

Programmable Controller

**MELSEC iQ-F**  
series

MELSEC iQ-F

FX5 Ethernet, EtherNet/IP,

CC-Link IE Function Block Reference

---



# SAFETY PRECAUTIONS

---

(Read these precautions before use.)

Before using this product, please read this reference and the relevant manuals introduced in this reference carefully and pay full attention to safety in order to handle the product correctly.

The precautions given in this reference are concerned with this product only. For the safety precautions of the programmable controller system, refer to the User's Manual (Hardware) of the CPU module used.

This reference classifies the safety precautions into two categories: "⚠️ WARNING" and "⚠️ CAUTION".

|                                                                                                  |                                                                                                                             |
|--------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
|  <b>WARNING</b> | Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.                      |
|  <b>CAUTION</b> | Indicates that incorrect handling may cause hazardous conditions, resulting in minor or moderate injury or property damage. |

Depending on the circumstances, procedures indicated by "⚠️ CAUTION" may also cause severe injury.

It is important to follow all precautions for personal safety.

Store this manual in a safe place so that it can be read whenever necessary. Always forward it to the end user.

# INTRODUCTION

Thank you for purchasing the Mitsubishi MELSEC iQ-F series programmable controllers.

This reference will guide the reader in module FBs for following target modules.

Before using this product, please read this manual and the relevant manuals introduced in this specifications carefully and pay attention to safety in order to handle the product correctly.

Always forward it to the end user.

## Relevant products

- FX5S CPU module
- FX5UJ CPU module
- FX5U CPU module
- FX5UC CPU module
- FX5-ENET
- FX5-ENET/IP
- FX5-EIP
- FX5-CCLGN-MS
- FX5-CCLIEF
- MX Controller MX-F Model

## Regarding use of this product

- This product has been manufactured as a general-purpose part for general industries, and has not been designed or manufactured to be incorporated in a device or system used in purposes related to human life.
- Before using the product for special purposes such as nuclear power, electric power, aerospace, medicine or passenger movement vehicles, consult Mitsubishi Electric.
- This product has been manufactured under strict quality control. However when installing the product where major accidents or losses could occur if the product fails, install appropriate backup or failsafe functions into the system.

## Note

- If in doubt at any stage during the installation of the product, always consult a professional electrical engineer who is qualified and trained to the local and national standards. If in doubt about the operation or use, please consult your local Mitsubishi Electric representative.
- Mitsubishi Electric will not accept responsibility for actual use of the product based on these illustrative examples. Please use it after confirming the function and safety of the equipment and system.
- The content, specification etc. of this manual may be changed, for improvement, without notice.
- The information in this manual has been carefully checked and is believed to be accurate; however, if you notice a doubtful point, an error, etc., please contact your local Mitsubishi Electric representative.

# CONTENTS

|                                                                                      |           |
|--------------------------------------------------------------------------------------|-----------|
| SAFETY PRECAUTIONS .....                                                             | 1         |
| INTRODUCTION .....                                                                   | 2         |
| RELEVANT MANUALS .....                                                               | 11        |
| TERMS .....                                                                          | 12        |
| GENERIC TERMS AND ABBREVIATIONS .....                                                | 12        |
| <b>CHAPTER 1 OVERVIEW</b> .....                                                      | <b>13</b> |
| 1.1 Function Block (FB) List .....                                                   | 13        |
| 1.2 How to Obtain .....                                                              | 15        |
| 1.3 System Configuration .....                                                       | 16        |
| <b>CHAPTER 2 FB FOR Ethernet</b> .....                                               | <b>19</b> |
| 2.1 <b>M+model_ConnectionOpen (Connection establishment)</b> .....                   | <b>19</b> |
| Overview .....                                                                       | 19        |
| Labels .....                                                                         | 19        |
| FB details .....                                                                     | 21        |
| Parameter setting .....                                                              | 22        |
| Performance value .....                                                              | 23        |
| Error code .....                                                                     | 23        |
| 2.2 <b>M+model_ConnectionClose (Disconnection)</b> .....                             | <b>24</b> |
| Overview .....                                                                       | 24        |
| Labels .....                                                                         | 24        |
| FB details .....                                                                     | 25        |
| Parameter setting .....                                                              | 26        |
| Performance value .....                                                              | 27        |
| Error code .....                                                                     | 27        |
| 2.3 <b>M+model_Recv_Socket (Receiving of data)</b> .....                             | <b>28</b> |
| Overview .....                                                                       | 28        |
| Labels .....                                                                         | 28        |
| FB details .....                                                                     | 29        |
| Parameter setting .....                                                              | 31        |
| Performance value .....                                                              | 31        |
| Error code .....                                                                     | 31        |
| 2.4 <b>M+model_Send_Socket (Sending of data)</b> .....                               | <b>32</b> |
| Overview .....                                                                       | 32        |
| Labels .....                                                                         | 32        |
| FB details .....                                                                     | 33        |
| Parameter setting .....                                                              | 34        |
| Performance value .....                                                              | 35        |
| Error code .....                                                                     | 35        |
| 2.5 <b>M+FX5UCPU-EN_SLMP_DeviceRead_IP (Reading of SLMP-compatible device)</b> ..... | <b>36</b> |
| Overview .....                                                                       | 36        |
| Labels .....                                                                         | 36        |
| FB details .....                                                                     | 40        |
| Parameter setting .....                                                              | 41        |
| Example of use .....                                                                 | 42        |
| Performance value .....                                                              | 42        |
| Error code .....                                                                     | 42        |

|             |                                                                             |           |
|-------------|-----------------------------------------------------------------------------|-----------|
| <b>2.6</b>  | <b>M+FX5UCPU-EN_SLMP_DeviceWrite_IP (Writing to SLMP-compatible device)</b> | <b>43</b> |
|             | Overview                                                                    | 43        |
|             | Labels                                                                      | 43        |
|             | FB details                                                                  | 47        |
|             | Parameter setting                                                           | 49        |
|             | Performance value                                                           | 49        |
|             | Error code                                                                  | 49        |
| <b>2.7</b>  | <b>M+FX5UCPU-EN_SLMP_DeviceRead_Active</b>                                  |           |
|             | <b>(Reading of SLMP-compatible device with Active connection)</b>           | <b>50</b> |
|             | Overview                                                                    | 50        |
|             | Labels                                                                      | 51        |
|             | FB details                                                                  | 54        |
|             | Parameter setting                                                           | 56        |
|             | Performance value                                                           | 56        |
|             | Error code                                                                  | 57        |
| <b>2.8</b>  | <b>M+FX5UCPU-EN_SLMP_DeviceWrite_Active</b>                                 |           |
|             | <b>(Writing to SLMP target device with Active connection)</b>               | <b>58</b> |
|             | Overview                                                                    | 58        |
|             | Labels                                                                      | 58        |
|             | FB details                                                                  | 61        |
|             | Parameter setting                                                           | 63        |
|             | Performance value                                                           | 63        |
|             | Error code                                                                  | 64        |
| <b>2.9</b>  | <b>M+FX5UCPU-EN_SLMP_DeviceCodeConversion</b>                               |           |
|             | <b>(Reading of device code for SLMP communication FB)</b>                   | <b>65</b> |
|             | Overview                                                                    | 65        |
|             | Labels                                                                      | 65        |
|             | FB details                                                                  | 66        |
|             | Parameter setting                                                           | 67        |
|             | Example of use                                                              | 67        |
|             | Performance value                                                           | 67        |
|             | Error code                                                                  | 68        |
| <b>2.10</b> | <b>M+FX5UCPU-EN_ModbusTcp_ClientRead (Reading by MODBUS/TCP client)</b>     | <b>69</b> |
|             | Overview                                                                    | 69        |
|             | Labels                                                                      | 69        |
|             | FB details                                                                  | 71        |
|             | Parameter setting                                                           | 73        |
|             | Performance value                                                           | 73        |
|             | Error code                                                                  | 74        |
| <b>2.11</b> | <b>M+FX5UCPU-EN_ModbusTcp_ClientWrite (Writing by MODBUS/TCP client)</b>    | <b>75</b> |
|             | Overview                                                                    | 75        |
|             | Labels                                                                      | 75        |
|             | FB details                                                                  | 78        |
|             | Parameter setting                                                           | 80        |
|             | Performance value                                                           | 80        |
|             | Error code                                                                  | 81        |
| <b>2.12</b> | <b>M+FX5ENET_MQTT_Connect (MQTT connection establishment)</b>               | <b>82</b> |
|             | Overview                                                                    | 82        |
|             | Labels                                                                      | 83        |
|             | FB details                                                                  | 85        |
|             | Parameter setting                                                           | 87        |

|             |                                                                        |            |
|-------------|------------------------------------------------------------------------|------------|
|             | Performance value .....                                                | 87         |
|             | Error code .....                                                       | 88         |
| <b>2.13</b> | <b>M+FX5ENET_MQTT_PublishSend (Sending of MQTT data) .....</b>         | <b>89</b>  |
|             | Overview .....                                                         | 89         |
|             | Labels .....                                                           | 89         |
|             | FB details.....                                                        | 91         |
|             | Parameter setting .....                                                | 93         |
|             | Performance value .....                                                | 93         |
|             | Error code .....                                                       | 93         |
| <b>2.14</b> | <b>M+FX5ENET_MQTT_Receive (Receiving of MQTT data).....</b>            | <b>94</b>  |
|             | Overview .....                                                         | 94         |
|             | Labels .....                                                           | 95         |
|             | FB details.....                                                        | 96         |
|             | Parameter setting .....                                                | 98         |
|             | Performance value .....                                                | 98         |
|             | Error code .....                                                       | 98         |
| <b>2.15</b> | <b>M+FX5ENET_MQTT_Subscribe (Sending of Subscribe command) .....</b>   | <b>99</b>  |
|             | Overview .....                                                         | 99         |
|             | Labels .....                                                           | 99         |
|             | FB details.....                                                        | 101        |
|             | Parameter setting .....                                                | 103        |
|             | Performance value .....                                                | 103        |
|             | Error code .....                                                       | 103        |
| <b>2.16</b> | <b>M+FX5ENET_Mail_Send (Sending of E-mail) .....</b>                   | <b>104</b> |
|             | Overview .....                                                         | 104        |
|             | Labels .....                                                           | 105        |
|             | FB details.....                                                        | 107        |
|             | Parameter setting .....                                                | 109        |
|             | Performance value .....                                                | 109        |
|             | Error code .....                                                       | 109        |
| <b>2.17</b> | <b>M+FX5ENET_MQTT_Connect_MF (MQTT connection establishment) .....</b> | <b>110</b> |
|             | Overview .....                                                         | 110        |
|             | Labels .....                                                           | 111        |
|             | FB details.....                                                        | 113        |
|             | Parameter setting .....                                                | 115        |
|             | Performance value .....                                                | 115        |
|             | Error code .....                                                       | 116        |
| <b>2.18</b> | <b>M+FX5ENET_MQTT_PublishSend_MF (Sending of MQTT data) .....</b>      | <b>117</b> |
|             | Overview .....                                                         | 117        |
|             | Labels .....                                                           | 117        |
|             | FB details.....                                                        | 119        |
|             | Parameter setting .....                                                | 122        |
|             | Performance value .....                                                | 122        |
|             | Error code .....                                                       | 122        |
| <b>2.19</b> | <b>M+FX5ENET_MQTT_Receive_MF (Receiving of MQTT data) .....</b>        | <b>123</b> |
|             | Overview .....                                                         | 123        |
|             | Labels .....                                                           | 123        |
|             | FB details.....                                                        | 125        |
|             | Parameter setting .....                                                | 127        |
|             | Performance value .....                                                | 127        |
|             | Error code .....                                                       | 127        |

|             |                                                                   |            |
|-------------|-------------------------------------------------------------------|------------|
| <b>2.20</b> | <b>M+FX5ENET_MQTT_Subscribe_MF (Sending of Subscribe command)</b> | <b>128</b> |
|             | Overview                                                          | 128        |
|             | Labels                                                            | 128        |
|             | FB details.                                                       | 130        |
|             | Parameter setting                                                 | 132        |
|             | Performance value                                                 | 132        |
|             | Error code                                                        | 132        |
| <b>2.21</b> | <b>M+FX5ENET_Mail_Send_MF (Sending of E-mail)</b>                 | <b>133</b> |
|             | Overview                                                          | 133        |
|             | Labels                                                            | 133        |
|             | FB details.                                                       | 135        |
|             | Parameter setting                                                 | 137        |
|             | Performance value                                                 | 137        |
|             | Error code                                                        | 137        |

---

## **CHAPTER 3 FB FOR CC-Link IE TSN** **138**

---

|            |                                                                     |            |
|------------|---------------------------------------------------------------------|------------|
| <b>3.1</b> | <b>M+FX5CCLGNMS_DeviceRead (Reading of another station device)</b>  | <b>138</b> |
|            | Overview                                                            | 138        |
|            | Labels                                                              | 138        |
|            | FB details.                                                         | 141        |
|            | Parameter setting                                                   | 143        |
|            | Performance value                                                   | 143        |
|            | Error code                                                          | 143        |
| <b>3.2</b> | <b>M+FX5CCLGNMS_DeviceWrite (Writing to another station device)</b> | <b>144</b> |
|            | Overview                                                            | 144        |
|            | Labels                                                              | 145        |
|            | FB details.                                                         | 149        |
|            | Parameter setting                                                   | 151        |
|            | Performance value                                                   | 151        |
|            | Error code                                                          | 151        |
| <b>3.3</b> | <b>M+FX5CCLGNMS_Send (Sending of another station data)</b>          | <b>152</b> |
|            | Overview                                                            | 152        |
|            | Labels                                                              | 153        |
|            | FB details.                                                         | 156        |
|            | Parameter setting                                                   | 158        |
|            | Performance value                                                   | 158        |
|            | Error code                                                          | 158        |
| <b>3.4</b> | <b>M+FX5CCLGNMS_Recv (Receiving of another station data)</b>        | <b>159</b> |
|            | Overview                                                            | 159        |
|            | Labels                                                              | 159        |
|            | FB details.                                                         | 162        |
|            | Parameter setting                                                   | 164        |
|            | Performance value                                                   | 164        |
|            | Error code                                                          | 164        |
| <b>3.5</b> | <b>M+FX5CCLGNMS_SetAddress (Station number/IP address setting)</b>  | <b>165</b> |
|            | Overview                                                            | 165        |
|            | Labels                                                              | 165        |
|            | FB details.                                                         | 166        |
|            | Parameter setting                                                   | 168        |
|            | Performance value                                                   | 168        |



|            |                                                                                   |            |
|------------|-----------------------------------------------------------------------------------|------------|
|            | Error code .....                                                                  | 168        |
| <b>3.6</b> | <b>M+FX5CCLGNMS_SLMP_DeviceRead_IP (Reading of SLMP-compatible device) .....</b>  | <b>169</b> |
|            | Overview .....                                                                    | 169        |
|            | Labels .....                                                                      | 170        |
|            | FB details.....                                                                   | 173        |
|            | Parameter setting .....                                                           | 176        |
|            | Example of use .....                                                              | 176        |
|            | Performance value .....                                                           | 176        |
|            | Error code .....                                                                  | 176        |
| <b>3.7</b> | <b>M+FX5CCLGNMS_SLMP_DeviceWrite_IP (Writing to SLMP-compatible device) .....</b> | <b>177</b> |
|            | Overview .....                                                                    | 177        |
|            | Labels .....                                                                      | 177        |
|            | FB details.....                                                                   | 181        |
|            | Parameter setting .....                                                           | 184        |
|            | Example of use .....                                                              | 184        |
|            | Performance value .....                                                           | 184        |
|            | Error code .....                                                                  | 184        |

## **CHAPTER 4 FB FOR CC-Link IE Field Network 185**

|            |                                                                          |            |
|------------|--------------------------------------------------------------------------|------------|
| <b>4.1</b> | <b>M+FX5CCLIEF_DeviceRead (Reading of another station device) .....</b>  | <b>185</b> |
|            | Overview .....                                                           | 185        |
|            | Labels .....                                                             | 186        |
|            | FB details.....                                                          | 188        |
|            | Parameter setting .....                                                  | 190        |
|            | Performance value .....                                                  | 190        |
|            | Error code .....                                                         | 190        |
| <b>4.2</b> | <b>M+FX5CCLIEF_DeviceWrite (Writing to another station device) .....</b> | <b>191</b> |
|            | Overview .....                                                           | 191        |
|            | Labels .....                                                             | 192        |
|            | FB details.....                                                          | 195        |
|            | Parameter setting .....                                                  | 197        |
|            | Performance value .....                                                  | 197        |
|            | Error code .....                                                         | 197        |
| <b>4.3</b> | <b>M+FX5CCLIEF_Send (Sending of another station device) .....</b>        | <b>198</b> |
|            | Overview .....                                                           | 198        |
|            | Labels .....                                                             | 198        |
|            | FB details.....                                                          | 201        |
|            | Parameter setting .....                                                  | 203        |
|            | Performance value .....                                                  | 203        |
|            | Error code .....                                                         | 203        |
| <b>4.4</b> | <b>M+FX5CCLIEF_Recv (Receiving of another station device) .....</b>      | <b>204</b> |
|            | Overview .....                                                           | 204        |
|            | Labels .....                                                             | 204        |
|            | FB details.....                                                          | 206        |
|            | Parameter setting .....                                                  | 207        |
|            | Performance value .....                                                  | 208        |
|            | Error code .....                                                         | 208        |
| <b>4.5</b> | <b>M+FX5CCLIEF_SetParameter (Parameter setting) .....</b>                | <b>209</b> |
|            | Overview .....                                                           | 209        |
|            | Labels .....                                                             | 209        |

|            |                                                                        |            |
|------------|------------------------------------------------------------------------|------------|
|            | FB details. . . . .                                                    | 211        |
|            | Parameter setting . . . . .                                            | 212        |
|            | Performance value . . . . .                                            | 213        |
|            | Error code . . . . .                                                   | 213        |
| <b>4.6</b> | <b>M+FX5CCLIEF_StationNoSet (Own station number setting) . . . . .</b> | <b>214</b> |
|            | Overview . . . . .                                                     | 214        |
|            | Labels . . . . .                                                       | 214        |
|            | FB details. . . . .                                                    | 214        |
|            | Parameter setting . . . . .                                            | 216        |
|            | Performance value . . . . .                                            | 216        |
|            | Error code . . . . .                                                   | 216        |

---

|                  |                                     |            |
|------------------|-------------------------------------|------------|
| <b>CHAPTER 5</b> | <b>FB FOR EtherNet/IP (FX5-EIP)</b> | <b>217</b> |
|------------------|-------------------------------------|------------|

---

|            |                                                                                                      |            |
|------------|------------------------------------------------------------------------------------------------------|------------|
| <b>5.1</b> | <b>Specifications . . . . .</b>                                                                      | <b>217</b> |
| <b>5.2</b> | <b>M+FX5-EIP_Class1GetInputData (Class1 communications input data acquisition) . . . . .</b>         | <b>220</b> |
|            | Overview . . . . .                                                                                   | 220        |
|            | Labels . . . . .                                                                                     | 220        |
|            | FB details. . . . .                                                                                  | 221        |
|            | Parameter setting . . . . .                                                                          | 225        |
|            | Error code . . . . .                                                                                 | 225        |
| <b>5.3</b> | <b>M+FX5-EIP_Class1SetOutputData (Class1 communications output data setting) . . . . .</b>           | <b>226</b> |
|            | Overview . . . . .                                                                                   | 226        |
|            | Labels . . . . .                                                                                     | 226        |
|            | FB details. . . . .                                                                                  | 227        |
|            | Parameter setting . . . . .                                                                          | 230        |
|            | Error code . . . . .                                                                                 | 231        |
| <b>5.4</b> | <b>M+FX5-EIP_UCMMOriginator_ReadTagData (UCMM tag communications data acquisition) . . . . .</b>     | <b>232</b> |
|            | Overview . . . . .                                                                                   | 232        |
|            | Labels . . . . .                                                                                     | 232        |
|            | FB details. . . . .                                                                                  | 234        |
|            | Parameter setting . . . . .                                                                          | 238        |
|            | Error code . . . . .                                                                                 | 238        |
| <b>5.5</b> | <b>M+FX5-EIP_UCMMOriginator_WriteTagData (UCMM tag communications data setting) . . . . .</b>        | <b>239</b> |
|            | Overview . . . . .                                                                                   | 239        |
|            | Labels . . . . .                                                                                     | 239        |
|            | FB details. . . . .                                                                                  | 242        |
|            | Parameter setting . . . . .                                                                          | 246        |
|            | Error code . . . . .                                                                                 | 246        |
| <b>5.6</b> | <b>M+FX5-EIP_Class3Originator_ReadTagData (Class3 tag communications data acquisition) . . . . .</b> | <b>247</b> |
|            | Overview . . . . .                                                                                   | 247        |
|            | Labels . . . . .                                                                                     | 247        |
|            | FB details. . . . .                                                                                  | 249        |
|            | Parameter setting . . . . .                                                                          | 253        |
|            | Error code . . . . .                                                                                 | 253        |
| <b>5.7</b> | <b>M+FX5-EIP_Class3Originator_WriteTagData (Class3 tag communications data setting) . . . . .</b>    | <b>254</b> |
|            | Overview . . . . .                                                                                   | 254        |
|            | Labels . . . . .                                                                                     | 254        |
|            | FB details. . . . .                                                                                  | 256        |
|            | Parameter setting . . . . .                                                                          | 260        |
|            | Error code . . . . .                                                                                 | 260        |

|            |                                                                                                    |            |
|------------|----------------------------------------------------------------------------------------------------|------------|
| <b>5.8</b> | <b>M+FX5-EIP_UCMMOriginator_MessageSend (Sending of UCMM communications message)</b> . . . . .     | <b>261</b> |
|            | Overview . . . . .                                                                                 | 261        |
|            | Labels . . . . .                                                                                   | 261        |
|            | FB details. . . . .                                                                                | 264        |
|            | Parameter setting . . . . .                                                                        | 268        |
|            | Error code . . . . .                                                                               | 268        |
| <b>5.9</b> | <b>M+FX5-EIP_Class3Originator_MessageSend (Sending of Class3 communications message)</b> . . . . . | <b>269</b> |
|            | Overview . . . . .                                                                                 | 269        |
|            | Labels . . . . .                                                                                   | 269        |
|            | FB details. . . . .                                                                                | 270        |
|            | Parameter setting . . . . .                                                                        | 275        |
|            | Error code . . . . .                                                                               | 275        |

## **CHAPTER 6 FB FOR EtherNet/IP (FX5-ENET/IP) 276**

|            |                                                                                                |            |
|------------|------------------------------------------------------------------------------------------------|------------|
| <b>6.1</b> | <b>M+FX5ENETIP_Class1GetInputData (Class1 communications input data acquisition)</b> . . . . . | <b>276</b> |
|            | Overview . . . . .                                                                             | 276        |
|            | Labels . . . . .                                                                               | 276        |
|            | FB details. . . . .                                                                            | 277        |
|            | Parameter setting . . . . .                                                                    | 279        |
|            | Performance value . . . . .                                                                    | 280        |
|            | Error code . . . . .                                                                           | 280        |
|            | Version upgrade history. . . . .                                                               | 280        |
| <b>6.2</b> | <b>M+FX5ENETIP_Class1SetOutputData (Class1 communications output data setting)</b> . . . . .   | <b>281</b> |
|            | Overview . . . . .                                                                             | 281        |
|            | Labels . . . . .                                                                               | 281        |
|            | FB details. . . . .                                                                            | 282        |
|            | Parameter setting . . . . .                                                                    | 284        |
|            | Performance value . . . . .                                                                    | 285        |
|            | Error code . . . . .                                                                           | 285        |
|            | Version upgrade history. . . . .                                                               | 285        |

## **CHAPTER 7 EXAMPLE OF USE 286**

|             |                                                                                                                    |            |
|-------------|--------------------------------------------------------------------------------------------------------------------|------------|
| <b>7.1</b>  | <b>M+FX5UCPU-EN_SLMP_DeviceRead_IP (Reading of SLMP-compatible device)</b> . . . . .                               | <b>286</b> |
| <b>7.2</b>  | <b>M+FX5UCPU-EN_SLMP_DeviceWrite_IP (Writing to SLMP-compatible device)</b> . . . . .                              | <b>289</b> |
| <b>7.3</b>  | <b>M+FX5UCPU-EN_SLMP_DeviceRead_Active</b><br>(Reading of SLMP-compatible device with Active connection) . . . . . | <b>292</b> |
| <b>7.4</b>  | <b>M+FX5UCPU-EN_SLMP_DeviceWrite_Active</b><br>(Writing to SLMP target device with Active connection) . . . . .    | <b>295</b> |
| <b>7.5</b>  | <b>M+FX5CCLIEF_DeviceRead (Reading of another station device)</b> . . . . .                                        | <b>298</b> |
| <b>7.6</b>  | <b>M+FX5CCLIEF_DeviceWrite (Writing to another station device)</b> . . . . .                                       | <b>300</b> |
| <b>7.7</b>  | <b>M+FX5CCLGNMS_DeviceRead (Reading of another station device)</b> . . . . .                                       | <b>302</b> |
|             | When the target station address specification method is off . . . . .                                              | 302        |
|             | When the target station address specification method is on . . . . .                                               | 304        |
| <b>7.8</b>  | <b>M+FX5CCLGNMS_DeviceWrite (Writing to another station device)</b> . . . . .                                      | <b>306</b> |
|             | When the target station address specification method is off . . . . .                                              | 306        |
|             | When the target station address specification method is on . . . . .                                               | 308        |
| <b>7.9</b>  | <b>M+FX5CCLGNMS_Send (Sending of another station data)</b> . . . . .                                               | <b>310</b> |
|             | When the target station address specification method is off . . . . .                                              | 310        |
|             | When the target station address specification method is on . . . . .                                               | 312        |
| <b>7.10</b> | <b>M+FX5CCLGNMS_SetAddress (Station number/IP address setting)</b> . . . . .                                       | <b>314</b> |

|      |                                                                                                                          |     |
|------|--------------------------------------------------------------------------------------------------------------------------|-----|
| 7.11 | M+FX5CCLGNMS_SLMP_DeviceRead_IP (Reading of SLMP-compatible device) . . . . .                                            | 315 |
| 7.12 | M+FX5CCLGNMS_SLMP_DeviceWrite_IP (Writing to SLMP-compatible device) . . . . .                                           | 317 |
| 7.13 | M+FX5-EIP_Class1GetInputData, M+FX5-EIP_Class1SetOutputData (Class1 communications) . . . . .                            | 320 |
| 7.14 | M+FX5-EIP_UCMMOriginator_ReadTagData, M+FX5-EIP_UCMMOriginator_WriteTagData<br>(UCMM tag communications) . . . . .       | 324 |
| 7.15 | M+FX5-EIP_Class3Originator_ReadTagData, M+FX5-EIP_Class3Originator_WriteTagData<br>(Class3 Tag communications) . . . . . | 328 |
| 7.16 | M+FX5-EIP_UCMMOriginator_MessageSend (UCMM instance communications) . . . . .                                            | 333 |
| 7.17 | M+FX5-EIP_Class3Originator_MessageSend (Class3 instance communications) . . . . .                                        | 338 |
| 7.18 | M+FX5ENET_MQTT_Connect (MQTT connection establishment) . . . . .                                                         | 343 |
| 7.19 | M+FX5ENET_MQTT_Subscribe (Sending of Subscribe command) . . . . .                                                        | 347 |
| 7.20 | M+FX5ENET_MQTT_Receive (Receiving of MQTT data) . . . . .                                                                | 349 |
| 7.21 | M+FX5ENET_MQTT_PublishSend (Sending of MQTT data) . . . . .                                                              | 352 |
| 7.22 | M+FX5ENET_Mail_Send (Sending of E-mail) . . . . .                                                                        | 355 |

---

|                          |            |
|--------------------------|------------|
| <b>INSTRUCTION INDEX</b> | <b>359</b> |
|--------------------------|------------|

|                                    |     |
|------------------------------------|-----|
| REVISIONS . . . . .                | 361 |
| INFORMATION AND SERVICES . . . . . | 362 |
| TRADEMARKS . . . . .               | 362 |

# RELEVANT MANUALS

| Manual name <manual number>                                                                            | Description                                                                                                                                        |
|--------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| MELSEC iQ-F FX5S/FX5UJ/FX5U/FX5UC User's Manual (Hardware)<br><SH-082452ENG>                           | Describes the details of hardware of the FX5 CPU module, including performance specifications, wiring, installation, and maintenance.              |
| MELSEC iQ-F FX5 User's Manual (Application)<br><JY997D55401>                                           | Describes basic knowledge required for program design, functions of the CPU module, devices/labels, and parameters.                                |
| MELSEC iQ-F FX5 Programming Manual (Program Design)<br><JY997D55701>                                   | Describes the specifications of ladder, ST, FBD/LD, and SFC programs, and labels.                                                                  |
| MELSEC iQ-F FX5 Programming Manual (Instructions, Standard Functions/Function Blocks)<br><JY997D55801> | Describes specifications of instructions and functions that can be used in programs.                                                               |
| MELSEC iQ-F FX5 User's Manual (Communication)<br><SH-082625ENG>                                        | Describes the communication function of the CPU module built-in and the Ethernet module.                                                           |
| MELSEC iQ-F FX5 Ethernet Module User's Manual<br><SH-082026ENG>                                        | Describes the functions of the Ethernet module.                                                                                                    |
| MELSEC iQ-F FX5-ENET/IP Ethernet Module User's Manual<br><SH-082027ENG>                                | Describes the functions of the FX5-ENET/IP Ethernet module.                                                                                        |
| MELSEC iQ-F FX5-EIP EtherNet/IP Module User's Manual<br><SH-082709ENG>                                 | Describes the functions of the EtherNet/IP module.                                                                                                 |
| MELSEC iQ-F FX5 CC-Link IE TSN Master/Local Module User's Manual<br><SH-082215ENG>                     | Describes CC-Link IE TSN module.                                                                                                                   |
| MELSEC MX Controller MX-F Model User's Manual<br><SH-082634ENG>                                        | Procedures before operation, specifications, devices, memory, functions, parameters, and troubleshooting of the controller                         |
| MELSEC MX Controller MX-F Model Programming Manual<br><SH-082691ENG>                                   | Program language specifications, controller instructions, standard functions/function blocks, and specifications of motion control function blocks |
| MELSEC iQ-F FX5 CC-Link IE Field Network Module User's Manual<br><JY997D64201>                         | Describes CC-Link IE Field Network module.                                                                                                         |
| GX Works3 Operating Manual<br><SH-081215ENG>                                                           | Describes the system configuration, parameter settings, and online operations of GX Works3.                                                        |

# TERMS

Unless otherwise specified, this manual uses the following terms.

| Terms                  | Description                                                                                                                                                                                                                                                                                |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Device code            | Device name represented in ASCII code or binary code for the device to be accessed                                                                                                                                                                                                         |
| Device station         | A station (local station, remote station) other than the master station                                                                                                                                                                                                                    |
| Engineering tool       | A tool used for setting up programmable controllers, programming, debugging, and maintenance                                                                                                                                                                                               |
| Local station          | A station that performs cyclic transmission and transient transmission with the master station and local stations                                                                                                                                                                          |
| Master station         | A station used to control the entire network. Only one master station can be used in a network. This station can perform cyclic transmission and transient transmission with all stations.                                                                                                 |
| Module label           | A label that represents one of memory areas (I/O signals and buffer memory areas) specific to each module in a given character string. For the module used, GX Works3 automatically generates this label, which can be used as a global label.                                             |
| Socket communication   | Data communications with the connected devices via Ethernet by TCP or UDP using dedicated instructions                                                                                                                                                                                     |
| Transient transmission | A function by which data are non-periodically exchanged among stations on the network. Data is exchanged with other stations when requested with a link dedicated command or from the engineering tool. Data can also be exchanged with other networks via the relay station or a gateway. |

## GENERIC TERMS AND ABBREVIATIONS

Unless otherwise specified, this manual uses the following generic terms and abbreviations.

| Generic term/abbreviation | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Controller                | A generic term for the MELSEC MX Controller MX-F Model                                                                                                                                                                                                                                                                                                                                                                                                                     |
| FB                        | FB is the abbreviation for function block, in which the circuit blocks used repeatedly in a sequence program are broken down into parts so that the parts can be used for other purposes in the sequence program.<br>This improves the program development efficiency, reduces program errors and improves the program quality.                                                                                                                                            |
| FX5 CPU module            | A generic term for the FX5S CPU module, FX5UJ CPU module, FX5U CPU module, and FX5UC CPU module                                                                                                                                                                                                                                                                                                                                                                            |
| FX5S CPU module           | A generic term for the FX5S-30MR/ES, FX5S-30MT/ES, FX5S-30MT/ESS, FX5S-40MR/ES, FX5S-40MT/ES, FX5S-40MT/ESS, FX5S-60MR/ES, FX5S-60MT/ES, FX5S-60MT/ESS, FX5S-80MR/ES <sup>*1</sup> , FX5S-80MT/ES <sup>*1</sup> , FX5S-80MT/ESS <sup>*1</sup> , FX5S-30MR/DS, FX5S-30MT/DS, FX5S-30MT/DSS, FX5S-40MR/DS, FX5S-40MT/DS, FX5S-40MT/DSS, FX5S-60MR/DS, FX5S-60MT/DS, FX5S-60MT/DSS, FX5S-80MR/DS <sup>*1</sup> , FX5S-80MT/DS <sup>*1</sup> , and FX5S-80MT/DSS <sup>*1</sup> |
| FX5U CPU module           | A generic term for the FX5U-32MR/ES, FX5U-32MT/ES, FX5U-32MT/ESS, FX5U-64MR/ES, FX5U-64MT/ES, FX5U-64MT/ESS, FX5U-80MR/ES, FX5U-80MT/ES, FX5U-80MT/ESS, FX5U-32MR/DS, FX5U-32MT/DS, FX5U-32MT/DSS, FX5U-64MR/DS, FX5U-64MT/DS, FX5U-64MT/DSS, FX5U-80MR/DS, FX5U-80MT/DS, and FX5U-80MT/DSS                                                                                                                                                                                |
| FX5UC CPU module          | A generic term for the FX5UC-32MT/D, FX5UC-32MT/DSS, FX5UC-64MT/D, FX5UC-64MT/DSS, FX5UC-96MT/D, FX5UC-96MT/DSS, FX5UC-32MT/DS-TS, FX5UC-32MT/DSS-TS, and FX5UC-32MR/DS-TS                                                                                                                                                                                                                                                                                                 |
| FX5UJ CPU module          | A generic term for the FX5UJ-24MR/ES, FX5UJ-24MT/ES, FX5UJ-24MT/ESS, FX5UJ-40MR/ES, FX5UJ-40MT/ES, FX5UJ-40MT/ESS, FX5UJ-60MR/ES, FX5UJ-60MT/ES, FX5UJ-60MT/ESS, FX5UJ-24MR/DS, FX5UJ-24MT/DS, FX5UJ-24MT/DSS, FX5UJ-40MR/DS, FX5UJ-40MT/DS, FX5UJ-40MT/DSS, FX5UJ-60MR/DS, FX5UJ-60MT/DS, and FX5UJ-60MT/DSS                                                                                                                                                              |
| MQTT                      | An abbreviation for Message Queueing Telemetry Transport                                                                                                                                                                                                                                                                                                                                                                                                                   |

\*1 Area-specific model

# 1 OVERVIEW

The FBs listed in this reference are module FBs (for GX Works3) for Ethernet, CC-Link IE TSN, CC-Link IE Field Network, and EtherNet/IP.

## 1.1 Function Block (FB) List

Shown below is the list of the module FBs cited in this reference.



Note that this reference does not describe the FB version information which is displayed such as "\_00A" at the end of FB name.

The following shows the model names used in the module FBs by module.

- FX5S, FX5U, FX5UC, and FX5UJ

FX5UCPU

- FX5-ENET

FX5ENET

- FX5-ENET/IP

FX5ENETIP

- FX5-EIP

FX5EIP

### FBs for Ethernet

○: Required, —: Not required

| Name                                                                                                                 | Description                                                                                                                                                                   | Necessity of parameter setting |
|----------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| M+model_ConnectionOpen (Connection establishment)                                                                    | Opens (establishes) a connection.                                                                                                                                             | ○                              |
| M+model_ConnectionClose (Disconnection)                                                                              | Closes (disconnects) the connection.                                                                                                                                          | ○                              |
| M+model_Recv_Socket (Receiving of data)                                                                              | Reads the data received from the target device through socket communication.                                                                                                  | ○                              |
| M+model_Send_Socket (Sending of data)                                                                                | Sends data to the target device through socket communication.                                                                                                                 | ○                              |
| M+FX5UCPU-EN_SLMP_DeviceRead_IP (Reading of SLMP-compatible device)                                                  | Reads device data from the SLMP-compatible device by specifying IP address.                                                                                                   | —                              |
| M+FX5UCPU-EN_SLMP_DeviceWrite_IP (Writing to SLMP-compatible device)                                                 | Writes device data to the SLMP-compatible device by specifying IP address.                                                                                                    | —                              |
| M+FX5UCPU-EN_SLMP_DeviceRead_Active (Reading of SLMP-compatible device with Active connection)                       | Performs the open/close processing and reading device data of SLMP-compatible devices via Active connection.                                                                  | ○                              |
| M+FX5UCPU-EN_SLMP_DeviceWrite_Active (Writing to SLMP target device with Active connection)                          | Performs the open/close processing and writing to the device data of SLMP-compatible devices via Active connection.                                                           | ○                              |
| M+FX5UCPU-EN_SLMP_DeviceCodeConversion (Reading of device code for SLMP communication FB)                            | Calculates the value to be input to the device code for SLMP communication FB.                                                                                                | —                              |
| M+FX5UCPU-EN_ModbusTcp_ClientRead (Reading by MODBUS/TCP client)                                                     | Performs the open/close processing and reading by MODBUS/TCP client in socket communication                                                                                   | ○                              |
| M+FX5UCPU-EN_ModbusTcp_ClientWrite (Writing by MODBUS/TCP client)                                                    | Performs the open/close processing and writing by MODBUS/TCP client in socket communication                                                                                   | ○                              |
| • M+model_MQTT_Connect (MQTT connection establishment)<br>• M+ENET_MQTT_Connect_MF (MQTT connection establishment)*1 | Controls the connection with an MQTT broker (server) to establish a TCP or TLS session on the CONNECT instruction or to disconnect the session on the DISCONNECT instruction. | ○                              |
| • M+model_MQTT_PublishSend (Sending of MQTT data)<br>• M+ENET_MQTT_PublishSend_MF (Sending of MQTT data)*1           | Sends a message to an MQTT broker (server).                                                                                                                                   | ○                              |
| • M+model_MQTT_Receive (Receiving of MQTT data)<br>• M+ENET_MQTT_Receive_MF (Receiving of MQTT data)*1               | Reads a message received from an MQTT broker (server).                                                                                                                        | ○                              |

| Name                                                                                                                                                                       | Description                                                                    | Necessity of parameter setting |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|--------------------------------|
| <ul style="list-style-type: none"> <li>M+model_MQTT_Subscribe (Sending of Subscribe command)</li> <li>M+ENET_MQTT_Subscribe_MF (Sending of Subscribe command)*1</li> </ul> | Sends a SUBSCRIBE/UNSUBSCRIBE command to an MQTT broker (server).              | ○                              |
| <ul style="list-style-type: none"> <li>M+model_Mail_Send (Sending of E-mail)</li> <li>M+ENET_Mail_Send_MF (Sending of E-mail)*1</li> </ul>                                 | Establishes a TLS/TCP session with an SMTP server. Then, it sends E-mail data. | ○                              |

\*1 Module FBs for controller

## FBs for CC-Link IE TSN

○: Required, —: Not required

| Name                                                                 | Description                                                                           | Necessity of parameter setting |
|----------------------------------------------------------------------|---------------------------------------------------------------------------------------|--------------------------------|
| M+FX5CCLGNMS_DeviceRead (Reading of another station device)          | Reads data from a specified device in the programmable controller of another station. | ○                              |
| M+FX5CCLGNMS_DeviceWrite (Writing to another station device)         | Writes data to a specified device in the programmable controller of another station.  | ○                              |
| M+FX5CCLGNMS_Send (Sending of another station data)                  | Sends data to the programmable controller of another station.                         | ○                              |
| M+FX5CCLGNMS_Recv (Receiving of another station data)                | Reads the data received from the programmable controller of another station.          | ○                              |
| M+FX5CCLGNMS_SetAddress (Station number/IP address setting)          | Sets the station number/IP address for the own station.                               | ○                              |
| M+FX5CCLGNMS_SLMP_DeviceRead_IP (Reading of SLMP-compatible device)  | Reads device data from the SLMP-compatible device by specifying IP address.           | —                              |
| M+FX5CCLGNMS_SLMP_DeviceWrite_IP (Writing to SLMP-compatible device) | Writes device data to the SLMP-compatible device by specifying IP address.            | —                              |

## FBs for CC-Link IE Field Network

○: Required, —: Not required

| Name                                                        | Description                                                                           | Necessity of parameter setting |
|-------------------------------------------------------------|---------------------------------------------------------------------------------------|--------------------------------|
| M+FX5CCLIEF_DeviceRead (Reading of another station device)  | Reads data from a specified device in the programmable controller of another station. | ○                              |
| M+FX5CCLIEF_DeviceWrite (Writing to another station device) | Writes data to a specified device in the programmable controller of another station.  | ○                              |
| M+FX5CCLIEF_Send (Sending of another station device)        | Sends data to the programmable controller of another station.                         | ○                              |
| M+FX5CCLIEF_Recv (Receiving of another station device)      | Reads the data received from the programmable controller of another station.          | ○                              |
| M+FX5CCLIEF_SetParameter (Parameter setting)                | Sets parameters for a module.                                                         | ○                              |
| M+FX5CCLIEF_StationNoSet (Own station number setting)       | Sets the station number for the own station.                                          | ○                              |



## FBs for EtherNet/IP

○: Required, —: Not required

| Name                                                                                | Description                                                                                      | Necessity of parameter setting |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|--------------------------------|
| M+FX5-EIP_Class1GetInputData (Class1 communications input data acquisition)         | Acquires input data of the specified connection through the Class1 communications.               | ○                              |
| M+FX5-EIP_Class1SetOutputData (Class1 communications output data setting)           | Updates output data of the specified connection through the Class1 communications.               | ○                              |
| M+FX5-EIP_UCMMOriginator_ReadTagData (UCMM tag communications data acquisition)     | Acquires data from the tag of the specified target device through the UCMM tag communications.   | ○                              |
| M+FX5-EIP_UCMMOriginator_WriteTagData (UCMM tag communications data setting)        | Sets data for the tag of the specified target device through the UCMM tag communications.        | ○                              |
| M+FX5-EIP_Class3Originator_ReadTagData (Class3 tag communications data acquisition) | Acquires data from the tag of the specified target device through the Class3 tag communications. | ○                              |
| M+FX5-EIP_Class3Originator_WriteTagData (Class3 tag communications data setting)    | Sets data for the tag of the specified target device through the Class3 tag communications.      | ○                              |
| M+FX5-EIP_UCMMOriginator_MessageSend (Sending of UCMM communications message)       | Sends a message to the specified target device through the UCMM message communications.          | ○                              |
| M+FX5-EIP_Class3Originator_MessageSend (Sending of Class3 communications message)   | Sends a message to the specified target device through the Class3 message communications.        | ○                              |
| M+FX5ENETIP_Class1GetInputData (Class1 communications input data acquisition)       | Acquires input data of the specified connection through the Class1 communications.               | ○                              |
| M+FX5ENETIP_Class1SetOutputData (Class1 communications output data setting)         | Updates output data of the specified connection through the Class1 communications.               | ○                              |

## 1.2 How to Obtain

The FBs for Ethernet, FBs for CC-Link IE TSN, FBs for CC-Link IE Field Network, and FBs for EtherNet/IP described in this reference manual are incorporated into GX Works3<sup>\*1</sup>.

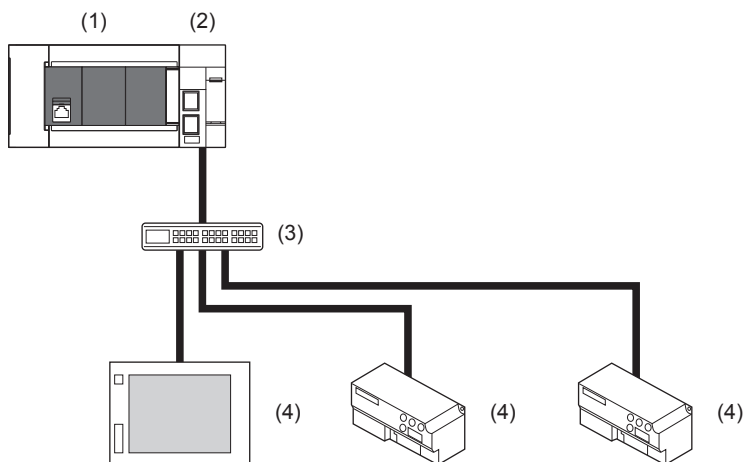
For using the module FBs, refer to the  GX Works3 Operating Manual.

<sup>\*1</sup> Use appropriate GX Works3 compatible with the module FB used.

## 1.3 System Configuration

This shows the system configurations to use the module FBs for this reference.

### Ethernet

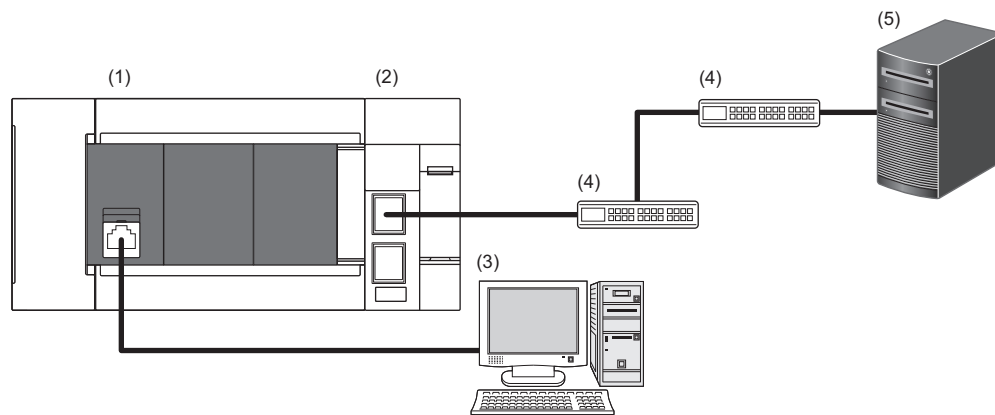


- (1) FX5S/FX5UJ/FX5U/FX5UC CPU module
- (2) FX5-ENET (master station)
- (3) Hub
- (4) External device (slave station)

For specifications of the module used, refer to the user's manual of each module.

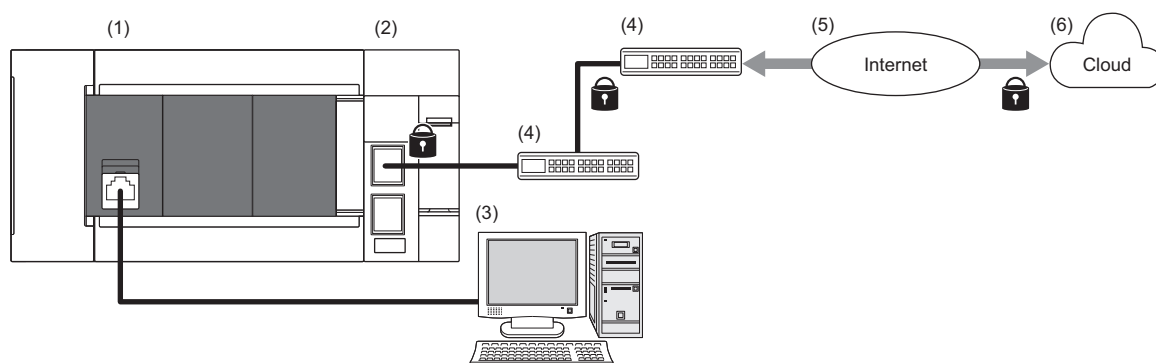
### Ethernet (MQTT communication function)

#### ■For TCP connection



- (1) FX5UJ/FX5U/FX5UC CPU module
- (2) FX5-ENET (MQTT client)
- (3) Personal computer installed with GX Works3 or Certificate Configuration Tool for FX5-ENET
- (4) Ethernet switch/router (Optional)
- (5) MQTT broker (Server)

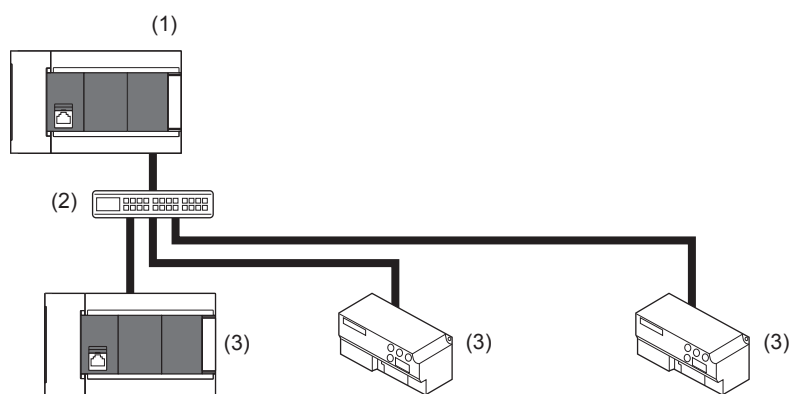
## ■For TLS connection



- (1) FX5UJ/FX5U/FX5UC CPU module
- (2) FX5-ENET (MQTT client)
- (3) Personal computer installed with GX Works3 or Certificate Configuration Tool for FX5-ENET
- (4) Ethernet switch/router (Optional)
- (5) MQTT broker (Server)

For specifications of the module used, refer to the user's manual of each module.

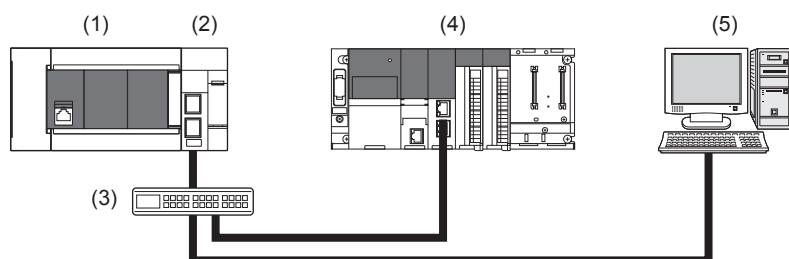
## MODBUS/TCP



- (1) FX5S/FX5UJ/FX5U/FX5UC CPU module (master station)
- (2) Hub
- (3) MODBUS/TCP device (slave station)

For specifications of the module used, refer to the user's manual of each module.

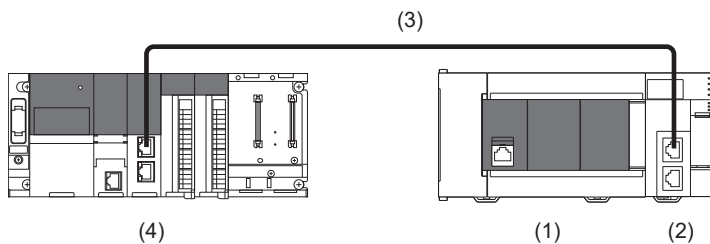
## CC-Link IE TSN



- (1) FX5UJ/FX5U/FX5UC CPU module
- (2) FX5-CCLGN-MS (master station)
- (3) Hub
- (4) CC-Link IE TSN module (device station)
- (5) Personal computer

For specifications of the module used, refer to the user's manual of each module.

## CC-Link IE Field Network

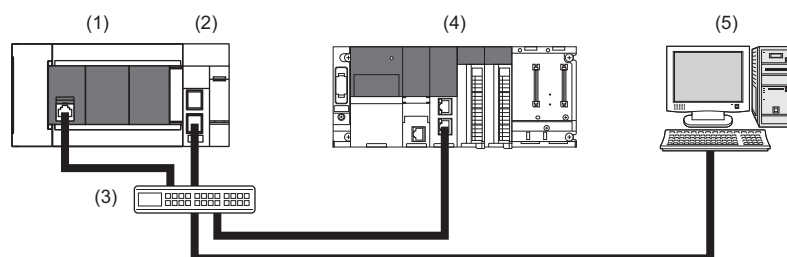


- (1) FX5UJ/FX5U/FX5UC CPU module
- (2) FX5-CCLIEF (device station)
- (3) Ethernet cable
- (4) CC-Link IE Field Network module (master station)

For specifications of the module used, refer to the user's manual of each module.

## EtherNet/IP

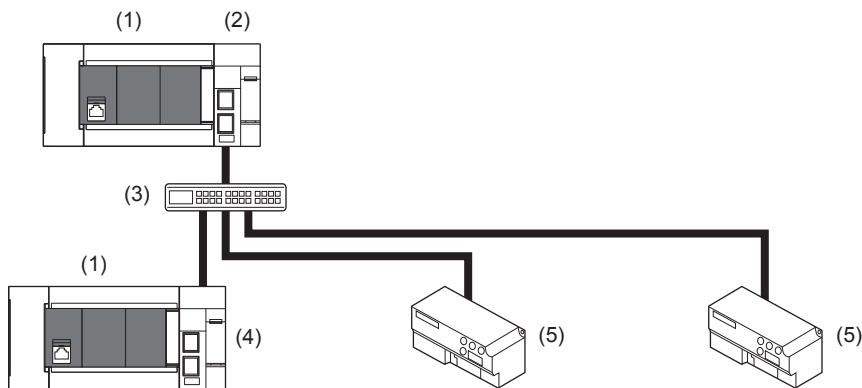
### ■For the FX5-EIP



- (1) FX5UJ/FX5U/FX5UC CPU module
- (2) FX5-EIP
- (3) Hub
- (4) EtherNet/IP device
- (5) Personal computer

For specifications of the module used, refer to the user's manual of each module.

### ■For the FX5-ENET/IP



- (1) FX5UJ/FX5U/FX5UC CPU module
- (2) FX5-ENET/IP (scanner)
- (3) Hub
- (4) FX5-ENET/IP (adapter)
- (5) EtherNet/IP device (scanner/adapter)

For specifications of the module used, refer to the user's manual of each module.

# 2 FB FOR Ethernet

## 2.1 M+model\_ConnectionOpen (Connection establishment)

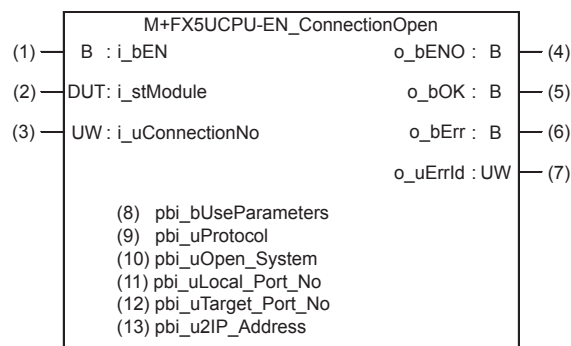
2

The following table lists the FB module names by module used.

| No. | Name                        | Target module  |
|-----|-----------------------------|----------------|
| 1   | M+FX5UCPU-EN_ConnectionOpen | FX5 CPU module |
| 2   | M+FX5ENET_ConnectionOpen    | FX5-ENET       |
| 3   | M+FX5ENETIP_ConnectionOpen  | FX5-ENET/IP    |
| 4   | M+FX5-EIP_ConnectionOpen    | FX5-EIP        |

### Overview

This FB opens (establishes) a connection for data communication with target device.



The above FB is an example for the FX5 CPU module.

### Labels

#### Input label

| No. | Variable name   | Name              | Data type                           | Range                                                     | Description                                                                                                                                          |
|-----|-----------------|-------------------|-------------------------------------|-----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1) | i_bEN           | Execution command | Bit                                 | On, off                                                   | On: The FB is activated.<br>Off: The FB is not activated.                                                                                            |
| (2) | i_stModule      | Module label      | Structure                           | The setting range differs depending on the module label.  | Specify the module for which the FB is to be executed. Specify the module label of the modules. (Example: FX5UCPU, FX5ENET_1, FX5ENETIP_1, FX5EIP_1) |
| (3) | i_uConnectionNo | Connection No.    | Word [Unsigned]/Bit String [16-bit] | The setting range differs depending on the target module. | Specify the number of the connection to be opened.<br>■FX5 CPU module<br>1 to 8<br>■FX5-ENET, FX5-ENET/IP, FX5-EIP<br>1 to 32                        |

#### Output label

| No. | Variable name | Name              | Data type                           | Default value | Description                                                                                |
|-----|---------------|-------------------|-------------------------------------|---------------|--------------------------------------------------------------------------------------------|
| (4) | o_bENO        | Execution status  | Bit                                 | Off           | The execution status of the FB is output.<br>• On: In execution<br>• Off: Not in execution |
| (5) | o_bOK         | Normal completion | Bit                                 | Off           | When this label is on, it indicates that the FB has been processed normally.               |
| (6) | o_bErr        | Error completion  | Bit                                 | Off           | When this label is on, it indicates that an error has occurred in the FB.                  |
| (7) | o_uErrId      | Error code        | Word [Unsigned]/Bit String [16-bit] | 0             | Stores the error code that occurred in the FB.                                             |

## Public label

| No.      | Variable name       | Name                        | Data type                                  | Range                                                     | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |          |             |              |          |             |              |          |       |          |       |
|----------|---------------------|-----------------------------|--------------------------------------------|-----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------|--------------|----------|-------------|--------------|----------|-------|----------|-------|
| (8)      | pbi_bUseParameters  | Parameter used              | Bit                                        | On, off                                                   | Specify whether to use the parameter values set by the engineering tool or the following operation parameter ((11) to (13)) values when processing for opening a connection.<br>• Off: Performs open processing according to the target device configuration setting made by the engineering tool. (The following operation parameters ((11) to (13)) need not be set. Any settings are ignored if made.)<br>• On: Performs open processing according to the following operation parameters ((11) to (13)).        |          |             |              |          |             |              |          |       |          |       |
| (9)      | pbi_uProtocol       | Protocol                    | Word [Unsigned]/Bit String [16-bit]        | 0, 1 <sup>*1</sup>                                        | Select the protocol to be used for the connection to be opened.<br>• 0: TCP/IP<br>• 1: UDP/IP                                                                                                                                                                                                                                                                                                                                                                                                                      |          |             |              |          |             |              |          |       |          |       |
| (10)     | pbi_uOpen_System    | Open method                 | Word [Unsigned]/Bit String [16-bit]        | 0 to 2 <sup>*1</sup>                                      | Select the connection open method.<br>• 0: Active open or UDP/IP<br>• 1: Unpassive open<br>• 2: Fullpassive open                                                                                                                                                                                                                                                                                                                                                                                                   |          |             |              |          |             |              |          |       |          |       |
| (11)     | pbi_uLocal_Port_No  | Own node port number        | Word [Unsigned]/Bit String [16-bit]        | 1 to 5548, 5570 to 65534                                  | Specify the port number of the own node.<br>Own node port numbers 1 to 1023 are generally reserved port numbers, and 61440 to 65534 are used by other communication functions. Therefore, port numbers 1024 to 5548 and 5570 to 61439 should be used.                                                                                                                                                                                                                                                              |          |             |              |          |             |              |          |       |          |       |
| (12)     | pbi_uTarget_Port_No | Destination port number     | Word [Unsigned]/Bit String [16-bit]        | The setting range differs depending on the target module. | Specify the destination port number.<br>■FX5 CPU module<br>1 to 65534<br>■FX5-ENET, FX5-ENET/IP, FX5-EIP<br>1 to 65535 <sup>*2</sup>                                                                                                                                                                                                                                                                                                                                                                               |          |             |              |          |             |              |          |       |          |       |
| (13)     | pbi_u2IP_Address    | IP address of target device | Word [Unsigned]/Bit String [16-bit] (0..1) | The setting range differs depending on the target module. | Specify the IP address of target device.<br><div><div>b15b8b7b0</div><table><tr><td>1st word</td><td>Third octet</td><td>Fourth octet</td></tr><tr><td>2nd word</td><td>First octet</td><td>Second octet</td></tr></table><p>Example: When IP address is 192.168.3.250</p><table><tr><td>1st word</td><td>03FAH</td></tr><tr><td>2nd word</td><td>C0A8H</td></tr></table><br/>■FX5 CPU module<br/>0.0.0.1 to 223.255.255.254<sup>*3</sup><br/>■FX5-ENET, FX5-ENET/IP, FX5-EIP<br/>0.0.0.1 to 223.255.255.255</div> | 1st word | Third octet | Fourth octet | 2nd word | First octet | Second octet | 1st word | 03FAH | 2nd word | C0A8H |
| 1st word | Third octet         | Fourth octet                |                                            |                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |          |             |              |          |             |              |          |       |          |       |
| 2nd word | First octet         | Second octet                |                                            |                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |          |             |              |          |             |              |          |       |          |       |
| 1st word | 03FAH               |                             |                                            |                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |          |             |              |          |             |              |          |       |          |       |
| 2nd word | C0A8H               |                             |                                            |                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |          |             |              |          |             |              |          |       |          |       |

\*1 If a value out of the effective range is set, the same settings as those for 0 are used.

\*2 The connection specifying 65535 receives data from all port numbers (only when UDP/IP is selected in the protocol). To send the data, specify the number from 1 to 65534. The connection specifying 65535 cannot send the data.

\*3 If a value out of the effective range is set, 192.168.1.1 is used as the IP address of target device.

## FB details

### Available device

#### ■Ethernet module

| Target module | Firmware version | Engineering tool                  |
|---------------|------------------|-----------------------------------|
| FX5-ENET      | —                | GX Works3 Version 1.050C or later |
| FX5-ENET/IP   | —                | GX Works3 Version 1.050C or later |
| FX5-EIP       | —                | GX Works3 Version 1.120A or later |

#### ■CPU module

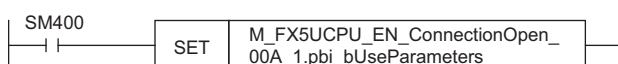
| Target module | Firmware version | Engineering tool                  |
|---------------|------------------|-----------------------------------|
| FX5S          | 1.000 or later   | GX Works3 Version 1.080J or later |
| FX5UJ         | 1.000 or later   | GX Works3 Version 1.060N or later |
| FX5U, FX5UC   | 1.040 or later   | GX Works3 Version 1.030G or later |

### Basic specifications

| Item                           | Description                                                                                                                                                                                                                                                                                                                                                      |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Language                       | Ladder diagram                                                                                                                                                                                                                                                                                                                                                   |
| Number of steps                | <p>■FX5 CPU module<br/>161 steps</p> <p>■FX5-ENET, FX5-ENET/IP, FX5-EIP<br/>156 steps</p> <p>The number of steps of the FB embedded in the program varies depending on the CPU module used, the input/output definitions, and the option setting of GX Works3. For the option setting of GX Works3, refer to the <a href="#">GX Works3 Operating Manual</a>.</p> |
| Label usage                    | <p>• Label: 0.02K points (Word)</p> <p>• Latch label: 0K points (Word)</p> <p>The amount of labels used in the program varies depending on the CPU module used, the device specified in an argument, and the option setting of GX Works3. For the option setting of GX Works3, refer to the <a href="#">GX Works3 Operating Manual</a>.</p>                      |
| Number of index register usage | <p>• Index register: 0 points</p> <p>• Long index register: 0 points</p>                                                                                                                                                                                                                                                                                         |
| File register usage            | 0 points                                                                                                                                                                                                                                                                                                                                                         |
| FB dependence                  | No dependence                                                                                                                                                                                                                                                                                                                                                    |
| FB compilation method          | Macro type                                                                                                                                                                                                                                                                                                                                                       |
| FB operation                   | Pulsed execution (multiple scan execution type)                                                                                                                                                                                                                                                                                                                  |

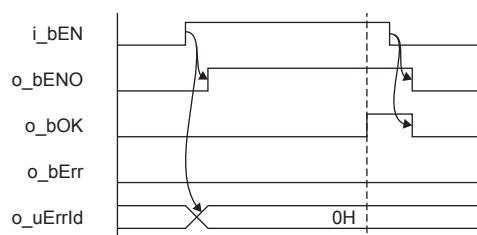
### Processing

- Turning on i\_bEN (execution command) opens a connection for data communication with the target device.
- If an error occurs, o\_bErr (error completion) is turned on, and the error code is stored in o\_uErrId (error code). For the error code, refer to [Page 23 Error code](#).
- Set the module parameters in GX Works3 in accordance with the connected equipment and system. For the module parameters, refer to [Page 22 Parameter setting](#).
- To set or monitor public labels, add a program for setting or monitoring as shown below. Specify a public label as "FB instance"."public label". The following program is designed to turn on the parameters used (M\_FX5UCPU\_EN\_ConnectionOpen\_00A\_1.pbi\_bUseParameters).

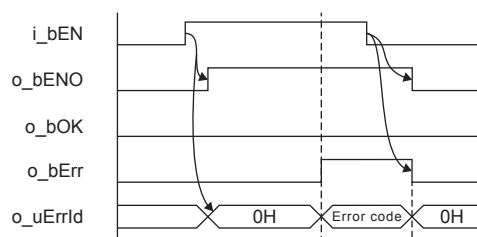


## Timing chart of I/O signals

### ■For normal completion



### ■For error completion



## Restrictions or precautions

- This FB does not include the error recovery processing. Program the error recovery processing separately in accordance with your system and the required operation.
- This FB uses the following instructions.
  - FX5 CPU module  
SP.SOCOPEN instruction
  - FX5-ENET, FX5-ENET/IP, FX5-EIP  
GP.OPEN instruction
- Turn off i\_bEN (Execution command) after o\_bOK (Normal completion) or o\_bErr (Error completion) is turned on. By turning off i\_bEN (Execution command), o\_bOK (Normal completion) or o\_bErr (Error completion) is turned off and o\_uErrId (Error code) is cleared to 0. However, because the above instruction which is a pulse instruction in the FB is used, if a write is performed while the FB is executed, the instruction may not be executed, and o\_bOK (Normal completion) and o\_bErr (Error completion) may not turn on. In that case, turn i\_bEN (Execution command) on again.
- This FB cannot be used in an interrupt program.
- Do not use this FB in programs that are executed only once, such as a subroutine program or FOR-NEXT loop, because i\_bEN (Execution command) cannot be turned off and the normal operation cannot be acquired. Always use this FB in programs that can turn off i\_bEN (Execution command).
- If this FB is executed for the connection for which parameters are already set by "External Device Configuration", make settings so that the parameters specified by this FB are overwritten.
- This FB requires circuit settings for all the input labels.

## Parameter setting

Set the target device connection configuration on Ethernet by using GX Works3.

- When the built-in Ethernet port of the CPU module is used

Navigation window ⇒ [Parameter] ⇒ Module name ⇒ [Module Parameter] ⇒ [Ethernet Port] ⇒ [Basic Settings] ⇒ [External Device Configuration]

- When the Ethernet module is used

Navigation window ⇒ [Parameter] ⇒ [Module Information] ⇒ [FX5-ENET] or [FX5-ENET/IP] ⇒ [Basic Settings] ⇒ [External Device Configuration]

In the target device connection configuration setting, set the TCP connection or UDP connection. For details on the setting procedure, refer to the user's manual for the CPU module or Ethernet module used.



## Performance value

### SP.SOCOPEN instruction

| CPU module                  | Measurement conditions       | Performance value |                   | Number of scans |
|-----------------------------|------------------------------|-------------------|-------------------|-----------------|
|                             |                              | Processing time   | Maximum scan time |                 |
| FX5S                        | When using UDP connection    | 1.41ms            | 0.885ms           | 2 scans         |
|                             | When using Active connection | 4.94ms            | 0.837ms           | 8 scans         |
| FX5UJ                       | When using UDP connection    | 1.39ms            | 0.730ms           | 6 scans         |
|                             | When using Active connection | 4.25ms            | 0.748ms           | 11 scans        |
| FX5U, FX5UC <sup>*1*2</sup> | When using UDP connection    | 0.99ms            | 0.413ms           | 4 scans         |
|                             | When using Active connection | 4.16ms            | 0.387ms           | 10 scans        |

### GP.OPEN instruction

| CPU module                  | Measurement conditions       | Performance value |                   | Number of scans |
|-----------------------------|------------------------------|-------------------|-------------------|-----------------|
|                             |                              | Processing time   | Maximum scan time |                 |
| FX5UJ                       | When using UDP connection    | 3.11ms            | 0.689ms           | 7 scans         |
|                             | When using Active connection | 6.87ms            | 0.691ms           | 20 scans        |
| FX5U, FX5UC <sup>*1*2</sup> | When using UDP connection    | 3.05ms            | 0.582ms           | 9 scans         |
|                             | When using Active connection | 5.70ms            | 0.522ms           | 17 scans        |

\*1 When the program capacity is set to 128K steps, the processing speed may be reduced.

\*2 The labels in the standard area are used.

## Error code

| Error code (hexadecimal) | Description                                                                                                                                                                                                                                        | Action                                                                                                                                                                                                                                                                                                                                                                                                                     |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| All error code           | <p>■FX5 CPU module<br/>Same as the error code caused by the connection establishment (SP.SOCOPEN) instruction.</p> <p>■FX5-ENET, FX5-ENET/IP, FX5-EIP<br/>Same as the error code caused by the connection establishment (GP.OPEN) instruction.</p> | <p>■FX5 CPU module<br/>Refer to the <a href="#">MELSEC iQ-F FX5 User's Manual (Communication)</a>.</p> <p>■FX5-ENET<br/>Refer to the <a href="#">MELSEC iQ-F FX5 Ethernet Module User's Manual</a>.</p> <p>■FX5-ENET/IP<br/>Refer to the <a href="#">MELSEC iQ-F FX5-ENET/IP Ethernet Module User's Manual</a>.</p> <p>■FX5-EIP<br/>Refer to the <a href="#">MELSEC iQ-F FX5-EIP EtherNet/IP Module User's Manual</a>.</p> |

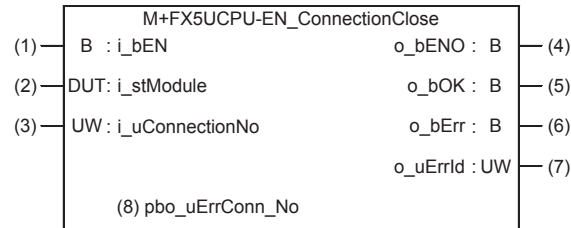
## 2.2 M+model\_ConnectionClose (Disconnection)

The following table lists the FB module names by module used.

| No. | Name                         | Target module  |
|-----|------------------------------|----------------|
| 1   | M+FX5UCPU-EN_ConnectionClose | FX5 CPU module |
| 2   | M+FX5ENET_ConnectionClose    | FX5-ENET       |
| 3   | M+FX5ENETIP_ConnectionClose  | FX5-ENET/IP    |
| 4   | M+FX5-EIP_ConnectionClose    | FX5-EIP        |

### Overview

This FB closes (disconnects) a connection for data communication with target device.



The above FB is an example for the FX5 CPU module.

### Labels

#### Input label

| No. | Variable name   | Name              | Data type                               | Range                                                     | Description                                                                                                                                                                                  |
|-----|-----------------|-------------------|-----------------------------------------|-----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1) | i_bEN           | Execution command | Bit                                     | On, off                                                   | On: The FB is activated.<br>Off: The FB is not activated.                                                                                                                                    |
| (2) | i_stModule      | Module label      | Structure                               | The setting range differs depending on the module label.  | Specify the module for which the FB is to be executed.<br>Specify the module label of the modules.<br>(Example: FX5UCPU, FX5ENET_1, FX5ENETIP_1, FX5EIP_1)                                   |
| (3) | i_uConnectionNo | Connection No.    | Word [Unsigned]/<br>Bit String [16-bit] | The setting range differs depending on the target module. | Specify the number of the connection to be closed.<br>This function closes all connections if FFFFH is specified.<br>■FX5 CPU module<br>1 to 8<br>■FX5-ENET, FX5-ENET/IP, FX5-EIP<br>1 to 32 |

#### Output label

| No. | Variable name | Name              | Data type                               | Default value | Description                                                                                |
|-----|---------------|-------------------|-----------------------------------------|---------------|--------------------------------------------------------------------------------------------|
| (4) | o_bENO        | Execution status  | Bit                                     | Off           | The execution status of the FB is output.<br>• On: In execution<br>• Off: Not in execution |
| (5) | o_bOK         | Normal completion | Bit                                     | Off           | When this label is on, it indicates that the FB has been processed normally.               |
| (6) | o_bErr        | Error completion  | Bit                                     | Off           | When this label is on, it indicates that an error has occurred in the FB.                  |
| (7) | o_uErrId      | Error code        | Word [Unsigned]/<br>Bit String [16-bit] | 0             | Stores the error code that occurred in the FB.                                             |

#### Public label

| No. | Variable name   | Name                 | Data type                               | Range | Description                                                                                                                                                                                                                                                       |
|-----|-----------------|----------------------|-----------------------------------------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (8) | pbo_uErrConn_No | Error connection No. | Word [Unsigned]/<br>Bit String [16-bit] | —     | The number of the connection for which close processing was completed with an error is stored.<br>If FFFFH is specified in i_uConnectionNo (Connection No.), the number of the connection for which close processing was first completed with an error is stored. |

## FB details

### Available device

#### ■Ethernet module

| Target module | Firmware version | Engineering tool                  |
|---------------|------------------|-----------------------------------|
| FX5-ENET      | —                | GX Works3 Version 1.050C or later |
| FX5-ENET/IP   | —                | GX Works3 Version 1.050C or later |
| FX5-EIP       | —                | GX Works3 Version 1.120A or later |

#### ■CPU module

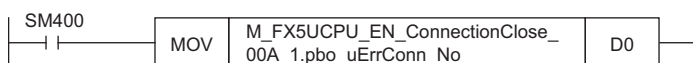
| Target module | Firmware version | Engineering tool                  |
|---------------|------------------|-----------------------------------|
| FX5S          | 1.000 or later   | GX Works3 Version 1.080J or later |
| FX5UJ         | 1.000 or later   | GX Works3 Version 1.060N or later |
| FX5U, FX5UC   | 1.040 or later   | GX Works3 Version 1.030G or later |

### Basic specifications

| Item                           | Description                                                                                                                                                                                                                                                                                                                                                                          |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Language                       | Ladder diagram                                                                                                                                                                                                                                                                                                                                                                       |
| Number of steps                | <p>■FX5 CPU module<br/>136 steps</p> <p>■FX5-ENET, FX5-ENET/IP, FX5-EIP<br/>143 steps</p> <p>The number of steps of the FB embedded in the program varies depending on the CPU module used, the input/output definitions, and the option setting of GX Works3. For the option setting of GX Works3, refer to the <a href="#">GX Works3 Operating Manual</a>.</p>                     |
| Label usage                    | <ul style="list-style-type: none"> <li>Label: 0.01K points (Word)</li> <li>Latch label: 0K points (Word)</li> </ul> <p>The amount of labels used in the program varies depending on the CPU module used, the device specified in an argument, and the option setting of GX Works3. For the option setting of GX Works3, refer to the <a href="#">GX Works3 Operating Manual</a>.</p> |
| Number of index register usage | <ul style="list-style-type: none"> <li>Index register: 0 points</li> <li>Long index register: 0 points</li> </ul>                                                                                                                                                                                                                                                                    |
| File register usage            | 0 points                                                                                                                                                                                                                                                                                                                                                                             |
| FB dependence                  | No dependence                                                                                                                                                                                                                                                                                                                                                                        |
| FB compilation method          | Macro type                                                                                                                                                                                                                                                                                                                                                                           |
| FB operation                   | Pulsed execution (multiple scan execution type)                                                                                                                                                                                                                                                                                                                                      |

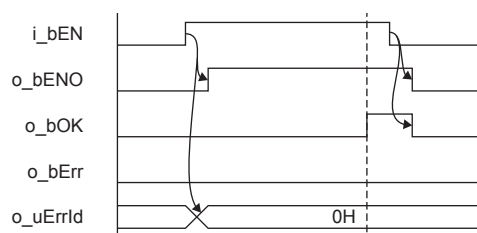
### Processing

- When i\_bEN (execution command) is turned on, this function closes a connection for data communication with target device.
- The function closes all connections if FFFFH is specified for the connection number in the input argument.
- If the function fails to close even one connection among those specified to be closed, it is completed with an error.
- Set the module parameters in GX Works3 in accordance with the connected equipment and system. For the module parameters, refer to [Page 22 Parameter setting](#).
- To set or monitor public labels, add a program for setting or monitoring as shown below. Specify a public label as "FB instance". "public label". The following program is designed to output an error connection number (M\_FX5UCPU\_EN\_ConnectionClose\_00A\_1.pbo\_uErrConn\_No) to the device D0.

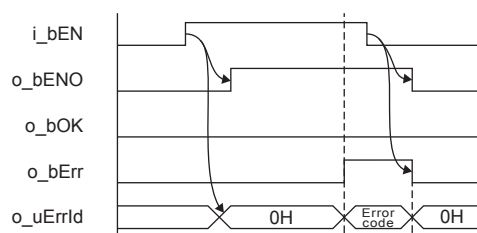


## Timing chart of I/O signals

### ■For normal completion



### ■For error completion



## Restrictions or precautions

- This FB does not include the error recovery processing. Program the error recovery processing separately in accordance with your system and the required operation.
- This FB uses the following instructions.
  - FX5 CPU module  
SP.SOC\_CLOSE instruction
  - FX5-ENET, FX5-ENET/IP, FX5-EIP  
GP.CLOSE instruction
- Turn off **i\_bEN** (Execution command) after **o\_bOK** (Normal completion) or **o\_bErr** (Error completion) is turned on. By turning off **i\_bEN** (Execution command), **o\_bOK** (Normal completion) or **o\_bErr** (Error completion) is turned off and **o\_uErrId** (Error code) is cleared to 0. However, because the above instruction which is a pulse instruction in the FB is used, if a write is performed while the FB is executed, the instruction may not be executed, and **o\_bOK** (Normal completion) and **o\_bErr** (Error completion) may not turn on. In that case, turn **i\_bEN** (Execution command) on again.
- This FB cannot be used in an interrupt program.
- Do not use this FB in programs that are executed only once, such as a subroutine program or FOR-NEXT loop, because **i\_bEN** (Execution command) cannot be turned off and the normal operation cannot be acquired. Always use this FB in programs that can turn off **i\_bEN** (Execution command).
- This FB requires circuit settings for all the input labels.

## Parameter setting

For the parameter setting, refer to  Page 22 Parameter setting.

## Performance value

### SP.SOCCLOSE instruction

| CPU module                  | Measurement conditions       | Performance value |                   | Number of scans |
|-----------------------------|------------------------------|-------------------|-------------------|-----------------|
|                             |                              | Processing time   | Maximum scan time |                 |
| FX5S                        | When using UDP connection    | 1.99ms            | 0.722ms           | 4 scans         |
|                             | When using Active connection | 4.74ms            | 0.714ms           | 10 scans        |
| FX5UJ                       | When using UDP connection    | 1.99ms            | 0.722ms           | 4 scans         |
|                             | When using Active connection | 4.74ms            | 0.714ms           | 10 scans        |
| FX5U, FX5UC <sup>*1*2</sup> | When using UDP connection    | 1.99ms            | 0.722ms           | 4 scans         |
|                             | When using Active connection | 4.74ms            | 0.714ms           | 10 scans        |

### GP.CLOSE instruction

| CPU module                  | Measurement conditions       | Performance value |                   | Number of scans |
|-----------------------------|------------------------------|-------------------|-------------------|-----------------|
|                             |                              | Processing time   | Maximum scan time |                 |
| FX5UJ                       | When using UDP connection    | 1.85ms            | 0.732ms           | 10 scans        |
|                             | When using Active connection | 6.08ms            | 0.754ms           | 15 scans        |
| FX5U, FX5UC <sup>*1*2</sup> | When using UDP connection    | 2.77ms            | 0.584ms           | 8 scans         |
|                             | When using Active connection | 6.38ms            | 0.586ms           | 18 scans        |

\*1 When the program capacity is set to 128K steps, the processing speed may be reduced.

\*2 The labels in the standard area are used.

## Error code

| Error code (hexadecimal) | Description                                                                                                                                                                                                                    | Action                                                                                                                                                                                                                                                                                                                                                                                                                     |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| All error code           | <p>■FX5 CPU module<br/>Same as the error code caused by the disconnection (SP.SOCCLOSE) instruction.</p> <p>■FX5-ENET, FX5-ENET/IP, FX5-EIP<br/>Same as the error code caused by the disconnection (GP.CLOSE) instruction.</p> | <p>■FX5 CPU module<br/>Refer to the <a href="#">MELSEC iQ-F FX5 User's Manual (Communication)</a>.</p> <p>■FX5-ENET<br/>Refer to the <a href="#">MELSEC iQ-F FX5 Ethernet Module User's Manual</a>.</p> <p>■FX5-ENET/IP<br/>Refer to the <a href="#">MELSEC iQ-F FX5-ENET/IP Ethernet Module User's Manual</a>.</p> <p>■FX5-EIP<br/>Refer to the <a href="#">MELSEC iQ-F FX5-EIP EtherNet/IP Module User's Manual</a>.</p> |

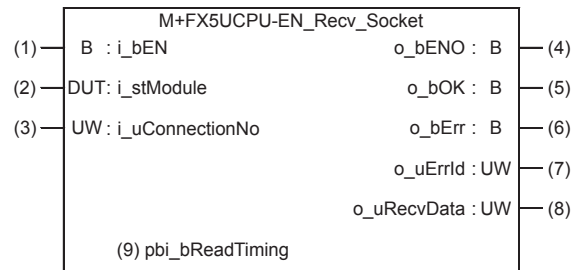
## 2.3 M+model\_Recv\_Socket (Receiving of data)

The following table lists the FB module names by module used.

| No. | Name                     | Target module  |
|-----|--------------------------|----------------|
| 1   | M+FX5UCPU-EN_Recv_Socket | FX5 CPU module |
| 2   | M+FX5ENET_Recv_Socket    | FX5-ENET       |
| 3   | M+FX5ENETIP_Recv_Socket  | FX5-ENET/IP    |
| 4   | M+FX5-EIP_Recv_Socket    | FX5-EIP        |

### Overview

This FB reads the data received by socket communication.



The above FB is an example for the FX5 CPU module.

### Labels

#### Input label

| No. | Variable name   | Name              | Data type                           | Range                                                     | Description                                                                                                                                          |
|-----|-----------------|-------------------|-------------------------------------|-----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1) | i_bEN           | Execution command | Bit                                 | On, off                                                   | On: The FB is activated.<br>Off: The FB is not activated.                                                                                            |
| (2) | i_stModule      | Module label      | Structure                           | The setting range differs depending on the module label.  | Specify the module for which the FB is to be executed. Specify the module label of the modules. (Example: FX5UCPU, FX5ENET_1, FX5ENETIP_1, FX5EIP_1) |
| (3) | i_uConnectionNo | Connection No.    | Word [Unsigned]/Bit String [16-bit] | The setting range differs depending on the target module. | Specify the connection number for receiving data.<br>■FX5 CPU module<br>1 to 8<br>■FX5-ENET, FX5-ENET/IP, FX5-EIP<br>1 to 32                         |

#### Output label

| No. | Variable name | Name              | Data type                           | Default value | Description                                                                                   |
|-----|---------------|-------------------|-------------------------------------|---------------|-----------------------------------------------------------------------------------------------|
| (4) | o_bENO        | Execution status  | Bit                                 | Off           | On: The execution command is on.<br>Off: The execution command is off.                        |
| (5) | o_bOK         | Normal completion | Bit                                 | Off           | When this label is on, it indicates that reading of the received data has completed normally. |
| (6) | o_bErr        | Error completion  | Bit                                 | Off           | When this label is on, it indicates that an error has occurred in the FB.                     |
| (7) | o_uErrId      | Error code        | Word [Unsigned]/Bit String [16-bit] | 0             | Stores the error code that occurred in the FB.                                                |

| No.      | Variable name                      | Name                             | Data type                           | Default value | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  |     |    |    |    |          |                                    |  |  |  |          |                 |  |                 |  |   |   |  |  |  |          |                    |  |                    |  |
|----------|------------------------------------|----------------------------------|-------------------------------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----|----|----|----|----------|------------------------------------|--|--|--|----------|-----------------|--|-----------------|--|---|---|--|--|--|----------|--------------------|--|--------------------|--|
| (8)      | o_uRecvData                        | Receive data storage destination | Word [Unsigned]/Bit String [16-bit] | —             | <p>Specify the receive data length and the start number of the device for storing received data.</p> <table><tr><td></td><td>b15</td><td>b8</td><td>b7</td><td>b0</td></tr><tr><td>1st word</td><td colspan="4">Received data length (unit: bytes)</td></tr><tr><td>2nd word</td><td colspan="2">Received data 2</td><td colspan="2">Received data 1</td></tr><tr><td>⋮</td><td colspan="4">⋮</td></tr><tr><td>nth word</td><td colspan="2">Received data 2n-2</td><td colspan="2">Received data 2n-3</td></tr></table> <ul style="list-style-type: none"><li>• The received data length is 1 to 2046 bytes.</li><li>• Receive data is stored in the word area in order from the first half (b0 to b7) to the second half (b8 to b15).</li></ul> |  | b15 | b8 | b7 | b0 | 1st word | Received data length (unit: bytes) |  |  |  | 2nd word | Received data 2 |  | Received data 1 |  | ⋮ | ⋮ |  |  |  | nth word | Received data 2n-2 |  | Received data 2n-3 |  |
|          | b15                                | b8                               | b7                                  | b0            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |     |    |    |    |          |                                    |  |  |  |          |                 |  |                 |  |   |   |  |  |  |          |                    |  |                    |  |
| 1st word | Received data length (unit: bytes) |                                  |                                     |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |     |    |    |    |          |                                    |  |  |  |          |                 |  |                 |  |   |   |  |  |  |          |                    |  |                    |  |
| 2nd word | Received data 2                    |                                  | Received data 1                     |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |     |    |    |    |          |                                    |  |  |  |          |                 |  |                 |  |   |   |  |  |  |          |                    |  |                    |  |
| ⋮        | ⋮                                  |                                  |                                     |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |     |    |    |    |          |                                    |  |  |  |          |                 |  |                 |  |   |   |  |  |  |          |                    |  |                    |  |
| nth word | Received data 2n-2                 |                                  | Received data 2n-3                  |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |     |    |    |    |          |                                    |  |  |  |          |                 |  |                 |  |   |   |  |  |  |          |                    |  |                    |  |

## Public label

| No. | Variable name   | Name        | Data type | Range   | Description                                                                                                                                                                                                                                                                                                                                                |
|-----|-----------------|-------------|-----------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (9) | pbi_bReadTiming | Read timing | Bit       | On, off | <p>Specify the timing of executing data read processing.</p> <ul style="list-style-type: none"> <li>Off: Start reading soon after the module FB starts.</li> <li>On: Start reading in the first END processing after the module FB starts.</li> </ul> <p>The setting is ignored in the FX5 CPU module because it reads the data in the END processing.</p> |

## FB details

### Available device

#### ■Ethernet module

| Target module | Firmware version | Engineering tool                  |
|---------------|------------------|-----------------------------------|
| FX5-ENET      | —                | GX Works3 Version 1.050C or later |
| FX5-ENET/IP   | —                | GX Works3 Version 1.050C or later |
| FX5-EIP       | —                | GX Works3 Version 1.120A or later |

#### ■CPU module

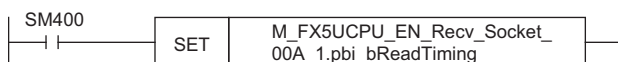
| Target module | Firmware version | Engineering tool                  |
|---------------|------------------|-----------------------------------|
| FX5S          | 1.000 or later   | GX Works3 Version 1.080J or later |
| FX5UJ         | 1.000 or later   | GX Works3 Version 1.060N or later |
| FX5U, FX5UC   | 1.040 or later   | GX Works3 Version 1.030G or later |

## Basic specifications

| Item                           | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Language                       | Ladder diagram                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Number of steps                | <ul style="list-style-type: none"> <li>■FX5 CPU module<br/>61 steps</li> <li>■FX5-ENET, FX5-ENET/IP, FX5-EIP<br/>68 steps</li> </ul> <p>The number of steps of the FB embedded in the program varies depending on the CPU module used, the input/output definitions, and the option setting of GX Works3. For the option setting of GX Works3, refer to the  GX Works3 Operating Manual.</p> |
| Label usage                    | <ul style="list-style-type: none"> <li>Label: 0.01K points (Word)</li> <li>Latch label: 0K points (Word)</li> </ul> <p>The amount of labels used in the program varies depending on the CPU module used, the device specified in an argument, and the option setting of GX Works3. For the option setting of GX Works3, refer to the  GX Works3 Operating Manual.</p>                        |
| Number of index register usage | <ul style="list-style-type: none"> <li>Index register: 0 points</li> <li>Long index register: 0 points</li> </ul>                                                                                                                                                                                                                                                                                                                                                                 |
| File register usage            | 0 points                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| FB dependence                  | No dependence                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| FB compilation method          | Macro type                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| FB operation                   | Pulsed execution (multiple scan execution type)                                                                                                                                                                                                                                                                                                                                                                                                                                   |

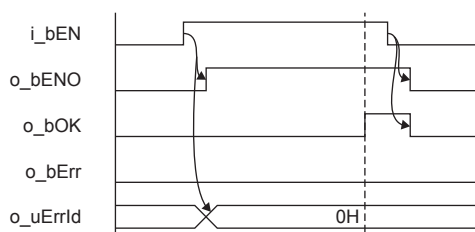
## Processing

- When i\_bEN (execution command) is turned on, this function reads the data received to the connection specified by the input argument.
- If an error occurs during data receive, o\_bErr (Error completion) turns on and the error code is stored in o\_uErrId (Error code). For the error code, refer to  Page 31 Error code.
- Set the module parameters in GX Works3 in accordance with the connected equipment and system. For the module parameters, refer to  Page 22 Parameter setting.
- To set or monitor public labels, add a program for setting or monitoring as shown below. Specify a public label as "FB instance"."public label". The following program is designed to turn on the read timing (M\_FX5UCPU\_EN\_Recv\_Socket\_00A\_1.pbi\_bReadTiming).

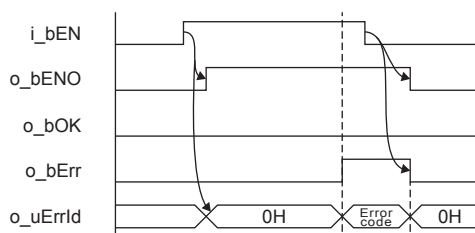


## Timing chart of I/O signals

### ■For normal completion



### ■For error completion



## Restrictions or precautions

- This FB does not include the error recovery processing. Program the error recovery processing separately in accordance with your system and the required operation.
- This FB uses the following instructions.
  - FX5 CPU module  
SP.SOCRCV instruction
  - FX5-ENET, FX5-ENET/IP, FX5-EIP  
GP.SOCRCV instruction
- Turn off i\_bEN (Execution command) after o\_bOK (Normal completion) or o\_bErr (Error completion) is turned on. By turning off i\_bEN (Execution command), o\_bOK (Normal completion) or o\_bErr (Error completion) is turned off and o\_uErrId (Error code) is cleared to 0. However, because the above instruction which is a pulse instruction in the FB is used, if a write is performed while the FB is executed, the instruction may not be executed, and o\_bOK (Normal completion) and o\_bErr (Error completion) may not turn on. In that case, turn i\_bEN (Execution command) on again.
- This FB cannot be used in an interrupt program.
- Do not use this FB in programs that are executed only once, such as a subroutine program or FOR-NEXT loop, because i\_bEN (Execution command) cannot be turned off and the normal operation cannot be acquired. Always use this FB in programs that can turn off i\_bEN (Execution command).
- This FB requires circuit settings for all the input labels.



## Parameter setting

For the parameter setting, refer to  Page 22 Parameter setting.

## Performance value

### SP.SOCRCV instruction

| CPU module      | Measurement conditions          | Performance value |                   | Number of scans |
|-----------------|---------------------------------|-------------------|-------------------|-----------------|
|                 |                                 | Processing time   | Maximum scan time |                 |
| FX5S            | Receive data length: 1 byte     | 0.431ms           | 0.872ms           | 1 scan          |
|                 | Receive data length: 1023 bytes | 0.527ms           | 0.856ms           | 1 scan          |
|                 | Receive data length: 2046 bytes | 0.808ms           | 0.904ms           | 1 scan          |
| FX5UJ           | Receive data length: 1 byte     | 0.399ms           | 0.731ms           | 1 scan          |
|                 | Receive data length: 1023 bytes | 0.471ms           | 0.708ms           | 1 scan          |
|                 | Receive data length: 2046 bytes | 0.587ms           | 0.700ms           | 1 scan          |
| FX5U, FX5UC*1*2 | Receive data length: 1 byte     | 0.246ms           | 0.396ms           | 1 scan          |
|                 | Receive data length: 1023 bytes | 0.290ms           | 0.394ms           | 1 scan          |
|                 | Receive data length: 2046 bytes | 0.351ms           | 0.394ms           | 1 scan          |

### GP.SOCRCV instruction

| CPU module      | Measurement conditions          | Performance value |                   | Number of scans |
|-----------------|---------------------------------|-------------------|-------------------|-----------------|
|                 |                                 | Processing time   | Maximum scan time |                 |
| FX5UJ           | Receive data length: 1 byte     | 1.290ms           | 0.840ms           | 2 scans         |
|                 | Receive data length: 1023 bytes | 1.900ms           | 1.020ms           | 3 scans         |
|                 | Receive data length: 2046 bytes | 3.090ms           | 1.520ms           | 5 scans         |
| FX5U, FX5UC*1*2 | Receive data length: 1 byte     | 0.942ms           | 0.591ms           | 2 scans         |
|                 | Receive data length: 1023 bytes | 1.970ms           | 0.944ms           | 4 scans         |
|                 | Receive data length: 2046 bytes | 2.820ms           | 1.570ms           | 5 scans         |

\*1 When the program capacity is set to 128K steps, the processing speed may be reduced.

\*2 The labels in the standard area are used.

## Error code

| Error code (hexadecimal) | Description                                                                                                                                                                                                                     | Action                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| All error code           | <p>■FX5 CPU module<br/>Same as the error code caused by the data receiving (SP.SOCRCV) instruction.</p> <p>■FX5-ENET, FX5-ENET/IP, FX5-EIP<br/>Same as the error code caused by the data receiving (GP.SOCRCV) instruction.</p> | <p>■FX5 CPU module<br/>Refer to the  MELSEC iQ-F FX5 User's Manual (Communication).</p> <p>■FX5-ENET<br/>Refer to the  MELSEC iQ-F FX5 Ethernet Module User's Manual.</p> <p>■FX5-ENET/IP<br/>Refer to the  MELSEC iQ-F FX5-ENET/IP Ethernet Module User's Manual.</p> <p>■FX5-EIP<br/>Refer to the  MELSEC iQ-F FX5-EIP EtherNet/IP Module User's Manual.</p> |

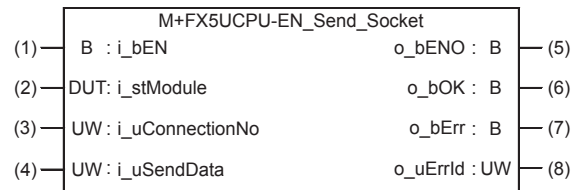
## 2.4 M+model\_Send\_Socket (Sending of data)

The following table lists the FB module names by module used.

| No. | Name                     | Target module  |
|-----|--------------------------|----------------|
| 1   | M+FX5UCPU-EN_Send_Socket | FX5 CPU module |
| 2   | M+FX5ENET_Send_Socket    | FX5-ENET       |
| 3   | M+FX5ENETIP_Send_Socket  | FX5-ENET/IP    |
| 4   | M+FX5-EIP_Send_Socket    | FX5-EIP        |

### Overview

This FB sends the data to the target device of the specified connection.



The above FB is an example for the FX5 CPU module.

### Labels

#### Input label

| No. | Variable name   | Name                          | Data type                           | Range                                                     | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----|-----------------|-------------------------------|-------------------------------------|-----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1) | i_bEN           | Execution command             | Bit                                 | On, off                                                   | On: The FB is activated.<br>Off: The FB is not activated.                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| (2) | i_stModule      | Module label                  | Structure                           | The setting range differs depending on the module label.  | Specify the module for which the FB is to be executed.<br>Specify the module label of the modules.<br>(Example: FX5UCPU, FX5ENET_1, FX5ENETIP_1, FX5EIP_1)                                                                                                                                                                                                                                                                                                                                                    |
| (3) | i_uConnectionNo | Connection No.                | Word [Unsigned]/Bit String [16-bit] | The setting range differs depending on the target module. | Specify the connection number for sending data.<br>■FX5 CPU module<br>1 to 8<br>■FX5-ENET, FX5-ENET/IP, FX5-EIP<br>1 to 32                                                                                                                                                                                                                                                                                                                                                                                    |
| (4) | i_uSendData     | Send data storage destination | Word [Unsigned]/Bit String [16-bit] | —                                                         | Specify the send data length and the start number of the device containing the send data. <div><div><div>b15b8b7b0</div><div>1st word<div>Send data length (unit: bytes)</div></div><div>2nd word<div>Send data 2Send data 1</div></div><div>⋮⋮</div><div>nth word<div>Send data 2n-2Send data 2n-3</div></div></div><div><div>• The sent data length is 1 to 2046 bytes.</div><div>• Data is sent in the word area in order from the first half (b0 to b7) to the second half (b8 to b15).</div></div></div> |

#### Output label

| No. | Variable name | Name              | Data type                           | Default value | Description                                                               |
|-----|---------------|-------------------|-------------------------------------|---------------|---------------------------------------------------------------------------|
| (5) | o_bENO        | Execution status  | Bit                                 | Off           | On: The execution command is on.<br>Off: The execution command is off.    |
| (6) | o_bOK         | Normal completion | Bit                                 | Off           | Data has been sent normally when this output is on.                       |
| (7) | o_bErr        | Error completion  | Bit                                 | Off           | When this label is on, it indicates that an error has occurred in the FB. |
| (8) | o_uErrId      | Error code        | Word [Unsigned]/Bit String [16-bit] | 0             | Stores the error code that occurred in the FB.                            |

## FB details

### Available device

#### ■Ethernet module

| Target module | Firmware version | Engineering tool                  |
|---------------|------------------|-----------------------------------|
| FX5-ENET      | —                | GX Works3 Version 1.050C or later |
| FX5-ENET/IP   | —                | GX Works3 Version 1.050C or later |
| FX5-EIP       | —                | GX Works3 Version 1.120A or later |

#### ■CPU module

| Target module | Firmware version | Engineering tool                  |
|---------------|------------------|-----------------------------------|
| FX5S          | 1.000 or later   | GX Works3 Version 1.080J or later |
| FX5UJ         | 1.000 or later   | GX Works3 Version 1.060N or later |
| FX5U, FX5UC   | 1.040 or later   | GX Works3 Version 1.030G or later |

### Basic specifications

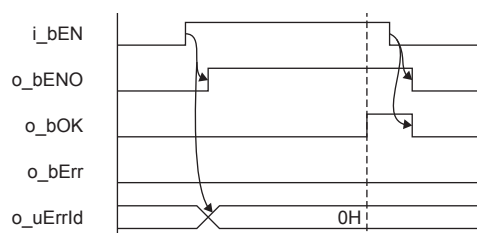
| Item                           | Description                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Language                       | Ladder diagram                                                                                                                                                                                                                                                                                                                                                                                                    |
| Number of steps                | ■FX5 CPU module<br>62 steps<br>■FX5-ENET, FX5-ENET/IP, FX5-EIP<br>69 steps<br>The number of steps of the FB embedded in the program varies depending on the CPU module used, the input/output definitions, and the option setting of GX Works3. For the option setting of GX Works3, refer to the  GX Works3 Operating Manual. |
| Label usage                    | • Label: 0.01K points (Word)<br>• Latch label: 0K points (Word)<br>The amount of labels used in the program varies depending on the CPU module used, the device specified in an argument, and the option setting of GX Works3. For the option setting of GX Works3, refer to the  GX Works3 Operating Manual.                  |
| Number of index register usage | • Index register: 0 points<br>• Long index register: 0 points                                                                                                                                                                                                                                                                                                                                                     |
| File register usage            | 0 points                                                                                                                                                                                                                                                                                                                                                                                                          |
| FB dependence                  | No dependence                                                                                                                                                                                                                                                                                                                                                                                                     |
| FB compilation method          | Macro type                                                                                                                                                                                                                                                                                                                                                                                                        |
| FB operation                   | Pulsed execution (multiple scan execution type)                                                                                                                                                                                                                                                                                                                                                                   |

### Processing

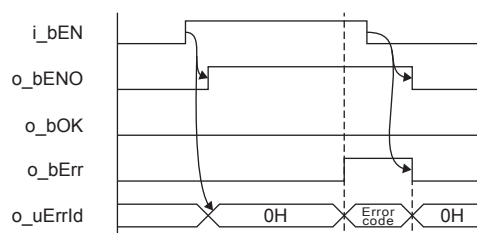
- When i\_bEN (Execution command) is turned on, this function sends the data to the target device of the connection specified by the input argument.
- If an error occurs during data send, o\_bErr (Error completion) is turned on, and the error code is stored in o\_uErrId (Error code). For the error code, refer to  Page 35 Error code.
- Set the module parameters in GX Works3 in accordance with the connected equipment and system. For the module parameters, refer to  Page 22 Parameter setting.

## Timing chart of I/O signals

### ■For normal completion



### ■For error completion



## Restrictions or precautions

- This FB does not include the error recovery processing. Program the error recovery processing separately in accordance with your system and the required operation.
- This FB uses the following instructions.
  - FX5 CPU module  
SP.SOCSEND instruction
  - FX5-ENET, FX5-ENET/IP, FX5-EIP  
GP.SOCSEND instruction
- Turn off **i\_bEN** (Execution command) after **o\_bOK** (Normal completion) or **o\_bErr** (Error completion) is turned on. By turning off **i\_bEN** (Execution command), **o\_bOK** (Normal completion) or **o\_bErr** (Error completion) is turned off and **o\_uErrId** (Error code) is cleared to 0. However, because the above instruction which is a pulse instruction in the FB is used, if a write is performed while the FB is executed, the instruction may not be executed, and **o\_bOK** (Normal completion) and **o\_bErr** (Error completion) may not turn on. In that case, turn **i\_bEN** (Execution command) on again.
- This FB cannot be used in an interrupt program.
- Do not use this FB in programs that are executed only once, such as a subroutine program or FOR-NEXT loop, because **i\_bEN** (Execution command) cannot be turned off and the normal operation cannot be acquired. Always use this FB in programs that can turn off **i\_bEN** (Execution command).
- This FB requires circuit settings for all the input labels.

## Parameter setting

For the parameter setting, refer to  Page 22 Parameter setting.

## Performance value

### SP.SOCSND instruction

| CPU module                  | Measurement conditions       | Performance value |                   | Number of scans |
|-----------------------------|------------------------------|-------------------|-------------------|-----------------|
|                             |                              | Processing time   | Maximum scan time |                 |
| FX5S                        | Send data length: 1 byte     | 3.02ms            | 0.842ms           | 3 scans         |
|                             | Send data length: 1023 bytes | 4.87ms            | 0.887ms           | 7 scans         |
|                             | Send data length: 2046 bytes | 8.36ms            | 0.901ms           | 16 scans        |
| FX5UJ                       | Send data length: 1 byte     | 3.00ms            | 0.671ms           | 8 scans         |
|                             | Send data length: 1023 bytes | 3.94ms            | 0.739ms           | 8 scans         |
|                             | Send data length: 2046 bytes | 6.680ms           | 0.738ms           | 18 scans        |
| FX5U, FX5UC <sup>*1*2</sup> | Send data length: 1 byte     | 2.74ms            | 0.395ms           | 10 scans        |
|                             | Send data length: 1023 bytes | 3.79ms            | 0.393ms           | 10 scans        |
|                             | Send data length: 2046 bytes | 4.52ms            | 0.402ms           | 16 scans        |

### GP.SOCSND instruction

| CPU module                  | Measurement conditions       | Performance value |                   | Number of scans |
|-----------------------------|------------------------------|-------------------|-------------------|-----------------|
|                             |                              | Processing time   | Maximum scan time |                 |
| FX5UJ                       | Send data length: 1 byte     | 1.47ms            | 0.788ms           | 2 scans         |
|                             | Send data length: 1023 bytes | 2.14ms            | 1.270ms           | 4 scans         |
|                             | Send data length: 2046 bytes | 3.60ms            | 1.650ms           | 7 scans         |
| FX5U, FX5UC <sup>*1*2</sup> | Send data length: 1 byte     | 1.27ms            | 0.586ms           | 3 scans         |
|                             | Send data length: 1023 bytes | 2.28ms            | 0.959ms           | 5 scans         |
|                             | Send data length: 2046 bytes | 3.35ms            | 1.390ms           | 8 scans         |

\*1 When the program capacity is set to 128K steps, the processing speed may be reduced.

\*2 The labels in the standard area are used.

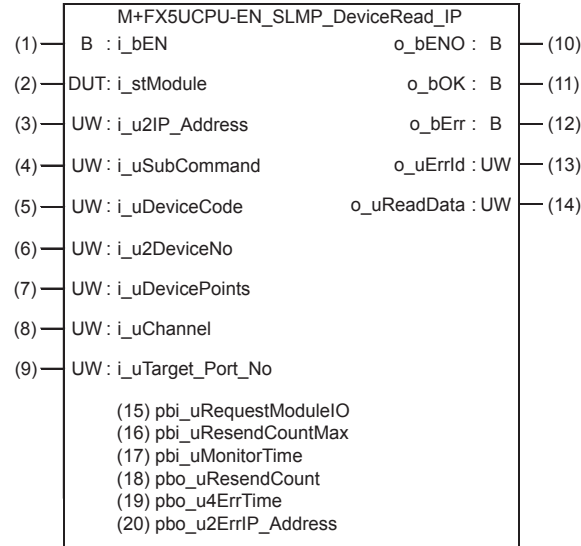
## Error code

| Error code (hexadecimal) | Description                                                                                                                                                                                                                 | Action                                                                                                                                                                                                                                                                                                                                                                                                                     |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| All error code           | <p>■FX5 CPU module<br/>Same as the error code caused by the data sending (SP.SOCSND) instruction.</p> <p>■FX5-ENET, FX5-ENET/IP, FX5-EIP<br/>Same as the error code caused by the data sending (GP.SOCSND) instruction.</p> | <p>■FX5 CPU module<br/>Refer to the <a href="#">MELSEC iQ-F FX5 User's Manual (Communication)</a>.</p> <p>■FX5-ENET<br/>Refer to the <a href="#">MELSEC iQ-F FX5 Ethernet Module User's Manual</a>.</p> <p>■FX5-ENET/IP<br/>Refer to the <a href="#">MELSEC iQ-F FX5-ENET/IP Ethernet Module User's Manual</a>.</p> <p>■FX5-EIP<br/>Refer to the <a href="#">MELSEC iQ-F FX5-EIP EtherNet/IP Module User's Manual</a>.</p> |

## 2.5 M+FX5UCPU-EN\_SLMP\_DeviceRead\_IP (Reading of SLMP-compatible device)

### Overview

This FB reads data from the SLMP-compatible device by specifying IP address.



### Labels

#### Input label

| No. | Variable name  | Name                        | Data type                                  | Range                                                    | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----|----------------|-----------------------------|--------------------------------------------|----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1) | i_bEN          | Execution command           | Bit                                        | On, off                                                  | On: The FB is activated.<br>Off: The FB is not activated.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| (2) | i_stModule     | Module label                | Structure                                  | The setting range differs depending on the module label. | Specify the module label of the CPU module.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| (3) | i_u2IP_Address | IP address of target device | Word [Unsigned]/Bit String [16-bit] (0..1) | 0.0.0.1 to 223.255.255.254                               | <p>Specify the IP address of target device. Specify the third and fourth octets to the 1st word, and first and second octets to the 2nd word.</p> <div><div>b15b8 b7b0</div><div><div>1st word<div>Third octetFourth octet</div></div><div>2nd word<div>First octetSecond octet</div></div></div><p>Example: When IP address is 192.168.3.250</p><div><div>1st word<div>03FAH</div></div><div>2nd word<div>C0A8H</div></div></div></div>                                                                                                                                                                                                           |
| (4) | i_uSubCommand  | Sub command                 | Word [Unsigned]/Bit String [16-bit]        | 0 to 3                                                   | <p>Specify the read unit and specification method of a device.</p> <p>■0th bit</p> <p>Specify whether the device is read in units of words or in units of bits.</p> <ul style="list-style-type: none"><li>• 0: In units of words</li><li>• 1: In units of bits</li></ul> <p>■1st bit</p> <p>Specify the combination of the number of digits of the device code and start device number of the device to be read.</p> <ul style="list-style-type: none"><li>• 0: Specify the device code in 2 digits and the start device number in 6 digits.</li><li>• 1: Specify the device code in 4 digits and the start device number in 8 digits.*1</li></ul> |

| No. | Variable name     | Name                    | Data type                                  | Range               | Description                                                                                                                                                                                                             |
|-----|-------------------|-------------------------|--------------------------------------------|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (5) | i_uDeviceCode     | Device code             | Word [Unsigned]/Bit String [16-bit]        | —                   | Specify the device code of the device to be read in binary code.<br>• When the 1st bit of the subcommand is 0: 2 digits<br>• When the 1st bit of the subcommand is 1: 4 digits                                          |
| (6) | i_u2DeviceNo      | Head device No.         | Word [Unsigned]/Bit String [16-bit] (0..1) | —                   | Specify the start device number of the device to be read in binary code.<br>• When the 1st bit of the subcommand is 0: 6 digits<br>• When the 1st bit of the subcommand is 1: 8 digits                                  |
| (7) | i_uDevicePoints   | Number of device points | Word [Unsigned]/Bit String [16-bit]        | 1 to 960, 1 to 3972 | Specify the number of device points of the device to be read in binary code.<br>• When the 0th bit of the subcommand is 0: 1 to 960 digits<br>• When the 0th bit of the subcommand is 1: 1 to 3972 digits <sup>*2</sup> |
| (8) | i_uChannel        | Own station channel     | Word [Unsigned]/Bit String [16-bit]        | —                   | Specify the channel to be used by own station.                                                                                                                                                                          |
| (9) | i_uTarget_Port_No | Destination port number | Word [Unsigned]/Bit String [16-bit]        | 1 to 65534          | Specify the UDP port number of target device.                                                                                                                                                                           |

\*1 It can be specified when the target device for reading is MELSEC iQ-R series. It cannot be specified when the target device for reading is MELSEC-Q/L series or MELSEC iQ-F series.

\*2 The allowable range is 1 to 3584 when the target device for reading is MELSEC iQ-F series.

## Output label

| No.  | Variable name | Name                          | Data type                           | Default value | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |     |    |    |    |   |      |   |   |     |  |  |  |   |   |   |   |   |   |   |   |   |   |   |   |   |      |     |  |  |  |  |  |  |  |  |  |      |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |      |      |      |      |     |    |    |    |   |   |   |   |      |      |      |      |
|------|---------------|-------------------------------|-------------------------------------|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----|----|----|---|------|---|---|-----|--|--|--|---|---|---|---|---|---|---|---|---|---|---|---|---|------|-----|--|--|--|--|--|--|--|--|--|------|-----|----|----|----|---|---|---|---|-----|----|----|----|---|---|---|---|-----|----|----|----|---|---|---|---|-----|----|----|----|---|---|---|---|------|------|------|------|-----|----|----|----|---|---|---|---|------|------|------|------|
| (10) | o_bENO        | Execution status              | Bit                                 | Off           | On: The execution command is on.<br>Off: The execution command is off.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |    |    |    |   |      |   |   |     |  |  |  |   |   |   |   |   |   |   |   |   |   |   |   |   |      |     |  |  |  |  |  |  |  |  |  |      |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |      |      |      |      |     |    |    |    |   |   |   |   |      |      |      |      |
| (11) | o_bOK         | Normal completion             | Bit                                 | Off           | Device reading has been completed normally when this output is on.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |     |    |    |    |   |      |   |   |     |  |  |  |   |   |   |   |   |   |   |   |   |   |   |   |   |      |     |  |  |  |  |  |  |  |  |  |      |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |      |      |      |      |     |    |    |    |   |   |   |   |      |      |      |      |
| (12) | o_bErr        | Error completion              | Bit                                 | Off           | When this label is on, it indicates that an error has occurred in the FB.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |     |    |    |    |   |      |   |   |     |  |  |  |   |   |   |   |   |   |   |   |   |   |   |   |   |      |     |  |  |  |  |  |  |  |  |  |      |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |      |      |      |      |     |    |    |    |   |   |   |   |      |      |      |      |
| (13) | o_uErrId      | Error code                    | Word [Unsigned]/Bit String [16-bit] | 0             | Stores the error code that occurred in the FB.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |     |    |    |    |   |      |   |   |     |  |  |  |   |   |   |   |   |   |   |   |   |   |   |   |   |      |     |  |  |  |  |  |  |  |  |  |      |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |      |      |      |      |     |    |    |    |   |   |   |   |      |      |      |      |
| (14) | o_uReadData   | Read data storage destination | Word [Unsigned]/Bit String [16-bit] | 0             | <p>Specify the start device number of the device for storing the read data.</p> <ul style="list-style-type: none"><li>When the 0th bit of the subcommand is 0, the device data is read in units of words.</li></ul> <p>Example: When reading the bit device M100 to M115 (one word) in units of words</p> <p>1st word :</p> <table><tr><td>b15</td><td>b8</td><td>b7</td><td>b0</td></tr><tr><td>1</td><td>2</td><td>3</td><td>4</td></tr><tr><td colspan="4">...</td></tr><tr><td>0</td><td>0</td><td>0</td><td>1</td><td>0</td><td>0</td><td>0</td><td>1</td><td>1</td><td>0</td><td>1</td><td>0</td><td>0</td></tr><tr><td>M115</td><td colspan="10">...</td><td>M100</td></tr></table> <p>Example: When reading the word device D0 to D2 in units of words</p> <p>1st word :</p> <table><tr><td>b15</td><td>b8</td><td>b7</td><td>b0</td></tr><tr><td>1</td><td>2</td><td>3</td><td>4</td></tr></table> <p>D0</p> <p>2nd word :</p> <table><tr><td>b15</td><td>b8</td><td>b7</td><td>b0</td></tr><tr><td>0</td><td>0</td><td>0</td><td>2</td></tr></table> <p>D1</p> <p>3rd word :</p> <table><tr><td>b15</td><td>b8</td><td>b7</td><td>b0</td></tr><tr><td>1</td><td>D</td><td>E</td><td>F</td></tr></table> <p>D2</p> <ul style="list-style-type: none"><li>When the 0th bit of the subcommand is 1, read the device data in units of bits.</li></ul> <p>Example: When reading the bit device M100 to M107 in units of bits</p> <p>1st word :</p> <table><tr><td>b15</td><td>b8</td><td>b7</td><td>b0</td></tr><tr><td>0</td><td>1</td><td>0</td><td>0</td></tr><tr><td>M102</td><td>M103</td><td>M100</td><td>M101</td></tr></table> <p>2nd word :</p> <table><tr><td>b15</td><td>b8</td><td>b7</td><td>b0</td></tr><tr><td>1</td><td>1</td><td>0</td><td>0</td></tr><tr><td>M106</td><td>M107</td><td>M104</td><td>M105</td></tr></table> | b15 | b8 | b7 | b0 | 1 | 2    | 3 | 4 | ... |  |  |  | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | M115 | ... |  |  |  |  |  |  |  |  |  | M100 | b15 | b8 | b7 | b0 | 1 | 2 | 3 | 4 | b15 | b8 | b7 | b0 | 0 | 0 | 0 | 2 | b15 | b8 | b7 | b0 | 1 | D | E | F | b15 | b8 | b7 | b0 | 0 | 1 | 0 | 0 | M102 | M103 | M100 | M101 | b15 | b8 | b7 | b0 | 1 | 1 | 0 | 0 | M106 | M107 | M104 | M105 |
| b15  | b8            | b7                            | b0                                  |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |     |    |    |    |   |      |   |   |     |  |  |  |   |   |   |   |   |   |   |   |   |   |   |   |   |      |     |  |  |  |  |  |  |  |  |  |      |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |      |      |      |      |     |    |    |    |   |   |   |   |      |      |      |      |
| 1    | 2             | 3                             | 4                                   |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |     |    |    |    |   |      |   |   |     |  |  |  |   |   |   |   |   |   |   |   |   |   |   |   |   |      |     |  |  |  |  |  |  |  |  |  |      |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |      |      |      |      |     |    |    |    |   |   |   |   |      |      |      |      |
| ...  |               |                               |                                     |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |     |    |    |    |   |      |   |   |     |  |  |  |   |   |   |   |   |   |   |   |   |   |   |   |   |      |     |  |  |  |  |  |  |  |  |  |      |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |      |      |      |      |     |    |    |    |   |   |   |   |      |      |      |      |
| 0    | 0             | 0                             | 1                                   | 0             | 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0   | 1  | 1  | 0  | 1 | 0    | 0 |   |     |  |  |  |   |   |   |   |   |   |   |   |   |   |   |   |   |      |     |  |  |  |  |  |  |  |  |  |      |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |      |      |      |      |     |    |    |    |   |   |   |   |      |      |      |      |
| M115 | ...           |                               |                                     |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |     |    |    |    |   | M100 |   |   |     |  |  |  |   |   |   |   |   |   |   |   |   |   |   |   |   |      |     |  |  |  |  |  |  |  |  |  |      |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |      |      |      |      |     |    |    |    |   |   |   |   |      |      |      |      |
| b15  | b8            | b7                            | b0                                  |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |     |    |    |    |   |      |   |   |     |  |  |  |   |   |   |   |   |   |   |   |   |   |   |   |   |      |     |  |  |  |  |  |  |  |  |  |      |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |      |      |      |      |     |    |    |    |   |   |   |   |      |      |      |      |
| 1    | 2             | 3                             | 4                                   |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |     |    |    |    |   |      |   |   |     |  |  |  |   |   |   |   |   |   |   |   |   |   |   |   |   |      |     |  |  |  |  |  |  |  |  |  |      |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |      |      |      |      |     |    |    |    |   |   |   |   |      |      |      |      |
| b15  | b8            | b7                            | b0                                  |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |     |    |    |    |   |      |   |   |     |  |  |  |   |   |   |   |   |   |   |   |   |   |   |   |   |      |     |  |  |  |  |  |  |  |  |  |      |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |      |      |      |      |     |    |    |    |   |   |   |   |      |      |      |      |
| 0    | 0             | 0                             | 2                                   |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |     |    |    |    |   |      |   |   |     |  |  |  |   |   |   |   |   |   |   |   |   |   |   |   |   |      |     |  |  |  |  |  |  |  |  |  |      |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |      |      |      |      |     |    |    |    |   |   |   |   |      |      |      |      |
| b15  | b8            | b7                            | b0                                  |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |     |    |    |    |   |      |   |   |     |  |  |  |   |   |   |   |   |   |   |   |   |   |   |   |   |      |     |  |  |  |  |  |  |  |  |  |      |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |      |      |      |      |     |    |    |    |   |   |   |   |      |      |      |      |
| 1    | D             | E                             | F                                   |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |     |    |    |    |   |      |   |   |     |  |  |  |   |   |   |   |   |   |   |   |   |   |   |   |   |      |     |  |  |  |  |  |  |  |  |  |      |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |      |      |      |      |     |    |    |    |   |   |   |   |      |      |      |      |
| b15  | b8            | b7                            | b0                                  |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |     |    |    |    |   |      |   |   |     |  |  |  |   |   |   |   |   |   |   |   |   |   |   |   |   |      |     |  |  |  |  |  |  |  |  |  |      |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |      |      |      |      |     |    |    |    |   |   |   |   |      |      |      |      |
| 0    | 1             | 0                             | 0                                   |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |     |    |    |    |   |      |   |   |     |  |  |  |   |   |   |   |   |   |   |   |   |   |   |   |   |      |     |  |  |  |  |  |  |  |  |  |      |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |      |      |      |      |     |    |    |    |   |   |   |   |      |      |      |      |
| M102 | M103          | M100                          | M101                                |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |     |    |    |    |   |      |   |   |     |  |  |  |   |   |   |   |   |   |   |   |   |   |   |   |   |      |     |  |  |  |  |  |  |  |  |  |      |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |      |      |      |      |     |    |    |    |   |   |   |   |      |      |      |      |
| b15  | b8            | b7                            | b0                                  |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |     |    |    |    |   |      |   |   |     |  |  |  |   |   |   |   |   |   |   |   |   |   |   |   |   |      |     |  |  |  |  |  |  |  |  |  |      |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |      |      |      |      |     |    |    |    |   |   |   |   |      |      |      |      |
| 1    | 1             | 0                             | 0                                   |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |     |    |    |    |   |      |   |   |     |  |  |  |   |   |   |   |   |   |   |   |   |   |   |   |   |      |     |  |  |  |  |  |  |  |  |  |      |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |      |      |      |      |     |    |    |    |   |   |   |   |      |      |      |      |
| M106 | M107          | M104                          | M105                                |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |     |    |    |    |   |      |   |   |     |  |  |  |   |   |   |   |   |   |   |   |   |   |   |   |   |      |     |  |  |  |  |  |  |  |  |  |      |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |      |      |      |      |     |    |    |    |   |   |   |   |      |      |      |      |



## Public label

| No.  | Variable name        | Name                              | Data type                                  | Range                                 | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------|----------------------|-----------------------------------|--------------------------------------------|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (15) | pbi_uRequestModuleIO | Requested module I/O No.          | Word [Unsigned]/Bit String [16-bit]        | 03FFH, 03E0H to 03E3H, 03D0H to 03D3H | Specify the module of the access destination.<br>• 03FFH: Own station, control CPU<br>• 03E0H: Multiple CPU No.1<br>• 03E1H: Multiple CPU No.2<br>• 03E2H: Multiple CPU No.3<br>• 03E3H: Multiple CPU No.4<br>• 03D0H: Control system CPU<br>• 03D1H: Standby system CPU<br>• 03D2H: System A CPU<br>• 03D3H: System B CPU                                                                                                                                                       |
| (16) | pbi_uResendCountMax  | Maximum number of resends         | Word [Unsigned]/Bit String [16-bit]        | 0 to 15                               | Specify the number of resends to be performed if the data transfer is not completed within the monitoring time specified by "arrival monitoring time".<br>• 0 to 15                                                                                                                                                                                                                                                                                                              |
| (17) | pbi_uMonitorTime     | Arrival monitoring time           | Word [Unsigned]/Bit String [16-bit]        | 0, 1 to 32767                         | Specify the monitoring time until completion of processing. If the processing is not completed within the monitoring time, data is resent until the value specified in "maximum number of resends" is reached.<br>• 0: 10s<br>• 1 to 32767: 1 to 32767s                                                                                                                                                                                                                          |
| (18) | pbo_uResendCount     | Number of resends                 | Word [Unsigned]/Bit String [16-bit]        | —                                     | The number of resends performed (result) is stored.                                                                                                                                                                                                                                                                                                                                                                                                                              |
| (19) | pbo_u4ErrTime        | Error occurrence time             | Word [Unsigned]/Bit String [16-bit] (0..3) | —                                     | Clock data at the time of error occurrence is stored.<br>1st word<br>• Upper 8 bits: Month (01H to 12H)<br>• Lower 8 bits: Lower 2 digits of year (00H to 99H)<br>2nd word<br>• Upper 8 bits: Hour (00H to 23H)<br>• Lower 8 bits: Day (01H to 31H)<br>3rd word<br>• Upper 8 bits: Second (00H to 59H)<br>• Lower 8 bits: Minute (00H to 59H)<br>4th word<br>• Upper 8 bits: Upper 2 digits of year (00H to 99H)<br>• Lower 8 bits: Day of week (00H (Sunday) to 06H (Saturday)) |
| (20) | pbo_u2ErrIP_Address  | Error-detected station IP address | Word [Unsigned]/Bit String [16-bit] (0..1) | —                                     | The IP address of the station in which an error was detected is stored. The third and fourth octets are stored in the 1st word, and first and second octets are stored in the 2nd word.<br><div><div>b15b8b7b0</div><div>1st word<div>Third octet</div><div>Fourth octet</div></div><div>2nd word<div>First octet</div><div>Second octet</div></div></div>                                                                                                                       |

## FB details

### Available device

#### ■CPU module

| Target module | Firmware version | Engineering tool                  |
|---------------|------------------|-----------------------------------|
| FX5S          | 1.000 or later   | GX Works3 Version 1.080J or later |
| FX5UJ         | 1.000 or later   | GX Works3 Version 1.060N or later |
| FX5U, FX5UC   | 1.040 or later   | GX Works3 Version 1.030G or later |

### Basic specifications

| Item                           | Description                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Language                       | Ladder diagram                                                                                                                                                                                                                                                                                                                                                                 |
| Number of steps                | 313 steps<br>The number of steps of the FB embedded in the program varies depending on the CPU module used, the input/output definitions, and the option setting of GX Works3. For the option setting of GX Works3, refer to the <a href="#">GX Works3 Operating Manual</a> .                                                                                                  |
| Label usage                    | <ul style="list-style-type: none"> <li>Label: 1.03K points (Word)</li> <li>Latch label: 0K points (Word)</li> </ul> The amount of labels used in the program varies depending on the CPU module used, the device specified in an argument, and the option setting of GX Works3. For the option setting of GX Works3, refer to the <a href="#">GX Works3 Operating Manual</a> . |
| Number of index register usage | <ul style="list-style-type: none"> <li>Index register: 0 points</li> <li>Long index register: 0 points</li> </ul>                                                                                                                                                                                                                                                              |
| File register usage            | 0 points                                                                                                                                                                                                                                                                                                                                                                       |
| FB dependence                  | No dependence                                                                                                                                                                                                                                                                                                                                                                  |
| FB compilation method          | Macro type                                                                                                                                                                                                                                                                                                                                                                     |
| FB operation                   | Pulsed execution (multiple scan execution type)                                                                                                                                                                                                                                                                                                                                |

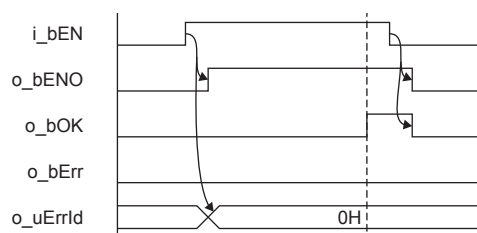
### Processing

- When i\_bEN (start condition) is turned on, this function reads device data from the SLMP-compatible device.
- This FB is executed specifying the IP address of target device.
- This FB uses Read command (command: 0401H) of SLMP. The message of the SLMP command is binary code. ([MELSEC iQ-F FX5 User's Manual \(Communication\)](#))
- If the set number of device points is out of the range, o\_bErr (error completion) is turned on, and the processing of FB is suspended. Also, the error code 100 (hexadecimal) is stored in o\_uErrId (error code). For the error code, refer to [Page 42 Error code](#).
- If an error occurs during device data read, o\_bErr (Error completion) turns on, and the error code is stored in o\_uErrId (Error code). For the error code, refer to [Page 42 Error code](#).
- To set or monitor public labels, add a program for setting or monitoring as shown below. Specify a public label as "FB instance"."public label". The following program is designed to assign K1 to the requested module I/O No.(M\_FX5UCPU\_EN\_SLMP\_DeviceRead\_IP\_00A\_1.pbi\_uRequestModuleIO).

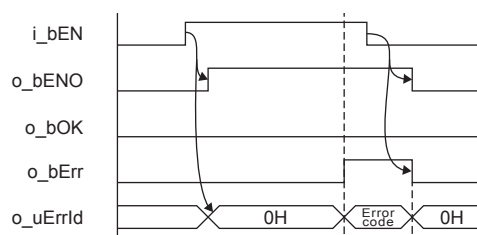


## Timing chart of I/O signals

### ■For normal completion



### ■For error completion



## Restrictions or precautions

- This FB does not include the error recovery processing. Program the error recovery processing separately in accordance with your system and the required operation.
- This FB uses the SP.SLMPSEND instruction.
- Turn off *i\_bEN* (Execution command) after *o\_bOK* (Normal completion) or *o\_bErr* (Error completion) is turned on. By turning off *i\_bEN* (Execution command), *o\_bOK* (Normal completion) or *o\_bErr* (Error completion) is turned off and *o\_uErrld* (Error code) is cleared to 0. However, because the SP.SLMPSEND instruction which is a pulse instruction in the FB is used, if a write is performed while the FB is executed, the instruction may not be executed, and *o\_bOK* (Normal completion) and *o\_bErr* (Error completion) may not turn on. In that case, turn *i\_bEN* (Execution command) on again.
- This FB cannot be used in an interrupt program.
- Do not use this FB in programs that are executed only once, such as a subroutine program or FOR-NEXT loop, because *i\_bEN* (Execution command) cannot be turned off and the normal operation cannot be acquired. Always use this FB in programs that can turn off *i\_bEN* (Execution command).
- In this FB, access devices (such as link direct device) that are accessed by the extension specification of SLMP cannot be read.
- In this FB, stations in other network cannot be set as the target station.
- For the port of target device where the remote password is set, execute this FB after performing the unlock processing of the remote password. When this FB is executed for the port of target device where the remote password is set, an error will occur.
- The target station must support "Read (command: 0401H)" of SLMP.
- This FB is for communications in binary code only. (Communications using ASCII code cannot be performed.)
- This FB uses UDP communications. Set the protocol setting of the target device to UDP.
- This FB requires circuit settings for all the input labels.

## Parameter setting

No parameters are required to use this FB.

## Example of use

For an example of use, refer to  Page 286 EXAMPLE OF USE.

## Performance value

| CPU module                  | Measurement conditions                                       | Performance value |                   | Number of scans |
|-----------------------------|--------------------------------------------------------------|-------------------|-------------------|-----------------|
|                             |                                                              | Processing time   | Maximum scan time |                 |
| FX5S                        | 0th bit of the subcommand: 0<br>Number of device points: 1   | 5.190ms           | 0.735ms           | 16 scans        |
|                             | 0th bit of the subcommand: 0<br>Number of device points: 960 | 11.400ms          | 0.869ms           | 25 scans        |
| FX5UJ                       | 0th bit of the subcommand: 0<br>Number of device points: 1   | 5.190ms           | 0.735ms           | 16 scans        |
|                             | 0th bit of the subcommand: 0<br>Number of device points: 960 | 11.400ms          | 0.869ms           | 25 scans        |
| FX5U, FX5UC <sup>*1*2</sup> | 0th bit of the subcommand: 0<br>Number of device points: 1   | 5.190ms           | 0.735ms           | 16 scans        |
|                             | 0th bit of the subcommand: 0<br>Number of device points: 960 | 11.400ms          | 0.869ms           | 25 scans        |

\*1 When the program capacity is set to 128K steps, the processing speed may be reduced.

\*2 The labels in the standard area are used.

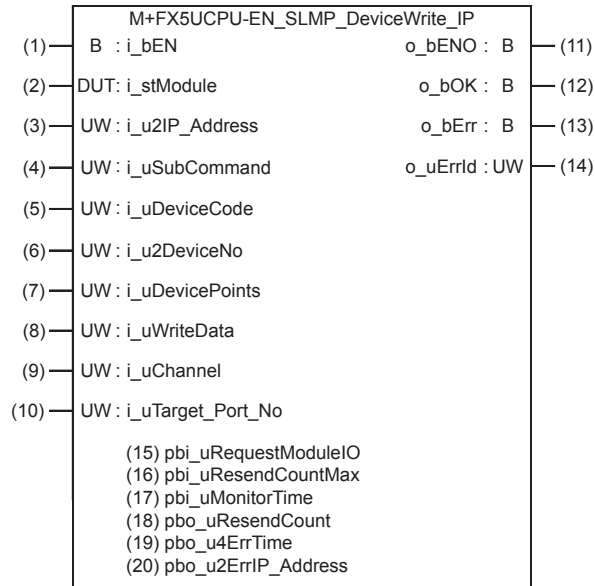
## Error code

| Error code (hexadecimal)   | Description                                                                                                                                                                                                                                                               | Action                                                                                                                                            |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| 100H                       | The setting of i_uDevicePoints (number of device points) is out of the range. The set number of device points is out of the range from 1 to 960 (when the 0th bit of the sub command is 0) or out of the range from 1 to 3972 (when the 0th bit of the sub command is 1). | After reviewing the setting, re-execute the FB.                                                                                                   |
| Error code other than 100H | Same as the error code caused by the SLMP frame sending (SP.SLMPSND) instruction.                                                                                                                                                                                         | Refer to the  MELSEC iQ-F FX5 User's Manual (Communication). |

## 2.6 M+FX5UCPU-EN\_SLMP\_DeviceWrite\_IP (Writing to SLMP-compatible device)

### Overview

This FB writes data to the SLMP-compatible device by specifying IP address.



### Labels

#### Input label

| No. | Variable name  | Name                        | Data type                                  | Range                                                    | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----|----------------|-----------------------------|--------------------------------------------|----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1) | i_bEN          | Execution command           | Bit                                        | On, off                                                  | On: The FB is activated.<br>Off: The FB is not activated.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| (2) | i_stModule     | Module label                | Structure                                  | The setting range differs depending on the module label. | Specify the module label of the CPU module.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| (3) | i_u2IP_Address | IP address of target device | Word [Unsigned]/Bit String [16-bit] (0..1) | 0.0.0.1 to 223.255.255.254                               | Specify the IP address of target device. Specify the third and fourth octets to the 1st word, and first and second octets to the 2nd word.<br><br><div style="text-align: right; margin-right: 20px;">           b15                      b8 b7                      b0         </div> <div style="display: flex; justify-content: space-between;"> <div style="width: 15%;">1st word</div> <div style="width: 35%; border: 1px solid black; text-align: center;">Third octet</div> <div style="width: 35%; border: 1px solid black; text-align: center;">Fourth octet</div> </div> <div style="display: flex; justify-content: space-between;"> <div style="width: 15%;">2nd word</div> <div style="width: 35%; border: 1px solid black; text-align: center;">First octet</div> <div style="width: 35%; border: 1px solid black; text-align: center;">Second octet</div> </div> Example: When IP address is 192.168.3.250<br><br><div style="display: flex; justify-content: space-between;"> <div style="width: 15%;">1st word</div> <div style="width: 35%; border: 1px solid black; text-align: center;">03FAH</div> <div style="width: 35%; border: 1px solid black; text-align: center;">C0A8H</div> </div> <div style="display: flex; justify-content: space-between;"> <div style="width: 15%;">2nd word</div> <div style="width: 35%; border: 1px solid black; text-align: center;">C0A8H</div> <div style="width: 35%; border: 1px solid black; text-align: center;">C0A8H</div> </div> |

| No. | Variable name   | Name                    | Data type                                  | Range               | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----|-----------------|-------------------------|--------------------------------------------|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (4) | i_uSubCommand   | Sub command             | Word [Unsigned]/Bit String [16-bit]        | 0 to 3              | Specify the write unit and specification method of a device.<br><b>■0th bit</b><br>Specify whether the device is written in units of words or in units of bits.<br>• 0: In units of words<br>• 1: In units of bits<br><b>■1st bit</b><br>Specify the combination of the number of digits of the device code and start device number of the device to be written.<br>• 0: Specify the device code in 2 digits and the start device number in 6 digits.<br>• 1: Specify the device code in 4 digits and the start device number in 8 digits.* <sup>1</sup> |
| (5) | i_uDeviceCode   | Device code             | Word [Unsigned]/Bit String [16-bit]        | —                   | Specify the device code of the device to be written in binary code.<br>• When the 1st bit of the subcommand is 0: 2 digits<br>• When the 1st bit of the subcommand is 1: 4 digits                                                                                                                                                                                                                                                                                                                                                                        |
| (6) | i_u2DeviceNo    | Head device No.         | Word [Unsigned]/Bit String [16-bit] (0..1) | —                   | Specify the start device number of the device to be written in binary code.<br>• When the 1st bit of the subcommand is 0: 6 digits<br>• When the 1st bit of the subcommand is 1: 8 digits                                                                                                                                                                                                                                                                                                                                                                |
| (7) | i_uDevicePoints | Number of device points | Word [Unsigned]/Bit String [16-bit]        | 1 to 960, 1 to 3972 | Specify the number of device points of the device to be written in binary code.<br>• When the 0th bit of the subcommand is 0: 1 to 960 digits<br>• When the 0th bit of the subcommand is 1: 1 to 3972 digits* <sup>2</sup>                                                                                                                                                                                                                                                                                                                               |

| No.                               | Variable name     | Name                           | Data type                           | Range      | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |      |  |      |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |                                   |  |  |  |  |  |  |  |  |  |  |  |      |  |  |  |       |  |  |  |      |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |      |  |      |  |      |  |      |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |      |  |      |  |      |  |      |  |  |  |  |  |
|-----------------------------------|-------------------|--------------------------------|-------------------------------------|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|--|------|--|-------|--|--|--|----|--|--|--|---|--|---|--|---|--|---|--|--|--|--|--|-----------------------------------|--|--|--|--|--|--|--|--|--|--|--|------|--|--|--|-------|--|--|--|------|--|--|--|-----|--|--|--|-------|--|--|--|----|--|--|--|---|--|---|--|---|--|---|--|--|--|--|--|----|--|--|--|--|--|--|--|--|--|--|--|-----|--|--|--|-------|--|--|--|----|--|--|--|---|--|---|--|---|--|---|--|--|--|--|--|----|--|--|--|--|--|--|--|--|--|--|--|-----|--|--|--|-------|--|--|--|----|--|--|--|---|--|---|--|---|--|---|--|--|--|--|--|----|--|--|--|--|--|--|--|--|--|--|--|-----|--|--|--|-------|--|--|--|----|--|--|--|---|--|---|--|---|--|---|--|--|--|--|--|------|--|------|--|------|--|------|--|--|--|--|--|-----|--|--|--|-------|--|--|--|----|--|--|--|---|--|---|--|---|--|---|--|--|--|--|--|------|--|------|--|------|--|------|--|--|--|--|--|
| (8)                               | i_uWriteData      | Write data storage destination | Word [Unsigned]/Bit String [16-bit] | —          | <p>Specify the start device number of the device for storing the write data.</p> <ul style="list-style-type: none"><li>When the 0th bit of the subcommand is 0, the device data is written in units of words.</li></ul> <p>Example: When writing the bit device M100 to M115 (one word) in units of words</p> <p>1st word :</p> <table><tr><td colspan="4">b15</td><td colspan="4">b8 b7</td><td colspan="4">b0</td></tr><tr><td colspan="2">1</td><td colspan="2">2</td><td colspan="2">3</td><td colspan="2">4</td><td colspan="2"></td><td colspan="2"></td></tr><tr><td colspan="12">0 0 0 1 0 0 0 1 0 0 0 1 1 0 1 0 0</td></tr><tr><td colspan="4">M115</td><td colspan="4">. . .</td><td colspan="4">M100</td></tr></table> <p>Example: When writing the word device D0 to D2 in units of words</p> <p>1st word :</p> <table><tr><td colspan="4">b15</td><td colspan="4">b8 b7</td><td colspan="4">b0</td></tr><tr><td colspan="2">1</td><td colspan="2">2</td><td colspan="2">3</td><td colspan="2">4</td><td colspan="2"></td><td colspan="2"></td></tr><tr><td colspan="12">D0</td></tr></table> <p>2nd word :</p> <table><tr><td colspan="4">b15</td><td colspan="4">b8 b7</td><td colspan="4">b0</td></tr><tr><td colspan="2">0</td><td colspan="2">0</td><td colspan="2">0</td><td colspan="2">2</td><td colspan="2"></td><td colspan="2"></td></tr><tr><td colspan="12">D1</td></tr></table> <p>3rd word :</p> <table><tr><td colspan="4">b15</td><td colspan="4">b8 b7</td><td colspan="4">b0</td></tr><tr><td colspan="2">1</td><td colspan="2">D</td><td colspan="2">E</td><td colspan="2">F</td><td colspan="2"></td><td colspan="2"></td></tr><tr><td colspan="12">D2</td></tr></table> <ul style="list-style-type: none"><li>When the 0th bit of the subcommand is 1, the device data is written in units of bits.</li></ul> <p>Example: When writing the bit device M100 to M107 in units of bits</p> <p>1st word :</p> <table><tr><td colspan="4">b15</td><td colspan="4">b8 b7</td><td colspan="4">b0</td></tr><tr><td colspan="2">0</td><td colspan="2">1</td><td colspan="2">0</td><td colspan="2">0</td><td colspan="2"></td><td colspan="2"></td></tr><tr><td colspan="2">M102</td><td colspan="2">M103</td><td colspan="2">M100</td><td colspan="2">M101</td><td colspan="2"></td><td colspan="2"></td></tr></table> <p>2nd word :</p> <table><tr><td colspan="4">b15</td><td colspan="4">b8 b7</td><td colspan="4">b0</td></tr><tr><td colspan="2">1</td><td colspan="2">1</td><td colspan="2">0</td><td colspan="2">0</td><td colspan="2"></td><td colspan="2"></td></tr><tr><td colspan="2">M106</td><td colspan="2">M107</td><td colspan="2">M104</td><td colspan="2">M105</td><td colspan="2"></td><td colspan="2"></td></tr></table> | b15  |  |      |  | b8 b7 |  |  |  | b0 |  |  |  | 1 |  | 2 |  | 3 |  | 4 |  |  |  |  |  | 0 0 0 1 0 0 0 1 0 0 0 1 1 0 1 0 0 |  |  |  |  |  |  |  |  |  |  |  | M115 |  |  |  | . . . |  |  |  | M100 |  |  |  | b15 |  |  |  | b8 b7 |  |  |  | b0 |  |  |  | 1 |  | 2 |  | 3 |  | 4 |  |  |  |  |  | D0 |  |  |  |  |  |  |  |  |  |  |  | b15 |  |  |  | b8 b7 |  |  |  | b0 |  |  |  | 0 |  | 0 |  | 0 |  | 2 |  |  |  |  |  | D1 |  |  |  |  |  |  |  |  |  |  |  | b15 |  |  |  | b8 b7 |  |  |  | b0 |  |  |  | 1 |  | D |  | E |  | F |  |  |  |  |  | D2 |  |  |  |  |  |  |  |  |  |  |  | b15 |  |  |  | b8 b7 |  |  |  | b0 |  |  |  | 0 |  | 1 |  | 0 |  | 0 |  |  |  |  |  | M102 |  | M103 |  | M100 |  | M101 |  |  |  |  |  | b15 |  |  |  | b8 b7 |  |  |  | b0 |  |  |  | 1 |  | 1 |  | 0 |  | 0 |  |  |  |  |  | M106 |  | M107 |  | M104 |  | M105 |  |  |  |  |  |
| b15                               |                   |                                |                                     | b8 b7      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |      |  | b0   |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |                                   |  |  |  |  |  |  |  |  |  |  |  |      |  |  |  |       |  |  |  |      |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |      |  |      |  |      |  |      |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |      |  |      |  |      |  |      |  |  |  |  |  |
| 1                                 |                   | 2                              |                                     | 3          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 4    |  |      |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |                                   |  |  |  |  |  |  |  |  |  |  |  |      |  |  |  |       |  |  |  |      |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |      |  |      |  |      |  |      |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |      |  |      |  |      |  |      |  |  |  |  |  |
| 0 0 0 1 0 0 0 1 0 0 0 1 1 0 1 0 0 |                   |                                |                                     |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |      |  |      |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |                                   |  |  |  |  |  |  |  |  |  |  |  |      |  |  |  |       |  |  |  |      |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |      |  |      |  |      |  |      |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |      |  |      |  |      |  |      |  |  |  |  |  |
| M115                              |                   |                                |                                     | . . .      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |      |  | M100 |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |                                   |  |  |  |  |  |  |  |  |  |  |  |      |  |  |  |       |  |  |  |      |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |      |  |      |  |      |  |      |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |      |  |      |  |      |  |      |  |  |  |  |  |
| b15                               |                   |                                |                                     | b8 b7      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |      |  | b0   |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |                                   |  |  |  |  |  |  |  |  |  |  |  |      |  |  |  |       |  |  |  |      |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |      |  |      |  |      |  |      |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |      |  |      |  |      |  |      |  |  |  |  |  |
| 1                                 |                   | 2                              |                                     | 3          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 4    |  |      |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |                                   |  |  |  |  |  |  |  |  |  |  |  |      |  |  |  |       |  |  |  |      |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |      |  |      |  |      |  |      |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |      |  |      |  |      |  |      |  |  |  |  |  |
| D0                                |                   |                                |                                     |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |      |  |      |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |                                   |  |  |  |  |  |  |  |  |  |  |  |      |  |  |  |       |  |  |  |      |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |      |  |      |  |      |  |      |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |      |  |      |  |      |  |      |  |  |  |  |  |
| b15                               |                   |                                |                                     | b8 b7      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |      |  | b0   |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |                                   |  |  |  |  |  |  |  |  |  |  |  |      |  |  |  |       |  |  |  |      |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |      |  |      |  |      |  |      |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |      |  |      |  |      |  |      |  |  |  |  |  |
| 0                                 |                   | 0                              |                                     | 0          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 2    |  |      |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |                                   |  |  |  |  |  |  |  |  |  |  |  |      |  |  |  |       |  |  |  |      |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |      |  |      |  |      |  |      |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |      |  |      |  |      |  |      |  |  |  |  |  |
| D1                                |                   |                                |                                     |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |      |  |      |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |                                   |  |  |  |  |  |  |  |  |  |  |  |      |  |  |  |       |  |  |  |      |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |      |  |      |  |      |  |      |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |      |  |      |  |      |  |      |  |  |  |  |  |
| b15                               |                   |                                |                                     | b8 b7      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |      |  | b0   |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |                                   |  |  |  |  |  |  |  |  |  |  |  |      |  |  |  |       |  |  |  |      |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |      |  |      |  |      |  |      |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |      |  |      |  |      |  |      |  |  |  |  |  |
| 1                                 |                   | D                              |                                     | E          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | F    |  |      |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |                                   |  |  |  |  |  |  |  |  |  |  |  |      |  |  |  |       |  |  |  |      |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |      |  |      |  |      |  |      |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |      |  |      |  |      |  |      |  |  |  |  |  |
| D2                                |                   |                                |                                     |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |      |  |      |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |                                   |  |  |  |  |  |  |  |  |  |  |  |      |  |  |  |       |  |  |  |      |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |      |  |      |  |      |  |      |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |      |  |      |  |      |  |      |  |  |  |  |  |
| b15                               |                   |                                |                                     | b8 b7      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |      |  | b0   |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |                                   |  |  |  |  |  |  |  |  |  |  |  |      |  |  |  |       |  |  |  |      |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |      |  |      |  |      |  |      |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |      |  |      |  |      |  |      |  |  |  |  |  |
| 0                                 |                   | 1                              |                                     | 0          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 0    |  |      |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |                                   |  |  |  |  |  |  |  |  |  |  |  |      |  |  |  |       |  |  |  |      |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |      |  |      |  |      |  |      |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |      |  |      |  |      |  |      |  |  |  |  |  |
| M102                              |                   | M103                           |                                     | M100       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | M101 |  |      |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |                                   |  |  |  |  |  |  |  |  |  |  |  |      |  |  |  |       |  |  |  |      |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |      |  |      |  |      |  |      |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |      |  |      |  |      |  |      |  |  |  |  |  |
| b15                               |                   |                                |                                     | b8 b7      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |      |  | b0   |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |                                   |  |  |  |  |  |  |  |  |  |  |  |      |  |  |  |       |  |  |  |      |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |      |  |      |  |      |  |      |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |      |  |      |  |      |  |      |  |  |  |  |  |
| 1                                 |                   | 1                              |                                     | 0          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 0    |  |      |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |                                   |  |  |  |  |  |  |  |  |  |  |  |      |  |  |  |       |  |  |  |      |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |      |  |      |  |      |  |      |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |      |  |      |  |      |  |      |  |  |  |  |  |
| M106                              |                   | M107                           |                                     | M104       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | M105 |  |      |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |                                   |  |  |  |  |  |  |  |  |  |  |  |      |  |  |  |       |  |  |  |      |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |      |  |      |  |      |  |      |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |      |  |      |  |      |  |      |  |  |  |  |  |
| (9)                               | i_uChannel        | Own station channel            | Word [Unsigned]/Bit String [16-bit] | 1          | Specify the channel to be used by own station.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |      |  |      |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |                                   |  |  |  |  |  |  |  |  |  |  |  |      |  |  |  |       |  |  |  |      |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |      |  |      |  |      |  |      |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |      |  |      |  |      |  |      |  |  |  |  |  |
| (10)                              | i_uTarget_Port_No | Destination port number        | Word [Unsigned]/Bit String [16-bit] | 1 to 65534 | Specify the UDP port number of target device.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |      |  |      |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |                                   |  |  |  |  |  |  |  |  |  |  |  |      |  |  |  |       |  |  |  |      |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |    |  |  |  |  |  |  |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |      |  |      |  |      |  |      |  |  |  |  |  |     |  |  |  |       |  |  |  |    |  |  |  |   |  |   |  |   |  |   |  |  |  |  |  |      |  |      |  |      |  |      |  |  |  |  |  |

\*1 It can be specified when the target device for writing is MELSEC iQ-R series. It cannot be specified when the target device for writing is MELSEC-Q/L series or MELSEC iQ-F series.

\*2 The allowable range is 1 to 3584 when the target device for writing is MELSEC iQ-F series.

## Output label

| No.  | Variable name | Name              | Data type                           | Default value | Description                                                               |
|------|---------------|-------------------|-------------------------------------|---------------|---------------------------------------------------------------------------|
| (11) | o_bENO        | Execution status  | Bit                                 | Off           | On: The execution command is on.<br>Off: The execution command is off.    |
| (12) | o_bOK         | Normal completion | Bit                                 | Off           | Device writing has been completed normally when this output is on.        |
| (13) | o_bErr        | Error completion  | Bit                                 | Off           | When this label is on, it indicates that an error has occurred in the FB. |
| (14) | o_uErrId      | Error code        | Word [Unsigned]/Bit String [16-bit] | 0             | Stores the error code that occurred in the FB.                            |

## Public label

| No.      | Variable name        | Name                              | Data type                                  | Range                                 | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |          |             |              |          |             |              |
|----------|----------------------|-----------------------------------|--------------------------------------------|---------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------|--------------|----------|-------------|--------------|
| (15)     | pbi_uRequestModuleIO | Requested module I/O No.          | Word [Unsigned]/Bit String [16-bit]        | 03FFH, 03E0H to 03E3H, 03D0H to 03D3H | Specify the module of the access destination. <ul style="list-style-type: none"><li>• 03FFH: Own station, control CPU</li><li>• 03E0H: Multiple CPU No.1</li><li>• 03E1H: Multiple CPU No.2</li><li>• 03E2H: Multiple CPU No.3</li><li>• 03E3H: Multiple CPU No.4</li><li>• 03D0H: Control system CPU</li><li>• 03D1H: Standby system CPU</li><li>• 03D2H: System A CPU</li><li>• 03D3H: System B CPU</li></ul>                                                                                                                                                                                                                                                                 |          |             |              |          |             |              |
| (16)     | pbi_uResendCountMax  | Maximum number of resends         | Word [Unsigned]/Bit String [16-bit]        | 0 to 15                               | Specify the number of resends to be performed if the data transfer is not completed within the monitoring time specified by "arrival monitoring time". <ul style="list-style-type: none"><li>• 0 to 15</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                |          |             |              |          |             |              |
| (17)     | pbi_uMonitorTime     | Arrival monitoring time           | Word [Unsigned]/Bit String [16-bit]        | 0, 1 to 32767                         | Specify the monitoring time until completion of processing. If the processing is not completed within the monitoring time, data is resent until the value specified in "maximum number of resends" is reached. <ul style="list-style-type: none"><li>• 0: 10s</li><li>• 1 to 32767: 1 to 32767s</li></ul>                                                                                                                                                                                                                                                                                                                                                                       |          |             |              |          |             |              |
| (18)     | pbo_uResendCount     | Number of resends                 | Word [Unsigned]/Bit String [16-bit]        | —                                     | The number of resends performed (result) is stored.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |          |             |              |          |             |              |
| (19)     | pbo_u4ErrTime        | Error occurrence time             | Word [Unsigned]/Bit String [16-bit] (0..3) | —                                     | Clock data at the time of error occurrence is stored.<br>1st word <ul style="list-style-type: none"><li>• Upper 8 bits: Month (01H to 12H)</li><li>• Lower 8 bits: Lower 2 digits of year (00H to 99H)</li></ul> 2nd word <ul style="list-style-type: none"><li>• Upper 8 bits: Hour (00H to 23H)</li><li>• Lower 8 bits: Day (01H to 31H)</li></ul> 3rd word <ul style="list-style-type: none"><li>• Upper 8 bits: Second (00H to 59H)</li><li>• Lower 8 bits: Minute (00H to 59H)</li></ul> 4th word <ul style="list-style-type: none"><li>• Upper 8 bits: Upper 2 digits of year (00H to 99H)</li><li>• Lower 8 bits: Day of week (00H (Sunday) to 06H (Saturday))</li></ul> |          |             |              |          |             |              |
| (20)     | pbo_u2ErrIP_Address  | Error-detected station IP address | Word [Unsigned]/Bit String [16-bit] (0..1) | —                                     | The IP address of the station in which an error was detected is stored. The third and fourth octets are stored in the 1st word, and first and second octets are stored in the 2nd word. <div><div>b15b8b7b0</div><table><tr><td>1st word</td><td>Third octet</td><td>Fourth octet</td></tr><tr><td>2nd word</td><td>First octet</td><td>Second octet</td></tr></table></div>                                                                                                                                                                                                                                                                                                    | 1st word | Third octet | Fourth octet | 2nd word | First octet | Second octet |
| 1st word | Third octet          | Fourth octet                      |                                            |                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |          |             |              |          |             |              |
| 2nd word | First octet          | Second octet                      |                                            |                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |          |             |              |          |             |              |



# FB details

## Available device

### ■CPU module

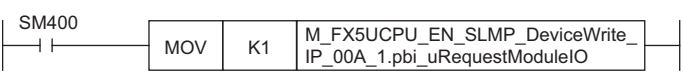
| Target module | Firmware version | Engineering tool                  |
|---------------|------------------|-----------------------------------|
| FX5S          | 1.000 or later   | GX Works3 Version 1.080J or later |
| FX5UJ         | 1.000 or later   | GX Works3 Version 1.060N or later |
| FX5U, FX5UC   | 1.040 or later   | GX Works3 Version 1.030G or later |

## Basic specifications

| Item                           | Description                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Language                       | Ladder diagram                                                                                                                                                                                                                                                                                                                                                                 |
| Number of steps                | 346 steps<br>The number of steps of the FB embedded in the program varies depending on the CPU module used, the input/output definitions, and the option setting of GX Works3. For the option setting of GX Works3, refer to the <a href="#">GX Works3 Operating Manual</a> .                                                                                                  |
| Label usage                    | <ul style="list-style-type: none"> <li>Label: 1.03K points (Word)</li> <li>Latch label: 0K points (Word)</li> </ul> The amount of labels used in the program varies depending on the CPU module used, the device specified in an argument, and the option setting of GX Works3. For the option setting of GX Works3, refer to the <a href="#">GX Works3 Operating Manual</a> . |
| Number of index register usage | <ul style="list-style-type: none"> <li>Index register: 0 points</li> <li>Long index register: 0 points</li> </ul>                                                                                                                                                                                                                                                              |
| File register usage            | 0 points                                                                                                                                                                                                                                                                                                                                                                       |
| FB dependence                  | No dependence                                                                                                                                                                                                                                                                                                                                                                  |
| FB compilation method          | Macro type                                                                                                                                                                                                                                                                                                                                                                     |
| FB operation                   | Pulsed execution (multiple scan execution type)                                                                                                                                                                                                                                                                                                                                |

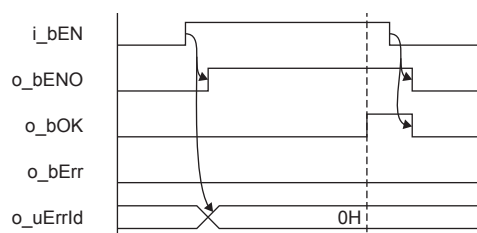
## Processing

- When i\_bEN (start condition) is turned on, this function writes device data of the SLMP-compatible device.
- This FB is executed specifying the IP address of target device.
- This FB uses Write command (command: 1401H) of SLMP. The message of the SLMP command is binary code. ([MELSEC iQ-F FX5 User's Manual \(Communication\)](#))
- If the set number of device points is out of the range, o\_bErr (error completion) is turned on, and the processing of FB is suspended. Also, the error code 100 (hexadecimal) is stored in o\_uErrId (error code). For the error code, refer to [Page 49 Error code](#).
- If an error occurs during device data write, o\_bErr (error completion) turns on, and the error code is stored in o\_uErrId (error code). For the error code, refer to [Page 49 Error code](#).
- To set or monitor public labels, add a program for setting or monitoring as shown below. Specify a public label as "FB instance"."public label". The following program is designed to assign K1 to the requested module I/O No.(M\_FX5UCPU\_EN\_SLMP\_DeviceWrite\_IP\_00A\_1.pbi\_uRequestModuleIO).

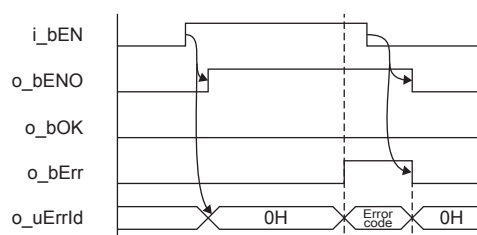


## Timing chart of I/O signals

### ■For normal completion



### ■For error completion



## Restrictions or precautions

- This FB does not include the error recovery processing. Program the error recovery processing separately in accordance with your system and the required operation.
- This FB uses the SP.SLMPSND instruction.
- Turn off *i\_bEN* (Execution command) after *o\_bOK* (Normal completion) or *o\_bErr* (Error completion) is turned on. By turning off *i\_bEN* (Execution command), *o\_bOK* (Normal completion) or *o\_bErr* (Error completion) is turned off and *o\_uErrld* (Error code) is cleared to 0. However, because the SP.SLMPSND instruction which is a pulse instruction in the FB is used, if a write is performed while the FB is executed, the instruction may not be executed, and *o\_bOK* (Normal completion) and *o\_bErr* (Error completion) may not turn on. In that case, turn *i\_bEN* (Execution command) on again.
- This FB cannot be used in an interrupt program.
- Do not use this FB in programs that are executed only once, such as a subroutine program or FOR-NEXT loop, because *i\_bEN* (Execution command) cannot be turned off and the normal operation cannot be acquired. Always use this FB in programs that can turn off *i\_bEN* (Execution command).
- In this FB, access devices (such as link direct device) that are accessed by the extension specification of SLMP cannot be written.
- In this FB, stations in other network cannot be set as the target station.
- For the port of target device where the remote password is set, execute this FB after performing the unlock processing of the remote password. When this FB is executed for the port of target device where the remote password is set, an error will occur.
- The target station must support "Write (command: 1401H)" of SLMP.
- This FB is for communications in binary code only. (Communications using ASCII code cannot be performed.)
- This FB uses UDP communications. Set the protocol setting of the target device to UDP.
- This FB requires circuit settings for all the input labels.

## Parameter setting

No parameters are required to use this FB.

## Performance value

| CPU module                  | Measurement conditions                                       | Performance value |                   | Number of scans |
|-----------------------------|--------------------------------------------------------------|-------------------|-------------------|-----------------|
|                             |                                                              | Processing time   | Maximum scan time |                 |
| FX5S                        | 0th bit of the subcommand: 0<br>Number of device points: 1   | 4.34ms            | 0.744ms           | 11 scans        |
|                             | 0th bit of the subcommand: 0<br>Number of device points: 960 | 11.0ms            | 0.90ms            | 20 scans        |
| FX5UJ                       | 0th bit of the subcommand: 0<br>Number of device points: 1   | 4.34ms            | 0.744ms           | 11 scans        |
|                             | 0th bit of the subcommand: 0<br>Number of device points: 960 | 11.0ms            | 0.90ms            | 20 scans        |
| FX5U, FX5UC <sup>*1*2</sup> | 0th bit of the subcommand: 0<br>Number of device points: 1   | 4.34ms            | 0.744ms           | 11 scans        |
|                             | 0th bit of the subcommand: 0<br>Number of device points: 960 | 11.0ms            | 0.90ms            | 20 scans        |

\*1 When the program capacity is set to 128K steps, the processing speed may be reduced.

\*2 The labels in the standard area are used.

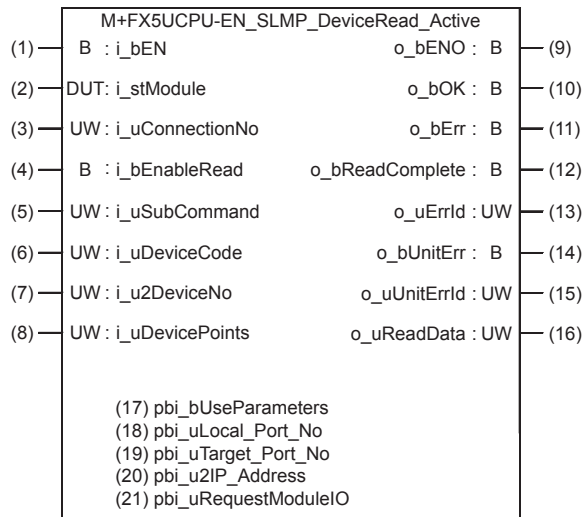
## Error code

| Error code (hexadecimal)   | Description                                                                                                                                                                                                                                                               | Action                                                                                                                                            |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| 100H                       | The setting of i_uDevicePoints (number of device points) is out of the range. The set number of device points is out of the range from 1 to 960 (when the 0th bit of the sub command is 0) or out of the range from 1 to 3972 (when the 0th bit of the sub command is 1). | After reviewing the setting, re-execute the FB.                                                                                                   |
| Error code other than 100H | Same as the error code caused by the SLMP frame sending (SP.SLMPSND) instruction.                                                                                                                                                                                         | Refer to the  MELSEC iQ-F FX5 User's Manual (Communication). |

## 2.7 M+FX5UCPU-EN\_SLMP\_DeviceRead\_Active (Reading of SLMP-compatible device with Active connection)

### Overview

This FB performs the open/close processing and reading device data of SLMP-compatible devices by Active connection.



# Labels

2

## Input label

| No. | Variable name   | Name                    | Data type                                  | Range                                                    | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----|-----------------|-------------------------|--------------------------------------------|----------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1) | i_bEN           | Execution command       | Bit                                        | On, off                                                  | On: The FB is activated.<br>Off: The FB is not activated.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| (2) | i_stModule      | Module label            | Structure                                  | The setting range differs depending on the module label. | Specify the module label of the CPU module.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| (3) | i_uConnectionNo | Connection No.          | Word [Unsigned]/Bit String [16-bit]        | 1 to 8                                                   | Specify the connection number for receiving data.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| (4) | i_bEnableRead   | Reading execution       | Bit                                        | On, off                                                  | On: Execute reading<br>Off: Not execute reading                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| (5) | i_uSubCommand   | Sub command             | Word [Unsigned]/Bit String [16-bit]        | 0 to 3                                                   | Specify the read unit and specification method of a device.<br><b>0th bit</b><br>Specify whether the device is read in units of words or in units of bits.<br>• 0: In units of words<br>• 1: In units of bits<br><b>1st bit</b><br>Specify the combination of the number of digits of the device code and start device number of the device to be read.<br>• 0: Specify the device code in 2 digits and the start device number in 6 digits.<br>• 1: Specify the device code in 4 digits and the start device number in 8 digits. <sup>*1</sup> |
| (6) | i_uDeviceCode   | Device code             | Word [Unsigned]/Bit String [16-bit]        | —                                                        | Specify the device code of the device to be read in binary code.<br>• When the 1st bit of the subcommand is 0: 2 digits<br>• When the 1st bit of the subcommand is 1: 4 digits                                                                                                                                                                                                                                                                                                                                                                  |
| (7) | i_u2DeviceNo    | Head device No.         | Word [Unsigned]/Bit String [16-bit] (0..1) | —                                                        | Specify the start device number of the device to be read in binary code.<br>• When the 1st bit of the subcommand is 0: 6 digits<br>• When the 1st bit of the subcommand is 1: 8 digits                                                                                                                                                                                                                                                                                                                                                          |
| (8) | i_uDevicePoints | Number of device points | Word [Unsigned]/Bit String [16-bit]        | 1 to 960, 1 to 3972                                      | Specify the number of device points of the device to be read in binary code.<br>• When the 0th bit of the subcommand is 0: 1 to 960 digits<br>• When the 0th bit of the subcommand is 1: 1 to 3972 digits <sup>*2</sup>                                                                                                                                                                                                                                                                                                                         |

\*1 It can be specified when the target device for reading is MELSEC iQ-R Series. It cannot be specified when the target device for reading is MELSEC-Q/L series or MELSEC iQ-F series.

\*2 The allowable range is 1 to 3584 when the target device for reading is MELSEC iQ-F series.

## Output label

| No.  | Variable name   | Name                          | Data type                           | Default value | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |
|------|-----------------|-------------------------------|-------------------------------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----|----|----|---|---|---|---|-----|----|----|----|---|---|---|---|-----|----|----|----|---|---|---|---|-----|----|----|----|---|---|---|---|-----|----|----|----|---|---|---|---|-----|----|----|----|---|---|---|---|
| (9)  | o_bENO          | Execution status              | Bit                                 | Off           | On: The execution command is on.<br>Off: The execution command is off.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |
| (10) | o_bOK           | Normal completion             | Bit                                 | Off           | When this label is on, it indicates that the opening of the connection has completed normally.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |
| (11) | o_bErr          | Error completion              | Bit                                 | Off           | When this label is on, it indicates that an error has occurred in the FB.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |
| (12) | o_bReadComplete | Reading completion            | Bit                                 | Off           | When this label is on, it indicates that the reading has completed normally.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |
| (13) | o_uErrId        | Error code                    | Word [Unsigned]/Bit String [16-bit] | 0             | Stores the error code that occurred in the FB.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |
| (14) | o_bUnitErr      | Module error outbreak flag    | Bit                                 | Off           | The on state indicates that a module error has occurred.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |
| (15) | o_uUnitErrId    | Module error code             | Word [Unsigned]/Bit String [16-bit] | 0             | The error code of an error occurred in the module is stored.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |
| (16) | o_uReadData     | Read data storage destination | Word [Unsigned]/Bit String [16-bit] | 0             | <p>Specify the start device number of the device for storing the read data.</p> <ul style="list-style-type: none"><li>When the 0th bit of the subcommand is 0, the device data is read in units of words.</li></ul> <p>Example: When reading the bit device M100 to M115 (one word) in units of words</p> <p>1st word:</p> <table><tr><td>b15</td><td>b8</td><td>b7</td><td>b0</td></tr><tr><td>1</td><td>2</td><td>3</td><td>4</td></tr></table> <p>0 0 0 1 0 0 1 0 0 0 1 1 0 1 0 0<br/>M115 . . . M100</p> <p>Example: When reading the word device D0 to D2 in units of words</p> <p>1st word:</p> <table><tr><td>b15</td><td>b8</td><td>b7</td><td>b0</td></tr><tr><td>1</td><td>2</td><td>3</td><td>4</td></tr></table> <p>D0</p> <p>2nd word:</p> <table><tr><td>b15</td><td>b8</td><td>b7</td><td>b0</td></tr><tr><td>0</td><td>0</td><td>0</td><td>2</td></tr></table> <p>D1</p> <p>3rd word:</p> <table><tr><td>b15</td><td>b8</td><td>b7</td><td>b0</td></tr><tr><td>1</td><td>D</td><td>E</td><td>F</td></tr></table> <p>D2</p> <ul style="list-style-type: none"><li>When the 0th bit of the subcommand is 1, read the device data in units of bits.</li></ul> <p>Example: When reading the bit device M100 to M107 in units of bits</p> <p>1st word:</p> <table><tr><td>b15</td><td>b8</td><td>b7</td><td>b0</td></tr><tr><td>0</td><td>1</td><td>0</td><td>0</td></tr></table> <p>M102 M103 M100 M101</p> <p>2nd word:</p> <table><tr><td>b15</td><td>b8</td><td>b7</td><td>b0</td></tr><tr><td>1</td><td>1</td><td>0</td><td>0</td></tr></table> <p>M106 M107 M104 M105</p> | b15 | b8 | b7 | b0 | 1 | 2 | 3 | 4 | b15 | b8 | b7 | b0 | 1 | 2 | 3 | 4 | b15 | b8 | b7 | b0 | 0 | 0 | 0 | 2 | b15 | b8 | b7 | b0 | 1 | D | E | F | b15 | b8 | b7 | b0 | 0 | 1 | 0 | 0 | b15 | b8 | b7 | b0 | 1 | 1 | 0 | 0 |
| b15  | b8              | b7                            | b0                                  |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |
| 1    | 2               | 3                             | 4                                   |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |
| b15  | b8              | b7                            | b0                                  |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |
| 1    | 2               | 3                             | 4                                   |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |
| b15  | b8              | b7                            | b0                                  |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |
| 0    | 0               | 0                             | 2                                   |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |
| b15  | b8              | b7                            | b0                                  |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |
| 1    | D               | E                             | F                                   |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |
| b15  | b8              | b7                            | b0                                  |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |
| 0    | 1               | 0                             | 0                                   |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |
| b15  | b8              | b7                            | b0                                  |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |
| 1    | 1               | 0                             | 0                                   |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |     |    |    |    |   |   |   |   |

## Public label

| No.      | Variable name            | Name                        | Data type                                         | Range                                 | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |     |    |    |    |          |             |  |              |  |          |             |  |              |  |          |       |  |  |  |          |       |  |  |  |
|----------|--------------------------|-----------------------------|---------------------------------------------------|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----|----|----|----|----------|-------------|--|--------------|--|----------|-------------|--|--------------|--|----------|-------|--|--|--|----------|-------|--|--|--|
| (17)     | pbi_bUseParameters       | Parameter used              | Bit                                               | On, off                               | Specify whether to use the parameter values set by the engineering tool or the following operation parameter ((18) to (20)) values when processing for opening a connection.<br><ul style="list-style-type: none"><li>Off: Performs open processing according to the target device configuration setting made by the engineering tool. (The following operation parameters ((18) to (20)) need not be set. Any settings are ignored if made.)</li><li>On: Performs open processing according to the following operation parameters ((18) to (20)).</li></ul> |  |     |    |    |    |          |             |  |              |  |          |             |  |              |  |          |       |  |  |  |          |       |  |  |  |
| (18)     | pbi_uLocal_Port_No       | Own node port number        | Word [Unsigned]/<br>Bit String [16-bit]           | 1 to 5548, 5570 to 65534              | Specify the port number of the own node.<br>Own node port numbers 1 to 1023 are generally reserved port numbers, and 61440 to 65534 are used by other communication functions. Therefore, port numbers 1024 to 5548 and 5570 to 61439 should be used.                                                                                                                                                                                                                                                                                                        |  |     |    |    |    |          |             |  |              |  |          |             |  |              |  |          |       |  |  |  |          |       |  |  |  |
| (19)     | pbi_uTarget_Port_No      | Destination port number     | Word [Unsigned]/<br>Bit String [16-bit]           | 1 to 65534                            | Specify the destination port number.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |     |    |    |    |          |             |  |              |  |          |             |  |              |  |          |       |  |  |  |          |       |  |  |  |
| (20)     | pbi_u2IP_Address         | IP address of target device | Word [Unsigned]/<br>Bit String [16-bit]<br>(0..1) | 0.0.0.1 to 223.255.255.254            | Specify the IP address of target device.<br><table><tr><td></td><td>b15</td><td>b8</td><td>b7</td><td>b0</td></tr><tr><td>1st word</td><td colspan="2">Third octet</td><td colspan="2">Fourth octet</td></tr><tr><td>2nd word</td><td colspan="2">First octet</td><td colspan="2">Second octet</td></tr></table><br>Example: When IP address is 192.168.3.250<br><table><tr><td>1st word</td><td colspan="4">03FAH</td></tr><tr><td>2nd word</td><td colspan="4">C0A8H</td></tr></table>                                                                     |  | b15 | b8 | b7 | b0 | 1st word | Third octet |  | Fourth octet |  | 2nd word | First octet |  | Second octet |  | 1st word | 03FAH |  |  |  | 2nd word | C0A8H |  |  |  |
|          | b15                      | b8                          | b7                                                | b0                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |     |    |    |    |          |             |  |              |  |          |             |  |              |  |          |       |  |  |  |          |       |  |  |  |
| 1st word | Third octet              |                             | Fourth octet                                      |                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |     |    |    |    |          |             |  |              |  |          |             |  |              |  |          |       |  |  |  |          |       |  |  |  |
| 2nd word | First octet              |                             | Second octet                                      |                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |     |    |    |    |          |             |  |              |  |          |             |  |              |  |          |       |  |  |  |          |       |  |  |  |
| 1st word | 03FAH                    |                             |                                                   |                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |     |    |    |    |          |             |  |              |  |          |             |  |              |  |          |       |  |  |  |          |       |  |  |  |
| 2nd word | C0A8H                    |                             |                                                   |                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |     |    |    |    |          |             |  |              |  |          |             |  |              |  |          |       |  |  |  |          |       |  |  |  |
| (21)     | pbi_uRequestModuleIO No. | Requested module I/O No.    | Word [Unsigned]/<br>Bit String [16-bit]           | 03FFH, 03E0H to 03E3H, 03D0H to 03D3H | Specify the module of the access destination.<br><ul style="list-style-type: none"><li>03FFH: Own station, control CPU</li><li>03E0H: Multiple CPU No.1</li><li>03E1H: Multiple CPU No.2</li><li>03E2H: Multiple CPU No.3</li><li>03E3H: Multiple CPU No.4</li><li>03D0H: Control system CPU</li><li>03D1H: Standby system CPU</li><li>03D2H: System A CPU</li><li>03D3H: System B CPU</li></ul>                                                                                                                                                             |  |     |    |    |    |          |             |  |              |  |          |             |  |              |  |          |       |  |  |  |          |       |  |  |  |

## FB details

### Available device

#### ■CPU module

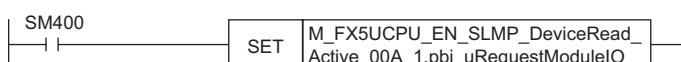
| Target module | Firmware version | Engineering tool                  |
|---------------|------------------|-----------------------------------|
| FX5S          | 1.000 or later   | GX Works3 Version 1.080J or later |
| FX5UJ         | 1.000 or later   | GX Works3 Version 1.060N or later |
| FX5U, FX5UC   | 1.040 or later   | GX Works3 Version 1.040S or later |

### Basic specifications

| Item                           | Description                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Language                       | Ladder diagram                                                                                                                                                                                                                                                                                                                                                                 |
| Number of steps                | 960 steps<br>The number of steps of the FB embedded in the program varies depending on the CPU module used, the input/output definitions, and the option setting of GX Works3. For the option setting of GX Works3, refer to the <a href="#">GX Works3 Operating Manual</a> .                                                                                                  |
| Label usage                    | <ul style="list-style-type: none"> <li>Label: 1.05K points (Word)</li> <li>Latch label: 0K points (Word)</li> </ul> The amount of labels used in the program varies depending on the CPU module used, the device specified in an argument, and the option setting of GX Works3. For the option setting of GX Works3, refer to the <a href="#">GX Works3 Operating Manual</a> . |
| Number of index register usage | <ul style="list-style-type: none"> <li>Index register: 0 points</li> <li>Long index register: 0 points</li> </ul>                                                                                                                                                                                                                                                              |
| File register usage            | 0 points                                                                                                                                                                                                                                                                                                                                                                       |
| FB dependence                  | No dependence                                                                                                                                                                                                                                                                                                                                                                  |
| FB compilation method          | Macro type                                                                                                                                                                                                                                                                                                                                                                     |
| FB operation                   | Pulsed execution (multiple scan execution type)                                                                                                                                                                                                                                                                                                                                |

### Processing

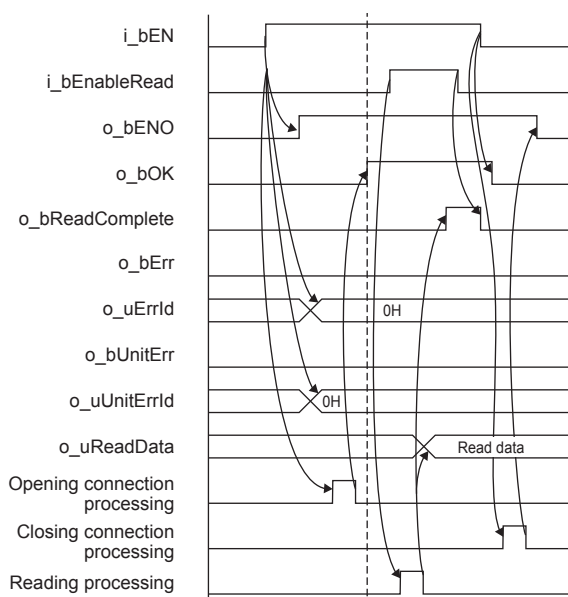
- Perform Active open processing by turning i\_bEN (Execution command) on. When the connection is the open status, the open processing is not executed. After the open processing has completed, o\_bOK (Normal completion) turns on.
- Perform Active close processing by turning i\_bEN (Execution command) off. When the connection is the closed status, the close processing is not executed.
- Execute reading from the external device according to the description set for arguments of input by turning i\_bEnableRead (Reading execution) on, and the data is output to o\_uReadData (Read data storage destination).
- If the set number of device points is out of the range, o\_bErr (error completion) is turned on, and the processing of FB is suspended. Also, the error code 100 (hexadecimal) is stored in o\_uErrId (error code). For the error code, refer to [Page 57 Error code](#).
- The target connection needs to be opened by Active connection of TCP. When the connection is opened while these conditions are not satisfied, o\_bErr (Error completion) turns on, and the FB processing is stopped. The error code 101 (hexadecimal) is stored in o\_uErrId (error code). For the error code, refer to [Page 57 Error code](#).
- When an error has occurred in the open processing, close processing, or information reading processing of the connection, or the reading processing by SLMP, o\_bUnitErr (Module error outbreak flag) turns on. Also, an error code is stored in o\_uUnitErrId (Module error code). For the error code, refer to [Page 57 Error code](#).
- To set or monitor public labels, add a program for setting or monitoring as shown below. Specify a public label as "FB instance"."public label". The following program is designed to assign K1 to the requested module I/O No. (M\_FX5UCPU\_EN\_SLMP\_DeviceRead\_Active\_00A\_1.pbi\_uRequestModuleIO).



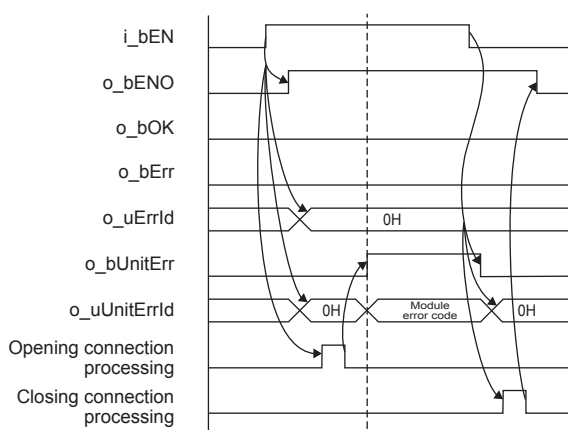


## Timing chart of I/O signals

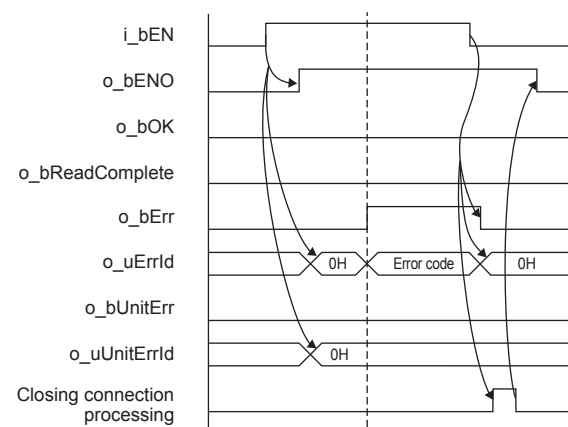
### ■For normal completion



### ■When a module error has occurred



### ■For error completion



## Restrictions or precautions

- This FB does not include the error recovery processing. Program the error recovery processing separately in accordance with your system and the required operation.
- This FB uses SP.SOCCINF instruction, SP.SOCOPEN instruction, SP.SOCCLOSE instruction, SP.SOCRCV instruction, and SP.SOCSND instruction.
- Turn off i\_bEN (Execution command) after o\_bOK (Normal completion), o\_bErr (Error completion), or o\_bUnitErr (Module error outbreak flag) turns on. By turning off i\_bEN (Execution command), o\_bOK (Normal completion), o\_bErr (Error completion), and o\_bUnitErr (Module error outbreak flag) turn off, and then o\_uErrId (Error code) and o\_uUnitErrId (Module error code) are cleared to zero. However, when performing writing during RUN of this FB, o\_bOK (Normal completion), o\_bErr (Error completion), and o\_bUnitErr (Module error outbreak flag) may not be turned on. In that case, turn i\_bEN (Execution command) on again.
- This FB cannot be used in an interrupt program.
- Do not use this FB in programs that are executed only once, such as a subroutine program or FOR-NEXT loop, because i\_bEN (Execution command) cannot be turned off and the normal operation cannot be acquired. Always use this FB in programs that can turn off i\_bEN (Execution command).
- In this FB, access devices (such as link direct device) that are accessed by the extension specification of SLMP cannot be read.
- In this FB, stations in other network cannot be set as the target station.
- For the port of target device where the remote password is set, execute this FB after performing the unlock processing of the remote password. When this FB is executed for the port of target device where the remote password is set, an error will occur.
- The target station must support "Read (command: 0401H)" of SLMP.
- This FB is for communications in binary code only. (Communications using ASCII code cannot be performed.)
- This FB uses TCP communications. Set the protocol setting of the target device to TCP.
- This FB requires circuit settings for all the input labels.

## Parameter setting

For the parameter setting, refer to  Page 22 Parameter setting.

## Performance value

| CPU module                  | Measurement conditions                                       | Performance value |                   | Number of scans |
|-----------------------------|--------------------------------------------------------------|-------------------|-------------------|-----------------|
|                             |                                                              | Processing time   | Maximum scan time |                 |
| FX5S                        | 0th bit of the subcommand: 0<br>Number of device points: 1   | 7.65ms            | 1.24ms            | 12 scans        |
|                             | 0th bit of the subcommand: 0<br>Number of device points: 960 | 14.40ms           | 1.60ms            | 17 scans        |
| FX5UJ                       | 0th bit of the subcommand: 0<br>Number of device points: 1   | 6.35ms            | 0.743ms           | 12 scans        |
|                             | 0th bit of the subcommand: 0<br>Number of device points: 960 | 10.50ms           | 1.30ms            | 25 scans        |
| FX5U, FX5UC <sup>*1,2</sup> | 0th bit of the subcommand: 0<br>Number of device points: 1   | 5.49ms            | 0.477ms           | 15 scans        |
|                             | 0th bit of the subcommand: 0<br>Number of device points: 960 | 7.02ms            | 0.794ms           | 22 scans        |

\*1 When the program capacity is set to 128K steps, the processing speed may be reduced.

\*2 The labels in the standard area are used.

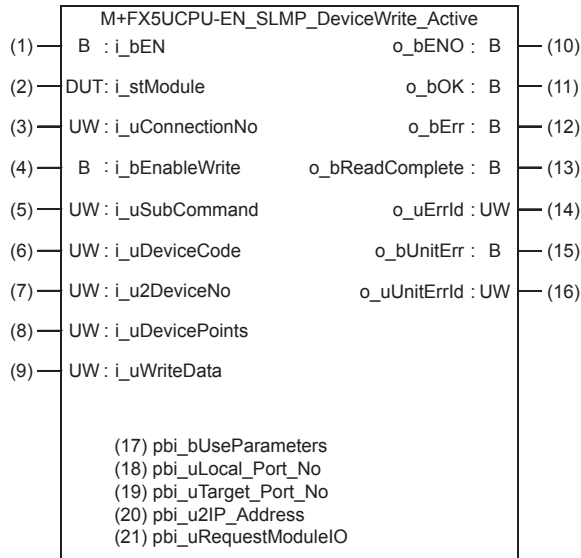
## Error code

| Error code (hexadecimal)        | Description                                                                                                                                                                                                                                                                                                                                                                                                                          | Action                                                                    |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| 100H                            | The setting of i_uDevicePoints (number of device points) is out of the range.<br>The set number of device points is out of the range from 1 to 960 (when the 0th bit of the sub command is 0) or out of the range from 1 to 3972 (when the 0th bit of the sub command is 1).                                                                                                                                                         | After reviewing the setting, re-execute the FB.                           |
| 101H                            | The target connection is opened by any of the following conditions. <ul style="list-style-type: none"> <li>• UDP/IP connection</li> <li>• Unpassive open</li> <li>• Fullpassive open</li> </ul>                                                                                                                                                                                                                                      | Close the target connection, review the setting and execute the FB again. |
| Error code other than the above | Same as the error code caused by the following instruction. Stored in o_uUnitErrId (Module error code). <ul style="list-style-type: none"> <li>• Reading connection information (SP.SOCCINF) instruction</li> <li>• Opening a connection (SP.SOCOPEN) instruction</li> <li>• Closing a connection (SP.SOCCLOSE) instruction</li> <li>• Receive data (SP.SOCRRCV) instruction</li> <li>• Send data (SP.SOCSND) instruction</li> </ul> | Refer to the MELSEC iQ-F FX5 User's Manual (Communication).               |

## 2.8 M+FX5UCPU-EN\_SLMP\_DeviceWrite\_Active (Writing to SLMP target device with Active connection)

### Overview

This FB performs the open/close processing and writing device data of SLMP-compatible devices by Active connection.



### Labels

#### Input label

| No. | Variable name   | Name              | Data type                           | Range                                                    | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-----|-----------------|-------------------|-------------------------------------|----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1) | i_bEN           | Execution command | Bit                                 | On, off                                                  | On: The FB is activated.<br>Off: The FB is not activated.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| (2) | i_stModule      | Module label      | Structure                           | The setting range differs depending on the module label. | Specify the module label of the CPU module.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| (3) | i_uConnectionNo | Connection No.    | Word [Unsigned]/Bit String [16-bit] | 1 to 8                                                   | Specify the connection number for sending data.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| (4) | i_bEnableWrite  | Writing execution | Bit                                 | On, off                                                  | On: Execute writing<br>Off: Not execute writing                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| (5) | i_uSubCommand   | Sub command       | Word [Unsigned]/Bit String [16-bit] | 0 to 3                                                   | Specify the write unit and specification method of a device.<br><div> <div>0th bit</div> Specify whether the device is written in units of words or in units of bits. <ul style="list-style-type: none"> <li>0: In units of words</li> <li>1: In units of bits</li> </ul> </div> <div> <div>1st bit</div> Specify the combination of the number of digits of the device code and start device number of the device to be written. <ul style="list-style-type: none"> <li>0: Specify the device code in 2 digits and the start device number in 6 digits.</li> <li>1: Specify the device code in 4 digits and the start device number in 8 digits.*1</li> </ul> </div> |
| (6) | i_uDeviceCode   | Device code       | Word [Unsigned]/Bit String [16-bit] | —                                                        | Specify the device code of the device to be written in binary code. <ul style="list-style-type: none"> <li>When the 1st bit of the subcommand is 0: 2 digits</li> <li>When the 1st bit of the subcommand is 1: 4 digits</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                    |

\*1 It can be specified when the target device for writing is MELSEC iQ-R series. It cannot be specified when the target device for writing is MELSEC-Q/L series or MELSEC iQ-F series.

\*2 The allowable range is 1 to 3584 when the target device for writing is MELSEC iQ-F series.

## Output label

| No.  | Variable name    | Name                       | Data type                           | Default value | Description                                                                                    |
|------|------------------|----------------------------|-------------------------------------|---------------|------------------------------------------------------------------------------------------------|
| (10) | o_bENO           | Execution status           | Bit                                 | Off           | On: The execution command is on.<br>Off: The execution command is off.                         |
| (11) | o_bOK            | Normal completion          | Bit                                 | Off           | When this label is on, it indicates that the opening of the connection has completed normally. |
| (12) | o_bErr           | Error completion           | Bit                                 | Off           | When this label is on, it indicates that an error has occurred in the FB.                      |
| (13) | o_bWriteComplete | Writing completion         | Bit                                 | Off           | When this label is on, it indicates that the writing has completed normally.                   |
| (14) | o_uErrId         | Error code                 | Word [Unsigned]/Bit String [16-bit] | 0             | Stores the error code that occurred in the FB.                                                 |
| (15) | o_bUnitErr       | Module error outbreak flag | Bit                                 | Off           | The on state indicates that a module error has occurred.                                       |
| (16) | o_uUnitErrId     | Module error code          | Word [Unsigned]/Bit String [16-bit] | 0             | The error code of an error occurred in the module is stored.                                   |

## Public label

| No.  | Variable name        | Name                        | Data type                                  | Range                                 | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|------|----------------------|-----------------------------|--------------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (17) | pbi_bUseParameters   | Parameter used              | Bit                                        | On, off                               | Specify whether to use the parameter values set by the engineering tool or the following operation parameter ((18) to (20)) values when processing for opening a connection.<br>• Off: Performs open processing according to the target device configuration setting made by the engineering tool. (The following operation parameters ((18) to (20)) need not be set. Any settings are ignored if made.)<br>• On: Performs open processing according to the following operation parameters ((18) to (20)). |
| (18) | pbi_uLocal_Port_No   | Own node port number        | Word [Unsigned]/Bit String [16-bit]        | 1 to 5548, 5570 to 65534              | Specify the port number of the own node.<br>Own node port numbers 1 to 1023 are generally reserved port numbers, and 61440 to 65534 are used by other communication functions. Therefore, port numbers 1024 to 5548 and 5570 to 61439 should be used.                                                                                                                                                                                                                                                       |
| (19) | pbi_uTarget_Port_No  | Destination port number     | Word [Unsigned]/Bit String [16-bit]        | 1 to 65534                            | Specify the destination port number.                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| (20) | pbi_u2IP_Address     | IP address of target device | Word [Unsigned]/Bit String [16-bit] (0..1) | 0.0.0.1 to 223.255.255.254            | Specify the IP address of target device.<br><div><div><div>b15b8b7b0</div><div>1st word<div>Third octet</div><div>Fourth octet</div></div><div>2nd word<div>First octet</div><div>Second octet</div></div></div><div>Example: When IP address is 192.168.3.250</div><div><div>1st word<div>03FAH</div></div><div>2nd word<div>C0A8H</div></div></div></div>                                                                                                                                                 |
| (21) | pbi_uRequestModuleIO | Requested module I/O No.    | Word [Unsigned]/Bit String [16-bit]        | 03FFH, 03E0H to 03E3H, 03D0H to 03D3H | Specify the module of the access destination.<br>• 03FFH: Own station, control CPU<br>• 03E0H: Multiple CPU No.1<br>• 03E1H: Multiple CPU No.2<br>• 03E2H: Multiple CPU No.3<br>• 03E3H: Multiple CPU No.4<br>• 03D0H: Control system CPU<br>• 03D1H: Standby system CPU<br>• 03D2H: System A CPU<br>• 03D3H: System B CPU                                                                                                                                                                                  |

## FB details

### Available device

#### ■CPU module

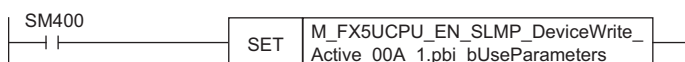
| Target module | Firmware version | Engineering tool                  |
|---------------|------------------|-----------------------------------|
| FX5S          | 1.000 or later   | GX Works3 Version 1.080J or later |
| FX5UJ         | 1.000 or later   | GX Works3 Version 1.060N or later |
| FX5U, FX5UC   | 1.040 or later   | GX Works3 Version 1.040S or later |

### Basic specifications

| Item                           | Description                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Language                       | Ladder diagram                                                                                                                                                                                                                                                                                                                                                                 |
| Number of steps                | 836 steps<br>The number of steps of the FB embedded in the program varies depending on the CPU module used, the input/output definitions, and the option setting of GX Works3. For the option setting of GX Works3, refer to the <a href="#">GX Works3 Operating Manual</a> .                                                                                                  |
| Label usage                    | <ul style="list-style-type: none"> <li>Label: 1.05K points (Word)</li> <li>Latch label: 0K points (Word)</li> </ul> The amount of labels used in the program varies depending on the CPU module used, the device specified in an argument, and the option setting of GX Works3. For the option setting of GX Works3, refer to the <a href="#">GX Works3 Operating Manual</a> . |
| Number of index register usage | <ul style="list-style-type: none"> <li>Index register: 0 points</li> <li>Long index register: 0 points</li> </ul>                                                                                                                                                                                                                                                              |
| File register usage            | 0 points                                                                                                                                                                                                                                                                                                                                                                       |
| FB dependence                  | No dependence                                                                                                                                                                                                                                                                                                                                                                  |
| FB compilation method          | Macro type                                                                                                                                                                                                                                                                                                                                                                     |
| FB operation                   | Pulsed execution (multiple scan execution type)                                                                                                                                                                                                                                                                                                                                |

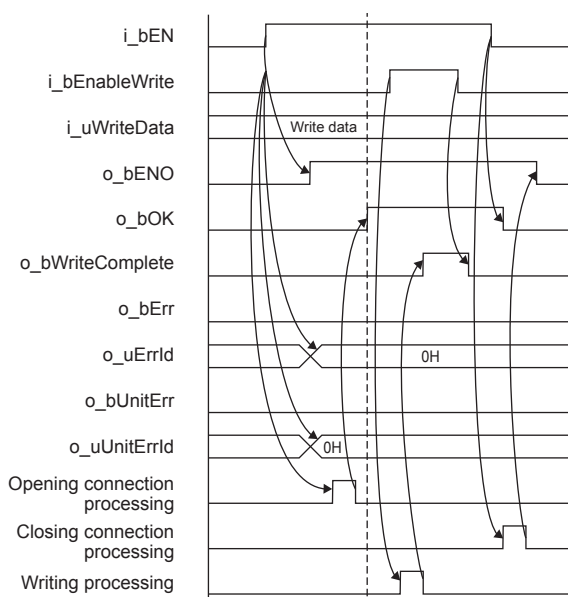
### Processing

- Perform Active open processing by turning i\_bEN (Execution command) on. When the connection is the open status, the open processing is not executed. After the open processing has completed, o\_bOK (Normal completion) turns on.
- Perform Active close processing by turning i\_bEN (Execution command) off. When the connection is the closed status, the close processing is not executed.
- Execute writing to the external device according to the description set for arguments of input by turning i\_bEnableWrite (Writing execution) on. When the writing has completed normally, o\_bWriteComplete (Writing completion) turns on.
- If the set number of device points is out of the range, o\_bErr (error completion) is turned on, and the processing of FB is suspended. Also, the error code 100 (hexadecimal) is stored in o\_uErrId (error code). For the error code, refer to [Page 64 Error code](#).
- The target connection needs to be opened by Active connection of TCP. When the connection is opened while these conditions are not satisfied, o\_bErr (Error completion) turns on, and the FB processing is stopped. The error code 101 (hexadecimal) is stored in o\_uErrId (error code). For the error code, refer to [Page 64 Error code](#).
- When an error has occurred in the open processing, close processing, or information writing processing of the connection, or the writing processing by SLMP, o\_bUnitErr (Module error outbreak flag) turns on. Also, an error code is stored in o\_uUnitErrId (Module error code). For the error code, refer to [Page 64 Error code](#).
- To set or monitor public labels, add a program for setting or monitoring as shown below. Specify a public label as "FB instance"."public label". The following program is designed to turn on the parameters used (M\_FX5UCPU\_EN\_SLMP\_DeviceWrite\_Active\_00A\_1.pbi\_bUseParameters).

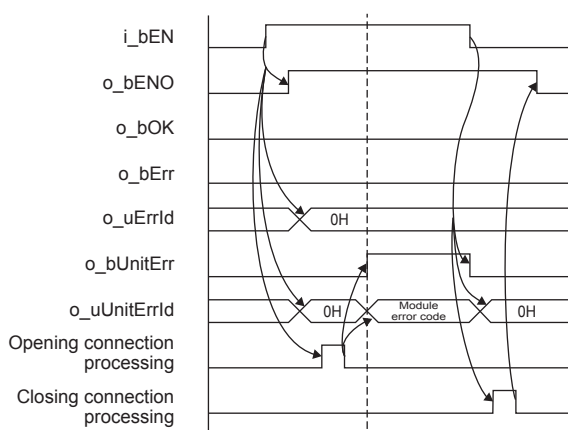


## Timing chart of I/O signals

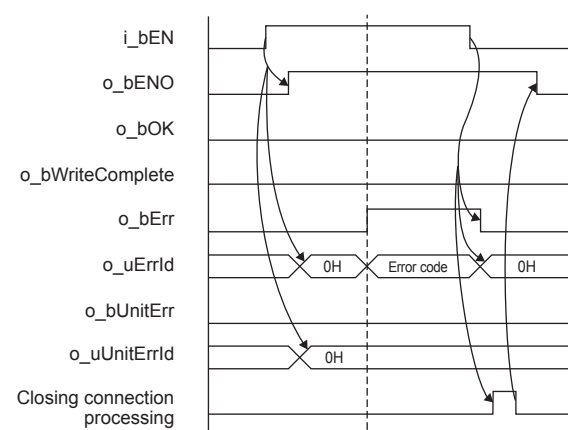
### ■For normal completion



### ■When a module error has occurred



### ■For error completion





## Restrictions or precautions

- This FB does not include the error recovery processing. Program the error recovery processing separately in accordance with your system and the required operation.
- This FB uses SP.SOCCINF instruction, SP.SOCOPEN instruction, SP.SOCCLOSE instruction, SP.SOCRCV instruction, and SP.SOCSND instruction.
- Turn off i\_bEN (Execution command) after o\_bOK (Normal completion), o\_bErr (Error completion), or o\_bUnitErr (Module error outbreak flag) turns on. By turning off i\_bEN (Execution command), o\_bOK (Normal completion), o\_bErr (Error completion), and o\_bUnitErr (Module error outbreak flag) turn off, and then o\_uErrId (Error code) and o\_uUnitErrId (Module error code) are cleared to zero. However, when performing writing during RUN of this FB, o\_bOK (Normal completion), o\_bErr (Error completion), and o\_bUnitErr (Module error outbreak flag) may not be turned on. In that case, turn i\_bEN (Execution command) on again.
- This FB cannot be used in an interrupt program.
- Do not use this FB in programs that are executed only once, such as a subroutine program or FOR-NEXT loop, because i\_bEN (Execution command) cannot be turned off and the normal operation cannot be acquired. Always use this FB in programs that can turn off i\_bEN (Execution command).
- In this FB, access devices (such as link direct device) that are accessed by the extension specification of SLMP cannot be written.
- In this FB, stations in other network cannot be set as the target station.
- For the port of target device where the remote password is set, execute this FB after performing the unlock processing of the remote password. When this FB is executed for the port of target device where the remote password is set, an error will occur.
- The target station must support "Write (command: 1401H)" of SLMP.
- This FB is for communications in binary code only. (Communications using ASCII code cannot be performed.)
- This FB uses TCP communications. Set the protocol setting of the target device to TCP.
- This FB requires circuit settings for all the input labels.

## Parameter setting

For the parameter setting, refer to  Page 22 Parameter setting.

## Performance value

| CPU module                  | Measurement conditions                                       | Performance value |                   | Number of scans |
|-----------------------------|--------------------------------------------------------------|-------------------|-------------------|-----------------|
|                             |                                                              | Processing time   | Maximum scan time |                 |
| FX5S                        | 0th bit of the subcommand: 0<br>Number of device points: 1   | 5.98ms            | 0.769ms           | 15 scans        |
|                             | 0th bit of the subcommand: 0<br>Number of device points: 960 | 12.00ms           | 1.750ms           | 27 scans        |
| FX5UJ                       | 0th bit of the subcommand: 0<br>Number of device points: 1   | 5.98ms            | 0.769ms           | 15 scans        |
|                             | 0th bit of the subcommand: 0<br>Number of device points: 960 | 12.00ms           | 1.750ms           | 27 scans        |
| FX5U, FX5UC <sup>*1,2</sup> | 0th bit of the subcommand: 0<br>Number of device points: 1   | 5.98ms            | 0.769ms           | 15 scans        |
|                             | 0th bit of the subcommand: 0<br>Number of device points: 960 | 12.00ms           | 1.750ms           | 27 scans        |

\*1 When the program capacity is set to 128K steps, the processing speed may be reduced.

\*2 The labels in the standard area are used.

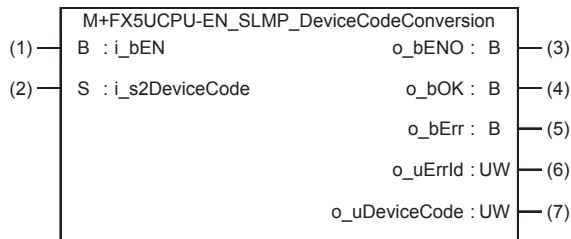
## Error code

| Error code<br>(hexadecimal)     | Description                                                                                                                                                                                                                                                                                                                                                                                                                          | Action                                                                                                                                          |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| 100H                            | The setting of i_uDevicePoints (number of device points) is out of the range.<br>The set number of device points is out of the range from 1 to 960 (when the 0th bit of the sub command is 0) or out of the range from 1 to 3972 (when the 0th bit of the sub command is 1).                                                                                                                                                         | After reviewing the setting, re-execute the FB.                                                                                                 |
| 101H                            | The target connection is opened by any of the following conditions. <ul style="list-style-type: none"> <li>• UDP/IP connection</li> <li>• Unpassive open</li> <li>• Fullpassive open</li> </ul>                                                                                                                                                                                                                                      | Close the target connection, review the setting and execute the FB again.                                                                       |
| Error code other than the above | Same as the error code caused by the following instruction. Stored in o_uUnitErrId (Module error code). <ul style="list-style-type: none"> <li>• Reading connection information (SP.SOCCINF) instruction</li> <li>• Opening a connection (SP.SOCOPEN) instruction</li> <li>• Closing a connection (SP.SOCCLOSE) instruction</li> <li>• Receive data (SP.SOCRRCV) instruction</li> <li>• Send data (SP.SOCSND) instruction</li> </ul> | Refer to the  MELSEC iQ-F FX5 User's Manual (Communication). |

## 2.9 M+FX5UCPU-EN\_SLMP\_DeviceCodeConversion (Reading of device code for SLMP communication FB)

### Overview

This FB calculates the value to be input to the device code for SLMP communication FB.



### Labels

#### Input label

| No. | Variable name  | Name                | Data type                       | Range   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----|----------------|---------------------|---------------------------------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1) | i_bEN          | Execution command   | Bit                             | On, off | On: The FB is activated.<br>Off: The FB is not activated.                                                                                                                                                                                                                                                                                                                                                                                                                          |
| (2) | i_s2DeviceCode | Device code (input) | Character string (32)<br>(0..1) | —       | Stores the device code (string).<br>(Ex.) When inputting the device code "LSTN"<br><div><div></div><div><div>b15b8b7b0</div><div>1st word<div>L</div><div>S</div></div><div>2nd word<div>T</div><div>N</div></div></div><br/>Input K0 in a part which characters are not input.<br/>For details on the device code, refer to the<br/> MELSEC iQ-F FX5 User's Manual<br/>(Communication).</div> |

#### Output label

| No. | Variable name | Name                 | Data type                              | Default value | Description                                                                                        |
|-----|---------------|----------------------|----------------------------------------|---------------|----------------------------------------------------------------------------------------------------|
| (3) | o_bENO        | Execution status     | Bit                                    | Off           | On: The execution command is on.<br>Off: The execution command is off.                             |
| (4) | o_bOK         | Normal completion    | Bit                                    | Off           | When this label is on, it indicates that the conversion of the device code has completed normally. |
| (5) | o_bErr        | Error completion     | Bit                                    | Off           | When this label is on, it indicates that an error has occurred in the FB.                          |
| (6) | o_uErrId      | Error code           | Word [Unsigned]/Bit<br>String [16-bit] | 0             | Stores the error code that occurred in the FB.                                                     |
| (7) | o_uDeviceCode | Device code (output) | Word [Unsigned]/Bit<br>String [16-bit] | 0             | Stores the converted device code.                                                                  |

## FB details

### Available device

#### ■CPU module

| Target module | Firmware version | Engineering tool                  |
|---------------|------------------|-----------------------------------|
| FX5S          | 1.000 or later   | GX Works3 Version 1.080J or later |
| FX5UJ         | 1.000 or later   | GX Works3 Version 1.060N or later |
| FX5U, FX5UC   | 1.040 or later   | GX Works3 Version 1.040S or later |

### Basic specifications

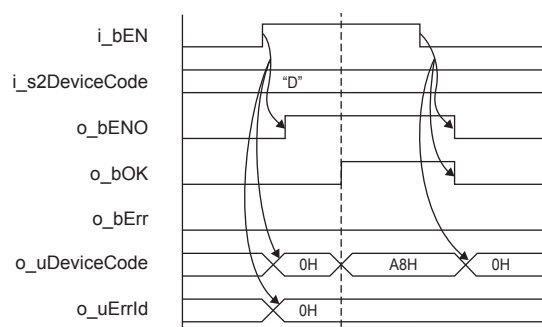
| Item                           | Description                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Language                       | Ladder diagram                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Number of steps                | 580 steps<br>The number of steps of the FB embedded in the program varies depending on the CPU module used, the input/output definitions, and the option setting of GX Works3. For the option setting of GX Works3, refer to the  GX Works3 Operating Manual.                                                                                               |
| Label usage                    | <ul style="list-style-type: none"><li>Label: 0.04K points (Word)</li><li>Latch label: 0K points (Word)</li></ul> The amount of labels used in the program varies depending on the CPU module used, the device specified in an argument, and the option setting of GX Works3. For the option setting of GX Works3, refer to the  GX Works3 Operating Manual. |
| Number of index register usage | <ul style="list-style-type: none"><li>Index register: 0 points</li><li>Long index register: 0 points</li></ul>                                                                                                                                                                                                                                                                                                                               |
| File register usage            | 0 points                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| FB dependence                  | No dependence                                                                                                                                                                                                                                                                                                                                                                                                                                |
| FB compilation method          | Macro type                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| FB operation                   | Pulsed execution (single scan execution type)                                                                                                                                                                                                                                                                                                                                                                                                |

### Processing

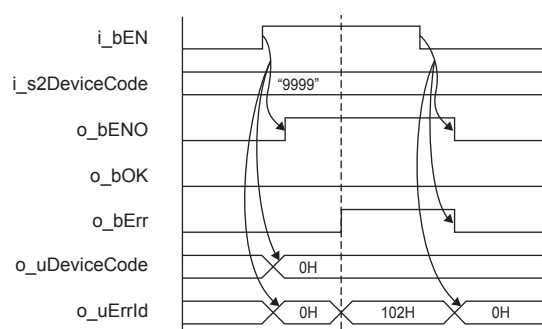
- Convert i\_s2DeviceCode (device code (input)) to the binary code by turning i\_bEN (Execution command) on, and the binary code is output to o\_uDeviceCode (device code (output)).
- When the values of i\_s2DeviceCode (device code (input)) are incorrect, o\_bErr (Error completion) turns on, and the FB processing is stopped. The error code 102 (hexadecimal) is stored in o\_uErrId (error code). For the error code, refer to  Page 68 Error code.

## Timing chart of I/O signals

### ■For normal completion



### ■For error completion



## Restrictions or precautions

- This FB does not include the error recovery processing. Program the error recovery processing separately in accordance with your system and the required operation.
- This FB cannot be used in an interrupt program.
- Do not use this FB in programs that are executed only once, such as a subroutine program or FOR-NEXT loop, because i\_bEN (Execution command) cannot be turned off and the normal operation cannot be acquired. Always use this FB in programs that can turn off i\_bEN (Execution command).

## Parameter setting

No parameters are required to use this FB.

## Example of use

For an example of use, refer to  Page 286 EXAMPLE OF USE.

## Performance value

| CPU module      | Measurement conditions       | Performance value |                   | Number of scans |
|-----------------|------------------------------|-------------------|-------------------|-----------------|
|                 |                              | Processing time   | Maximum scan time |                 |
| FX5S            | When the device code is W    | 0.516ms           | 1.620ms           | 1 scan          |
|                 | When the device code is LSTN | 0.514ms           | 1.560ms           | 1 scan          |
| FX5UJ           | When the device code is W    | 0.461ms           | 1.230ms           | 1 scan          |
|                 | When the device code is LSTN | 0.460ms           | 1.210ms           | 1 scan          |
| FX5U, FX5UC*1*2 | When the device code is W    | 0.372ms           | 0.816ms           | 1 scan          |
|                 | When the device code is LSTN | 0.376ms           | 0.812ms           | 1 scan          |

\*1 When the program capacity is set to 128K steps, the processing speed may be reduced.

\*2 The labels in the standard area are used.

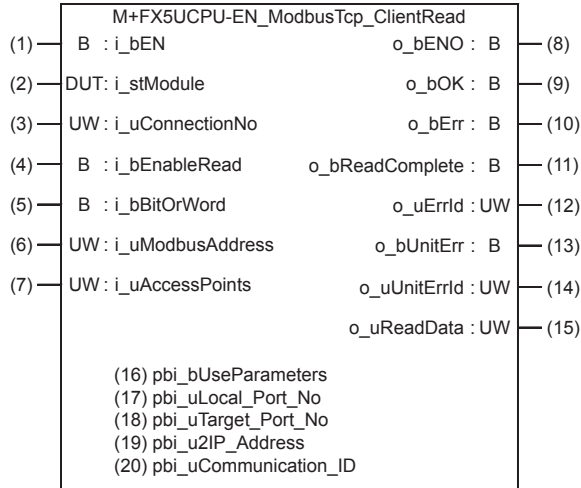
## Error code

| Error code<br>(hexadecimal) | Description                                                           | Action                                                                                                                                                                                                                                                                               |
|-----------------------------|-----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 102H                        | The set values of i_s2DeviceCode (device code (input)) are incorrect. | Set the device code described in the  MELSEC iQ-F FX5 User's Manual (Communication) or  SLMP Reference Manual. |

## 2.10 M+FX5UCPU-EN\_ModbusTcp\_ClientRead (Reading by MODBUS/TCP client)

### Overview

This FB performs the open/close processing and reading by MODBUS/TCP client in socket communication.



### Labels

#### Input label

| No. | Variable name    | Name               | Data type                           | Range                                                    | Description                                                        |
|-----|------------------|--------------------|-------------------------------------|----------------------------------------------------------|--------------------------------------------------------------------|
| (1) | i_bEN            | Execution command  | Bit                                 | On, off                                                  | On: The FB is activated.<br>Off: The FB is not activated.          |
| (2) | i_stModule       | Module label       | Structure                           | The setting range differs depending on the module label. | Specify the module label of the CPU module.                        |
| (3) | i_uConnectionNo  | Connection No.     | Word [Unsigned]/Bit String [16-bit] | 1 to 8                                                   | Specify the connection number for receiving data.                  |
| (4) | i_bEnableRead    | Reading execution  | Bit                                 | On, off                                                  | On: Execute reading<br>Off: Not execute reading                    |
| (5) | i_bBitOrWord     | Bit/word selection | Bit                                 | On, off                                                  | On: Select bit for read device<br>Off: Select word for read device |
| (6) | i_uModbusAddress | MODBUS address     | Word [Unsigned]/Bit String [16-bit] | 0000H to FFFFH                                           | Specify the head MODBUS address which executes reading.            |
| (7) | i_uAccessPoints  | Access points      | Word [Unsigned]/Bit String [16-bit] | 1 to 2000,<br>1 to 125                                   | When selecting bit: 1 to 2000<br>When selecting word: 1 to 125     |

#### Output label

| No.  | Variable name   | Name                       | Data type                           | Default value | Description                                                                                    |
|------|-----------------|----------------------------|-------------------------------------|---------------|------------------------------------------------------------------------------------------------|
| (8)  | o_bENO          | Execution status           | Bit                                 | Off           | On: The execution command is on.<br>Off: The execution command is off.                         |
| (9)  | o_bOK           | Normal completion          | Bit                                 | Off           | When this label is on, it indicates that the opening of the connection has completed normally. |
| (10) | o_bErr          | Error completion           | Bit                                 | Off           | When this label is on, it indicates that an error has occurred in the FB.                      |
| (11) | o_bReadComplete | Reading completion         | Bit                                 | Off           | When this label is on, it indicates that the reading has completed normally.                   |
| (12) | o_uErrId        | Error code                 | Word [Unsigned]/Bit String [16-bit] | 0             | Stores the error code that occurred in the FB.                                                 |
| (13) | o_bUnitErr      | Module error outbreak flag | Bit                                 | Off           | The on state indicates that a module error has occurred.                                       |

| No.  | Variable name | Name                          | Data type                           | Default value | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|------|---------------|-------------------------------|-------------------------------------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (14) | o_uUnitErrId  | Module error code             | Word [Unsigned]/Bit String [16-bit] | 0             | The error code of an error occurred in the module is stored.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| (15) | o_uReadData   | Read data storage destination | Word [Unsigned]/Bit String [16-bit] | 0             | <p>The values read from the server device are stored in word units.</p> <ul style="list-style-type: none"><li>When bit/word selection is on, bit device is read.</li></ul> <p>Example: When reading bit device M100 to M115 (for 1 word)</p> <p>1st word :</p> <div><div>b15b8b7b0</div><table><tr><td>1</td><td>2</td><td>3</td><td>4</td></tr><tr><td>0</td><td>0</td><td>0</td><td>1</td><td>0</td><td>0</td><td>1</td><td>0</td><td>0</td><td>0</td><td>1</td><td>1</td><td>0</td><td>1</td><td>0</td><td>0</td></tr></table><div>M115 . . . M100</div></div> <ul style="list-style-type: none"><li>When bit/word selection is off, word device is read.</li></ul> <p>Example: When reading word device D0 to D2</p> <p>1st word :</p> <div><div>b15b8b7b0</div><table><tr><td>1</td><td>2</td><td>3</td><td>4</td></tr></table><div>D0</div></div> <p>2nd word :</p> <div><div>b15b8b7b0</div><table><tr><td>0</td><td>0</td><td>0</td><td>2</td></tr></table><div>D1</div></div> <p>3rd word :</p> <div><div>b15b8b7b0</div><table><tr><td>1</td><td>D</td><td>E</td><td>F</td></tr></table><div>D2</div></div> | 1 | 2 | 3 | 4 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 2 | 3 | 4 | 0 | 0 | 0 | 2 | 1 | D | E | F |
| 1    | 2             | 3                             | 4                                   |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 0    | 0             | 0                             | 1                                   | 0             | 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 1    | 2             | 3                             | 4                                   |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 0    | 0             | 0                             | 2                                   |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 1    | D             | E                             | F                                   |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

## Public label

| No.      | Variable name         | Name                        | Data type                                  | Range                      | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |     |    |    |    |          |             |  |              |  |          |             |  |              |  |          |       |  |  |  |          |       |  |  |  |
|----------|-----------------------|-----------------------------|--------------------------------------------|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----|----|----|----|----------|-------------|--|--------------|--|----------|-------------|--|--------------|--|----------|-------|--|--|--|----------|-------|--|--|--|
| (16)     | pbi_bUseParameters    | Parameter used              | Bit                                        | On, off                    | Specify whether to use the parameter values set by the engineering tool or the following operation parameter ((17) to (19)) values when processing for opening a connection.<br>• Off: Performs open processing according to the target device configuration setting made by the engineering tool. (The following operation parameters ((17) to (19)) need not be set. Any settings are ignored if made.)<br>• On: Performs open processing according to the following operation parameters ((17) to (19)). |  |     |    |    |    |          |             |  |              |  |          |             |  |              |  |          |       |  |  |  |          |       |  |  |  |
| (17)     | pbi_uLocal_Port_No    | Own node port number        | Word [Unsigned]/Bit String [16-bit]        | 1 to 5548, 5570 to 65534   | Specify the port number of the own node.<br>Own node port numbers 1 to 1023 are generally reserved port numbers, and 61440 to 65534 are used by other communication functions. Therefore, port numbers 1024 to 5548 and 5570 to 61439 should be used.                                                                                                                                                                                                                                                       |  |     |    |    |    |          |             |  |              |  |          |             |  |              |  |          |       |  |  |  |          |       |  |  |  |
| (18)     | pbi_uTarget_Port_No   | Destination port number     | Word [Unsigned]/Bit String [16-bit]        | 1 to 65534                 | Specify the destination port number.                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |     |    |    |    |          |             |  |              |  |          |             |  |              |  |          |       |  |  |  |          |       |  |  |  |
| (19)     | pbi_u2IP_Address      | IP address of target device | Word [Unsigned]/Bit String [16-bit] (0..1) | 0.0.0.1 to 223.255.255.254 | Specify the IP address of target device.<br><table><tr><td></td><td>b15</td><td>b8</td><td>b7</td><td>b0</td></tr><tr><td>1st word</td><td colspan="2">Third octet</td><td colspan="2">Fourth octet</td></tr><tr><td>2nd word</td><td colspan="2">First octet</td><td colspan="2">Second octet</td></tr></table><br>Example: When IP address is 192.168.3.250<br><table><tr><td>1st word</td><td colspan="4">03FAH</td></tr><tr><td>2nd word</td><td colspan="4">C0A8H</td></tr></table>                    |  | b15 | b8 | b7 | b0 | 1st word | Third octet |  | Fourth octet |  | 2nd word | First octet |  | Second octet |  | 1st word | 03FAH |  |  |  | 2nd word | C0A8H |  |  |  |
|          | b15                   | b8                          | b7                                         | b0                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |     |    |    |    |          |             |  |              |  |          |             |  |              |  |          |       |  |  |  |          |       |  |  |  |
| 1st word | Third octet           |                             | Fourth octet                               |                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |     |    |    |    |          |             |  |              |  |          |             |  |              |  |          |       |  |  |  |          |       |  |  |  |
| 2nd word | First octet           |                             | Second octet                               |                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |     |    |    |    |          |             |  |              |  |          |             |  |              |  |          |       |  |  |  |          |       |  |  |  |
| 1st word | 03FAH                 |                             |                                            |                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |     |    |    |    |          |             |  |              |  |          |             |  |              |  |          |       |  |  |  |          |       |  |  |  |
| 2nd word | C0A8H                 |                             |                                            |                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |     |    |    |    |          |             |  |              |  |          |             |  |              |  |          |       |  |  |  |          |       |  |  |  |
| (20)     | pbi_uCommunication_ID | Communication ID            | Word [Unsigned]/Bit String [16-bit]        | 0000H to FFFFH             | Client uses this label for matching with response message from the server.                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |     |    |    |    |          |             |  |              |  |          |             |  |              |  |          |       |  |  |  |          |       |  |  |  |



## FB details

### Available device

#### ■CPU module

| Target module | Firmware version | Engineering tool                  |
|---------------|------------------|-----------------------------------|
| FX5S          | 1.000 or later   | GX Works3 Version 1.080J or later |
| FX5UJ         | 1.000 or later   | GX Works3 Version 1.060N or later |
| FX5U, FX5UC   | 1.040 or later   | GX Works3 Version 1.045X or later |

### Basic specifications

| Item                           | Description                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Language                       | Ladder diagram                                                                                                                                                                                                                                                                                                                                                                 |
| Number of steps                | 813 steps<br>The number of steps of the FB embedded in the program varies depending on the CPU module used, the input/output definitions, and the option setting of GX Works3. For the option setting of GX Works3, refer to the <a href="#">GX Works3 Operating Manual</a> .                                                                                                  |
| Label usage                    | <ul style="list-style-type: none"> <li>Label: 0.18K points (Word)</li> <li>Latch label: 0K points (Word)</li> </ul> The amount of labels used in the program varies depending on the CPU module used, the device specified in an argument, and the option setting of GX Works3. For the option setting of GX Works3, refer to the <a href="#">GX Works3 Operating Manual</a> . |
| Number of index register usage | <ul style="list-style-type: none"> <li>Index register: 0 points</li> <li>Long index register: 0 points</li> </ul>                                                                                                                                                                                                                                                              |
| File register usage            | 0 points                                                                                                                                                                                                                                                                                                                                                                       |
| FB dependence                  | No dependence                                                                                                                                                                                                                                                                                                                                                                  |
| FB compilation method          | Macro type                                                                                                                                                                                                                                                                                                                                                                     |
| FB operation                   | Pulsed execution (multiple scan execution type)                                                                                                                                                                                                                                                                                                                                |

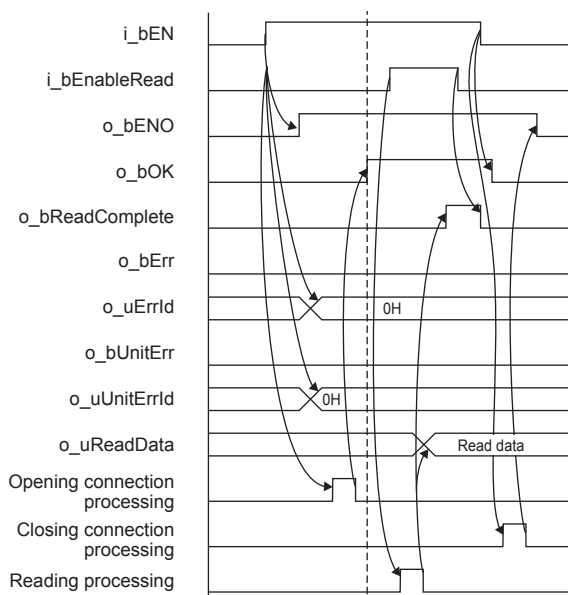
### Processing

- Perform Active open processing by turning i\_bEN (Execution command) on. When the connection is the open status, the open processing is not executed. After the open processing has completed, o\_bOK (Normal completion) turns on.
- Perform Active close processing by turning i\_bEN (Execution command) off. When the connection is the closed status, the close processing is not executed.
- Execute reading from the external device according to the description set for arguments of input by turning i\_bEnableRead (Reading execution) on, and the data is output to o\_uReadData (Read data storage destination).
- When the setting values of i\_uAccessPoints (Access points) are out of range, o\_bErr (Error completion) turns on, and the FB processing are stopped. Also, the error code 100 (hexadecimal) is stored in o\_uErrId (error code). For the error code, refer to [Page 74 Error code](#).
- The target connection needs to be opened by Active connection of TCP. When the connection is opened while these conditions are not satisfied, o\_bErr (Error completion) turns on, and the FB processing is stopped. The error code 101 (hexadecimal) is stored in o\_uErrId (error code). For the error code, refer to [Page 74 Error code](#).
- When an error has occurred in the reading processing of the open/close/information of the connection, or the reading processing by MODBUS/TCP client, o\_bUnitErr (Module error outbreak flag) turns on. Also, an error code is stored in o\_uUnitErrId (Module error code). For the error code, refer to [Page 74 Error code](#).
- Set the module parameters in GX Works3 in accordance with the connected equipment and system. For the module parameters, refer to [Page 22 Parameter setting](#).
- To set or monitor public labels, add a program for setting or monitoring as shown below. Specify a public label as "FB instance"."public label". The following program is designed to turn on the parameters used (M\_FX5UCPU\_EN\_ModbusTcp\_ClientRead\_00A\_1.pbi\_bUseParameters).

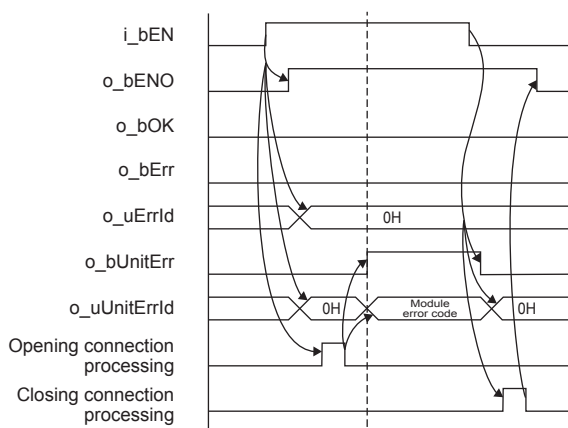


## Timing chart of I/O signals

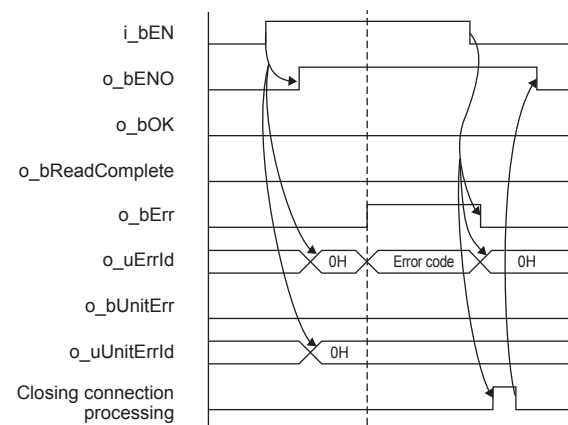
### ■For normal completion



### ■When a module error has occurred



### ■For error completion



## Restrictions or precautions

- This FB does not include the error recovery processing. Program the error recovery processing separately in accordance with your system and the required operation.
- This FB uses SP.SOCCINF instruction, SP.SOCOPEN instruction, SP.SOCCLOSE instruction, SP.SOCRCV instruction, and SP.SOCSND instruction.
- Turn off i\_bEN (Execution command) after o\_bOK (Normal completion), o\_bReadComplete (Reading completion), o\_bErr (Error completion), or o\_bUnitErr (Module error outbreak flag) turns on. By turning off i\_bEN (Execution command), o\_bOK (Normal completion), o\_bReadComplete (Reading completion), o\_bErr (Error completion), and o\_bUnitErr (Module error outbreak flag) turn off, and then o\_uErrId (Error code) and o\_uUnitErrId (Module error code) are cleared to zero. However, when performing writing during RUN of this FB, o\_bOK (Normal completion), o\_bReadComplete (Reading completion), o\_bErr (Error completion), and o\_bUnitErr (Module error outbreak flag) may not be turned on. In that case, turn i\_bEN (Execution command) on again.
- This FB cannot be used in an interrupt program.
- Do not use this FB in programs that are executed only once, such as a subroutine program or FOR-NEXT loop, because i\_bEN (Execution command) cannot be turned off and the normal operation cannot be acquired. Always use this FB in programs that can turn off i\_bEN (Execution command).
- In this FB, stations in other network cannot be set as the target station.
- This FB is for communications in binary code only. (Communications using ASCII code cannot be performed.)
- This FB uses TCP communications. Set the protocol setting of the target device to TCP.
- This FB requires circuit settings for all the input labels.

## Parameter setting

For the parameter setting, refer to  Page 22 Parameter setting.

## Performance value

| CPU module                   | Measurement conditions                                           | Performance value |                   | Number of scans |
|------------------------------|------------------------------------------------------------------|-------------------|-------------------|-----------------|
|                              |                                                                  | Processing time   | Maximum scan time |                 |
| FX5S                         | Only opening                                                     | 5.47ms            | 0.913ms           | 11 scans        |
|                              | Reading processing of access points with one word after opening  | 5.72ms            | 0.746ms           | 12 scans        |
|                              | Reading processing of access points with 125 words after opening | 7.24ms            | 2.950ms           | 13 scans        |
| FX5UJ                        | Only opening                                                     | 5.26ms            | 0.757ms           | 14 scans        |
|                              | Reading processing of access points with one word after opening  | 5.72ms            | 0.746ms           | 12 scans        |
|                              | Reading processing of access points with 125 words after opening | 7.16ms            | 1.770ms           | 15 scans        |
| FX5U, FX5UC <sup>*1</sup> *2 | Only opening                                                     | 5.03ms            | 0.404ms           | 14 scans        |
|                              | Reading processing of access points with one word after opening  | 4.84ms            | 0.410ms           | 16 scans        |
|                              | Reading processing of access points with 125 words after opening | 6.92ms            | 1.510ms           | 14 scans        |

\*1 When the program capacity is set to 128K steps, the processing speed may be reduced.

\*2 The labels in the standard area are used.

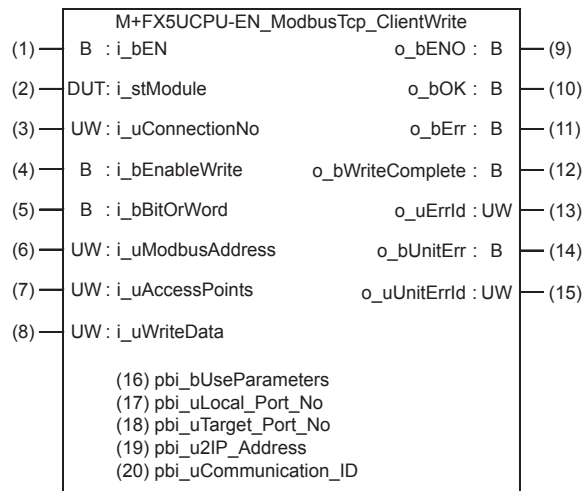
## Error code

| Error code (hexadecimal)        | Description                                                                                                                                                                                                                                                                                                                                                                                                                         | Action                                                                                                                                          |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| 100H                            | The setting values of i_uAccessPoints (Access points) are out of range. Access points are set to the value other than 1 to 2000 (when bit is selected), or 1 to 125 (when word is selected).                                                                                                                                                                                                                                        | After reviewing the setting, re-execute the FB.                                                                                                 |
| 101H                            | The target connection is opened by any of the following conditions. <ul style="list-style-type: none"> <li>• UDP/IP connection</li> <li>• Unpassive open</li> <li>• Fullpassive open</li> </ul>                                                                                                                                                                                                                                     | Close the target connection, review the setting and execute the FB again.                                                                       |
| Error code other than the above | Same as the error code caused by the following instruction. Stored in o_uUnitErrId (Module error code). <ul style="list-style-type: none"> <li>• Reading connection information (SP.SOCCINF) instruction</li> <li>• Opening a connection (SP.SOCOPEN) instruction</li> <li>• Closing a connection (SP.SOCCLOSE) instruction</li> <li>• Receive data (SP.SOCRCV) instruction</li> <li>• Send data (SP.SOCSND) instruction</li> </ul> | Refer to the  MELSEC iQ-F FX5 User's Manual (Communication). |

## 2.11 M+FX5UCPU-EN\_ModbusTcp\_ClientWrite (Writing by MODBUS/TCP client)

### Overview

This FB performs the open/close processing and writing by MODBUS/TCP client in socket communication.



### Labels

#### Input label

| No. | Variable name    | Name               | Data type                           | Range                                                    | Description                                                          |
|-----|------------------|--------------------|-------------------------------------|----------------------------------------------------------|----------------------------------------------------------------------|
| (1) | i_bEN            | Execution command  | Bit                                 | On, off                                                  | On: The FB is activated.<br>Off: The FB is not activated.            |
| (2) | i_stModule       | Module label       | Structure                           | The setting range differs depending on the module label. | Specify the module label of the CPU module.                          |
| (3) | i_uConnectionNo  | Connection No.     | Word [Unsigned]/Bit String [16-bit] | 1 to 8                                                   | Specify the connection number for sending data.                      |
| (4) | i_bEnableWrite   | Writing execution  | Bit                                 | On, off                                                  | On: Execute writing<br>Off: Not execute writing                      |
| (5) | i_bBitOrWord     | Bit/word selection | Bit                                 | On, off                                                  | On: Select bit for write device<br>Off: Select word for write device |
| (6) | i_uModbusAddress | MODBUS address     | Word [Unsigned]/Bit String [16-bit] | 0000H to FFFFH                                           | Specify the head MODBUS address which executes writing.              |
| (7) | i_uAccessPoints  | Access points      | Word [Unsigned]/Bit String [16-bit] | 1 to 1968,<br>1 to 123                                   | When selecting bit: 1 to 1968<br>When selecting word: 1 to 123       |

| No. | Variable name | Name                           | Data type                           | Range | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|-----|---------------|--------------------------------|-------------------------------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (8) | i_uWriteData  | Write data storage destination | Word [Unsigned]/Bit String [16-bit] | —     | <p>The values to be written to the server device are stored in word units.</p> <ul style="list-style-type: none"><li>When bit/word selection is on, the values are written to bit device.</li></ul> <p>Example: When writing to bit device M100 to M115 (for 1 word)</p> <p>1st word :</p> <div><div>b15b8b7b0</div><table><tr><td>1</td><td>2</td><td>3</td><td>4</td></tr></table><div>...</div><table><tr><td>0</td><td>0</td><td>0</td><td>1</td><td>0</td><td>0</td><td>1</td><td>0</td><td>0</td><td>0</td><td>1</td><td>1</td><td>0</td><td>1</td><td>0</td><td>0</td></tr></table><div>M115 . . . M100</div></div> <ul style="list-style-type: none"><li>When bit/word selection is off, the values are written to word device.</li></ul> <p>Example: When writing to word device D0 to D2</p> <p>1st word :</p> <div><div>b15b8b7b0</div><table><tr><td>1</td><td>2</td><td>3</td><td>4</td></tr></table><div>D0</div></div> <p>2nd word :</p> <div><div>b15b8b7b0</div><table><tr><td>0</td><td>0</td><td>0</td><td>2</td></tr></table><div>D1</div></div> <p>3rd word :</p> <div><div>b15b8b7b0</div><table><tr><td>1</td><td>D</td><td>E</td><td>F</td></tr></table><div>D2</div></div> | 1 | 2 | 3 | 4 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 2 | 3 | 4 | 0 | 0 | 0 | 2 | 1 | D | E | F |
| 1   | 2             | 3                              | 4                                   |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 0   | 0             | 0                              | 1                                   | 0     | 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 1   | 2             | 3                              | 4                                   |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 0   | 0             | 0                              | 2                                   |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 1   | D             | E                              | F                                   |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

## Output label

| No.  | Variable name    | Name                       | Data type                           | Default value | Description                                                                                    |
|------|------------------|----------------------------|-------------------------------------|---------------|------------------------------------------------------------------------------------------------|
| (9)  | o_bENO           | Execution status           | Bit                                 | Off           | On: The execution command is on.<br>Off: The execution command is off.                         |
| (10) | o_bOK            | Normal completion          | Bit                                 | Off           | When this label is on, it indicates that the opening of the connection has completed normally. |
| (11) | o_bErr           | Error completion           | Bit                                 | Off           | When this label is on, it indicates that an error has occurred in the FB.                      |
| (12) | o_bWriteComplete | Writing completion         | Bit                                 | Off           | When this label is on, it indicates that the writing has completed normally.                   |
| (13) | o_uErrId         | Error code                 | Word [Unsigned]/Bit String [16-bit] | 0             | Stores the error code that occurred in the FB.                                                 |
| (14) | o_bUnitErr       | Module error outbreak flag | Bit                                 | Off           | The on state indicates that a module error has occurred.                                       |
| (15) | o_uUnitErrId     | Module error code          | Word [Unsigned]/Bit String [16-bit] | 0             | The error code of an error occurred in the module is stored.                                   |

## Public label

| No.  | Variable name         | Name                        | Data type                                  | Range                      | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------|-----------------------|-----------------------------|--------------------------------------------|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (16) | pbi_bUseParameters    | Parameter used              | Bit                                        | On, off                    | Specify whether to use the parameter values set by the engineering tool or the following operation parameter ((17) to (19)) values when processing for opening a connection.<br><ul style="list-style-type: none"><li>• Off: Performs open processing according to the target device configuration setting made by the engineering tool. (The following operation parameters ((17) to (19)) need not be set. Any settings are ignored if made.)</li><li>• On: Performs open processing according to the following operation parameters ((17) to (19)).</li></ul> |
| (17) | pbi_uLocal_Port_No    | Own node port number        | Word [Unsigned]/Bit String [16-bit]        | 1 to 5548, 5570 to 65534   | Specify the port number of the own node.<br>Own node port numbers 1 to 1023 are generally reserved port numbers, and 61440 to 65534 are used by other communication functions. Therefore, port numbers 1024 to 5548 and 5570 to 61439 should be used.                                                                                                                                                                                                                                                                                                            |
| (18) | pbi_uTarget_Port_No   | Destination port number     | Word [Unsigned]/Bit String [16-bit]        | 1 to 65534                 | Specify the destination port number.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| (19) | pbi_u2IP_Address      | IP address of target device | Word [Unsigned]/Bit String [16-bit] (0..1) | 0.0.0.1 to 223.255.255.254 | Specify the IP address of target device.<br><div><div>b15b8b7b0</div><div>1st word<div>Third octetFourth octet</div></div><div>2nd word<div>First octetSecond octet</div></div><div>Example: When IP address is 192.168.3.250</div><div><div>1st word<div>03FAH</div></div><div>2nd word<div>C0A8H</div></div></div></div>                                                                                                                                                                                                                                       |
| (20) | pbi_uCommunication_ID | Communication ID            | Word [Unsigned]/Bit String [16-bit]        | 0000H to FFFFH             | Client uses this label for matching with response message from the server.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

## FB details

### Available device

#### ■CPU module

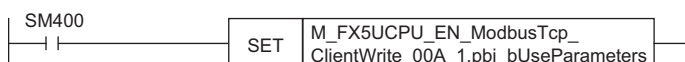
| Target module | Firmware version | Engineering tool                  |
|---------------|------------------|-----------------------------------|
| FX5S          | 1.000 or later   | GX Works3 Version 1.080J or later |
| FX5UJ         | 1.000 or later   | GX Works3 Version 1.060N or later |
| FX5U, FX5UC   | 1.040 or later   | GX Works3 Version 1.045X or later |

### Basic specifications

| Item                           | Description                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Language                       | Ladder diagram                                                                                                                                                                                                                                                                                                                                                                 |
| Number of steps                | 883 steps<br>The number of steps of the FB embedded in the program varies depending on the CPU module used, the input/output definitions, and the option setting of GX Works3. For the option setting of GX Works3, refer to the <a href="#">GX Works3 Operating Manual</a> .                                                                                                  |
| Label usage                    | <ul style="list-style-type: none"> <li>Label: 0.18K points (Word)</li> <li>Latch label: 0K points (Word)</li> </ul> The amount of labels used in the program varies depending on the CPU module used, the device specified in an argument, and the option setting of GX Works3. For the option setting of GX Works3, refer to the <a href="#">GX Works3 Operating Manual</a> . |
| Number of index register usage | <ul style="list-style-type: none"> <li>Index register: 0 points</li> <li>Long index register: 0 points</li> </ul>                                                                                                                                                                                                                                                              |
| File register usage            | 0 points                                                                                                                                                                                                                                                                                                                                                                       |
| FB dependence                  | No dependence                                                                                                                                                                                                                                                                                                                                                                  |
| FB compilation method          | Macro type                                                                                                                                                                                                                                                                                                                                                                     |
| FB operation                   | Pulsed execution (multiple scan execution type)                                                                                                                                                                                                                                                                                                                                |

### Processing

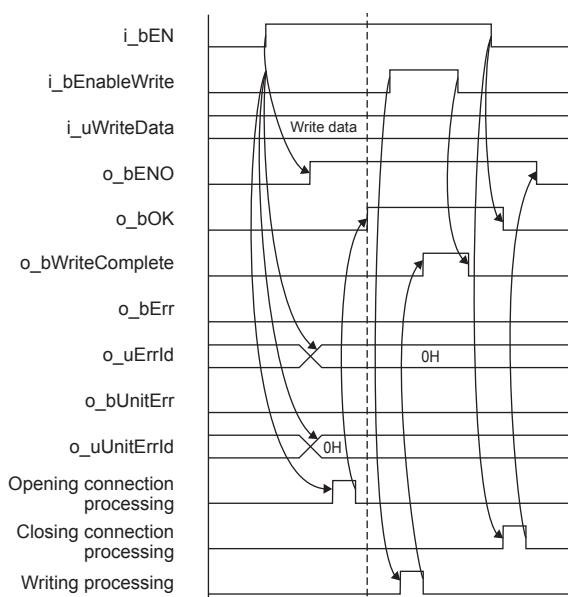
- Perform Active open processing by turning i\_bEN (Execution command) on. When the connection is the open status, the open processing is not executed. After the open processing has completed, o\_bOK (Normal completion) turns on.
- Perform Active close processing by turning i\_bEN (Execution command) off. When the connection is the closed status, the close processing is not executed.
- Execute writing to the external device according to the description set for arguments of input by turning i\_bEnableWrite (Writing execution) on. When the writing has completed normally, o\_bWriteComplete (Writing completion) turns on.
- When the setting values of i\_uAccessPoints (Access points) are out of range, o\_bErr (Error completion) turns on, and the FB processing are stopped. Also, the error code 100 (hexadecimal) is stored in o\_uErrId (error code). For the error code, refer to [Page 81 Error code](#).
- The target connection needs to be opened by Active connection of TCP. When the connection is opened while these conditions are not satisfied, o\_bErr (Error completion) turns on, and the FB processing is stopped. The error code 101 (hexadecimal) is stored in o\_uErrId (error code). For the error code, refer to [Page 81 Error code](#).
- When an error has occurred in the writing processing of the open/close/information of the connection, or the writing processing by MODBUS/TCP client, o\_bUnitErr (Module error outbreak flag) turns on. Also, an error code is stored in o\_uUnitErrId (Module error code). For the error code, refer to [Page 81 Error code](#).
- Set the module parameters in GX Works3 in accordance with the connected equipment and system. For the module parameters, refer to [Page 22 Parameter setting](#).
- To set or monitor public labels, add a program for setting or monitoring as shown below. Specify a public label as "FB instance"."public label". The following program is designed to turn on the parameters used (M\_FX5UCPU\_EN\_ModbusTcp\_ClientWrite\_00A\_1.pbi\_bUseParameters).



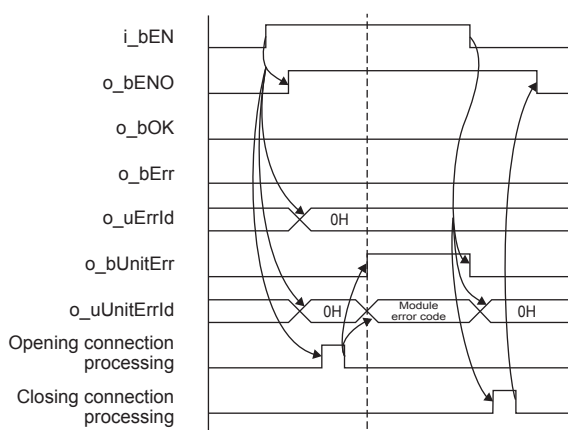


## Timing chart of I/O signals

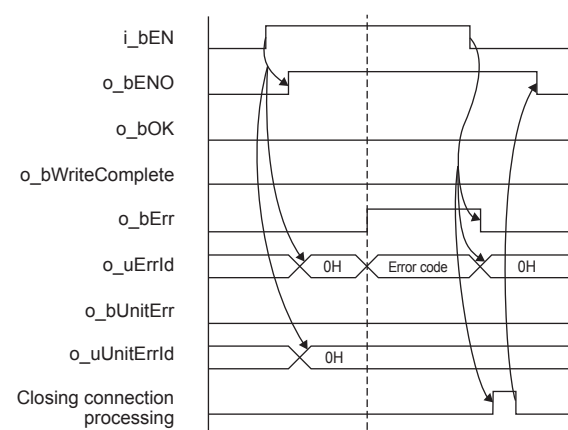
### ■For normal completion



### ■When a module error has occurred



### ■For error completion



## Restrictions or precautions

- This FB does not include the error recovery processing. Program the error recovery processing separately in accordance with your system and the required operation.
- This FB uses SP.SOCCINF instruction, SP.SOCOPEN instruction, SP.SOCCLOSE instruction, SP.SOCRCV instruction, and SP.SOCSND instruction.
- Turn off i\_bEN (Execution command) after o\_bOK (Normal completion), o\_bWriteComplete (Writing completion), o\_bErr (Error completion), or o\_bUnitErr (Module error outbreak flag) turns on. By turning off i\_bEN (Execution command), o\_bOK (Normal completion), o\_bWriteComplete (Writing completion), o\_bErr (Error completion), and o\_bUnitErr (Module error outbreak flag) turn off, and then o\_uErrId (Error code) and o\_uUnitErrId (Module error code) are cleared to zero. However, when performing writing during RUN of this FB, o\_bOK (Normal completion), o\_bWriteComplete (Writing completion), o\_bErr (Error completion), and o\_bUnitErr (Module error outbreak flag) may not be turned on. In that case, turn i\_bEN (Execution command) on again.
- This FB cannot be used in an interrupt program.
- Do not use this FB in programs that are executed only once, such as a subroutine program or FOR-NEXT loop, because i\_bEN (Execution command) cannot be turned off and the normal operation cannot be acquired. Always use this FB in programs that can turn off i\_bEN (Execution command).
- In this FB, stations in other network cannot be set as the target station.
- This FB is for communications in binary code only. (Communications using ASCII code cannot be performed.)
- This FB uses TCP communications. Set the protocol setting of the target device to TCP.
- This FB requires circuit settings for all the input labels.

## Parameter setting

For the parameter setting, refer to  Page 22 Parameter setting.

## Performance value

| CPU module                  | Measurement conditions                                           | Performance value |                   | Number of scans |
|-----------------------------|------------------------------------------------------------------|-------------------|-------------------|-----------------|
|                             |                                                                  | Processing time   | Maximum scan time |                 |
| FX5S                        | Only opening                                                     | 29.60ms           | 10.300ms          | 2 scans         |
|                             | Writing processing of access points with one bit after opening   | 5.450ms           | 0.428ms           | 14 scans        |
|                             | Writing processing of access points with 1968 bits after opening | 39.00ms           | 12.600ms          | 4 scans         |
| FX5UJ                       | Only opening                                                     | 29.60ms           | 10.300ms          | 2 scans         |
|                             | Writing processing of access points with one bit after opening   | 5.450ms           | 0.428ms           | 14 scans        |
|                             | Writing processing of access points with 1968 bits after opening | 39.00ms           | 12.600ms          | 4 scans         |
| FX5U, FX5UC <sup>*1*2</sup> | Only opening                                                     | 29.60ms           | 10.300ms          | 2 scans         |
|                             | Writing processing of access points with one bit after opening   | 5.450ms           | 0.428ms           | 14 scans        |
|                             | Writing processing of access points with 1968 bits after opening | 39.00ms           | 12.600ms          | 4 scans         |

\*1 When the program capacity is set to 128K steps, the processing speed may be reduced.

\*2 The labels in the standard area are used.

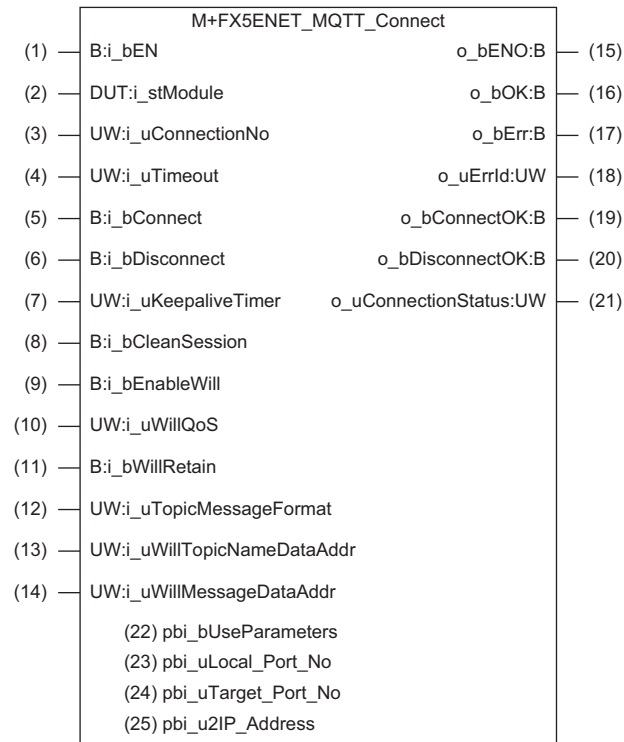
## Error code

| Error code (hexadecimal)        | Description                                                                                                                                                                                                                                                                                                                                                                                                                          | Action                                                                                                                                          |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| 100H                            | The setting values of i_uAccessPoints (Access points) are out of range. Access points are set to the value other than 1 to 1968 (when bit is selected), or 1 to 123 (when word is selected).                                                                                                                                                                                                                                         | After reviewing the setting, re-execute the FB.                                                                                                 |
| 101H                            | The target connection is opened by any of the following conditions. <ul style="list-style-type: none"> <li>• UDP/IP connection</li> <li>• Unpassive open</li> <li>• Fullpassive open</li> </ul>                                                                                                                                                                                                                                      | Close the target connection, review the setting and execute the FB again.                                                                       |
| Error code other than the above | Same as the error code caused by the following instruction. Stored in o_uUnitErrId (Module error code). <ul style="list-style-type: none"> <li>• Reading connection information (SP.SOCCINF) instruction</li> <li>• Opening a connection (SP.SOCOPEN) instruction</li> <li>• Closing a connection (SP.SOCCLOSE) instruction</li> <li>• Receive data (SP.SOCRVCV) instruction</li> <li>• Send data (SP.SOCSND) instruction</li> </ul> | Refer to the  MELSEC iQ-F FX5 User's Manual (Communication). |

## 2.12 M+FX5ENET\_MQTT\_Connect (MQTT connection establishment)

### Overview

This FB controls the connection with an MQTT broker (server) to establish a TCP or TLS session on the CONNECT instruction or to disconnect the session on the DISCONNECT instruction.



# Labels

2

## Input label

| No.  | Variable name            | Name                                                                            | Data type                               | Range                                                    | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------|--------------------------|---------------------------------------------------------------------------------|-----------------------------------------|----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1)  | i_bEN                    | Execution command                                                               | Bit                                     | On, off                                                  | On: The FB is activated.<br>Off: The FB is not activated.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| (2)  | i_stModule               | Module label                                                                    | Structure                               | The setting range differs depending on the module label. | Specify the module for which the FB is to be executed.<br>Specify the module label of the modules.<br>(Example: FX5ENET_1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| (3)  | i_uConnectionNo          | Connection No.                                                                  | Word [Unsigned]/<br>Bit String [16-bit] | 1 to 32                                                  | Specify the number of the connection to be used.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| (4)  | i_uTimeout               | Timeout setting                                                                 | Word [Unsigned]/<br>Bit String [16-bit] | 1 to 65535                                               | Specify the connection timeout (s).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| (5)  | i_bConnect               | CONNECT instruction                                                             | Bit                                     | On, off                                                  | Turn on this label when establishing a TCP or TLS session.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| (6)  | i_bDisconnect            | DISCONNECT instruction                                                          | Bit                                     | On, off                                                  | Turn on this label when disconnecting a TCP or TLS session.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| (7)  | i_uKeepaliveTimer        | keepalive timer                                                                 | Word [Unsigned]/<br>Bit String [16-bit] | 0 to 65535                                               | Specify the KeepAlive timer (s) to an MQTT broker.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| (8)  | i_bCleanSession          | Clean session setting                                                           | Bit                                     | On, off                                                  | Select the operation when the communication is disconnected once and it is reconnected while the FX5-ENET (MQTT client) is communicating with the MQTT broker.<br><ul style="list-style-type: none"> <li>Off: Stored</li> <li>On: Not stored</li> </ul> <p>■ The operation when off (Stored) is selected<br/>Since the MQTT broker stores Topic to which the FX5-ENET has subscribed before the communication disconnection, the message that the MQTT broker has received while the communications are disconnected can be received when the FX5-ENET is connected again.<br/>QoS 0 message may not be received by the server and service.</p> <p>■ The operation when on (Not stored) is selected<br/>The message that the MQTT broker has received while the communications are disconnected cannot be received when the FX5-ENET is connected again.</p> |
| (9)  | i_bEnableWill            | Enable Will                                                                     | Bit                                     | On, off                                                  | On: Will is enabled.<br>Off: Will is disabled.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| (10) | i_uWillQoS               | Will QoS                                                                        | Word [Unsigned]/<br>Bit String [16-bit] | 0 to 2                                                   | Specify the QoS to be used for sending Will.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| (11) | i_bWillRetain            | Will Retain                                                                     | Bit                                     | On, off                                                  | Specify the Retain flag of Will messages.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| (12) | i_uTopicMessageFormat    | Will topic/message format<br>(ASCII/Unicode string* <sup>1</sup> specification) | Word [Unsigned]/<br>Bit String [16-bit] | 0 to 1                                                   | Specify the character code of Will topic/message.* <sup>2</sup><br><ul style="list-style-type: none"> <li>0: ASCII is used for Will topic/message.</li> <li>1: The Unicode string*<sup>1</sup> is used for Will topic/message.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| (13) | i_uWillTopicNameDataAddr | Will topic name data start address                                              | Word [Unsigned]/<br>Bit String [16-bit] | —                                                        | Specify the start address of the file register (R) in which the Will message topic name is stored.* <sup>3</sup><br><p>■ Maximum number of characters</p> <ul style="list-style-type: none"> <li>For ASCII: 511 characters (excluding NULL at the end)</li> <li>For Unicode: 255 characters (excluding NULL at the end)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| (14) | i_uWillMessageDataAddr   | Will message data start address                                                 | Word [Unsigned]/<br>Bit String [16-bit] | —                                                        | Specify the start address of the file register (R) in which the Will message content is stored.* <sup>4</sup><br><p>■ Maximum number of characters</p> <ul style="list-style-type: none"> <li>For ASCII: 500 characters (excluding NULL at the end)</li> <li>For Unicode: 250 characters (excluding NULL at the end)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

\*<sup>1</sup> For GX Works3, the Unicode string is UTF-16.

\*<sup>2</sup> The mixture of the ASCII code and Unicode strings cannot be specified.

\*<sup>3</sup> The Will topic name data area is treated as 511 bytes (excluding NULL).

\*<sup>4</sup> The Will message data area is treated as 500 bytes (excluding NULL).

## Output label

| No.  | Variable name       | Name                     | Data type                           | Default value | Description                                                                                                                                                                                                                                                                                    |
|------|---------------------|--------------------------|-------------------------------------|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (15) | o_bENO              | Execution status         | Bit                                 | Off           | The execution status of the FB is output.<br>• On: In execution<br>• Off: Not in execution                                                                                                                                                                                                     |
| (16) | o_bOK               | Normal completion        | Bit                                 | Off           | When this label is on, it indicates that the FB has been processed normally.                                                                                                                                                                                                                   |
| (17) | o_bErr              | Error completion         | Bit                                 | Off           | When this label is on, it indicates that an error has occurred in the FB.                                                                                                                                                                                                                      |
| (18) | o_uErrId            | Error code               | Word [Unsigned]/Bit String [16-bit] | 0             | Stores the error code that occurred in the FB.                                                                                                                                                                                                                                                 |
| (19) | o_bConnectOK        | Establishment completion | Bit                                 | Off           | When this label is on, it indicates that Connect has been processed normally.                                                                                                                                                                                                                  |
| (20) | o_bDisconnectOK     | Disconnection completion | Bit                                 | Off           | When this label is on, it indicates that Disconnect has been processed normally.                                                                                                                                                                                                               |
| (21) | o_uConnectionStatus | Communication status     | Word [Unsigned]/Bit String [16-bit] | 0             | Monitors the FX5-ENET status buffer memory. When i_bEN (Execution command) is on, the status is constantly output.<br>For details, refer to the following.<br> MELSEC iQ-F FX5 Ethernet Module User's Manual |

## Public label

| No.  | Variable name       | Name                        | Data type                                  | Range                      | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------|---------------------|-----------------------------|--------------------------------------------|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (22) | pbi_bUseParameters  | Parameter used              | Bit                                        | On, off                    | Specify whether to use the parameter values set by the engineering tool or the following operation parameter ((23) to (25)) values when processing for opening a connection.<br><ul style="list-style-type: none"><li>Off: Performs open processing according to the target device configuration setting made by the engineering tool. (The following operation parameters ((23) to (25)) need not be set. Any settings are ignored if made.)</li><li>On: Performs open processing according to the following operation parameters ((23) to (25)).</li></ul> |
| (23) | pbi_uLocal_Port_No  | Own node port number        | Word [Unsigned]/Bit String [16-bit]        | 1 to 5548, 5570 to 65534   | Specify the port number of the own node.<br>Own node port numbers 1 to 1023 are generally reserved port numbers, and 61440 to 65534 are used by other communication functions. Therefore, port numbers 1024 to 5548 and 5570 to 61439 should be used.                                                                                                                                                                                                                                                                                                        |
| (24) | pbi_uTarget_Port_No | Destination port number     | Word [Unsigned]/Bit String [16-bit]        | 1 to 65534                 | Specify the destination port number.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| (25) | pbi_u2IP_Address    | IP address of target device | Word [Unsigned]/Bit String [16-bit] (0..1) | 0.0.0.1 to 223.255.255.255 | <div>Specify the IP address of the target device.</div> <div><div><div>b15b8b7b0</div><div>1st word<div>Third octetFourth octet</div></div><div>2nd word<div>First octetSecond octet</div></div></div><div>Example: When IP address is 192.168.3.250</div><div><div>1st word<div>03FAH</div></div><div>2nd word<div>C0A8H</div></div></div></div>                                                                                                                                                                                                            |

## FB details

### Available device

#### ■Ethernet module

| Target module | Firmware version | Engineering tool                  |
|---------------|------------------|-----------------------------------|
| FX5-ENET      | 1.200 or later   | GX Works3 Version 1.095Z or later |

#### ■CPU module

| Target module | Firmware version | Engineering tool                  |
|---------------|------------------|-----------------------------------|
| FX5U, FX5UC   | 1.280 or later   | GX Works3 Version 1.095Z or later |
| FX5UJ         | 1.040 or later   | GX Works3 Version 1.095Z or later |

### Basic specifications

| Item                           | Description                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Number of steps                | 845 steps<br>The number of steps of the FB embedded in the program varies depending on the CPU module used, the input/output definitions, and the option setting of GX Works3. For the option settings of GX Works3, refer to the following.<br> GX Works3 Operating Manual                                                |
| Label usage                    | • Label: 1.67K points (Word)<br>• Latch label: 0 points (Word)<br>The amount of labels used in the program varies depending on the CPU module used, the device specified in an argument, and the option setting of GX Works3. For the option settings of GX Works3, refer to the following.<br> GX Works3 Operating Manual |
| Number of index register usage | • Index register: 1 point (Device number: Z9)<br>• Long index register: 0 points<br>When using an interrupt program, do not use the index register within the interrupt program.                                                                                                                                                                                                                            |
| File register usage            | 0 points                                                                                                                                                                                                                                                                                                                                                                                                    |
| FB dependence                  | No dependence                                                                                                                                                                                                                                                                                                                                                                                               |
| FB compilation method          | Macro type                                                                                                                                                                                                                                                                                                                                                                                                  |
| FB operation                   | Always executed                                                                                                                                                                                                                                                                                                                                                                                             |

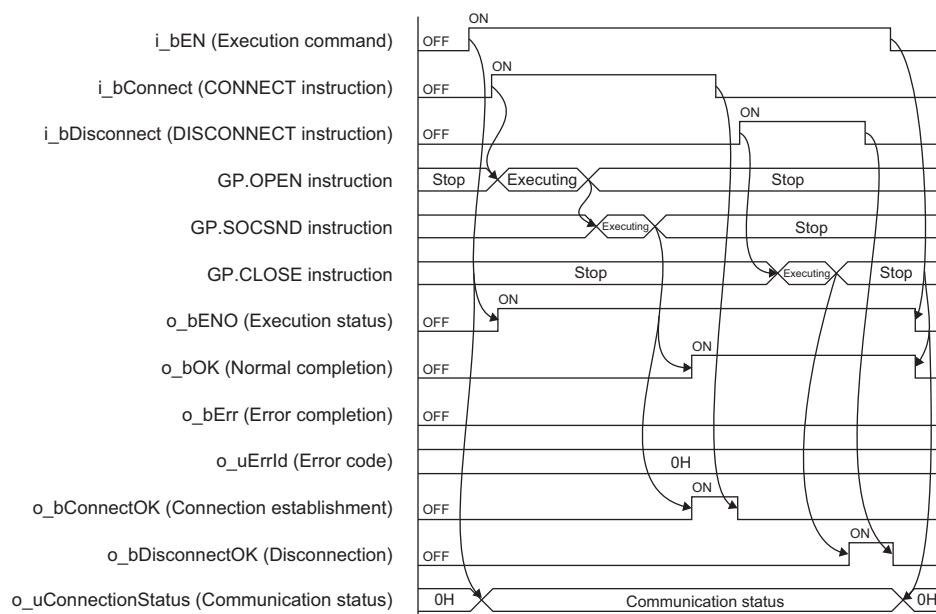
### Processing

- After i\_bEN (Execution command) turns on, a session is established by turning on i\_bConnect (CONNECT instruction) and is disconnected by turning on i\_bDisconnect (DISCONNECT instruction).
- After i\_bEN (Execution command) turns on, o\_bOK (Normal completion) turns on when the first session is completely established or disconnected.
- When the session is completely established, o\_bConnectOK (Establishment completion) turns on. When i\_bConnect (CONNECT instruction) turns off from on, o\_bSendOK (Establishment completion) turns off.
- When the session is completely disconnected, o\_bDisconnectOK (Disconnection completion) turns on. When i\_bDisconnect (DISCONNECT instruction) turns off from on, o\_bDisconnectOK (Disconnection completion) turns off.
- If an error occurs during establishment/disconnection of the session, o\_bErr (Error completion) turns on and the error code is stored in o\_uErrId (Error code).
- While i\_bEN (Execution command) is on, o\_uConnectionStatus (Communication status) returns the buffer memory session status (Un\G108975) value.
- Set the module parameters in GX Works3 in accordance with the connected equipment and system. For the module parameters, refer to the following.

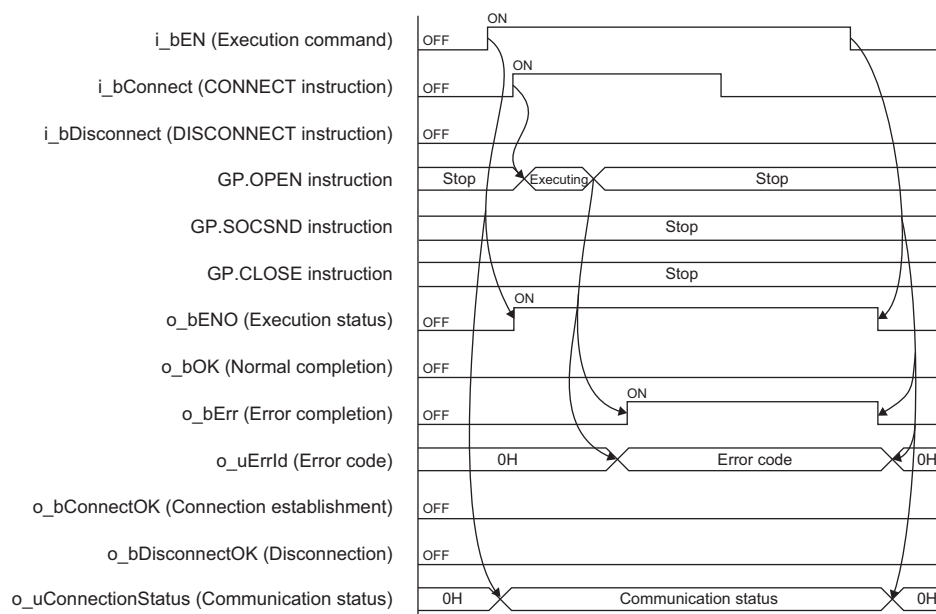
 Page 87 Parameter setting

## Timing chart of I/O signals

### ■For normal completion (Starting when i\_bConnect or i\_bDisconnect turns on)



### ■For error completion





## Restrictions or precautions

- This FB does not include the error recovery processing. Program the error recovery processing separately in accordance with your system and the required operation.
- This FB uses the following instructions.  
GP.OPEN instruction  
GP.SOCSND instruction  
GP.CLOSE instruction
- Do not use this FB in programs that are executed only once, such as a subroutine program or FOR-NEXT loop, because i\_bEN (Execution command) cannot be turned off and the normal operation cannot be acquired. Always use this FB in programs that can turn off i\_bEN (Execution command).
- This FB requires circuit settings for all the input labels.
- This FB cannot be used in an interrupt program.
- The i\_uKeepaliveTimer (keepalive timer) value does not always apply. Some connection target devices may be disconnected before the time set with i\_uKeepaliveTimer (keepalive timer).
- Do not concurrently turn on i\_bConnect (CONNECT instruction) and i\_bDisconnect (DISCONNECT instruction).
- When using more than one of this FB, do not concurrently turn on i\_bConnect (CONNECT instruction) or i\_bDisconnect (DISCONNECT instruction) of the more than one FBs.
- Do not concurrently execute this FB and any other Ethernet module dedicated instruction or any FB including an Ethernet module dedicated instruction. For example, do not concurrently turn on the GP.SOCSND instruction and i\_bConnect (CONNECT instruction) or i\_bDisconnect (DISCONNECT instruction) of this FB, or do not concurrently turn on i\_bEN (Execution command) of M+FX5ENET\_MQTT\_Receive (Receiving of MQTT data) FB and i\_bConnect (CONNECT instruction) or i\_bDisconnect (DISCONNECT instruction) of this FB.

## Parameter setting

Set the target device connection configuration on MQTT communication by using GX Works3.

 Navigation window ⇒ [Parameter] ⇒ [Module Information] ⇒ [FX5-ENET] ⇒ [Basic Settings] ⇒ [External Device Configuration]

In the target device connection configuration setting, set the protocol to the TLS connection or TCP connection. Set the certificate by using Certificate Configuration Tool for FX5-ENET. For details on the setting method, refer to the following.

 MELSEC iQ-F FX5 Ethernet Module User's Manual

## Performance value

| CPU module                    | Input label | Performance value |                   | Number of scans |
|-------------------------------|-------------|-------------------|-------------------|-----------------|
|                               |             | Processing time   | Maximum scan time |                 |
| FX5UJ <sup>*1</sup>           | CONNECT     | 509.000ms         | 1.340ms           | 1219 scans      |
|                               | DISCONNECT  | 180.000ms         | 1.410ms           | 259 scans       |
| FX5U, FX5UC <sup>*1*2*3</sup> | CONNECT     | 493.000ms         | 1.140ms           | 1425 scans      |
|                               | DISCONNECT  | 180.000ms         | 1.250ms           | 305 scans       |

\*1 A personal computer in the same LAN is connected via a hub.

\*2 When the program capacity is set to 128K steps, the processing speed may be reduced.

\*3 The labels in the standard area are used.

## Error code

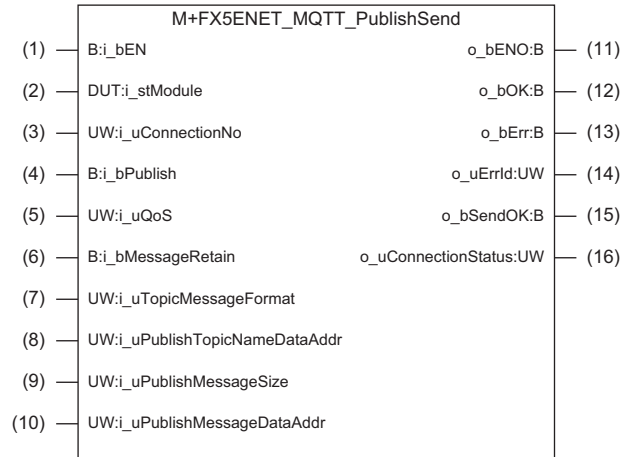
| Error code (hexadecimal)    | Description                                                                                                                                                                                                                  | Action                                                                                                                                                                                                            |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 100H                        | The i_uConnectionNo (Connection No.) setting value is out of range.                                                                                                                                                          | After reviewing the setting, re-execute the FB.                                                                                                                                                                   |
| 101H                        | Contention has occurred between i_bConnect (CONNECT instruction) and i_bDisconnect (DISCONNECT instruction).                                                                                                                 | After reviewing the setting, re-execute the FB.                                                                                                                                                                   |
| 102H                        | The i_uWillQoS (WillQoS) setting value is out of range.                                                                                                                                                                      | After reviewing the setting, re-execute the FB.                                                                                                                                                                   |
| 103H                        | The i_uTimeout (Timeout value) setting value is out of range.                                                                                                                                                                | After reviewing the setting, re-execute the FB.                                                                                                                                                                   |
| 104H                        | The i_uTopicMessageFormat (Will topic/message format) setting value is out of range.                                                                                                                                         | After reviewing the setting, re-execute the FB.                                                                                                                                                                   |
| 120H                        | The i_uWillTopicNameDataAddr (Will topic name data start address) topic name is not set.                                                                                                                                     | After setting the topic name with one or more characters, re-execute the FB.                                                                                                                                      |
| 200H                        | i_bEN (Execution command) was turned off during the processing.                                                                                                                                                              | Maintain the on state of the execution command until normal completion, error completion, establishment completion, or disconnection completion turns on.*1                                                       |
| 210H                        | There is an overlapping part in the following two areas. Otherwise, the range of file register areas is exceeded. <ul style="list-style-type: none"> <li>• Will topic data area</li> <li>• Will message data area</li> </ul> | Set the following two areas so that no overlap occurs. <ul style="list-style-type: none"> <li>• Will topic data area</li> <li>• Will message data area</li> </ul> After reviewing the setting, re-execute the FB. |
| Latest error code (session) | Same as the latest error code stored in the buffer memory.                                                                                                                                                                   | Refer to the following.<br> MELSEC iQ-F FX5 Ethernet Module User's Manual                                                        |

\*1 The output will be only for a single scan.

## 2.13 M+FX5ENET\_MQTT\_PublishSend (Sending of MQTT data)

### Overview

This FB sends a message to an MQTT broker (server).



### Labels

#### Input label

| No. | Variable name         | Name                                             | Data type                               | Range                                                    | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----|-----------------------|--------------------------------------------------|-----------------------------------------|----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1) | i_bEN                 | Execution command                                | Bit                                     | On, off                                                  | On: The FB is activated.<br>Off: The FB is not activated.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| (2) | i_stModule            | Module label                                     | Structure                               | The setting range differs depending on the module label. | Specify the module for which the FB is to be executed.<br>Specify the module label of the modules.<br>(Example: FX5ENET_1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| (3) | i_uConnectionNo       | Connection No.                                   | Word [Unsigned]/<br>Bit String [16-bit] | 1 to 32                                                  | Specify the number of the connection to be used.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| (4) | i_bPublish            | PUBLISH instruction (Rise detection)             | Bit                                     | On, off                                                  | Sends data on the PUBLISH command.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| (5) | i_uQoS                | QoS                                              | Word [Unsigned]/<br>Bit String [16-bit] | 0 to 2                                                   | Specify the QoS level to be used for send.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| (6) | i_bMessageRetain      | Retain send message                              | Bit                                     | On, off                                                  | Specify the Retain flag of the PUBLISH command.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| (7) | i_uTopicMessageFormat | Topic/message format <sup>*1</sup> specification | Word [Unsigned]/<br>Bit String [16-bit] | 0 to 3                                                   | Specify the character code of topic/message.<br>• 0 (b1 = 0, b0 = 0): ASCII is used for topic/message.<br>• 1 (b1 = 0, b0 = 1): The Unicode string <sup>*1</sup> is used for topic/message.<br>• 2 (b1 = 1, b0 = 0): ASCII is used for topic and binary is used for message.<br>• 3 (b1 = 1, b0 = 1): The Unicode string <sup>*1</sup> is used for topic and binary is used for message.<br><div><div>b15</div><div>0</div><div>b8 b7</div><div>0</div><div>b2 b1 b0</div><div>(1)(2)</div></div><br>• (1): Binary is specified for message.<br>• (2): ASCII/UTF-16 is specified for topic/message. |

| No.  | Variable name                 | Name                                  | Data type                               | Range      | Description                                                                                                                                                                                                                                                                                                            |
|------|-------------------------------|---------------------------------------|-----------------------------------------|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (8)  | i_uPublishTopicNameDataAddr   | Publish topic name data start address | Word [Unsigned]/<br>Bit String [16-bit] | —          | Specify the start address of the file register (R) in which the send message topic name is stored.* <sup>4</sup><br>■Maximum number of characters<br>• For ASCII: 511 characters (excluding NULL at the end)<br>• For Unicode: 255 characters (excluding NULL at the end)<br>ASCII/Unicode string* <sup>1</sup>        |
| (9)  | i_uPublishSendMessageSize     | Publish message size                  | Word [Unsigned]/<br>Bit String [16-bit] | 0 to 32768 | Specify the send message size.<br>When 0 is specified, the send message size is automatically set.* <sup>2</sup> <sup>3</sup><br>If the number of characters reaches the maximum length, manually set NULL at the position of the maximum length + 1 in the send message.<br>Therefore, secure a space of 32768 bytes. |
| (10) | i_uPublishSendMessageDataAddr | Publish message data start address    | Word [Unsigned]/<br>Bit String [16-bit] | —          | Specify the start address of the file register (R) in which the send message content is stored.<br>Binary/ASCII/Unicode string* <sup>1</sup>                                                                                                                                                                           |

\*1 For GX Works3, the Unicode string is UTF-16.

\*2 The Publish message data area is treated as 32768 bytes (excluding NULL).

\*3 When i\_uTopicMessageFormat (Topic/message format) is binary, this area is treated as 0 byte data.

\*4 The Publish topic name data area is treated as 511 bytes (excluding NULL).

## Output label

| No.  | Variable name       | Name                 | Data type                              | Default value | Description                                                                                                                                                                                                                                                                                      |
|------|---------------------|----------------------|----------------------------------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (11) | o_bENO              | Execution status     | Bit                                    | Off           | The execution status of the FB is output.<br>• On: In execution<br>• Off: Not in execution                                                                                                                                                                                                       |
| (12) | o_bOK               | Normal completion    | Bit                                    | Off           | When this label is on, it indicates that the FB has been processed normally.                                                                                                                                                                                                                     |
| (13) | o_bErr              | Error completion     | Bit                                    | Off           | When this label is on, it indicates that an error has occurred in the FB.                                                                                                                                                                                                                        |
| (14) | o_uErrId            | Error code           | Word [Unsigned]/Bit<br>String [16-bit] | 0             | Stores the error code that occurred in the FB.                                                                                                                                                                                                                                                   |
| (15) | o_bSendOK           | Send completion      | Bit                                    | Off           | When this label is on, it indicates that send or response receive on the PUBLISH command has been processed normally.                                                                                                                                                                            |
| (16) | o_uConnectionStatus | Communication status | Word [Unsigned]/Bit<br>String [16-bit] | 0             | Monitors the FX5-ENET status buffer memory. When i_bEN (Execution command) is on, the status is constantly output.<br>For details, refer to the following.<br> MELSEC iQ-F FX5 Ethernet Module User's Manual |

## FB details

### Available device

#### ■Ethernet module

| Target module | Firmware version | Engineering tool                  |
|---------------|------------------|-----------------------------------|
| FX5-ENET      | 1.200 or later   | GX Works3 Version 1.095Z or later |

#### ■CPU module

| Target module | Firmware version | Engineering tool                  |
|---------------|------------------|-----------------------------------|
| FX5U, FX5UC   | 1.280 or later   | GX Works3 Version 1.095Z or later |
| FX5UJ         | 1.040 or later   | GX Works3 Version 1.095Z or later |

### Basic specifications

| Item                           | Description                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Number of steps                | 828 steps<br>The number of steps of the FB embedded in the program varies depending on the CPU module used, the input/output definitions, and the option setting of GX Works3. For the option settings of GX Works3, refer to the following.<br> GX Works3 Operating Manual                                                                                              |
| Label usage                    | <ul style="list-style-type: none"><li>Label: 2.40K points (Word)</li><li>Latch label: 0 points (Word)</li></ul> The amount of labels used in the program varies depending on the CPU module used, the device specified in an argument, and the option setting of GX Works3. For the option settings of GX Works3, refer to the following.<br> GX Works3 Operating Manual |
| Number of index register usage | <ul style="list-style-type: none"><li>Index register: 1 point (Device number: Z9)</li><li>Long index register: 0 points</li></ul> When using an interrupt program, do not use the index register within the interrupt program.                                                                                                                                                                                                                            |
| File register usage            | 0 points                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| FB dependence                  | No dependence                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| FB compilation method          | Macro type                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| FB operation                   | Always executed                                                                                                                                                                                                                                                                                                                                                                                                                                           |

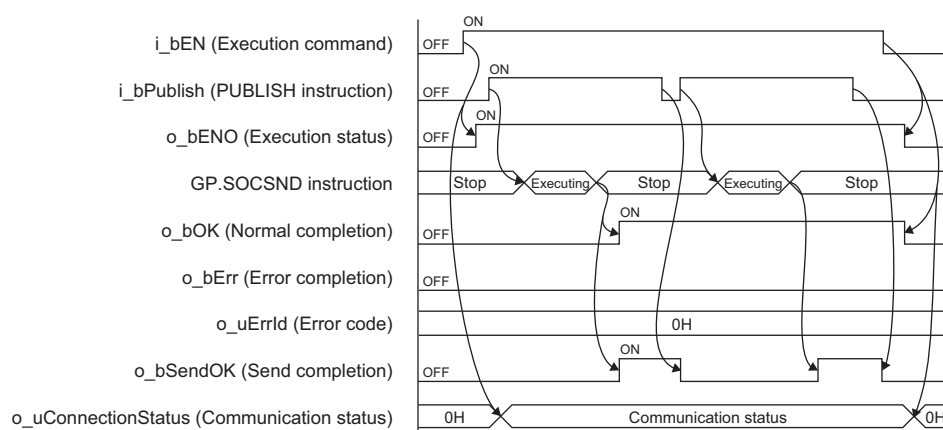
### Processing

- After i\_bEN (Execution command) turns on, the PUBLISH command is sent by turning on i\_bPublish (PUBLISH instruction).
- If i\_bPublish (PUBLISH instruction) turns on before the turning on of i\_bEN (Execution command), the PUBLISH command is not sent.
- After i\_bEN (Execution command) turns on, o\_bOK (Normal completion) turns on when the first PUBLISH command is completed.
- When the PUBLISH command is completed, o\_bSendOK (Send completion) turns on. When i\_bPublish (PUBLISH instruction) turns off from on, o\_bSendOK (Send completion) turns off.
- If an error occurs during the PUBLISH command execution, o\_bErr (Error completion) turns on and the error code is stored in o\_uErrId (Error code).
- While i\_bEN (Execution command) is on, o\_uConnectionStatus (Communication status) returns the buffer memory session status (Un\G108977) value.
- Set the module parameters in GX Works3 in accordance with the connected equipment and system. For the module parameters, refer to the following.

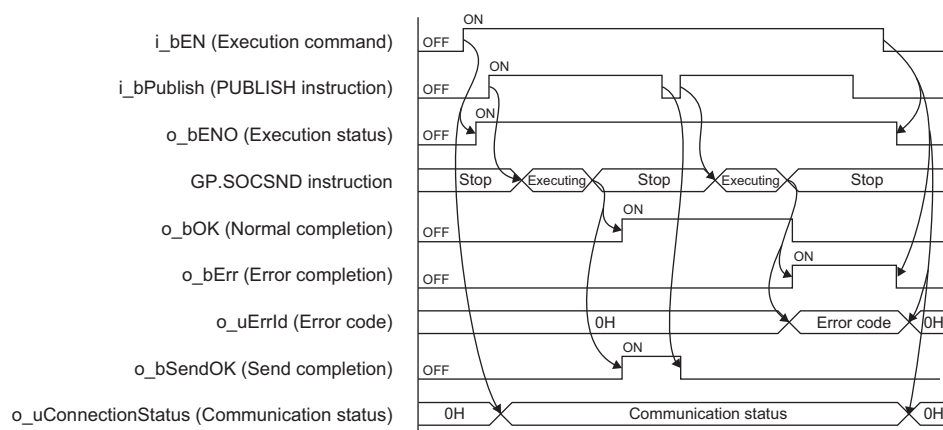
 Page 87 Parameter setting

## Timing chart of I/O signals

### ■For normal completion



### ■For error completion



## Restrictions or precautions

- This FB does not include the error recovery processing. Program the error recovery processing separately in accordance with your system and the required operation.
- This FB uses the following instruction.  
GP.SOCSEND instruction
- Do not use this FB in programs that are executed only once, such as a subroutine program or FOR-NEXT loop, because i\_bEN (Execution command) cannot be turned off and the normal operation cannot be acquired. Always use this FB in programs that can turn off i\_bEN (Execution command).
- This FB requires circuit settings for all the input labels.
- This FB cannot be used in an interrupt program.
- When using more than one of this FB, do not concurrently turn on i\_bPublish (PUBLISH instruction) of the more than one FBs.
- Specify a NULL character at the end of each string.
- When K0 is specified for i\_uPublishSendMessageSize (Publish message size) and i\_uTopicMessageFormat (Topic/message format) is binary, the send message size is 0 bytes.
- When K0 is specified for i\_uPublishSendMessageSize (Publish message size) and i\_uTopicMessageFormat (Topic/message format) is ASCII, the maximum send message size is 32767 bytes.
- When K0 is specified for i\_uPublishSendMessageSize (Publish message size) and i\_uTopicMessageFormat (Topic/message format) is Unicode, the maximum send message size is 16383 words.
- To send a 32768 byte message with ASCII or Unicode specified for i\_uTopicMessageFormat (Topic/message format), follow the conditions listed below.
  - Do not specify any NULL character at the end of Publish messages.
  - Specify K32768 for i\_uPublishSendMessageSize (Publish message size).

- Do not concurrently execute this FB and any other Ethernet module dedicated instruction or any FB including an Ethernet module dedicated instruction. For example, do not concurrently turn on the GP.SOCSSND instruction and i\_bPublish (PUBLISH instruction) of this FB, or do not concurrently turn on i\_bEN (Execution command) of M+FX5ENET\_MQTT\_Receive (Receiving of MQTT data) FB and i\_bPublish (PUBLISH instruction) of this FB.

## Parameter setting

For the parameter setting, refer to the following.

 Page 87 Parameter setting

## Performance value

| CPU module                    | Input label      | Performance value |                   | Number of scans |
|-------------------------------|------------------|-------------------|-------------------|-----------------|
|                               | Send size (byte) | Processing time   | Maximum scan time |                 |
| FX5UJ <sup>*1</sup>           | 1                | 180.000ms         | 1.340ms           | 223 scans       |
|                               | 16384            | 181.000ms         | 43.800ms          | 260 scans       |
|                               | 32768            | 180.000ms         | 87.100ms          | 298 scans       |
| FX5U, FX5UC <sup>*1*2*3</sup> | 1                | 180.000ms         | 1.360ms           | 264 scans       |
|                               | 16384            | 183.000ms         | 41.400ms          | 316 scans       |
|                               | 32768            | 185.000ms         | 82.400ms          | 367 scans       |

\*1 A personal computer in the same LAN is connected via a hub.

\*2 When the program capacity is set to 128K steps, the processing speed may be reduced.

\*3 The labels in the standard area are used.

## Error code

| Error code (hexadecimal)        | Description                                                                                                                                                                                                                    | Action                                                                                                                                                                                                                           |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 100H                            | The i_uConnectionNo (Connection No.) setting value is out of range.                                                                                                                                                            | After reviewing the setting, re-execute the FB.                                                                                                                                                                                  |
| 102H                            | The i_uQoS (QoS) setting value is out of range.                                                                                                                                                                                | After reviewing the setting, re-execute the FB.                                                                                                                                                                                  |
| 104H                            | The i_uTopicMessageFormat (Topic/message format) setting value is out of range.                                                                                                                                                | After reviewing the setting, re-execute the FB.                                                                                                                                                                                  |
| 105H                            | The i_uPublishTopicNameDataAdd (Publish topic name data start address) topic name is not set.                                                                                                                                  | After setting the topic name with one or more characters, re-execute the FB.                                                                                                                                                     |
| 130H                            | The i_uPublishMessageSize (Publish message size) setting value is out of range.                                                                                                                                                | After reviewing the setting, re-execute the FB.                                                                                                                                                                                  |
| 200H                            | i_bEN (Execution command) was turned off during the processing.                                                                                                                                                                | Maintain the on state of the execution command until normal completion, error completion, establishment completion, or disconnection completion turns on. <sup>*1</sup>                                                          |
| 210H                            | There is an overlapping part in the following two areas. Otherwise, the range of file register areas is exceeded. <ul style="list-style-type: none"> <li>Publish topic data area</li> <li>Publish message data area</li> </ul> | Set the following two areas so that no overlap occurs. <ul style="list-style-type: none"> <li>Publish topic data area</li> <li>Publish message data area<sup>*2</sup></li> </ul> After reviewing the setting, re-execute the FB. |
| Latest error code (session)     | Same as the latest error code stored in the buffer memory.                                                                                                                                                                     | Refer to the following.<br> MELSEC iQ-F FX5 Ethernet Module User's Manual                                                                     |
| Socket communication error code | Same as the error code caused by the connection establishment (GP.SOCRCV) instruction                                                                                                                                          | Refer to the following.<br> MELSEC iQ-F FX5 Ethernet Module User's Manual                                                                     |

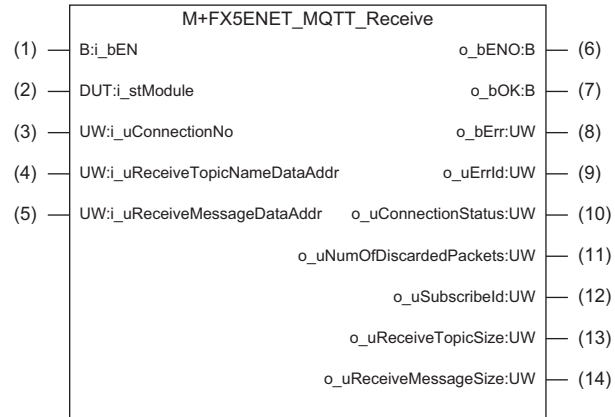
\*1 The output will be only for a single scan.

\*2 When the i\_uPublishMessageSize (Publish message size) is set to 0, this area is treated as the area of 32768 bytes.

## 2.14 M+FX5ENET\_MQTT\_Receive (Receiving of MQTT data)

### Overview

This FB reads a message received from an MQTT broker (server).





# Labels

2

## Input label

| No. | Variable name               | Name                                  | Data type                               | Range                                                    | Description                                                                                                                                                                                                                                                                                          |
|-----|-----------------------------|---------------------------------------|-----------------------------------------|----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1) | i_bEN                       | Execution command                     | Bit                                     | On, off                                                  | On: The FB is activated.<br>Off: The FB is not activated.                                                                                                                                                                                                                                            |
| (2) | i_stModule                  | Module label                          | Structure                               | The setting range differs depending on the module label. | Specify the module for which the FB is to be executed. Specify the module label of the modules.<br>(Example: FX5ENET_1)                                                                                                                                                                              |
| (3) | i_uConnectionNo             | Connection No.                        | Word [Unsigned]/<br>Bit String [16-bit] | 1 to 32                                                  | Specify the number of the connection to be used.                                                                                                                                                                                                                                                     |
| (4) | i_uReceiveTopicNameDataAddr | Receive topic name data start address | Word [Unsigned]/<br>Bit String [16-bit] | —                                                        | Specify the start address of the file register (R) in which to store the receive topic.<br>■Maximum number of characters<br>• For ASCII: 511 characters (excluding NULL at the end)<br>• For Unicode: 255 characters (excluding NULL at the end)<br>ASCII/UTF-16 string                              |
| (5) | i_uReceiveMessageDataAddr   | Receive message data start address    | Word [Unsigned]/<br>Bit String [16-bit] | —                                                        | Specify the start address of the file register (R) in which to store the receive message content.<br>■Maximum number<br>• For binary: 32768 bytes<br>• For ASCII: 32767 characters (excluding NULL at the end)<br>• For Unicode: 16383 characters (excluding NULL at the end)<br>ASCII/UTF-16 string |

## Output label

| No.  | Variable name            | Name                        | Data type                               | Default value | Description                                                                                                                                                                                                                                                                                      |
|------|--------------------------|-----------------------------|-----------------------------------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (6)  | o_bENO                   | Execution status            | Bit                                     | Off           | The execution status of the FB is output.<br>• On: In execution<br>• Off: Not in execution                                                                                                                                                                                                       |
| (7)  | o_bOK                    | Normal completion           | Bit                                     | Off           | When this label is on, it indicates that the FB has been processed normally.                                                                                                                                                                                                                     |
| (8)  | o_bErr                   | Error completion            | Bit                                     | Off           | When this label is on, it indicates that an error has occurred in the FB.                                                                                                                                                                                                                        |
| (9)  | o_uErrId                 | Error code                  | Word [Unsigned]/<br>Bit String [16-bit] | 0             | Stores the error code that occurred in the FB.                                                                                                                                                                                                                                                   |
| (10) | o_uConnectionStatus      | Communication status        | Word [Unsigned]/<br>Bit String [16-bit] | 0             | Monitors the FX5-ENET status buffer memory. When i_bEN (Execution command) is on, the status is constantly output.<br>For details, refer to the following.<br> MELSEC iQ-F FX5 Ethernet Module User's Manual |
| (11) | o_uNumOfDiscardedPackets | Number of discarded packets | Word [Unsigned]/<br>Bit String [16-bit] | 0             | Stores the number of discarded packets.                                                                                                                                                                                                                                                          |
| (12) | o_uSubscribeId           | Subscribe ID                | Word [Unsigned]/<br>Bit String [16-bit] | 0             | Stores the ID associated with the topic filter specified during Subscribe.                                                                                                                                                                                                                       |
| (13) | o_uReceiveTopicSize      | Receive topic size          | Word [Unsigned]/<br>Bit String [16-bit] | 0             | Stores the receive topic size.                                                                                                                                                                                                                                                                   |
| (14) | o_uReceiveMessageSize    | Receive message size        | Word [Unsigned]/<br>Bit String [16-bit] | 0             | Stores the receive message size.                                                                                                                                                                                                                                                                 |

## FB details

### Available device

#### ■Ethernet module

| Target module | Firmware version | Engineering tool                  |
|---------------|------------------|-----------------------------------|
| FX5-ENET      | 1.200 or later   | GX Works3 Version 1.095Z or later |

#### ■CPU module

| Target module | Firmware version | Engineering tool                  |
|---------------|------------------|-----------------------------------|
| FX5U, FX5UC   | 1.280 or later   | GX Works3 Version 1.095Z or later |
| FX5UJ         | 1.040 or later   | GX Works3 Version 1.095Z or later |

### Basic specifications

| Item                           | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Number of steps                | 604 steps<br>The number of steps of the FB embedded in the program varies depending on the CPU module used, the input/output definitions, and the option setting of GX Works3. For the option settings of GX Works3, refer to the following.<br> GX Works3 Operating Manual                                                                                                  |
| Label usage                    | <ul style="list-style-type: none"><li>• Label: 2.40K points (Word)</li><li>• Latch label: 0 points (Word)</li></ul> The amount of labels used in the program varies depending on the CPU module used, the device specified in an argument, and the option setting of GX Works3. For the option settings of GX Works3, refer to the following.<br> GX Works3 Operating Manual |
| Number of index register usage | <ul style="list-style-type: none"><li>• Index register: 1 point (Device number: Z9)</li><li>• Long index register: 0 points</li></ul> When using an interrupt program, do not use the index register within the interrupt program.                                                                                                                                                                                                                            |
| File register usage            | 0 points                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| FB dependence                  | No dependence                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| FB compilation method          | Macro type                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| FB operation                   | Pulsed execution (multiple scan execution type)                                                                                                                                                                                                                                                                                                                                                                                                               |

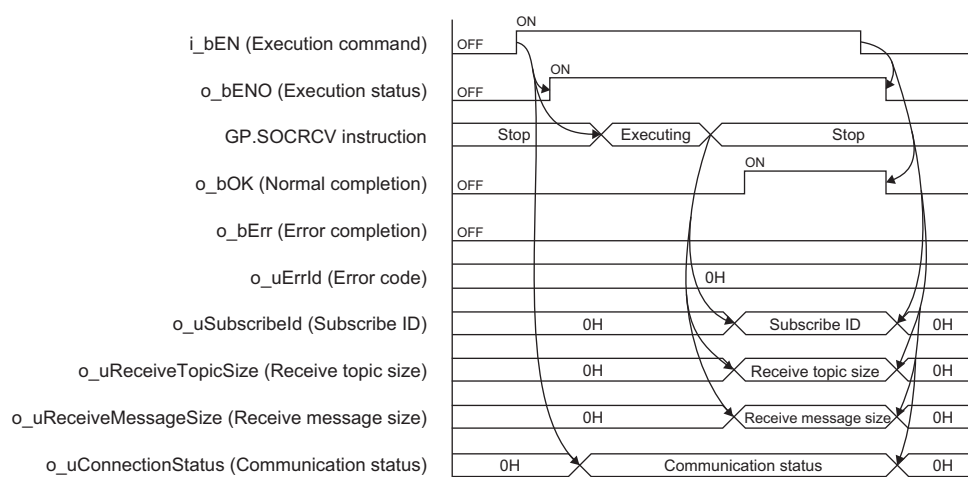
### Processing

- After i\_bEN (Execution command) turns on, this FB reads the data being received to the connection specified by the input argument.
- After the data receive is completed, o\_bOK (Normal completion) turns on.
- If an error occurs during data receive, o\_bErr (Error completion) turns on and the error code is stored in o\_uErrId (Error code).
- While i\_bEN (Execution command) is on, o\_uConnectionStatus (Communication status) returns the buffer memory session status (Un\G108981) value.
- Set the module parameters in GX Works3 in accordance with the connected equipment and system. For the module parameters, refer to the following.

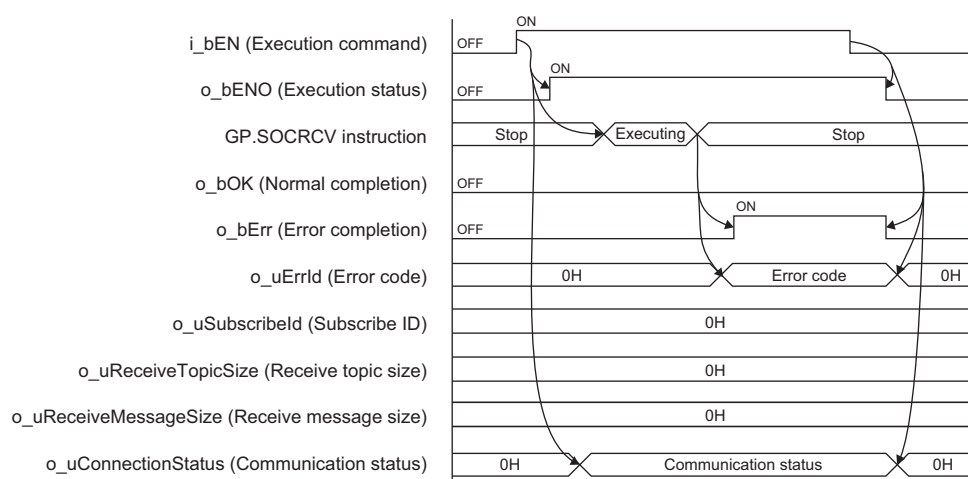
 Page 87 Parameter setting

## Timing chart of I/O signals

### ■For normal completion



### ■For error completion



## Restrictions or precautions

- This FB does not include the error recovery processing. Program the error recovery processing separately in accordance with your system and the required operation.
- This FB uses the following instruction.  
GP. SOCRCV instruction
- Do not use this FB in programs that are executed only once, such as a subroutine program or FOR-NEXT loop, because i\_bEN (Execution command) cannot be turned off and the normal operation cannot be acquired. Always use this FB in programs that can turn off i\_bEN (Execution command).
- This FB requires circuit settings for all the input labels.
- This FB cannot be used in an interrupt program.
- When using more than one of this FB, do not concurrently turn on i\_bEN (Execution command) of the more than one FBs.
- Do not concurrently execute this FB and any other Ethernet module dedicated instruction or any FB including an Ethernet module dedicated instruction. For example, do not concurrently turn on the GP.SOCSND instruction and i\_bEN (Execution command) of this FB, or do not concurrently turn on i\_bPublish (PUBLISH instruction) of M+FX5ENET\_MQTT\_PublishSend (Sending of MQTT data) FB and i\_bEN (Execution command) of this FB.

## Parameter setting

For the parameter setting, refer to the following.

 Page 87 Parameter setting

## Performance value

| CPU module                    | Input label         | Performance value |                   | Number of scans |
|-------------------------------|---------------------|-------------------|-------------------|-----------------|
|                               | Receive size (byte) | Processing time   | Maximum scan time |                 |
| FX5UJ <sup>*1</sup>           | 1                   | 2.000ms           | 2.310ms           | 5 scans         |
|                               | 16384               | 35.100ms          | 1.890ms           | 46 scans        |
|                               | 32768               | 69.100ms          | 1.960ms           | 89 scans        |
| FX5U, FX5UC <sup>*1*2*3</sup> | 1                   | 2.000ms           | 1.190ms           | 5 scans         |
|                               | 16384               | 31.400ms          | 1.640ms           | 50 scans        |
|                               | 32768               | 60.600ms          | 1.630ms           | 94 scans        |

\*1 A personal computer in the same LAN is connected via a hub.

\*2 When the program capacity is set to 128K steps, the processing speed may be reduced.

\*3 The labels in the standard area are used.

## Error code

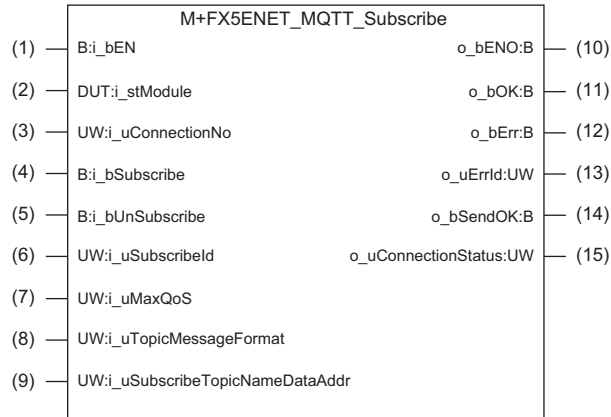
| Error code (hexadecimal)        | Description                                                                                                                                                                                                                          | Action                                                                                                                                                                                                                    |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 100H                            | The i_uConnectionNo (Connection No.) setting value is out of range.                                                                                                                                                                  | After reviewing the setting, re-execute the FB.                                                                                                                                                                           |
| 200H                            | i_bEN (Execution command) was turned off during the processing.                                                                                                                                                                      | Maintain the on state of the execution command until normal completion, error completion, establishment completion, or disconnection completion turns on. <sup>*1</sup>                                                   |
| 210H                            | There is an overlapping part in the following two areas. Otherwise, the range of file register areas is exceeded. <ul style="list-style-type: none"><li>• Receive topic name data area</li><li>• Receive message data area</li></ul> | Set the following two areas so that no overlap occurs. <ul style="list-style-type: none"><li>• Receive topic name data area</li><li>• Receive message data area</li></ul> After reviewing the setting, re-execute the FB. |
| Latest error code (session)     | Same as the latest error code stored in the buffer memory.                                                                                                                                                                           | Refer to the following.<br> IMELSEC iQ-F FX5 Ethernet Module User's Manual                                                             |
| Socket communication error code | Same as the error code caused by the connection establishment (GP.SOCRCV) instruction                                                                                                                                                | Refer to the following.<br> IMELSEC iQ-F FX5 Ethernet Module User's Manual                                                             |

\*1 The output will be only for a single scan.

## 2.15 M+FX5ENET\_MQTT\_Subscribe (Sending of Subscribe command)

### Overview

This FB sends a SUBSCRIBE/UNSUBSCRIBE command to an MQTT broker (server).



### Labels

#### Input label

| No. | Variable name   | Name                                | Data type                               | Range                                                    | Description                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----|-----------------|-------------------------------------|-----------------------------------------|----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1) | i_bEN           | Execution command                   | Bit                                     | On, off                                                  | On: The FB is activated.<br>Off: The FB is not activated.                                                                                                                                                                                                                                                                                                                                                     |
| (2) | i_stModule      | Module label                        | Structure                               | The setting range differs depending on the module label. | Specify the module for which the FB is to be executed.<br>Specify the module label of the modules.<br>(Example: FX5ENET_1)                                                                                                                                                                                                                                                                                    |
| (3) | i_uConnectionNo | Connection No.                      | Word [Unsigned]/<br>Bit String [16-bit] | 1 to 32                                                  | Specify the number of the connection to be used.                                                                                                                                                                                                                                                                                                                                                              |
| (4) | i_bSubscribe    | SUBSCRIBE instruction <sup>*1</sup> | Bit                                     | On, off                                                  | When On (rise) is detected, this FB sends the SUBSCRIBE command of the specified topic.                                                                                                                                                                                                                                                                                                                       |
| (5) | i_bUnSubscribe  | UNSUBSCRIBE instruction             | Bit                                     | On, off                                                  | When On (rise) is detected, this FB sends the UNSUBSCRIBE command of the specified topic.                                                                                                                                                                                                                                                                                                                     |
| (6) | i_uSubscribeld  | Subscribe ID                        | Word [Unsigned]/<br>Bit String [16-bit] | 0 to 255                                                 | In the range of 1 to 255, specify ID1 <sup>*2</sup> to be associated with the topic to be subscribed to. When 0 is specified, no ID association is performed.<br>This input label is valid only for the SUBSCRIBE instruction. The setting value is ignored for the UNSUBSCRIBE instruction.<br>If a subscribe ID that has been already set is specified again for another topic, an error completion occurs. |
| (7) | i_uMaxQoS       | Maximum QoS                         | Word [Unsigned]/<br>Bit String [16-bit] | 0 to 2                                                   | Specify the maximum QoS level at message receive on SUBSCRIBE. The actual QoS level varies depending on the broker specifications.<br>This input label is valid only for the SUBSCRIBE instruction. The setting value is ignored for the UNSUBSCRIBE instruction.                                                                                                                                             |

| No. | Variable name                 | Name                                                                           | Data type                           | Range  | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----|-------------------------------|--------------------------------------------------------------------------------|-------------------------------------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (8) | i_uTopicMessageFormat         | Topic/message format (Binary/ASCII/Unicode string <sup>*3</sup> specification) | Word [Unsigned]/Bit String [16-bit] | 0 to 3 | Specify the character code to be input in the send topic data start address (i_uSendTopicDataAddr) of FB: MQTT_Subscribe.<br>Also, specify the data type and character code to be output with the receive topic data start address (o_uReceiveTopicDataAddr)/receive message data start address (i_uReceiveMessageDataAddr) of FB: MQTT_Receive.<br><ul style="list-style-type: none"> <li>• 0: ASCII is used for topic/message.</li> <li>• 1: The Unicode string<sup>*3</sup> is used for topic/message.</li> <li>• 2: ASCII is used for topic and binary is used for message.</li> <li>• 3: The Unicode string<sup>*3</sup> is used for topic and binary is used for message.</li> </ul> (Default: 0)<br>Even when messages whose format differs between binary and string depending on the topic filter, those messages are converted and output as the received messages in accordance with this setting. |
| (9) | i_uSubscribeTopicNameDataAddr | Subscribe topic name data start address                                        | ASCII/Unicode string <sup>*3</sup>  | —      | Specify the start address of the file register (R) in which topic executing SUBSCRIBE or UNSUBSCRIBE (topic filter) is stored.<br><b>■</b> Maximum number of characters <ul style="list-style-type: none"> <li>• For ASCII: 511 characters (excluding NULL at the end)</li> <li>• For Unicode: 255 characters (excluding NULL at the end)</li> </ul> If SUBSCRIBE is specified again for the topic for which SUBSCRIBE has been already set with another subscribe ID, error completion occurs.<br>If UNSUBSCRIBE is specified for a topic for which SUBSCRIBE is not set, normal completion occurs without any action.                                                                                                                                                                                                                                                                                       |

\*1 The normal MQTT executes Subscribe only for the first time for each topic.

For how to receive data after Subscribe is executed, refer to the following.

☞ Page 349 M+FX5ENET\_MQTT\_Receive (Receiving of MQTT data)

\*2 While the normal MQTT uses topics to distinguish the receive data, this label uses subscribe IDs (numbers) in the replacement of the topics.

For example, when the topic of test/abc1 is replaced with the subscribe ID 1 and the topic of test/bcd2 is replaced with the subscribe ID 2, those numbers are output at MQTT\_Receive. Therefore, the topic can be determined from the ID.

\*3 For GX Works3, the Unicode string is UTF-16.

## Output label

| No.  | Variable name       | Name                 | Data type                           | Default value | Description                                                                                                                                                                                                   |
|------|---------------------|----------------------|-------------------------------------|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (10) | o_bENO              | Execution status     | Bit                                 | Off           | The execution status of the FB is output.<br><ul style="list-style-type: none"> <li>• On: In execution</li> <li>• Off: Not in execution</li> </ul>                                                            |
| (11) | o_bOK               | Normal completion    | Bit                                 | Off           | When this label is on, it indicates that the FB has been processed normally.                                                                                                                                  |
| (12) | o_bErr              | Error completion     | Bit                                 | Off           | When this label is on, it indicates that an error has occurred in the FB.                                                                                                                                     |
| (13) | o_uErrId            | Error code           | Word [Unsigned]/Bit String [16-bit] | 0             | Stores the error code that occurred in the FB.                                                                                                                                                                |
| (14) | o_bSendOK           | Send completion      | Bit                                 | Off           | When this label is on, it indicates that Subscribe/Unsubscribe has been completed normally.                                                                                                                   |
| (15) | o_uConnectionStatus | Communication status | Word [Unsigned]/Bit String [16-bit] | 0             | Monitors the FX5-ENET status buffer memory. When i_bEN (Execution command) is on, the status is constantly output.<br>For details, refer to the following.<br>☞ MELSEC iQ-F FX5 Ethernet Module User's Manual |

## FB details

### Available device

#### ■Ethernet module

| Target module | Firmware version | Engineering tool                  |
|---------------|------------------|-----------------------------------|
| FX5-ENET      | 1.200 or later   | GX Works3 Version 1.095Z or later |

#### ■CPU module

| Target module | Firmware version | Engineering tool                  |
|---------------|------------------|-----------------------------------|
| FX5U, FX5UC   | 1.280 or later   | GX Works3 Version 1.095Z or later |
| FX5UJ         | 1.040 or later   | GX Works3 Version 1.095Z or later |

### Basic specifications

| Item                           | Description                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Number of steps                | 500 steps<br>The number of steps of the FB embedded in the program varies depending on the CPU module used, the input/output definitions, and the option setting of GX Works3. For the option settings of GX Works3, refer to the following.<br> GX Works3 Operating Manual                                                |
| Label usage                    | • Label: 1.90K points (Word)<br>• Latch label: 0 points (Word)<br>The amount of labels used in the program varies depending on the CPU module used, the device specified in an argument, and the option setting of GX Works3. For the option settings of GX Works3, refer to the following.<br> GX Works3 Operating Manual |
| Number of index register usage | • Index register: 1 point (Device number: Z9)<br>• Long index register: 0 points<br>When using an interrupt program, do not use the index register within the interrupt program.                                                                                                                                                                                                                            |
| File register usage            | 0 points                                                                                                                                                                                                                                                                                                                                                                                                    |
| FB dependence                  | No dependence                                                                                                                                                                                                                                                                                                                                                                                               |
| FB compilation method          | Macro type                                                                                                                                                                                                                                                                                                                                                                                                  |
| FB operation                   | Always executed                                                                                                                                                                                                                                                                                                                                                                                             |

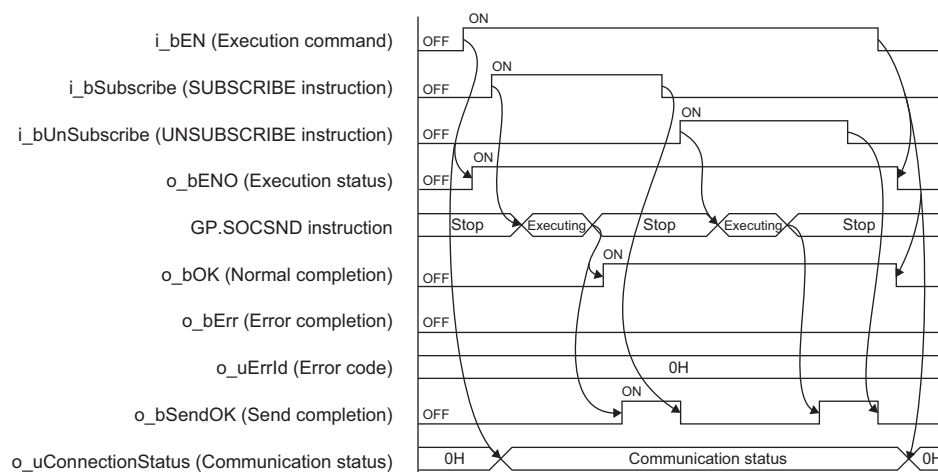
### Processing

- After i\_bEN (Execution command) turns on, the SUBSCRIBE command is sent to an MQTT broker (server) by turning on i\_bSubscribe (SUBSCRIBE instruction) and the UNSUBSCRIBE command is sent by turning on (rising) i\_bUnSubscribe (UNSUBSCRIBE instruction).
- After i\_bEN (Execution command) turns on, o\_bOK (Normal completion) turns on when the first SUBSCRIBE/UNSUBSCRIBE is completed.
- When the SUBSCRIBE/UNSUBSCRIBE is completed, o\_bSendOK (Send completion) turns on. When i\_bSubscribe (SUBSCRIBE instruction) or i\_bUnSubscribe (UNSUBSCRIBE instruction) turns off from on, o\_bSendOK (Send completion) turns off.
- If an error occurs during the SUBSCRIBE/UNSUBSCRIBE execution, o\_bErr (Error completion) turns on and the error code is stored in o\_uErrId (Error code).
- While i\_bEN (Execution command) is on, o\_uConnectionStatus (Communication status) returns the buffer memory session status (Un\G108979) value.
- Set the module parameters in GX Works3 in accordance with the connected equipment and system. For the module parameters, refer to the following.

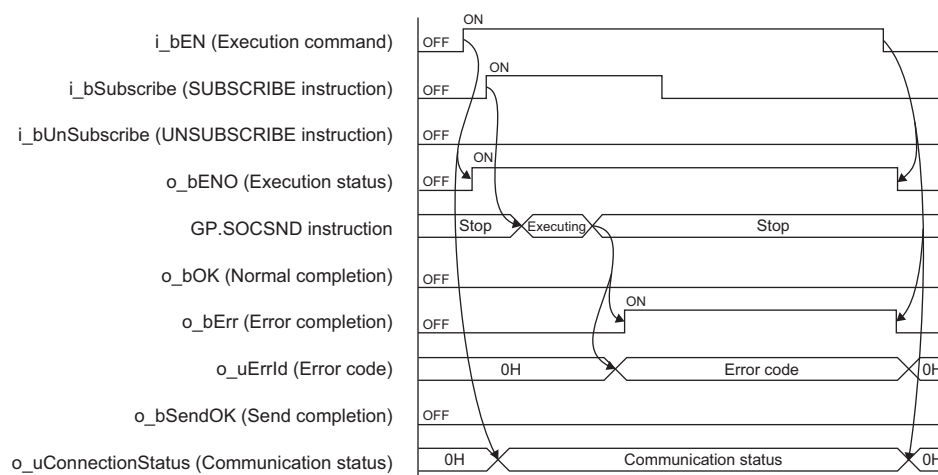
 Page 87 Parameter setting

## Timing chart of I/O signals

### ■For normal completion



### ■For error completion



## Restrictions or precautions

- This FB does not include the error recovery processing. Program the error recovery processing separately in accordance with your system and the required operation.
- This FB uses the following instruction.  
GP.SOCSEND instruction
- Do not use this FB in programs that are executed only once, such as a subroutine program or FOR-NEXT loop, because i\_bEN (Execution command) cannot be turned off and the normal operation cannot be acquired. Always use this FB in programs that can turn off i\_bEN (Execution command).
- This FB requires circuit settings for all the input labels.
- This FB cannot be used in an interrupt program.
- Do not concurrently turn on i\_bSubscribe (SUBSCRIBE instruction) and i\_bUnSubscribe (UNSUBSCRIBE instruction).
- When using more than one of this FB, do not concurrently turn on i\_bSubscribe (SUBSCRIBE instruction) or i\_bUnSubscribe (UNSUBSCRIBE instruction) of the more than one FBs.
- Do not concurrently execute this FB and any other Ethernet module dedicated instruction or any FB including an Ethernet module dedicated instruction. For example, do not concurrently turn on the GP.SOCSEND instruction and i\_bSubscribe (SUBSCRIBE instruction) or i\_bUnSubscribe (UNSUBSCRIBE instruction) of this FB, or do not concurrently turn on i\_bEN (Execution command) of M+FX5ENET\_MQTT\_Receive (Receiving of MQTT data) FB and i\_bSubscribe (SUBSCRIBE instruction) or i\_bUnSubscribe (UNSUBSCRIBE instruction) of this FB.



## Parameter setting

For the parameter setting, refer to the following.

 Page 87 Parameter setting

## Performance value

| CPU module                    | Input label             | Performance value |                   | Number of scans |
|-------------------------------|-------------------------|-------------------|-------------------|-----------------|
|                               | Command                 | Processing time   | Maximum scan time |                 |
| FX5UJ <sup>*1</sup>           | SUBSCRIBE instruction   | 186.000ms         | 1.360ms           | 243 scans       |
|                               | UNSUBSCRIBE instruction | 187.000ms         | 1.900ms           | 245 scans       |
| FX5U, FX5UC <sup>*1*2*3</sup> | SUBSCRIBE instruction   | 185.000ms         | 1.340ms           | 287 scans       |
|                               | UNSUBSCRIBE instruction | 186.000ms         | 1.210ms           | 288 scans       |

\*1 A personal computer in the same LAN is connected via a hub.

\*2 When the program capacity is set to 128K steps, the processing speed may be reduced.

\*3 The labels in the standard area are used.

## Error code

| Error code (hexadecimal)    | Description                                                                                                        | Action                                                                                                                                                       |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 100H                        | The i_uConnectionNo (Connection No.) setting value is out of range.                                                | After reviewing the setting, re-execute the FB.                                                                                                              |
| 101H                        | Contention has occurred between i_bSubscribe (SUBSCRIBE instruction) and i_bUnSubscribe (UNSUBSCRIBE instruction). | Review the timing of instructions so that they do not cause contention.                                                                                      |
| 102H                        | The i_uMaxQoS (Maximum QoS) setting value is out of range.                                                         | After reviewing the setting, re-execute the FB.                                                                                                              |
| 103H                        | The i_uTimeout (Timeout value) setting value is out of range.                                                      | After reviewing the setting, re-execute the FB.                                                                                                              |
| 104H                        | The i_uTopicMessageFormat (Topic/message format) setting value is out of range.                                    | After reviewing the setting, re-execute the FB.                                                                                                              |
| 105H                        | The i_uSubscribeTopicNameDataAddr (Subscribe topic data start address) topic name is not set.                      | After setting the topic name with one or more characters, re-execute the FB.                                                                                 |
| 150H                        | The i_uSubscribeId (Subscribe ID) setting value is out of range.                                                   | After reviewing the setting, re-execute the FB.                                                                                                              |
| 200H                        | i_bEN (Execution command) was turned off during the processing.                                                    | Maintain the on state of the execution command until normal completion, error completion, establishment completion, or disconnection completion turns on.*1  |
| Latest error code (session) | Same as the latest error code stored in the buffer memory.                                                         | Refer to the following.<br> MELSEC iQ-F FX5 Ethernet Module User's Manual |

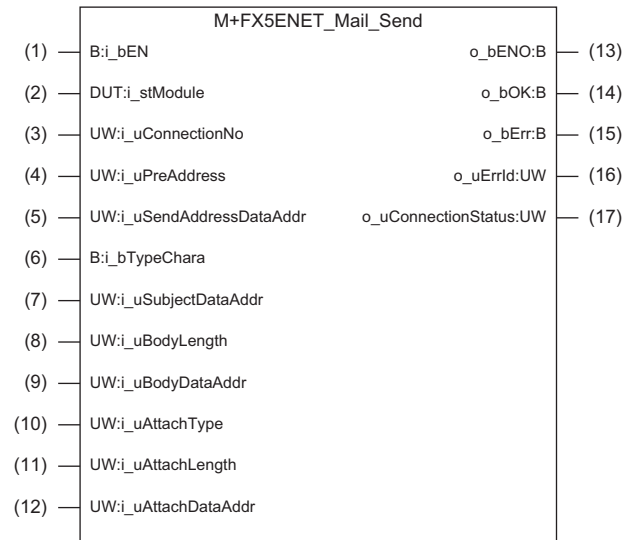
\*1 The output will be only for a single scan.

## 2.16 M+FX5ENET\_Mail\_Send (Sending of E-mail)

### Overview

This FB establishes a TLS/TCP session with an SMTP server. Then, it sends E-mail data.

After sending the E-mail, it disconnects the TLS/TCP session.



# Labels

2

## Input label

| No.  | Variable name          | Name                                        | Data type                               | Range                                                    | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|------|------------------------|---------------------------------------------|-----------------------------------------|----------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1)  | i_bEN                  | Execution command                           | Bit                                     | On, off                                                  | On: The FB is activated.<br>Off: The FB is not activated.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| (2)  | i_stModule             | Module label                                | Structure                               | The setting range differs depending on the module label. | Specify the module for which the FB is to be executed.<br>Specify the module label of the modules.<br>(Example: FX5ENET_1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| (3)  | i_uConnectionNo        | Connection No.                              | Word [Unsigned]/<br>Bit String [16-bit] | 1 to 32                                                  | Specify the number of the connection to be used.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| (4)  | i_uPreAddress          | Preset send address instruction             | Word [Unsigned]/<br>Bit String [16-bit] | 0000H to 03FFH                                           | When the send destination E-mail addresses whose parameters are set with GXW3 are specified, the corresponding bits turn on.<br>• b0: Send destination E-mail address No.1<br>• b1: Send destination E-mail address No.2<br>:<br>• b9: Send destination E-mail address No.10                                                                                                                                                                                                                                                                                                              |
| (5)  | i_uSendAddressDataAddr | Send destination address data start address | Word [Unsigned]/<br>Bit String [16-bit] | —                                                        | Specify the start address of the file register (R) in which to store the send destination E-mail address within 256 characters.*2<br>Multiple E-mail addresses (10 or more is also possible.) can be specified in the comma-delimited format. Also, this label can be concurrently used with the preset send address instruction.<br>Set the end of string to NULL because it is used for size determination.<br>If the number of characters reaches the maximum length, secure the space of 257 bytes because NULL is set at the position of the maximum length + 1 in the subject.      |
| (6)  | i_bTypeChara           | ASCII/UTF-16 string specification           | Bit                                     | On, off                                                  | On: ASCII is used for subject/message body.<br>Off: UTF-16 is used for subject/message body.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| (7)  | i_uSubjectDataAddr     | Subject data start address                  | Word [Unsigned]/<br>Bit String [16-bit] | —                                                        | Specify the start address of the file register (R) in which to store the subject.<br>The maximum number of characters varies depending on the setting value of the ASCII/UTF-16 string specification.*3<br>■Maximum number of characters<br>• For ASCII: 128 bytes/128 characters<br>• For Unicode: 128 bytes/64 characters<br>Set the end of string to NULL because it is used for size determination.<br>If the number of characters reaches the maximum length, secure the space of 65 words (130 bytes) because NULL is set at the position of the maximum length + 1 in the subject. |
| (8)  | i_uBodyLength          | Number of message body characters           | Word [Unsigned]/<br>Bit String [16-bit] | 0 to 1024, 0 to 512                                      | Specify the number of message body data characters.<br>• When ASCII is used: 0 to 1024 characters<br>• When UTF-16 is used: 0 to 512 characters<br>When 0 is specified, the number of message body characters is automatically set.*1                                                                                                                                                                                                                                                                                                                                                     |
| (9)  | i_uBodyDataAddr        | Message body data start address             | Word [Unsigned]/<br>Bit String [16-bit] | —                                                        | Specify the start address of the file register (R) in which to store the message body.<br>When the number of message body characters is 0, set the end of string to NULL because it is used for size determination.<br>If the number of characters reaches the maximum length, secure the space of 513 words (1026 bytes) because NULL is set at the position of the maximum length + 1 in the subject.                                                                                                                                                                                   |
| (10) | i_uAttachType          | Attachment format                           | Word [Unsigned]/<br>Bit String [16-bit] | 0 to 3                                                   | Specify the presence/absence of an attachment and the file format.<br>• 0: No attachment<br>• 1: CSV format<br>• 2: BIN format<br>• 3: ASCII format                                                                                                                                                                                                                                                                                                                                                                                                                                       |

| No.  | Variable name     | Name                             | Data type                               | Range      | Description                                                                                                         |
|------|-------------------|----------------------------------|-----------------------------------------|------------|---------------------------------------------------------------------------------------------------------------------|
| (11) | i_uAttachLength   | Attachment size                  | Word [Unsigned]/<br>Bit String [16-bit] | 0 to 16384 | Specify the attachment size (number of words).<br>When the format is 0 (no attachment), this item is not used.      |
| (12) | i_uAttachDataAddr | Attachment data<br>start address | Word [Unsigned]/<br>Bit String [16-bit] | —          | Specify the start address of the file register (R) in which the<br>attachment (maximum 32768 bytes) data is stored. |

\*1 The data area for number of message body characters is treated as 1024 bytes (excluding NULL).

\*2 The send destination address data area is treated as 256 bytes (excluding NULL).

\*3 The subject data area is treated as 128 bytes (excluding NULL).

## Output label

| No.  | Variable name       | Name                    | Data type                              | Default value | Description                                                                                                                                                                                                                                                                                          |
|------|---------------------|-------------------------|----------------------------------------|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (13) | o_bENO              | Execution status        | Bit                                    | Off           | The execution status of the FB is output.<br>• On: In execution<br>• Off: Not in execution                                                                                                                                                                                                           |
| (14) | o_bOK               | Normal completion       | Bit                                    | Off           | When this label is on, it indicates that the FB has been<br>processed normally.                                                                                                                                                                                                                      |
| (15) | o_bErr              | Error completion        | Bit                                    | Off           | When this label is on, it indicates that an error has<br>occurred in the FB.                                                                                                                                                                                                                         |
| (16) | o_uErrId            | Error code              | Word [Unsigned]/Bit<br>String [16-bit] | 0             | Stores the error code that occurred in the FB.                                                                                                                                                                                                                                                       |
| (17) | o_uConnectionStatus | Communication<br>status | Word [Unsigned]/Bit<br>String [16-bit] | 0             | Monitors the FX5-ENET status buffer memory. When<br>i_bEN (Execution command) is on, the status is<br>constantly output.<br>For details, refer to the following.<br> MELSEC iQ-F FX5 Ethernet Module User's Manual |

## FB details

### Available device

#### ■Ethernet module

| Target module | Firmware version | Engineering tool                  |
|---------------|------------------|-----------------------------------|
| FX5-ENET      | 1.200 or later   | GX Works3 Version 1.095Z or later |

#### ■CPU module

| Target module | Firmware version | Engineering tool                  |
|---------------|------------------|-----------------------------------|
| FX5U, FX5UC   | 1.280 or later   | GX Works3 Version 1.095Z or later |
| FX5UJ         | 1.040 or later   | GX Works3 Version 1.095Z or later |

### Basic specifications

| Item                           | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Number of steps                | 1081 steps<br>The number of steps of the FB embedded in the program varies depending on the CPU module used, the input/output definitions, and the option setting of GX Works3. For the option settings of GX Works3, refer to the following.<br> GX Works3 Operating Manual                                                                                                |
| Label usage                    | <ul style="list-style-type: none"> <li>Label: 2.41K points (Word)</li> <li>Latch label: 0 points (Word)</li> </ul> The amount of labels used in the program varies depending on the CPU module used, the device specified in an argument, and the option setting of GX Works3. For the option settings of GX Works3, refer to the following.<br> GX Works3 Operating Manual |
| Number of index register usage | <ul style="list-style-type: none"> <li>Index register: 1 point (Device number: Z9)</li> <li>Long index register: 0 points</li> </ul> When using an interrupt program, do not use the index register within the interrupt program.                                                                                                                                                                                                                            |
| File register usage            | 0 points                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| FB dependence                  | No dependence                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| FB compilation method          | Macro type                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| FB operation                   | Pulsed execution (multiple scan execution type)                                                                                                                                                                                                                                                                                                                                                                                                              |

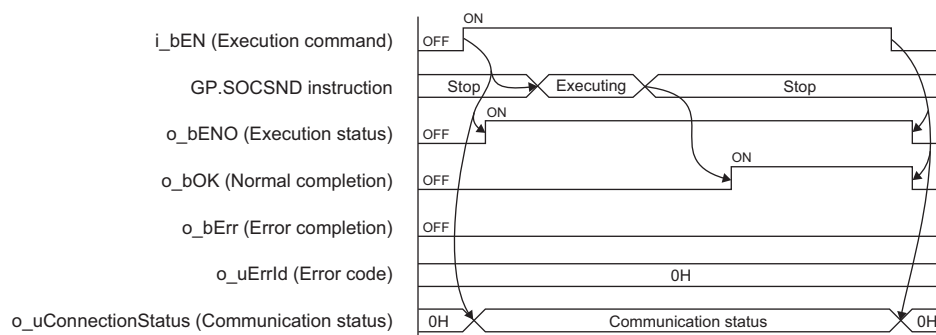
### Processing

- After i\_bEN (Execution command) turns on, this FB sends the E-mail send command.
- When the E-mail send command is completed, this FB turns on o\_bOK (Normal completion) or turns on o\_bErr (Error completion) and stores the error code in o\_uErrId (Error code).
- When i\_bEN (Execution command) is on, o\_uConnectionStatus (Communication status) returns the buffer memory session status (Un\G4380) value.
- Set the module parameters in GX Works3 in accordance with the connected equipment and system. For the module parameters, refer to the following.

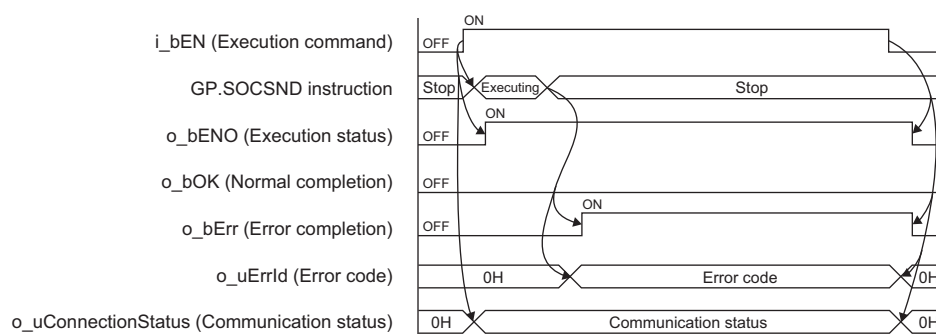
 Page 87 Parameter setting

## Timing chart of I/O signals

### ■For normal completion



### ■For error completion



## Restrictions or precautions

- This FB does not include the error recovery processing. Program the error recovery processing separately in accordance with your system and the required operation.
- This FB uses the following instructions.  
GP.OPEN instruction  
GP.SOCSEND instruction  
GP.CLOSE instruction
- Do not use this FB in programs that are executed only once, such as a subroutine program or FOR-NEXT loop, because i\_bEN (Execution command) cannot be turned off and the normal operation cannot be acquired. Always use this FB in programs that can turn off i\_bEN (Execution command).
- This FB requires circuit settings for all the input labels.
- This FB cannot be used in an interrupt program.
- When using more than one of this FB, do not concurrently turn on i\_bEN (Execution command) of the more than one FBs.
- When K0 is specified for i\_uBodyLength (Number of message body characters) and i\_bTypeChara (ASCII/UTF-16 string specification) is ASCII, the maximum send message size is 1023 bytes.
- When K0 is specified for i\_uBodyLength (Number of message body characters) and i\_bTypeChara (ASCII/UTF-16 string specification) is Unicode, the maximum send message size is 511 words.
- To send the maximum size of message body data, follow the conditions listed below.
  - Do not specify any NULL character at the end of message body data.
  - When i\_bTypeChara (ASCII/UTF-16 string specification) is ASCII, specify K1024 for i\_uBodyLength (Number of message body characters).
  - When i\_bTypeChara (ASCII/UTF-16 string specification) is Unicode, specify K512 for i\_uBodyLength (Number of message body characters).
- Do not concurrently execute this FB and any other Ethernet module dedicated instruction or any FB including an Ethernet module dedicated instruction. For example, do not concurrently turn on the GP.SOCSEND instruction and i\_bEN (Execution command) of this FB, or do not concurrently turn on i\_bPublish (PUBLISH instruction) of M+FX5ENET\_MQTT\_PublishSend (Sending of MQTT data) FB and i\_bEN (Execution command) of this FB.

## Parameter setting

Set the target device connection configuration for E-mail send by using GX Works3.

 Navigation window ⇒ [Parameter] ⇒ [Module Information] ⇒ [FX5-ENET] ⇒ [Basic Settings] ⇒ [External Device Configuration]

In the target device connection configuration setting, set the protocol to the TLS connection or TCP connection. Set the certificate by using Certificate Configuration Tool for FX5-ENET. For details on the setting method, refer to the following.

 MELSEC iQ-F FX5 Ethernet Module User's Manual

## Performance value

| CPU module                    | Input label      | Performance value |                   | Number of scans |
|-------------------------------|------------------|-------------------|-------------------|-----------------|
|                               | Send size (byte) | Processing time   | Maximum scan time |                 |
| FX5UJ <sup>*1</sup>           | 1                | 5170.000ms        | 0.946ms           | 10173 scans     |
|                               | 16384            | 6330.000ms        | 2.400ms           | 13251 scans     |
|                               | 32768            | 6790.000ms        | 2.570ms           | 16079 scans     |
| FX5U, FX5UC <sup>*1*2*3</sup> | 1                | 3750.000ms        | 0.829ms           | 11117 scans     |
|                               | 16384            | 5480.000ms        | 1.710ms           | 15823 scans     |
|                               | 32768            | 6790.000ms        | 2.030ms           | 19185 scans     |

\*1 Connect with a free mail service.

\*2 When the program capacity is set to 128K steps, the processing speed may be reduced.

\*3 The labels in the standard area are used.

## Error code

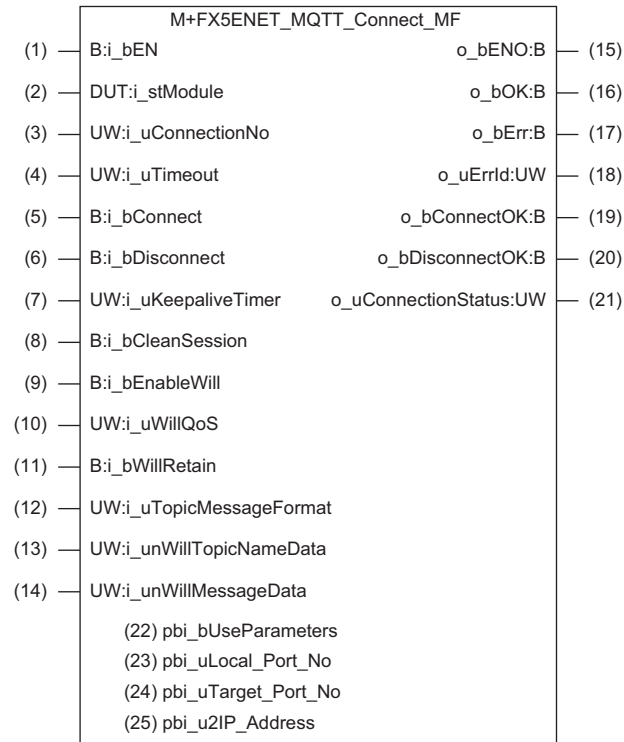
| Error code (hexadecimal)    | Description                                                                                                                                                                                                                                                                                              | Action                                                                                                                                                                                                                                                                                        |
|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 100H                        | The i_uConnectionNo (Connection No.) setting value is out of range.                                                                                                                                                                                                                                      | After reviewing the setting, re-execute the FB.                                                                                                                                                                                                                                               |
| 101H                        | The i_uPreAddress (Preset send address instruction) setting value is out of range.                                                                                                                                                                                                                       | After reviewing the setting, re-execute the FB.                                                                                                                                                                                                                                               |
| 102H                        | The i_uBodyLength (Number of message body characters) setting value is out of range.                                                                                                                                                                                                                     | After reviewing the setting, re-execute the FB.                                                                                                                                                                                                                                               |
| 103H                        | The i_uAttachType (Attachment format) setting value is out of range.                                                                                                                                                                                                                                     | After reviewing the setting, re-execute the FB.                                                                                                                                                                                                                                               |
| 104H                        | The i_uAttachLength (Attachment size) setting value is out of range.                                                                                                                                                                                                                                     | After reviewing the setting, re-execute the FB.                                                                                                                                                                                                                                               |
| 200H                        | i_bEN (Execution command) was turned off during the processing.                                                                                                                                                                                                                                          | Maintain the on state of the execution command until normal completion, error completion, establishment completion, or disconnection completion turns on. <sup>*1</sup>                                                                                                                       |
| 210H                        | There is an overlapping part in the following four areas. Otherwise, the range of file register areas is exceeded. <ul style="list-style-type: none"> <li>• Send destination address data area</li> <li>• Subject data area</li> <li>• Message body data area</li> <li>• Attachment data area</li> </ul> | Set the following four areas so that no overlap occurs. <ul style="list-style-type: none"> <li>• Send destination address data area</li> <li>• Subject data area</li> <li>• Message body data area</li> <li>• Attachment data area</li> </ul> After reviewing the setting, re-execute the FB. |
| Latest error code (session) | Same as the latest error code stored in the buffer memory.                                                                                                                                                                                                                                               | Refer to the following.<br> MELSEC iQ-F FX5 Ethernet Module User's Manual                                                                                                                                 |

\*1 The output will be only for a single scan.

## 2.17 M+FX5ENET\_MQTT\_Connect\_MF (MQTT connection establishment)

### Overview

This FB controls the connection with an MQTT broker (server) to establish a TCP or TLS session on the CONNECT instruction or to disconnect the session on the DISCONNECT instruction.





# Labels

2

## Input label

| No.  | Variable name         | Name                                                                                   | Data type                           | Range                                                    | Description                                                                                                                                                                                                                                                         |
|------|-----------------------|----------------------------------------------------------------------------------------|-------------------------------------|----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1)  | i_bEN                 | Execution command                                                                      | Bit                                 | On, off                                                  | On: The FB is activated.<br>Off: The FB is not activated.                                                                                                                                                                                                           |
| (2)  | i_stModule            | Module label                                                                           | Structure                           | The setting range differs depending on the module label. | Specify the module for which the FB is to be executed. Specify the module label of the modules. (Example: FX5ENET_1)                                                                                                                                                |
| (3)  | i_uConnectionNo       | Connection No.                                                                         | Word [Unsigned]/Bit String [16-bit] | 1 to 32                                                  | Specify the number of the connection to be used.                                                                                                                                                                                                                    |
| (4)  | i_uTimeout            | Timeout setting                                                                        | Word [Unsigned]/Bit String [16-bit] | 1 to 65535                                               | Specify the connection timeout (s).                                                                                                                                                                                                                                 |
| (5)  | i_bConnect            | CONNECT instruction                                                                    | Bit                                 | On, off                                                  | Turn on this label when establishing a TCP or TLS session.                                                                                                                                                                                                          |
| (6)  | i_bDisconnect         | DISCONNECT instruction                                                                 | Bit                                 | On, off                                                  | Turn on this label when disconnecting a TCP or TLS session.                                                                                                                                                                                                         |
| (7)  | i_uKeepaliveTimer     | keepalive timer                                                                        | Word [Unsigned]/Bit String [16-bit] | 0 to 65535                                               | Specify the KeepAlive timer (s) to an MQTT broker.                                                                                                                                                                                                                  |
| (8)  | i_bCleanSession       | Clean session setting                                                                  | Bit                                 | On, off                                                  | Select the operation to be performed when a session already exists at CONNECT.                                                                                                                                                                                      |
| (9)  | i_bEnableWill         | Enable Will                                                                            | Bit                                 | On, off                                                  | On: Will is enabled.<br>Off: Will is disabled.                                                                                                                                                                                                                      |
| (10) | i_uWillQoS            | Will QoS                                                                               | Word [Unsigned]/Bit String [16-bit] | 0 to 2                                                   | Specify the QoS to be used for sending Will.                                                                                                                                                                                                                        |
| (11) | i_bWillRetain         | Will Retain                                                                            | Bit                                 | On, off                                                  | Specify the Retain flag of Will messages.                                                                                                                                                                                                                           |
| (12) | i_uTopicMessageFormat | Will topic/<br>message format<br>(ASCII/Unicode string <sup>*1</sup><br>specification) | Word [Unsigned]/Bit String [16-bit] | 0 to 1                                                   | Specify the character code of Will topic/message. <sup>*2</sup><br>• 0: ASCII is used for Will topic/message.<br>• 1: The Unicode string <sup>*1</sup> is used for Will topic/message.                                                                              |
| (13) | i_unWillTopicNameData | Will topic name data                                                                   | Word [Unsigned]/Bit String [16-bit] | —                                                        | Specify the start element of the array label in which the Will message topic name is stored. <sup>*3</sup><br>■Maximum number of characters<br>• For ASCII: 511 characters (excluding NULL at the end)<br>• For Unicode: 255 characters (excluding NULL at the end) |
| (14) | i_unWillMessageData   | Will message data                                                                      | Word [Unsigned]/Bit String [16-bit] | —                                                        | Specify the start element of the array label in which the Will message content is stored. <sup>*4</sup><br>■Maximum number of characters<br>• For ASCII: 500 characters (excluding NULL at the end)<br>• For Unicode: 250 characters (excluding NULL at the end)    |

\*1 For GX Works3, the Unicode string is UTF-16.

\*2 The mixture of the ASCII code and Unicode strings cannot be specified.

\*3 The Will topic name data area is treated as 511 bytes (excluding NULL). Therefore, set the number of elements in the array label to 256. If the number of elements in the array label is insufficient, an undefined value may be included.

\*4 The Will message data area is treated as 500 bytes (excluding NULL). Therefore, set the number of elements in the array label to 250. If the number of elements in the array label is insufficient, an undefined value may be included.

## Output label

| No.  | Variable name       | Name                     | Data type                           | Default value | Description                                                                                                                                                                                                                                                                                    |
|------|---------------------|--------------------------|-------------------------------------|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (15) | o_bENO              | Execution status         | Bit                                 | Off           | The execution status of the FB is output.<br>• On: In execution<br>• Off: Not in execution                                                                                                                                                                                                     |
| (16) | o_bOK               | Normal completion        | Bit                                 | Off           | When this label is on, it indicates that the FB has been processed normally.                                                                                                                                                                                                                   |
| (17) | o_bErr              | Error completion         | Bit                                 | Off           | When this label is on, it indicates that an error has occurred in the FB.                                                                                                                                                                                                                      |
| (18) | o_uErrId            | Error code               | Word [Unsigned]/Bit String [16-bit] | 0             | Stores the error code that occurred in the FB.                                                                                                                                                                                                                                                 |
| (19) | o_bConnectOK        | Establishment completion | Bit                                 | Off           | When this label is on, it indicates that Connect has been processed normally.                                                                                                                                                                                                                  |
| (20) | o_bDisconnectOK     | Disconnection completion | Bit                                 | Off           | When this label is on, it indicates that Disconnect has been processed normally.                                                                                                                                                                                                               |
| (21) | o_uConnectionStatus | Communication status     | Word [Unsigned]/Bit String [16-bit] | 0             | Monitors the FX5-ENET status buffer memory. When i_bEN (Execution command) is on, the status is constantly output.<br>For details, refer to the following.<br> MELSEC iQ-F FX5 Ethernet Module User's Manual |

## Public label

| No.      | Variable name       | Name                        | Data type                                  | Range                      | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |     |    |    |    |          |             |  |              |  |          |             |  |              |  |          |       |  |          |       |  |
|----------|---------------------|-----------------------------|--------------------------------------------|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----|----|----|----|----------|-------------|--|--------------|--|----------|-------------|--|--------------|--|----------|-------|--|----------|-------|--|
| (22)     | pbi_bUseParameters  | Parameter used              | Bit                                        | On, off                    | Specify whether to use the parameter values set by the engineering tool or the following operation parameter ((23) to (25)) values when processing for opening a connection.<br>• Off: Performs open processing according to the target device configuration setting made by the engineering tool. (The following operation parameters ((23) to (25)) need not be set. Any settings are ignored if made.)<br>• On: Performs open processing according to the following operation parameters ((23) to (25)).        |  |     |    |    |    |          |             |  |              |  |          |             |  |              |  |          |       |  |          |       |  |
| (23)     | pbi_uLocal_Port_No  | Own node port number        | Word [Unsigned]/Bit String [16-bit]        | 1 to 5548, 5570 to 65534   | Specify the port number of the own node.<br>Own node port numbers 1 to 1023 are generally reserved port numbers, and 61440 to 65534 are used by other communication functions. Therefore, port numbers 1024 to 5548 and 5570 to 61439 should be used.                                                                                                                                                                                                                                                              |  |     |    |    |    |          |             |  |              |  |          |             |  |              |  |          |       |  |          |       |  |
| (24)     | pbi_uTarget_Port_No | Destination port number     | Word [Unsigned]/Bit String [16-bit]        | 1 to 65534                 | Specify the destination port number.                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |     |    |    |    |          |             |  |              |  |          |             |  |              |  |          |       |  |          |       |  |
| (25)     | pbi_u2IP_Address    | IP address of target device | Word [Unsigned]/Bit String [16-bit] (0..1) | 0.0.0.1 to 223.255.255.255 | <div>Specify the IP address of the target device.</div> <div><table><tr><td></td><td>b15</td><td>b8</td><td>b7</td><td>b0</td></tr><tr><td>1st word</td><td colspan="2">Third octet</td><td colspan="2">Fourth octet</td></tr><tr><td>2nd word</td><td colspan="2">First octet</td><td colspan="2">Second octet</td></tr></table><div>Example: When IP address is 192.168.3.250</div><table><tr><td>1st word</td><td colspan="2">03FAH</td></tr><tr><td>2nd word</td><td colspan="2">C0A8H</td></tr></table></div> |  | b15 | b8 | b7 | b0 | 1st word | Third octet |  | Fourth octet |  | 2nd word | First octet |  | Second octet |  | 1st word | 03FAH |  | 2nd word | C0A8H |  |
|          | b15                 | b8                          | b7                                         | b0                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |     |    |    |    |          |             |  |              |  |          |             |  |              |  |          |       |  |          |       |  |
| 1st word | Third octet         |                             | Fourth octet                               |                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |     |    |    |    |          |             |  |              |  |          |             |  |              |  |          |       |  |          |       |  |
| 2nd word | First octet         |                             | Second octet                               |                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |     |    |    |    |          |             |  |              |  |          |             |  |              |  |          |       |  |          |       |  |
| 1st word | 03FAH               |                             |                                            |                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |     |    |    |    |          |             |  |              |  |          |             |  |              |  |          |       |  |          |       |  |
| 2nd word | C0A8H               |                             |                                            |                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |     |    |    |    |          |             |  |              |  |          |             |  |              |  |          |       |  |          |       |  |

## FB details

### Available device

#### ■Ethernet module

| Target module | Firmware version | Engineering tool                  |
|---------------|------------------|-----------------------------------|
| FX5-ENET      | 1.200 or later   | GX Works3 Version 1.095Z or later |

#### ■Controller

| Target module | Firmware version | Engineering tool                  |
|---------------|------------------|-----------------------------------|
| MXF100        | 106 or later     | GX Works3 Version 1.095Z or later |

### Basic specifications

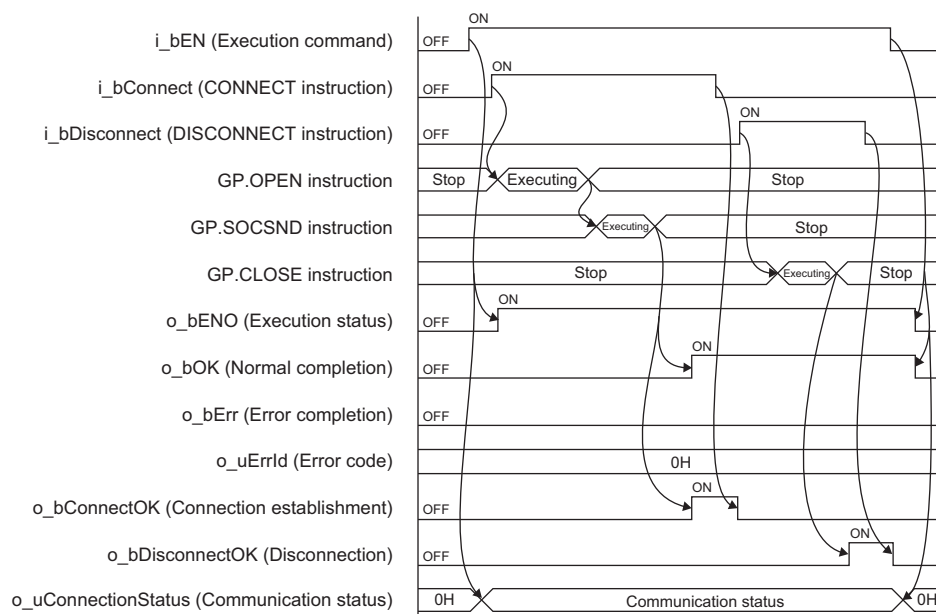
| Item                           | Description                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Number of steps                | 254 steps<br>The number of steps of the FB embedded in the program varies depending on the controller used, the input/output definitions, and the option setting of GX Works3. For the option settings of GX Works3, refer to the following.<br> GX Works3 Operating Manual                                                                                              |
| Label usage                    | <ul style="list-style-type: none"><li>Label: 0.33K points (Word)</li><li>Latch label: 0 points (Word)</li></ul> The amount of labels used in the program varies depending on the controller used, the device specified in an argument, and the option setting of GX Works3. For the option settings of GX Works3, refer to the following.<br> GX Works3 Operating Manual |
| Number of index register usage | <ul style="list-style-type: none"><li>Index register: 0 points</li><li>Long index register: 0 points</li></ul>                                                                                                                                                                                                                                                                                                                                            |
| File register usage            | 0 points                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| FB dependence                  | No dependence                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| FB compilation method          | Macro type                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| FB operation                   | Always executed                                                                                                                                                                                                                                                                                                                                                                                                                                           |

### Processing

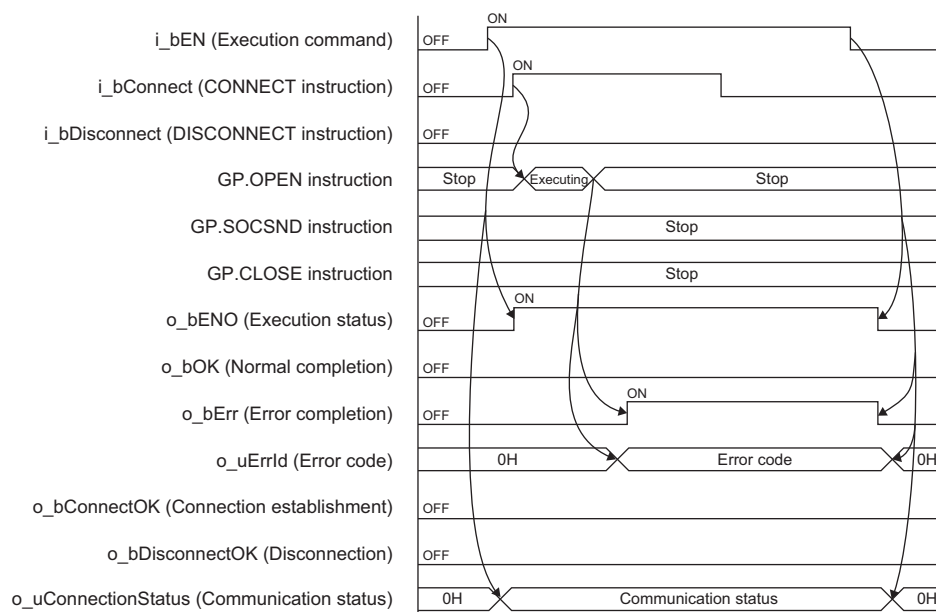
- After i\_bEN (Execution command) turns on, a session is established by turning on i\_bConnect (CONNECT instruction) and is disconnected by turning on i\_bDisconnect (DISCONNECT instruction).
- After i\_bEN (Execution command) turns on, o\_bOK (Normal completion) turns on when the first session is completely established or disconnected.
- When the session is completely established, o\_bConnectOK (Establishment completion) turns on. When i\_bConnect (CONNECT instruction) turns off from on, o\_bSendOK (Establishment completion) turns off.
- When the session is completely disconnected, o\_bDisconnectOK (Disconnection completion) turns on. When i\_bDisconnect (DISCONNECT instruction) turns off from on, o\_bDisconnectOK (Disconnection completion) turns off.
- If an error occurs during establishment/disconnection of the session, o\_bErr (Error completion) turns on and the error code is stored in o\_uErrId (Error code).
- While i\_bEN (Execution command) is on, o\_uConnectionStatus (Communication status) returns the buffer memory session status (Un\G108975) value.
- Set the module parameters in GX Works3 in accordance with the connected equipment and system. ( Page 87 Parameter setting)

## Timing chart of I/O signals

### ■For normal completion (Starting when i\_bConnect or i\_bDisconnect turns on)



### ■For error completion



## Restrictions or precautions

- This FB does not include the error recovery processing. Program the error recovery processing separately in accordance with your system and the required operation.
- This FB uses the following instructions.  
GP.OPEN instruction  
GP.SOCSEND instruction  
GP.CLOSE instruction
- Do not use this FB in programs that are executed only once, such as a subroutine program or FOR-NEXT loop, because i\_bEN (Execution command) cannot be turned off and the normal operation cannot be acquired. Always use this FB in programs that can turn off i\_bEN (Execution command).
- This FB requires circuit settings for all the input labels.
- This FB cannot be used in an interrupt program.
- The i\_uKeepaliveTimer (keepalive timer) value does not always apply. Some connection target devices may be disconnected before the time set with i\_uKeepaliveTimer (keepalive timer).
- Do not concurrently turn on i\_bConnect (CONNECT instruction) and i\_bDisconnect (DISCONNECT instruction).
- When using more than one of this FB, do not concurrently turn on i\_bConnect (CONNECT instruction) or i\_bDisconnect (DISCONNECT instruction) of the more than one FBs.
- If the number of elements in the array label specified in i\_unWillTopicNameData (Will topic name data) or i\_unWillMessageData (Will message data) is insufficient, an undefined value may be included.
- Specify the start element of the array label in i\_unWillTopicNameData (Will topic name data) and i\_unWillMessageData (Will message data).
- When TLS connection is specified to perform the CONNECT instruction while simple CPU communication is being performed, simple CPU communication may be performed with a delay of less than one second until the MQTT connection is established.

## Parameter setting

Set the target device connection configuration on MQTT communication by using GX Works3.

 Navigation window ⇒ [Parameter] ⇒ [Module Information] ⇒ [FX5-ENET] ⇒ [Basic Settings] ⇒ [External Device Configuration]

In the target device connection configuration setting, set the protocol to the TLS connection or TCP connection. Set the certificate by using Certificate Configuration Tool for FX5-ENET. For details on the setting method, refer to the following.

 MELSEC iQ-F FX5 Ethernet Module User's Manual

## Performance value

| Controller           | Input label        | Performance value |                   | Number of scans |
|----------------------|--------------------|-------------------|-------------------|-----------------|
|                      | CONNECT/DISCONNECT | Processing time   | Maximum scan time |                 |
| MXF100 <sup>*1</sup> | CONNECT            | 34.600ms          | 0.542ms           | 21 scans        |
|                      | DISCONNECT         | 8.090ms           | 0.543ms           | 4 scans         |

\*1 A personal computer in the same LAN is connected via a hub.

## Error code

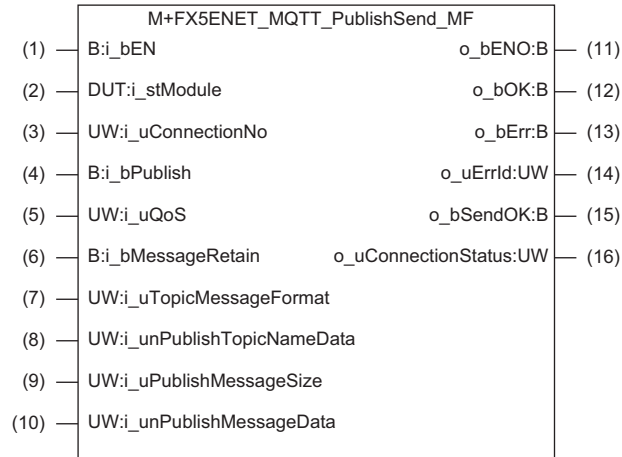
| Error code (hexadecimal)    | Description                                                                                                  | Action                                                                                                                                                      |
|-----------------------------|--------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 100H                        | The i_uConnectionNo (Connection No.) setting value is out of range.                                          | After reviewing the setting, re-execute the FB.                                                                                                             |
| 101H                        | Contention has occurred between i_bConnect (CONNECT instruction) and i_bDisconnect (DISCONNECT instruction). | After reviewing the setting, re-execute the FB.                                                                                                             |
| 102H                        | The i_uWillQoS (WillQoS) setting value is out of range.                                                      | After reviewing the setting, re-execute the FB.                                                                                                             |
| 103H                        | The i_uTimeout (Timeout value) setting value is out of range.                                                | After reviewing the setting, re-execute the FB.                                                                                                             |
| 104H                        | The i_uTopicMessageFormat (Will topic/message format) setting value is out of range.                         | After reviewing the setting, re-execute the FB.                                                                                                             |
| 120H                        | The i_uWillTopicNameDataAddr (Will topic name data start address) topic name is not set.                     | After setting the topic name with one or more characters, re-execute the FB.                                                                                |
| 200H                        | i_bEN (Execution command) was turned off during the processing.                                              | Maintain the on state of the execution command until normal completion, error completion, establishment completion, or disconnection completion turns on.*1 |
| Latest error code (session) | Same as the latest error code stored in the buffer memory.                                                   | Refer to the following.<br> MELSEC iQ-F FX5 Ethernet Module User's Manual  |

\*1 The output will be only for a single scan.

## 2.18 M+FX5ENET\_MQTT\_PublishSend\_MF (Sending of MQTT data)

### Overview

This FB sends a message to an MQTT broker (server).



### Labels

#### Input label

| No. | Variable name         | Name                                             | Data type                               | Range                                                    | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |       |          |   |   |        |
|-----|-----------------------|--------------------------------------------------|-----------------------------------------|----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-------|----------|---|---|--------|
| (1) | i_bEN                 | Execution command                                | Bit                                     | On, off                                                  | On: The FB is activated.<br>Off: The FB is not activated.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |     |       |          |   |   |        |
| (2) | i_stModule            | Module label                                     | Structure                               | The setting range differs depending on the module label. | Specify the module for which the FB is to be executed.<br>Specify the module label of the modules.<br>(Example: FX5ENET_1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |     |       |          |   |   |        |
| (3) | i_uConnectionNo       | Connection No.                                   | Word [Unsigned]/<br>Bit String [16-bit] | 1 to 32                                                  | Specify the number of the connection to be used.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |     |       |          |   |   |        |
| (4) | i_bPublish            | PUBLISH instruction (Rise detection)             | Bit                                     | On, off                                                  | Sends data on the PUBLISH command.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |     |       |          |   |   |        |
| (5) | i_uQoS                | QoS                                              | Word [Unsigned]/<br>Bit String [16-bit] | 0 to 2                                                   | Specify the QoS level to be used for send.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |     |       |          |   |   |        |
| (6) | i_bMessageRetain      | Retain send message                              | Bit                                     | On, off                                                  | Specify the Retain flag of the PUBLISH command.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |     |       |          |   |   |        |
| (7) | i_uTopicMessageFormat | Topic/message format <sup>*1</sup> specification | Word [Unsigned]/<br>Bit String [16-bit] | 0 to 3                                                   | <div>Specify the character code of topic/message.<ul style="list-style-type: none"><li>• 0 (b1 = 0, b0 = 0): ASCII is used for topic/message.</li><li>• 1 (b1 = 0, b0 = 1): The Unicode string<sup>*1</sup> is used for topic/message.</li><li>• 2 (b1 = 1, b0 = 0): ASCII is used for topic and binary is used for message.</li><li>• 3 (b1 = 1, b0 = 1): The Unicode string<sup>*1</sup> is used for topic and binary is used for message.</li></ul></div> <div><table><tr><td>b15</td><td>b8 b7</td><td>b2 b1 b0</td></tr><tr><td>0</td><td>0</td><td>(1)(2)</td></tr></table></div> <div><ul style="list-style-type: none"><li>• (1): Binary is specified for message.</li><li>• (2): ASCII/UTF-16 is specified for topic/message.</li></ul></div> | b15 | b8 b7 | b2 b1 b0 | 0 | 0 | (1)(2) |
| b15 | b8 b7                 | b2 b1 b0                                         |                                         |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |     |       |          |   |   |        |
| 0   | 0                     | (1)(2)                                           |                                         |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |     |       |          |   |   |        |

| No.  | Variable name             | Name                    | Data type                               | Range      | Description                                                                                                                                                                                                                                                                                               |
|------|---------------------------|-------------------------|-----------------------------------------|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (8)  | i_unPublishTopicNameData  | Publish topic name data | Word [Unsigned]/<br>Bit String [16-bit] | —          | Specify the start element of the array label in which the send message topic name is stored. <sup>*4</sup><br>■Maximum number of characters<br>• For ASCII: 511 characters (excluding NULL at the end)<br>• For Unicode: 255 characters (excluding NULL at the end)<br>ASCII/Unicode string <sup>*1</sup> |
| (9)  | i_uPublishSendMessageSize | Publish message size    | Word [Unsigned]/<br>Bit String [16-bit] | 0 to 32768 | Specify the send message size.<br>When 0 is specified, the send message size is automatically set. <sup>*2*3</sup><br>If the number of characters reaches the maximum length, manually set NULL at the position of the maximum length + 1 in the send message. Therefore, secure a space of 32768 bytes.  |
| (10) | i_unPublishMessageData    | Publish message data    | Word [Unsigned]/<br>Bit String [16-bit] | —          | Specify the start element of the array label in which the send message content is stored.<br>Binary/ASCII/Unicode string <sup>*1</sup>                                                                                                                                                                    |

\*1 For GX Works3, the Unicode string is UTF-16.

\*2 The Publish message data area is treated as 32768 bytes (including NULL). Therefore, set the number of elements of the array label according to the Publish message size. If 0 is specified for the Publish message size, the area is treated as the maximum length + 1 byte. Therefore, set the number of elements of the array label to 16384.

\*3 When i\_uTopicMessageFormat (Topic/message format) is binary, this area is treated as 0 byte data.

\*4 The Publish topic name data area is treated as 511 bytes (excluding NULL). Therefore, set the number of elements of the array label to 256. If the number of elements in the array label is insufficient, an undefined value may be included.

## Output label

| No.  | Variable name       | Name                 | Data type                              | Default value | Description                                                                                                                                                                                                                                                                                      |
|------|---------------------|----------------------|----------------------------------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (11) | o_bENO              | Execution status     | Bit                                    | Off           | The execution status of the FB is output.<br>• On: In execution<br>• Off: Not in execution                                                                                                                                                                                                       |
| (12) | o_bOK               | Normal completion    | Bit                                    | Off           | When this label is on, it indicates that the FB has been processed normally.                                                                                                                                                                                                                     |
| (13) | o_bErr              | Error completion     | Bit                                    | Off           | When this label is on, it indicates that an error has occurred in the FB.                                                                                                                                                                                                                        |
| (14) | o_uErrId            | Error code           | Word [Unsigned]/Bit<br>String [16-bit] | 0             | Stores the error code that occurred in the FB.                                                                                                                                                                                                                                                   |
| (15) | o_bSendOK           | Send completion      | Bit                                    | Off           | When this label is on, it indicates that send or response receive on the PUBLISH command has been processed normally.                                                                                                                                                                            |
| (16) | o_uConnectionStatus | Communication status | Word [Unsigned]/Bit<br>String [16-bit] | 0             | Monitors the FX5-ENET status buffer memory. When i_bEN (Execution command) is on, the status is constantly output.<br>For details, refer to the following.<br> MELSEC iQ-F FX5 Ethernet Module User's Manual |



## FB details

### Available device

#### ■Ethernet module

| Target module | Firmware version | Engineering tool                  |
|---------------|------------------|-----------------------------------|
| FX5-ENET      | 1.200 or later   | GX Works3 Version 1.095Z or later |

#### ■Controller

| Target module | Firmware version | Engineering tool                  |
|---------------|------------------|-----------------------------------|
| MXF100        | 106 or later     | GX Works3 Version 1.095Z or later |

### Basic specifications

| Item                           | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Number of steps                | 226 steps<br>The number of steps of the FB embedded in the program varies depending on the controller used, the input/output definitions, and the option setting of GX Works3. For the option settings of GX Works3, refer to the following.<br> GX Works3 Operating Manual                                                                                                  |
| Label usage                    | <ul style="list-style-type: none"><li>• Label: 1.05K points (Word)</li><li>• Latch label: 0 points (Word)</li></ul> The amount of labels used in the program varies depending on the controller used, the device specified in an argument, and the option setting of GX Works3. For the option settings of GX Works3, refer to the following.<br> GX Works3 Operating Manual |
| Number of index register usage | <ul style="list-style-type: none"><li>• Index register: 0 points</li><li>• Long index register: 0 points</li></ul>                                                                                                                                                                                                                                                                                                                                            |
| File register usage            | 0 points                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| FB dependence                  | No dependence                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| FB compilation method          | Macro type                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| FB operation                   | Always executed                                                                                                                                                                                                                                                                                                                                                                                                                                               |

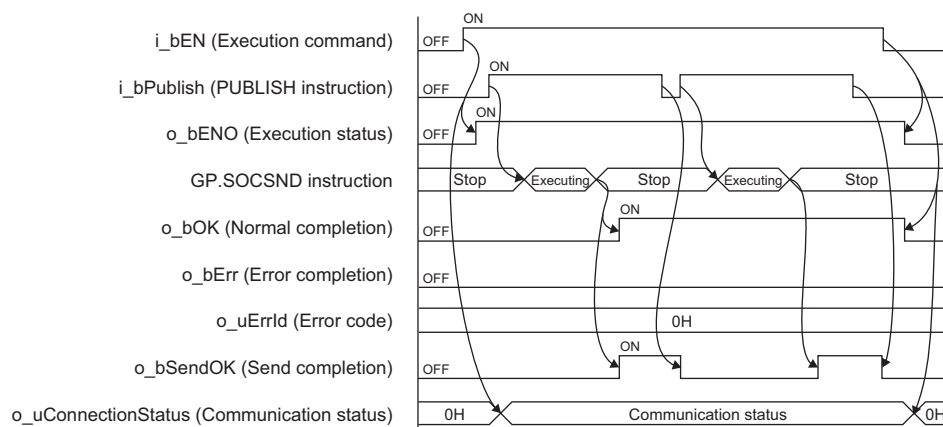
### Processing

- After i\_bEN (Execution command) turns on, the PUBLISH command is sent by turning on i\_bPublish (PUBLISH instruction).
- If i\_bPublish (PUBLISH instruction) turns on before the turning on of i\_bEN (Execution command), the PUBLISH command is not sent.
- After i\_bEN (Execution command) turns on, o\_bOK (Normal completion) turns on when the first PUBLISH command is completed.
- When the PUBLISH command is completed, o\_bSendOK (Send completion) turns on. When i\_bPublish (PUBLISH instruction) turns off from on, o\_bSendOK (Send completion) turns off.
- If an error occurs during the PUBLISH command execution, o\_bErr (Error completion) turns on and the error code is stored in o\_uErrId (Error code).
- While i\_bEN (Execution command) is on, o\_uConnectionStatus (Communication status) returns the buffer memory session status (Un\G108977) value.
- Set the module parameters in GX Works3 in accordance with the connected equipment and system. For the module parameters, refer to the following.

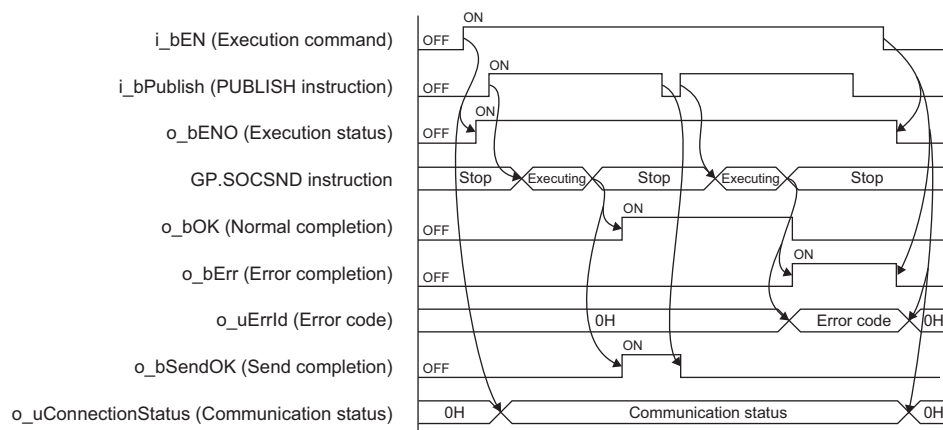
 Page 87 Parameter setting

## Timing chart of I/O signals

### ■For normal completion



### ■For error completion



## Restrictions or precautions

- This FB does not include the error recovery processing. Program the error recovery processing separately in accordance with your system and the required operation.
- This FB uses the following instruction.

GP.SOCSND instruction

- Do not use this FB in programs that are executed only once, such as a subroutine program or FOR-NEXT loop, because i\_bEN (Execution command) cannot be turned off and the normal operation cannot be acquired. Always use this FB in programs that can turn off i\_bEN (Execution command).
- This FB requires circuit settings for all the input labels.
- This FB cannot be used in an interrupt program.
- When using more than one of this FB, do not concurrently turn on ibPublish (PUBLISH instruction) of the more than one FBs.
- Specify a NULL character at the end of each string.
- When K0 is specified for i\_uPublishSendMessageSize (Publish message size) and i\_uTopicMessageFormat (Topic/message format) is binary, the send message size is 0 bytes.
- When K0 is specified for i\_uPublishSendMessageSize (Publish message size) and i\_uTopicMessageFormat (Topic/message format) is ASCII, the maximum send message size is 32767 bytes.
- When K0 is specified for i\_uPublishSendMessageSize (Publish message size) and i\_uTopicMessageFormat (Topic/message format) is Unicode, the maximum send message size is 16383 words.
- To send a 32768 byte message with ASCII or Unicode specified for i\_uTopicMessageFormat (Topic/message format), follow the conditions listed below.
- Do not specify any NULL character at the end of Publish messages.
- Specify K32768 for i\_uPublishSendMessageSize (Publish message size).
- If the number of elements in the array label specified in i\_unPublishTopicNameData (Publish topic name data) or i\_unPublishSendMessageData (Publish message data) is insufficient, an undefined value may be included.
- Specify the start element of the array label in i\_unPublishTopicNameData (Publish topic name data) and i\_unPublishSendMessageData (Publish message data).

## Parameter setting

For the parameter setting, refer to the following.

 Page 87 Parameter setting

## Performance value

| Controller           | Input label      | Performance value |                   | Number of scans |
|----------------------|------------------|-------------------|-------------------|-----------------|
|                      | Send size (byte) | Processing time   | Maximum scan time |                 |
| MXF100 <sup>*1</sup> | 1                | 6.450ms           | 0.718ms           | 15 scans        |
|                      | 16384            | 39.200ms          | 1.260ms           | 100 scans       |
|                      | 32768            | 69.200ms          | 1.310ms           | 184 scans       |

\*1 A personal computer in the same LAN is connected via a hub.

## Error code

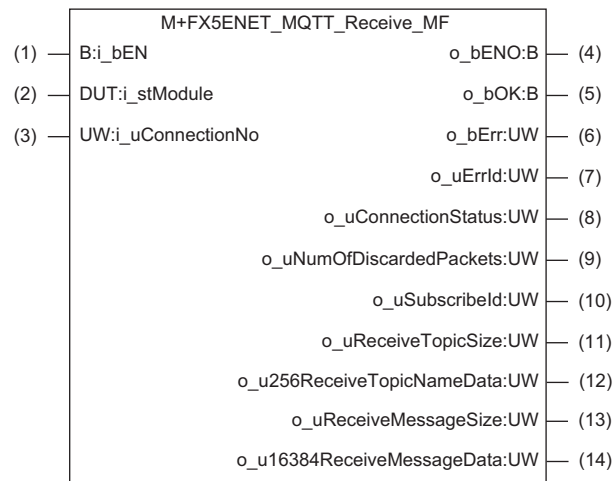
| Error code (hexadecimal)        | Description                                                                                   | Action                                                                                                                                                                  |
|---------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 100H                            | The i_uConnectionNo (Connection No.) setting value is out of range.                           | After reviewing the setting, re-execute the FB.                                                                                                                         |
| 102H                            | The i_uQoS (QoS) setting value is out of range.                                               | After reviewing the setting, re-execute the FB.                                                                                                                         |
| 104H                            | The i_uTopicMessageFormat (Topic/message format) setting value is out of range.               | After reviewing the setting, re-execute the FB.                                                                                                                         |
| 105H                            | The i_uPublishTopicNameDataAdd (Publish topic name data start address) topic name is not set. | After setting the topic name with one or more characters, re-execute the FB.                                                                                            |
| 130H                            | The i_uPublishMessageSize (Publish message size) setting value is out of range.               | After reviewing the setting, re-execute the FB.                                                                                                                         |
| 200H                            | i_bEN (Execution command) was turned off during the processing.                               | Maintain the on state of the execution command until normal completion, error completion, establishment completion, or disconnection completion turns on. <sup>*1</sup> |
| Latest error code (session)     | Same as the latest error code stored in the buffer memory.                                    | Refer to the following.<br> MELSEC iQ-F FX5 Ethernet Module User's Manual            |
| Socket communication error code | Same as the error code caused by the connection establishment (GP.SOCRCV) instruction         | Refer to the following.<br> MELSEC iQ-F FX5 Ethernet Module User's Manual            |

\*1 The output will be only for a single scan.

## 2.19 M+FX5ENET\_MQTT\_Receive\_MF (Receiving of MQTT data)

### Overview

This FB reads a message received from an MQTT broker (server).



### Labels

#### Input label

| No. | Variable name   | Name              | Data type                           | Range                                                    | Description                                                                                                                |
|-----|-----------------|-------------------|-------------------------------------|----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| (1) | i_bEN           | Execution command | Bit                                 | On, off                                                  | On: The FB is activated.<br>Off: The FB is not activated.                                                                  |
| (2) | i_stModule      | Module label      | Structure                           | The setting range differs depending on the module label. | Specify the module for which the FB is to be executed.<br>Specify the module label of the modules.<br>(Example: FX5ENET_1) |
| (3) | i_uConnectionNo | Connection No.    | Word [Unsigned]/Bit String [16-bit] | 1 to 32                                                  | Specify the number of the connection to be used.                                                                           |

## Output label

| No.  | Variable name              | Name                                        | Data type                                      | Default value | Description                                                                                                                                                                                                                                                                                   |
|------|----------------------------|---------------------------------------------|------------------------------------------------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (4)  | o_bENO                     | Execution status                            | Bit                                            | Off           | The execution status of the FB is output.<br>• On: In execution<br>• Off: Not in execution                                                                                                                                                                                                    |
| (5)  | o_bOK                      | Normal completion                           | Bit                                            | Off           | When this label is on, it indicates that the FB has been processed normally.                                                                                                                                                                                                                  |
| (6)  | o_bErr                     | Error completion                            | Bit                                            | Off           | When this label is on, it indicates that an error has occurred in the FB.                                                                                                                                                                                                                     |
| (7)  | o_uErrId                   | Error code                                  | Word [Unsigned]/Bit String [16-bit]            | 0             | Stores the error code that occurred in the FB.                                                                                                                                                                                                                                                |
| (8)  | o_uConnectionStatus        | Communication status                        | Word [Unsigned]/Bit String [16-bit]            | 0             | Monitors the FX5-ENET status buffer memory. When i_bEN (Execution command) is on, the status is constantly output.<br>For details, refer to the following.<br> MELSEC iQ-F FX5 Ethernet Module User's Manual |
| (9)  | o_uNumOfDiscardedPackets   | Number of discarded packets                 | Word [Unsigned]/Bit String [16-bit]            | 0             | Stores the number of discarded packets.                                                                                                                                                                                                                                                       |
| (10) | o_uSubscribeId             | Subscribe ID                                | Word [Unsigned]/Bit String [16-bit]            | 0             | Stores the ID associated with the topic filter specified during Subscribe.                                                                                                                                                                                                                    |
| (11) | o_uReceiveTopicSize        | Receive topic size                          | Word [Unsigned]/Bit String [16-bit]            | 0             | Stores the receive topic size.                                                                                                                                                                                                                                                                |
| (12) | o_u256ReceiveTopicNameData | Receive topic name data storage destination | Word [Unsigned]/Bit String [16-bit] (0..255)   | —             | Specify the array label in which to store the receive topic.*1<br>■Maximum number of characters<br>• For ASCII: 511 characters (excluding NULL at the end)<br>• For Unicode: 255 characters (excluding NULL at the end)<br>ASCII/UTF-16 string                                                |
| (13) | o_uReceiveMessageSize      | Receive message size                        | Word [Unsigned]/Bit String [16-bit]            | 0             | Stores the receive message size.                                                                                                                                                                                                                                                              |
| (14) | o_u16384ReceiveMessageData | Receive message data storage destination    | Word [Unsigned]/Bit String [16-bit] (0..16383) | —             | Specify the array label in which to store the receive message content.*1<br>■Maximum number of characters<br>• For binary: 32768 bytes<br>• For ASCII: 32767 characters (excluding NULL at the end)<br>• For Unicode: 16383 characters (excluding NULL at the end)<br>ASCII/UTF-16 string     |

\*1 If a label other than an array label is specified, an undefined value may be included.

## FB details

### Available device

#### ■Ethernet module

| Target module | Firmware version | Engineering tool                  |
|---------------|------------------|-----------------------------------|
| FX5-ENET      | 1.200 or later   | GX Works3 Version 1.095Z or later |

#### ■Controller

| Target module | Firmware version | Engineering tool                  |
|---------------|------------------|-----------------------------------|
| MXF100        | 106 or later     | GX Works3 Version 1.095Z or later |

### Basic specifications

| Item                           | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Number of steps                | 155 steps<br>The number of steps of the FB embedded in the program varies depending on the controller used, the input/output definitions, and the option setting of GX Works3. For the option settings of GX Works3, refer to the following.<br> GX Works3 Operating Manual                                                                                                  |
| Label usage                    | <ul style="list-style-type: none"> <li>Label: 17.29K points (Word)</li> <li>Latch label: 0 points (Word)</li> </ul> The amount of labels used in the program varies depending on the controller used, the device specified in an argument, and the option setting of GX Works3. For the option settings of GX Works3, refer to the following.<br> GX Works3 Operating Manual |
| Number of index register usage | <ul style="list-style-type: none"> <li>Index register: 0 points</li> <li>Long index register: 0 points</li> </ul> When using an interrupt program, do not use the index register within the interrupt program.                                                                                                                                                                                                                                                |
| File register usage            | 0 points                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| FB dependence                  | No dependence                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| FB compilation method          | Macro type                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| FB operation                   | Pulsed execution (multiple scan execution type)                                                                                                                                                                                                                                                                                                                                                                                                               |

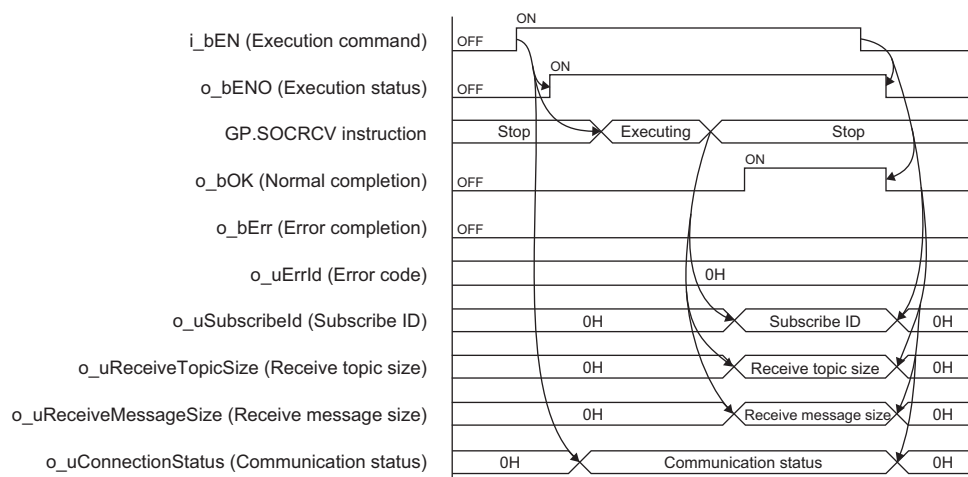
### Processing

- After i\_bEN (Execution command) turns on, this FB reads the data being received to the connection specified by the input argument.
- After the data receive is completed, o\_bOK (Normal completion) turns on.
- If an error occurs during data receive, o\_bErr (Error completion) turns on and the error code is stored in o\_uErrId (Error code).
- While i\_bEN (Execution command) is on, o\_uConnectionStatus (Communication status) returns the buffer memory session status (Un\G108981) value.
- Set the module parameters in GX Works3 in accordance with the connected equipment and system. For the module parameters, refer to the following.

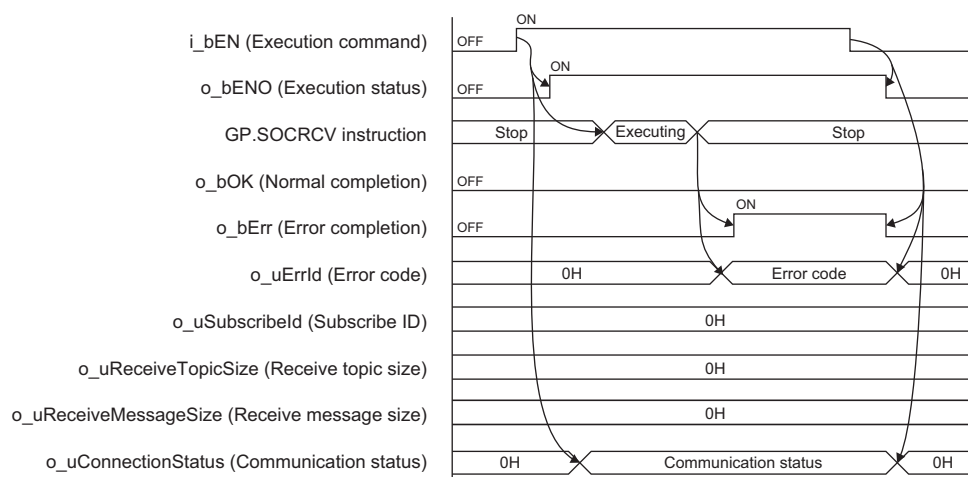
 Page 87 Parameter setting

## Timing chart of I/O signals

### ■For normal completion



### ■For error completion





## Restrictions or precautions

- This FB does not include the error recovery processing. Program the error recovery processing separately in accordance with your system and the required operation.
- This FB uses the following instruction.  
GP. SOCRCV instruction
- Do not use this FB in programs that are executed only once, such as a subroutine program or FOR-NEXT loop, because i\_bEN (Execution command) cannot be turned off and the normal operation cannot be acquired. Always use this FB in programs that can turn off i\_bEN (Execution command).
- This FB requires circuit settings for all the input labels.
- This FB cannot be used in an interrupt program.
- When using more than one of this FB, do not concurrently turn on i\_bEN (Execution command) of the more than one FBs.
- If a label other than an array label is specified in o\_u256ReceiveTopicNameData (Receive topic name data storage destination) or o\_u16384ReceiveMessageData (Receive message data storage destination), an undefined value may be included.

## Parameter setting

For the parameter setting, refer to the following.

 Page 87 Parameter setting

## Performance value

| Controller           | Input label         | Performance value |                   | Number of scans |
|----------------------|---------------------|-------------------|-------------------|-----------------|
|                      | Receive size (byte) | Processing time   | Maximum scan time |                 |
| MXF100 <sup>*1</sup> | 1                   | 3.850ms           | 0.756ms           | 8 scans         |
|                      | 16384               | 30.000ms          | 1.220ms           | 71 scans        |
|                      | 32768               | 56.000ms          | 1.2000ms          | 131 scans       |

<sup>\*1</sup> A personal computer in the same LAN is connected via a hub.

## Error code

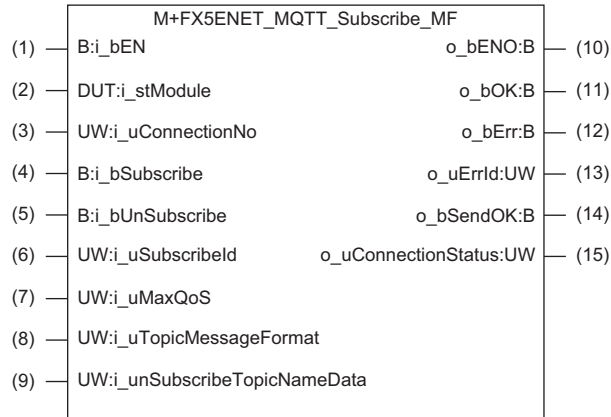
| Error code (hexadecimal)        | Description                                                                           | Action                                                                                                                                                                  |
|---------------------------------|---------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 100H                            | The i_uConnectionNo (Connection No.) setting value is out of range.                   | After reviewing the setting, re-execute the FB.                                                                                                                         |
| 200H                            | i_bEN (Execution command) was turned off during the processing.                       | Maintain the on state of the execution command until normal completion, error completion, establishment completion, or disconnection completion turns on. <sup>*1</sup> |
| Latest error code (session)     | Same as the latest error code stored in the buffer memory.                            | Refer to the following.<br> MELSEC iQ-F FX5 Ethernet Module User's Manual            |
| Socket communication error code | Same as the error code caused by the connection establishment (GP.SOCRCV) instruction | Refer to the following.<br> MELSEC iQ-F FX5 Ethernet Module User's Manual            |

<sup>\*1</sup> The output will be only for a single scan.

## 2.20 M+FX5ENET\_MQTT\_Subscribe\_MF (Sending of Subscribe command)

### Overview

This FB sends a SUBSCRIBE/UNSUBSCRIBE command to an MQTT broker (server).



### Labels

#### Input label

| No. | Variable name   | Name                    | Data type                               | Range                                                    | Description                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----|-----------------|-------------------------|-----------------------------------------|----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1) | i_bEN           | Execution command       | Bit                                     | On, off                                                  | On: The FB is activated.<br>Off: The FB is not activated.                                                                                                                                                                                                                                                                                                                                                        |
| (2) | i_stModule      | Module label            | Structure                               | The setting range differs depending on the module label. | Specify the module for which the FB is to be executed.<br>Specify the module label of the modules.<br>(Example: FX5ENET_1)                                                                                                                                                                                                                                                                                       |
| (3) | i_uConnectionNo | Connection No.          | Word [Unsigned]/<br>Bit String [16-bit] | 1 to 32                                                  | Specify the number of the connection to be used.                                                                                                                                                                                                                                                                                                                                                                 |
| (4) | i_bSubscribe    | SUBSCRIBE instruction   | Bit                                     | On, off                                                  | When On (rise) is detected, this FB sends the SUBSCRIBE command of the specified topic.                                                                                                                                                                                                                                                                                                                          |
| (5) | i_bUnSubscribe  | UNSUBSCRIBE instruction | Bit                                     | On, off                                                  | When On (rise) is detected, this FB sends the UNSUBSCRIBE command of the specified topic.                                                                                                                                                                                                                                                                                                                        |
| (6) | i_uSubscribeId  | Subscribe ID            | Word [Unsigned]/<br>Bit String [16-bit] | 0 to 255                                                 | In the range of 1 to 255, specify ID1 <sup>*1</sup> to be associated with the topic to be subscribed to. When 0 is specified, no ID association is performed.<br>This input label is valid only for the SUBSCRIBE instruction.<br>The setting value is ignored for the UNSUBSCRIBE instruction.<br>If a subscribe ID that has been already set is specified again for another topic, an error completion occurs. |
| (7) | i_uMaxQoS       | Maximum QoS             | Word [Unsigned]/<br>Bit String [16-bit] | 0 to 2                                                   | Specify the maximum QoS level at message receive on SUBSCRIBE. The actual QoS level varies depending on the broker specifications.<br>This input label is valid only for the SUBSCRIBE instruction.<br>The setting value is ignored for the UNSUBSCRIBE instruction.                                                                                                                                             |

| No. | Variable name               | Name                                                                           | Data type                                         | Range  | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----|-----------------------------|--------------------------------------------------------------------------------|---------------------------------------------------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (8) | i_uTopicMessageFormat       | Topic/message format (Binary/ASCII/Unicode string <sup>*3</sup> specification) | Word [Unsigned]/Bit String [16-bit]               | 0 to 3 | Specify the character code to be input in the send topic data start address (i_uSendTopicDataAddr) of FB: MQTT_Subscribe.<br>Also, specify the data type and character code to be output with the receive topic data start address (o_uReceiveTopicDataAddr)/receive message data start address (i_uReceiveMessageDataAddr) of FB: MQTT_Receive.<br><ul style="list-style-type: none"> <li>• 0: ASCII is used for topic/message.</li> <li>• 1: The Unicode string<sup>*3</sup> is used for topic/message.</li> <li>• 2: ASCII is used for topic and binary is used for message.</li> <li>• 3: The Unicode string<sup>*3</sup> is used for topic and binary is used for message.</li> </ul> (Default: 0)<br>Even when messages whose format differs between binary and string depending on the topic filter, those messages are converted and output as the received messages in accordance with this setting. |
| (9) | i_unSubscribeTopicName Data | Subscribe topic name data                                                      | Word [Unsigned]/Bit String [16-bit] <sup>*1</sup> | —      | Specify the start element of the array label in which the topic executing SUBSCRIBE or UNSUBSCRIBE (topic filter) is stored. <sup>*2</sup><br>■Maximum number of characters <ul style="list-style-type: none"> <li>• For ASCII: 511 characters (excluding NULL at the end)</li> <li>• For Unicode: 255 characters (excluding NULL at the end)</li> </ul> ASCII/Unicode string <sup>*3</sup><br>If SUBSCRIBE is specified again for the topic for which SUBSCRIBE has been already set with another subscribe ID, error completion occurs.<br>If UNSUBSCRIBE is specified for a topic for which SUBSCRIBE is not set, normal completion occurs without any action.                                                                                                                                                                                                                                             |

\*1 While the normal MQTT uses topics to distinguish the receive data, this label uses subscribe IDs (numbers) in the replacement of the topics.

For example, when the topic of test/abc1 is replaced with the subscribe ID 1 and the topic of test/bcd2 is replaced with the subscribe ID 2, those numbers are output at MQTT\_Receive. Therefore, the topic can be determined from the ID.

\*2 The Publish topic name data area is treated as 511 bytes (excluding NULL). Therefore, set the number of elements of the array label to 256. If the number of elements in the array label is insufficient, an undefined value may be included.

\*3 For GX Works3, the Unicode string is UTF-16.

## Output label

| No.  | Variable name       | Name                 | Data type                           | Default value | Description                                                                                                                                                                                                                                                                                  |
|------|---------------------|----------------------|-------------------------------------|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (10) | o_bENO              | Execution status     | Bit                                 | Off           | The execution status of the FB is output.<br><ul style="list-style-type: none"> <li>• On: In execution</li> <li>• Off: Not in execution</li> </ul>                                                                                                                                           |
| (11) | o_bOK               | Normal completion    | Bit                                 | Off           | When this label is on, it indicates that the FB has been processed normally.                                                                                                                                                                                                                 |
| (12) | o_bErr              | Error completion     | Bit                                 | Off           | When this label is on, it indicates that an error has occurred in the FB.                                                                                                                                                                                                                    |
| (13) | o_uErrId            | Error code           | Word [Unsigned]/Bit String [16-bit] | 0             | Stores the error code that occurred in the FB.                                                                                                                                                                                                                                               |
| (14) | o_bSendOK           | Send completion      | Bit                                 | Off           | When this label is on, it indicates that Subscribe/Unsubscribe has been completed normally.                                                                                                                                                                                                  |
| (15) | o_uConnectionStatus | Communication status | Word [Unsigned]/Bit String [16-bit] | 0             | Monitors the FX5-ENET status buffer memory. When i_bEN (Execution command) is on, the status is constantly output. For details, refer to the following.<br> MELSEC iQ-F FX5 Ethernet Module User's Manual |

## FB details

### Available device

#### ■Ethernet module

| Target module | Firmware version | Engineering tool                  |
|---------------|------------------|-----------------------------------|
| FX5-ENET      | 1.200 or later   | GX Works3 Version 1.095Z or later |

#### ■Controller

| Target module | Firmware version | Engineering tool                  |
|---------------|------------------|-----------------------------------|
| MXF100        | 106 or later     | GX Works3 Version 1.095Z or later |

### Basic specifications

| Item                           | Description                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Number of steps                | 184 steps<br>The number of steps of the FB embedded in the program varies depending on the controller used, the input/output definitions, and the option setting of GX Works3. For the option settings of GX Works3, refer to the following.<br> GX Works3 Operating Manual                                                                                              |
| Label usage                    | <ul style="list-style-type: none"><li>Label: 0.55K points (Word)</li><li>Latch label: 0 points (Word)</li></ul> The amount of labels used in the program varies depending on the controller used, the device specified in an argument, and the option setting of GX Works3. For the option settings of GX Works3, refer to the following.<br> GX Works3 Operating Manual |
| Number of index register usage | <ul style="list-style-type: none"><li>Index register: 0 points</li><li>Long index register: 0 points</li></ul> When using an interrupt program, do not use the index register within the interrupt program.                                                                                                                                                                                                                                               |
| File register usage            | 0 points                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| FB dependence                  | No dependence                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| FB compilation method          | Macro type                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| FB operation                   | Always executed                                                                                                                                                                                                                                                                                                                                                                                                                                           |

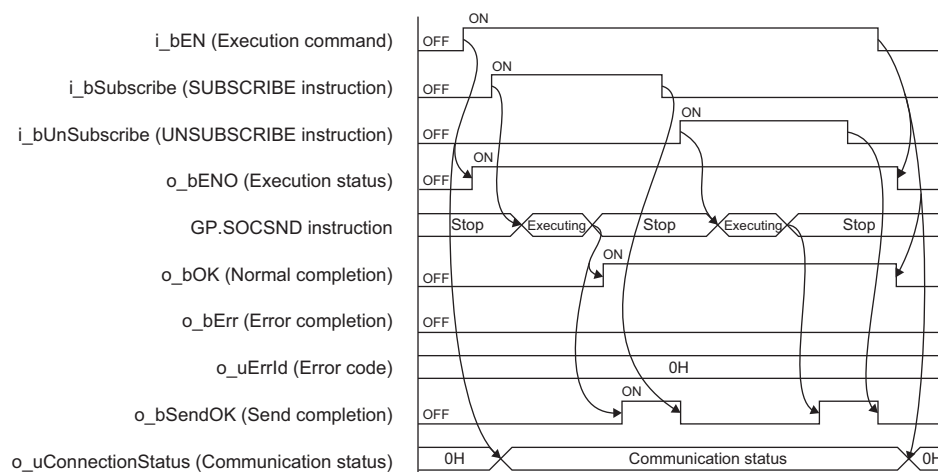
### Processing

- After i\_bEN (Execution command) turns on, the SUBSCRIBE command is sent to an MQTT broker (server) by turning on i\_bSubscribe (SUBSCRIBE instruction) and the UNSUBSCRIBE command is sent by turning on (rising) i\_bUnSubscribe (UNSUBSCRIBE instruction).
- After i\_bEN (Execution command) turns on, o\_bOK (Normal completion) turns on when the first SUBSCRIBE/UNSUBSCRIBE is completed.
- When the SUBSCRIBE/UNSUBSCRIBE is completed, o\_bSendOK (Send completion) turns on. When i\_bSubscribe (SUBSCRIBE instruction) or i\_bUnSubscribe (UNSUBSCRIBE instruction) turns off from on, o\_bSendOK (Send completion) turns off.
- If an error occurs during the SUBSCRIBE/UNSUBSCRIBE execution, o\_bErr (Error completion) turns on and the error code is stored in o\_uErrId (Error code).
- While i\_bEN (Execution command) is on, o\_uConnectionStatus (Communication status) returns the buffer memory session status (Un\G108979) value.
- Set the module parameters in GX Works3 in accordance with the connected equipment and system. For the module parameters, refer to the following.

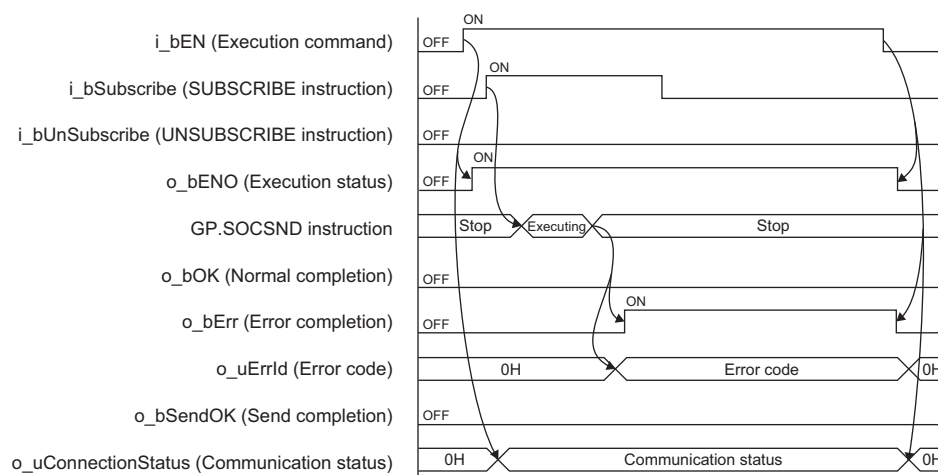
 Page 87 Parameter setting

## Timing chart of I/O signals

### ■For normal completion



### ■For error completion



## Restrictions or precautions

- This FB does not include the error recovery processing. Program the error recovery processing separately in accordance with your system and the required operation.
- This FB uses the following instruction.  
GP.SOCSND instruction
- Do not use this FB in programs that are executed only once, such as a subroutine program or FOR-NEXT loop, because i\_bEN (Execution command) cannot be turned off and the normal operation cannot be acquired. Always use this FB in programs that can turn off i\_bEN (Execution command).
- This FB requires circuit settings for all the input labels.
- This FB cannot be used in an interrupt program.
- Do not concurrently turn on i\_bSubscribe (SUBSCRIBE instruction) and i\_bUnSubscribe (UNSUBSCRIBE instruction).
- When using more than one of this FB, do not concurrently turn on i\_bSubscribe (SUBSCRIBE instruction) or i\_bUnSubscribe (UNSUBSCRIBE instruction) of the more than one FBs.
- If the number of elements in the array label specified in i\_unSubscribeTopicNameData (Subscribe topic name data) is insufficient, an undefined value may be included.
- Specify the start element of the array label in i\_unSubscribeTopicNameData (Subscribe topic name data).

## Parameter setting

For the parameter setting, refer to the following.

 Page 87 Parameter setting

## Performance value

| Controller           | Input label             | Performance value |                   | Number of scans |
|----------------------|-------------------------|-------------------|-------------------|-----------------|
|                      | Command                 | Processing time   | Maximum scan time |                 |
| MXF100 <sup>*1</sup> | SUBSCRIBE instruction   | 6.000ms           | 0.752ms           | 17 scans        |
|                      | UNSUBSCRIBE instruction | 126.000ms         | 0.718ms           | 314 scans       |

<sup>\*1</sup> A personal computer in the same LAN is connected via a hub.

## Error code

| Error code (hexadecimal)    | Description                                                                                                        | Action                                                                                                                                                                  |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 100H                        | The i_uConnectionNo (Connection No.) setting value is out of range.                                                | After reviewing the setting, re-execute the FB.                                                                                                                         |
| 101H                        | Contention has occurred between i_bSubscribe (SUBSCRIBE instruction) and i_bUnSubscribe (UNSUBSCRIBE instruction). | Review the timing of instructions so that they do not cause contention.                                                                                                 |
| 102H                        | The i_uMaxQoS (Maximum QoS) setting value is out of range.                                                         | After reviewing the setting, re-execute the FB.                                                                                                                         |
| 104H                        | The i_uTopicMessageFormat (Topic/message format) setting value is out of range.                                    | After reviewing the setting, re-execute the FB.                                                                                                                         |
| 105H                        | The i_uSubscribeTopicNameDataAddr (Subscribe topic data start address) topic name is not set.                      | After setting the topic name with one or more characters, re-execute the FB.                                                                                            |
| 150H                        | The i_uSubscribeId (Subscribe ID) setting value is out of range.                                                   | After reviewing the setting, re-execute the FB.                                                                                                                         |
| 200H                        | i_bEN (Execution command) was turned off during the processing.                                                    | Maintain the on state of the execution command until normal completion, error completion, establishment completion, or disconnection completion turns on. <sup>*1</sup> |
| Latest error code (session) | Same as the latest error code stored in the buffer memory.                                                         | Refer to the following.<br> MELSEC iQ-F FX5 Ethernet Module User's Manual            |

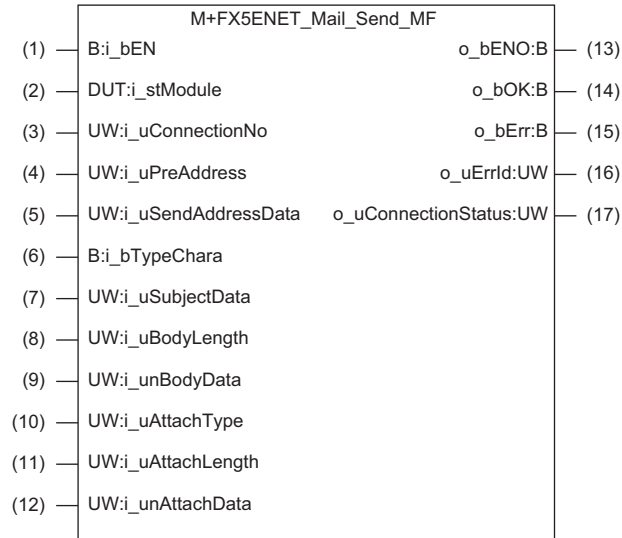
<sup>\*1</sup> The output will be only for a single scan.

## 2.21 M+FX5ENET\_Mail\_Send\_MF (Sending of E-mail)

### Overview

This FB establishes a TLS/TCP session with an SMTP server. Then, it sends E-mail data.

After sending the E-mail, it disconnects the TLS/TCP session.



### Labels

#### Input label

| No. | Variable name      | Name                              | Data type                           | Range                                                    | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-----|--------------------|-----------------------------------|-------------------------------------|----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1) | i_bEN              | Execution command                 | Bit                                 | On, off                                                  | On: The FB is activated.<br>Off: The FB is not activated.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| (2) | i_stModule         | Module label                      | Structure                           | The setting range differs depending on the module label. | Specify the module for which the FB is to be executed.<br>Specify the module label of the modules.<br>(Example: FX5ENET_1)                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| (3) | i_uConnectionNo    | Connection No.                    | Word [Unsigned]/Bit String [16-bit] | 1 to 32                                                  | Specify the number of the connection to be used.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| (4) | i_uPreAddress      | Preset send address instruction   | Word [Unsigned]/Bit String [16-bit] | 0000H to 03FFH                                           | When the send destination E-mail addresses whose parameters are set with GXW3 are specified, the corresponding bits turn on. <ul style="list-style-type: none"><li>• b0: Send destination E-mail address No.1</li><li>• b1: Send destination E-mail address No.2</li><li>• b9: Send destination E-mail address No.10</li></ul>                                                                                                                                                                                                                                                 |
| (5) | i_uSendAddressData | Send destination address data     | Word [Unsigned]/Bit String [16-bit] | —                                                        | Specify the start element of the array label in which to store the send destination E-mail address within 256 characters.*2<br>Multiple E-mail addresses (10 or more is also possible.) can be specified in the comma-delimited format. Also, this label can be concurrently used with the preset send address instruction.<br>Set the end of string to NULL because it is used for size determination.<br>If the number of characters reaches the maximum length, secure the space of 257 bytes because NULL is set at the position of the maximum length + 1 in the subject. |
| (6) | i_bTypeChara       | ASCII/UTF-16 string specification | Bit                                 | On, off                                                  | On: ASCII is used for subject/message body.<br>Off: UTF-16 is used for subject/message body.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

| No.  | Variable name   | Name                              | Data type                           | Range               | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|------|-----------------|-----------------------------------|-------------------------------------|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (7)  | i_uSubjectData  | Subject data                      | Word [Unsigned]/Bit String [16-bit] | —                   | Specify the start element of the array label in which to store the subject.<br>The maximum number of characters varies depending on the setting value of the ASCII/UTF-16 string specification.* <sup>3</sup><br>■Maximum number of characters<br>• For ASCII: 128 bytes/128 characters<br>• For Unicode: 128 bytes/64 characters<br>Set the end of string to NULL because it is used for size determination.<br>If the number of characters reaches the maximum length, secure the space of 65 words (130 bytes) because NULL is set at the position of the maximum length + 1 in the subject. |
| (8)  | i_uBodyLength   | Number of message body characters | Word [Unsigned]/Bit String [16-bit] | 0 to 1024, 0 to 512 | Specify the number of message body data characters.<br>• When ASCII is used: 0 to 1024 characters<br>• When UTF-16 is used: 0 to 512 characters<br>When 0 is specified, the number of message body characters is automatically set.* <sup>1</sup>                                                                                                                                                                                                                                                                                                                                               |
| (9)  | i_unBodyData    | Message body data                 | Word [Unsigned]/Bit String [16-bit] | —                   | Specify the start element of the array label in which to store the message body.<br>When the number of message body characters is 0, set the end of string to NULL because it is used for size determination.<br>If the number of characters reaches the maximum length, secure the space of 513 words (1026 bytes) because NULL is set at the position of the maximum length + 1 in the subject.                                                                                                                                                                                               |
| (10) | i_uAttachType   | Attachment format                 | Word [Unsigned]/Bit String [16-bit] | 0 to 3              | Specify the presence/absence of an attachment and the file format.<br>• 0: No attachment<br>• 1: CSV format<br>• 2: BIN format<br>• 3: ASCII format                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| (11) | i_uAttachLength | Attachment size                   | Word [Unsigned]/Bit String [16-bit] | 0 to 16384          | Specify the attachment size (number of words).<br>When the format is 0 (no attachment), this item is not used.* <sup>4</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| (12) | i_unAttachData  | Attachment data                   | Word [Unsigned]/Bit String [16-bit] | —                   | Specify the start element of the array label in which the attachment (up to 32768 bytes) data is stored.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

\*<sup>1</sup> The message body data area is treated as the number of bytes (excluding NULL) specified in the number of message body characters. Therefore, set the number of elements of the array label according to the number of message body characters. If 0 is specified for the number of message body characters, the area is treated as the maximum length + 1 byte. Therefore, set the number of elements of the array label to 513. If the number of elements in the array label is insufficient, an undefined value may be included.

\*<sup>2</sup> The send destination address data area is treated as 256 bytes (excluding NULL). Therefore, set the number of elements of the array label to 128. If the number of elements in the array label is insufficient, an undefined value may be included.

\*<sup>3</sup> The subject data area is treated as 128 bytes (excluding NULL). Therefore, set the number of elements of the array label to 64. If the number of elements in the array label is insufficient, an undefined value may be included.

\*<sup>4</sup> The attachment data area is treated as the number of bytes (excluding NULL) specified in the attachment size. Therefore, set the number of elements of the array label according to the attachment size. If the number of elements in the array label is insufficient, an undefined value may be included.

## Output label

| No.  | Variable name       | Name                 | Data type                           | Default value | Description                                                                                                                                                                                                                                                                                      |
|------|---------------------|----------------------|-------------------------------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (13) | o_bENO              | Execution status     | Bit                                 | Off           | The execution status of the FB is output.<br>• On: In execution<br>• Off: Not in execution                                                                                                                                                                                                       |
| (14) | o_bOK               | Normal completion    | Bit                                 | Off           | When this label is on, it indicates that the FB has been processed normally.                                                                                                                                                                                                                     |
| (15) | o_bErr              | Error completion     | Bit                                 | Off           | When this label is on, it indicates that an error has occurred in the FB.                                                                                                                                                                                                                        |
| (16) | o_uErrId            | Error code           | Word [Unsigned]/Bit String [16-bit] | 0             | Stores the error code that occurred in the FB.                                                                                                                                                                                                                                                   |
| (17) | o_uConnectionStatus | Communication status | Word [Unsigned]/Bit String [16-bit] | 0             | Monitors the FX5-ENET status buffer memory. When i_bEN (Execution command) is on, the status is constantly output.<br>For details, refer to the following.<br> MELSEC iQ-F FX5 Ethernet Module User's Manual |



## FB details

2

### Available device

#### ■Ethernet module

| Target module | Firmware version | Engineering tool                  |
|---------------|------------------|-----------------------------------|
| FX5-ENET      | 1.200 or later   | GX Works3 Version 1.095Z or later |

#### ■Controller

| Target module | Firmware version | Engineering tool                  |
|---------------|------------------|-----------------------------------|
| MXF100        | 106 or later     | GX Works3 Version 1.095Z or later |

### Basic specifications

| Item                           | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Number of steps                | 260 steps<br>The number of steps of the FB embedded in the program varies depending on the controller used, the input/output definitions, and the option setting of GX Works3. For the option settings of GX Works3, refer to the following.<br> GX Works3 Operating Manual                                                                                                  |
| Label usage                    | <ul style="list-style-type: none"><li>• Label: 1.06K points (Word)</li><li>• Latch label: 0 points (Word)</li></ul> The amount of labels used in the program varies depending on the controller used, the device specified in an argument, and the option setting of GX Works3. For the option settings of GX Works3, refer to the following.<br> GX Works3 Operating Manual |
| Number of index register usage | <ul style="list-style-type: none"><li>• Index register: 0 points</li><li>• Long index register: 0 points</li></ul>                                                                                                                                                                                                                                                                                                                                            |
| File register usage            | 0 points                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| FB dependence                  | No dependence                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| FB compilation method          | Macro type                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| FB operation                   | Pulsed execution (multiple scan execution type)                                                                                                                                                                                                                                                                                                                                                                                                               |

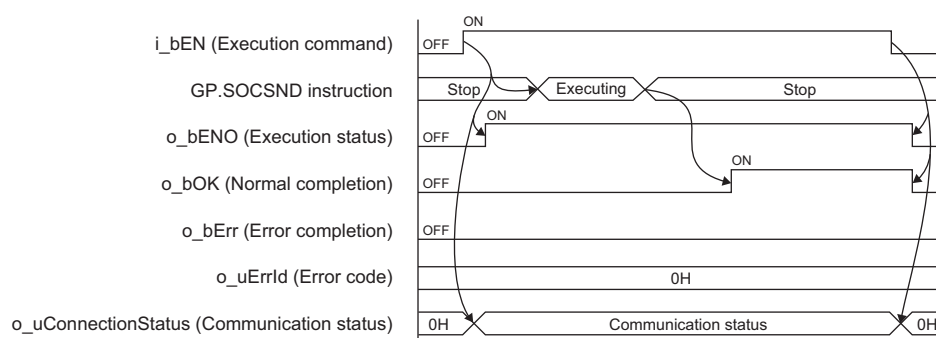
### Processing

- After i\_bEN (Execution command) turns on, this FB sends the E-mail send command.
- When the E-mail send command is completed, this FB turns on o\_bOK (Normal completion) or turns on o\_bErr (Error completion) and stores the error code in o\_uErrId (Error code).
- When i\_bEN (Execution command) is on, o\_uConnectionStatus (Communication status) returns the buffer memory session status (Un\G4380) value.
- Set the module parameters in GX Works3 in accordance with the connected equipment and system. For the module parameters, refer to the following.

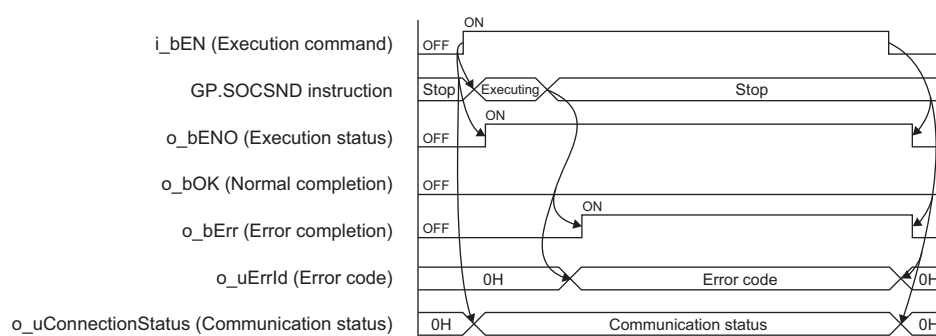
 Page 87 Parameter setting

## Timing chart of I/O signals

### ■For normal completion



### ■For error completion



## Restrictions or precautions

- This FB does not include the error recovery processing. Program the error recovery processing separately in accordance with your system and the required operation.
- This FB uses the following instructions.  
GP.OPEN instruction  
GP.SOCSEND instruction  
GP.CLOSE instruction
- Do not use this FB in programs that are executed only once, such as a subroutine program or FOR-NEXT loop, because i\_bEN (Execution command) cannot be turned off and the normal operation cannot be acquired. Always use this FB in programs that can turn off i\_bEN (Execution command).
- This FB requires circuit settings for all the input labels.
- This FB cannot be used in an interrupt program.
- When using more than one of this FB, do not concurrently turn on i\_bEN (Execution command) of the more than one FBs.
- When K0 is specified for i\_uBodyLength (Number of message body characters) and i\_bTypeChara (ASCII/UTF-16 string specification) is ASCII, the maximum send message size is 1023 bytes.
- When K0 is specified for i\_uBodyLength (Number of message body characters) and i\_bTypeChara (ASCII/UTF-16 string specification) is Unicode, the maximum send message size is 511 words.
- To send the maximum size of message body data, follow the conditions listed below.
  - Do not specify any NULL character at the end of message body data.
  - When i\_bTypeChara (ASCII/UTF-16 string specification) is ASCII, specify K1024 for i\_uBodyLength (Number of message body characters).
  - When i\_bTypeChara (ASCII/UTF-16 string specification) is Unicode, specify K512 for i\_uBodyLength (Number of message body characters).
- If the number of elements in the array label specified in i\_unSendAddressData (Send destination address data), i\_unSubjectData (Subject data), i\_unBodyData (Message body data), or i\_unAttachData (Attachment data) is insufficient, an undefined value may be included.
- Specify the start element of the array label in i\_unSendAddressData (Send destination address data), i\_unSubjectData (Subject data), i\_unBodyData (Message body data), and i\_unAttachData (Attachment data).

## Parameter setting

Set the target device connection configuration for E-mail send by using GX Works3.

 Navigation window ⇒ [Parameter] ⇒ [Module Information] ⇒ [FX5-ENET] ⇒ [Basic Settings] ⇒ [External Device Configuration]

In the target device connection configuration setting, set the protocol to the TLS connection or TCP connection. Set the certificate by using Certificate Configuration Tool for FX5-ENET. For details on the setting method, refer to the following.

 MELSEC iQ-F FX5 Ethernet Module User's Manual

## Performance value

| Controller           | Input label      | Performance value |                   | Number of scans |
|----------------------|------------------|-------------------|-------------------|-----------------|
|                      | Send size (byte) | Processing time   | Maximum scan time |                 |
| MXF100 <sup>*1</sup> | 1                | 1250.000ms        | 0.996ms           | 5742 scans      |
|                      | 16384            | 1260.000ms        | 1.160ms           | 6378 scans      |
|                      | 32768            | 1350.000ms        | 1.230ms           | 7200 scans      |

\*1 Connect with a free mail service.

## Error code

| Error code (hexadecimal)    | Description                                                                          | Action                                                                                                                                                        |
|-----------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 100H                        | The i_uConnectionNo (Connection No.) setting value is out of range.                  | After reviewing the setting, re-execute the FB.                                                                                                               |
| 101H                        | The i_uPreAddress (Preset send address instruction) setting value is out of range.   | After reviewing the setting, re-execute the FB.                                                                                                               |
| 102H                        | The i_uBodyLength (Number of message body characters) setting value is out of range. | After reviewing the setting, re-execute the FB.                                                                                                               |
| 103H                        | The i_uAttachType (Attachment format) setting value is out of range.                 | After reviewing the setting, re-execute the FB.                                                                                                               |
| 104H                        | The i_uAttachLength (Attachment size) setting value is out of range.                 | After reviewing the setting, re-execute the FB.                                                                                                               |
| 200H                        | i_bEN (Execution command) was turned off during the processing.                      | Maintain the on state of the execution command until normal completion, error completion, establishment completion, or disconnection completion turns on.*1   |
| Latest error code (session) | Same as the latest error code stored in the buffer memory.                           | Refer to the following.<br> MELSEC iQ-F FX5 Ethernet Module User's Manual |

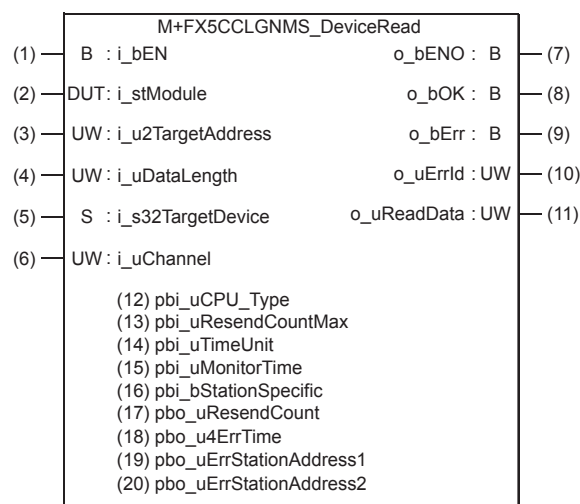
\*1 The output will be only for a single scan.

# 3 FB FOR CC-Link IE TSN

## 3.1 M+FX5CCLGNMS\_DeviceRead (Reading of another station device)

### Overview

This FB reads data from a specified device in the programmable controller of another station.



### Labels

#### Input label

| No. | Variable name     | Name                   | Data type                                  | Range                                                                                   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-----|-------------------|------------------------|--------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1) | i_bEN             | Execution command      | Bit                                        | On, off                                                                                 | On: The FB is activated.<br>Off: The FB is not activated.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| (2) | i_stModule        | Module label           | Structure                                  | The setting range differs depending on the module label.                                | Specify the module label of the FX5-CCLGN-MS.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| (3) | i_u2TargetAddress | Target station address | Word [Unsigned]/Bit String [16-bit] (0..1) | The setting range differs depending on the target station address specification method. | <div>■When the target station address specification method is off<br/>Specify the network number and station number for the target station. To specify with a label, use an array for the data type.<div><div>b15b0</div><div>1st word<div>Network number: 1 to 239</div></div><div>2nd word<div>Station number</div></div><div><div>• 125: Master station</div><div>• 1 to 120: Device stations</div></div></div><div>■When the target station address specification method is on<br/>Specify the IP address for the target station. To specify with a label, use an array for the data type.<div><div>• Valid range: 00000001H to FFFFFFFEH</div><div>Specify 1 to 254 (FEH) for the fourth octet.</div><div><div>b15b8b7b0</div><div>1st word<div>Third octetFourth octet</div></div><div>2nd word<div>First octetSecond octet</div></div></div></div></div></div> |

| No. | Variable name     | Name                       | Data type                           | Range    | Description                                                                                                                                                                                      |
|-----|-------------------|----------------------------|-------------------------------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (4) | i_uDataLength     | Read data length           | Word [Unsigned]/Bit String [16-bit] | 1 to 960 | Specify the number of words to be read.<br>• When the target station is RCP, QCPU, LCP, or FX5CPU: 1 to 960 (words)<br>• When the target station is QnACPU: 1 to 480 (words)                     |
| (5) | i_s32TargetDevice | Target station read device | Character string (32)               | —        | Specify the head device of the target station from which data is to be read. Refer to the MELSEC iQ-F FX5 CC-Link IE TSN Master/Local Module User's Manual for details on specifying the device. |
| (6) | i_uChannel        | Own station channel        | Word [Unsigned]/Bit String [16-bit] | 1 to 8   | Specify the channel to be used by own station.                                                                                                                                                   |

## Output label

| No.  | Variable name | Name                     | Data type                           | Default value | Description                                                                      |
|------|---------------|--------------------------|-------------------------------------|---------------|----------------------------------------------------------------------------------|
| (7)  | o_bENO        | Execution status         | Bit                                 | Off           | On: The execution command is on.<br>Off: The execution command is off.           |
| (8)  | o_bOK         | Normal completion        | Bit                                 | Off           | When this label is on, it indicates that the device has been read out correctly. |
| (9)  | o_bErr        | Error completion         | Bit                                 | Off           | When this label is on, it indicates that an error has occurred in the FB.        |
| (10) | o_uErrId      | Error code               | Word [Unsigned]/Bit String [16-bit] | 0             | The error code that occurred in the FB is stored.                                |
| (11) | o_uReadData   | Read data storage device | Word [Unsigned]/Bit String [16-bit] | 0             | Specify the start number of the device for storing the read data.                |

## Public label (operation parameters)

| No.  | Variable name        | Name                                        | Data type                           | Range                                        | Description                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------|----------------------|---------------------------------------------|-------------------------------------|----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (12) | pbi_uCPU_Type        | Target station CPU type                     | Word [Unsigned]/Bit String [16-bit] | 0000H, 03D0H to 03D3H, 03E0H to 03E3H, 03FFH | Specify the CPU type of the target station.<br>• 0000H: To CPU of target station (control CPU)<br>• 03D0H: To control system CPU<br>• 03D1H: To standby system CPU<br>• 03D2H: To system A CPU<br>• 03D3H: To system B CPU<br>• 03E0H: To multiple CPU No.1<br>• 03E1H: To multiple CPU No.2<br>• 03E2H: To multiple CPU No.3<br>• 03E3H: To multiple CPU No.4<br>• 03FFH: To CPU of target station (control CPU)                                |
| (13) | pbi_uResendCountMax  | Maximum number of resends                   | Word [Unsigned]/Bit String [16-bit] | 0 to 15                                      | Specify the number of resends to be performed if the data transfer is not completed within the monitoring time specified by "arrival monitoring time".<br>• 0 to 15                                                                                                                                                                                                                                                                              |
| (14) | pbi_uTimeUnit        | Arrival monitoring time unit                | Word [Unsigned]/Bit String [16-bit] | 0, 1                                         | Specify the arrival monitoring time unit.*1<br>• 0: 1s<br>• 1: 100ms                                                                                                                                                                                                                                                                                                                                                                             |
| (15) | pbi_uMonitorTime     | Arrival monitoring time                     | Word [Unsigned]/Bit String [16-bit] | 0 to 65535                                   | Specify the monitoring time until completion of processing. If the processing is not completed within the monitoring time, data is resent until the value specified in the "maximum number of resends" is reached.<br>• 0: 10 seconds<br>■ When arrival monitoring time unit is set to 1s<br>• Valid range 1 to 32767: 1 to 32767 seconds<br>■ When arrival monitoring time unit is set to 100ms<br>• Valid range 1 to 65535: 1 to 65535 × 100ms |
| (16) | pbi_bStationSpecific | Target station address specification method | Bit                                 | On, off                                      | Specify the target station address specification method.<br>• Off: Specify with the network number and station number.<br>• On: Specify with the IP address (IPv4).                                                                                                                                                                                                                                                                              |

\*1 Set the lower 2 bits (bit 0 and 1) of the set value in bits 8 and 9 of the completion type for READ instruction control data error. With the dedicated instructions, if the lower 2 bits exceed the valid range, an error (D24AH) will occur.

## Public label (monitor)

| No.  | Variable name           | Name                                | Data type                                  | Default value | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------|-------------------------|-------------------------------------|--------------------------------------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (17) | pbo_uResendCount        | Number of resends                   | Word [Unsigned]/Bit String [16-bit]        | 0             | The number of resends performed (result) is stored.<br>When an error is detected, the number of resends performed (results) between the detection of the error to stopping of resending is stored.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| (18) | pbo_u4ErrTime           | Error occurrence time               | Word [Unsigned]/Bit String [16-bit] (0..3) | 0             | Clock data at the time of error occurrence is stored.<br>1st word<br><ul style="list-style-type: none"> <li>Upper 8 bits: Month (01H to 12H)</li> <li>Lower 8 bits: Year (00H to 99H) (Last 2 digits of the year)</li> </ul> 2nd word<br><ul style="list-style-type: none"> <li>Upper 8 bits: Hour (00H to 23H)</li> <li>Lower 8 bits: Day (01H to 31H)</li> </ul> 3rd word<br><ul style="list-style-type: none"> <li>Upper 8 bits: Second (00H to 59H)</li> <li>Lower 8 bits: Minute (00H to 59H)</li> </ul> 4th word<br><ul style="list-style-type: none"> <li>Upper 8 bits: Year (00H to 99H) (Upper 2 digits of the year)</li> <li>Lower 8 bits: Day of week (00H (Sunday) to 06H (Saturday))</li> </ul> |
| (19) | pbo_uErrStationAddress1 | Error-detected station IP address 1 | Word [Unsigned]/Bit String [16-bit]        | 0             | <p>■When the target station address specification method is off<br/>The network number of the station in which an error was detected is stored.</p> <p>■When the target station address specification method is on<br/>The IP address (third octet, fourth octet) of the station in which an error was detected is stored.<br/>Example: When IP address is 192.168.1.2<br/> <ul style="list-style-type: none"> <li>0102H</li> </ul> </p>                                                                                                                                                                                                                                                                     |
| (20) | pbo_uErrStationAddress2 | Error-detected station IP address 2 | Word [Unsigned]/Bit String [16-bit]        | 0             | <p>■When the target station address specification method is off<br/>The station number of the station in which an error was detected is stored.<br/> <ul style="list-style-type: none"> <li>007DH (125): Master station</li> <li>0001H to 0078H (1 to 120): Device station</li> </ul> </p> <p>■When the target station address specification method is on<br/>The IP address (first octet, second octet) of the station in which an error was detected is stored.<br/>Example: When IP address is 192.168.1.2<br/> <ul style="list-style-type: none"> <li>C0A8H</li> </ul> </p>                                                                                                                              |

## FB details

### Available device

#### ■CC-Link IE TSN module

| Target module | Firmware version | Engineering tool                  |
|---------------|------------------|-----------------------------------|
| FX5-CCLGN-MS  | —                | GX Works3 Version 1.065T or later |

#### ■CPU module

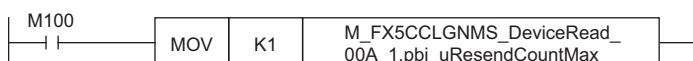
FX5UJ/FX5U/FX5UC CPU module

### Basic specifications

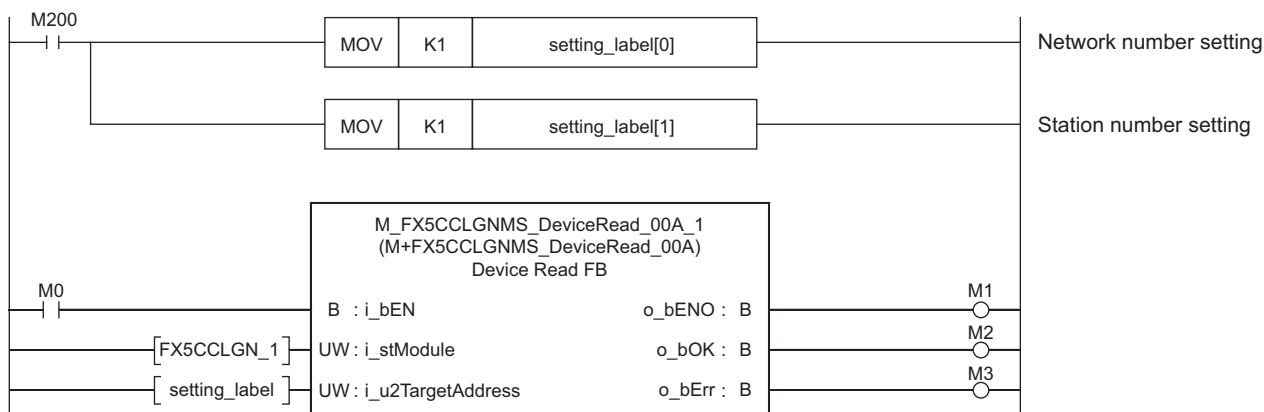
| Item                           | Description                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Language                       | Ladder diagram                                                                                                                                                                                                                                                                                                                                                 |
| Number of steps                | 152 steps<br>The number of steps of the FB embedded in the program varies depending on the CPU module used, the input/output definitions, and the option setting of GX Works3. For the option setting of GX Works3, refer to the  GX Works3 Operating Manual.                                                                                                  |
| Label usage                    | <ul style="list-style-type: none"> <li>Label: 0.05K points (Word)</li> <li>Latch label: 0K points (Word)</li> </ul> The amount of labels used in the program varies depending on the CPU module used, the device specified in an argument, and the option setting of GX Works3. For the option setting of GX Works3, refer to the  GX Works3 Operating Manual. |
| Number of index register usage | <ul style="list-style-type: none"> <li>Index register: 0 points</li> <li>Long index register: 0 points</li> </ul>                                                                                                                                                                                                                                              |
| File register usage            | 0 points                                                                                                                                                                                                                                                                                                                                                       |
| FB dependence                  | No dependence                                                                                                                                                                                                                                                                                                                                                  |
| FB compilation method          | Macro type                                                                                                                                                                                                                                                                                                                                                     |
| FB operation                   | Pulsed execution (multiple scan execution type)                                                                                                                                                                                                                                                                                                                |

### Processing

- When i\_bEN (Execution command) is turned on, data corresponding to the read data length is read from the read device of the specified target station address.
- If an error occurs during device read, o\_bErr (Error completion) turns on, and the error code is stored in o\_uErrId (Error code). For the error code, refer to Page 143 Error code.
- Set the module parameters in GX Works3 in accordance with the connected equipment and system. For the module parameters, refer to Page 143 Parameter setting.
- When setting or monitoring the public label (operation parameters) or public label (monitor), add a program to execute the setting or monitor as described below. Specify a public label as "FB instance"."public label". The following program is designed to assign K1 to the maximum number of resends  
(M\_FX5CCLGNMS\_DeviceRead\_00A\_1.pbi\_uResendCountMax) to set the number of resends to be performed if the transmission is not completed within the monitoring time specified in the arrival monitoring time.

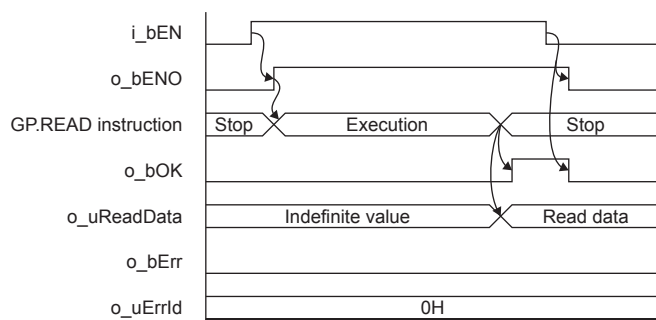


- Since the `i_u2TargetAddress` (Target station address) data type is an array, the value cannot be set as a constant. Create a global label for setting, and create a program to set that label value in `i_u2TargetAddress` (Target station address). The following program sets the target station network number and station number in `i_u2TargetAddress` (Target station address). Define the global label `setting_label` (data type: bit, class: `VAR_GLOBAL`). Set the target station network number 1 (K1) in `setting_label[0]` and CC-Link IE TSN station number 1 (K1) in `setting_label[1]`.



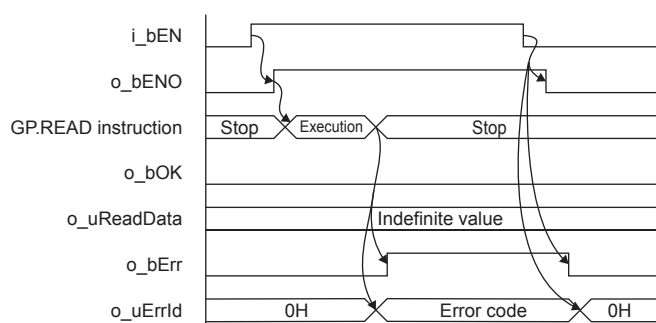
## Timing chart of I/O signals

### ■For normal completion



### ■For error completion

(Same when a module error has occurred)





## Restrictions or precautions

- This FB does not include the error recovery processing. Program the error recovery processing separately in accordance with the required system operation.
- This FB uses the GP.READ instruction.
- Turn off i\_bEN (Execution command) after o\_bOK (Normal completion) or o\_bErr (Error completion) is turned on. By turning off i\_bEN (Execution command), o\_bOK (Normal completion) or o\_bErr (Error completion) is turned off and o\_uErrId (Error code) is cleared to 0. However, because the GP.READ instruction which is a pulse instruction in the FB is used, if a write is performed while the FB is executed, the instruction may not be executed, and o\_bOK (Normal completion) and o\_bErr (Error completion) may not turn on. In that case, turn i\_bEN (Execution command) on again.
- When booting the CPU module, if the program file using this FB is specified for the booting, add the program-specific label default value file also to the boot settings. Refer to the MELSEC iQ-F FX5 User's Manual (Application) for details on the setting methods.
- This FB cannot be used in an interrupt program.
- Do not use this FB in programs that are executed only once, such as a subroutine program or FOR-NEXT loop, because i\_bEN (Execution command) cannot be turned off and the normal operation cannot be acquired. Always use this FB in programs that can turn off i\_bEN (Execution command).
- When using several of these FBs, ensure that the target station address and own station channel do not overlap.
- Every input must be provided with a value for proper FB operation. Set the public label (operation parameter) as needed.

## Parameter setting

For CC-Link IE TSN settings, set the parameters on GX Works3.

Navigation window ⇒ [Parameter] ⇒ [Module Information] ⇒ [FX5-CCLGN-MS]

Refer to the MELSEC iQ-F FX5 CC-Link IE TSN Master/Local Module User's Manual.

## Performance value

| CPU module                  | Measurement conditions <sup>*3</sup> | Performance value |                   | Number of scans |
|-----------------------------|--------------------------------------|-------------------|-------------------|-----------------|
|                             |                                      | Processing time   | Maximum scan time |                 |
| FX5U, FX5UC <sup>*1,2</sup> | Read data length: 1 word             | 9.26ms            | 0.717ms           | 26 scans        |
|                             | Read data length: 960 words          | 9.94ms            | 1.280ms           | 26 scans        |

\*1 When the program capacity is set to 128K steps, the processing speed may be reduced.

\*2 The labels in the standard area are used.

\*3 The read data is K1234.

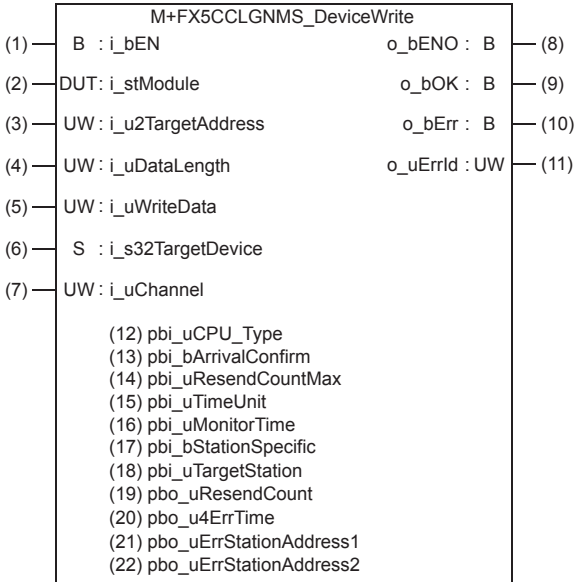
## Error code

| Error code (hexadecimal)         | Description                                                                                                                                                  | Action                                                                          |
|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| C000H to CFFFH<br>D000H to DFFFH | This error code is the same as the error code that occurs with the (GP.READ) instruction for reading data in the programmable controller of another station. | Refer to the  MELSEC iQ-F FX5 CC-Link IE TSN Master/Local Module User's Manual. |

# 3.2 M+FX5CCLGNMS\_DeviceWrite (Writing to another station device)

## Overview

This FB writes data to a specified device in the programmable controller of another station.



# Labels

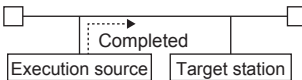
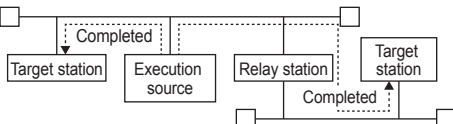
## Input label

| No. | Variable name     | Name                        | Data type                                  | Range                                                                                   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----|-------------------|-----------------------------|--------------------------------------------|-----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1) | i_bEN             | Execution command           | Bit                                        | On, off                                                                                 | On: The FB is activated.<br>Off: The FB is not activated.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| (2) | i_stModule        | Module label                | Structure                                  | The setting range differs depending on the module label.                                | Specify the module label of the FX5-CCLGN-MS.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| (3) | i_u2TargetAddress | Target station address      | Word [Unsigned]/Bit String [16-bit] (0..1) | The setting range differs depending on the target station address specification method. | <div>When the target station address specification method is off</div> <div>Specify the network number and station number for the target station. To specify with a label, use an array for the data type.</div> <div>■When "target station specification method" is set to 0 to specify a station number</div> <div><div><div>b15b0</div><div>1st wordNetwork number: 1 to 239</div><div>2nd wordStation number</div></div></div> <div><div>• 125: Master station</div><div>• 1 to 120: Device stations</div></div> <div>■When "target station specification method" is set to 1 to specify a group</div> <div><div><div>b15b0</div><div>1st wordNetwork number: 1 to 239</div><div>2nd wordTransient transmission group number: 1 to 32</div></div></div> <div>■When "target station specification method" is set to 2 to specify all stations</div> <div><div><div>b15b0</div><div>1st wordNetwork number: 1 to 239</div><div>2nd word0 (The set value is ignored.)</div></div></div> <div>When the target station address specification method is on</div> <div>Specify the IP address for the target station. To specify with a label, use an array for the data type.</div> <div><div>• Valid range: 00000001H to FFFFFFFEH</div><div>Specify 1 to 254 (FEH) for the fourth octet.</div></div> <div><div><div>b15b8b7b0</div><div>1st wordThird octetFourth octet</div><div>2nd wordFirst octetSecond octet</div></div></div> |
| (4) | i_uDataLength     | Write data length           | Word [Unsigned]/Bit String [16-bit]        | 1 to 960                                                                                | Specify the number of words to be written. <div><div>• When writing to RCP, QCPU, LCP, or FX5CPU: 1 to 960 (words)</div><div>• When writing to QnACPU: 1 to 480 (words)</div></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| (5) | i_uWriteData      | Write data storage device   | Word [Unsigned]/Bit String [16-bit]        | —                                                                                       | Specify the head device of the own station that is storing the written data.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| (6) | i_s32TargetDevice | Target station write device | Character string (32)                      | —                                                                                       | Specify the head device of the target station to which data is to be written. Refer to the MELSEC iQ-F FX5 CC-Link IE TSN Master/Local Module User's Manual for details on specifying the device.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| (7) | i_uChannel        | Own station channel         | Word [Unsigned]/Bit String [16-bit]        | 1 to 8                                                                                  | Specify the channel to be used by own station.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

## Output label

| No.  | Variable name | Name              | Data type                           | Default value | Description                                                                     |
|------|---------------|-------------------|-------------------------------------|---------------|---------------------------------------------------------------------------------|
| (8)  | o_bENO        | Execution status  | Bit                                 | Off           | On: The execution command is on.<br>Off: The execution command is off.          |
| (9)  | o_bOK         | Normal completion | Bit                                 | Off           | When this label is on, it indicates that the device has been written correctly. |
| (10) | o_bErr        | Error completion  | Bit                                 | Off           | When this label is on, it indicates that an error has occurred in the FB.       |
| (11) | o_uErrId      | Error code        | Word [Unsigned]/Bit String [16-bit] | 0             | The error code that occurred in the FB is stored.                               |

## Public label (operation parameters)

| No.  | Variable name        | Name                                        | Data type                           | Range                                        | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|------|----------------------|---------------------------------------------|-------------------------------------|----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (12) | pbi_uCPU_Type        | Target station CPU type                     | Word [Unsigned]/Bit String [16-bit] | 0000H, 03D0H to 03D3H, 03E0H to 03E3H, 03FFH | Specify the CPU type of the target station. <ul style="list-style-type: none"> <li>• 0000H: To CPU of target station (control CPU)</li> <li>• 03D0H: To control system CPU</li> <li>• 03D1H: To standby system CPU</li> <li>• 03D2H: To system A CPU</li> <li>• 03D3H: To system B CPU</li> <li>• 03E0H: To multiple CPU No.1</li> <li>• 03E1H: To multiple CPU No.2</li> <li>• 03E2H: To multiple CPU No.3</li> <li>• 03E3H: To multiple CPU No.4</li> <li>• 03FFH: To CPU of target station (control CPU)</li> </ul>                                                                                                                                                                                                                                 |
| (13) | pbi_bArrivalConfirm  | Arrival acknowledgment                      | Bit                                 | On, off                                      | Specify whether to use arrival acknowledgment. <p>■Off: None</p> <ul style="list-style-type: none"> <li>• When the target station is within the own network, sending data from the own station completes the sending.</li> </ul>  <p>■On: Check</p> <ul style="list-style-type: none"> <li>• Sending data is completed when the data is written to the target station.</li> </ul>                                                                                                                                                                                                  |
| (14) | pbi_uResendCountMax  | Maximum number of resends                   | Word [Unsigned]/Bit String [16-bit] | 0 to 15                                      | Specify the number of resends to be performed if the data transfer is not completed within the monitoring time specified by "arrival monitoring time". <ul style="list-style-type: none"> <li>• 0 to 15</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| (15) | pbi_uTimeUnit        | Arrival monitoring time unit                | Word [Unsigned]/Bit String [16-bit] | 0, 1                                         | Specify the arrival monitoring time unit.*1 <ul style="list-style-type: none"> <li>• 0: 1s</li> <li>• 1: 100ms</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| (16) | pbi_uMonitorTime     | Arrival monitoring time                     | Word [Unsigned]/Bit String [16-bit] | 0 to 65535                                   | Specify the monitoring time until completion of processing. If the processing is not completed within the monitoring time, data is resent until the value specified in the "maximum number of resends" is reached. <ul style="list-style-type: none"> <li>• 0: 10 seconds</li> </ul> <p>■When arrival monitoring time unit is set to 1s</p> <ul style="list-style-type: none"> <li>• Valid range 1 to 32767: 1 to 32767 seconds</li> </ul> <p>■When arrival monitoring time unit is set to 100ms</p> <ul style="list-style-type: none"> <li>• Valid range 1 to 65535: 1 to 65535 × 100ms</li> </ul>                                                                                                                                                    |
| (17) | pbi_bStationSpecific | Target station address specification method | Bit                                 | On, off                                      | Specify the target station address specification method. <ul style="list-style-type: none"> <li>• Off: Specify with the network number and station number.</li> <li>• On: Specify with the IP address (IPv4).</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| (18) | pbi_uTargetStation   | Target station specification method         | Word [Unsigned]/Bit String [16-bit] | 0 to 2                                       | Specify the target station specification method. <ul style="list-style-type: none"> <li>• 0: Station number specification</li> </ul> <p>Station with station number specified with the target station address</p> <ul style="list-style-type: none"> <li>• 1: Group specification</li> </ul> <p>All station numbers in transient transmission group number specified with target station address (Selectable when off (none) is specified for arrival acknowledgment.)</p> <ul style="list-style-type: none"> <li>• 2: All stations</li> </ul> <p>All station numbers in network number specified with target station address (simultaneous broadcast excluding own station) (Selectable when off (none) is specified for arrival acknowledgment.)</p> |

\*1 Set the lower 2 bits (bit 0 and 1) of the set value in bits 8 and 9 of the completion type for WRITE instruction control data execution/error. With the dedicated instructions, if the lower 2 bits exceed the valid range, an error (D24AH) will occur.

## Public label (monitor)

| No.  | Variable name           | Name                                | Data type                                  | Default value | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------|-------------------------|-------------------------------------|--------------------------------------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (19) | pbo_uResendCount        | Number of resends                   | Word [Unsigned]/Bit String [16-bit]        | 0             | The number of resends performed (result) is stored.<br>When an error is detected, the number of resends performed (results) between the detection of the error to stopping of resending is stored.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| (20) | pbo_u4ErrTime           | Error occurrence time               | Word [Unsigned]/Bit String [16-bit] (0..3) | 0             | Clock data at the time of error occurrence is stored.<br>1st word<br><ul style="list-style-type: none"> <li>Upper 8 bits: Month (01H to 12H)</li> <li>Lower 8 bits: Year (00H to 99H) (Last 2 digits of the year)</li> </ul> 2nd word<br><ul style="list-style-type: none"> <li>Upper 8 bits: Hour (00H to 23H)</li> <li>Lower 8 bits: Day (01H to 31H)</li> </ul> 3rd word<br><ul style="list-style-type: none"> <li>Upper 8 bits: Second (00H to 59H)</li> <li>Lower 8 bits: Minute (00H to 59H)</li> </ul> 4th word<br><ul style="list-style-type: none"> <li>Upper 8 bits: Year (00H to 99H) (Upper 2 digits of the year)</li> <li>Lower 8 bits: Day of week (00H (Sunday) to 06H (Saturday))</li> </ul> |
| (21) | pbo_uErrStationAddress1 | Error-detected station IP address 1 | Word [Unsigned]/Bit String [16-bit]        | 0             | <p>■When the target station address specification method is off<br/>The network number of the station in which an error was detected is stored.</p> <p>■When the target station address specification method is on<br/>The IP address (third octet, fourth octet) of the station in which an error was detected is stored.<br/>Example: When IP address is 192.168.1.2<br/> <ul style="list-style-type: none"> <li>0102H</li> </ul> </p>                                                                                                                                                                                                                                                                     |
| (22) | pbo_uErrStationAddress2 | Error-detected station IP address 2 | Word [Unsigned]/Bit String [16-bit]        | 0             | <p>■When the target station address specification method is off<br/>The station number of the station in which an error was detected is stored.<br/> <ul style="list-style-type: none"> <li>007DH (125): Master station</li> <li>0001H to 0078H (1 to 120): Device station</li> </ul> </p> <p>■When the target station address specification method is on<br/>The IP address (first octet, second octet) of the station in which an error was detected is stored.<br/>Example: When IP address is 192.168.1.2<br/> <ul style="list-style-type: none"> <li>C0A8H</li> </ul> </p>                                                                                                                              |

## FB details

### Available device

#### ■CC-Link IE TSN module

| Target module | Firmware version | Engineering tool                  |
|---------------|------------------|-----------------------------------|
| FX5-CCLGN-MS  | —                | GX Works3 Version 1.065T or later |

#### ■CPU module

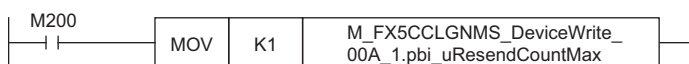
FX5UJ/FX5U/FX5UC CPU module

### Basic specifications

| Item                           | Description                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Language                       | Ladder diagram                                                                                                                                                                                                                                                                                                                                                 |
| Number of steps                | 181 steps<br>The number of steps of the FB embedded in the program varies depending on the CPU module used, the input/output definitions, and the option setting of GX Works3. For the option setting of GX Works3, refer to the  GX Works3 Operating Manual.                                                                                                  |
| Label usage                    | <ul style="list-style-type: none"> <li>Label: 0.05K points (Word)</li> <li>Latch label: 0K points (Word)</li> </ul> The amount of labels used in the program varies depending on the CPU module used, the device specified in an argument, and the option setting of GX Works3. For the option setting of GX Works3, refer to the  GX Works3 Operating Manual. |
| Number of index register usage | <ul style="list-style-type: none"> <li>Index register: 0 points</li> <li>Long index register: 0 points</li> </ul>                                                                                                                                                                                                                                              |
| File register usage            | 0 points                                                                                                                                                                                                                                                                                                                                                       |
| FB dependence                  | No dependence                                                                                                                                                                                                                                                                                                                                                  |
| FB compilation method          | Macro type                                                                                                                                                                                                                                                                                                                                                     |
| FB operation                   | Pulsed execution (multiple scan execution type)                                                                                                                                                                                                                                                                                                                |

### Processing

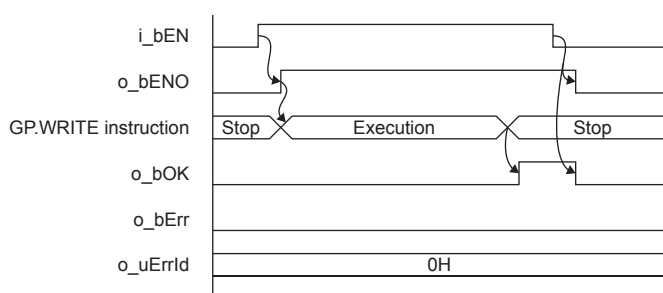
- When i\_bEN (Execution command) is turned on, data corresponding to the write data length is written from the device specified with the write data storage device into the target station write device of the specified target station address.
- If an error occurs during device write, o\_bErr (Error completion) turns on, and the error code is stored in o\_uErrId (Error code). For the error code, refer to Page 151 Error code.
- Set the module parameters in GX Works3 in accordance with the connected equipment and system. For the module parameters, refer to Page 143 Parameter setting.
- When setting or monitoring the public label (operation parameters) or public label (monitor), add a program to execute the setting or monitor as described below. Specify a public label as "FB instance"."public label". The following program is designed to assign K1 to the maximum number of resends  
(M\_FX5CCLGNMS\_DeviceWrite\_00A\_1.pbi\_uResendCountMax) to set the number of resends to be performed if the transmission is not completed within the monitoring time specified in the arrival monitoring time.



- Since the i\_u2TargetAddress (Target station address) data type is an array, the value cannot be set as a constant. Create a global label for setting, and create a program to set that label value in i\_u2TargetAddress (Target station address). For the setting procedure, refer to Page 138 M+FX5CCLGNMS\_DeviceRead (Reading of another station device).

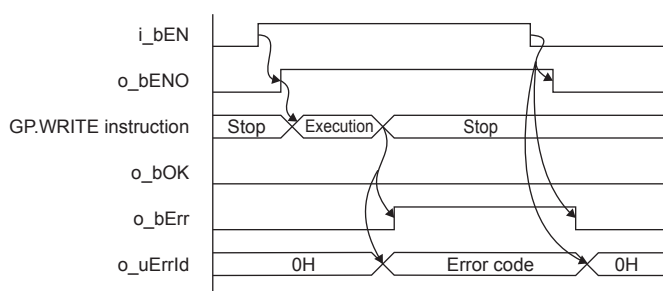
## Timing chart of I/O signals

### ■For normal completion



### ■For error completion

(Same when a module error has occurred)



## Restrictions or precautions

- This FB does not include the error recovery processing. Program the error recovery processing separately in accordance with the required system operation.
- This FB uses the GP.WRITE instruction.
- Turn off i\_bEN (Execution command) after o\_bOK (Normal completion) or o\_bErr (Error completion) is turned on. By turning off i\_bEN (Execution command), o\_bOK (Normal completion) or o\_bErr (Error completion) is turned off and o\_uErrId (Error code) is cleared to 0. However, because the GP.WRITE instruction which is a pulse instruction in the FB is used, if a write is performed while the FB is executed, the instruction may not be executed, and o\_bOK (Normal completion) and o\_bErr (Error completion) may not turn on. In that case, turn i\_bEN (Execution command) on again.
- When booting the CPU module, if the program file using this FB is specified for the booting, add the program-specific label default value file also to the boot settings. Refer to the [MELSEC iQ-F FX5 User's Manual \(Application\)](#) for details on the setting methods.
- This FB cannot be used in an interrupt program.
- Do not use this FB in programs that are executed only once, such as a subroutine program or FOR-NEXT loop, because i\_bEN (Execution command) cannot be turned off and the normal operation cannot be acquired. Always use this FB in programs that can turn off i\_bEN (Execution command).
- When using several of these FBs, ensure that the target station address and own station channel do not overlap.
- Every input must be provided with a value for proper FB operation. Set the public label (operation parameter) as needed.



## Parameter setting

For the setting procedure, refer to  Page 143 Parameter setting.

## Performance value

| CPU module                  | Measurement conditions <sup>*3</sup> | Performance value |                   | Number of scans |
|-----------------------------|--------------------------------------|-------------------|-------------------|-----------------|
|                             |                                      | Processing time   | Maximum scan time |                 |
| FX5U, FX5UC <sup>*1*2</sup> | Write data length: 1 word            | 8.89ms            | 0.703ms           | 25 scans        |
|                             | Write data length: 960 words         | 10.2ms            | 1.430ms           | 34 scans        |

\*1 When the program capacity is set to 128K steps, the processing speed may be reduced.

\*2 The labels in the standard area are used.

\*3 The written data is K1234.

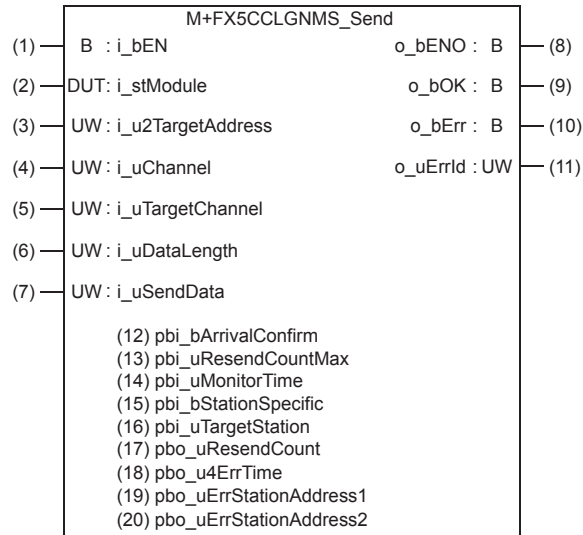
## Error code

| Error code (hexadecimal)         | Description                                                                                                                                                   | Action                                                                                                                                                             |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| C000H to CFFFH<br>D000H to DFFFH | This error code is the same as the error code that occurs with the (GP.WRITE) instruction for writing data in the programmable controller of another station. | Refer to the  MELSEC iQ-F FX5 CC-Link IE TSN Master/Local Module User's Manual. |

## 3.3 M+FX5CCLGNMS\_Send (Sending of another station data)

### Overview

This FB sends data to the programmable controller of another station.



# Labels

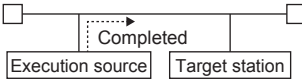
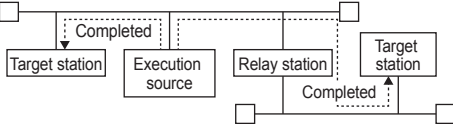
## Input label

| No. | Variable name     | Name                                | Data type                                  | Range                                                                                   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----|-------------------|-------------------------------------|--------------------------------------------|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1) | i_bEN             | Execution command                   | Bit                                        | On, off                                                                                 | On: The FB is activated.<br>Off: The FB is not activated.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| (2) | i_stModule        | Module label                        | Structure                                  | The setting range differs depending on the module label.                                | Specify the module label of the FX5-CCLGN-MS.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| (3) | i_u2TargetAddress | Target station address              | Word [Unsigned]/Bit String [16-bit] (0..1) | The setting range differs depending on the target station address specification method. | <div>When the target station address specification method is off</div> <div>Specify the network number and station number for the target station. To specify with a label, use an array for the data type.</div> <div>■When "target station specification method" is set to 0 to specify a station number</div> <div><div><div>b15b0</div><div>1st word<div>Network number: 1 to 239</div></div><div>2nd word<div>Station number</div></div></div><div><div>• 125: Master station</div><div>• 1 to 120: Device stations</div></div><div>■When "target station specification method" is set to 1 to specify a group</div><div><div><div>b15b0</div><div>1st word<div>Network number: 1 to 239</div></div><div>2nd word<div>Transient transmission group number: 1 to 32</div></div></div></div><div>■When "target station specification method" is set to 2 to specify all stations</div><div><div><div>b15b0</div><div>1st word<div>Network number: 1 to 239</div></div><div>2nd word<div>0 (The set value is ignored.)</div></div></div><div>When the target station address specification method is on</div><div>Specify the IP address for the target station. To specify with a label, use an array for the data type.</div><div><div>• Valid range: 00000001H to FFFFFFFEH</div><div>Specify 1 to 254 (FEH) for the fourth octet.</div></div><div><div><div>b15b8b7b0</div><div>1st word<div>Third octet</div><div>Fourth octet</div></div><div>2nd word<div>First octet</div><div>Second octet</div></div></div></div></div></div> |
| (4) | i_uChannel        | Own station channel                 | Word [Unsigned]/Bit String [16-bit]        | 1 to 8                                                                                  | Specify the channel to be used by own station.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| (5) | i_uTargetChannel  | Target station data storage channel | Word [Unsigned]/Bit String [16-bit]        | 1 to 8                                                                                  | Specify the channel of the target station for storing data. When the target station is a CC-Link IE Field Network master/local module, specify 1 or 2.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| (6) | i_uDataLength     | Send data length                    | Word [Unsigned]/Bit String [16-bit]        | 1 to 960                                                                                | Specify the number of words to be sent. <div>• When the target station is RCP, QCP, LCP, or FX5CPU: 1 to 960 (words)</div> <div>• When the target station is QnACP: 1 to 480 (words)</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| (7) | i_uSendData       | Send data storage device            | Word [Unsigned]/Bit String [16-bit]        | —                                                                                       | Specify the head device of the own station containing the send data.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

## Output label

| No.  | Variable name | Name              | Data type                           | Default value | Description                                                                |
|------|---------------|-------------------|-------------------------------------|---------------|----------------------------------------------------------------------------|
| (8)  | o_bENO        | Execution status  | Bit                                 | Off           | On: The execution command is on.<br>Off: The execution command is off.     |
| (9)  | o_bOK         | Normal completion | Bit                                 | Off           | When this label is on, it indicates that the data has been sent correctly. |
| (10) | o_bErr        | Error completion  | Bit                                 | Off           | When this label is on, it indicates that an error has occurred in the FB.  |
| (11) | o_uErrId      | Error code        | Word [Unsigned]/Bit String [16-bit] | 0             | The error code that occurred in the FB is stored.                          |

## Public label (operation parameters)

| No.  | Variable name        | Name                                        | Data type                           | Range      | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------|----------------------|---------------------------------------------|-------------------------------------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (12) | pbi_bArrivalConfirm  | Arrival acknowledgment                      | Bit                                 | On, off    | <p>Specify whether to use arrival acknowledgment.</p> <p>■Off: None</p> <ul style="list-style-type: none"> <li>When the target station is within the own network, sending data from the own station completes the sending.</li> </ul>  <p>■On: Check</p> <ul style="list-style-type: none"> <li>Sending data is completed when the data is written to the target station.</li> </ul>                                                                                                    |
| (13) | pbi_uResendCountMax  | Maximum number of resends                   | Word [Unsigned]/Bit String [16-bit] | 0 to 15    | <p>Specify the number of resends to be performed if the data transfer is not completed within the monitoring time specified by "arrival monitoring time".</p> <ul style="list-style-type: none"> <li>0 to 15</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| (14) | pbi_uMonitorTime     | Arrival monitoring time                     | Word [Unsigned]/Bit String [16-bit] | 0 to 32767 | <p>Specify the monitoring time until completion of processing. If the processing is not completed within the monitoring time, data is resent until the value specified in the "maximum number of resends" is reached.</p> <ul style="list-style-type: none"> <li>0: 10 seconds</li> <li>Valid range 1 to 32767: 1 to 32767 seconds</li> </ul>                                                                                                                                                                                                                                                                                                                |
| (15) | pbi_bStationSpecific | Target station address specification method | Bit                                 | On, off    | <p>Specify the target station address specification method.</p> <ul style="list-style-type: none"> <li>Off: Specify with the network number and station number.</li> <li>On: Specify with the IP address (IPv4).</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| (16) | pbi_uTargetStation   | Target station specification method         | Word [Unsigned]/Bit String [16-bit] | 0 to 2     | <p>Specify the target station specification method.</p> <ul style="list-style-type: none"> <li>0: Station number specification<br/>Station with station number specified with the target station address</li> <li>1: Group specification<br/>All station numbers in transient transmission group number specified with target station address (Selectable when off (none) is specified for arrival acknowledgment.)</li> <li>2: All stations<br/>All station numbers in network number specified with target station address (simultaneous broadcast excluding own station) (Selectable when off (none) is specified for arrival acknowledgment.)</li> </ul> |

## Public label (monitor)

| No.  | Variable name           | Name                                | Data type                                  | Default value | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------|-------------------------|-------------------------------------|--------------------------------------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (17) | pbo_uResendCount        | Number of resends                   | Word [Unsigned]/Bit String [16-bit]        | 0             | The number of resends performed (result) is stored.<br>When an error is detected, the number of resends performed (results) between the detection of the error to stopping of resending is stored.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| (18) | pbo_u4ErrTime           | Error occurrence time               | Word [Unsigned]/Bit String [16-bit] (0..3) | 0             | Clock data at the time of error occurrence is stored.<br>1st word<br><ul style="list-style-type: none"> <li>Upper 8 bits: Month (01H to 12H)</li> <li>Lower 8 bits: Year (00H to 99H) (Last 2 digits of the year)</li> </ul> 2nd word<br><ul style="list-style-type: none"> <li>Upper 8 bits: Hour (00H to 23H)</li> <li>Lower 8 bits: Day (01H to 31H)</li> </ul> 3rd word<br><ul style="list-style-type: none"> <li>Upper 8 bits: Second (00H to 59H)</li> <li>Lower 8 bits: Minute (00H to 59H)</li> </ul> 4th word<br><ul style="list-style-type: none"> <li>Upper 8 bits: Year (00H to 99H) (Upper 2 digits of the year)</li> <li>Lower 8 bits: Day of week (00H (Sunday) to 06H (Saturday))</li> </ul> |
| (19) | pbo_uErrStationAddress1 | Error-detected station IP address 1 | Word [Unsigned]/Bit String [16-bit]        | 0             | <p>■When the target station address specification method is off<br/>The network number of the station in which an error was detected is stored.</p> <p>■When the target station address specification method is on<br/>The IP address (third octet, fourth octet) of the station in which an error was detected is stored.<br/>Example: When IP address is 192.168.1.2<br/> <ul style="list-style-type: none"> <li>0102H</li> </ul> </p>                                                                                                                                                                                                                                                                     |
| (20) | pbo_uErrStationAddress2 | Error-detected station IP address 2 | Word [Unsigned]/Bit String [16-bit]        | 0             | <p>■When the target station address specification method is off<br/>The station number of the station in which an error was detected is stored.<br/> <ul style="list-style-type: none"> <li>007DH (125): Master station</li> <li>0001H to 0078H (1 to 120): Device station</li> </ul> </p> <p>■When the target station address specification method is on<br/>The IP address (first octet, second octet) of the station in which an error was detected is stored.<br/>Example: When IP address is 192.168.1.2<br/> <ul style="list-style-type: none"> <li>C0A8H</li> </ul> </p>                                                                                                                              |

## FB details

### Available device

#### ■CC-Link IE TSN module

| Target module | Firmware version | Engineering tool                  |
|---------------|------------------|-----------------------------------|
| FX5-CCLGN-MS  | —                | GX Works3 Version 1.065T or later |

#### ■CPU module

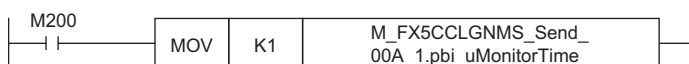
FX5UJ/FX5U/FX5UC CPU module

### Basic specifications

| Item                           | Description                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Language                       | Ladder diagram                                                                                                                                                                                                                                                                                                                                                                 |
| Number of steps                | 166 steps<br>The number of steps of the FB embedded in the program varies depending on the CPU module used, the input/output definitions, and the option setting of GX Works3. For the option setting of GX Works3, refer to the <a href="#">GX Works3 Operating Manual</a> .                                                                                                  |
| Label usage                    | <ul style="list-style-type: none"> <li>Label: 0.04K points (Word)</li> <li>Latch label: 0K points (Word)</li> </ul> The amount of labels used in the program varies depending on the CPU module used, the device specified in an argument, and the option setting of GX Works3. For the option setting of GX Works3, refer to the <a href="#">GX Works3 Operating Manual</a> . |
| Number of index register usage | <ul style="list-style-type: none"> <li>Index register: 0 points</li> <li>Long index register: 0 points</li> </ul>                                                                                                                                                                                                                                                              |
| File register usage            | 0 points                                                                                                                                                                                                                                                                                                                                                                       |
| FB dependence                  | No dependence                                                                                                                                                                                                                                                                                                                                                                  |
| FB compilation method          | Macro type                                                                                                                                                                                                                                                                                                                                                                     |
| FB operation                   | Pulsed execution (multiple scan execution type)                                                                                                                                                                                                                                                                                                                                |

### Processing

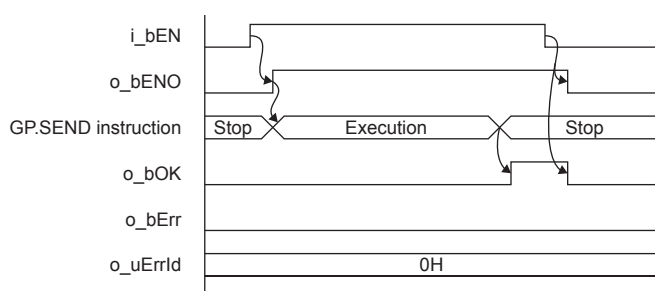
- When i\_bEN (Execution command) is turned on, data corresponding to the send data length is sent from the send data storage device to the specified target station address.
- If an error occurs while sending data, o\_bErr (Error completion) turns on, and the error code is stored in o\_uErrId (Error code). For the error code, refer to [Page 158 Error code](#).
- Set the module parameters in GX Works3 in accordance with the connected equipment and system. For the module parameters, refer to [Page 143 Parameter setting](#).
- When setting or monitoring the public label (operation parameters) or public label (monitor), add a program to execute the setting or monitor as described below. Specify a public label as "FB instance"."public label". The following program is designed to assign K1 to the arrival monitoring time (M\_FX5CCLGNMS\_Send\_00A\_1.pbi\_uMonitorTime) to specify the monitoring time until the completion of processing.



- Since the i\_u2TargetAddress (Target station address) data type is an array, the value cannot be set as a constant. Create a global label for setting, and create a program to set that label value in i\_u2TargetAddress (Target station address). For the setting procedure, refer to [Page 138 M+FX5CCLGNMS\\_DeviceRead \(Reading of another station device\)](#).

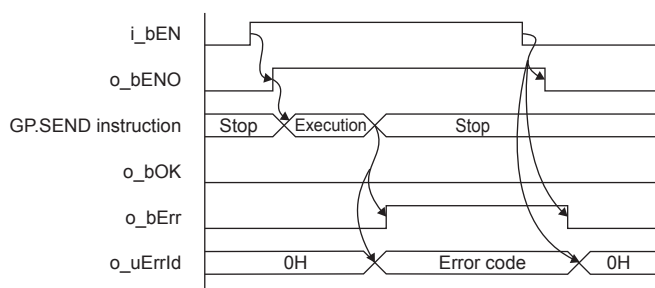
## Timing chart of I/O signals

### ■For normal completion



### ■For error completion

(Same when a module error has occurred)



## Restrictions or precautions

- This FB does not include the error recovery processing. Program the error recovery processing separately in accordance with the required system operation.
- This FB uses the GP.SEND instruction.
- Turn off i\_bEN (Execution command) after o\_bOK (Normal completion) or o\_bErr (Error completion) is turned on. By turning off i\_bEN (Execution command), o\_bOK (Normal completion) or o\_bErr (Error completion) is turned off and o\_uErrId (Error code) is cleared to 0. However, because the GP.SEND instruction which is a pulse instruction in the FB is used, if a write is performed while the FB is executed, the instruction may not be executed, and o\_bOK (Normal completion) and o\_bErr (Error completion) may not turn on. In that case, turn i\_bEN (Execution command) on again.
- When booting the CPU module, if the program file using this FB is specified for the booting, add the program-specific label default value file also to the boot settings. Refer to the MELSEC iQ-F FX5 User's Manual (Application) for details on the setting methods.
- This FB cannot be used in an interrupt program.
- Do not use this FB in programs that are executed only once, such as a subroutine program or FOR-NEXT loop, because i\_bEN (Execution command) cannot be turned off and the normal operation cannot be acquired. Always use this FB in programs that can turn off i\_bEN (Execution command).
- When using several of these FBs, ensure that the target station address and own station channel do not overlap.
- Every input must be provided with a value for proper FB operation. Set the public label (operation parameter) as needed.

## Parameter setting

For the setting procedure, refer to  Page 143 Parameter setting.

## Performance value

| CPU module                  | Measurement conditions <sup>*3</sup> | Performance value |                   | Number of scans |
|-----------------------------|--------------------------------------|-------------------|-------------------|-----------------|
|                             |                                      | Processing time   | Maximum scan time |                 |
| FX5U, FX5UC <sup>*1*2</sup> | Send data length: 1 word             | 5.36ms            | 0.655ms           | 10 scans        |
|                             | Send data length: 960 words          | 7.56ms            | 1.390ms           | 17 scans        |

\*1 When the program capacity is set to 128K steps, the processing speed may be reduced.

\*2 The labels in the standard area are used.

\*3 The send data is K1234.

## Error code

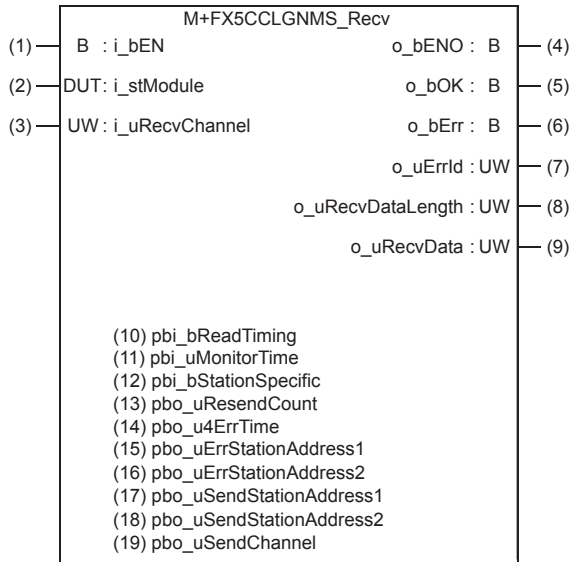
| Error code (hexadecimal)         | Description                                                                                                                                                  | Action                                                                                                                                                             |
|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| C000H to CFFFH<br>D000H to DFFFH | This error code is the same as the error code that occurs with the (GP.SEND) instruction for sending data to the programmable controller of another station. | Refer to the  MELSEC iQ-F FX5 CC-Link IE TSN Master/Local Module User's Manual. |



## 3.4 M+FX5CCLGNMS\_Recv (Receiving of another station data)

### Overview

This FB reads the data received from the programmable controller of another station.



### Labels

#### Input label

| No. | Variable name  | Name                         | Data type                           | Range                                                    | Description                                               |
|-----|----------------|------------------------------|-------------------------------------|----------------------------------------------------------|-----------------------------------------------------------|
| (1) | i_bEN          | Execution command            | Bit                                 | On, off                                                  | On: The FB is activated.<br>Off: The FB is not activated. |
| (2) | i_stModule     | Module label                 | Structure                           | The setting range differs depending on the module label. | Specify the module label of the FX5-CCLGN-MS.             |
| (3) | i_uRecvChannel | Receive data storage channel | Word [Unsigned]/Bit String [16-bit] | 1 to 8                                                   | Specify the channel containing the data to be read.       |

#### Output label

| No. | Variable name     | Name                         | Data type                           | Default value | Description                                                                                   |
|-----|-------------------|------------------------------|-------------------------------------|---------------|-----------------------------------------------------------------------------------------------|
| (4) | o_bENO            | Execution status             | Bit                                 | Off           | On: The execution command is on.<br>Off: The execution command is off.                        |
| (5) | o_bOK             | Normal completion            | Bit                                 | Off           | When this label is on, it indicates that reading of the received data has completed normally. |
| (6) | o_bErr            | Error completion             | Bit                                 | Off           | When this label is on, it indicates that an error has occurred in the FB.                     |
| (7) | o_uErrId          | Error code                   | Word [Unsigned]/Bit String [16-bit] | 0             | The error code that occurred in the FB is stored.                                             |
| (8) | o_uRecvDataLength | Received data length         | Word [Unsigned]/Bit String [16-bit] | 0             | The number of received data is stored.<br>• 1 to 960 (words)                                  |
| (9) | o_uRecvData       | Received data storage device | Word [Unsigned]/Bit String [16-bit] | 0             | Specify the start number of the device for storing received data.                             |

## Public label (operation parameters)

| No.  | Variable name        | Name                                | Data type                           | Range      | Description                                                                                                                                                                                                                                                                                                          |
|------|----------------------|-------------------------------------|-------------------------------------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (10) | pbi_bReadTiming      | Read timing                         | Bit                                 | —          | This label is not used in the FB program and does not need to be set. Data is read at the first END processing after the unit FB is started.                                                                                                                                                                         |
| (11) | pbi_uMonitorTime     | Arrival monitoring time             | Word [Unsigned]/Bit String [16-bit] | 0 to 32767 | Specify the monitoring time until completion of processing (valid only when read timing is on). If the processing is not completed within the monitoring time, it will end with an error.<br><ul style="list-style-type: none"> <li>• 0: 10 seconds</li> <li>• Valid range 1 to 32767: 1 to 32767 seconds</li> </ul> |
| (12) | pbi_bStationSpecific | Send station address display method | Bit                                 | On, off    | Specify the method of displaying the send station address.<br><ul style="list-style-type: none"> <li>• Off: Specify with the network number and station number.</li> <li>• On: Specify with the IP address (IPv4).</li> </ul>                                                                                        |

## Public label (monitor)

| No.  | Variable name            | Name                                | Data type                                  | Default value | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|------|--------------------------|-------------------------------------|--------------------------------------------|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (13) | pbo_uResendCount         | Number of resends                   | Word [Unsigned]/Bit String [16-bit]        | 0             | 0 is stored in this area.                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| (14) | pbo_u4ErrTime            | Error occurrence time               | Word [Unsigned]/Bit String [16-bit] (0..3) | 0             | Clock data at the time of error occurrence is stored.<br>1st word<br>• Upper 8 bits: Month (01H to 12H)<br>• Lower 8 bits: Year (00H to 99H) (Last 2 digits of the year)<br>2nd word<br>• Upper 8 bits: Hour (00H to 23H)<br>• Lower 8 bits: Day (01H to 31H)<br>3rd word<br>• Upper 8 bits: Second (00H to 59H)<br>• Lower 8 bits: Minute (00H to 59H)<br>4th word<br>• Upper 8 bits: Year (00H to 99H) (Upper 2 digits of the year)<br>• Lower 8 bits: Day of week (00H (Sunday) to 06H (Saturday)) |
| (15) | pbo_uErrStationAddress1  | Error-detected station IP address 1 | Word [Unsigned]/Bit String [16-bit]        | 0             | ■When the send station address display method is off<br>The network number of the station in which an error was detected is stored.<br>■When the send station address display method is on<br>The IP address (third octet, fourth octet) of the station in which an error was detected is stored.<br>Example: When IP address is 192.168.1.2<br>• 0102H                                                                                                                                               |
| (16) | pbo_uErrStationAddress2  | Error-detected station IP address 2 | Word [Unsigned]/Bit String [16-bit]        | 0             | ■When the send station address display method is off<br>The station number of the station in which an error was detected is stored.<br>• 007DH (125): Master station<br>• 0001H to 0078H (1 to 120): Device station<br>■When the send station address display method is on<br>The IP address (first octet, second octet) of the station in which an error was detected is stored.<br>Example: When IP address is 192.168.1.2<br>• C0A8H                                                               |
| (17) | pbo_uSendStationAddress1 | Send station address 1              | Word [Unsigned]/Bit String [16-bit]        | 0             | ■When the send station address display method is off<br>The network number and station number of the send station are stored.<br>■When the send station address display method is on<br>The send station IP address (third octet, fourth octet) is stored.<br>Example: When IP address is 192.168.1.2<br>• 0102H                                                                                                                                                                                      |
| (18) | pbo_uSendStationAddress2 | Send station address 2              | Word [Unsigned]/Bit String [16-bit]        | 0             | ■When the send station address display method is off<br>The station number of the send station is stored.<br>• 007DH (125): Master station<br>• 0001H to 0078H (1 to 120): Device station<br>■When the send station address display method is on<br>The send station IP address (first octet, second octet) is stored.<br>Example: When IP address is 192.168.1.2<br>• C0A8H                                                                                                                          |
| (19) | pbo_uSendChannel         | Channel used by send station        | Word [Unsigned]/Bit String [16-bit]        | 0             | The channel number used by the send station is stored.<br>• 1 to 8                                                                                                                                                                                                                                                                                                                                                                                                                                    |

# FB details

## Available device

### ■CC-Link IE TSN module

| Target module | Firmware version | Engineering tool                  |
|---------------|------------------|-----------------------------------|
| FX5-CCLGN-MS  | —                | GX Works3 Version 1.065T or later |

### ■CPU module

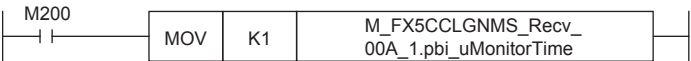
FX5UJ/FX5U/FX5UC CPU module

## Basic specifications

| Item                           | Description                                                                                                                                                                                                                                                                                                                                                 |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Language                       | Ladder diagram                                                                                                                                                                                                                                                                                                                                              |
| Number of steps                | 140 steps<br>The number of steps of the FB embedded in the program varies depending on the CPU module used, the input/output definitions, and the option setting of GX Works3. For the option setting of GX Works3, refer to the  GX Works3 Operating Manual.                                                                                               |
| Label usage                    | <ul style="list-style-type: none"><li>Label: 0.04K points (Word)</li><li>Latch label: 0K points (Word)</li></ul> The amount of labels used in the program varies depending on the CPU module used, the device specified in an argument, and the option setting of GX Works3. For the option setting of GX Works3, refer to the  GX Works3 Operating Manual. |
| Number of index register usage | <ul style="list-style-type: none"><li>Index register: 0 points</li><li>Long index register: 0 points</li></ul>                                                                                                                                                                                                                                              |
| File register usage            | 0 points                                                                                                                                                                                                                                                                                                                                                    |
| FB dependence                  | No dependence                                                                                                                                                                                                                                                                                                                                               |
| FB compilation method          | Macro type                                                                                                                                                                                                                                                                                                                                                  |
| FB operation                   | Pulsed execution (multiple scan execution type)                                                                                                                                                                                                                                                                                                             |

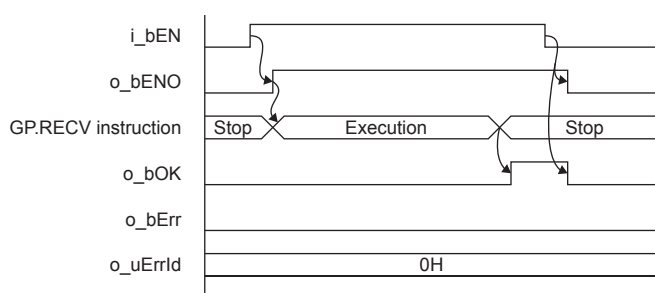
## Processing

- When i\_bEN (Execution command) is turned on, the received data is read from the specified receive data storage channel and saved into the received data storage device.
- If an error occurs while receiving the data, o\_bErr (Error completion) turns on, and the error code is stored in o\_uErrId (Error code). For the error code, refer to Page 164 Error code.
- Set the module parameters in GX Works3 in accordance with the connected equipment and system. For the module parameters, refer to Page 143 Parameter setting.
- When setting or monitoring the public label (operation parameters) or public label (monitor), add a program to execute the setting or monitor as described below. Specify a public label as "FB instance"."public label". The following program is designed to assign K1 to the arrival monitoring time (M\_FX5CCLGNMS\_Recv\_00A\_1.pbi\_uMonitorTime) to specify the monitoring time until the completion of processing.



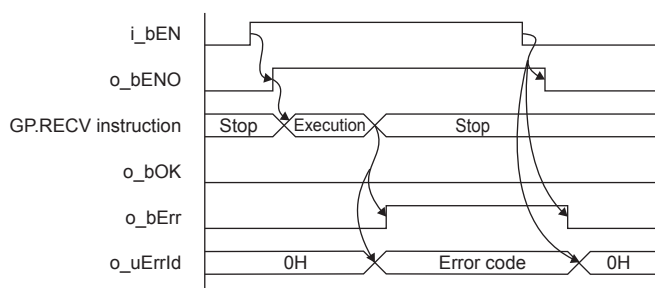
## Timing chart of I/O signals

### ■For normal completion



### ■For error completion

(Same when a module error has occurred)



## Restrictions or precautions

- This FB does not include the error recovery processing. Program the error recovery processing separately in accordance with the required system operation.
- This FB uses the GP.RECV instruction.
- Turn off i\_bEN (Execution command) after o\_bOK (Normal completion) or o\_bErr (Error completion) is turned on. By turning off i\_bEN (Execution command), o\_bOK (Normal completion) or o\_bErr (Error completion) is turned off and o\_uErrId (Error code) is cleared to 0. However, because the GP.RECV instruction which is a pulse instruction in the FB is used, if a write is performed while the FB is executed, the instruction may not be executed, and o\_bOK (Normal completion) and o\_bErr (Error completion) may not turn on. In that case, turn i\_bEN (Execution command) on again.
- When booting the CPU module, if the program file using this FB is specified for the booting, add the program-specific label default value file also to the boot settings. Refer to the MELSEC iQ-F FX5 User's Manual (Application) for details on the setting methods.
- This FB cannot be used in an interrupt program.
- Do not use this FB in programs that are executed only once, such as a subroutine program or FOR-NEXT loop, because i\_bEN (Execution command) cannot be turned off and the normal operation cannot be acquired. Always use this FB in programs that can turn off i\_bEN (Execution command).
- When using several of these FBs, ensure that the receive data storage channel do not overlap.
- Every input must be provided with a value for proper FB operation. Set the public label (operation parameter) as needed.

## Parameter setting

For the setting procedure, refer to  Page 143 Parameter setting.

## Performance value

| CPU module                  | Measurement conditions <sup>*3</sup> | Performance value |                   | Number of scans |
|-----------------------------|--------------------------------------|-------------------|-------------------|-----------------|
|                             |                                      | Processing time   | Maximum scan time |                 |
| FX5U, FX5UC <sup>*1*2</sup> | Received data length: 1 word         | 0.71ms            | 0.643ms           | 1 scan          |
|                             | Received data length: 960 words      | 1.75ms            | 1.550ms           | 2 scans         |

\*1 When the program capacity is set to 128K steps, the processing speed may be reduced.

\*2 The labels in the standard area are used.

\*3 The received data is K1234.

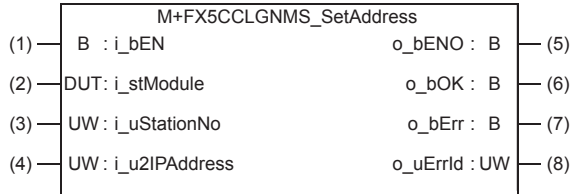
## Error code

| Error code (hexadecimal)         | Description                                                                                                                                             | Action                                                                                                                                                           |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| C000H to CFFFH<br>D000H to DFFFH | This error code is the same as the error code generated with the data receiving (GP.RECV) instruction from the other station's programmable controller. | Refer to the  MELSEC iQ-F FX5 CC-Link IE TSN Master/Local Module User's Manual. |

# 3.5 M+FX5CCLGNMS\_SetAddress (Station number/IP address setting)

## Overview

This FB sets the station number/IP address for the own station.



## Labels

### Input label

| No. | Variable name | Name               | Data type                                  | Range                                                    | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----|---------------|--------------------|--------------------------------------------|----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1) | i_bEN         | Execution command  | Bit                                        | On, off                                                  | On: The FB is activated.<br>Off: The FB is not activated.                                                                                                                                                                                                                                                                                                                                                                                                                   |
| (2) | i_stModule    | Module label       | Structure                                  | The setting range differs depending on the module label. | Specify the module label of the FX5-CCLGN-MS.                                                                                                                                                                                                                                                                                                                                                                                                                               |
| (3) | i_uStationNo  | Own station number | Word [Unsigned]/Bit String [16-bit]        | 0 to 120                                                 | Specify the station number to be set.<br>• Master station: 0<br>• Local station: 1 to 120                                                                                                                                                                                                                                                                                                                                                                                   |
| (4) | i_u2IPAddress | IP address         | Word [Unsigned]/Bit String [16-bit] (0..1) | 0.0.0.1 to 223.255.255.254                               | <div>Specify the IP address for the own station. To specify with a label, use an array for the data type.</div> <div><div><div>b15b8b7b0</div><div><div>1st word</div><div>Third octet</div><div>Fourth octet</div></div><div><div>2nd word</div><div>First octet</div><div>Second octet</div></div></div></div> <div>Example: When IP address is 192.168.1.2</div> <div><div><div>1st word</div><div>0102H</div></div><div><div>2nd word</div><div>C0A8H</div></div></div> |

### Output label

| No. | Variable name | Name              | Data type                           | Default value | Description                                                                      |
|-----|---------------|-------------------|-------------------------------------|---------------|----------------------------------------------------------------------------------|
| (5) | o_bENO        | Execution status  | Bit                                 | Off           | On: The execution command is on.<br>Off: The execution command is off.           |
| (6) | o_bOK         | Normal completion | Bit                                 | Off           | When this label is on, it indicates that the parameters have been set correctly. |
| (7) | o_bErr        | Error completion  | Bit                                 | Off           | When this label is on, it indicates that an error has occurred in the FB.        |
| (8) | o_uErrId      | Error code        | Word [Unsigned]/Bit String [16-bit] | 0             | The error code that occurred in the FB is stored.                                |

## FB details

### Available device

#### ■CC-Link IE TSN module

| Target module | Firmware version | Engineering tool                  |
|---------------|------------------|-----------------------------------|
| FX5-CCLGN-MS  | —                | GX Works3 Version 1.065T or later |

#### ■CPU module

FX5UJ/FX5U/FX5UC CPU module

### Basic specifications

| Item                           | Description                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Language                       | Ladder diagram                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Number of steps                | 89 steps<br>The number of steps of the FB embedded in the program varies depending on the CPU module used, the input/output definitions, and the option setting of GX Works3. For the option setting of GX Works3, refer to the  GX Works3 Operating Manual.                                                                                                    |
| Label usage                    | <ul style="list-style-type: none"><li>• Label: 0.02K points (Word)</li><li>• Latch label: 0K points (Word)</li></ul> The amount of labels used in the program varies depending on the CPU module used, the device specified in an argument, and the option setting of GX Works3. For the option setting of GX Works3, refer to the  GX Works3 Operating Manual. |
| Number of index register usage | <ul style="list-style-type: none"><li>• Index register: 0 points</li><li>• Long index register: 0 points</li></ul>                                                                                                                                                                                                                                                                                                                                 |
| File register usage            | 0 points                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| FB dependence                  | No dependence                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| FB compilation method          | Macro type                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| FB operation                   | Pulsed execution (multiple scan execution type)                                                                                                                                                                                                                                                                                                                                                                                                    |

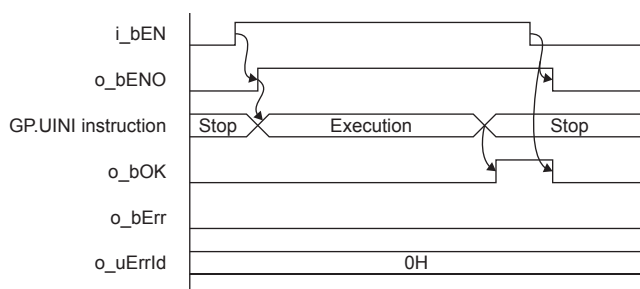
### Processing

- The station number/IP address is set in the own station by turning i\_bEN (Execution command) on.
- If an error occurs while setting the parameters, o\_bErr (Error completion) turns on, and the error code is stored in o\_uErrId (Error code). For the error code, refer to  Page 168 Error code.
- Set the module parameters in GX Works3 in accordance with the connected equipment and system. For the module parameters, refer to  Page 143 Parameter setting.



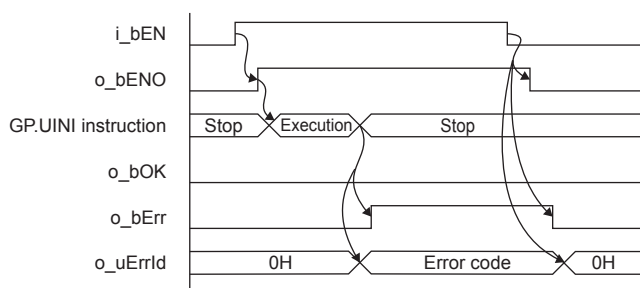
## Timing chart of I/O signals

### ■For normal completion



### ■For error completion

(Same when a module error has occurred)



## Restrictions or precautions

- This FB does not include the error recovery processing. Program the error recovery processing separately in accordance with the required system operation.
- This FB uses the GP.UINI instruction. Select "Set with programs" with the module parameter "Parameter setting method" to validate the GP.UINI instruction.
- Turn off i\_bEN (Execution command) after o\_bOK (Normal completion) or o\_bErr (Error completion) is turned on. By turning off i\_bEN (Execution command), o\_bOK (Normal completion) or o\_bErr (Error completion) is turned off and o\_uErrId (Error code) is cleared to 0. However, because the GP.UINI instruction which is a pulse instruction in the FB is used, if a write is performed while the FB is executed, the instruction may not be executed, and o\_bOK (Normal completion) and o\_bErr (Error completion) may not turn on. In that case, turn i\_bEN (Execution command) on again.
- If a broadcast address or reserved address is set for the IP address, the data may not link. Do not set a broadcast address or reserved address for the IP address.
- This FB cannot be used in an interrupt program.
- Do not use this FB in programs that are executed only once, such as a subroutine program or FOR-NEXT loop, because i\_bEN (Execution command) cannot be turned off and the normal operation cannot be acquired. Always use this FB in programs that can turn off i\_bEN (Execution command).
- Every input must be provided with a value for proper FB operation.

## Parameter setting

For the setting procedure, refer to  Page 143 Parameter setting.

## Performance value

| CPU module      | Measurement conditions                                              | Performance value |                   | Number of scans |
|-----------------|---------------------------------------------------------------------|-------------------|-------------------|-----------------|
|                 |                                                                     | Processing time   | Maximum scan time |                 |
| FX5U, FX5UC*1*2 | Operation check of setting station No.1 (IP address: 192.168.3.250) | 459.0ms           | 0.845ms           | 880 scans       |

\*1 When the program capacity is set to 128K steps, the processing speed may be reduced.

\*2 The labels in the standard area are used.

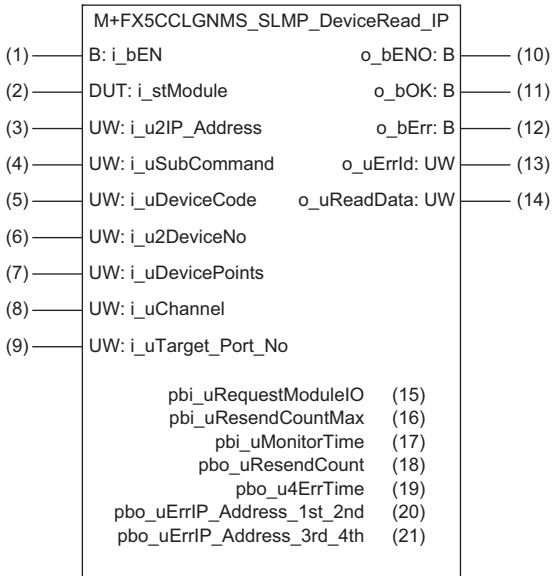
## Error code

| Error code (hexadecimal)                           | Description                                                                                                                         | Action                                                                                                                                                             |
|----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| C000H to CFFFH<br>D000H to DFFFH<br>E000H to EFFFH | This error code is the same as the error code that occurs with the own station number and IP address setting (GP.UINI) instruction. | Refer to the  MELSEC IQ-F FX5 CC-Link IE TSN Master/Local Module User's Manual. |

# 3.6 M+FX5CCLGNMS\_SLMP\_DeviceRead\_IP (Reading of SLMP-compatible device)

## Overview

This FB reads device data from the SLMP-compatible device by specifying IP address.



# Labels

## Input label

| No.      | Variable name     | Name                        | Data type                                  | Range                                                    | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |     |       |    |          |             |             |  |          |              |              |  |
|----------|-------------------|-----------------------------|--------------------------------------------|----------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----|-------|----|----------|-------------|-------------|--|----------|--------------|--------------|--|
| (1)      | i_bEN             | Execution command           | Bit                                        | On, off                                                  | On: The FB is activated.<br>Off: The FB is not activated.                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |     |       |    |          |             |             |  |          |              |              |  |
| (2)      | i_stModule        | Module label                | Structure                                  | The setting range differs depending on the module label. | Specify the module label of the FX5-CCLGN-MS.                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |     |       |    |          |             |             |  |          |              |              |  |
| (3)      | i_u2IP_Address    | IP address of target device | Word [Unsigned]/Bit String [16-bit] (0..1) | 0.0.0.1 to 223.255.255.254                               | Specify the IP address of target device.<br>Specify a value in the range of 1 to 254 (FEH) for the fourth octet.<br><table><tr><td></td><td>b15</td><td>b8 b7</td><td>b0</td></tr><tr><td>1st word</td><td>First octet</td><td>Third octet</td><td></td></tr><tr><td>2nd word</td><td>Second octet</td><td>Fourth octet</td><td></td></tr></table>                                                                                                                                                                      |  | b15 | b8 b7 | b0 | 1st word | First octet | Third octet |  | 2nd word | Second octet | Fourth octet |  |
|          | b15               | b8 b7                       | b0                                         |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |     |       |    |          |             |             |  |          |              |              |  |
| 1st word | First octet       | Third octet                 |                                            |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |     |       |    |          |             |             |  |          |              |              |  |
| 2nd word | Second octet      | Fourth octet                |                                            |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |     |       |    |          |             |             |  |          |              |              |  |
| (4)      | i_uSubCommand     | Sub command                 | Word [Unsigned]/Bit String [16-bit]        | 0 to 3                                                   | Specify the read unit and specification method of a device.<br>■0th bit<br>Specify whether the device is read in units of words or in units of bits.<br>• 0: In units of words<br>• 1: In units of bits<br>■1st bit<br>Specify the combination of the number of digits of the device code and start device number of the device to be read.<br>• 0: Specify the device code in 2 digits and the start device number in 6 digits.<br>• 1: Specify the device code in 4 digits and the start device number in 8 digits.*1 |  |     |       |    |          |             |             |  |          |              |              |  |
| (5)      | i_uDeviceCode     | Device code                 | Word [Unsigned]/Bit String [16-bit]        | —                                                        | Specify the device code of the device to be read in binary code.<br>• When the 1st bit of the subcommand is 0: 2 digits<br>• When the 1st bit of the subcommand is 1: 4 digits                                                                                                                                                                                                                                                                                                                                          |  |     |       |    |          |             |             |  |          |              |              |  |
| (6)      | i_u2DeviceNo      | Head device No.             | Word [Unsigned]/Bit String [16-bit] (0..1) | —                                                        | Specify the start device number of the device to be read in binary code.<br>• When the 1st bit of the subcommand is 0: 6 digits<br>• When the 1st bit of the subcommand is 1: 8 digits                                                                                                                                                                                                                                                                                                                                  |  |     |       |    |          |             |             |  |          |              |              |  |
| (7)      | i_uDevicePoints   | Number of device points     | Word [Unsigned]/Bit String [16-bit]        | 1 to 960, 1 to 3972                                      | Specify the number of device points of the device to be read in binary code.<br>• When the 0th bit of the subcommand is 0: 1 to 960 digits<br>• When the 0th bit of the subcommand is 1<br>Own station channel is 1 to 9: 1 to 3972 digits*2<br>Own station channel is 10 to 17: 1 to 3960 digits*2                                                                                                                                                                                                                     |  |     |       |    |          |             |             |  |          |              |              |  |
| (8)      | i_uChannel        | Own station channel         | Word [Unsigned]/Bit String [16-bit]        | 1 to 17                                                  | Specify the channel to be used by own station according to the communication content.<br>• 1: Do not add serial number.<br>• 2 to 9: Add serial number.<br>• 10 to 17: Communicate using station number extension frame.                                                                                                                                                                                                                                                                                                |  |     |       |    |          |             |             |  |          |              |              |  |
| (9)      | i_uTarget_Port_No | Destination port number     | Word [Unsigned]/Bit String [16-bit]        | 1 to 65534                                               | Specify the UDP port number of target device.                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |     |       |    |          |             |             |  |          |              |              |  |

\*1 It can be specified when the target device for reading is MELSEC iQ-R Series. It cannot be specified when the target device for reading is MELSEC-Q/L Series or MELSEC iQ-F Series.

\*2 The allowable range is 1 to 3584 when the target device for reading is MELSEC iQ-F Series.

## Output label

| No.  | Variable name | Name                          | Data type                           | Default value | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|------|---------------|-------------------------------|-------------------------------------|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (10) | o_bENO        | Execution status              | Bit                                 | Off           | On: The execution command is on.<br>Off: The execution command is off.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| (11) | o_bOK         | Normal completion             | Bit                                 | Off           | When this label is on, it indicates that the device has been read out correctly.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| (12) | o_bErr        | Error completion              | Bit                                 | Off           | When this label is on, it indicates that an error has occurred in the FB.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| (13) | o_uErrId      | Error code                    | Word [Unsigned]/Bit String [16-bit] | 0             | The error code that occurred in the FB is stored.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| (14) | o_uReadData   | Read data storage destination | Word [Unsigned]/Bit String [16-bit] | 0             | <p>Specify the start device number of the device for storing the read data.</p> <ul style="list-style-type: none"><li>When the 0th bit of the subcommand is 0, the device data is read in units of words.</li></ul> <p>Example: When reading the bit device M100 to M115 (one word) in units of words</p> <p>1st word :</p> <div><div>b15b8b7b0</div><table><tr><td>1</td><td>2</td><td>3</td><td>4</td></tr><tr><td>0</td><td>0</td><td>0</td><td>1</td></tr><tr><td>0</td><td>0</td><td>1</td><td>0</td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>1</td><td>1</td><td>0</td><td>1</td></tr><tr><td>0</td><td>1</td><td>0</td><td>0</td></tr></table><div>M115 . . . M100</div></div> <p>Example: When reading the word device D0 to D2 in units of words</p> <p>1st word :</p> <div><div>b15b8b7b0</div><table><tr><td>1</td><td>2</td><td>3</td><td>4</td></tr></table><div>D0</div></div> <p>2nd word :</p> <div><div>b15b8b7b0</div><table><tr><td>0</td><td>0</td><td>0</td><td>2</td></tr></table><div>D1</div></div> <p>3rd word :</p> <div><div>b15b8b7b0</div><table><tr><td>1</td><td>D</td><td>E</td><td>F</td></tr></table><div>D2</div></div> <ul style="list-style-type: none"><li>When the 0th bit of the subcommand is 1, read the device data in units of bits.</li></ul> <p>Example: When reading the bit device M100 to M107 in units of bits</p> <p>1st word :</p> <div><div>b15b8b7b0</div><table><tr><td>0</td><td>1</td><td>0</td><td>0</td></tr></table><div>M102M103M100M101</div></div> <p>2nd word :</p> <div><div>b15b8b7b0</div><table><tr><td>1</td><td>1</td><td>0</td><td>0</td></tr></table><div>M106M107M104M105</div></div> | 1 | 2 | 3 | 4 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 2 | 3 | 4 | 0 | 0 | 0 | 2 | 1 | D | E | F | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 |
| 1    | 2             | 3                             | 4                                   |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 0    | 0             | 0                             | 1                                   |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 0    | 0             | 1                             | 0                                   |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 0    | 0             | 0                             | 0                                   |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 1    | 1             | 0                             | 1                                   |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 0    | 1             | 0                             | 0                                   |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 1    | 2             | 3                             | 4                                   |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 0    | 0             | 0                             | 2                                   |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 1    | D             | E                             | F                                   |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 0    | 1             | 0                             | 0                                   |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 1    | 1             | 0                             | 0                                   |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

## Operation parameter

| No.  | Variable name        | Name                      | Data type                           | Range                                 | Description                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------|----------------------|---------------------------|-------------------------------------|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (15) | pbi_uRequestModuleIO | Requested module I/O No.  | Word [Unsigned]/Bit String [16-bit] | 03FFH, 03E0H to 03E3H, 03D0H to 03D3H | Specify the module of the access destination.<br><ul style="list-style-type: none"> <li>• 03FFH: Own station, control CPU</li> <li>• 03E0H: Multiple CPU No.1</li> <li>• 03E1H: Multiple CPU No.2</li> <li>• 03E2H: Multiple CPU No.3</li> <li>• 03E3H: Multiple CPU No.4</li> <li>• 03D0H: Control system CPU</li> <li>• 03D1H: Standby system CPU</li> <li>• 03D2H: System A CPU</li> <li>• 03D3H: System B CPU</li> </ul> |
| (16) | pbi_uResendCountMax  | Maximum number of resends | Word [Unsigned]/Bit String [16-bit] | 0 to 15                               | Specify the number of resends to be performed if the data transfer is not completed within the monitoring time specified by "arrival monitoring time".<br><ul style="list-style-type: none"> <li>• 0 to 15</li> </ul>                                                                                                                                                                                                        |
| (17) | pbi_uMonitorTime     | Arrival monitoring time   | Word [Unsigned]/Bit String [16-bit] | 0, 1 to 32767                         | Specify the monitoring time until completion of processing. If the processing is not completed within the monitoring time, data is resent until the value specified in "maximum number of resends" is reached.<br><ul style="list-style-type: none"> <li>• 0: 10 seconds</li> <li>• 1 to 32767: 1 to 32767 seconds</li> </ul>                                                                                                |

## Public variable

| No.  | Variable name              | Name                                                   | Data type                                  | Range | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------|----------------------------|--------------------------------------------------------|--------------------------------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (18) | pbo_uResendCount           | Number of resends                                      | Word [Unsigned]/Bit String [16-bit]        | —     | The number of resends performed (result) is stored. When an error is detected, the number of resends performed (results) between the detection of the error to stopping of resending is stored.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| (19) | pbo_u4ErrTime              | Error occurrence time                                  | Word [Unsigned]/Bit String [16-bit] (0..3) | —     | Clock data at the time of error occurrence is stored.* <sup>1</sup><br>1st word<br><ul style="list-style-type: none"> <li>• Upper 8 bits: Month (01H to 12H)</li> <li>• Lower 8 bits: Year (00H to 99H) (Last 2 digits of the year)</li> </ul> 2nd word<br><ul style="list-style-type: none"> <li>• Upper 8 bits: Hour (00H to 23H)</li> <li>• Lower 8 bits: Day (01H to 31H)</li> </ul> 3rd word<br><ul style="list-style-type: none"> <li>• Upper 8 bits: Second (00H to 59H)</li> <li>• Lower 8 bits: Minute (00H to 59H)</li> </ul> 4th word<br><ul style="list-style-type: none"> <li>• Upper 8 bits: Year (00H to 99H) (Upper 2 digits of the year)</li> <li>• Lower 8 bits: Day of week (00H (Sunday) to 06H (Saturday))</li> </ul> |
| (20) | pbo_uErrIP_Address_1st_2nd | Error-detected station IP address (1st and 2nd octets) | Word [Unsigned]/Bit String [16-bit]        | —     | The IP address (first octet, second octet) of the device in which an error was detected is stored.* <sup>1</sup><br>Example: For 192.168.1.2<br>C0A8H                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| (21) | pbo_uErrIP_Address_3rd_4th | Error-detected station IP address (3rd and 4th octets) | Word [Unsigned]/Bit String [16-bit]        | —     | The IP address (third octet, fourth octet) of the device in which an error was detected is stored.* <sup>1</sup><br>Example: For 192.168.1.2<br>0102H                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

\*<sup>1</sup> The value is stored only when a dedicated instruction is completed with an error.  
The error-detected station IP address (1st and 2nd octets) and error-detected station IP address (3rd and 4th octets) store values set as the IP address of target device of the input argument.

## FB details

### Available device

#### ■CC-Link IE TSN module

| Target module | Firmware version | Engineering tool                  |
|---------------|------------------|-----------------------------------|
| FX5-CCLGN-MS  | 1.020 or later   | GX Works3 Version 1.105K or later |

#### ■CPU module

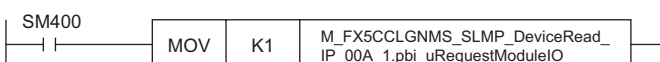
| Target module | Firmware version | Engineering tool                  |
|---------------|------------------|-----------------------------------|
| FX5UJ         | 1.070 or later   | GX Works3 Version 1.105K or later |
| FX5U, FX5UC   | 1.300 or later   | GX Works3 Version 1.105K or later |

### Basic specifications

| Item                           | Description                                                                                                                                                                                                                                                                                                                                                  |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Language                       | Ladder diagram                                                                                                                                                                                                                                                                                                                                               |
| Number of steps                | 425 steps<br>The number of steps of the FB embedded in the program varies depending on the CPU module used, the input/output definitions, and the option setting of GX Works3. For the option setting of GX Works3, refer to the  GX Works3 Operating Manual.                                                                                                |
| Label usage                    | <ul style="list-style-type: none"> <li>Label: 1056 points (Word)</li> <li>Latch label: 0 points (Word)</li> </ul> The amount of labels used in the program varies depending on the CPU module used, the device specified in an argument, and the option setting of GX Works3. For the option setting of GX Works3, refer to the  GX Works3 Operating Manual. |
| Number of index register usage | <ul style="list-style-type: none"> <li>Index register: 0 points</li> <li>Long index register: 0 points</li> </ul>                                                                                                                                                                                                                                            |
| File register usage            | 0 points                                                                                                                                                                                                                                                                                                                                                     |
| FB dependence                  | No dependence                                                                                                                                                                                                                                                                                                                                                |
| FB compilation method          | Macro type                                                                                                                                                                                                                                                                                                                                                   |
| FB operation                   | Pulsed type (multiple scan execution type)                                                                                                                                                                                                                                                                                                                   |

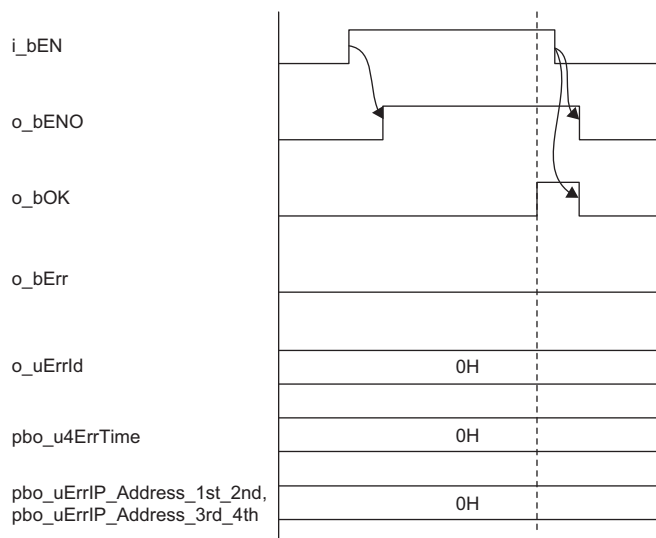
### Processing

- When i\_bEN (start condition) is turned on, this function reads device data from the SLMP-compatible device.
- Before executing this FB, specify the IP address of target device.
- This FB uses "Device Read (command: 0401H)" of SLMP. SLMP command messages are binary-coded. ( MELSEC iQ-F FX5 User's Manual (Communication))
- If the set number of device points is out of the range, o\_bErr (error completion) is turned on, and the processing of FB is suspended. Also, the error code 100H (hexadecimal) is stored in o\_uErrId (error code). For the error code, refer to Page 176 Error code.
- If an error occurs during device data read, o\_bErr (Error completion) turns on, and the error code is stored in o\_uErrId (Error code). For the error code, refer to Page 176 Error code.
- To set or monitor public labels, add a program for setting or monitoring as shown below. Specify a public label as "FB instance"."public label". The following program is designed to assign K1 to the requested module I/O No. (M\_FX5CCLGNMS\_SLMP\_DeviceRead\_IP\_00A\_1.pbi\_uRequestModuleIO).

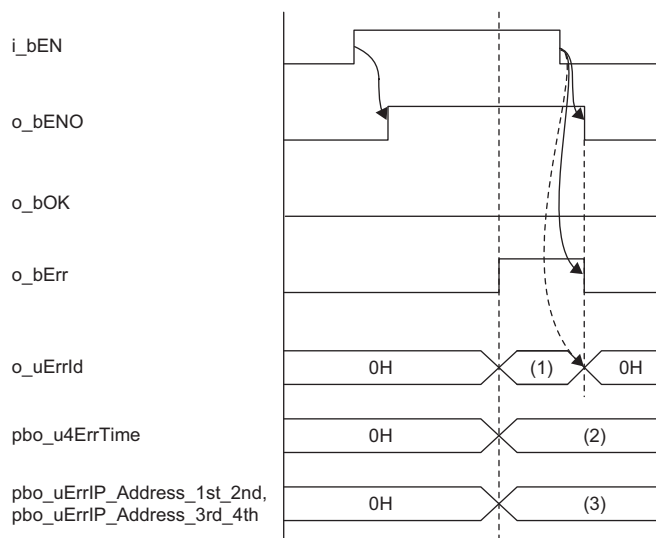


## Timing chart of I/O signals

### ■For normal completion



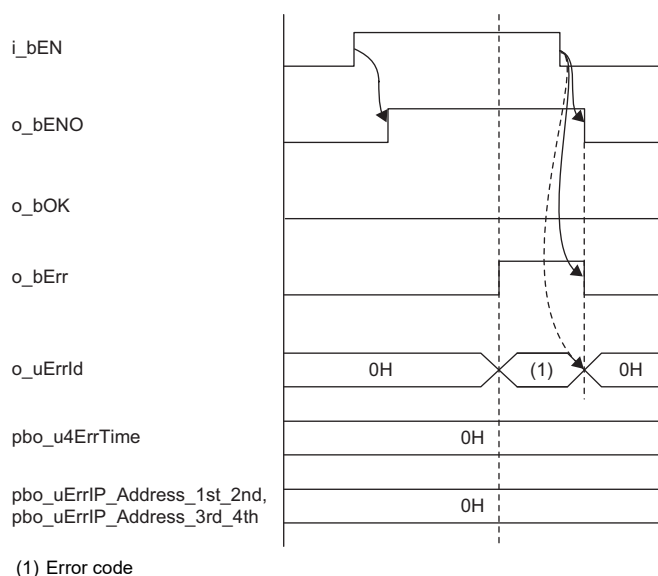
### ■For error completion (when a dedicated instruction is completed with an error)



- (1) Error code
- (2) Error occurrence time
- (3) Error-detected station IP address



■ **For error completion (when a dedicated instruction is normally completed but the end code is issued with an error)**



## Restrictions or precautions

- This FB does not include the error recovery processing. Program the error recovery processing separately in accordance with the required system operation.
- Turn off i\_bEN (Execution command) after o\_bOK (Normal completion) or o\_bErr (Error completion) is turned on. By turning off i\_bEN (Execution command), o\_bOK (Normal completion) or o\_bErr (Error completion) is turned off and o\_uErrId (Error code) is cleared to 0. However, because the GP.SLMPSND instruction which is a pulse instruction in the FB is used, if a write is performed while the FB is executed, the instruction may not be executed, and o\_bOK (Normal completion) and o\_bErr (Error completion) may not turn on. In that case, turn i\_bEN (Execution command) on again.
- This FB uses the GP.SLMPSND instruction. The GP.SLMPSND instruction will be normally completed even if an abnormal response is returned from the target device. This FB judges the normal completion/error completion from the end code of the response frame. Therefore, when the error completion is judged from the end code, the end code is stored as the output label end code.
- When the GP.SLMPSND instruction is normally completed, the error occurrence time, error-detected device IP address (1st and 2nd octets), and error-detected device IP address (3rd and 4th octets) of the public variables do not store values. <sup>\*1</sup>
- The constants are set to a part of the setting data as follows in the GP.SLMPSND instruction used in this FB.

| Data range   | Device   | Item                                 | Constant set by FB |
|--------------|----------|--------------------------------------|--------------------|
| Control data | (s1) + 0 | Execution or error completion type   | 0081H              |
|              | (s1) + 6 | Request destination network number   | 0000H              |
|              | (s1) + 7 | Request destination station number   | 00FFH              |
|              | (s1) + 9 | Request destination multidrop number | 0000H              |
| Request data | (s2) + 1 | Monitoring timer                     | K2                 |
|              | (s2) + 2 | Command                              | 0401H (Read)       |

- This FB cannot be used in an interrupt program.
- Do not use this FB in programs that are executed only once, such as a subroutine program or FOR-NEXT loop, because i\_bEN (Execution command) cannot be turned off and the normal operation cannot be acquired. Always use this FB in programs that can turn off i\_bEN (Execution command).
- In this FB, access devices (such as link direct device) that are accessed by the extension specification of SLMP cannot be read.
- In this FB, stations in other network cannot be set as the target station.
- For the port of target device where the remote password is set, execute this FB after performing the unlock processing of the remote password. When this FB is executed for the port of target device where the remote password is set, an error will occur.

- The target station must support "Device Read (Batch) (command: 0401H)" of 3E frame command.
  - This FB is for communications in binary code only. (Communications using ASCII code cannot be performed.)
  - This FB uses UDP communications. Set the protocol setting of the target device to UDP.
  - Every input must be provided with a value for proper FB operation.
  - When executing this FB from the first scan, set values for all public variables (operation parameters) in advance.
- \*1 When 0 (default value) is stored in the error occurrence time, error-detected station IP address (1st and 2nd octets), and error-detected station IP address (3rd and 4th octets), refer to the manual for the SLMP-compatible device used and take appropriate actions.

## Parameter setting

No parameters are required to use this FB.

## Example of use

For an example of use, refer to  Page 286 EXAMPLE OF USE.

## Performance value

| CPU module                  | Measurement conditions <sup>*3</sup>  | Performance value |                   | Number of scans |
|-----------------------------|---------------------------------------|-------------------|-------------------|-----------------|
|                             |                                       | Processing time   | Maximum scan time |                 |
| FX5UJ                       | Number of device points to read: K1   | 6.810ms           | 0.915ms           | 20 scans        |
|                             | Number of device points to read: K960 | 8.310ms           | 1.850ms           | 21 scans        |
| FX5U, FX5UC <sup>*1*2</sup> | Number of device points to read: K1   | 10.200ms          | 0.734ms           | 24 scans        |
|                             | Number of device points to read: K960 | 12.600ms          | 1.550ms           | 28 scans        |

\*1 When the program capacity is set to 128K steps, the processing speed may be reduced.

\*2 The labels in the standard area are used.

\*3 The written data is K1234.

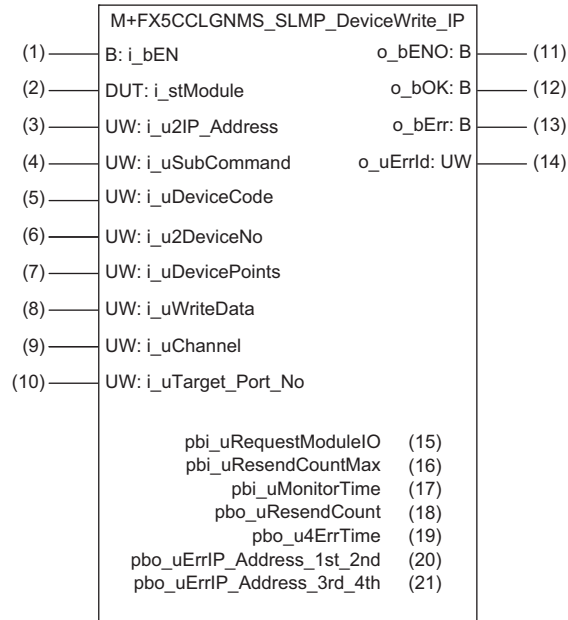
## Error code

| Error code (hexadecimal)   | Description                                                                                                                                                                        | Action                                                                                                                                                             |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 100H                       | When the read unit is 0 (in units of words), a value other than 1 to 960 was specified.<br>When the read unit is 1 (in units of bits), a value other than 1 to 3972 was specified. | After reviewing the setting, re-execute the FB.                                                                                                                    |
| Error code other than 100H | Same as the error code caused by the SLMP frame sending (GP.SLMPSND) instruction.                                                                                                  | Refer to the  MELSEC iQ-F FX5 CC-Link IE TSN Master/Local Module User's Manual. |

## 3.7 M+FX5CCLGNMS\_SLMP\_DeviceWrite\_IP (Writing to SLMP-compatible device)

### Overview

This FB writes device data to the SLMP-compatible device by specifying IP address.



### Labels

#### Input label

| No.      | Variable name  | Name                        | Data type                                  | Range                                                    | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |     |       |    |          |             |             |  |          |              |              |  |
|----------|----------------|-----------------------------|--------------------------------------------|----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----|-------|----|----------|-------------|-------------|--|----------|--------------|--------------|--|
| (1)      | i_bEN          | Execution command           | Bit                                        | On, off                                                  | On: The FB is activated.<br>Off: The FB is not activated.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |     |       |    |          |             |             |  |          |              |              |  |
| (2)      | i_stModule     | Module label                | Structure                                  | The setting range differs depending on the module label. | Specify the module label of the FX5-CCLGN-MS.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |     |       |    |          |             |             |  |          |              |              |  |
| (3)      | i_u2IP_Address | IP address of target device | Word [Unsigned]/Bit String [16-bit] (0..1) | 0.0.0.1 to 223.255.255.254                               | Specify the IP address of target device.<br>Specify a value in the range of 1 to 254 (FEH) for the fourth octet. <div><table><tr><td></td><td>b15</td><td>b8 b7</td><td>b0</td></tr><tr><td>1st word</td><td>First octet</td><td>Third octet</td><td></td></tr><tr><td>2nd word</td><td>Second octet</td><td>Fourth octet</td><td></td></tr></table></div>                                                                                                                                                                                                                                                                      |  | b15 | b8 b7 | b0 | 1st word | First octet | Third octet |  | 2nd word | Second octet | Fourth octet |  |
|          | b15            | b8 b7                       | b0                                         |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |     |       |    |          |             |             |  |          |              |              |  |
| 1st word | First octet    | Third octet                 |                                            |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |     |       |    |          |             |             |  |          |              |              |  |
| 2nd word | Second octet   | Fourth octet                |                                            |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |     |       |    |          |             |             |  |          |              |              |  |
| (4)      | i_uSubCommand  | Sub command                 | Word [Unsigned]/Bit String [16-bit]        | 0 to 3                                                   | Specify the write unit and specification method of a device.<br>■0th bit<br>Specify whether the device is written in units of words or in units of bits. <ul style="list-style-type: none"><li>• 0: In units of words</li><li>• 1: In units of bits</li></ul> ■1st bit<br>Specify the combination of the number of digits of the device code and start device number of the device to be written. <ul style="list-style-type: none"><li>• 0: Specify the device code in 2 digits and the start device number in 6 digits.</li><li>• 1: Specify the device code in 4 digits and the start device number in 8 digits.*1</li></ul> |  |     |       |    |          |             |             |  |          |              |              |  |

| No. | Variable name   | Name                           | Data type                                  | Range               | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-----|-----------------|--------------------------------|--------------------------------------------|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (5) | i_uDeviceCode   | Device code                    | Word [Unsigned]/Bit String [16-bit]        | —                   | Specify the device code of the device to be written in binary code.<br>• When the 1st bit of the subcommand is 0: 2 digits<br>• When the 1st bit of the subcommand is 1: 4 digits                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| (6) | i_u2DeviceNo    | Head device No.                | Word [Unsigned]/Bit String [16-bit] (0..1) | —                   | Specify the start device number of the device to be written in binary code.<br>• When the 1st bit of the subcommand is 0: 2 digits<br>• When the 1st bit of the subcommand is 1: 4 digits                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| (7) | i_uDevicePoints | Number of device points        | Word [Unsigned]/Bit String [16-bit]        | 1 to 960, 1 to 3972 | Specify the number of device points of the device to be written in binary code.<br>• When the 0th bit of the subcommand is 0: 1 to 960 digits<br>• When the 0th bit of the subcommand is 1: 1 to 3972 digits*2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| (8) | i_uWriteData    | Write data storage destination | Word [Unsigned]/Bit String [16-bit]        | —                   | Specify the start device number of the device for storing the write data.<br>• When the 0th bit of the subcommand is 0, the device data is written in units of words.<br>Example: When writing the bit device M100 to M115 (one word) in units of words<br><div>1st word :<br/>b15                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  </div> |

\*1 It can be specified when the target device for reading is MELSEC iQ-R Series. It cannot be specified when the target device for reading is MELSEC-Q/L Series or MELSEC iQ-F Series.

\*2 The allowable range is 1 to 3584 when the target device for reading is MELSEC iQ-F Series.

## Output label

| No.  | Variable name | Name              | Data type                           | Default value | Description                                                                     |
|------|---------------|-------------------|-------------------------------------|---------------|---------------------------------------------------------------------------------|
| (11) | o_bENO        | Execution status  | Bit                                 | Off           | On: The execution command is on.<br>Off: The execution command is off.          |
| (12) | o_bOK         | Normal completion | Bit                                 | Off           | When this label is on, it indicates that the device has been written correctly. |
| (13) | o_bErr        | Error completion  | Bit                                 | Off           | When this label is on, it indicates that an error has occurred in the FB.       |
| (14) | o_uErrId      | Error code        | Word [Unsigned]/Bit String [16-bit] | 0             | The error code that occurred in the FB is stored.                               |

## Operation parameter

| No.  | Variable name        | Name                      | Data type                           | Range                                 | Description                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------|----------------------|---------------------------|-------------------------------------|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (15) | pbi_uRequestModuleIO | Requested module I/O No.  | Word [Unsigned]/Bit String [16-bit] | 03FFH, 03E0H to 03E3H, 03D0H to 03D3H | Specify the module of the access destination.<br><ul style="list-style-type: none"> <li>• 03FFH: Own station, control CPU</li> <li>• 03E0H: Multiple CPU No.1</li> <li>• 03E1H: Multiple CPU No.2</li> <li>• 03E2H: Multiple CPU No.3</li> <li>• 03E3H: Multiple CPU No.4</li> <li>• 03D0H: Control system CPU</li> <li>• 03D1H: Standby system CPU</li> <li>• 03D2H: System A CPU</li> <li>• 03D3H: System B CPU</li> </ul> |
| (16) | pbi_uResendCountMax  | Maximum number of resends | Word [Unsigned]/Bit String [16-bit] | 0 to 15                               | Specify the number of resends to be performed if the data transfer is not completed within the monitoring time specified by "arrival monitoring time".<br><ul style="list-style-type: none"> <li>• 0 to 15</li> </ul>                                                                                                                                                                                                        |
| (17) | pbi_uMonitorTime     | Arrival monitoring time   | Word [Unsigned]/Bit String [16-bit] | 0, 1 to 32767                         | Specify the monitoring time until completion of processing. If the processing is not completed within the monitoring time, data is resent until the value specified in "maximum number of resends" is reached.<br><ul style="list-style-type: none"> <li>• 0: 10 seconds</li> <li>• 1 to 32767: 1 to 32767 seconds</li> </ul>                                                                                                |

## Public variable

| No.  | Variable name              | Name                                                   | Data type                                  | Range | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------|----------------------------|--------------------------------------------------------|--------------------------------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (18) | pbo_uResendCount           | Number of resends                                      | Word [Unsigned]/Bit String [16-bit]        | —     | The number of resends performed (result) is stored.<br>When an error is detected, the number of resends performed (results) between the detection of the error to stopping of resending is stored.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| (19) | pbo_u4ErrTime              | Error occurrence time                                  | Word [Unsigned]/Bit String [16-bit] (0..3) | —     | Clock data at the time of error occurrence is stored.* <sup>1</sup><br>1st word<br><ul style="list-style-type: none"> <li>• Upper 8 bits: Month (01H to 12H)</li> <li>• Lower 8 bits: Year (00H to 99H) (Last 2 digits of the year)</li> </ul> 2nd word<br><ul style="list-style-type: none"> <li>• Upper 8 bits: Hour (00H to 23H)</li> <li>• Lower 8 bits: Day (01H to 31H)</li> </ul> 3rd word<br><ul style="list-style-type: none"> <li>• Upper 8 bits: Second (00H to 59H)</li> <li>• Lower 8 bits: Minute (00H to 59H)</li> </ul> 4th word<br><ul style="list-style-type: none"> <li>• Upper 8 bits: Year (00H to 99H) (Upper 2 digits of the year)</li> <li>• Lower 8 bits: Day of week (00H (Sunday) to 06H (Saturday))</li> </ul> |
| (20) | pbo_uErrIP_Address_1st_2nd | Error-detected station IP address (1st and 2nd octets) | Word [Unsigned]/Bit String [16-bit]        | —     | The IP address (first octet, second octet) of the device in which an error was detected is stored.* <sup>1</sup><br>Example: For 192.168.1.2<br>C0A8H                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| (21) | pbo_uErrIP_Address_3rd_4th | Error-detected station IP address (3rd and 4th octets) | Word [Unsigned]/Bit String [16-bit]        | —     | The IP address (third octet, fourth octet) of the device in which an error was detected is stored.* <sup>1</sup><br>Example: For 192.168.1.2<br>0102H                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

\*<sup>1</sup> The value is stored only when a dedicated instruction is completed with an error.  
The error-detected station IP address (1st and 2nd octets) and error-detected station IP address (3rd and 4th octets) store values set as the IP address of target device of the input argument.

## FB details

### Available device

#### ■CC-Link IE TSN module

| Target module | Firmware version | Engineering tool                  |
|---------------|------------------|-----------------------------------|
| FX5-CCLGN-MS  | 1.020 or later   | GX Works3 Version 1.105K or later |

#### ■CPU module

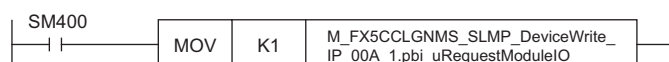
| Target module | Firmware version | Engineering tool                  |
|---------------|------------------|-----------------------------------|
| FX5UJ         | 1.070 or later   | GX Works3 Version 1.105K or later |
| FX5U, FX5UC   | 1.300 or later   | GX Works3 Version 1.105K or later |

### Basic specifications

| Item                           | Description                                                                                                                                                                                                                                                                                                                                                  |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Language                       | Ladder diagram                                                                                                                                                                                                                                                                                                                                               |
| Number of steps                | 460 steps<br>The number of steps of the FB embedded in the program varies depending on the CPU module used, the input/output definitions, and the option setting of GX Works3. For the option setting of GX Works3, refer to the  GX Works3 Operating Manual.                                                                                                |
| Label usage                    | <ul style="list-style-type: none"> <li>Label: 1060 points (Word)</li> <li>Latch label: 0 points (Word)</li> </ul> The amount of labels used in the program varies depending on the CPU module used, the device specified in an argument, and the option setting of GX Works3. For the option setting of GX Works3, refer to the  GX Works3 Operating Manual. |
| Number of index register usage | <ul style="list-style-type: none"> <li>Index register: 0 points</li> <li>Long index register: 0 points</li> </ul>                                                                                                                                                                                                                                            |
| File register usage            | 0 points                                                                                                                                                                                                                                                                                                                                                     |
| FB dependence                  | No dependence                                                                                                                                                                                                                                                                                                                                                |
| FB compilation method          | Macro type                                                                                                                                                                                                                                                                                                                                                   |
| FB operation                   | Pulsed type (multiple scan execution type)                                                                                                                                                                                                                                                                                                                   |

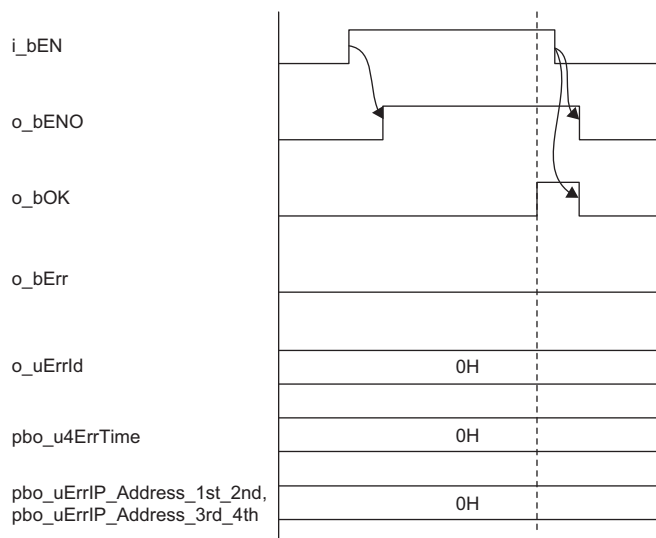
### Processing

- When i\_bEN (start condition) is turned on, this function writes device data of the SLMP-compatible device.
- Before executing this FB, specify the IP address of target device.
- This FB uses "Device Write (command: 1401H)" of SLMP. SLMP command messages are binary-coded. ( MELSEC iQ-F FX5 User's Manual (Communication))
- If the set number of device points is out of the range, o\_bErr (error completion) is turned on, and the processing of FB is suspended. Also, the error code 100H (hexadecimal) is stored in o\_uErrId (error code). For the error code, refer to Page 184 Error code.
- If an error occurs during device data writing, o\_bErr (error completion) is turned on, and the error code is stored in o\_uErrId (error code). For the error code, refer to Page 184 Error code.
- To set or monitor public labels, add a program for setting or monitoring as shown below. Specify a public label as "FB instance"."public label". The following program is designed to assign K1 to the requested module I/O No. (M\_FX5CCLGNMS\_SLMP\_DeviceWrite\_IP\_00A\_1.pbi\_uRequestModuleIO).

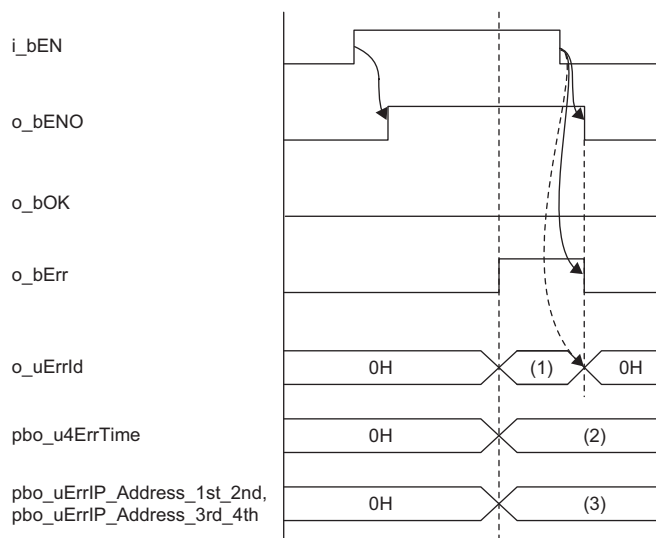


## Timing chart of I/O signals

### ■For normal completion



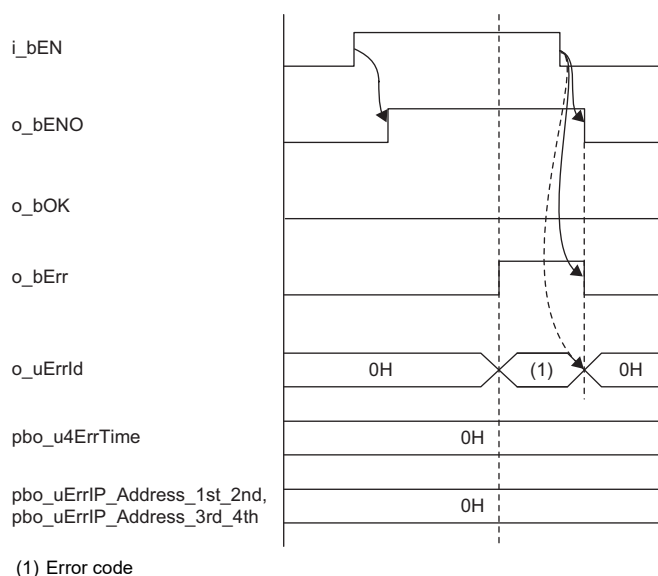
### ■For error completion (when a dedicated instruction is completed with an error)



- (1) Error code
- (2) Error occurrence time
- (3) Error-detected station IP address



■ **For error completion (when a dedicated instruction is normally completed but the end code is issued with an error)**



## Restrictions or precautions

- This FB does not include the error recovery processing. Program the error processing separately in accordance with the system and the required operation.
- Turn off i\_bEN (Execution command) after o\_bOK (Normal completion) or o\_bErr (Error completion) is turned on. By turning off i\_bEN (Execution command), o\_bOK (Normal completion) or o\_bErr (Error completion) is turned off and o\_uErrId (Error code) is cleared to 0. However, because the GP.SLMPSND instruction which is a pulse instruction in the FB is used, if a write is performed while the FB is executed, the instruction may not be executed, and o\_bOK (Normal completion) and o\_bErr (Error completion) may not turn on. In that case, turn i\_bEN (Execution command) on again.
- This FB uses the GP.SLMPSND instruction. The GP.SLMPSND instruction will be normally completed even if an abnormal response is returned from the target device. This FB judges the normal completion/error completion from the end code of the response frame. Therefore, when the error completion is judged from the end code, the end code is stored as the output label end code.
- When the GP.SLMPSND instruction is normally completed, the error occurrence time, error-detected device IP address (1st and 2nd octets), and error-detected device IP address (3rd and 4th octets) of the public variables do not store values. <sup>\*1</sup>
- The constants are set to a part of the setting data as follows in the GP.SLMPSND instruction used in this FB.

| Data range   | Device   | Item                                 | Constant set by FB |
|--------------|----------|--------------------------------------|--------------------|
| Control data | (s1) + 0 | Execution or error completion type   | 0081H              |
|              | (s1) + 6 | Request destination network number   | 0000H              |
|              | (s1) + 7 | Request destination station number   | 00FFH              |
|              | (s1) + 9 | Request destination multidrop number | 0000H              |
| Request data | (s2) + 1 | Monitoring timer                     | K2                 |
|              | (s2) + 2 | Command                              | 1401H (Write)      |

- This FB cannot be used in an interrupt program.
- Do not use this FB in programs that are executed only once, such as a subroutine program or FOR-NEXT loop, because i\_bEN (Execution command) cannot be turned off and the normal operation cannot be acquired. Always use this FB in programs that can turn off i\_bEN (Execution command).
- In this FB, access devices (such as link direct device) that are accessed by the extension specification of SLMP cannot be written.
- In this FB, stations in other network cannot be set as the target station.
- For the port of target device where the remote password is set, execute this FB after performing the unlock processing of the remote password. When this FB is executed for the port of target device where the remote password is set, an error will occur.

- The target station must support "Device Write (Batch) (command: 1401H)" of 3E frame command.
  - This FB is for communications in binary code only. (Communications using ASCII code cannot be performed.)
  - This FB uses UDP communications. Set the protocol setting of the target device to UDP.
  - Every input must be provided with a value for proper FB operation.
  - When executing this FB from the first scan, set values for all public variables (operation parameters) in advance.
- \*1 When 0 (default value) is stored in the error occurrence time, error-detected station IP address (1st and 2nd octets), and error-detected station IP address (3rd and 4th octets), refer to the manual for the SLMP-compatible device used and take appropriate actions.

## Parameter setting

No parameters are required to use this FB.

## Example of use

For an example of use, refer to  Page 286 EXAMPLE OF USE.

## Performance value

| CPU module                  | Measurement conditions <sup>*3</sup>  | Performance value |                   | Number of scans |
|-----------------------------|---------------------------------------|-------------------|-------------------|-----------------|
|                             |                                       | Processing time   | Maximum scan time |                 |
| FX5UJ                       | Number of device points to read: K1   | 10.100ms          | 2.550ms           | 5 scans         |
|                             | Number of device points to read: K960 | 11.200ms          | 3.310ms           | 6 scans         |
| FX5U, FX5UC <sup>*1*2</sup> | Number of device points to read: K1   | 10.900ms          | 2.700ms           | 6 scans         |
|                             | Number of device points to read: K960 | 12.800ms          | 2.880ms           | 6 scans         |

\*1 When the program capacity is set to 128K steps, the processing speed may be reduced.

\*2 The labels in the standard area are used.

\*3 The written data is K1234.

## Error code

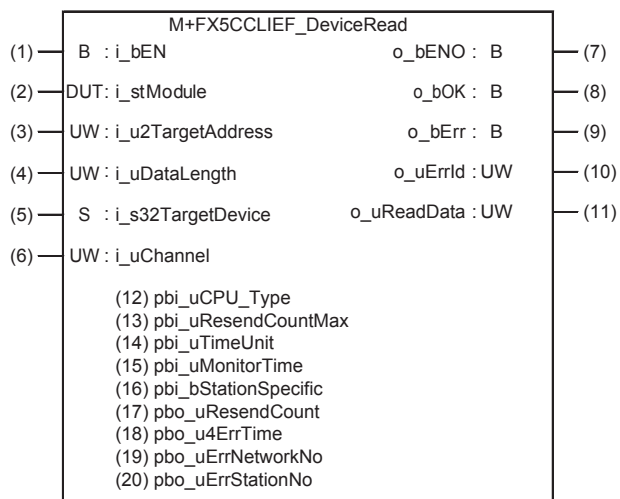
| Error code (hexadecimal)   | Description                                                                                                                                                                        | Action                                                                                                                                                               |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 100H                       | When the read unit is 0 (in units of words), a value other than 1 to 960 was specified.<br>When the read unit is 1 (in units of bits), a value other than 1 to 3972 was specified. | After reviewing the setting, re-execute the FB.                                                                                                                      |
| Error code other than 100H | Same as the error code caused by the SLMP frame sending (GP.SLMPSND) instruction.                                                                                                  | Refer to the  MELSEC iQ-F FX5 CC-Link IE TSN Master/Local Module User's Manual. |

# 4 FB FOR CC-Link IE Field Network

## 4.1 M+FX5CCLIEF\_DeviceRead (Reading of another station device)

### Overview

This FB reads data from a specified device in the programmable controller of another station.



# Labels

## Input label

| No. | Variable name     | Name                       | Data type                                  | Range                                                    | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----|-------------------|----------------------------|--------------------------------------------|----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1) | i_bEN             | Execution command          | Bit                                        | On, off                                                  | On: The FB is activated.<br>Off: The FB is not activated.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| (2) | i_stModule        | Module label               | Structure                                  | The setting range differs depending on the module label. | Specify the module label of the FX5-CCLIEF.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| (3) | i_u2TargetAddress | Target station address     | Word [Unsigned]/Bit String [16-bit] (0..1) | —                                                        | Specify the network number and station number for the target station. To specify with a label, use an array for the data type.<br><br><div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">1st word</div> <div style="border: 1px solid black; padding: 2px; text-align: center;"> <div style="display: flex; justify-content: space-between; font-size: 0.8em;">b15<span style="float: right;">b0</span></div> <div style="border-top: 1px solid black; border-bottom: 1px solid black; padding: 2px;">Network number: 1 to 239</div> </div> </div> <div style="display: flex; align-items: center; margin-top: 5px;"> <div style="margin-right: 10px;">2nd word</div> <div style="border: 1px solid black; padding: 2px; text-align: center;"> <div style="border-top: 1px solid black; border-bottom: 1px solid black; padding: 2px;">Station number</div> </div> </div> <p>Station number of Ethernet or CC-Link IE Controller Network</p> <ul style="list-style-type: none"> <li>• 1 to 120</li> </ul> <p>CC-Link IE Field Network station number</p> <ul style="list-style-type: none"> <li>• 125: Master station</li> <li>• 126: Master operating station</li> <li>• 1 to 120: Local station, remote device station, intelligent device station, submaster station</li> </ul> |
| (4) | i_uDataLength     | Read data length           | Word [Unsigned]/Bit String [16-bit]        | 1 to 960                                                 | Specify the number of words to be read.<br><ul style="list-style-type: none"> <li>• When reading data from RCP, QCPU, LCP, or FX5CPU: 1 to 960</li> <li>• When reading data from QnACP: 1 to 480</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| (5) | i_s32TargetDevice | Target station read device | Character string (32)                      | —                                                        | Specify the head device of the target station from which data is to be read.<br>Refer to the MELSEC iQ-F FX5 CC-Link IE Field Network Module User's Manual for details on specifying the device.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| (6) | i_uChannel        | Own station channel        | Word [Unsigned]/Bit String [16-bit]        | 1, 2                                                     | Specify the channel to be used by own station.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

## Output label

| No.  | Variable name | Name                     | Data type                           | Default value | Description                                                                      |
|------|---------------|--------------------------|-------------------------------------|---------------|----------------------------------------------------------------------------------|
| (7)  | o_bENO        | Execution status         | Bit                                 | Off           | On: The execution command is on.<br>Off: The execution command is off.           |
| (8)  | o_bOK         | Normal completion        | Bit                                 | Off           | When this label is on, it indicates that the device has been read out correctly. |
| (9)  | o_bErr        | Error completion         | Bit                                 | Off           | When this label is on, it indicates that an error has occurred in the FB.        |
| (10) | o_uErrId      | Error code               | Word [Unsigned]/Bit String [16-bit] | 0             | The error code that occurred in the FB is stored.                                |
| (11) | o_uReadData   | Read data storage device | Word [Unsigned]/Bit String [16-bit] | 0             | Specify the start number of the device for storing the read data.                |

## Public label

| No.  | Variable name        | Name                                        | Data type                                  | Range                                        | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|------|----------------------|---------------------------------------------|--------------------------------------------|----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (12) | pbi_uCPU_Type        | Target station CPU type                     | Word [Unsigned]/Bit String [16-bit]        | 0000H, 03D0H to 03D3H, 03E0H to 03E3H, 03FFH | Specify the CPU type of the target station. <ul style="list-style-type: none"> <li>• 0000H: To CPU of target station (control CPU)</li> <li>• 03D0H: To control system CPU</li> <li>• 03D1H: To standby system CPU</li> <li>• 03D2H: To system A CPU</li> <li>• 03D3H: To system B CPU</li> <li>• 03E0H: To multiple CPU No.1</li> <li>• 03E1H: To multiple CPU No.2</li> <li>• 03E2H: To multiple CPU No.3</li> <li>• 03E3H: To multiple CPU No.4</li> <li>• 03FFH: To CPU of target station (control CPU)</li> </ul>                                                                                                                                                                   |
| (13) | pbi_uResendCountMax  | Maximum number of resends                   | Word [Unsigned]/Bit String [16-bit]        | 0 to 15                                      | Specify the number of resends to be performed if the data transfer is not completed within the monitoring time specified by "arrival monitoring time". <ul style="list-style-type: none"> <li>• 0 to 15</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| (14) | pbi_uTimeUnit        | Arrival monitoring time unit                | Word [Unsigned]/Bit String [16-bit]        | —                                            | This label is not used in the FB program and does not need to be set.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| (15) | pbi_uMonitorTime     | Arrival monitoring time                     | Word [Unsigned]/Bit String [16-bit]        | 0, 1 to 32767                                | Specify the monitoring time until completion of processing. If the processing is not completed within the monitoring time, data is resent until the value specified in "maximum number of resends" is reached. <ul style="list-style-type: none"> <li>• 0: 10s</li> <li>• 1 to 32767: 1 to 32767s</li> </ul>                                                                                                                                                                                                                                                                                                                                                                             |
| (16) | pbi_bStationSpecific | Target station address specification method | Bit                                        | —                                            | This label is not used in the FB program and does not need to be set.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| (17) | pbo_uResendCount     | Number of resends                           | Word [Unsigned]/Bit String [16-bit]        | —                                            | The number of resends performed (result) is stored.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| (18) | pbo_u4ErrTime        | Error occurrence time                       | Word [Unsigned]/Bit String [16-bit] (0..3) | —                                            | Clock data at the time of error occurrence is stored. 1st word <ul style="list-style-type: none"> <li>• Upper 8 bits: Month (01H to 12H)</li> <li>• Lower 8 bits: Lower 2 digits of year (00H to 99H)</li> </ul> 2nd word <ul style="list-style-type: none"> <li>• Upper 8 bits: Hour (00H to 23H)</li> <li>• Lower 8 bits: Day (01H to 31H)</li> </ul> 3rd word <ul style="list-style-type: none"> <li>• Upper 8 bits: Second (00H to 59H)</li> <li>• Lower 8 bits: Minute (00H to 59H)</li> </ul> 4th word <ul style="list-style-type: none"> <li>• Upper 8 bits: Upper 2 digits of year (00H to 99H)</li> <li>• Lower 8 bits: Day of week (00H (Sunday) to 06H (Saturday))</li> </ul> |
| (19) | pbo_uErrNetworkNo    | Error detection network number              | Word [Unsigned]/Bit String [16-bit]        | —                                            | The network number of the station in which an error was detected is stored.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| (20) | pbo_uErrStationNo    | Error-detected station number               | Word [Unsigned]/Bit String [16-bit]        | —                                            | The station number of the station in which an error was detected is stored. Station number of Ethernet or CC-Link IE Controller Network <ul style="list-style-type: none"> <li>• 1 to 120</li> </ul> CC-Link IE Field Network station number <ul style="list-style-type: none"> <li>• 125: Master station</li> <li>• 1 to 120: Local station, remote device station, intelligent device station, submaster station</li> </ul>                                                                                                                                                                                                                                                            |

## FB details

### Available device

#### ■CC-Link IE Field Network module

| Target module | Firmware version | Engineering tool                  |
|---------------|------------------|-----------------------------------|
| FX5-CCLIEF    | —                | GX Works3 Version 1.025B or later |

#### ■CPU module

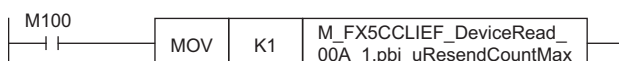
FX5UJ/FX5U/FX5UC CPU module

### Basic specifications

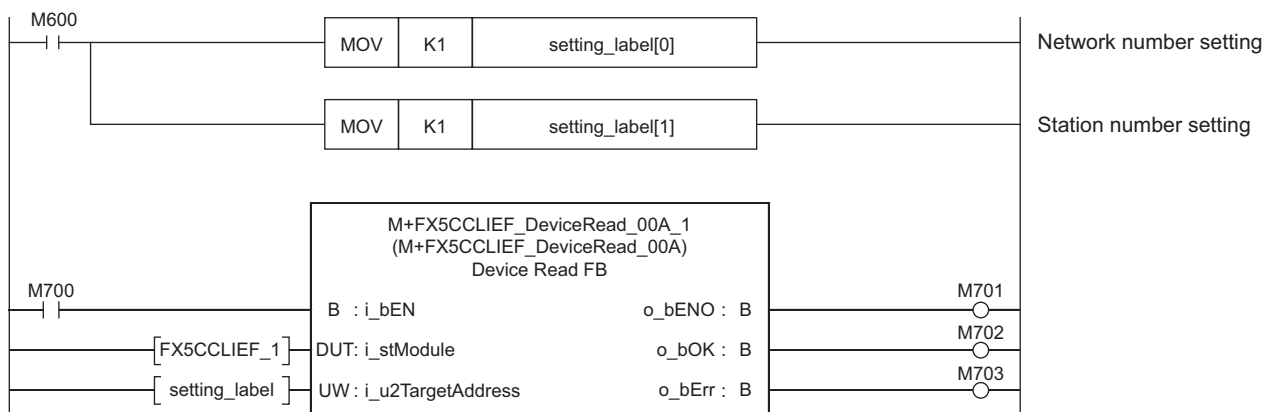
| Item                           | Description                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Language                       | Ladder diagram                                                                                                                                                                                                                                                                                                                                                 |
| Number of steps                | 113 steps<br>The number of steps of the FB embedded in the program varies depending on the CPU module used, the input/output definitions, and the option setting of GX Works3. For the option setting of GX Works3, refer to the  GX Works3 Operating Manual.                                                                                                  |
| Label usage                    | <ul style="list-style-type: none"> <li>Label: 0.05K points (Word)</li> <li>Latch label: 0K points (Word)</li> </ul> The amount of labels used in the program varies depending on the CPU module used, the device specified in an argument, and the option setting of GX Works3. For the option setting of GX Works3, refer to the  GX Works3 Operating Manual. |
| Number of index register usage | <ul style="list-style-type: none"> <li>Index register: 0 points</li> <li>Long index register: 0 points</li> </ul>                                                                                                                                                                                                                                              |
| File register usage            | 0 points                                                                                                                                                                                                                                                                                                                                                       |
| FB dependence                  | No dependence                                                                                                                                                                                                                                                                                                                                                  |
| FB compilation method          | Macro type                                                                                                                                                                                                                                                                                                                                                     |
| FB operation                   | Pulsed execution (multiple scan execution type)                                                                                                                                                                                                                                                                                                                |

### Processing

- When i\_bEN (Execution command) is turned on, data corresponding to the read data length is read from the read device of the specified target station address.
- If an error occurs during device read, o\_bErr (Error completion) turns on, and the error code is stored in o\_uErrId (Error code). For the error code, refer to Page 190 Error code.
- Set the module parameters in GX Works3 in accordance with the connected equipment and system. For the module parameters, refer to the MELSEC iQ-F FX5 CC-Link IE Field Network Module User's Manual.
- To set or monitor public labels, add a program for setting or monitoring as shown below. Specify a public label with "FB instance". "public label". The following program is designed to assign K1 to the maximum number of resends (M\_FX5CCLIEF\_DeviceRead\_00A\_1.pbi\_uResendCountMax) to set the number of resends to be performed if the transmission is not completed within the monitoring time specified in the arrival monitoring time.

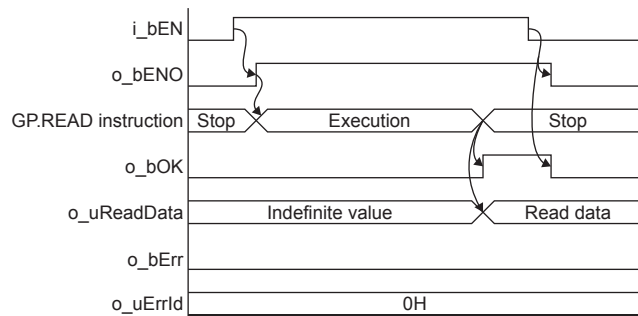


- Since the i\_u2TargetAddress (Target station address) data type is an array, the value cannot be set as a constant. Create a global label for setting, and create a program to set that label value in i\_u2TargetAddress (Target station address). The following program is designed to set the network No.1 (K1) of the target station in the global label setting\_label[0] and set the station No.1 (K1) of Ethernet or CC-Link IE Controller Network in setting\_label[1] and i\_u2TargetAddress (target station address).



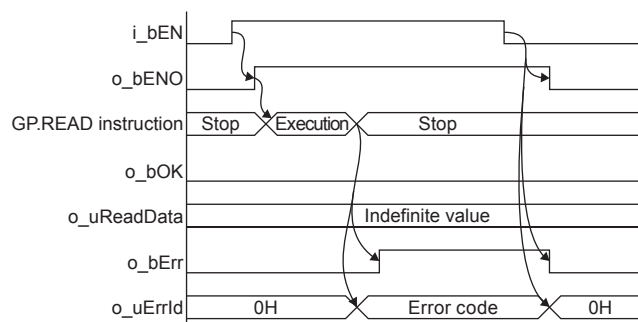
## Timing chart of I/O signals

### ■For normal completion



### ■For error completion

For instruction error



## Restrictions or precautions

- This FB does not include the error recovery processing. Program the error recovery processing separately in accordance with the required system operation.
- This FB uses the GP.READ instruction.
- Turn off i\_bEN (Execution command) after o\_bOK (Normal completion) or o\_bErr (Error completion) is turned on. By turning off i\_bEN (Execution command), o\_bOK (Normal completion) or o\_bErr (Error completion) is turned off and o\_uErrId (Error code) is cleared to 0. However, because the GP.READ instruction which is a pulse instruction in the FB is used, if a write is performed while the FB is executed, the instruction may not be executed, and o\_bOK (Normal completion) and o\_bErr (Error completion) may not turn on. In that case, turn i\_bEN (Execution command) on again.
- This FB cannot be used in an interrupt program.
- Do not use this FB in programs that are executed only once, such as a subroutine program or FOR-NEXT loop, because i\_bEN (Execution command) cannot be turned off and the normal operation cannot be acquired. Always use this FB in programs that can turn off i\_bEN (Execution command).
- When using several of these FBs, ensure that the target station address and own station channel do not overlap.
- Every input must be provided with a value for proper FB operation. Set the public label as needed.

## Parameter setting

For CC-Link IE Field Network settings, set the parameters on GX Works3.

 Navigation window ⇒ [Parameter] ⇒ [Module Information] ⇒ [FX5-CCLIEF]

For details on the setting procedure, refer to the  MELSEC iQ-F FX5 CC-Link IE Field Network Module User's Manual.

## Performance value

| CPU module                  | Measurement conditions      | Performance value |                   | Number of scans |
|-----------------------------|-----------------------------|-------------------|-------------------|-----------------|
|                             |                             | Processing time   | Maximum scan time |                 |
| FX5UJ                       | Read data length: 1 word    | 19.6ms            | 1.31ms            | 23 scans        |
|                             | Read data length: 960 words | 24.7ms            | 1.87ms            | 28 scans        |
| FX5U, FX5UC <sup>*1*2</sup> | Read data length: 1 word    | 17.5ms            | 1.01ms            | 27 scans        |
|                             | Read data length: 960 words | 23.1ms            | 1.60ms            | 27 scans        |

\*1 When the program capacity is set to 128K steps, the processing speed may be reduced.

\*2 The labels in the standard area are used.

## Error code

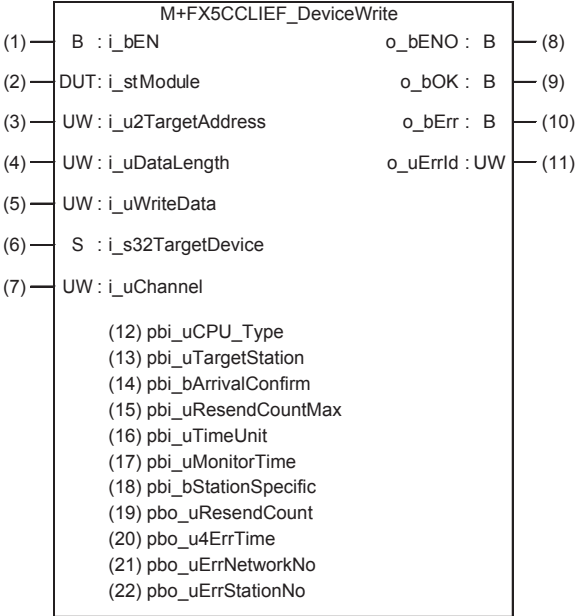
| Error code (hexadecimal) | Description                                                                                                                                                  | Action                                                                                                                                                            |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| D000H to DFFFH           | This error code is the same as the error code that occurs with the (GP.READ) instruction for reading data in the programmable controller of another station. | Refer to the  MELSEC iQ-F FX5 CC-Link IE Field Network Module User's Manual. |



# 4.2 M+FX5CCLIEF\_DeviceWrite (Writing to another station device)

## Overview

This FB writes data to a specified device in the programmable controller of another station.



# Labels

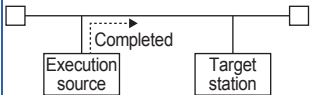
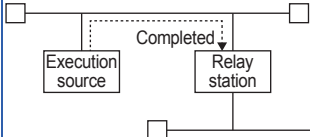
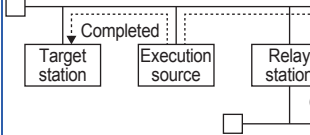
## Input label

| No. | Variable name     | Name                        | Data type                                  | Range                                                    | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----|-------------------|-----------------------------|--------------------------------------------|----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1) | i_bEN             | Execution command           | Bit                                        | On, off                                                  | On: The FB is activated.<br>Off: The FB is not activated.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| (2) | i_stModule        | Module label                | Structure                                  | The setting range differs depending on the module label. | Specify the module label of the FX5-CCLIEF.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| (3) | i_u2TargetAddress | Target station address      | Word [Unsigned]/Bit String [16-bit] (0..1) | —                                                        | <p>Specify the network number and station number for the target station. To specify with a label, use an array for the data type.</p> <p>■When "target station specification method" is set to 0 to specify a station number</p> <div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">1st word</div> <div style="border: 1px solid black; padding: 2px; text-align: center;"> <div style="display: flex; justify-content: space-between; font-size: 0.8em;">b15<span style="float: right;">b0</span></div> <div style="border-top: 1px solid black; border-bottom: 1px solid black; padding: 2px;">Network number: 1 to 239</div> </div> </div> <div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">2nd word</div> <div style="border: 1px solid black; padding: 2px; text-align: center;"> <div style="border-top: 1px solid black; border-bottom: 1px solid black; padding: 2px;">Station number</div> </div> </div> <p>Station number of Ethernet or CC-Link IE Controller Network</p> <ul style="list-style-type: none"> <li>• 1 to 120</li> </ul> <p>CC-Link IE Field Network station number</p> <ul style="list-style-type: none"> <li>• 125: Master station</li> <li>• 126: Master operating station</li> <li>• 1 to 120: Local station, remote device station, intelligent device station, submaster station</li> </ul> <p>■When "target station specification method" is set to 1 to specify a group</p> <div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">1st word</div> <div style="border: 1px solid black; padding: 2px; text-align: center;"> <div style="display: flex; justify-content: space-between; font-size: 0.8em;">b15<span style="float: right;">b0</span></div> <div style="border-top: 1px solid black; border-bottom: 1px solid black; padding: 2px;">Network number: 1 to 239</div> </div> </div> <div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">2nd word</div> <div style="border: 1px solid black; padding: 2px; text-align: center;"> <div style="border-top: 1px solid black; border-bottom: 1px solid black; padding: 2px;">Transient transmission group number: 1 to 32</div> </div> </div> <p>■When "target station specification method" is set to 2 to specify all stations</p> <div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">1st word</div> <div style="border: 1px solid black; padding: 2px; text-align: center;"> <div style="display: flex; justify-content: space-between; font-size: 0.8em;">b15<span style="float: right;">b0</span></div> <div style="border-top: 1px solid black; border-bottom: 1px solid black; padding: 2px;">Network number: 1 to 239</div> </div> </div> <div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">2nd word</div> <div style="border: 1px solid black; padding: 2px; text-align: center;"> <div style="border-top: 1px solid black; border-bottom: 1px solid black; padding: 2px;">0 (The set value is ignored.)</div> </div> </div> |
| (4) | i_uDataLength     | Write data length           | Word [Unsigned]/Bit String [16-bit]        | 1 to 960                                                 | Specify the number of words to be written. <ul style="list-style-type: none"> <li>• When reading data from RCP, QCPU, LCP, or FX5CPU: 1 to 960</li> <li>• When reading data from QnACPU: 1 to 480</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| (5) | i_uWriteData      | Write data storage device   | Word [Unsigned]/Bit String [16-bit]        | —                                                        | Specify the head device of own station containing the write data.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| (6) | i_s32TargetDevice | Target station write device | Character string (32)                      | —                                                        | Specify the head device of the target station to which data is to be written.<br>Refer to the MELSEC iQ-F FX5 CC-Link IE Field Network Module User's Manual for details on specifying the device.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| (7) | i_uChannel        | Own station channel         | Word [Unsigned]/Bit String [16-bit]        | 1, 2                                                     | Specify the channel to be used by own station.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

## Output label

| No.  | Variable name | Name              | Data type                           | Default value | Description                                                                     |
|------|---------------|-------------------|-------------------------------------|---------------|---------------------------------------------------------------------------------|
| (8)  | o_bENO        | Execution status  | Bit                                 | Off           | On: The execution command is on.<br>Off: The execution command is off.          |
| (9)  | o_bOK         | Normal completion | Bit                                 | Off           | When this label is on, it indicates that the device has been written correctly. |
| (10) | o_bErr        | Error completion  | Bit                                 | Off           | When this label is on, it indicates that an error has occurred in the FB.       |
| (11) | o_uErrId      | Error code        | Word [Unsigned]/Bit String [16-bit] | 0             | The error code that occurred in the FB is stored.                               |

## Public label

| No.  | Variable name       | Name                                | Data type                           | Range                                        | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|------|---------------------|-------------------------------------|-------------------------------------|----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (12) | pbi_uCPU_Type       | Target station CPU type             | Word [Unsigned]/Bit String [16-bit] | 0000H, 03D0H to 03D3H, 03E0H to 03E3H, 03FFH | Specify the CPU type of the target station. <ul style="list-style-type: none"> <li>• 0000H: To CPU of target station (control CPU)</li> <li>• 03D0H: To control system CPU</li> <li>• 03D1H: To standby system CPU</li> <li>• 03D2H: To system A CPU</li> <li>• 03D3H: To system B CPU</li> <li>• 03E0H: To multiple CPU No.1</li> <li>• 03E1H: To multiple CPU No.2</li> <li>• 03E2H: To multiple CPU No.3</li> <li>• 03E3H: To multiple CPU No.4</li> <li>• 03FFH: To CPU of target station (control CPU)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                              |
| (13) | pbi_uTargetStation  | Target station specification method | Word [Unsigned]/Bit String [16-bit] | 0 to 2                                       | Specify the target station specification method. <ul style="list-style-type: none"> <li>• 0: Station number specification → Station with the station number specified in "target station address"</li> <li>• 1: Group specification → All stations with the transient transmission group number specified with "target station address specification"</li> <li>• 2: All stations → All stations with the network number specified with "target station address specification" (Broadcast simultaneously to all stations excluding own station)</li> </ul> <p>Group specification cannot be used when the target group is CC-Link IE Field Network.</p> <p>Group specification and All station specification can be specified only when "Arrival acknowledgment" = Off (None).</p> <p>When using Group specification or All station specification, set the CPU type of the target station to "0000H" or "03FFH".</p> |
| (14) | pbi_bArrivalConfirm | Arrival acknowledgment              | Bit                                 | On, off                                      | Specify whether to use arrival acknowledgment. <p>■Off: None</p> <ul style="list-style-type: none"> <li>• When the target station is within the own network, sending data from the own station completes the sending.</li> </ul>  <ul style="list-style-type: none"> <li>• When the target station is within another network, data arrival to the relay station within the own network completes the sending.</li> </ul>  <p>■On: Check</p> <ul style="list-style-type: none"> <li>• Sending data is completed when the data is written to the target station.</li> </ul>                                                                               |
| (15) | pbi_uResendCountMax | Maximum number of resends           | Word [Unsigned]/Bit String [16-bit] | 0 to 15                                      | Specify the number of resends to be performed if the data transfer is not completed within the monitoring time specified by "arrival monitoring time". <ul style="list-style-type: none"> <li>• 0 to 15</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| (16) | pbi_uTimeUnit       | Arrival monitoring time unit        | Word [Unsigned]/Bit String [16-bit] | —                                            | This label is not used in the FB program and does not need to be set.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

| No.  | Variable name        | Name                                        | Data type                                  | Range         | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------|----------------------|---------------------------------------------|--------------------------------------------|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (17) | pbi_uMonitorTime     | Arrival monitoring time                     | Word [Unsigned]/Bit String [16-bit]        | 0, 1 to 32767 | Specify the monitoring time until completion of processing. If the processing is not completed within the monitoring time, data is resent until the value specified in "maximum number of resends" is reached.<br>• 0: 10s<br>• 1 to 32767: 1 to 32767s                                                                                                                                                                                                                          |
| (18) | pbi_bStationSpecific | Target station address specification method | Bit                                        | —             | This label is not used in the FB program and does not need to be set.                                                                                                                                                                                                                                                                                                                                                                                                            |
| (19) | pbo_uResendCount     | Number of resends                           | Word [Unsigned]/Bit String [16-bit]        | —             | The number of resends performed (result) is stored.                                                                                                                                                                                                                                                                                                                                                                                                                              |
| (20) | pbo_u4ErrTime        | Error occurrence time                       | Word [Unsigned]/Bit String [16-bit] (0..3) | —             | Clock data at the time of error occurrence is stored.<br>1st word<br>• Upper 8 bits: Month (01H to 12H)<br>• Lower 8 bits: Lower 2 digits of year (00H to 99H)<br>2nd word<br>• Upper 8 bits: Hour (00H to 23H)<br>• Lower 8 bits: Day (01H to 31H)<br>3rd word<br>• Upper 8 bits: Second (00H to 59H)<br>• Lower 8 bits: Minute (00H to 59H)<br>4th word<br>• Upper 8 bits: Upper 2 digits of year (00H to 99H)<br>• Lower 8 bits: Day of week (00H (Sunday) to 06H (Saturday)) |
| (21) | pbo_uErrNetworkNo    | Error detection network number              | Word [Unsigned]/Bit String [16-bit]        | —             | The network number of the station in which an error was detected is stored.                                                                                                                                                                                                                                                                                                                                                                                                      |
| (22) | pbo_uErrStationNo    | Error-detected station number               | Word [Unsigned]/Bit String [16-bit]        | —             | The station number of the station in which an error was detected is stored.<br>Station number of Ethernet or CC-Link IE Controller Network<br>• 1 to 120<br>CC-Link IE Field Network station number<br>• 125: Master station<br>• 1 to 120: Local station, remote device station, intelligent device station, submaster station                                                                                                                                                  |

# FB details

## Available device

### ■CC-Link IE Field Network module

| Target module | Firmware version | Engineering tool                  |
|---------------|------------------|-----------------------------------|
| FX5-CCLIEF    | —                | GX Works3 Version 1.025B or later |

### ■CPU module

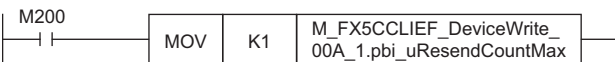
FX5UJ/FX5U/FX5UC CPU module

## Basic specifications

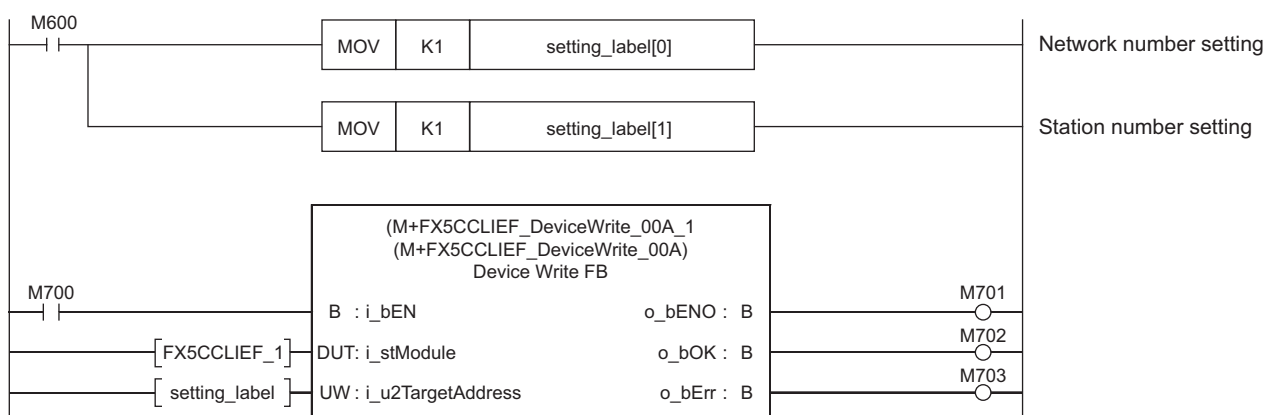
| Item                           | Description                                                                                                                                                                                                                                                                                                                                                     |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Language                       | Ladder diagram                                                                                                                                                                                                                                                                                                                                                  |
| Number of steps                | 136 steps<br>The number of steps of the FB embedded in the program varies depending on the CPU module used, the input/output definitions, and the option setting of GX Works3. For the option setting of GX Works3, refer to the  GX Works3 Operating Manual.                                                                                                   |
| Label usage                    | <ul style="list-style-type: none"><li>• Label: 0.05K points (Word)</li><li>• Latch label: 0K points (Word)</li></ul> The amount of labels used in the program varies depending on the CPU module used, the device specified in an argument, and the option setting of GX Works3. For the option setting of GX Works3, refer to the  GX Works3 Operating Manual. |
| Number of index register usage | <ul style="list-style-type: none"><li>• Index register: 0 points</li><li>• Long index register: 0 points</li></ul>                                                                                                                                                                                                                                              |
| File register usage            | 0 points                                                                                                                                                                                                                                                                                                                                                        |
| FB dependence                  | No dependence                                                                                                                                                                                                                                                                                                                                                   |
| FB compilation method          | Macro type                                                                                                                                                                                                                                                                                                                                                      |
| FB operation                   | Pulsed execution (multiple scan execution type)                                                                                                                                                                                                                                                                                                                 |

## Processing

- When i\_bEN (Execution command) is turned on, data corresponding to the write data length is written from the device specified with the write data storage device into the target station write device of the specified target station address.
- If an error occurs during device write, o\_bErr (Error completion) turns on, and the error code is stored in o\_uErrId (Error code). For the error code, refer to Page 197 Error code.
- Set the module parameters in GX Works3 in accordance with the connected equipment and system. For the module parameters, refer to Page 190 Parameter setting.
- To set or monitor public labels, add a program for setting or monitoring as shown below. Specify a public label with "FB instance". "public label". The following program is designed to assign K1 to the maximum number of resends (M\_FX5CCLIEF\_DeviceWrite\_00A\_1.pbi\_uResendCountMax) to set the number of resends to be performed if the transmission is not completed within the monitoring time specified in the arrival monitoring time.

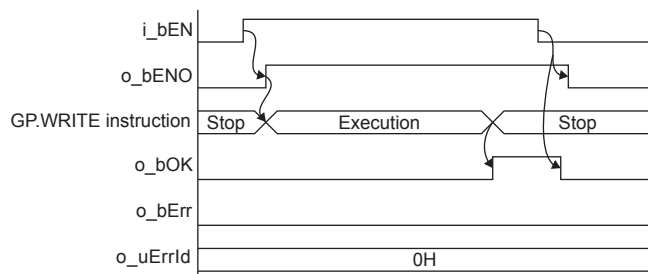


- Since the `i_u2TargetAddress` (Target station address) data type is an array, the value cannot be set as a constant. Create a global label for setting, and create a program to set that label value in `i_u2TargetAddress` (Target station address). For the setting procedure, refer to [Page 185 M+FX5CCLIEF\\_DeviceRead \(Reading of another station device\)](#).



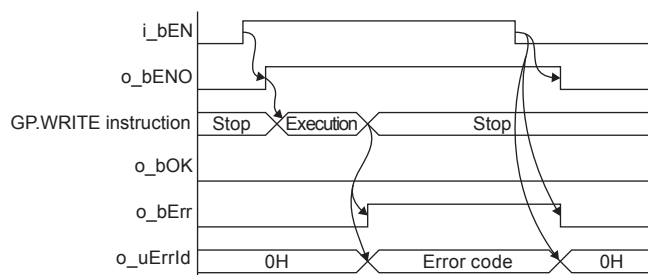
## Timing chart of I/O signals

### ■For normal completion



### ■For error completion

For instruction error



## Restrictions or precautions

- This FB does not include the error recovery processing. Program the error recovery processing separately in accordance with the required system operation.
- This FB uses the GP.WRITE instruction.
- Turn off i\_bEN (Execution command) after o\_bOK (Normal completion) or o\_bErr (Error completion) is turned on. By turning off i\_bEN (Execution command), o\_bOK (Normal completion) or o\_bErr (Error completion) is turned off and o\_uErrId (Error code) is cleared to 0. However, because the GP.WRITE instruction which is a pulse instruction in the FB is used, if a write is performed while the FB is executed, the instruction may not be executed, and o\_bOK (Normal completion) and o\_bErr (Error completion) may not turn on. In that case, turn i\_bEN (Execution command) on again.
- This FB cannot be used in an interrupt program.
- Do not use this FB in programs that are executed only once, such as a subroutine program or FOR-NEXT loop, because i\_bEN (Execution command) cannot be turned off and the normal operation cannot be acquired. Always use this FB in programs that can turn off i\_bEN (Execution command).
- When using several of these FBs, ensure that the target station address and own station channel do not overlap.
- Every input must be provided with a value for proper FB operation. Set the public label as needed.

## Parameter setting

For the parameter setting, refer to  Page 190 Parameter setting.

## Performance value

| CPU module      | Measurement conditions       | Performance value |                   | Number of scans |
|-----------------|------------------------------|-------------------|-------------------|-----------------|
|                 |                              | Processing time   | Maximum scan time |                 |
| FX5UJ           | Write data length: 1 word    | 19.4ms            | 1.27ms            | 23 scans        |
|                 | Write data length: 960 words | 24.6ms            | 2.12ms            | 27 scans        |
| FX5U, FX5UC*1*2 | Write data length: 1 word    | 17.6ms            | 1.06ms            | 27 scans        |
|                 | Write data length: 960 words | 21.4ms            | 1.75ms            | 30 scans        |

\*1 When the program capacity is set to 128K steps, the processing speed may be reduced.

\*2 The labels in the standard area are used.

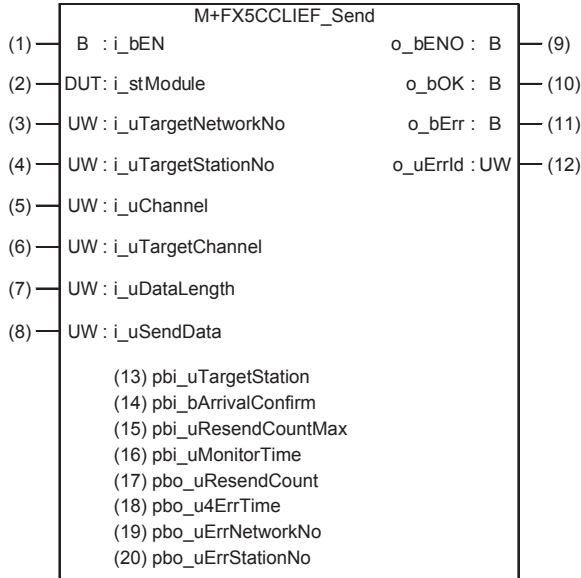
## Error code

| Error code (hexadecimal) | Description                                                                                                                                                   | Action                                                                                                                                                            |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| D000H to DFFFH           | This error code is the same as the error code that occurs with the (GP.WRITE) instruction for writing data in the programmable controller of another station. | Refer to the  MELSEC iQ-F FX5 CC-Link IE Field Network Module User's Manual. |

## 4.3 M+FX5CCLIEF\_Send (Sending of another station device)

### Overview

This FB sends data to the programmable controller of another station.



### Labels

#### Input label

| No. | Variable name      | Name                                | Data type                               | Range                                                    | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----|--------------------|-------------------------------------|-----------------------------------------|----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1) | i_bEN              | Execution command                   | Bit                                     | On, off                                                  | On: The FB is activated.<br>Off: The FB is not activated.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| (2) | i_stModule         | Module label                        | Structure                               | The setting range differs depending on the module label. | Specify the module label of the FX5-CCLIEF.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| (3) | i_uTargetNetworkNo | Target network number               | Word [Unsigned]/<br>Bit String [16-bit] | 1 to 239                                                 | Specify the network number of the target station.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| (4) | i_uTargetStationNo | Target station number               | Word [Unsigned]/<br>Bit String [16-bit] | —                                                        | Specify the station number of the target station or the transient transmission group number.<br>■When "target station specification method" is set to 0 to specify a station number<br>Station number of Ethernet or CC-Link IE Controller Network<br>• 1 to 120<br>CC-Link IE Field Network station number<br>• 125: Master station<br>• 126: Master operating station<br>• 1 to 120: Local station, remote device station, intelligent device station, submaster station<br>■When "target station specification method" is set to 1 to specify a group<br>Specify the transient transmission group number<br>• 1 to 32<br>■When "target station specification method" is set to 2 to specify all stations<br>The setting is ignored. |
| (5) | i_uChannel         | Own station channel                 | Word [Unsigned]/<br>Bit String [16-bit] | 1, 2                                                     | Specify the channel to be used by own station.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| (6) | i_uTargetChannel   | Target station data storage channel | Word [Unsigned]/<br>Bit String [16-bit] | 1 to 8                                                   | Specify the channel of the target station for storing data.<br>When the target station is a CC-Link IE Field Network master/local module, specify 1 or 2.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

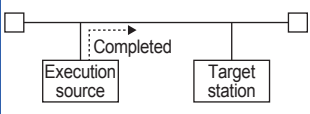
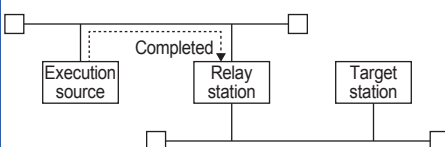
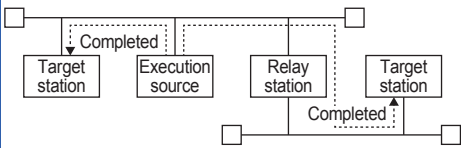


| No. | Variable name | Name                     | Data type                               | Range    | Description                                                                                                                                          |
|-----|---------------|--------------------------|-----------------------------------------|----------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| (7) | i_uDataLength | Send data length         | Word [Unsigned]/<br>Bit String [16-bit] | 1 to 960 | Specify the number of words to be sent.<br>• When reading data from RCP, QCPU, LCP, or FX5CPU: 1 to 960<br>• When reading data from QnACPU: 1 to 480 |
| (8) | i_uSendData   | Send data storage device | Word [Unsigned]/<br>Bit String [16-bit] | —        | Specify the head device of own station containing the send data.                                                                                     |

## Output label

| No.  | Variable name | Name              | Data type                              | Default value | Description                                                                |
|------|---------------|-------------------|----------------------------------------|---------------|----------------------------------------------------------------------------|
| (9)  | o_bENO        | Execution status  | Bit                                    | Off           | On: The execution command is on.<br>Off: The execution command is off.     |
| (10) | o_bOK         | Normal completion | Bit                                    | Off           | When this label is on, it indicates that the data has been sent correctly. |
| (11) | o_bErr        | Error completion  | Bit                                    | Off           | When this label is on, it indicates that an error has occurred in the FB.  |
| (12) | o_uErrId      | Error code        | Word [Unsigned]/Bit<br>String [16-bit] | 0             | The error code that occurred in the FB is stored.                          |

## Public label

| No.  | Variable name       | Name                                | Data type                              | Range   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------|---------------------|-------------------------------------|----------------------------------------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (13) | pbi_uTargetStation  | Target station specification method | Word [Unsigned]/Bit<br>String [16-bit] | 0 to 2  | Specify the target station specification method.<br>• 0: Station number specification → Station with the station number specified in "Target station number"<br>• 1: Group specification → All stations with the transient transmission group number specified with "target station number"<br>• 2: All stations → All stations with the network number specified with "target station network number" (Broadcast simultaneously to all stations excluding own station)<br>Group specification cannot be used when the target group is CC-Link IE Field Network.<br>Group specification and All station specification can be specified only when "Arrival acknowledgment" = Off (None).    |
| (14) | pbi_bArrivalConfirm | Arrival acknowledgment              | Bit                                    | On, off | Specify whether to use arrival acknowledgment.<br>■Off: None<br>• When the target station is within the own network, sending data from the own station completes the sending.<br><br>• When the target station is within another network, data arrival to the relay station within the own network completes the sending.<br><br>■On: Check<br>• Sending data is completed when the data is written to the target station.<br> |

| No.  | Variable name       | Name                           | Data type                                  | Range         | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------|---------------------|--------------------------------|--------------------------------------------|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (15) | pbi_uResendCountMax | Maximum number of resends      | Word [Unsigned]/Bit String [16-bit]        | 0 to 15       | Specify the number of resends to be performed if the data transfer is not completed within the monitoring time specified by "arrival monitoring time".<br>• 0 to 15                                                                                                                                                                                                                                                                                                              |
| (16) | pbi_uMonitorTime    | Arrival monitoring time        | Word [Unsigned]/Bit String [16-bit]        | 0, 1 to 32767 | Specify the monitoring time until completion of processing. If the processing is not completed within the monitoring time, data is resent until the value specified in "maximum number of resends" is reached.<br>• 0: 10s<br>• 1 to 32767: 1 to 32767s                                                                                                                                                                                                                          |
| (17) | pbo_uResendCount    | Number of resends              | Word [Unsigned]/Bit String [16-bit]        | —             | The number of resends performed (result) is stored.                                                                                                                                                                                                                                                                                                                                                                                                                              |
| (18) | pbo_u4ErrTime       | Error occurrence time          | Word [Unsigned]/Bit String [16-bit] (0..3) | —             | Clock data at the time of error occurrence is stored.<br>1st word<br>• Upper 8 bits: Month (01H to 12H)<br>• Lower 8 bits: Lower 2 digits of year (00H to 99H)<br>2nd word<br>• Upper 8 bits: Hour (00H to 23H)<br>• Lower 8 bits: Day (01H to 31H)<br>3rd word<br>• Upper 8 bits: Second (00H to 59H)<br>• Lower 8 bits: Minute (00H to 59H)<br>4th word<br>• Upper 8 bits: Upper 2 digits of year (00H to 99H)<br>• Lower 8 bits: Day of week (00H (Sunday) to 06H (Saturday)) |
| (19) | pbo_uErrNetworkNo   | Error detection network number | Word [Unsigned]/Bit String [16-bit]        | —             | The network number of the station in which an error was detected is stored.                                                                                                                                                                                                                                                                                                                                                                                                      |
| (20) | pbo_uErrStationNo   | Error-detected station number  | Word [Unsigned]/Bit String [16-bit]        | —             | The station number of the station in which an error was detected is stored.<br>Station number of Ethernet or CC-Link IE Controller Network<br>• 1 to 120<br>CC-Link IE Field Network station number<br>• 125: Master station<br>• 1 to 120: Local station, remote device station, intelligent device station, submaster station                                                                                                                                                  |

## FB details

### Available device

#### ■CC-Link IE Field Network module

| Target module | Firmware version | Engineering tool                  |
|---------------|------------------|-----------------------------------|
| FX5-CCLIEF    | —                | GX Works3 Version 1.025B or later |

#### ■CPU module

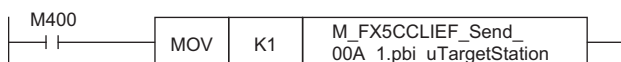
FX5UJ/FX5U/FX5UC CPU module

### Basic specifications

| Item                           | Description                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Language                       | Ladder diagram                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Number of steps                | 128 steps<br>The number of steps of the FB embedded in the program varies depending on the CPU module used, the input/output definitions, and the option setting of GX Works3. For the option setting of GX Works3, refer to the  GX Works3 Operating Manual.                                                                                                   |
| Label usage                    | <ul style="list-style-type: none"><li>• Label: 0.04K points (Word)</li><li>• Latch label: 0K points (Word)</li></ul> The amount of labels used in the program varies depending on the CPU module used, the device specified in an argument, and the option setting of GX Works3. For the option setting of GX Works3, refer to the  GX Works3 Operating Manual. |
| Number of index register usage | <ul style="list-style-type: none"><li>• Index register: 0 points</li><li>• Long index register: 0 points</li></ul>                                                                                                                                                                                                                                                                                                                                 |
| File register usage            | 0 points                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| FB dependence                  | No dependence                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| FB compilation method          | Macro type                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| FB operation                   | Pulsed execution (multiple scan execution type)                                                                                                                                                                                                                                                                                                                                                                                                    |

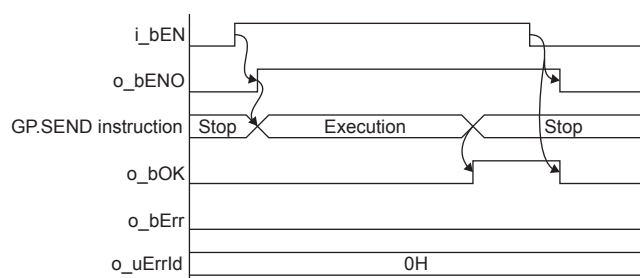
## Processing

- When i\_bEN (Execution command) is turned on, data corresponding to the send data length is sent from the send data storage device to the specified target station address.
- If an error occurs while sending data, o\_bErr (Error completion) turns on, and the error code is stored in o\_uErrId (Error code). For the error code, refer to  Page 203 Error code.
- Set the module parameters in GX Works3 in accordance with the connected equipment and system. For the module parameters, refer to  Page 190 Parameter setting.
- To set or monitor public labels, add a program for setting or monitoring as shown below. Specify a public label with "FB instance". "public label". The following program is designed to assign K1 to the target station specification method (M\_FX5CCLIEF\_Send\_00A\_1.pbi\_uTargetStation) to specify the monitoring time to the completion of processing.



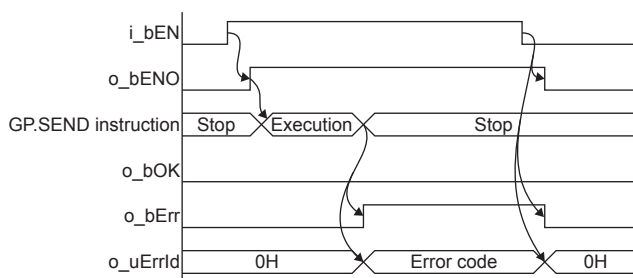
## Timing chart of I/O signals

### ■For normal completion



### ■For error completion

For instruction error



## Restrictions or precautions

- This FB does not include the error recovery processing. Program the error recovery processing separately in accordance with the required system operation.
- This FB uses the GP.SEND instruction.
- Turn off i\_bEN (Execution command) after o\_bOK (Normal completion) or o\_bErr (Error completion) is turned on. By turning off i\_bEN (Execution command), o\_bOK (Normal completion) or o\_bErr (Error completion) is turned off and o\_uErrId (Error code) is cleared to 0. However, because the GP.SEND instruction which is a pulse instruction in the FB is used, if a write is performed while the FB is executed, the instruction may not be executed, and o\_bOK (Normal completion) and o\_bErr (Error completion) may not turn on. In that case, turn i\_bEN (Execution command) on again.
- This FB cannot be used in an interrupt program.
- Do not use this FB in programs that are executed only once, such as a subroutine program or FOR-NEXT loop, because i\_bEN (Execution command) cannot be turned off and the normal operation cannot be acquired. Always use this FB in programs that can turn off i\_bEN (Execution command).
- When using several of these FBs, ensure that the target station address and own station channel do not overlap.
- Every input must be provided with a value for proper FB operation. Set the public label as needed.

## Parameter setting

For the parameter setting, refer to  Page 190 Parameter setting.

## Performance value

| CPU module                  | Measurement conditions                         | Performance value |                   | Number of scans |
|-----------------------------|------------------------------------------------|-------------------|-------------------|-----------------|
|                             |                                                | Processing time   | Maximum scan time |                 |
| FX5UJ                       | Operation check of target station network No.1 | 13.1ms            | 1.380ms           | 20 scans        |
| FX5U, FX5UC <sup>*1*2</sup> | Operation check of target station network No.1 | 12.7ms            | 0.974ms           | 17 scans        |

\*1 When the program capacity is set to 128K steps, the processing speed may be reduced.

\*2 The labels in the standard area are used.

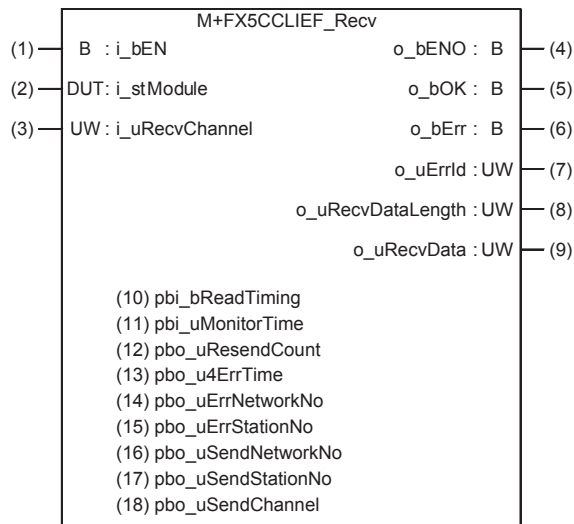
## Error code

| Error code (hexadecimal) | Description                                                                                                                                                  | Action                                                                                                                                                          |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| D000H to DFFFH           | This error code is the same as the error code that occurs with the (GP.SEND) instruction for sending data to the programmable controller of another station. | Refer to the  MELSEC iQ-F FX5 CC-Link IE Field Network Module User's Manual. |

## 4.4 M+FX5CCLIEF\_Recv (Receiving of another station device)

### Overview

This FB reads the data received from the programmable controller of another station.



### Labels

#### Input label

| No. | Variable name  | Name                         | Data type                           | Range                                                    | Description                                               |
|-----|----------------|------------------------------|-------------------------------------|----------------------------------------------------------|-----------------------------------------------------------|
| (1) | i_bEN          | Execution command            | Bit                                 | On, off                                                  | On: The FB is activated.<br>Off: The FB is not activated. |
| (2) | i_stModule     | Module label                 | Structure                           | The setting range differs depending on the module label. | Specify the module label of the FX5-CCLIEF.               |
| (3) | i_uRecvChannel | Receive data storage channel | Word [Unsigned]/Bit String [16-bit] | 1, 2                                                     | Specify the channel containing the data to be read.       |

#### Output label

| No. | Variable name     | Name                        | Data type                           | Default value | Description                                                                                   |
|-----|-------------------|-----------------------------|-------------------------------------|---------------|-----------------------------------------------------------------------------------------------|
| (4) | o_bENO            | Execution status            | Bit                                 | Off           | On: The execution command is on.<br>Off: The execution command is off.                        |
| (5) | o_bOK             | Normal completion           | Bit                                 | Off           | When this label is on, it indicates that reading of the received data has completed normally. |
| (6) | o_bErr            | Error completion            | Bit                                 | Off           | When this label is on, it indicates that an error has occurred in the FB.                     |
| (7) | o_uErrId          | Error code                  | Word [Unsigned]/Bit String [16-bit] | 0             | The error code that occurred in the FB is stored.                                             |
| (8) | o_uRecvDataLength | Receive data length         | Word [Unsigned]/Bit String [16-bit] | 0             | The number of received data is stored.<br>1 to 960 words                                      |
| (9) | o_uRecvData       | Receive data storage device | Word [Unsigned]/Bit String [16-bit] | 0             | Specify the start number of the device for storing received data.                             |

## Public label

| No.  | Variable name      | Name                           | Data type                                  | Range         | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------|--------------------|--------------------------------|--------------------------------------------|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (10) | pbi_bReadTiming    | Read timing                    | Bit                                        | —             | This label is not used in the FB program and does not need to be set.<br>Data is read at the first END processing after the module FB is started.                                                                                                                                                                                                                                                                                                                                |
| (11) | pbi_uMonitorTime   | Arrival monitoring time        | Word [Unsigned]/Bit String [16-bit]        | 0, 1 to 32767 | Specify the monitoring time until completion of processing. If the processing is not completed within the monitoring time, it will end with an error.<br>• 0: 10s<br>• 1 to 32767: 1 to 32767s                                                                                                                                                                                                                                                                                   |
| (12) | pbo_uResendCount   | Number of resends              | Word [Unsigned]/Bit String [16-bit]        | —             | This label is not used in the FB program and does not need to be set.                                                                                                                                                                                                                                                                                                                                                                                                            |
| (13) | pbo_u4ErrTime      | Error occurrence time          | Word [Unsigned]/Bit String [16-bit] (0..3) | —             | Clock data at the time of error occurrence is stored.<br>1st word<br>• Upper 8 bits: Month (01H to 12H)<br>• Lower 8 bits: Lower 2 digits of year (00H to 99H)<br>2nd word<br>• Upper 8 bits: Hour (00H to 23H)<br>• Lower 8 bits: Day (01H to 31H)<br>3rd word<br>• Upper 8 bits: Second (00H to 59H)<br>• Lower 8 bits: Minute (00H to 59H)<br>4th word<br>• Upper 8 bits: Upper 2 digits of year (00H to 99H)<br>• Lower 8 bits: Day of week (00H (Sunday) to 06H (Saturday)) |
| (14) | pbo_uErrNetworkNo  | Error detection network number | Word [Unsigned]/Bit String [16-bit]        | —             | The network number of the station in which an error was detected is stored.                                                                                                                                                                                                                                                                                                                                                                                                      |
| (15) | pbo_uErrStationNo  | Error-detected station number  | Word [Unsigned]/Bit String [16-bit]        | —             | The station number of the station in which an error was detected is stored.<br>Station number of Ethernet or CC-Link IE Controller Network<br>• 1 to 120<br>CC-Link IE Field Network station number<br>• 125: Master station<br>• 1 to 120: Local station, remote device station, intelligent device station, submaster station                                                                                                                                                  |
| (16) | pbo_uSendNetworkNo | Send station network number    | Word [Unsigned]/Bit String [16-bit]        | —             | The network number of the send station is stored.                                                                                                                                                                                                                                                                                                                                                                                                                                |
| (17) | pbo_uSendStationNo | Send station number            | Word [Unsigned]/Bit String [16-bit]        | —             | The station number of the send station is stored.<br>Station number of Ethernet or CC-Link IE Controller Network<br>• 1 to 120<br>CC-Link IE Field Network station number<br>• 125: Master station<br>• 1 to 120: Local station, remote device station, intelligent device station, submaster station                                                                                                                                                                            |
| (18) | pbo_uSendChannel   | Channel used by send station   | Word [Unsigned]/Bit String [16-bit]        | 1 to 8        | The channel number used by the send station is stored.                                                                                                                                                                                                                                                                                                                                                                                                                           |

# FB details

## Available device

### ■CC-Link IE Field Network module

| Target module | Firmware version | Engineering tool                  |
|---------------|------------------|-----------------------------------|
| FX5-CCLIEF    | —                | GX Works3 Version 1.025B or later |

### ■CPU module

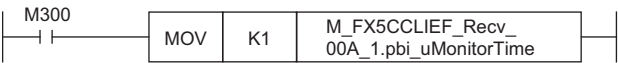
FX5UJ/FX5U/FX5UC CPU module

## Basic specifications

| Item                           | Description                                                                                                                                                                                                                                                                                                                                                     |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Language                       | Ladder diagram                                                                                                                                                                                                                                                                                                                                                  |
| Number of steps                | 132 steps<br>The number of steps of the FB embedded in the program varies depending on the CPU module used, the input/output definitions, and the option setting of GX Works3. For the option setting of GX Works3, refer to the  GX Works3 Operating Manual.                                                                                                   |
| Label usage                    | <ul style="list-style-type: none"><li>• Label: 0.04K points (Word)</li><li>• Latch label: 0K points (Word)</li></ul> The amount of labels used in the program varies depending on the CPU module used, the device specified in an argument, and the option setting of GX Works3. For the option setting of GX Works3, refer to the  GX Works3 Operating Manual. |
| Number of index register usage | <ul style="list-style-type: none"><li>• Index register: 0 points</li><li>• Long index register: 0 points</li></ul>                                                                                                                                                                                                                                              |
| File register usage            | 0 points                                                                                                                                                                                                                                                                                                                                                        |
| FB dependence                  | No dependence                                                                                                                                                                                                                                                                                                                                                   |
| FB compilation method          | Macro type                                                                                                                                                                                                                                                                                                                                                      |
| FB operation                   | Pulsed execution (multiple scan execution type)                                                                                                                                                                                                                                                                                                                 |

## Processing

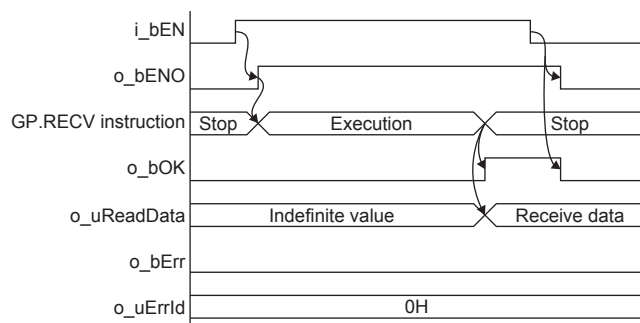
- When i\_bEN (Execution command) is turned on, the received data is read from the specified received data storage channel and saved into the received data storage device.
- If an error occurs while receiving the data, o\_bErr (Error completion) turns on, and the error code is stored in o\_uErrId (Error code). For the error code, refer to Page 208 Error code.
- Set the module parameters in GX Works3 in accordance with the connected equipment and system. For the module parameters, refer to Page 190 Parameter setting.
- To set or monitor public labels, add a program for setting or monitoring as shown below. Specify a public label with "FB instance". "public label". The following program is designed to assign K1 to the arrival monitoring time (M\_FX5CCLIEF\_Recv\_00A\_1.pbi\_uMonitorTime) to specify the monitoring time to the completion of processing.





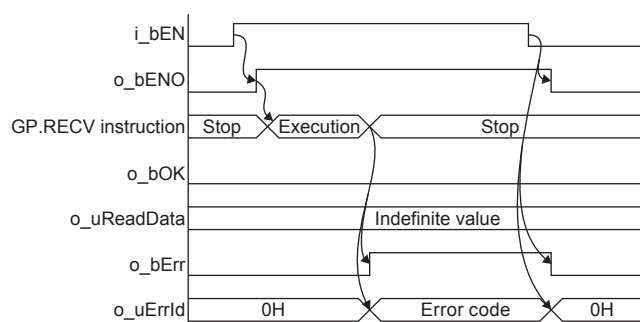
## Timing chart of I/O signals

### ■For normal completion



### ■For error completion

For instruction error



## Restrictions or precautions

- This FB does not include the error recovery processing. Program the error recovery processing separately in accordance with the required system operation.
- This FB uses the GP.RECV instruction.
- Turn off i\_bEN (Execution command) after o\_bOK (Normal completion) or o\_bErr (Error completion) is turned on. By turning off i\_bEN (Execution command), o\_bOK (Normal completion) or o\_bErr (Error completion) is turned off and o\_uErrId (Error code) is cleared to 0. However, because the GP.RECV instruction which is a pulse instruction in the FB is used, if a write is performed while the FB is executed, the instruction may not be executed, and o\_bOK (Normal completion) and o\_bErr (Error completion) may not turn on. In that case, turn i\_bEN (Execution command) on again.
- This FB cannot be used in an interrupt program.
- Do not use this FB in programs that are executed only once, such as a subroutine program or FOR-NEXT loop, because i\_bEN (Execution command) cannot be turned off and the normal operation cannot be acquired. Always use this FB in programs that can turn off i\_bEN (Execution command).
- When using several of these FBs, ensure that the receive data storage channel do not overlap.
- Every input must be provided with a value for proper FB operation. Set the public label as needed.

## Parameter setting

For the parameter setting, refer to  Page 190 Parameter setting.

## Performance value

| CPU module                  | Measurement conditions                            | Performance value |                   | Number of scans |
|-----------------------------|---------------------------------------------------|-------------------|-------------------|-----------------|
|                             |                                                   | Processing time   | Maximum scan time |                 |
| FX5UJ                       | Operation check of receive data storage channel 1 | 0.299ms           | 0.131ms           | 1 scan          |
| FX5U, FX5UC <sup>*1*2</sup> | Operation check of receive data storage channel 1 | 0.009ms           | 1.780ms           | 1 scan          |

\*1 When the program capacity is set to 128K steps, the processing speed may be reduced.

\*2 The labels in the standard area are used.

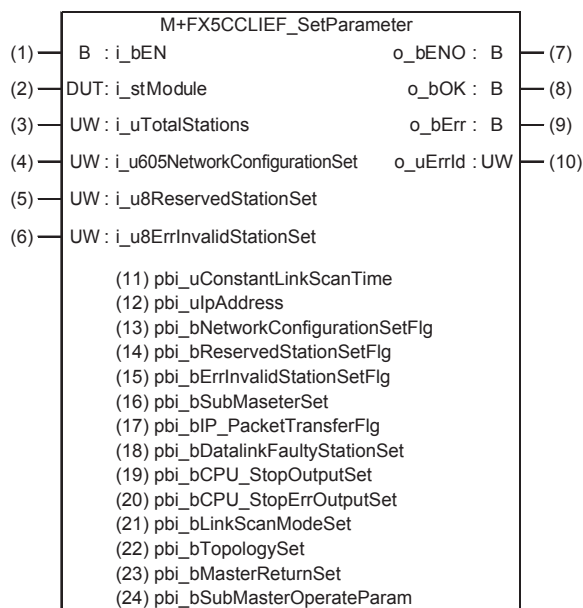
## Error code

| Error code (hexadecimal) | Description                                                                                                                                                             | Action                                                                                                                                                          |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| D000H to DFFFH           | This error code is the same as the error code that occurs with the (GP.RECV) instruction for reading data received from the programmable controller of another station. | Refer to the  MELSEC iQ-F FX5 CC-Link IE Field Network Module User's Manual. |

## 4.5 M+FX5CCLIEF\_SetParameter (Parameter setting)

### Overview

This FB sets parameters for a module.



4

### Labels

#### Input label

| No. | Variable name                 | Name                               | Data type                                    | Range                                                    | Description                                                           |
|-----|-------------------------------|------------------------------------|----------------------------------------------|----------------------------------------------------------|-----------------------------------------------------------------------|
| (1) | i_bEN                         | Execution command                  | Bit                                          | On, off                                                  | On: The FB is activated.<br>Off: The FB is not activated.             |
| (2) | i_stModule                    | Module label                       | Structure                                    | The setting range differs depending on the module label. | Specify the module label of the FX5-CCLIEF.                           |
| (3) | i_uTotalStations              | Total number of device stations    | Word [Unsigned]/Bit String [16-bit]          | —                                                        | This label is not used in the FB program and does not need to be set. |
| (4) | i_u605NetworkConfigurationSet | Network configuration setting data | Word [Unsigned]/Bit String [16-bit] (0..604) | —                                                        |                                                                       |
| (5) | i_u8ReservedStationSet        | Reserved station setting data      | Word [Unsigned]/Bit String [16-bit] (0..7)   | —                                                        |                                                                       |
| (6) | i_u8ErrInvalidStationSet      | Error invalid station setting data | Word [Unsigned]/Bit String [16-bit] (0..7)   | —                                                        |                                                                       |

## Output label

| No.  | Variable name | Name              | Data type                           | Default value | Description                                                                      |
|------|---------------|-------------------|-------------------------------------|---------------|----------------------------------------------------------------------------------|
| (7)  | o_bENO        | Execution status  | Bit                                 | Off           | On: The execution command is on.<br>Off: The execution command is off.           |
| (8)  | o_bOK         | Normal completion | Bit                                 | Off           | When this label is on, it indicates that the parameters have been set correctly. |
| (9)  | o_bErr        | Error completion  | Bit                                 | Off           | When this label is on, it indicates that an error has occurred in the FB.        |
| (10) | o_uErrId      | Error code        | Word [Unsigned]/Bit String [16-bit] | 0             | The error code that occurred in the FB is stored.                                |

## Public label

| No.  | Variable name                   | Name                                            | Data type                           | Range   | Description                                                                                                                          |
|------|---------------------------------|-------------------------------------------------|-------------------------------------|---------|--------------------------------------------------------------------------------------------------------------------------------------|
| (11) | pbi_uConstantLinkScanTime       | Constant link scan time                         | Word [Unsigned]/Bit String [16-bit] | —       | This label is not used in the FB program and does not need to be set.                                                                |
| (12) | pbi_ulpAddress                  | Upper 2 digits of IP address                    | Word [Unsigned]/Bit String [16-bit] | —       |                                                                                                                                      |
| (13) | pbi_bNetworkConfigurationSetFlg | Presence of network configuration setting data  | Bit                                 | —       |                                                                                                                                      |
| (14) | pbi_bReservedStationSetFlg      | Presence of reserved station specification data | Bit                                 | —       |                                                                                                                                      |
| (15) | pbi_bErrInvalidStationSetFlg    | Presence of error invalid station setting data  | Bit                                 | —       |                                                                                                                                      |
| (16) | pbi_bSubMasterSet               | Presence of submaster function                  | Bit                                 | —       |                                                                                                                                      |
| (17) | pbi_bIP_PacketTransferFlg       | Presence of IP packet transfer function         | Bit                                 | —       |                                                                                                                                      |
| (18) | pbi_bDataLinkFaultyStationSet   | Data link faulty station setting                | Bit                                 | On, off | Specify whether to hold or clear the input data from a data link faulty station.<br>• Off: Clear<br>• On: Hold                       |
| (19) | pbi_bCPU_StopOutputSet          | Output setting for CPU STOP                     | Bit                                 | On, off | Specify whether to hold or clear the output data when the operating status of a CPU module is STOP.<br>• Off: Hold<br>• On: Clear    |
| (20) | pbi_bCPU_StopErrOutputSet       | Output setting for CPU stop error               | Bit                                 | On, off | Specify whether to hold or clear the output data when a CPU stop error has occurred in the CPU module.<br>• Off: Clear<br>• On: Hold |
| (21) | pbi_bLinkScanModeSet            | Link scan mode setting                          | Bit                                 | —       | This label is not used in the FB program and does not need to be set.                                                                |
| (22) | pbi_bTopologySet                | Network topology setting                        | Bit                                 | —       |                                                                                                                                      |
| (23) | pbi_bMasterReturnSet            | Master station return time operation setting    | Bit                                 | —       |                                                                                                                                      |
| (24) | pbi_bSubMasterOperateParam      | Submaster station parameter operation setting   | Bit                                 | —       |                                                                                                                                      |

# FB details

## Available device

### ■CC-Link IE Field Network module

| Target module | Firmware version | Engineering tool                  |
|---------------|------------------|-----------------------------------|
| FX5-CCLIEF    | —                | GX Works3 Version 1.025B or later |

### ■CPU module

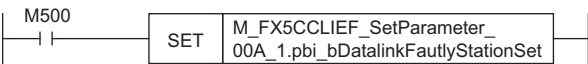
FX5UJ/FX5U/FX5UC CPU module

## Basic specifications

| Item                           | Description                                                                                                                                                                                                                                                                                                                                                     |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Language                       | Ladder diagram                                                                                                                                                                                                                                                                                                                                                  |
| Number of steps                | 92 steps<br>The number of steps of the FB embedded in the program varies depending on the CPU module used, the input/output definitions, and the option setting of GX Works3. For the option setting of GX Works3, refer to the  GX Works3 Operating Manual.                                                                                                    |
| Label usage                    | <ul style="list-style-type: none"><li>• Label: 0.63K points (Word)</li><li>• Latch label: 0K points (Word)</li></ul> The amount of labels used in the program varies depending on the CPU module used, the device specified in an argument, and the option setting of GX Works3. For the option setting of GX Works3, refer to the  GX Works3 Operating Manual. |
| Number of index register usage | <ul style="list-style-type: none"><li>• Index register: 0 points</li><li>• Long index register: 0 points</li></ul>                                                                                                                                                                                                                                              |
| File register usage            | 0 points                                                                                                                                                                                                                                                                                                                                                        |
| FB dependence                  | No dependence                                                                                                                                                                                                                                                                                                                                                   |
| FB compilation method          | Macro type                                                                                                                                                                                                                                                                                                                                                      |
| FB operation                   | Pulsed execution (multiple scan execution type)                                                                                                                                                                                                                                                                                                                 |

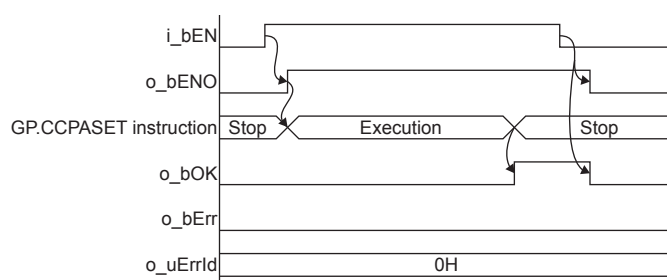
## Processing

- When i\_bEN (Execution command) is turned on, the parameters are set in the module.
- If an error occurs while setting the parameters, o\_bErr (Error completion) turns on, and the error code is stored in o\_uErrld (Error code). For the error code, refer to Page 213 Error code.
- Set the module parameters in GX Works3 in accordance with the connected equipment and system. For the module parameters, refer to Page 190 Parameter setting.
- To set or monitor public labels, add a program for setting or monitoring as shown below. Specify a public label with "FB instance". "public label". The following program is designed to turn on the data link faulty station setting (M\_FX5CCLIEF\_SetParameter\_00A\_1.pbi\_bDatalinkFautlyStationSet).



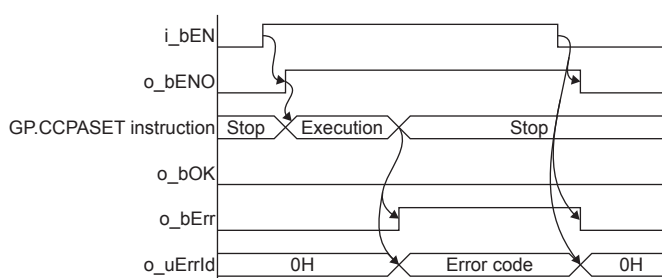
## Timing chart of I/O signals

### ■For normal completion



### ■For error completion

For instruction error



## Restrictions or precautions

- This FB does not include the error recovery processing. Program the error recovery processing separately in accordance with the required system operation.
- This FB uses the GP.CCPASET instruction. The module parameter "Parameter Setting Method" must be set to "Set with Program" to enable the GP.CCPASET instruction.
- Turn off i\_bEN (Execution command) after o\_bOK (Normal completion) or o\_bErr (Error completion) is turned on. By turning off i\_bEN (Execution command), o\_bOK (Normal completion) or o\_bErr (Error completion) is turned off and o\_uErrId (Error code) is cleared to 0. However, because the GP.CCPASET instruction which is a pulse instruction in the FB is used, if a write is performed while the FB is executed, the instruction may not be executed, and o\_bOK (Normal completion) and o\_bErr (Error completion) may not turn on. In that case, turn i\_bEN (Execution command) on again.
- This FB cannot be used in an interrupt program.
- Do not use this FB in programs that are executed only once, such as a subroutine program or FOR-NEXT loop, because i\_bEN (Execution command) cannot be turned off and the normal operation cannot be acquired. Always use this FB in programs that can turn off i\_bEN (Execution command).

## Parameter setting

For the parameter setting, refer to  Page 190 Parameter setting.

## Performance value

| CPU module                  | Measurement conditions                                          | Performance value |                   | Number of scans |
|-----------------------------|-----------------------------------------------------------------|-------------------|-------------------|-----------------|
|                             |                                                                 | Processing time   | Maximum scan time |                 |
| FX5UJ                       | Operation check when the data link faulty station setting is on | 5.46ms            | 1.93ms            | 5 scans         |
| FX5U, FX5UC <sup>*1*2</sup> | Operation check when the data link faulty station setting is on | 11.10ms           | 1.66ms            | 12 scans        |

\*1 When the program capacity is set to 128K steps, the processing speed may be reduced.

\*2 The labels in the standard area are used.

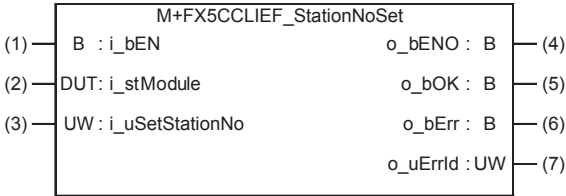
## Error code

| Error code (hexadecimal) | Description                                                                                                | Action                                                                                                                                                          |
|--------------------------|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| D000H to DFFFH           | This error code is the same as the error code that occurs with the parameter set (GP.CCPASET) instruction. | Refer to the  MELSEC IQ-F FX5 CC-Link IE Field Network Module User's Manual. |

# 4.6 M+FX5CCLIEF\_StationNoSet (Own station number setting)

## Overview

This FB sets the station number for the own station.



## Labels

### Input label

| No. | Variable name   | Name                   | Data type                           | Range                                                    | Description                                               |
|-----|-----------------|------------------------|-------------------------------------|----------------------------------------------------------|-----------------------------------------------------------|
| (1) | i_bEN           | Execution command      | Bit                                 | On, off                                                  | On: The FB is activated.<br>Off: The FB is not activated. |
| (2) | i_stModule      | Module label           | Structure                           | The setting range differs depending on the module label. | Specify the module label of the FX5-CCLIEF.               |
| (3) | i_uSetStationNo | Setting station number | Word [Unsigned]/Bit String [16-bit] | 1 to 120                                                 | Specify the station number to be set.                     |

### Output label

| No. | Variable name | Name              | Data type                           | Default value | Description                                                                         |
|-----|---------------|-------------------|-------------------------------------|---------------|-------------------------------------------------------------------------------------|
| (4) | o_bENO        | Execution status  | Bit                                 | Off           | On: The execution command is on.<br>Off: The execution command is off.              |
| (5) | o_bOK         | Normal completion | Bit                                 | Off           | When this label is on, it indicates that the station number has been set correctly. |
| (6) | o_bErr        | Error completion  | Bit                                 | Off           | When this label is on, it indicates that an error has occurred in the FB.           |
| (7) | o_uErrId      | Error code        | Word [Unsigned]/Bit String [16-bit] | 0             | The error code that occurred in the FB is stored.                                   |

## FB details

### Available device

#### ■CC-Link IE Field Network module

| Target module | Firmware version | Engineering tool                  |
|---------------|------------------|-----------------------------------|
| FX5-CCLIEF    | —                | GX Works3 Version 1.025B or later |

#### ■CPU module

FX5UJ/FX5U/FX5UC CPU module



## Basic specifications

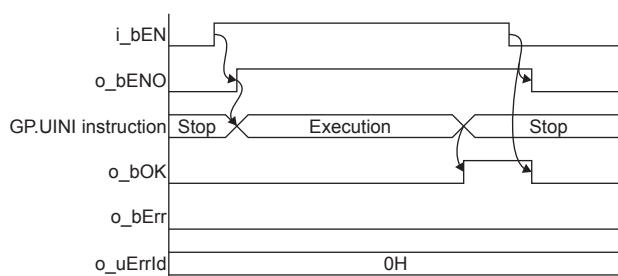
| Item                           | Description                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Language                       | Ladder diagram                                                                                                                                                                                                                                                                                                                                                                 |
| Number of steps                | 77 steps<br>The number of steps of the FB embedded in the program varies depending on the CPU module used, the input/output definitions, and the option setting of GX Works3. For the option setting of GX Works3, refer to the <a href="#">GX Works3 Operating Manual</a> .                                                                                                   |
| Label usage                    | <ul style="list-style-type: none"> <li>Label: 0.02K points (Word)</li> <li>Latch label: 0K points (Word)</li> </ul> The amount of labels used in the program varies depending on the CPU module used, the device specified in an argument, and the option setting of GX Works3. For the option setting of GX Works3, refer to the <a href="#">GX Works3 Operating Manual</a> . |
| Number of index register usage | <ul style="list-style-type: none"> <li>Index register: 0 points</li> <li>Long index register: 0 points</li> </ul>                                                                                                                                                                                                                                                              |
| File register usage            | 0 points                                                                                                                                                                                                                                                                                                                                                                       |
| FB dependence                  | No dependence                                                                                                                                                                                                                                                                                                                                                                  |
| FB compilation method          | Macro type                                                                                                                                                                                                                                                                                                                                                                     |
| FB operation                   | Pulsed execution (multiple scan execution type)                                                                                                                                                                                                                                                                                                                                |

## Processing

- When i\_bEN (Execution command) is turned on, the number is set to the station number specified with the set station number.
- If an error occurs while setting the own station number, o\_bErr (Error completion) turns on, and the error code is stored in o\_uErrId (Error code). For the error code, refer to [Page 216 Error code](#).
- Set the module parameters in GX Works3 in accordance with the connected equipment and system. For the module parameters, refer to [Page 190 Parameter setting](#).

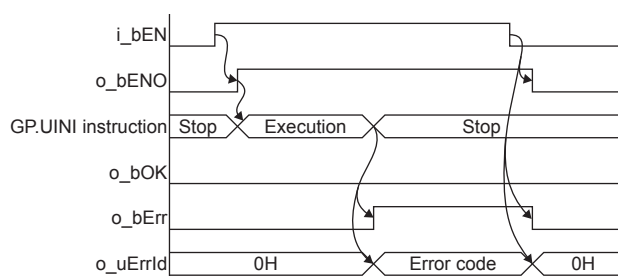
## Timing chart of I/O signals

### ■For normal completion



### ■For error completion

For instruction error



## Restrictions or precautions

- This FB does not include the error recovery processing. Program the error recovery processing separately in accordance with the required system operation.
- This FB uses the GP.UINI instruction. The module parameter "Station Setting Method" must be set to "Set with Program" to enable the GP.UINI instruction.
- Turn off i\_bEN (Execution command) after o\_bOK (Normal completion) or o\_bErr (Error completion) is turned on. By turning off i\_bEN (Execution command), o\_bOK (Normal completion) or o\_bErr (Error completion) is turned off and o\_uErrId (Error code) is cleared to 0. However, because the GP.UINI instruction which is a pulse instruction in the FB is used, if a write is performed while the FB is executed, the instruction may not be executed, and o\_bOK (Normal completion) and o\_bErr (Error completion) may not turn on. In that case, turn i\_bEN (Execution command) on again.
- This FB cannot be used in an interrupt program.
- Do not use this FB in programs that are executed only once, such as a subroutine program or FOR-NEXT loop, because i\_bEN (Execution command) cannot be turned off and the normal operation cannot be acquired. Always use this FB in programs that can turn off i\_bEN (Execution command).
- Every input must be provided with a value for proper FB operation.

## Parameter setting

For the parameter setting, refer to  Page 190 Parameter setting.

## Performance value

| CPU module      | Measurement conditions                  | Performance value |                   | Number of scans |
|-----------------|-----------------------------------------|-------------------|-------------------|-----------------|
|                 |                                         | Processing time   | Maximum scan time |                 |
| FX5UJ           | Operation check of setting station No.1 | 8.36ms            | 1.170ms           | 9 scans         |
| FX5U, FX5UC*1*2 | Operation check of setting station No.1 | 10.30ms           | 0.916ms           | 12 scans        |

\*1 When the program capacity is set to 128K steps, the processing speed may be reduced.

\*2 The labels in the standard area are used.

## Error code

| Error code (hexadecimal) | Description                                                                                                          | Action                                                                                                                                                            |
|--------------------------|----------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| D000H to DFFFH           | This error code is the same as the error code that occurs with the own station number setting (GP.UINI) instruction. | Refer to the  MELSEC iQ-F FX5 CC-Link IE Field Network Module User's Manual. |

# 5 FB FOR EtherNet/IP (FX5-EIP)

This chapter describes the FBs dedicated to the FX5-EIP.

Up to one FX5-EIP can be connected. The module cannot be used with the FX5-ENET/IP.

For details, refer to the following.

📖 MELSEC iQ-F FX5S/FX5UJ/FX5U/FX5UC User's Manual (Hardware)

## 5.1 Specifications

When the FX5-EIP is used for any of the applications shown below, the corresponding FBs can be used.

○: Available, ×: Not available

| FB                                      | Originator | Target |
|-----------------------------------------|------------|--------|
| M+FX5-EIP_Class1GetInputData            | ○          | ○      |
| M+FX5-EIP_Class1SetOutputData           | ○          | ○      |
| FB                                      | Client     | Server |
| M+FX5-EIP_UCMMOriginator_ReadTagData    | ○          | ×      |
| M+FX5-EIP_UCMMOriginator_WriteTagData   | ○          | ×      |
| M+FX5-EIP_Class3Originator_ReadTagData  | ○          | ×      |
| M+FX5-EIP_Class3Originator_WriteTagData | ○          | ×      |
| M+FX5-EIP_UCMMOriginator_MessageSend    | ○          | ×      |
| M+FX5-EIP_Class3Originator_MessageSend  | ○          | ×      |

## Precautions

- This FB cannot be used in an interrupt program.
- Do not use this FB in programs that are executed only once, such as a subroutine program or FOR-NEXT loop, because i\_bEN (Execution command) cannot be turned off and the normal operation cannot be performed. Always use this FB in programs that can turn off i\_bEN (Execution command).
- Every input must be provided with a value for proper FB operation.
- Regarding the specification values of each FB, the time until the FB processing finishes varies depending on the factors such as the time required for processing of programs other than the relevant FB. Refer to the specification values as a guide for the processing time.
- The module FBs of this product do not include the error recovery processing. Program the error recovery processing separately in accordance with the required system operation.
- Turn off i\_bEN (Execution instruction) after o\_bOK (Normal completion) or o\_bErr (Error completion) is turned on. By turning off i\_bEN (Execution instruction), o\_bOK (Normal completion) or o\_bErr (Error completion) is turned off and o\_uErrId (Error code) is cleared to 0.
- A device or label can be specified for the symbol of the module FB.
- The number of FB steps integrated in the program varies depending on the CPU module used, the input/output definition, and the option setting of GX Works3.
- During input, it is recommended not to use this FB for connections for which auto refresh is enabled. If it is used, apart from the input data stored in the device specified as the output argument, the same input data will be set to the target device for auto refresh. During output, this FB cannot be used for connections for which auto refresh is enabled in "Refresh Setting" of GX Works3 module parameters. If it is used, integrity cannot be maintained in the data sent between the data of the device that is the target of auto refresh and i\_uOutputData (output data storage device) specified as the input argument.
- The timing at which the obtained input data is updated is determined by the scan time of the program operating asynchronously, apart from the RPI setting. For details, refer to the  MELSEC iQ-F FX5-EIP EtherNet/IP Module User's Manual.
- When assuring data such as the input and output data used in Class1 communications or Class3/UCMM communications, set 'Connection-unit block assurance specification' (Un\G232) to K16 (assure) before executing the FB. When using the auto refresh function, set the connection-unit block assurance specification to 0. For details, refer to the  MELSEC iQ-F FX5-EIP EtherNet/IP Module User's Manual.
- Since the buffer memory areas are operated inside FBs using module labels, a double coil warning may occur at compilation if multiple FBs are used, but the warning does not affect the FBs.

### Point

When a module FB is executed, an operation error may occur in the CPU module. In this case, check the detailed information of the operation error in event history and correct the input argument of the module FB.

## Precautions on FB combinations

Multiple FBs of the FX5-EIP can be used at the same time by setting each FB to a different connection number.

The following shows whether the FBs can be used when set to the same connection number.

○: Can be set, × Cannot be set

① M+FX5-EIP\_Class1GetInputData

② M+FX5-EIP\_Class1SetOutputData

③ M+FX5-EIP\_UCMMOriginator\_ReadTagData

④ M+FX5-EIP\_UCMMOriginator\_WriteTagData

⑤ M+FX5-EIP\_Class3Originator\_ReadTagData

⑥ M+FX5-EIP\_Class3Originator\_WriteTagData

⑦ M+FX5-EIP\_UCMMOriginator\_MessageSend

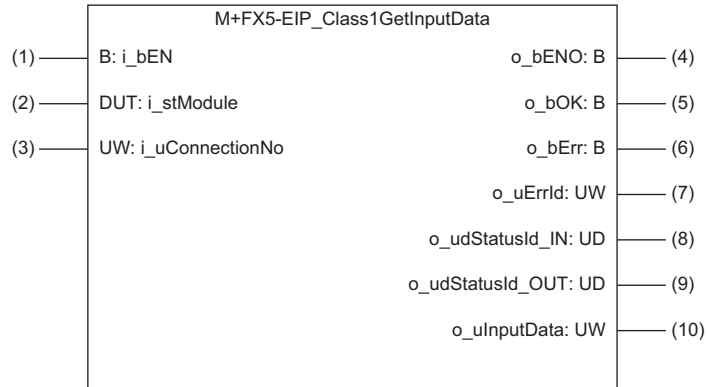
⑧ M+FX5-EIP\_Class3Originator\_MessageSend

|                      |   | Communication method |   |   |   |   |   |   |   |
|----------------------|---|----------------------|---|---|---|---|---|---|---|
|                      |   | ①                    | ② | ③ | ④ | ⑤ | ⑥ | ⑦ | ⑧ |
| Communication method | ① | ○                    | ○ | × | × | × | × | × | × |
|                      | ② | ○                    | ○ | × | × | × | × | × | × |
|                      | ③ | ×                    | × | × | × | × | × | × | × |
|                      | ④ | ×                    | × | × | × | × | × | × | × |
|                      | ⑤ | ×                    | × | × | × | × | × | × | × |
|                      | ⑥ | ×                    | × | × | × | × | × | × | × |
|                      | ⑦ | ×                    | × | × | × | × | × | × | × |
|                      | ⑧ | ×                    | × | × | × | × | × | × | × |

## 5.2 M+FX5-EIP\_Class1GetInputData (Class1 communications input data acquisition)

### Overview

Acquires input data of a specified connection through the Class1 communications.



### Labels

#### Input label

| No. | Variable name   | Name              | Data type                               | Import                        | Range    | Description                                                                                                                                                                                                                                           |
|-----|-----------------|-------------------|-----------------------------------------|-------------------------------|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1) | i_bEN           | Execution command | Bit                                     | Always                        | On, off  | On: The FB is activated.<br>Off: The FB is not activated.                                                                                                                                                                                             |
| (2) | i_stModule      | Module label      | Structure                               | Only when the FB is activated | —        | Specifies the module label of the FX5-EIP.                                                                                                                                                                                                            |
| (3) | i_uConnectionNo | Connection No.    | Word [Unsigned]/<br>Bit String [16-bit] | Only when the FB is activated | 1 to 128 | Specify the number of the connection where the input data is acquired. <ul style="list-style-type: none"> <li>When the maximum number of the connection is 64: 1 to 64</li> <li>When the maximum number of the connection is 128: 1 to 128</li> </ul> |

#### Output labels

| No.  | Variable name    | Name                                                            | Data type                                   | Default value | Description                                                                                                                      |
|------|------------------|-----------------------------------------------------------------|---------------------------------------------|---------------|----------------------------------------------------------------------------------------------------------------------------------|
| (4)  | o_bENO           | Execution status                                                | Bit                                         | Off           | On: The execution command is on.<br>Off: The execution command is off.                                                           |
| (5)  | o_bOK            | Normal completion                                               | Bit                                         | Off           | The on state indicates that the FB has been completed successfully.                                                              |
| (6)  | o_bErr           | Error completion                                                | Bit                                         | Off           | When this label is on, it indicates that an error has occurred in the FB.                                                        |
| (7)  | o_uErrId         | Error code                                                      | Word [Unsigned]/<br>Bit String [16-bit]     | 0             | Stores the error code that occurred in the FB.                                                                                   |
| (8)  | o_udStatusId_IN  | Error code of connection communication error on the input side  | Double word [unsigned]/bit string [32 bits] | 0             | An error code on the input side is stored when a connection communication error has occurred (when 200H is stored in o_uErrId).  |
| (9)  | o_udStatusId_OUT | Error code of connection communication error on the output side | Double word [unsigned]/bit string [32 bits] | 0             | An error code on the output side is stored when a connection communication error has occurred (when 200H is stored in o_uErrId). |
| (10) | o_uInputData     | Input data storage device                                       | Word [Unsigned]/<br>Bit String [16-bit]     | 0             | Specifies the head number of the device where the input data is stored.                                                          |

## FB details

### Available device

#### ■Module for EtherNet/IP

| Target module | Firmware version | Engineering tool                       |
|---------------|------------------|----------------------------------------|
| FX5-EIP       | —                | GX Works3 with version 1.120A or later |

#### ■CPU module

| Target module              | Firmware version | Engineering tool                       |
|----------------------------|------------------|----------------------------------------|
| MX Controller (MX-F Model) | 106 or later     | GX Works3 with version 1.120A or later |
| FX5UJ                      | 1.100 or later   | GX Works3 with version 1.120A or later |
| FX5U, FX5UC                | 1.340 or later   | GX Works3 with version 1.120A or later |

### Basic specifications

| Item                           | Description                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Language                       | Ladder diagram                                                                                                                                                                                                                                                                                                                                                 |
| Number of steps                | 726 steps<br>The number of steps of the FB embedded in the program varies depending on the CPU module used, the input/output definitions, and the option setting of GX Works3. For the option setting of GX Works3, refer to the  GX Works3 Operating Manual.                                                                                                  |
| Label usage                    | <ul style="list-style-type: none"> <li>• Label: 24 points (Word)</li> <li>• Latch label: 0 points (Word)</li> </ul> The amount of labels used in the program varies depending on the CPU module used, the device specified in an argument, and the option setting of GX Works3. For the option setting of GX Works3, refer to the  GX Works3 Operating Manual. |
| Number of index register usage | <ul style="list-style-type: none"> <li>• Index register: 0 points</li> <li>• Long index register: 0 points</li> </ul>                                                                                                                                                                                                                                          |
| File register usage            | 0 points                                                                                                                                                                                                                                                                                                                                                       |
| FB dependence                  | No dependence                                                                                                                                                                                                                                                                                                                                                  |
| FB compilation method          | Macro type                                                                                                                                                                                                                                                                                                                                                     |
| FB operation                   | Always executed                                                                                                                                                                                                                                                                                                                                                |

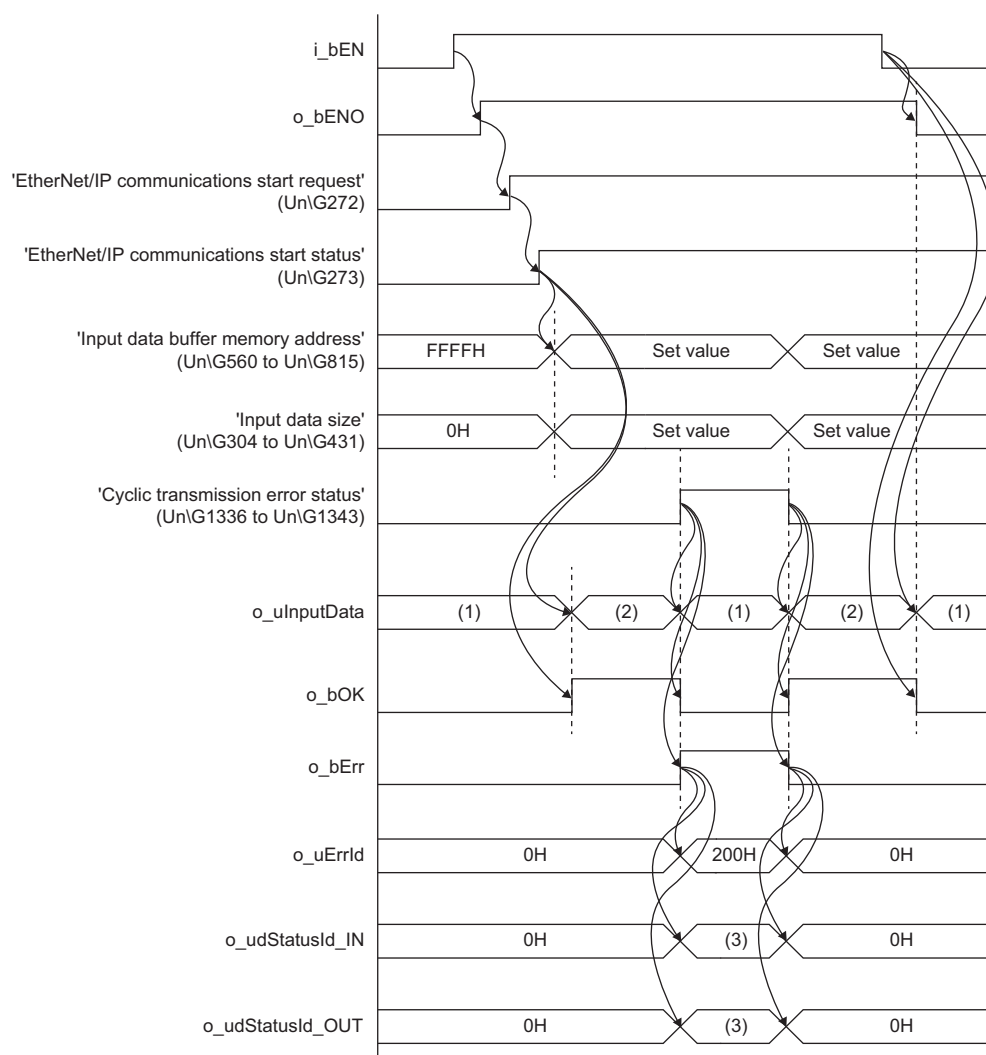
### Processing

- By turning i\_bEN (Execution command) on, the input data of the specified connection is acquired by Class1 communication.
- The input data is continuously stored in o\_ulInputData (Input data storage device) while i\_bEN (Execution command) and o\_bOK (Normal completion) are on.
- By turning i\_bEN (Execution command) on, 'EtherNet/IP communication start request' (Un\G272) turns on.
- Set the module parameters in GX Works3 in accordance with the connected equipment and system. For the module parameters, refer to the MELSEC iQ-F FX5-EIP EtherNet/IP Module User's Manual.

## Timing chart of I/O signals

### ■For normal completion

When the operation is recovered after an error occurs for a certain time during communication

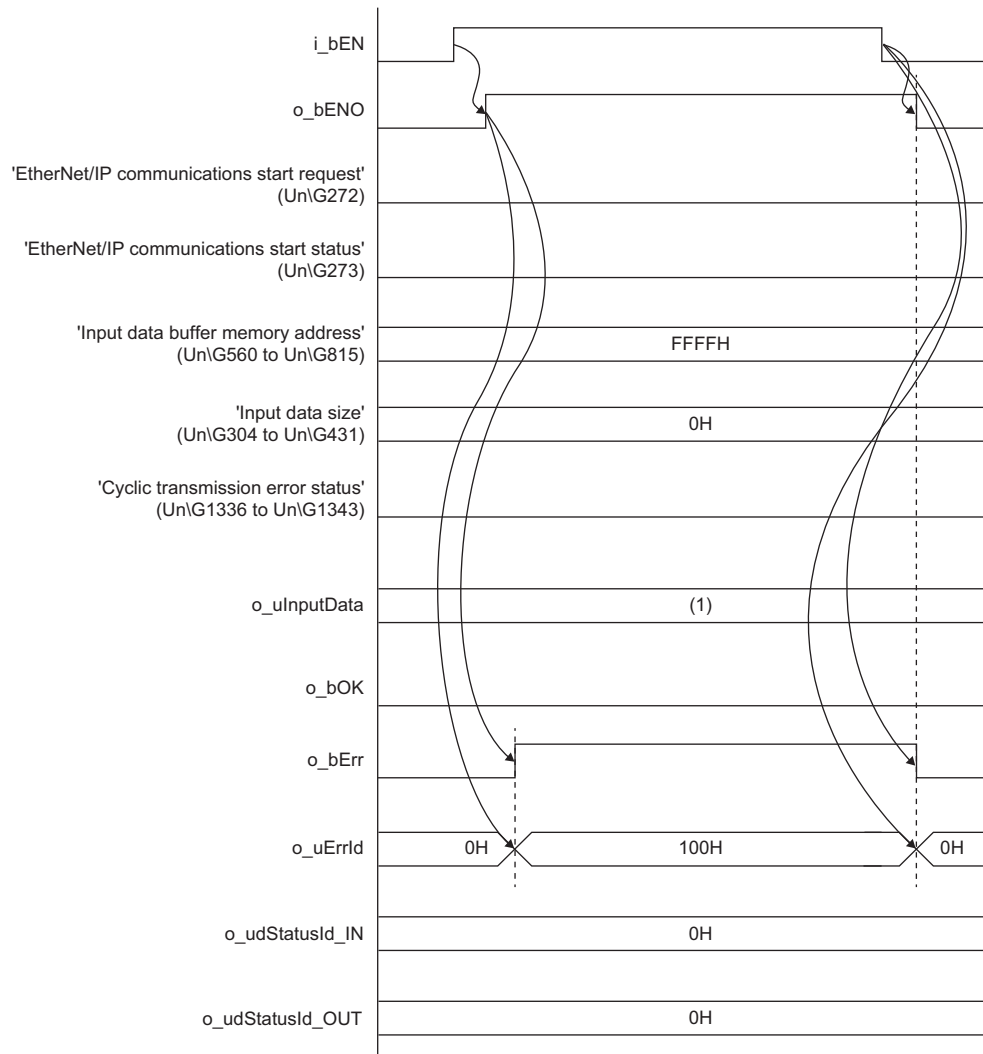


- (1) The last value is held.
- (2) The input data is stored.
- (3) Error code



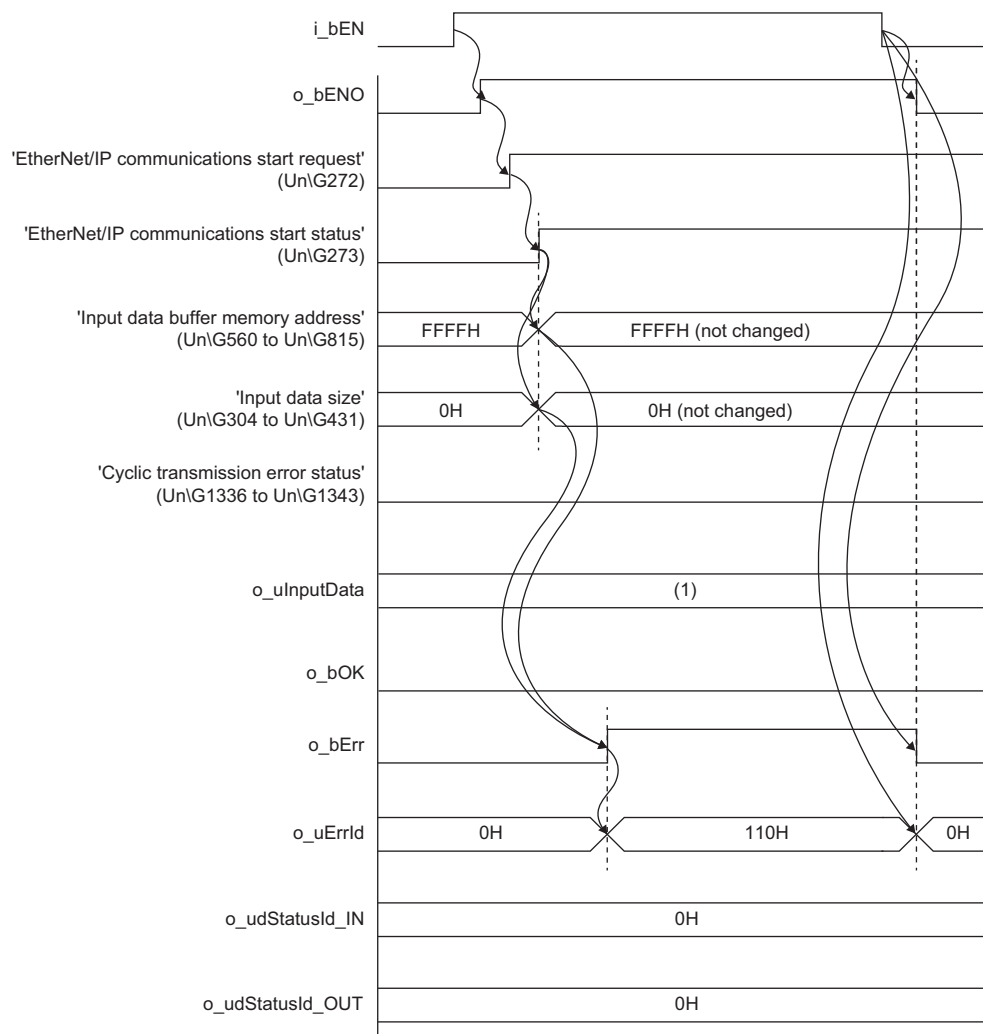
## ■ For error completion

- Out of setting range for i\_uConnectionNo (connection No.)



(1) The last value is held.

- Input data is not allocated to the target connection



(1) The last value is held.

## Restrictions or precautions

- Even if i\_bEN (Execution command) is turned off, 'EtherNet/IP communication start request' (UnG272) does not turn off. To stop the EtherNet/IP communication, turn off i\_bEN (Execution command) of all the FBs of the FX5-EIP/IP in the program, then turn off 'EtherNet/IP communication start request' (UnG272).
- With 'Connection-unit block assurance status' (UnG231) set to K2 (Data assured), old data may be read until the first input data is received if this FB is executed when 'Input data update status' (UnG1072 to UnG1199) in the buffer memory area with the same i\_uConnectionNo (Connection No.) is turned on.
- For the device where o\_uInputData (Input data storage device) is to be set, ensure that it has a sufficient size to prevent overlap and does not access areas out of range. If the device accesses an area out of range, an unexpected value may be set or a CPU error may occur. For details, refer to the MELSEC iQ-F FX5-EIP EtherNet/IP Module User's Manual.
- This FB performs operations using the following buffer memory areas. Therefore, during the execution of this FB, do not execute any operation other than this FB using a buffer memory area<sup>\*1</sup> that has the same number as i\_uConnectionNo (Connection No.).
  - 'Input data size' (UnG304 to UnG431)
  - 'Input data buffer memory address' (UnG560 to UnG815)
  - 'Cyclic pause specification' (UnG1360 to UnG1367)

\*1 The 'n'th area of the buffer memory, where 'n' is the same number as i\_uConnectionNo (Connection No.) of this FB

## Parameter setting

Set the parameters for the EtherNet/IP communications using GX Works3.

Configure settings separately for the originator (the side that requests connection establishment) and the target (the side that receives the connection establishment request).

For the parameter setting, refer to the  MELSEC iQ-F FX5-EIP EtherNet/IP Module User's Manual.

## Error code

| Error code | Description                                                                    | Action                                                                                                                                                                                                                                                                                                                                      |
|------------|--------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 100H       | The setting value of i_uConnectionNo (Connection No.) is invalid.              | After reviewing the setting, re-execute the FB.                                                                                                                                                                                                                                                                                             |
| 108H       | EtherNet/IP communication has been suspended.                                  | Re-execute the FB.                                                                                                                                                                                                                                                                                                                          |
| 110H       | Input data for Class1 communications is not assigned to the target connection. | After reviewing the settings for "EtherNet/IP Configuration" of GX Works3, re-execute the FB.<br>Check whether the value set in a change-prohibited buffer memory area has been changed. Change-prohibited buffer memory areas are described in the 'Restrictions and precautions' section.*1                                               |
| 112H       | A connection assigned as a reserved station was used.                          | Review the value set for i_uConnectionNo (Connection No.) or review the settings in "EtherNet/IP Configuration" of GX Works3.                                                                                                                                                                                                               |
| 200H       | A connection communication error has occurred in the target connection.        | Check the error code stored in o_udStatusId_IN (Error code of connection communication error on the input side) or o_udStatusId_OUT (Error code of connection communication error on the output side).<br> MELSEC iQ-F FX5-EIP User's Manual (Application) |

\*1 Assume that no connection assignments exist if any of the following conditions is met.

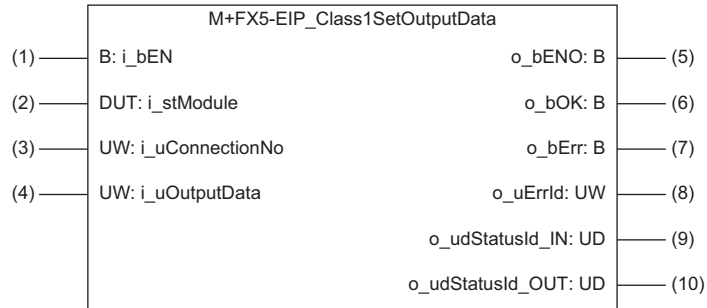
- The value of 'Input data buffer memory address' (Un\G560 to Un\G815) is set to 0H or FFFFFFFFH.
- 'Input data size' (Un\G304 to Un\G431) is set to 0H.
- 'Input data size' (Un\G304 to Un\G431) is set to a value exceeding the maximum data size compatible with the maximum number of connections setting.
- 'Communications method specification for message communications request area' (Un\G4656) is set to a value other than 0.

For the maximum data size compatible with the maximum number of connections setting, refer to the  MELSEC iQ-F FX5-EIP EtherNet/IP Module User's Manual.

## 5.3 M+FX5-EIP\_Class1SetOutputData (Class1 communications output data setting)

### Overview

Sets output data of the specified connection through the Class1 communications.



### Labels

#### Input label

| No. | Variable name   | Name                       | Data type                               | Import                        | Range    | Description                                                                                                                                                                                          |
|-----|-----------------|----------------------------|-----------------------------------------|-------------------------------|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1) | i_bEN           | Execution command          | Bit                                     | Always                        | On, off  | On: The FB is activated.<br>Off: The FB is not activated.                                                                                                                                            |
| (2) | i_stModule      | Module label               | Structure                               | Only when the FB is activated | —        | Specifies the module label of the FX5-EIP.                                                                                                                                                           |
| (3) | i_uConnectionNo | Connection No.             | Word [Unsigned]/<br>Bit String [16-bit] | Only when the FB is activated | 1 to 128 | Specify the number of the connection where the input data is acquired.<br>• When the maximum number of the connection is 64: 1 to 64<br>• When the maximum number of the connection is 128: 1 to 128 |
| (4) | i_uOutputData   | Output data storage device | Word [Unsigned]/<br>Bit String [16-bit] | Always                        | —        | Specify the head number of the device where the output data is stored.                                                                                                                               |

#### Output label

| No.  | Variable name    | Name                                                            | Data type                                   | Default value | Description                                                                                                                      |
|------|------------------|-----------------------------------------------------------------|---------------------------------------------|---------------|----------------------------------------------------------------------------------------------------------------------------------|
| (5)  | o_bENO           | Execution status                                                | Bit                                         | Off           | On: The execution command is on.<br>Off: The execution command is off.                                                           |
| (6)  | o_bOK            | Normal completion                                               | Bit                                         | Off           | The on state indicates that the FB has been completed successfully.                                                              |
| (7)  | o_bErr           | Error completion                                                | Bit                                         | Off           | When this label is on, it indicates that an error has occurred in the FB.                                                        |
| (8)  | o_uErrId         | Error code                                                      | Word [Unsigned]/<br>Bit String [16-bit]     | 0             | Stores the error code that occurred in the FB.                                                                                   |
| (9)  | o_udStatusId_IN  | Error code of connection communication error on the input side  | Double word [unsigned]/bit string [32 bits] | 0             | An error code on the input side is stored when a connection communication error has occurred (when 200H is stored in o_uErrId).  |
| (10) | o_udStatusId_OUT | Error code of connection communication error on the output side | Double word [unsigned]/bit string [32 bits] | 0             | An error code on the output side is stored when a connection communication error has occurred (when 200H is stored in o_uErrId). |

## FB details

### Available device

#### ■Module for EtherNet/IP

| Target module | Firmware version | Engineering tool                       |
|---------------|------------------|----------------------------------------|
| FX5-EIP       | —                | GX Works3 with version 1.120A or later |

#### ■CPU module

| Target module              | Firmware version | Engineering tool                       |
|----------------------------|------------------|----------------------------------------|
| MX Controller (MX-F Model) | 106 or later     | GX Works3 with version 1.120A or later |
| FX5UJ                      | 1.100 or later   | GX Works3 with version 1.120A or later |
| FX5U, FX5UC                | 1.340 or later   | GX Works3 with version 1.120A or later |

### Basic specifications

| Item                           | Description                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Language                       | Ladder diagram                                                                                                                                                                                                                                                                                                                                                 |
| Number of steps                | 715 steps<br>The number of steps of the FB embedded in the program varies depending on the CPU module used, the input/output definitions, and the option setting of GX Works3. For the option setting of GX Works3, refer to the  GX Works3 Operating Manual.                                                                                                  |
| Label usage                    | <ul style="list-style-type: none"> <li>• Label: 24 points (Word)</li> <li>• Latch label: 0 points (Word)</li> </ul> The amount of labels used in the program varies depending on the CPU module used, the device specified in an argument, and the option setting of GX Works3. For the option setting of GX Works3, refer to the  GX Works3 Operating Manual. |
| Number of index register usage | <ul style="list-style-type: none"> <li>• Index register: 0 points</li> <li>• Long index register: 0 points</li> </ul>                                                                                                                                                                                                                                          |
| File register usage            | 0 points                                                                                                                                                                                                                                                                                                                                                       |
| FB dependence                  | No dependence                                                                                                                                                                                                                                                                                                                                                  |
| FB compilation method          | Macro type                                                                                                                                                                                                                                                                                                                                                     |
| FB operation                   | Always executed                                                                                                                                                                                                                                                                                                                                                |

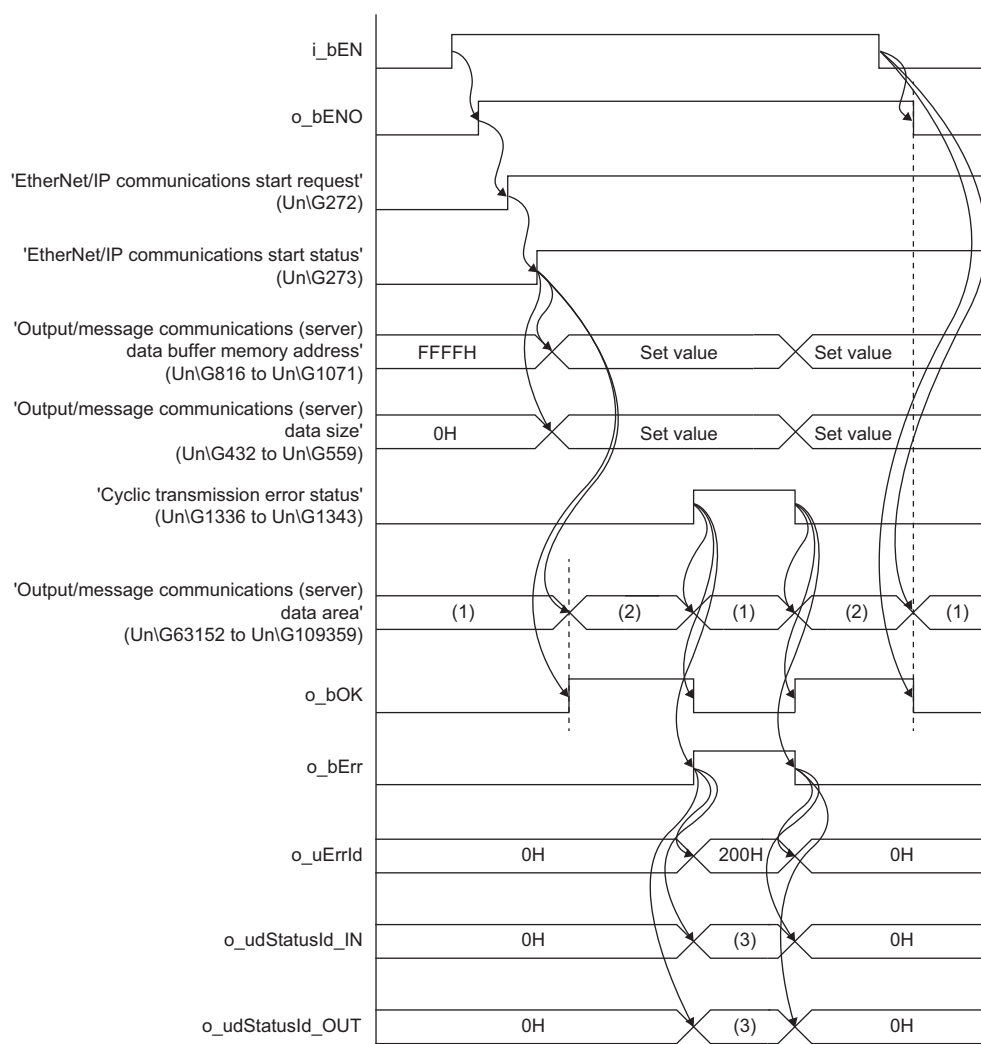
### Processing

- By turning i\_bEN (Execution command) on, the output data of the specified connection is set through Class1 communications.
- The designated number is continuously stored in the output area for the specified connection number from i\_uOutputData (Output data storage device) while i\_bEN (Execution command) and o\_bOK (Normal completion) are on. For the number of devices transferred from i\_uOutputData (Output data storage device), refer to the MELSEC iQ-F FX5-EIP EtherNet/IP Module User's Manual.
- By turning i\_bEN (Execution command) on, 'EtherNet/IP communication start request' (Un\G272) turns on.
- Set the module parameters in GX Works3 in accordance with the connected equipment and system. For the module parameters, refer to the MELSEC iQ-F FX5-EIP EtherNet/IP Module User's Manual.

## Timing chart of I/O signals

### ■For normal completion

When the operation is recovered after an error occurs for a certain time during communication



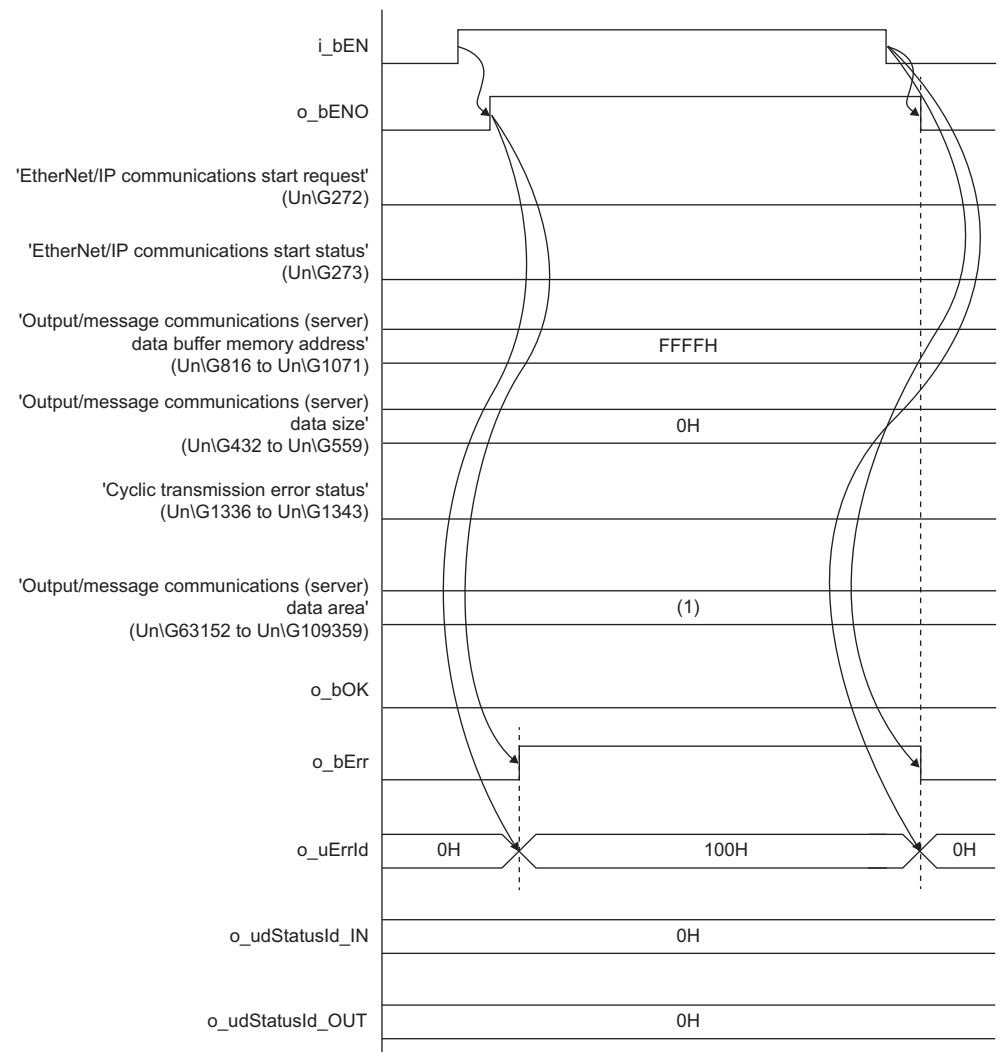
(1) The last value is held.

(2) Data are updated to the value stored in i\_uOutputData (output data storage device).

(3) Error code

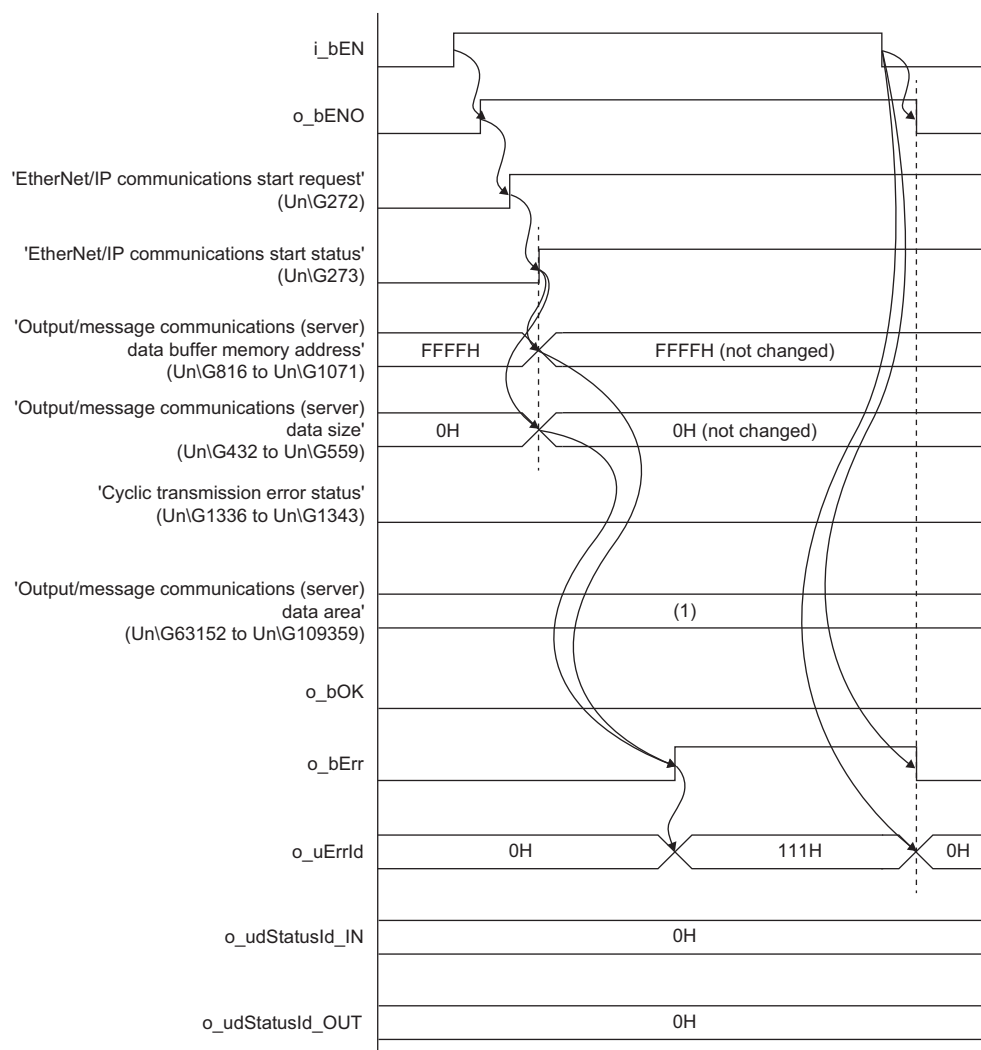
■ For error completion

- Out of setting range for i\_uConnectionNo (connection No.)



(1) The last value is held.

- Input data is not allocated to the target connection



(1) The last value is held.

## Restrictions or precautions

- Even if i\_bEN (Execution command) is turned off, 'EtherNet/IP communication start request' (UnG272) does not turn off. To stop the EtherNet/IP communication, turn off i\_bEN (Execution command) of all the FBs of the FX5-EIP/IP in the program, then turn off 'EtherNet/IP communication start request' (UnG272).
- For the device where i\_uOutputData (Output data storage device) is to be set, ensure that it has a sufficient size to prevent overlap and does not access areas out of range. If the device accesses an area out of range, an unexpected value may be set or a CPU error may occur. For details, refer to the [MELSEC iQ-F FX5-EIP EtherNet/IP Module User's Manual](#).
- This FB performs operations using the following buffer memory areas. Therefore, during the execution of this FB, do not execute any operation other than this FB using a buffer memory area<sup>\*1</sup> that has the same number as i\_uConnectionNo (Connection No.).
  - 'Output/message communications (server) data size' (UnG432 to UnG559)
  - 'Output/message communications (server) data buffer memory address' (UnG816 to UnG1071)
  - 'Cyclic pause specification' (UnG1360 to UnG1367)

\*1 The 'n'th area of the buffer memory, where 'n' is the same number as i\_uConnectionNo (Connection No.) of this FB

## Parameter setting

Set the parameters for the EtherNet/IP communications using GX Works3.

Configure settings separately for the originator (the side that requests connection establishment) and the target (the side that receives the connection establishment request).

For the parameter setting, refer to the [MELSEC iQ-F FX5-EIP EtherNet/IP Module User's Manual](#).



## Error code

| Error code | Description                                                                     | Action                                                                                                                                                                                                                                                                                                                                           |
|------------|---------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 100H       | The setting value of i_uConnectionNo (Connection No.) is invalid.               | After reviewing the setting, re-execute the FB.                                                                                                                                                                                                                                                                                                  |
| 108H       | EtherNet/IP communication has been suspended.                                   | Re-execute the FB.                                                                                                                                                                                                                                                                                                                               |
| 111H       | Output data for Class1 communications is not assigned to the target connection. | After reviewing the settings for "EtherNet/IP Configuration" of GX Works3, re-execute the FB.<br>Check whether the value set in a change-prohibited buffer memory area has been changed. Change-prohibited buffer memory areas are described in the 'Restrictions and precautions' section.*1                                                    |
| 112H       | A connection assigned as a reserved station was used.                           | Review the value set for i_uConnectionNo (Connection No.) or review the settings in "EtherNet/IP Configuration" of GX Works3.                                                                                                                                                                                                                    |
| 200H       | A connection communication error has occurred in the target connection.         | Check the error code stored in o_udStatusId_IN (Error code of connection communication error on the input side) or o_udStatusId_OUT (Error code of connection communication error on the output side).<br> MELSEC iQ-F FX5-EIP EtherNet/IP Module User's Manual |

\*1 Assume that no connection assignments exist if any of the following conditions is met.

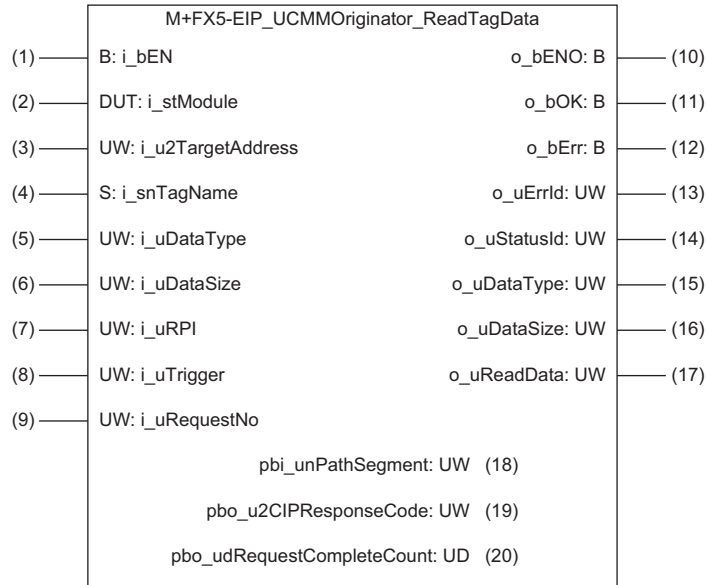
- The value of 'Output/message communications (server) data buffer memory address' (Un\G816 to Un\G1071) is set to 0H or FFFFFFFFH.
- 'Output/message communications (server) data size' (Un\G432 to Un\G559) is set to 0H.
- 'Output/message communications (server) data size' (Un\G432 to Un\G559) is set to a value exceeding the maximum data size compatible with the maximum number of connections setting.
- 'Communications method specification for message communications request area' (Un\G4656) is set to a value other than 0.

For the maximum data size compatible with the maximum number of connections setting, refer to the  MELSEC iQ-F FX5-EIP EtherNet/IP Module User's Manual.

## 5.4 M+FX5-EIP\_UCMMOriginator\_ReadTagData (UCMM tag communications data acquisition)

### Overview

Acquires data from the tag of the specified target device through the UCMM tag communications.



### Labels

#### Input label

| No. | Variable name     | Name                       | Data type                                   | Import                        | Range          | Description                                                                                                                                                                                                        |
|-----|-------------------|----------------------------|---------------------------------------------|-------------------------------|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1) | i_bEN             | Execution command          | Bit                                         | Always                        | On, off        | On: The FB is activated.<br>Off: The FB is not activated.                                                                                                                                                          |
| (2) | i_stModule        | Module label               | Structure                                   | Only when the FB is activated | —              | Specifies the module label of the FX5-EIP.                                                                                                                                                                         |
| (3) | i_u2TargetAddress | IP address                 | Word [unsigned]/bit string [16 bits] (0..1) | Only when the FB is activated | —              | Specify the IP address of the target device.                                                                                                                                                                       |
| (4) | i_snTagName       | Tag name                   | Character string (255)                      | Only when the FB is activated | *1             | Specify the tag name of the target device to be read.                                                                                                                                                              |
| (5) | i_uDataType       | Read request tag data type | Word [unsigned]/bit string [16 bits]        | Only when the FB is activated | 00C3H<br>00C4H | Specify the data type of the tag to be read.<br>• 00C3H: INT (1 word)<br>• 00C4H: DINT (2 words)                                                                                                                   |
| (6) | i_uDataSize       | Read request data size     | Word [unsigned]/bit string [16 bits]        | Only when the FB is activated | 1 to 249       | Specify the number of data points to be read.<br>The number of data points to be read is calculated by the data type × the number of data points.<br>■Range<br>• INT (00C3H): 1 to 249<br>• DINT (00C4H): 1 to 124 |
| (7) | i_uRPI            | RPI                        | Word [unsigned]/bit string [16 bits]        | Always                        | 200 to 60000   | ■When Trigger specification is set to Cyclic<br>Specify the send cycle. (Unit: millisecond)<br>■When Trigger specification is set to Application Trigger<br>Settings are not required. (Any settings are ignored.) |
| (8) | i_uTrigger        | Trigger specification      | Word [unsigned]/bit string [16 bits]        | Only when the FB is activated | 0000H<br>0010H | Specify the send trigger.<br>• 0000H: Application Trigger<br>• 0010H: Cyclic                                                                                                                                       |

| No. | Variable name | Name        | Data type                            | Import                        | Range    | Description                                                                                                                                                                                                                               |
|-----|---------------|-------------|--------------------------------------|-------------------------------|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (9) | i_uRequestNo  | Request No. | Word [unsigned]/bit string [16 bits] | Only when the FB is activated | 1 to 128 | Specify the request No. for acquiring the input data.*2<br><ul style="list-style-type: none"> <li>When the maximum number of the connection is 64: 1 to 64</li> <li>When the maximum number of the connection is 128: 1 to 128</li> </ul> |

\*1 For details on the characters that can be used for the tag name, refer to the following.

📖 MELSEC iQ-F FX5-EIP EtherNet/IP Module User's Manual

\*2 Do not specify a request No. that is the same as the connection number in Class3 communications parameters set in "EtherNet/IP Configuration" of GX Works3. Specify a request No. that is not set in Class3 communications parameters.

## Output labels

| No.  | Variable name | Name                              | Data type                            | Default value | Description                                                                                                                                                                                                                                                                 |
|------|---------------|-----------------------------------|--------------------------------------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (10) | o_bENO        | Execution status                  | Bit                                  | Off           | On: The execution command is on.<br>Off: The execution command is off.                                                                                                                                                                                                      |
| (11) | o_bOK         | Normal completion                 | Bit                                  | Off           | The on state indicates that the FB has been completed successfully.                                                                                                                                                                                                         |
| (12) | o_bErr        | Error completion                  | Bit                                  | Off           | When this label is on, it indicates that an error has occurred in the FB.                                                                                                                                                                                                   |
| (13) | o_uErrId      | Error code                        | Word [Unsigned]/Bit String [16-bit]  | 0             | Stores the error code that occurred in the FB.                                                                                                                                                                                                                              |
| (14) | o_uStatusId   | Error code of communication error | Word [unsigned]/bit string [16 bits] | 0             | An error code is stored when a communication error has occurred (when 200H is stored in o_uErrId (error code)).                                                                                                                                                             |
| (15) | o_uDataType   | Read tag data type                | Word [unsigned]/bit string [16 bits] | 0             | The data type that is set for a tag received from the target device is stored.*1<br><ul style="list-style-type: none"> <li>00C3H: INT (1 word)</li> <li>00C4H: DINT (2 words)</li> </ul>                                                                                    |
| (16) | o_uDataSize   | Read data size                    | Word [unsigned]/bit string [16 bits] | 0             | The size of the read data is stored.*2                                                                                                                                                                                                                                      |
| (17) | o_uReadData   | Read data storage device          | Word [unsigned]/bit string [16 bits] | 0             | Data read from a tag of the target device is stored in the specified device, starting from the first area and continuing into subsequent areas. The type size of the stored data is calculated as follows: o_uDataSize (Read data size) × o_uDataType (Read tag data type). |

\*1 It may differ from the read request tag data type because the data type of the tag read from the target device is set.

\*2 The unit of data points is to be 1 word when the read tag data type is INT, and 2 words when DINT.

## Operation parameter

| No.  | Variable name     | Name        | Data type                            | Default value | Range | Description                                                                                                              |
|------|-------------------|-------------|--------------------------------------|---------------|-------|--------------------------------------------------------------------------------------------------------------------------|
| (18) | pbi_unPathSegment | PathSegment | Word [unsigned]/bit string [16 bits] | 0             | —     | Specify the Path Segment data to be given at connection during UCMM tag communications. Specify 0 when not using it.*1*2 |

\*1 Specify 0 to access the Class3 tag or UCMM tag that is set in the module.

\*2 For details on this parameter, refer to the following.

📖 MELSEC iQ-F FX5-EIP EtherNet/IP Module User's Manual

## Public variable

| No.  | Variable name               | Name                           | Data type                                   | Default value | Description                                                                                                                                                                                                                              |
|------|-----------------------------|--------------------------------|---------------------------------------------|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (19) | pbo_u2CIPResponseCode       | CIP response code              | Word [unsigned]/bit string [16 bits] (0..1) | 0             | The CIP response code is stored when a communication error has occurred (when 200H is stored in o_uErrId (error code)). For details on the CIP response code, refer to the manual for the target device that sends the response command. |
| (20) | pbo_udRequestComplete Count | Number of completed executions | Double word [unsigned]/bit string [32 bits] | 0             | The number of completed executions for UCMM tag communications is stored.                                                                                                                                                                |

## FB details

### Available device

#### ■Module for EtherNet/IP

| Target module | Firmware version | Engineering tool                       |
|---------------|------------------|----------------------------------------|
| FX5-EIP       | —                | GX Works3 with version 1.120A or later |

#### ■CPU module

| Target module              | Firmware version | Engineering tool                       |
|----------------------------|------------------|----------------------------------------|
| MX Controller (MX-F Model) | 106 or later     | GX Works3 with version 1.120A or later |
| FX5UJ                      | 1.100 or later   | GX Works3 with version 1.120A or later |
| FX5U, FX5UC                | 1.340 or later   | GX Works3 with version 1.120A or later |

### Basic specifications

| Item                           | Description                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Language                       | Ladder diagram                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Number of steps                | 1494 steps<br>The number of steps of the FB embedded in the program varies depending on the CPU module used, the input/output definitions, and the option setting of GX Works3. For the option setting of GX Works3, refer to the  GX Works3 Operating Manual.                                                                                                |
| Label usage                    | <ul style="list-style-type: none"><li>• Label: 292 points (Word)</li><li>• Latch label: 0 points (Word)</li></ul> The amount of labels used in the program varies depending on the CPU module used, the device specified in an argument, and the option setting of GX Works3. For the option setting of GX Works3, refer to the  GX Works3 Operating Manual. |
| Number of index register usage | <ul style="list-style-type: none"><li>• Index register: 0 points</li><li>• Long index register: 0 points</li></ul>                                                                                                                                                                                                                                                                                                                               |
| File register usage            | 0 points                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| FB dependence                  | No dependence                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| FB compilation method          | Macro type                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| FB operation                   | Always executed                                                                                                                                                                                                                                                                                                                                                                                                                                  |

### Processing

#### ■When Trigger specification is set to Cyclic

- When i\_bEN (Execution command) is turned on, data is periodically acquired from the tag of the specified target device through the UCMM tag communications.
- The read data is continuously stored in o\_uReadData (Read data storage device) while i\_bEN (Execution command) and o\_bOK (Normal completion) are on.

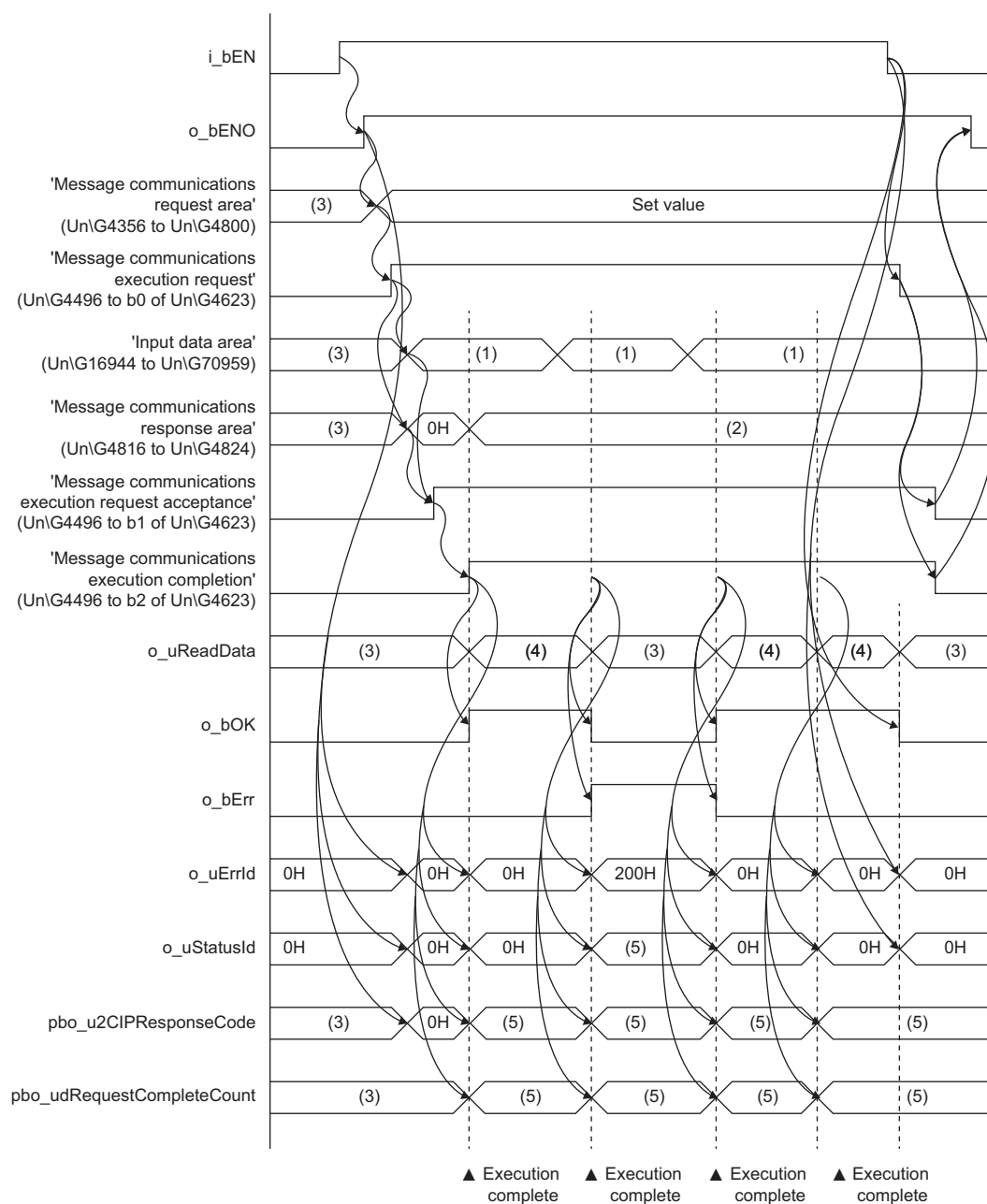
#### ■When Trigger specification is set to Application Trigger

- When i\_bEN (Execution command) is turned on, data is acquired from the tag of the specified target device through the UCMM tag communications.

## Timing chart of I/O signals

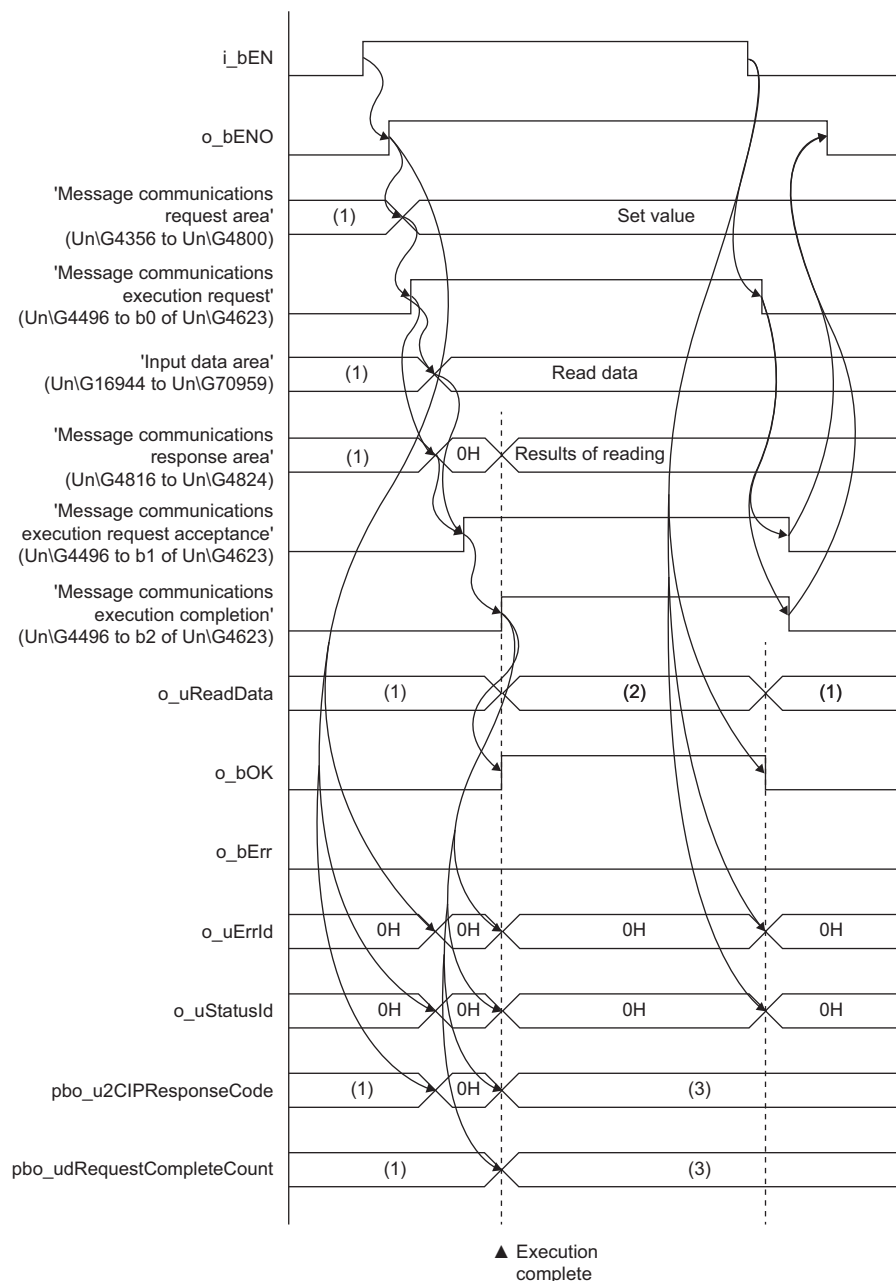
### ■ For normal completion when Trigger specification is set to Cyclic

When the operation is recovered after an error occurs for a certain time during communication



- (1) Read data
- (2) Result of reading
- (3) The last value is held.
- (4) Read data is stored.
- (5) Results storage area in the response area/stored value

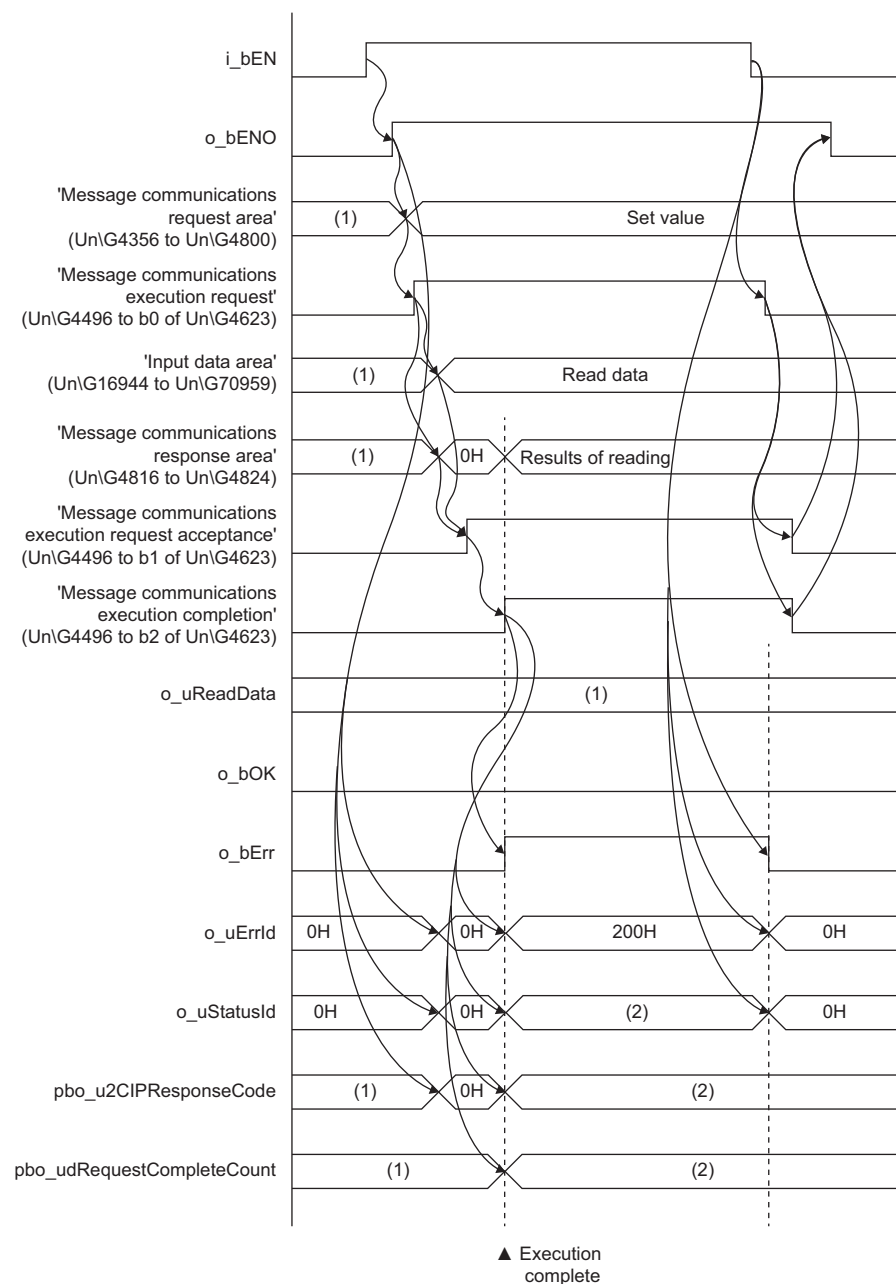
■ For normal completion when Trigger specification is set to Application Trigger



- (1) The last value is held.
- (2) Read data is stored.
- (3) Results storage area in the response area/stored value

## ■For error completion when Trigger specification is set to Application Trigger

When a communication error occurs



(1) The last value is held.

(2) Results storage area in the response area/stored value

## Restrictions or precautions

- Refer to o\_uReadData (Read data storage device) when o\_bOK (Normal completion) is turned on.
- Refer to o\_uErrId (Error code) and o\_uStatusId (Error code of communication error) when o\_bErr (Error completion) is turned on.
- Do not turn off i\_bEN (Execution command) until o\_bOK (Normal completion) or o\_bErr (Error completion) is turned on. <sup>\*1</sup>
- For the device where o\_uReadData (Read data storage device) is to be set, ensure that it has a sufficient size to prevent overlap and does not access areas out of range. If the device accesses an area out of range, an unexpected value may be set or a CPU error may occur. For details, refer to the MELSEC iQ-F FX5-EIP EtherNet/IP Module User's Manual.
- This FB performs operations using the following buffer memory areas. Therefore, during the execution of this FB, do not execute any operation other than this FB using a buffer memory area <sup>\*2</sup> that has the same number as i\_uRequestNo (Request No.).
  - 'Message communications execution request' (Un\G4496 to Un\G4623)
  - 'Message communications request/response area' (Un\G4656 to Un\G29231)
  - 'Input data area' (Un\G16944 to Un\G70959)
  - 'Output/message communications (server) data area' (Un\G63152 to Un\G109359)

<sup>\*1</sup> If i\_bEN (Execution command) is turned off before o\_bOK (Normal completion) or o\_bErr (Error completion) is turned on, o\_bErr (Error completion) is turned on while o\_bENO (Execution status) is turned on and during the scan where the state of o\_bENO (Execution status) is changed from off to on. Meanwhile, 113H (hexadecimal) is stored in o\_uErrId (Error code).

<sup>\*2</sup> The 'n'th area of the buffer memory, where 'n' is the same number as i\_uRequestNo (Request No.) of this FB

## Parameter setting

Set the parameters for the EtherNet/IP communications using GX Works3.

Configure settings separately for the originator (the side that requests connection establishment) and the target (the side that receives the connection establishment request).

For the parameter setting, refer to the MELSEC iQ-F FX5-EIP EtherNet/IP Module User's Manual.

## Error code

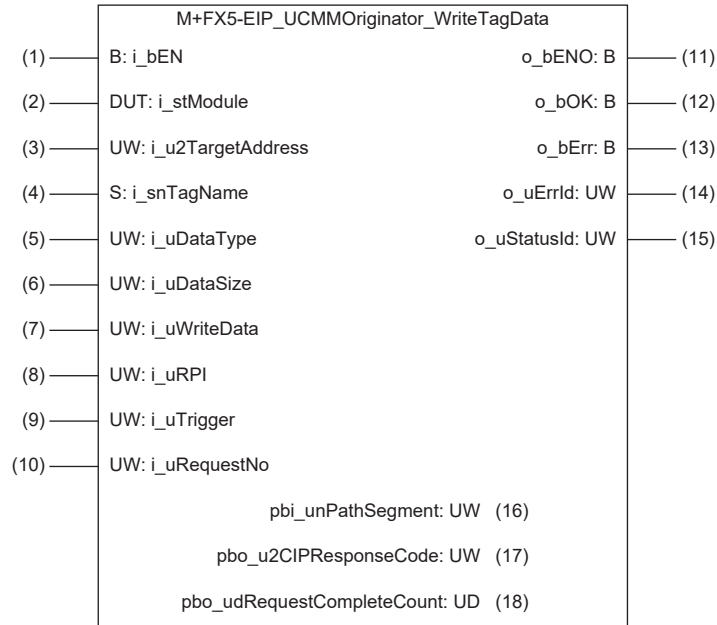
| Error code | Description                                                               | Action                                                                                                                                                                                                                                                                                                                                    |
|------------|---------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 100H       | The value of i_uRequestNo (Request No.) is out of range.                  | After reviewing the setting, re-execute the FB.                                                                                                                                                                                                                                                                                           |
| 101H       | The EtherNet/IP communications have stopped.                              | Set a value other than 0 for 'EtherNet/IP communications start request' (Un\G4256) and start the EtherNet/IP communications.                                                                                                                                                                                                              |
| 102H       | The number of characters used for i_snTagName (Tag name) is out of range. | Set i_snTagName (Tag name) using 1 to 255 characters.                                                                                                                                                                                                                                                                                     |
| 103H       | UCMM used an inappropriate area.                                          | <ul style="list-style-type: none"> <li>• Check if the Class1 communications and Class3 communications are used in the area of Request No.</li> <li>• Check if the initial value for the area of Request No. has been changed using a ladder diagram or by other means.</li> </ul>                                                         |
| 108H       | EtherNet/IP communication has been suspended.                             | Set a value other than 0 for EtherNet/IP communications start request (Un\G4256) and re-execute the FB.                                                                                                                                                                                                                                   |
| 113H       | i_bEN (Execution command) was turned off during the processing.           | Maintain the on state of i_bEN (Execution command) until o_bOK (Normal completion) or o_bErr (Error completion) is turned on.                                                                                                                                                                                                             |
| 114H       | The previous request is being executed.                                   | Ensure that 'Message communications execution request' (Un\G4496 to Un\G4623) of the relevant connection is turned off, then execute again.                                                                                                                                                                                               |
| 200H       | A communication error has occurred.                                       | <p>Check the value stored in o_uStatusId (Error code of communication error) by referring to the following.</p> <p>(When o_uStatusId (Error code of communication error) is set to 01FFH, the CIP response code is stored in pbo_u2CIPResponseCode (CIP response code).)</p> <p> MELSEC iQ-F FX5-EIP EtherNet/IP Module User's Manual</p> |



## 5.5 M+FX5-EIP\_UCMMOriginator\_WriteTagData (UCMM tag communications data setting)

### Overview

Sets data for the tag of the specified target device through the UCMM tag communications.



5

### Labels

#### Input label

| No. | Variable name     | Name              | Data type                                   | Import                        | Range          | Description                                                                                         |
|-----|-------------------|-------------------|---------------------------------------------|-------------------------------|----------------|-----------------------------------------------------------------------------------------------------|
| (1) | i_bEN             | Execution command | Bit                                         | Always                        | On, off        | On: The FB is activated.<br>Off: The FB is not activated.                                           |
| (2) | i_stModule        | Module label      | Structure                                   | Only when the FB is activated | —              | Specifies the module label of the FX5-EIP.                                                          |
| (3) | i_u2TargetAddress | IP address        | Word [unsigned]/bit string [16 bits] (0..1) | Only when the FB is activated | —              | Specify the IP address of the target device.                                                        |
| (4) | i_snTagName       | Tag name          | Character string (255)                      | Only when the FB is activated | *1             | Specify the tag name of the target device to be written.                                            |
| (5) | i_uDataType       | Tag data type     | Word [unsigned]/bit string [16 bits]        | Only when the FB is activated | 00C3H<br>00C4H | Specify the data type of the tag to be written.<br>• 00C3H: INT (1 word)<br>• 00C4H: DINT (2 words) |

| No.  | Variable name | Name                      | Data type                            | Import                        | Range          | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|------|---------------|---------------------------|--------------------------------------|-------------------------------|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (6)  | i_uDataSize   | Write data size           | Word [unsigned]/bit string [16 bits] | Only when the FB is activated | 1 to 245       | Specify the number of data points to be written.<br>The number of data points to be written is calculated by the tag data type × the number of data points.<br>■Range<br><ul style="list-style-type: none"> <li>When the tag data type is INT (00C3H) and PathSegment is 0: 1 to (494 - the number of characters of the tag name) ÷ 2 (decimals are omitted)</li> <li>When the tag data type is INT (00C3H) and PathSegment is other than 0: 1 to (480 - the number of characters of the tag name) ÷ 2 (decimals are omitted)</li> <li>When the tag data type is DINT (00C4H) and PathSegment is 0: 1 to (494 - the number of characters of the tag name) ÷ 4 (decimals are omitted)</li> <li>When the tag data type is DINT (00C4H) and PathSegment is other than 0: 1 to (480 - the number of characters of the tag name) ÷ 4 (decimals are omitted)</li> </ul> |
| (7)  | i_uWriteData  | Write data storage device | Word [unsigned]/bit string [16 bits] | Always                        | —              | Data (write data size × type size for the tag data type) is written to the tag specified with the tag name of the target device specified with the IP address from the start of the specified device.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| (8)  | i_uRPI        | RPI                       | Word [unsigned]/bit string [16 bits] | Always                        | 200 to 60000   | ■When Trigger specification is set to Cyclic<br>Specify the send cycle. (Unit: millisecond)<br>■When Trigger specification is set to Application Trigger<br>Settings are not required. (Any settings are ignored.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| (9)  | i_uTrigger    | Trigger specification     | Word [unsigned]/bit string [16 bits] | Only when the FB is activated | 0000H<br>0010H | Specify the send trigger.<br><ul style="list-style-type: none"> <li>0000H: Application Trigger</li> <li>0010H: Cyclic</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| (10) | i_uRequestNo  | Request No.               | Word [unsigned]/bit string [16 bits] | Only when the FB is activated | 1 to 128       | Specify the number of Request No. where the input data is acquired.*2<br><ul style="list-style-type: none"> <li>When the maximum number of the connection is 64: 1 to 64</li> <li>When the maximum number of the connection is 128: 1 to 128</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

\*1 For details on the characters that can be used for the tag name, refer to the following.

📖 MELSEC iQ-F FX5-EIP EtherNet/IP Module User's Manual

\*2 Do not specify a request No. that is the same as the connection number in Class3 communications parameters set in "EtherNet/IP Configuration" of GX Works3. Specify a request No. that is not set in Class3 communications parameters.

## Output labels

| No.  | Variable name | Name                              | Data type                            | Default value | Description                                                                                                     |
|------|---------------|-----------------------------------|--------------------------------------|---------------|-----------------------------------------------------------------------------------------------------------------|
| (11) | o_bENO        | Execution status                  | Bit                                  | Off           | On: The execution command is on.<br>Off: The execution command is off.                                          |
| (12) | o_bOK         | Normal completion                 | Bit                                  | Off           | The on state indicates that the FB has been completed successfully.                                             |
| (13) | o_bErr        | Error completion                  | Bit                                  | Off           | When this label is on, it indicates that an error has occurred in the FB.                                       |
| (14) | o_uErrId      | Error code                        | Word [Unsigned]/Bit String [16-bit]  | 0             | Stores the error code that occurred in the FB.                                                                  |
| (15) | o_uStatusId   | Error code of communication error | Word [unsigned]/bit string [16 bits] | 0             | An error code is stored when a communication error has occurred (when 200H is stored in o_uErrId (error code)). |

## Operation parameter

| No.  | Variable name     | Name        | Data type                            | Default value | Range | Description                                                                                                                 |
|------|-------------------|-------------|--------------------------------------|---------------|-------|-----------------------------------------------------------------------------------------------------------------------------|
| (16) | pbi_unPathSegment | PathSegment | Word [unsigned]/bit string [16 bits] | 0             | —     | Specify the Path Segment data to be given at connection during UCMM tag communications.<br>Specify 0 when not using it.*1*2 |

\*1 Specify 0 to access the Class3 tag or UCMM tag that is set in the module.

\*2 For details on this parameter, refer to the following.

📖 MELSEC iQ-F FX5-EIP EtherNet/IP Module User's Manual

## Public variable

| No.  | Variable name               | Name                           | Data type                                   | Default value | Description                                                                                                                                                                                                                              |
|------|-----------------------------|--------------------------------|---------------------------------------------|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (17) | pbo_u2CIPResponseCode       | CIP response code              | Word [unsigned]/bit string [16 bits] (0..1) | 0             | The CIP response code is stored when a communication error has occurred (when 200H is stored in o_uErrId (error code)). For details on the CIP response code, refer to the manual for the target device that sends the response command. |
| (18) | pbo_udRequestComplete Count | Number of completed executions | Double word [unsigned]/bit string [32 bits] | 0             | The number of completed executions for UCMM tag communications is stored.<br>When the read data is updated, this area is also updated.                                                                                                   |

## FB details

### Available device

#### ■Module for EtherNet/IP

| Target module | Firmware version | Engineering tool                       |
|---------------|------------------|----------------------------------------|
| FX5-EIP       | —                | GX Works3 with version 1.120A or later |

#### ■CPU module

| Target module              | Firmware version | Engineering tool                       |
|----------------------------|------------------|----------------------------------------|
| MX Controller (MX-F Model) | 106 or later     | GX Works3 with version 1.120A or later |
| FX5UJ                      | 1.100 or later   | GX Works3 with version 1.120A or later |
| FX5U, FX5UC                | 1.340 or later   | GX Works3 with version 1.120A or later |

### Basic specifications

| Item                           | Description                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Language                       | Ladder diagram                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Number of steps                | 1375 steps<br>The number of steps of the FB embedded in the program varies depending on the CPU module used, the input/output definitions, and the option setting of GX Works3. For the option setting of GX Works3, refer to the  GX Works3 Operating Manual.                                                                                                |
| Label usage                    | <ul style="list-style-type: none"><li>• Label: 292 points (Word)</li><li>• Latch label: 0 points (Word)</li></ul> The amount of labels used in the program varies depending on the CPU module used, the device specified in an argument, and the option setting of GX Works3. For the option setting of GX Works3, refer to the  GX Works3 Operating Manual. |
| Number of index register usage | <ul style="list-style-type: none"><li>• Index register: 0 points</li><li>• Long index register: 0 points</li></ul>                                                                                                                                                                                                                                                                                                                               |
| File register usage            | 0 points                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| FB dependence                  | No dependence                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| FB compilation method          | Macro type                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| FB operation                   | Always executed                                                                                                                                                                                                                                                                                                                                                                                                                                  |

### Processing

#### ■When Trigger specification is set to Cyclic

- When i\_bEN (Execution command) is turned on, data is periodically set for the tag of the specified target device through the UCMM tag communications.
- While i\_bEN (Execution command) is turned on, the requested data is continuously updated to the value stored in i\_uWriteData (Read data storage device).

#### ■When Trigger specification is set to Application Trigger

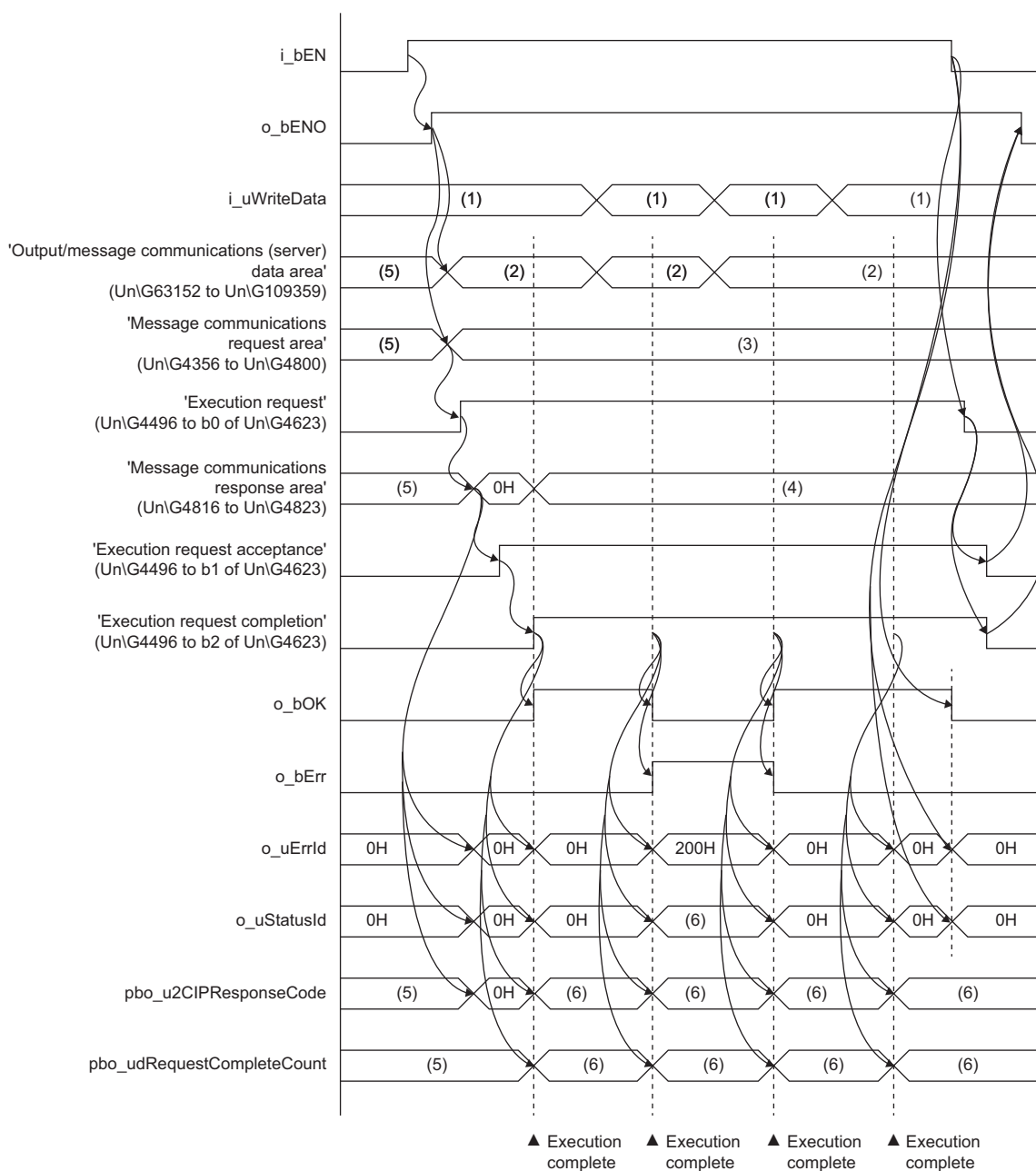
- When i\_bEN (Execution command) is turned on, data is set for the tag of the specified target device through the UCMM tag communications.

## Timing chart of I/O signals

### ■ For normal completion when Trigger specification is set to Cyclic

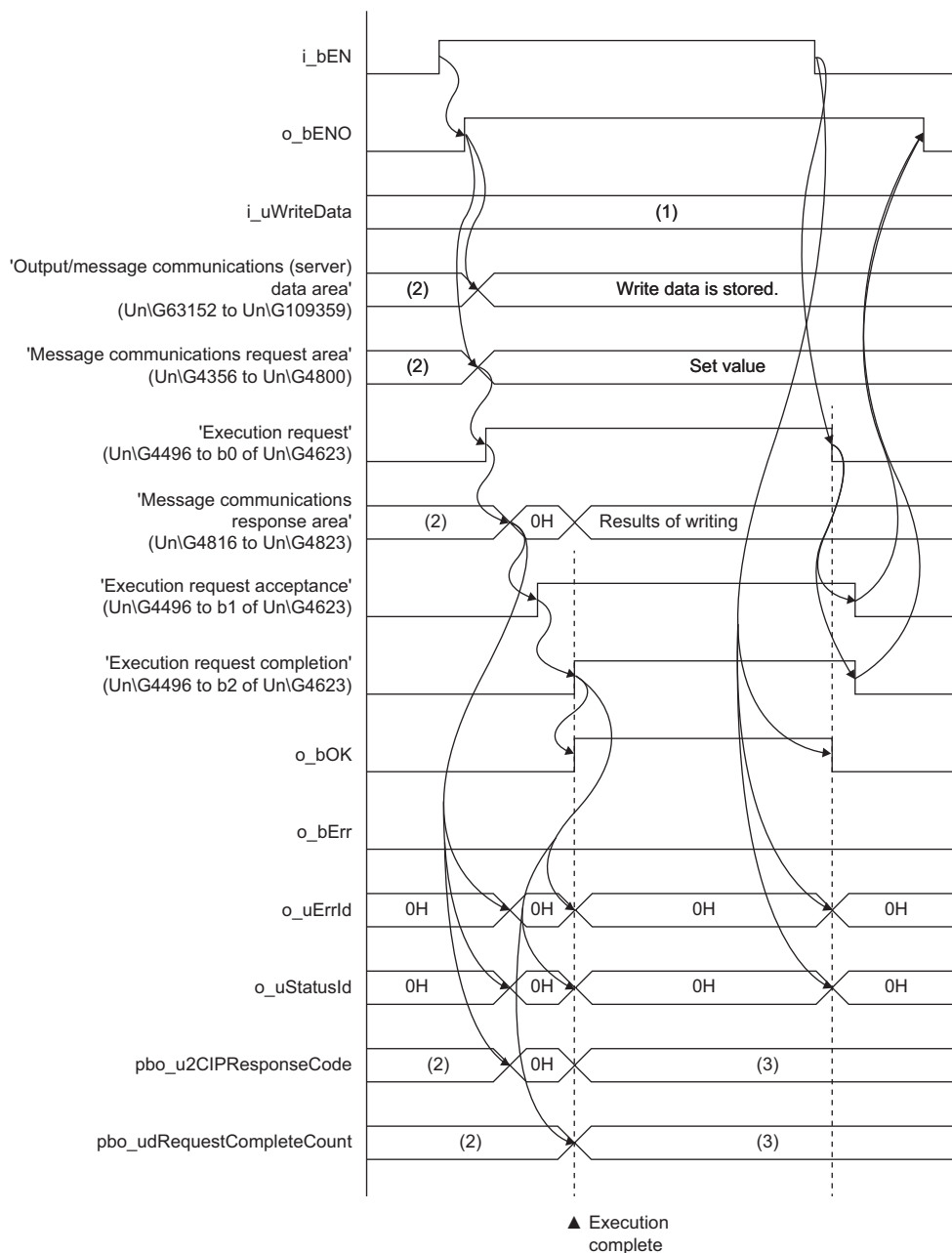
When the operation is recovered after an error occurs for a certain time during communication

5



- (1) Write data start address
- (2) Write data is stored.
- (3) Set value
- (4) Results of writing
- (5) The last value is held.
- (6) Results storage area in the response area/stored value

■ For normal completion when Trigger specification is set to Application Trigger

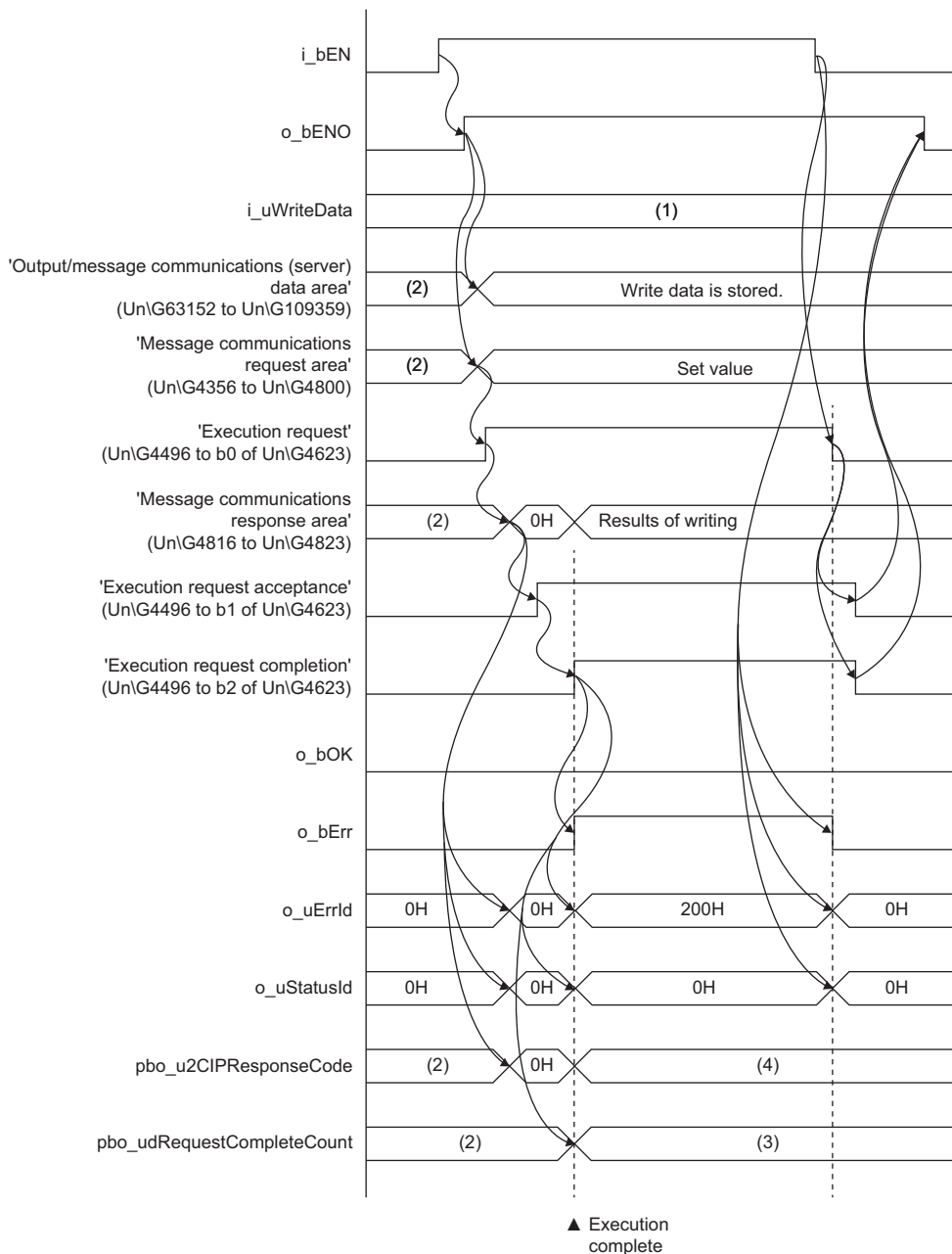


- (1) Write data
- (2) The last value is held.
- (3) Results storage area in the response area/stored value

## ■For error completion when Trigger specification is set to Application Trigger

When a communication error occurs

5



- (1) Write data
- (2) The last value is held.
- (3) Results storage area in the response area/stored value
- (4) CIP response code

## Restrictions or precautions

- Refer to o\_uErrId (Error code) and o\_uStatusId (Error code of communication error) when o\_bErr (Error completion) is turned on.
- Do not turn off i\_bEN (Execution command) until o\_bOK (Normal completion) or o\_bErr (Error completion) is turned on. <sup>\*1</sup>
- For the device where i\_uWriteData (Read data storage device) is to be set, ensure that it has a sufficient size to prevent overlap and does not access areas out of range. If the device accesses an area out of range, an unexpected value may be set or a CPU error may occur. For details, refer to the MELSEC iQ-F FX5-EIP EtherNet/IP Module User's Manual.
- This FB performs operations using the following buffer memory areas. Therefore, during the execution of this FB, do not execute any operation other than this FB using a buffer memory area <sup>\*2</sup> that has the same number as i\_uRequestNo (Request No.).
  - 'Message communications execution request' (Un\G4496 to Un\G4623)
  - 'Message communications request/response area' (Un\G4656 to Un\G29231)
  - 'Input data area' (Un\G16944 to Un\G70959)
  - 'Output/message communications (server) data area' (Un\G63152 to Un\G109359)

<sup>\*1</sup> If i\_bEN (Execution command) is turned off before o\_bOK (Normal completion) or o\_bErr (Error completion) is turned on, o\_bErr (Error completion) is turned on while o\_bENO (Execution status) is turned on and during the scan where the state of o\_bENO (Execution status) is changed from off to on. Meanwhile, 113H (hexadecimal) is stored in o\_uErrId (Error code).

<sup>\*2</sup> The 'n'th area of the buffer memory, where 'n' is the same number as i\_uRequestNo (Request No.) of this FB

## Parameter setting

Set the parameters for the EtherNet/IP communications using GX Works3.

Configure settings separately for the originator (the side that requests connection establishment) and the target (the side that receives the connection establishment request).

For the parameter setting, refer to the MELSEC iQ-F FX5-EIP EtherNet/IP Module User's Manual.

## Error code

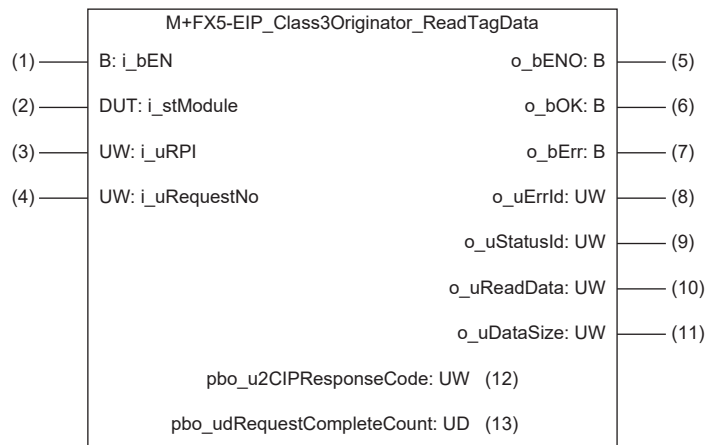
| Error code | Description                                                               | Action                                                                                                                                                                                                                                                                                                                                    |
|------------|---------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 100H       | The value of i_uRequestNo (Request No.) is out of range.                  | After reviewing the setting, re-execute the FB.                                                                                                                                                                                                                                                                                           |
| 101H       | The EtherNet/IP communications have stopped.                              | Set a value other than 0 for 'EtherNet/IP communications start request' (Un\G4256) and start the EtherNet/IP communications.                                                                                                                                                                                                              |
| 102H       | The number of characters used for i_snTagName (Tag name) is out of range. | Set i_snTagName (Tag name) using 1 to 255 characters.                                                                                                                                                                                                                                                                                     |
| 103H       | UCMM used an inappropriate area.                                          | <ul style="list-style-type: none"> <li>• Check if the Class1 communications and Class3 communications are used in Request No.</li> <li>• Check if the initial value for the area of Request No. has been changed using a ladder diagram or by other means.</li> </ul>                                                                     |
| 108H       | EtherNet/IP communication has been suspended.                             | Set a value other than 0 for EtherNet/IP communications start request (Un\G4256) and re-execute the FB.                                                                                                                                                                                                                                   |
| 113H       | i_bEN (Execution command) was turned off during the processing.           | Maintain the on state of i_bEN (Execution command) until o_bOK (Normal completion) or o_bErr (Error completion) is turned on.                                                                                                                                                                                                             |
| 114H       | The previous request is being executed.                                   | Ensure that 'Message communications execution request' (Un\G4496 to Un\G4623) of the relevant connection is turned off, then execute again.                                                                                                                                                                                               |
| 200H       | A communication error has occurred.                                       | <p>Check the value stored in o_uStatusId (Error code of communication error) by referring to the following.</p> <p>(When o_uStatusId (Error code of communication error) is set to 01FFH, the CIP response code is stored in pbo_u2CIPResponseCode (CIP response code).)</p> <p> MELSEC iQ-F FX5-EIP EtherNet/IP Module User's Manual</p> |



## 5.6 M+FX5-EIP\_Class3Originator\_ReadTagData (Class3 tag communications data acquisition)

### Overview

Acquires data from the tag of the specified target device through the Class3 tag communications.



### Labels

#### Input label

| No. | Variable name | Name              | Data type                            | Import                        | Range                         | Description                                                                                                                                                                                      |
|-----|---------------|-------------------|--------------------------------------|-------------------------------|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1) | i_bEN         | Execution command | Bit                                  | Always                        | On, off                       | On: The FB is activated.<br>Off: The FB is not activated.                                                                                                                                        |
| (2) | i_stModule    | Module label      | Structure                            | Only when the FB is activated | —                             | Specifies the module label of the FX5-EIP.                                                                                                                                                       |
| (3) | i_uRPI        | RPI               | Word [unsigned]/bit string [16 bits] | Always                        | 0, 200 to 60000 <sup>*1</sup> | Specify the send cycle. (Unit: millisecond)<br>Specify 0 when not changing from the value set in "EtherNet/IP Configuration" of GX Works3.                                                       |
| (4) | i_uRequestNo  | Request No.       | Word [unsigned]/bit string [16 bits] | Only when the FB is activated | 1 to 128                      | Specify the connection number to acquire input data. <sup>*2</sup><br>• When the maximum number of the connection is 64: 1 to 64<br>• When the maximum number of the connection is 128: 1 to 128 |

\*1 The operation is performed using the last value if a value out of range is set.

\*2 Specify the same value as the connection number of the Class3 communications parameter set in "EtherNet/IP Configuration" of GX Works3.

## Output labels

| No.  | Variable name | Name                              | Data type                            | Default value | Description                                                                                                                                                                                                                                                           |
|------|---------------|-----------------------------------|--------------------------------------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (5)  | o_bENO        | Execution status                  | Bit                                  | Off           | On: The execution command is on.<br>Off: The execution command is off.                                                                                                                                                                                                |
| (6)  | o_bOK         | Normal completion                 | Bit                                  | Off           | The on state indicates that the FB has been completed successfully.                                                                                                                                                                                                   |
| (7)  | o_bErr        | Error completion                  | Bit                                  | Off           | When this label is on, it indicates that an error has occurred in the FB.                                                                                                                                                                                             |
| (8)  | o_uErrId      | Error code                        | Word [Unsigned]/Bit String [16-bit]  | 0             | Stores the error code that occurred in the FB.                                                                                                                                                                                                                        |
| (9)  | o_uStatusId   | Error code of communication error | Word [unsigned]/bit string [16 bits] | 0             | An error code is stored when a communication error has occurred (when 200H is stored in o_uErrId (error code)).                                                                                                                                                       |
| (10) | o_uReadData   | Read data storage device          | Word [unsigned]/bit string [16 bits] | 0             | Data read from the tag of the target device is stored in the specified device, starting from the first area and continuing into subsequent areas. The type size of the stored data is calculated as follows: Read data size × Type size for the read tag data type.*1 |
| (11) | o_uDataSize   | Read data size                    | Word [unsigned]/bit string [16 bits] | 0             | The number of the read data points (in units of words) is stored.                                                                                                                                                                                                     |

\*1 For the tag name, tag data type, and the size of the target device for which a read is requested, set Class3 communications parameters in "EtherNet/IP Configuration" of GX Works3. The type size is to be 1 word when the tag data type is set to INT, and 2 words when DINT.

## Public variable

### ■Public variable

| No.  | Variable name               | Name                           | Data type                                   | Default value | Description                                                                                                                                                                                                                              |
|------|-----------------------------|--------------------------------|---------------------------------------------|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (12) | pbo_u2CIPResponseCode       | CIP response code              | Word [unsigned]/bit string [16 bits] (0..1) | 0             | The CIP response code is stored when a communication error has occurred (when 200H is stored in o_uErrId (error code)). For details on the CIP response code, refer to the manual for the target device that sends the response command. |
| (13) | pbo_udRequestComplete Count | Number of completed executions | Double word [unsigned]/bit string [32 bits] | 0             | The number of completed executions for Class3 tag communications is stored.                                                                                                                                                              |

## FB details

### Available device

#### ■Module for EtherNet/IP

| Target module | Firmware version | Engineering tool                       |
|---------------|------------------|----------------------------------------|
| FX5-EIP       | —                | GX Works3 with version 1.120A or later |

#### ■CPU module

| Target module              | Firmware version | Engineering tool                       |
|----------------------------|------------------|----------------------------------------|
| MX Controller (MX-F Model) | 106 or later     | GX Works3 with version 1.120A or later |
| FX5UJ                      | 1.100 or later   | GX Works3 with version 1.120A or later |
| FX5U, FX5UC                | 1.340 or later   | GX Works3 with version 1.120A or later |

### Basic specifications

| Item                           | Description                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Language                       | Ladder diagram                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Number of steps                | 1183 steps<br>The number of steps of the FB embedded in the program varies depending on the CPU module used, the input/output definitions, and the option setting of GX Works3. For the option setting of GX Works3, refer to the  GX Works3 Operating Manual.                                                                                               |
| Label usage                    | <ul style="list-style-type: none"><li>• Label: 24 points (Word)</li><li>• Latch label: 0 points (Word)</li></ul> The amount of labels used in the program varies depending on the CPU module used, the device specified in an argument, and the option setting of GX Works3. For the option setting of GX Works3, refer to the  GX Works3 Operating Manual. |
| Number of index register usage | <ul style="list-style-type: none"><li>• Index register: 0 points</li><li>• Long index register: 0 points</li></ul>                                                                                                                                                                                                                                                                                                                              |
| File register usage            | 0 points                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| FB dependence                  | No dependence                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| FB compilation method          | Macro type                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| FB operation                   | Always executed                                                                                                                                                                                                                                                                                                                                                                                                                                 |

### Processing

To perform Class3 tag communications, set Class3 communications parameters for the module using "EtherNet/IP Configuration" of GX Works3.

#### ■When Trigger specification is set to Cyclic

- When i\_bEN (Execution command) is turned on, data is periodically acquired from the tag of the specified target device through the Class3 tag communications.
- The read data is continuously stored in o\_uReadData (Read data storage device) while i\_bEN (Execution command) and o\_bOK (Normal completion) are on.

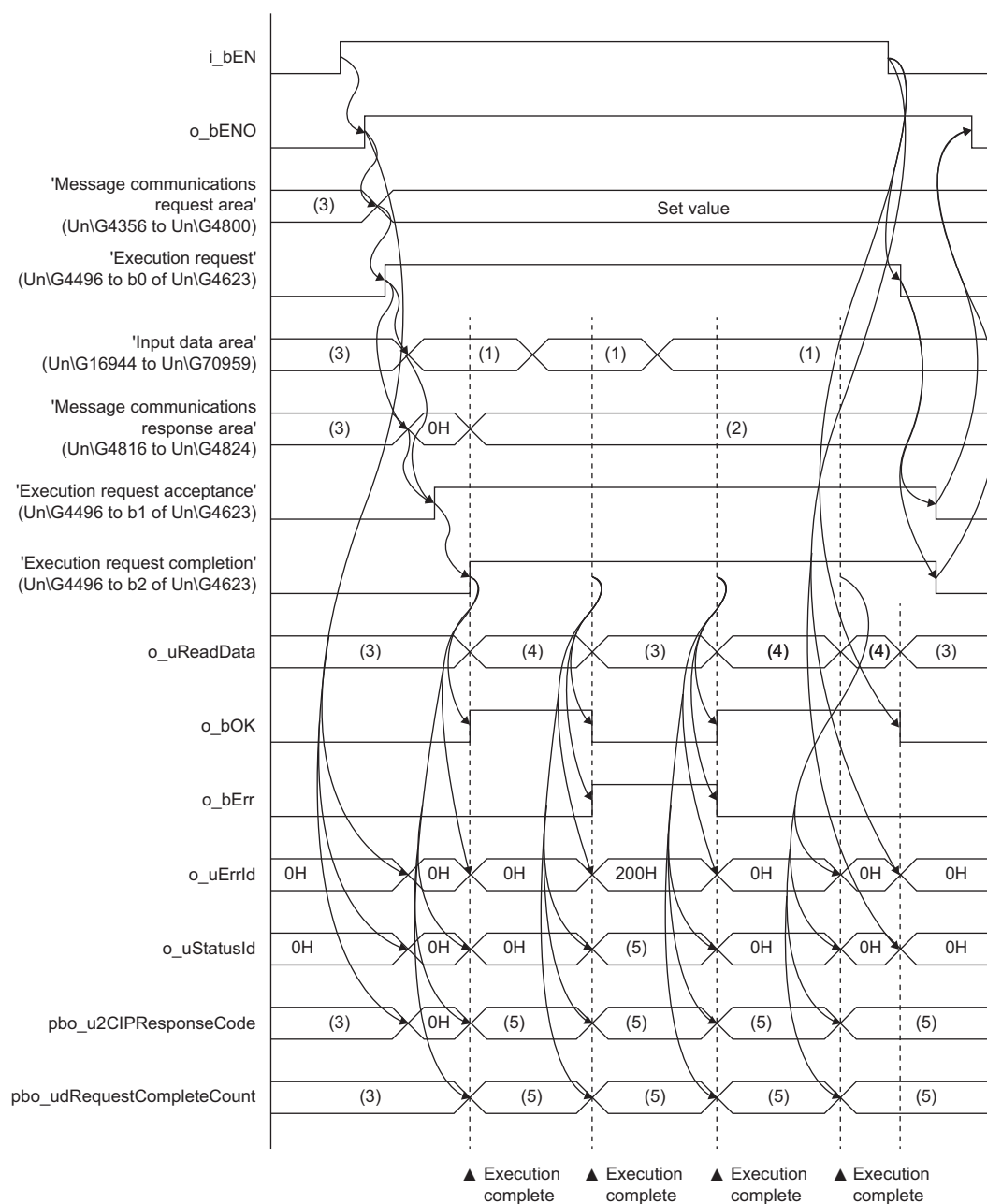
#### ■When Trigger specification is set to Application Trigger

- When i\_bEN (Execution command) is turned on, data is acquired from the tag of the specified target device through the Class3 tag communications.

## Timing chart of I/O signals

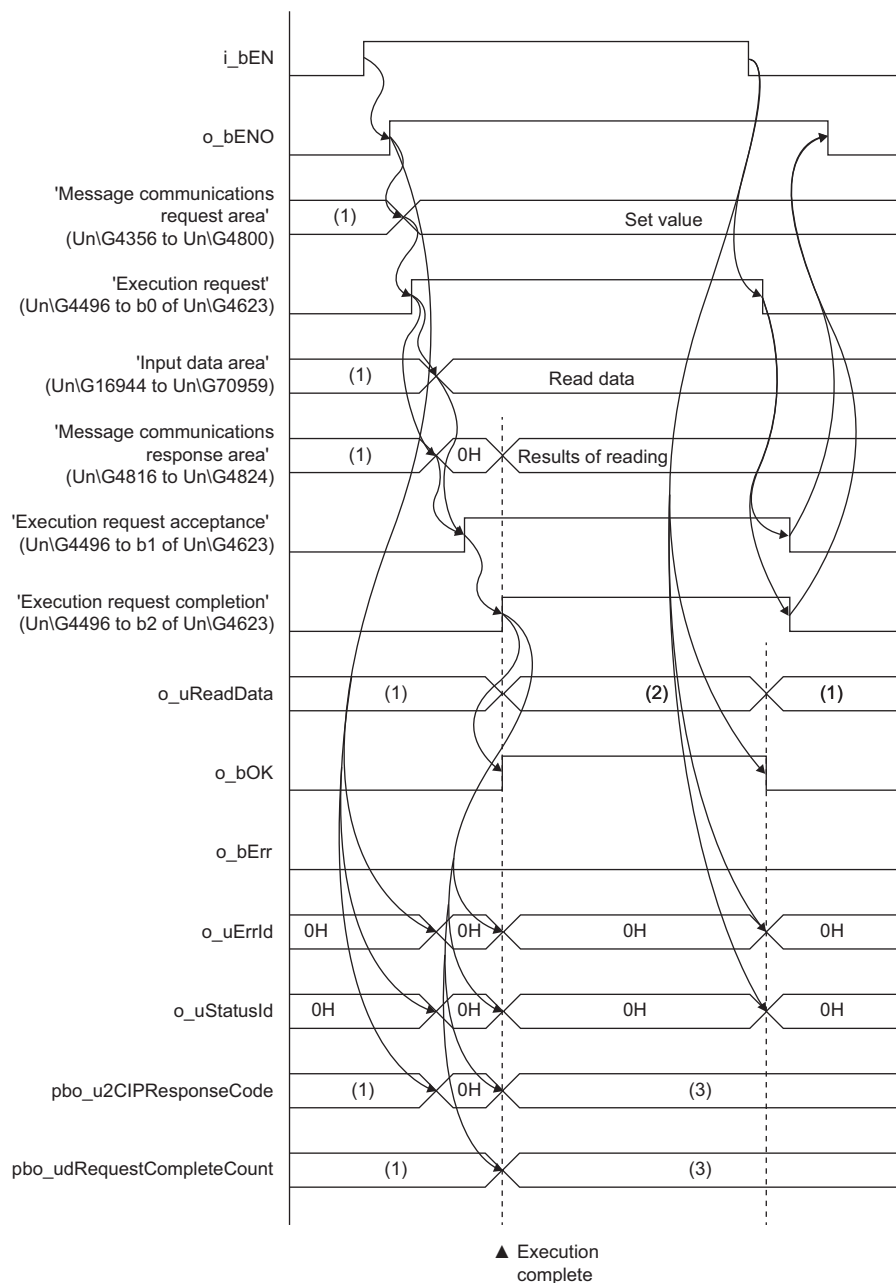
### ■ For normal completion when Trigger specification is set to Cyclic

When the operation is recovered after an error occurs for a certain time during communication



- (1) Read data
- (2) Result of reading
- (3) The last value is held.
- (4) Read data is stored.
- (5) Results storage area in the response area/stored value

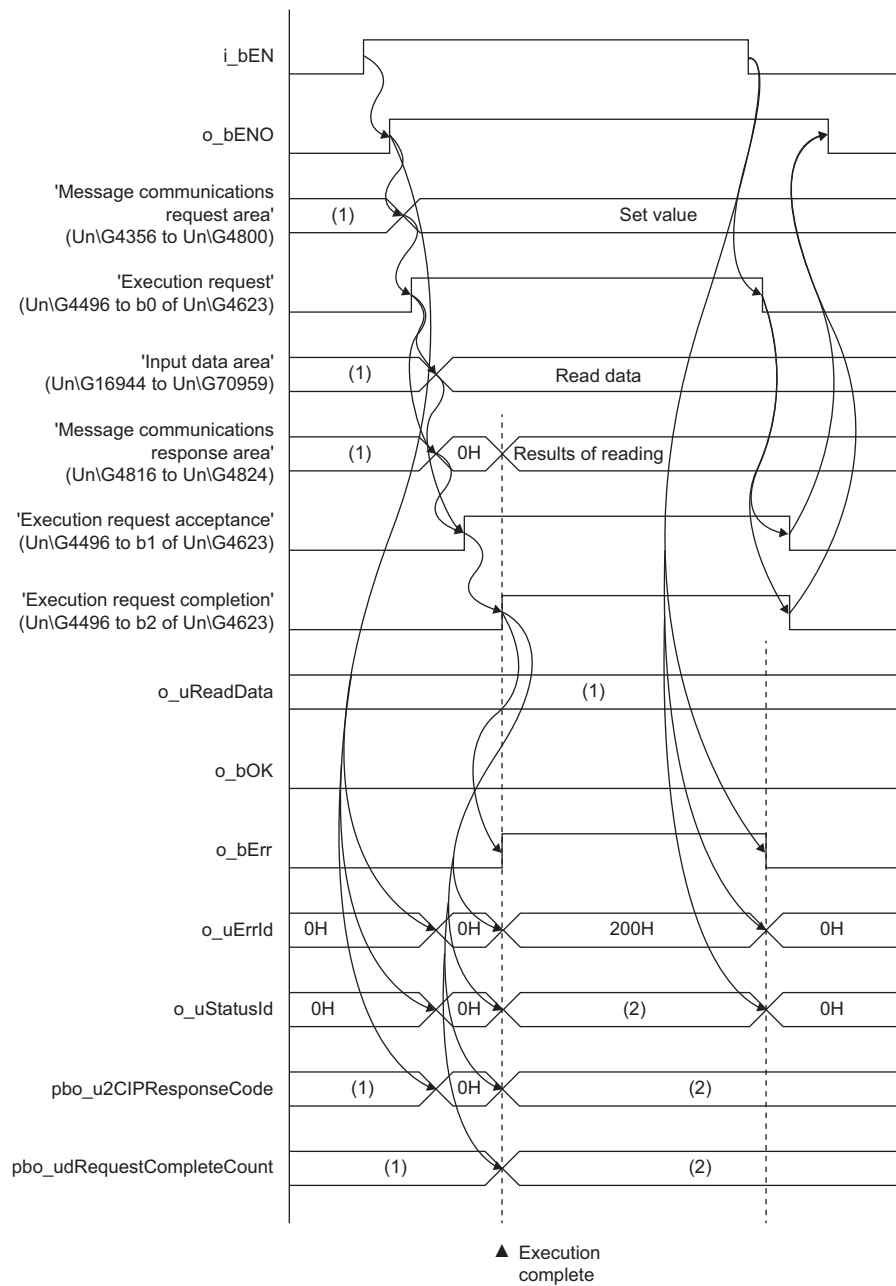
■ For normal completion when Trigger specification is set to Application Trigger



- (1) The last value is held.
- (2) Read data is stored.
- (3) Results storage area in the response area/stored value

## ■ For error completion when Trigger specification is set to Application Trigger

When a communication error occurs



(1) The last value is held.

(2) Results storage area in the response area/stored value

## Restrictions or precautions

- Refer to o\_uReadData (Read data storage device) when o\_bOK (Normal completion) is turned on.
  - Refer to o\_uErrId (Error code) and o\_uStatusId (Error code of communication error) when o\_bErr (Error completion) is turned on.
  - Do not turn off i\_bEN (Execution command) until o\_bOK (Normal completion) or o\_bErr (Error completion) is turned on. <sup>\*1</sup>
  - For the device where o\_uReadData (Read data storage device) is to be set, ensure that it has a sufficient size to prevent overlap and does not access areas out of range. If the device accesses an area out of range, an unexpected value may be set or a CPU error may occur. For details, refer to the MELSEC iQ-F FX5-EIP EtherNet/IP Module User's Manual.
  - This FB performs operations using the following buffer memory areas. Therefore, during the execution of this FB, do not execute any operation other than this FB using a buffer memory area <sup>\*2</sup> that has the same number as i\_uRequestNo (Request No.).
    - 'Message communications execution request' (Un\G4496 to Un\G4623)
    - 'Message communications request/response area' (Un\G4656 to Un\G29231)
    - 'Input data area' (Un\G16944 to Un\G70959)
    - 'Output/message communications (server) data area' (Un\G63152 to Un\G109359)
- <sup>\*1</sup> If i\_bEN (Execution command) is turned off before o\_bOK (Normal completion) or o\_bErr (Error completion) is turned on, o\_bErr (Error completion) is turned on while o\_bENO (Execution status) is turned on and during the scan where the state of o\_bENO (Execution status) is changed from off to on. Meanwhile, 113H (hexadecimal) is stored in o\_uErrId (Error code).
- <sup>\*2</sup> The 'n'th area of the buffer memory, where 'n' is the same number as i\_uRequestNo (Request No.) of this FB

## Parameter setting

Set the parameters for the EtherNet/IP communications using GX Works3.

Configure settings separately for the originator (the side that requests connection establishment) and the target (the side that receives the connection establishment request).

For the parameter setting, refer to the MELSEC iQ-F FX5-EIP EtherNet/IP Module User's Manual.

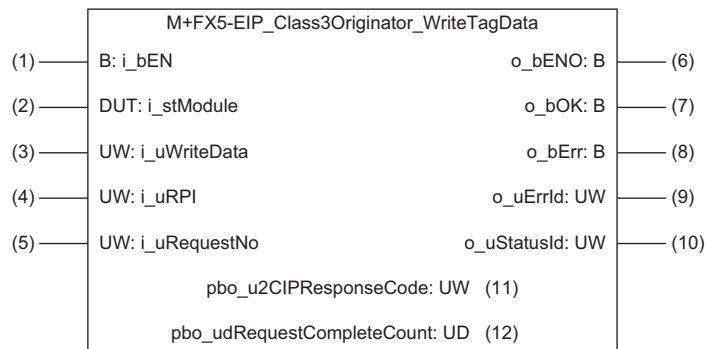
## Error code

| Error code | Description                                                          | Action                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|------------|----------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 100H       | The setting value of i_uRequestNo (Request No.) is invalid.          | After reviewing the setting, re-execute the FB.                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 101H       | The EtherNet/IP communications have stopped.                         | Set a value other than 0 for 'EtherNet/IP communications start request' (Un\G4272) and start the EtherNet/IP communications.                                                                                                                                                                                                                                                                                                                                                                 |
| 104H       | An area where Class3 communications parameters are not set was used. | <ul style="list-style-type: none"> <li>• Check the settings in "EtherNet/IP Configuration" of GX Works3 and check if the connection number for which Class3 communications parameters are set matches the number specified in i_uRequestNo (Request No.).</li> <li>• Check that the initial value in the area where Write is prohibited has not been changed using a ladder diagram or by other means within the request area of the message communications area (Request No. X).</li> </ul> |
| 105H       | An area where a service other than Read service is set was used.     | <ul style="list-style-type: none"> <li>• Check the settings for "EtherNet/IP Configuration" of GX Works3 and check that the service ID is set to [Read service].</li> <li>• Check that the initial value in the area where Write is prohibited has not been changed using a ladder diagram or by other means within the request area of the message communications area (Request No. X).</li> </ul>                                                                                          |
| 108H       | EtherNet/IP communication has been suspended.                        | Set a value other than 0 for EtherNet/IP communications start request (Un\G4256) and re-execute the FB.                                                                                                                                                                                                                                                                                                                                                                                      |
| 113H       | i_bEN (Execution command) was turned off during the processing.      | Maintain the on state of i_bEN (Execution command) until o_bOK (Normal completion) or o_bErr (Error completion) is turned on.                                                                                                                                                                                                                                                                                                                                                                |
| 114H       | The previous request is being executed.                              | Ensure that 'Message communications execution request' (Un\G4496 to Un\G4623) of the relevant connection is turned off, then execute again.                                                                                                                                                                                                                                                                                                                                                  |
| 200H       | A communication error has occurred.                                  | <p>Check the value stored in o_uStatusId (Error code of communication error) by referring to the following.</p> <p>(When o_uStatusId (Error code of communication error) is set to 01FFH, the CIP response code is stored in pbo_u2CIPResponseCode (CIP response code).)</p> <p>MELSEC iQ-F FX5-EIP EtherNet/IP Module User's Manual</p>                                                                                                                                                     |

## 5.7 M+FX5-EIP\_Class3Originator\_WriteTagData (Class3 tag communications data setting)

### Overview

Sets data to the tag of the specified target device through the Class3 tag communications.



### Labels

#### Input label

| No. | Variable name | Name                      | Data type                            | Import                        | Range             | Description                                                                                                                                                                                                                              |
|-----|---------------|---------------------------|--------------------------------------|-------------------------------|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1) | i_bEN         | Execution command         | Bit                                  | Always                        | On, off           | On: The FB is activated.<br>Off: The FB is not activated.                                                                                                                                                                                |
| (2) | i_stModule    | Module label              | Structure                            | Only when the FB is activated | —                 | Specifies the module label of the FX5-EIP.                                                                                                                                                                                               |
| (3) | i_uWriteData  | Write data storage device | Word [unsigned]/bit string [16 bits] | Always                        | —                 | Data is written from the first area of the specified device to a tag of the target device. The type size of the written data is calculated as follows: Set size × Type size for the tag data type.*1                                     |
| (4) | i_uRPI        | RPI                       | Word [unsigned]/bit string [16 bits] | Always                        | 0, 200 to 60000*2 | Specify the send cycle. (Unit: millisecond)<br>Specify 0 when not changing from the value set in "EtherNet/IP Configuration" of GX Works3.                                                                                               |
| (5) | i_uRequestNo  | Request No.               | Word [unsigned]/bit string [16 bits] | Only when the FB is activated | 1 to 128          | Specify the connection number to acquire input data.*3<br><ul style="list-style-type: none"> <li>When the maximum number of the connection is 64: 1 to 64</li> <li>When the maximum number of the connection is 128: 1 to 128</li> </ul> |

\*1 For the send size and the tag name of the specification destination, set Class3 communications parameters in "EtherNet/IP Configuration" of GX Works3.

The type size is to be 1 word when the tag data type is set to INT, and 2 words when DINT.

\*2 The operation is performed using the last value if a value out of range is set.

\*3 Specify the same value as the connection number of the Class3 communications parameter set in "EtherNet/IP Configuration" of GX Works3.



## Output labels

| No.  | Variable name | Name                              | Data type                            | Default value | Description                                                                                                     |
|------|---------------|-----------------------------------|--------------------------------------|---------------|-----------------------------------------------------------------------------------------------------------------|
| (6)  | o_bENO        | Execution status                  | Bit                                  | Off           | On: The execution command is on.<br>Off: The execution command is off.                                          |
| (7)  | o_bOK         | Normal completion                 | Bit                                  | Off           | The on state indicates that the FB has been completed successfully.                                             |
| (8)  | o_bErr        | Error completion                  | Bit                                  | Off           | When this label is on, it indicates that an error has occurred in the FB.                                       |
| (9)  | o_uErrId      | Error code                        | Word [Unsigned]/Bit String [16-bit]  | 0             | Stores the error code that occurred in the FB.                                                                  |
| (10) | o_uStatusId   | Error code of communication error | Word [unsigned]/bit string [16 bits] | 0             | An error code is stored when a communication error has occurred (when 200H is stored in o_uErrId (error code)). |

## Public variable

| No.  | Variable name               | Name                           | Data type                                   | Default value | Description                                                                                                                                                                                                                              |
|------|-----------------------------|--------------------------------|---------------------------------------------|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (11) | pbo_u2CIPResponseCode       | CIP response code              | Word [unsigned]/bit string [16 bits] (0..1) | 0             | The CIP response code is stored when a communication error has occurred (when 200H is stored in o_uErrId (error code)). For details on the CIP response code, refer to the manual for the target device that sends the response command. |
| (12) | pbo_udRequestComplete Count | Number of completed executions | Double word [unsigned]/bit string [32 bits] | 0             | The number of completed executions for Class3 tag communications is stored.                                                                                                                                                              |

## FB details

### Available device

#### ■Module for EtherNet/IP

| Target module | Firmware version | Engineering tool                       |
|---------------|------------------|----------------------------------------|
| FX5-EIP       | —                | GX Works3 with version 1.120A or later |

#### ■CPU module

| Target module              | Firmware version | Engineering tool                       |
|----------------------------|------------------|----------------------------------------|
| MX Controller (MX-F Model) | 106 or later     | GX Works3 with version 1.120A or later |
| FX5UJ                      | 1.100 or later   | GX Works3 with version 1.120A or later |
| FX5U, FX5UC                | 1.340 or later   | GX Works3 with version 1.120A or later |

### Basic specifications

| Item                           | Description                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Language                       | Ladder diagram                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Number of steps                | 1125 steps<br>The number of steps of the FB embedded in the program varies depending on the CPU module used, the input/output definitions, and the option setting of GX Works3. For the option setting of GX Works3, refer to the  GX Works3 Operating Manual.                                                                                               |
| Label usage                    | <ul style="list-style-type: none"><li>• Label: 24 points (Word)</li><li>• Latch label: 0 points (Word)</li></ul> The amount of labels used in the program varies depending on the CPU module used, the device specified in an argument, and the option setting of GX Works3. For the option setting of GX Works3, refer to the  GX Works3 Operating Manual. |
| Number of index register usage | <ul style="list-style-type: none"><li>• Index register: 0 points</li><li>• Long index register: 0 points</li></ul>                                                                                                                                                                                                                                                                                                                              |
| File register usage            | 0 points                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| FB dependence                  | No dependence                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| FB compilation method          | Macro type                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| FB operation                   | Always executed                                                                                                                                                                                                                                                                                                                                                                                                                                 |

### Processing

To perform Class3 tag communications, set Class3 communications parameters for the module using "EtherNet/IP Configuration" of GX Works3.

#### ■When Trigger specification is set to Cyclic

- When i\_bEN (Execution command) is turned on, data is periodically set for the tag of the specified target device through the Class3 tag communications.
- While i\_bEN (Execution command) is turned on, the requested data is continuously updated to the value stored in i\_uWriteData (Read data storage device).

#### ■When Trigger specification is set to Application Trigger

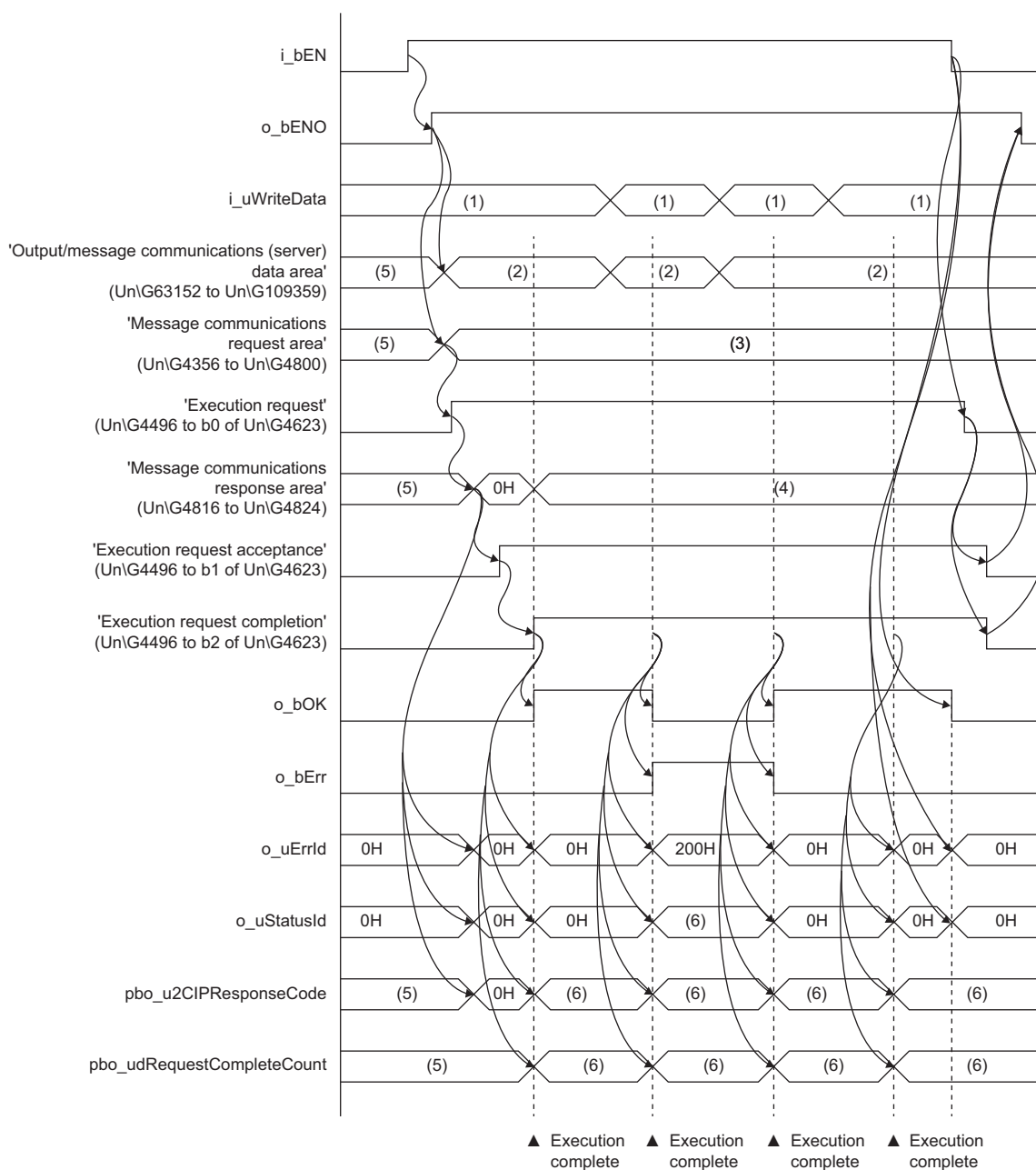
- When i\_bEN (Execution command) is turned on, data is set for the tag of the specified target device through the Class3 tag communications.

## Timing chart of I/O signals

### ■ For normal completion when Trigger specification is set to Cyclic

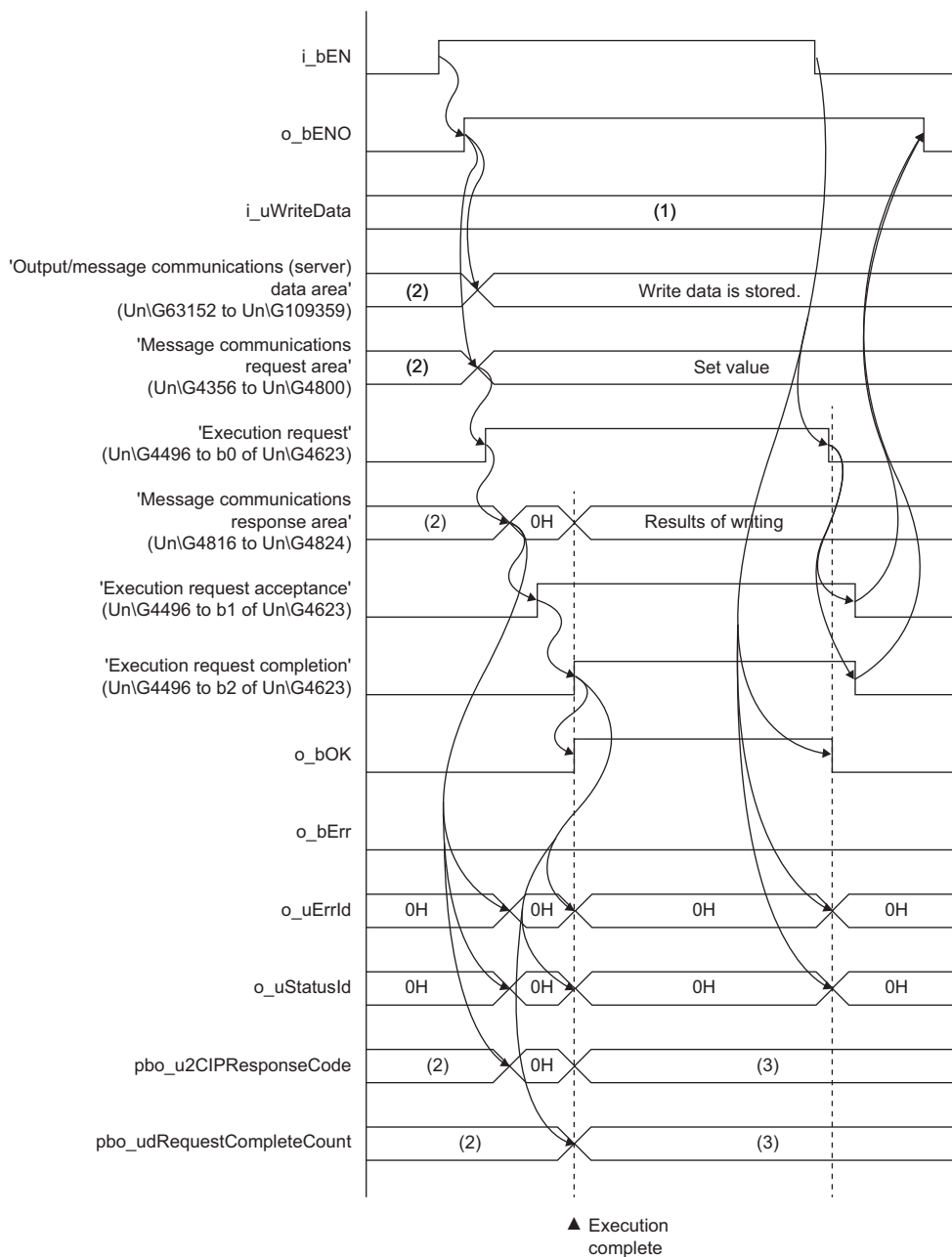
When the operation is recovered after an error occurs for a certain time during communication

5



- (1) Write data start address
- (2) Write data is stored.
- (3) Set value
- (4) Results of writing
- (5) The last value is held.
- (6) Results storage area in the response area/stored value

■ For normal completion when Trigger specification is set to Application Trigger

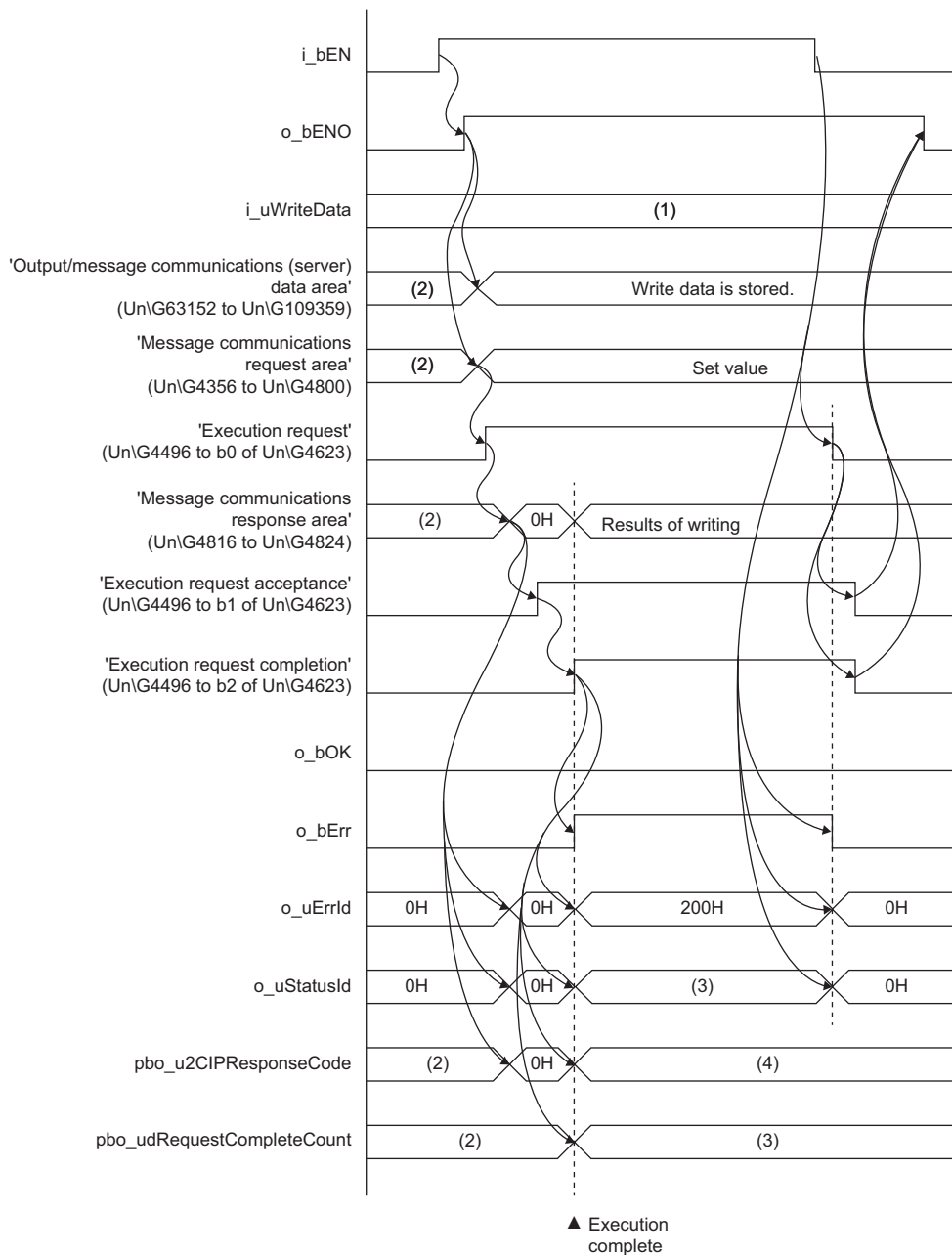


- (1) Write data
- (2) The last value is held.
- (3) Results storage area in the response area/stored value

## ■ For error completion when Trigger specification is set to Application Trigger

When a communication error occurs

5



- (1) Write data
- (2) The last value is held.
- (3) Results storage area in the response area/stored value
- (4) CIP response code

## Restrictions or precautions

- Refer to o\_uReadData (Read data storage device) when o\_bOK (Normal completion) is turned on.
- Refer to o\_uErrId (Error code) and o\_uStatusId (Error code of communication error) when o\_bErr (Error completion) is turned on.
- Do not turn off i\_bEN (Execution command) until o\_bOK (Normal completion) or o\_bErr (Error completion) is turned on. <sup>\*1</sup>
- 3) For the device where i\_uWriteData (Read data storage device) is to be set, ensure that it has a sufficient size to prevent overlap and does not access areas out of range. If the device accesses an area out of range, an unexpected value may be set or a CPU error may occur. For details, refer to the MELSEC iQ-F FX5-EIP EtherNet/IP Module User's Manual.
- This FB performs operations using the following buffer memory areas. Therefore, during the execution of this FB, do not execute any operation other than this FB using a buffer memory area <sup>\*2</sup> that has the same number as i\_uRequestNo (Request No.).
  - 'Message communications execution request' (Un\G4496 to Un\G4623)
  - 'Message communications request/response area' (Un\G4656 to Un\G29231)
  - 'Input data area' (Un\G16944 to Un\G70959)
  - 'Output/message communications (server) data area' (Un\G63152 to Un\G109359)

<sup>\*1</sup> If i\_bEN (Execution command) is turned off before o\_bOK (Normal completion) or o\_bErr (Error completion) is turned on, o\_bErr (Error completion) is turned on while o\_bENO (Execution status) is turned on and during the scan where the state of o\_bENO (Execution status) is changed from off to on. Meanwhile, 113H (hexadecimal) is stored in o\_uErrId (Error code).

<sup>\*2</sup> The 'n'th area of the buffer memory, where 'n' is the same number as i\_uRequestNo (Request No.) of this FB

## Parameter setting

Set the parameters for the EtherNet/IP communications using GX Works3.

Configure settings separately for the originator (the side that requests connection establishment) and the target (the side that receives the connection establishment request).

For the parameter setting, refer to the MELSEC iQ-F FX5-EIP EtherNet/IP Module User's Manual.

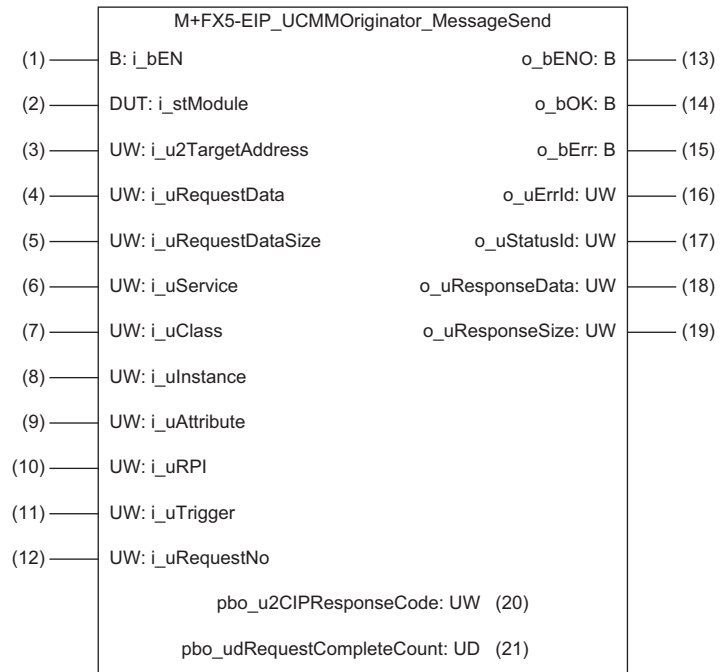
## Error code

| Error code | Description                                                          | Action                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|------------|----------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 100H       | The setting value of i_uRequestNo (Request No.) is invalid.          | After reviewing the setting, re-execute the FB.                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 101H       | The EtherNet/IP communications have stopped.                         | Set a value other than 0 for 'EtherNet/IP communications start request' (Un\G272) and start the EtherNet/IP communications.                                                                                                                                                                                                                                                                                                                                                                  |
| 104H       | An area where Class3 communications parameters are not set was used. | <ul style="list-style-type: none"> <li>• Check the settings in "EtherNet/IP Configuration" of GX Works3 and check if the connection number for which Class3 communications parameters are set matches the number specified in i_uRequestNo (Request No.).</li> <li>• Check that the initial value in the area where Write is prohibited has not been changed using a ladder diagram or by other means within the request area of the message communications area (Request No. X).</li> </ul> |
| 106H       | An area where a service other than Write service is set was used.    | <ul style="list-style-type: none"> <li>• Check the settings for "EtherNet/IP Configuration" of GX Works3 and check that the service ID is set to [Write service].</li> <li>• Check if the initial value for the area of Request No. has been changed using a ladder diagram or by other means.</li> </ul>                                                                                                                                                                                    |
| 108H       | EtherNet/IP communication has been suspended.                        | Set a value other than 0 for EtherNet/IP communications start request (Un\G4256) and re-execute the FB.                                                                                                                                                                                                                                                                                                                                                                                      |
| 113H       | i_bEN (Execution command) was turned off during the processing.      | Maintain the on state of i_bEN (Execution command) until o_bOK (Normal completion) or o_bErr (Error completion) is turned on.                                                                                                                                                                                                                                                                                                                                                                |
| 114H       | The previous request is being executed.                              | Ensure that 'Message communications execution request' (Un\G4496 to Un\G4623) of the relevant connection is turned off, then execute again.                                                                                                                                                                                                                                                                                                                                                  |
| 200H       | A communication error has occurred in the target connection.         | <p>Check the value stored in o_uStatusId (Error code of communication error) by referring to the following.</p> <p>(When o_uStatusId (Error code of communication error) is set to 01FFH, the CIP response code is stored in pbo_u2CIPResponseCode (CIP response code).)</p> <p>MELSEC iQ-F FX5-EIP EtherNet/IP Module User's Manual</p>                                                                                                                                                     |

## 5.8 M+FX5-EIP\_UCMMOriginator\_MessageSend (Sending of UCMM communications message)

### Overview

Sends a message to the specified target device through the UCMM instance communications.



### Labels

#### Input label

| No. | Variable name      | Name                        | Data type                                   | Import                        | Range                  | Description                                                                                                                                                                                                                                                                                                                                                     |
|-----|--------------------|-----------------------------|---------------------------------------------|-------------------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1) | i_bEN              | Execution command           | Bit                                         | Always                        | On, off                | On: The FB is activated.<br>Off: The FB is not activated.                                                                                                                                                                                                                                                                                                       |
| (2) | i_stModule         | Module label                | Structure                                   | Only when the FB is activated | —                      | Specifies the module label of the FX5-EIP.                                                                                                                                                                                                                                                                                                                      |
| (3) | i_u2TargetAddress  | IP address                  | Word [unsigned]/bit string [16 bits] (0..1) | Only when the FB is activated | —                      | Specify the IP address of the target device.                                                                                                                                                                                                                                                                                                                    |
| (4) | i_uRequestData     | Request data storage device | Word [unsigned]/bit string [16 bits]        | Always                        | —                      | As the request data to be used for the service, data (request data size ÷ 2 (value is rounded up)) is sent to the target device specified with the IP address from the start of the device specified here.<br>However, when the request data size is an odd number, only the lower 8 bits are sent as the final area.                                           |
| (5) | i_uRequestDataSize | Request data size           | Word [unsigned]/bit string [16 bits]        | Only when the FB is activated | 0 to 496 <sup>*1</sup> | Specify the request data size. (Unit: byte)<br>Specify 0 when request data does not exist.<br>The settable maximum value decreases according to the parameters set for the FB.<br>• When Class is set to 0100H to FFFFH,<br>• When Instance is set to 0100H to FFFFH, and<br>• When Attribute is set to 0100H to FFFFH, the value decreases by 2. <sup>*2</sup> |

| No.  | Variable name | Name                  | Data type                            | Import                        | Range          | Description                                                                                                                                                                                                                                          |
|------|---------------|-----------------------|--------------------------------------|-------------------------------|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (6)  | i_uService    | Service               | Word [unsigned]/bit string [16 bits] | Only when the FB is activated | 0 to 255       | Set the service code to be used.<br>Only the values in the lower 8 bits are valid in this area.<br>The values set for the upper 8 bits are ignored.                                                                                                  |
| (7)  | i_uClass      | Class                 | Word [unsigned]/bit string [16 bits] | Only when the FB is activated | —              | Specify the class ID to be the target.                                                                                                                                                                                                               |
| (8)  | i_uInstance   | Instance              | Word [unsigned]/bit string [16 bits] | Only when the FB is activated | —              | Specify the instance ID to be the target.                                                                                                                                                                                                            |
| (9)  | i_uAttribute  | Attribute             | Word [unsigned]/bit string [16 bits] | Only when the FB is activated | —              | Specify the attribute ID to be the target.                                                                                                                                                                                                           |
| (10) | i_uRPI        | RPI                   | Word [unsigned]/bit string [16 bits] | Always                        | 200 to 60000   | <div> <div>■</div>When Trigger specification is set to Cyclic<br/>Specify the send cycle. (Unit: millisecond) <div>■</div>When Trigger specification is set to Application Trigger<br/>Settings are not required. (Any settings are ignored.) </div> |
| (11) | i_uTrigger    | Trigger specification | Word [unsigned]/bit string [16 bits] | Only when the FB is activated | 0000H<br>0010H | Specify the send trigger.<br><ul style="list-style-type: none"> <li>• 0000H: Application Trigger</li> <li>• 0010H: Cyclic</li> </ul>                                                                                                                 |
| (12) | i_uRequestNo  | Request No.           | Word [unsigned]/bit string [16 bits] | Only when the FB is activated | 1 to 128       | Specify the connection number to acquire input data.*3<br><ul style="list-style-type: none"> <li>• When the maximum number of the connection is 64: 1 to 64</li> <li>• When the maximum number of the connection is 128: 1 to 128</li> </ul>         |

\*1 When 0 is set, i\_uRequestData (Request data storage device) is not required to be set.

\*2 For details on the settable range of this parameter, refer to the following.

📖 MELSEC iQ-F FX5-EIP EtherNet/IP Module User's Manual

\*3 Do not specify a request No. that is the same as the connection number in Class3 communications parameters set in "EtherNet/IP Configuration" of GX Works3. Specify a request No. that is not set in Class3 communications parameters.

## Output labels

| No.  | Variable name   | Name                              | Data type                            | Default value | Description                                                                                                                                                                                                                                                                        |
|------|-----------------|-----------------------------------|--------------------------------------|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (13) | o_bENO          | Execution status                  | Bit                                  | Off           | On: The execution command is on.<br>Off: The execution command is off.                                                                                                                                                                                                             |
| (14) | o_bOK           | Normal completion                 | Bit                                  | Off           | The on state indicates that the FB has been completed successfully.                                                                                                                                                                                                                |
| (15) | o_bErr          | Error completion                  | Bit                                  | Off           | When this label is on, it indicates that an error has occurred in the FB.                                                                                                                                                                                                          |
| (16) | o_uErrId        | Error code                        | Word [Unsigned]/Bit String [16-bit]  | 0             | Stores the error code that occurred in the FB.                                                                                                                                                                                                                                     |
| (17) | o_uStatusId     | Error code of communication error | Word [unsigned]/bit string [16 bits] | 0             | An error code is stored when a communication error has occurred (when 200H is stored in o_uErrId (error code)).                                                                                                                                                                    |
| (18) | o_uResponseData | Response data storage device      | Word [unsigned]/bit string [16 bits] | 0             | Data (response data size ÷ 2 (value is rounded up)) is stored from the start of the device specified with the response data for the requested service.<br>However, when the response data size is an odd number, the data stored in the final area includes only the lower 8 bits. |
| (19) | o_uResponseSize | Response data size                | Word [unsigned]/bit string [16 bits] | 0             | The size of the received response data is stored. (Unit: byte)                                                                                                                                                                                                                     |



## Public variable

| No.  | Variable name               | Name                           | Data type                                   | Default value | Description                                                                                                                                                                                                                                 |
|------|-----------------------------|--------------------------------|---------------------------------------------|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (20) | pbo_u2CIPResponseCode       | CIP response code              | Word [unsigned]/bit string [16 bits] (0..1) | 0             | The CIP response code is stored when a communication error has occurred (when 200H is stored in o_uErrId (error code)).<br>For details on the CIP response code, refer to the manual for the target device that sends the response command. |
| (21) | pbo_udRequestComplete Count | Number of completed executions | Double word [unsigned]/bit string [32 bits] | 0             | The number of times the requested execution is completed for UCMM instance communications is stored.                                                                                                                                        |

## FB details

### Available device

#### ■Module for EtherNet/IP

| Target module | Firmware version | Engineering tool                       |
|---------------|------------------|----------------------------------------|
| FX5-EIP       | —                | GX Works3 with version 1.120A or later |

#### ■CPU module

| Target module              | Firmware version | Engineering tool                       |
|----------------------------|------------------|----------------------------------------|
| MX Controller (MX-F Model) | 106 or later     | GX Works3 with version 1.120A or later |
| FX5UJ                      | 1.100 or later   | GX Works3 with version 1.120A or later |
| FX5U, FX5UC                | 1.340 or later   | GX Works3 with version 1.120A or later |

### Basic specifications

| Item                           | Description                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Language                       | Ladder diagram                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Number of steps                | 1566 steps<br>The number of steps of the FB embedded in the program varies depending on the CPU module used, the input/output definitions, and the option setting of GX Works3. For the option setting of GX Works3, refer to the  GX Works3 Operating Manual.                                                                                               |
| Label usage                    | <ul style="list-style-type: none"><li>• Label: 40 points (Word)</li><li>• Latch label: 0 points (Word)</li></ul> The amount of labels used in the program varies depending on the CPU module used, the device specified in an argument, and the option setting of GX Works3. For the option setting of GX Works3, refer to the  GX Works3 Operating Manual. |
| Number of index register usage | <ul style="list-style-type: none"><li>• Index register: 0 points</li><li>• Long index register: 0 points</li></ul>                                                                                                                                                                                                                                                                                                                              |
| File register usage            | 0 points                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| FB dependence                  | No dependence                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| FB compilation method          | Macro type                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| FB operation                   | Always executed                                                                                                                                                                                                                                                                                                                                                                                                                                 |

### Processing

#### ■When Trigger specification is set to Cyclic

- When i\_bEN (Execution command) is turned on, a message is periodically sent to the specified target device through the UCMM instance communications.
- While i\_bEN (Execution command) and o\_bOK (Normal completion) are on, the data of i\_uRequestData (Request data storage device) is sent in the message and the response data is continuously stored in o\_uResponseData (Response data storage device).

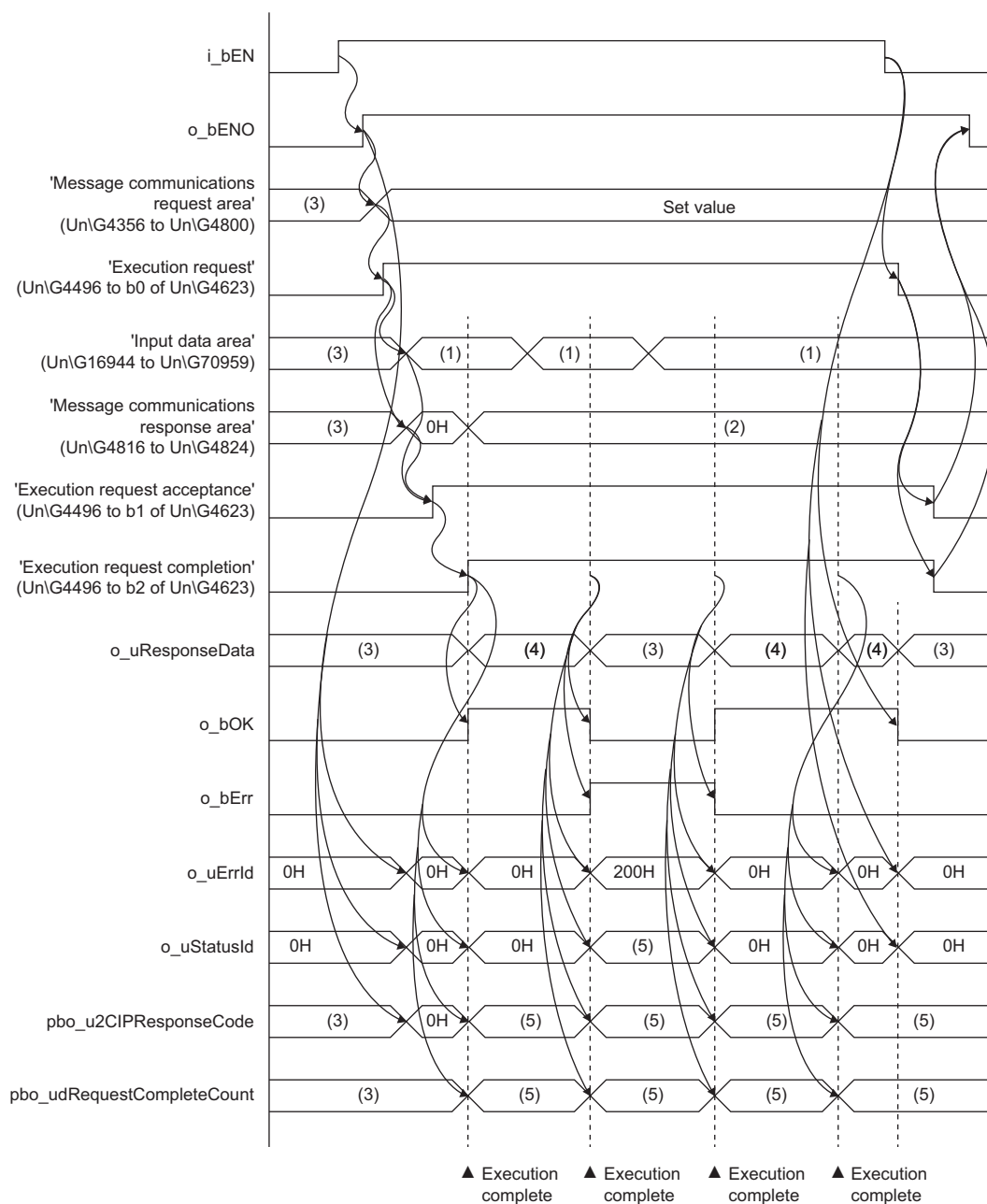
#### ■When Trigger specification is set to Application Trigger

- When i\_bEN (Execution command) is turned on, a message is sent to the specified target device through the UCMM instance communications.

## Timing chart of I/O signals

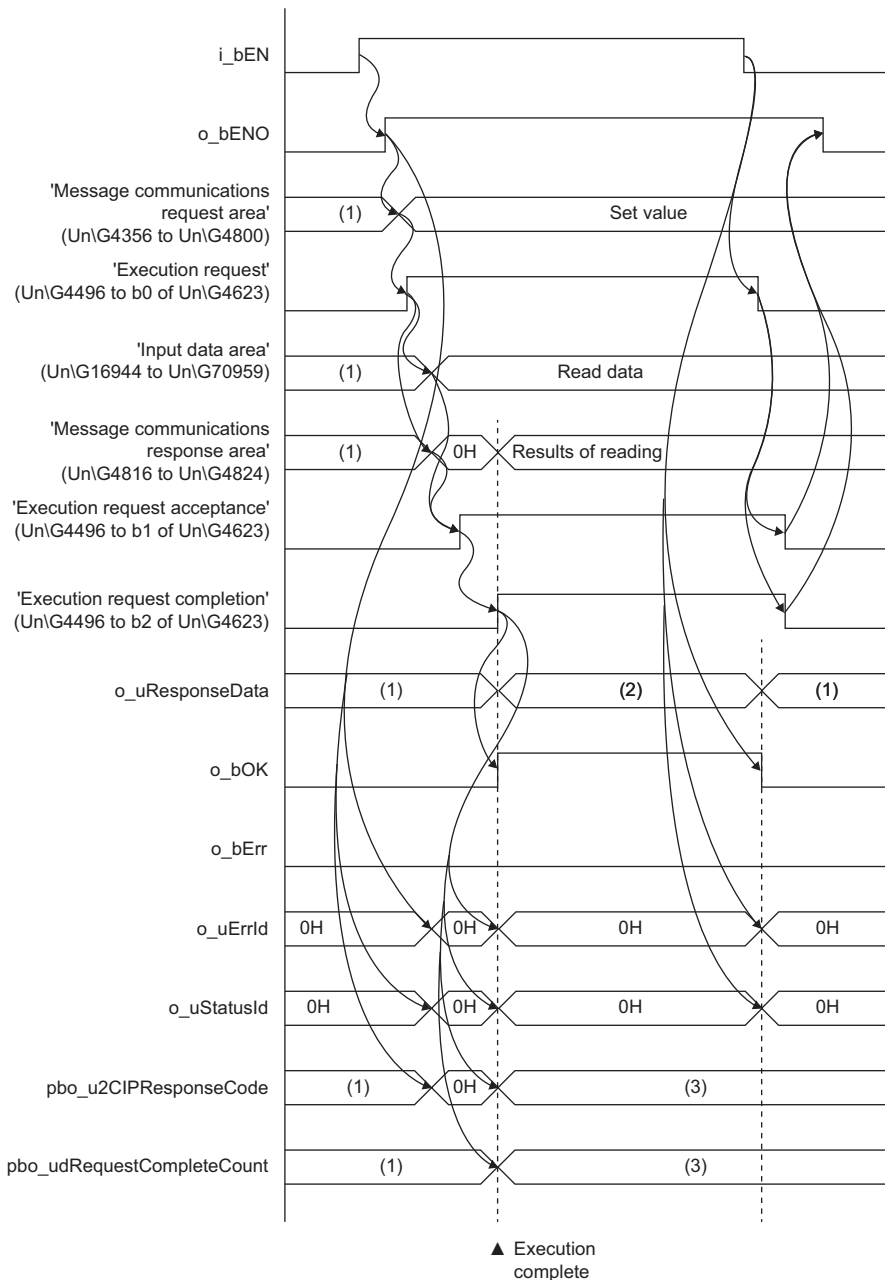
### ■ For normal completion when Trigger specification is set to Cyclic

When the operation is recovered after an error occurs for a certain time during communication



- (1) Read data
- (2) Result of reading
- (3) The last value is held.
- (4) Response data is stored.
- (5) Results storage area in the response area/stored value

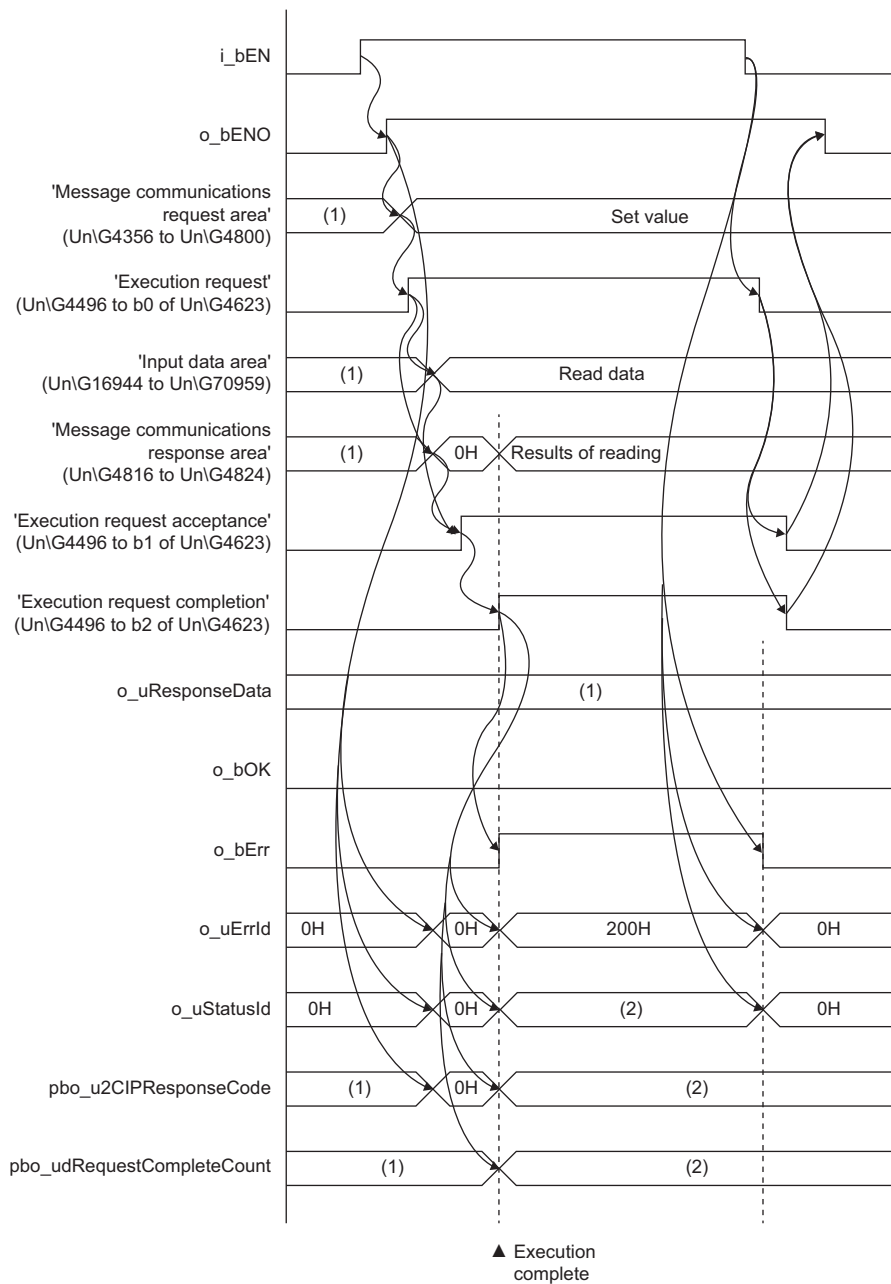
■ For normal completion when Trigger specification is set to Application Trigger



- (1) The last value is held.
- (2) Response data is stored.
- (3) Results storage area in the response area/stored value

## ■ For error completion when Trigger specification is set to Application Trigger

When a communication error occurs



(1) The last value is held.

(2) Results storage area in the response area/stored value

## Restrictions or precautions

- Refer to o\_uResponseData (Response data storage device) when o\_bOK (Normal completion) is turned on.
- Refer to o\_uErrId (Error code) and o\_uStatusId (Error code of communication error) when o\_bErr (Error completion) is turned on.
- Do not turn off i\_bEN (Execution command) until o\_bOK (Normal completion) or o\_bErr (Error completion) is turned on. <sup>\*1</sup>
- For the device where i\_uRequestData (Request data storage device) and o\_uResponseData (Response data storage device) are to be set, ensure that it has a sufficient size to prevent overlap and does not access areas out of range. If the device accesses an area out of range, an unexpected value may be set or a CPU error may occur. For the communication data size, refer to the manual for the target device. For details, refer to the MELSEC iQ-F FX5-EIP EtherNet/IP Module User's Manual.
- This FB performs operations using the following buffer memory areas. Therefore, during the execution of this FB, do not execute any operation other than this FB using a buffer memory area <sup>\*2</sup> that has the same number as i\_uRequestNo (request No.).
  - 'Message communications execution request' (Un\G4496 to Un\G4623)
  - 'Message communications request/response area' (Un\G4656 to Un\G29231)
  - 'Input data area' (Un\G16944 to Un\G70959)
  - 'Output/message communications (server) data area' (Un\G63152 to Un\G109359)

<sup>\*1</sup> If i\_bEN (Execution command) is turned off before o\_bOK (Normal completion) or o\_bErr (Error completion) is turned on, o\_bErr (Error completion) is turned on while o\_bENO (Execution status) is turned on and during the scan where the state of o\_bENO (Execution status) is changed from off to on. Meanwhile, 113H (hexadecimal) is stored in o\_uErrId (Error code).

<sup>\*2</sup> The 'n'th area of the buffer memory, where 'n' is the same number as i\_uRequestNo (Request No.) of this FB

## Parameter setting

Set the parameters for the EtherNet/IP communications using GX Works3.

Configure settings separately for the originator (the side that requests connection establishment) and the target (the side that receives the connection establishment request).

For the parameter setting, refer to the MELSEC iQ-F FX5-EIP EtherNet/IP Module User's Manual.

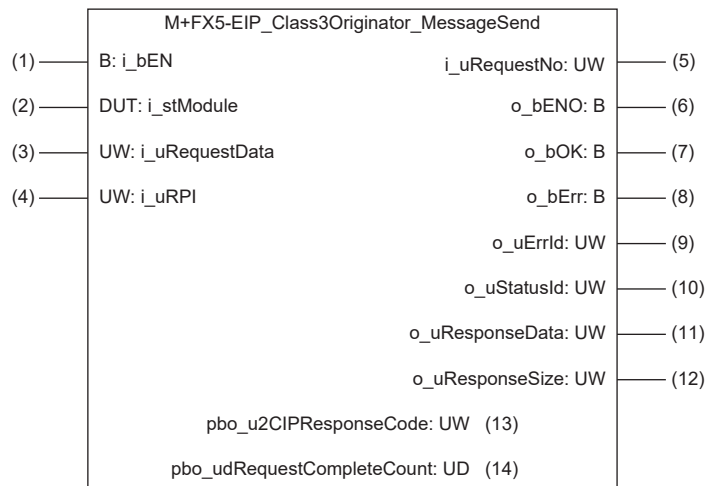
## Error code

| Error code | Description                                                     | Action                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------------|-----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 100H       | The value of i_uRequestNo (Request No.) is out of range.        | After reviewing the setting, re-execute the FB.                                                                                                                                                                                                                                                                                                                                                                                                         |
| 101H       | The EtherNet/IP communications have stopped.                    | Set a value other than 0 for 'EtherNet/IP communications start request' (Un\G252) and start the EtherNet/IP communications.                                                                                                                                                                                                                                                                                                                             |
| 103H       | UCMM used an inappropriate area.                                | <ul style="list-style-type: none"> <li>• Check if the Class1 communications and Class3 communications are used in Request No.</li> <li>• Check if the initial value for the area of Request No. has been changed using a ladder diagram or by other means.</li> </ul>                                                                                                                                                                                   |
| 108H       | EtherNet/IP communication has been suspended.                   | Set a value other than 0 for EtherNet/IP communications start request (Un\G4256) and re-execute the FB.                                                                                                                                                                                                                                                                                                                                                 |
| 113H       | i_bEN (Execution command) was turned off during the processing. | Maintain the on state of i_bEN (Execution command) until o_bOK (Normal completion) or o_bErr (Error completion) is turned on.                                                                                                                                                                                                                                                                                                                           |
| 114H       | The previous request is being executed.                         | Ensure that 'Message communications execution request' (Un\G4496 to Un\G4623) of the relevant connection is turned off, then execute again.                                                                                                                                                                                                                                                                                                             |
| 200H       | A communication error has occurred.                             | <p>Check the value stored in o_uStatusId (Error code of communication error) by referring to the following.</p> <p>(When o_uStatusId (Error code of communication error) is set to 01FFH, the CIP response code is stored in pbo_u2CIPResponseCode (CIP response code).)</p> <p>If o_uStatusId (Error code of communication error) is 0010H, check the value of the request data size.</p> <p> MELSEC iQ-F FX5-EIP EtherNet/IP Module User's Manual</p> |

## 5.9 M+FX5-EIP\_Class3Originator\_MessageSend (Sending of Class3 communications message)

### Overview

Sends a message to the specified target device through the Class3 instance communications.



### Labels

#### Input label

| No. | Variable name  | Name                        | Data type                            | Import                        | Range             | Description                                                                                                                                                                                                                                                                                                      |
|-----|----------------|-----------------------------|--------------------------------------|-------------------------------|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1) | i_bEN          | Execution command           | Bit                                  | Always                        | On, off           | On: The FB is activated.<br>Off: The FB is not activated.                                                                                                                                                                                                                                                        |
| (2) | i_stModule     | Module label                | Structure                            | Only when the FB is activated | —                 | Specifies the module label of the FX5-EIP.                                                                                                                                                                                                                                                                       |
| (3) | i_uRequestData | Request data storage device | Word [unsigned]/bit string [16 bits] | Always                        | —                 | As the request data to be used for the service, data (request data size ÷ 2 (value is rounded up)) is sent to the specified target device from the start of the device specified here. However, when the request data size is an odd number, the data sent from the final area includes only the lower 8 bits.*1 |
| (4) | i_uRPI         | RPI                         | Word [unsigned]/bit string [16 bits] | Always                        | 0, 200 to 60000*2 | Specify the send cycle. (Unit: millisecond)<br>Specify 0 when not changing from the value set in "EtherNet/IP Configuration" of GX Works3.                                                                                                                                                                       |
| (5) | i_uRequestNo   | Request No.                 | Word [unsigned]/bit string [16 bits] | Only when the FB is activated | 1 to 128          | Specify the connection number to acquire input data.*3<br><ul style="list-style-type: none"> <li>When the maximum number of the connection is 64: 1 to 64</li> <li>When the maximum number of the connection is 128: 1 to 128</li> </ul>                                                                         |

\*1 For the service to use, request data size, and external device, set Class3 communications parameters in "EtherNet/IP Configuration" of GX Works3.

\*2 The operation is performed using the last value if a value out of range is set.

\*3 Specify the same value as the connection number of the Class3 communications parameter set in "EtherNet/IP Configuration" of GX Works3.

## Output labels

| No.  | Variable name   | Name                              | Data type                               | Default value | Description                                                                                                                                                                                                                                                                        |
|------|-----------------|-----------------------------------|-----------------------------------------|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (6)  | o_bENO          | Execution status                  | Bit                                     | Off           | On: The execution command is on.<br>Off: The execution command is off.                                                                                                                                                                                                             |
| (7)  | o_bOK           | Normal completion                 | Bit                                     | Off           | The on state indicates that the FB has been completed successfully.                                                                                                                                                                                                                |
| (8)  | o_bErr          | Error completion                  | Bit                                     | Off           | When this label is on, it indicates that an error has occurred in the FB.                                                                                                                                                                                                          |
| (9)  | o_uErrId        | Error code                        | Word [Unsigned]/<br>Bit String [16-bit] | 0             | Stores the error code that occurred in the FB.                                                                                                                                                                                                                                     |
| (10) | o_uStatusId     | Error code of communication error | Word [unsigned]/bit string [16 bits]    | 0             | An error code is stored when a communication error has occurred (when 200H is stored in o_uErrId (error code)).                                                                                                                                                                    |
| (11) | o_uResponseData | Response data storage device      | Word [unsigned]/bit string [16 bits]    | 0             | Data (response data size ÷ 2 (value is rounded up)) is stored from the start of the device specified with the response data for the requested service.<br>However, when the response data size is an odd number, the data stored in the final area includes only the lower 8 bits. |
| (12) | o_uResponseSize | Response data size                | Word [unsigned]/bit string [16 bits]    | 0             | The size of the received response data is stored. (Unit: byte)                                                                                                                                                                                                                     |

## Public variable

| No.  | Variable name               | Name                           | Data type                                   | Default value | Description                                                                                                                                                                                                                              |
|------|-----------------------------|--------------------------------|---------------------------------------------|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (13) | pbo_u2CIPResponseCode       | CIP response code              | Word [unsigned]/bit string [16 bits]        | 0             | The CIP response code is stored when a communication error has occurred (when 200H is stored in o_uErrId (error code)). For details on the CIP response code, refer to the manual for the target device that sends the response command. |
| (14) | pbo_udRequestComplete Count | Number of completed executions | Double word [unsigned]/bit string [32 bits] | 0             | The number of completed executions for Class3 tag communications is stored.                                                                                                                                                              |

## FB details

### Available device

#### ■Module for EtherNet/IP

| Target module | Firmware version | Engineering tool                       |
|---------------|------------------|----------------------------------------|
| FX5-EIP       | —                | GX Works3 with version 1.120A or later |

#### ■CPU module

| Target module              | Firmware version | Engineering tool                       |
|----------------------------|------------------|----------------------------------------|
| MX Controller (MX-F Model) | 106 or later     | GX Works3 with version 1.120A or later |
| FX5UJ                      | 1.100 or later   | GX Works3 with version 1.120A or later |
| FX5U, FX5UC                | 1.340 or later   | GX Works3 with version 1.120A or later |



## Basic specifications

| Item                           | Description                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Language                       | Ladder diagram                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Number of steps                | 1377 steps<br>The number of steps of the FB embedded in the program varies depending on the CPU module used, the input/output definitions, and the option setting of GX Works3. For the option setting of GX Works3, refer to the  GX Works3 Operating Manual.                                                                                                 |
| Label usage                    | <ul style="list-style-type: none"> <li>• Label: 40 points (Word)</li> <li>• Latch label: 0 points (Word)</li> </ul> The amount of labels used in the program varies depending on the CPU module used, the device specified in an argument, and the option setting of GX Works3. For the option setting of GX Works3, refer to the  GX Works3 Operating Manual. |
| Number of index register usage | <ul style="list-style-type: none"> <li>• Index register: 0 points</li> <li>• Long index register: 0 points</li> </ul>                                                                                                                                                                                                                                                                                                                             |
| File register usage            | 0 points                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| FB dependence                  | No dependence                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| FB compilation method          | Macro type                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| FB operation                   | Always executed                                                                                                                                                                                                                                                                                                                                                                                                                                   |

## Processing

To perform Class3 instance communications, set Class3 communications parameters for the module using "EtherNet/IP Configuration" of GX Works3.

### ■When Trigger specification is set to Cyclic

- When i\_bEN (Execution command) is turned on, a message is periodically sent to the specified target device through the Class3 instance communications.
- While i\_bEN (Execution command) and o\_bOK (Normal completion) are on, the data of i\_uRequestData (Request data storage device) is sent in the message and the response data is continuously stored in o\_uResponseData (Response data storage device).

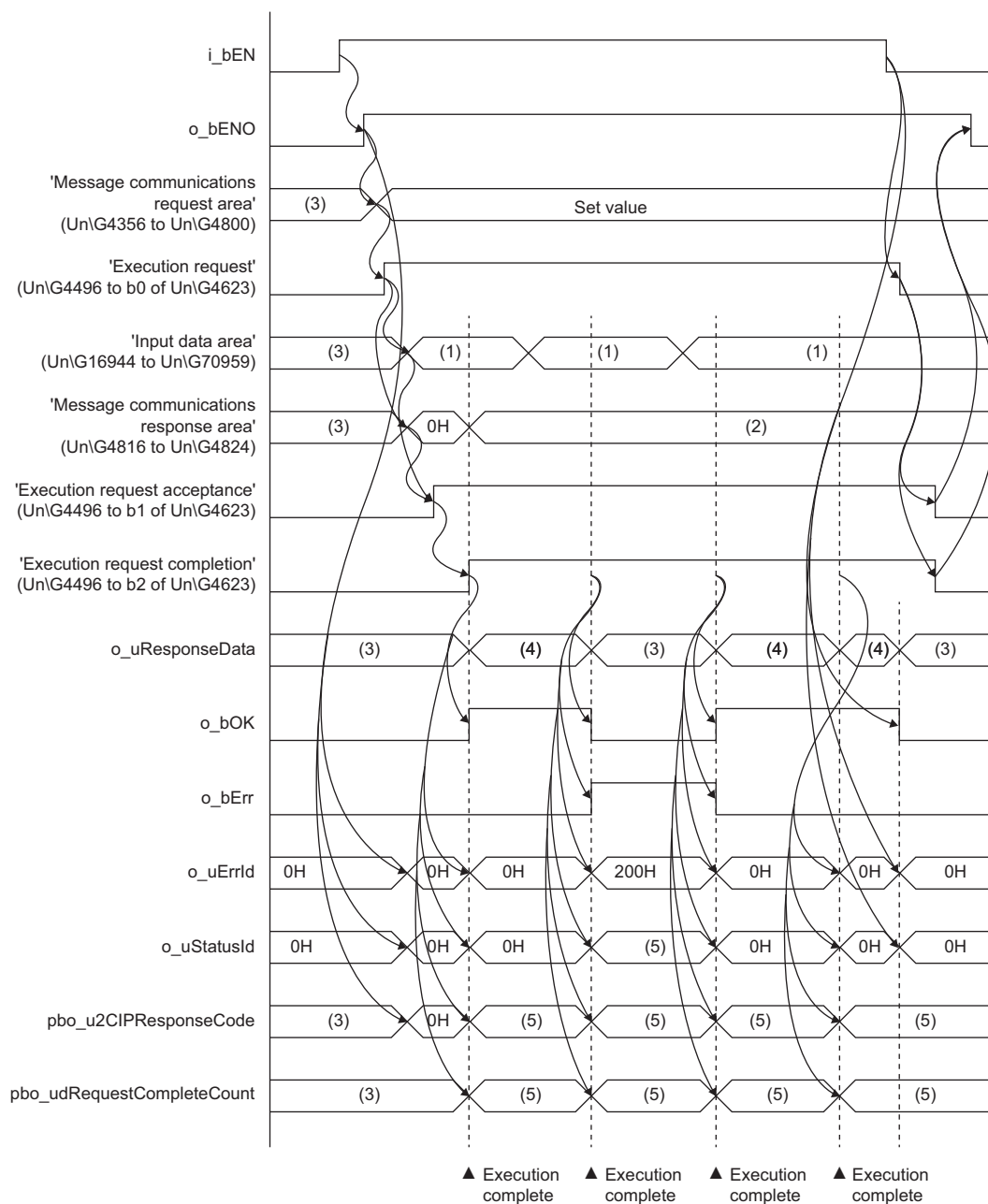
### ■When Trigger specification is set to Application Trigger

- When i\_bEN (Execution command) is turned on, a message is sent to the specified target device through the Class3 instance communications.

## Timing chart of I/O signals

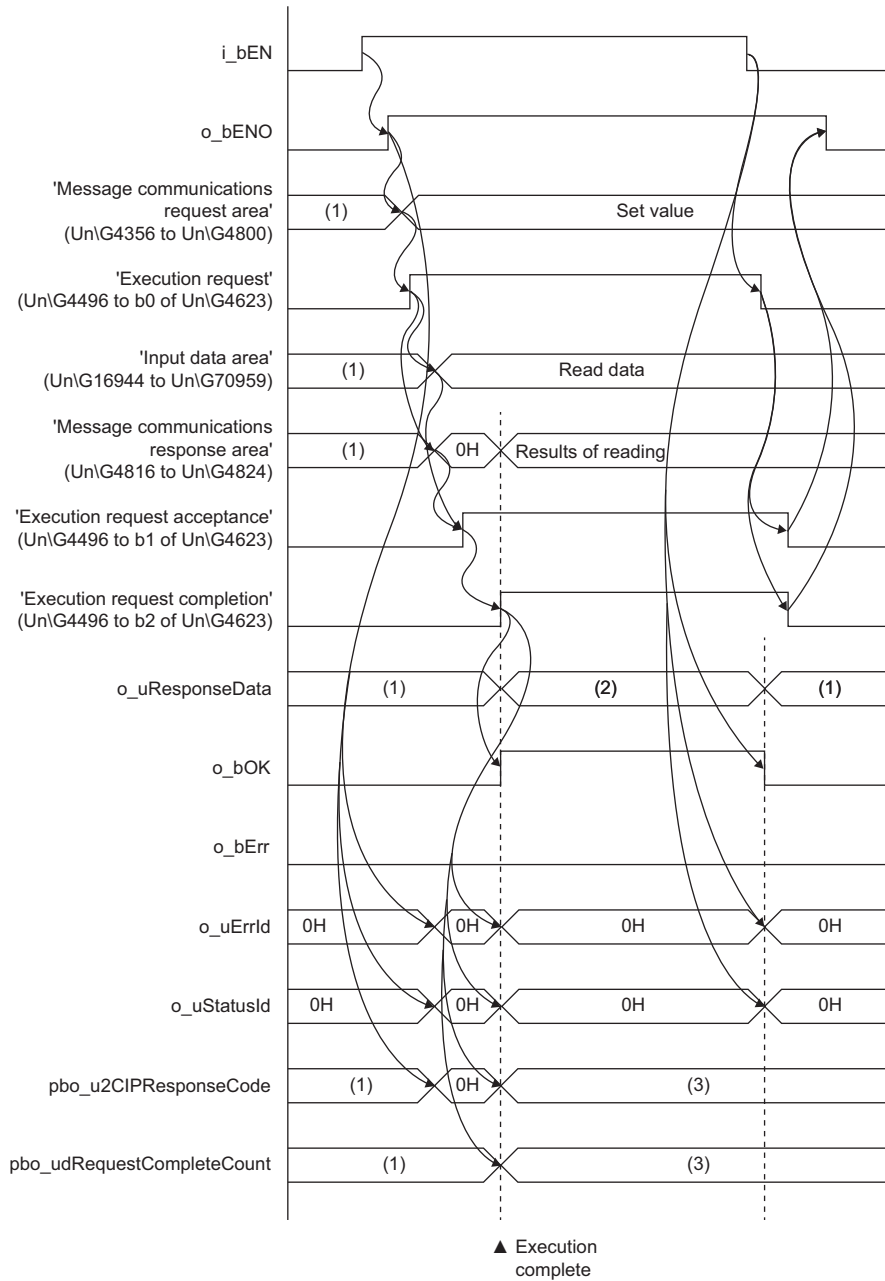
### ■ For normal completion when Trigger specification is set to Cyclic

When the operation is recovered after an error occurs for a certain time during communication



- (1) Read data
- (2) Result of reading
- (3) The last value is held.
- (4) Response data is stored.
- (5) Results storage area in the response area/stored value

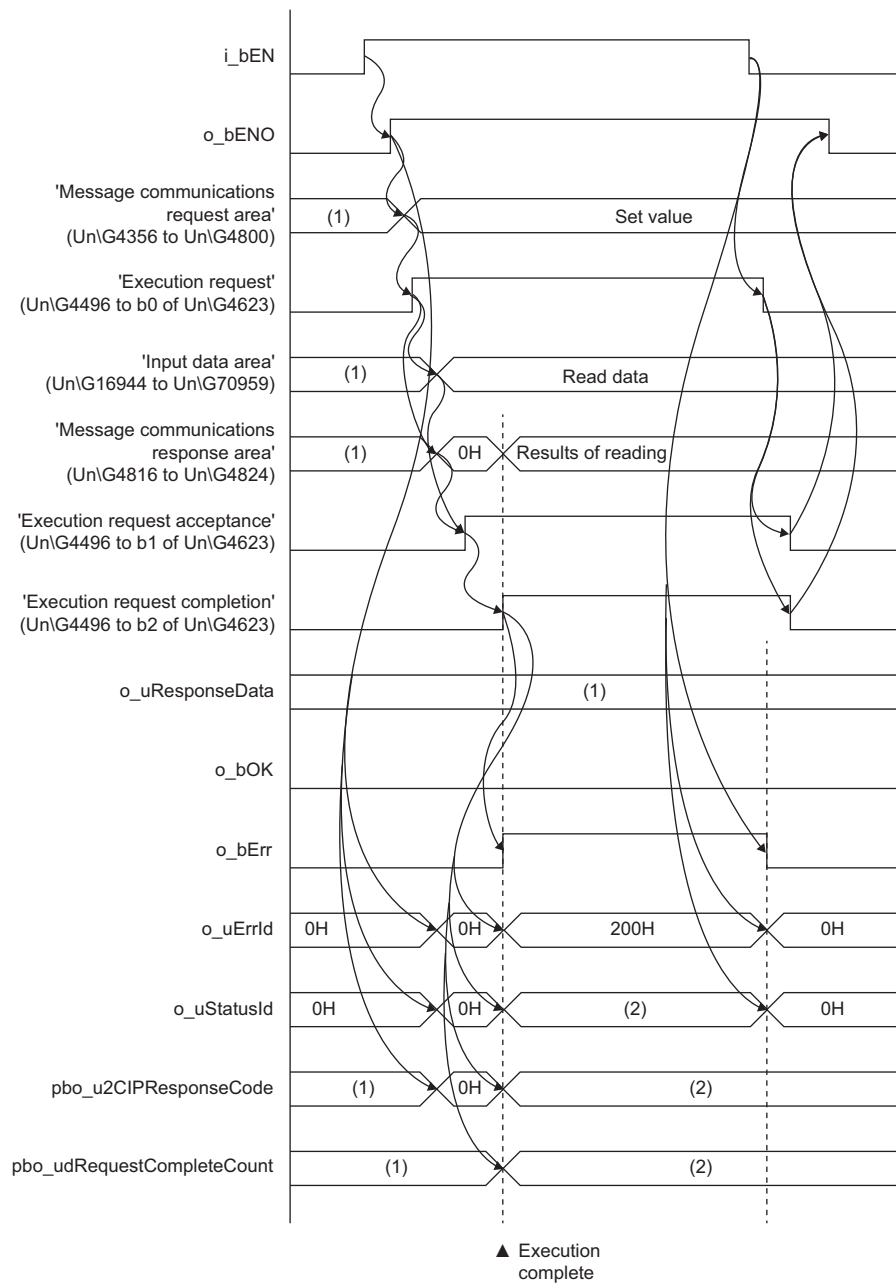
■ For normal completion when Trigger specification is set to Application Trigger



- (1) The last value is held.  
 (2) Response data is stored.  
 (3) Results storage area in the response area/stored value

## ■ For error completion when Trigger specification is set to Application Trigger

When a communication error occurs



(1) The last value is held.

(2) Results storage area in the response area/stored value

## Restrictions or precautions

- Refer to o\_uResponseData (Response data storage device) when o\_bOK (Normal completion) is turned on.
  - Refer to o\_uErrId (Error code) and o\_uStatusId (Error code of communication error) when o\_bErr (Error completion) is turned on.
  - Do not turn off i\_bEN (Execution command) until o\_bOK (Normal completion) or o\_bErr (Error completion) is turned on. \*1
  - 4) For the device where i\_uRequestData (Request data storage device) and o\_uResponseData (Response data storage device) are to be set, ensure that it has a sufficient size to prevent overlap and does not access areas out of range. If the device accesses an area out of range, an unexpected value may be set or a CPU error may occur. For the communication data size, refer to the manual for the target device. For details, refer to the MELSEC iQ-F FX5-EIP EtherNet/IP Module User's Manual.
  - This FB performs operations using the following buffer memory areas. Therefore, during the execution of this FB, do not execute any operation other than this FB using a buffer memory area \*2 that has the same number as i\_uRequestNo (request No.).
    - 'Message communications execution request' (Un\G4496 to Un\G4623)
    - 'Message communications request/response area' (Un\G4656 to Un\G29231)
    - 'Input data area' (Un\G16944 to Un\G70959)
    - 'Output/message communications (server) data area' (Un\G63152 to Un\G109359)
- \*1 o\_bErr (Error completion) is turned on while o\_bENO (Execution status) is turned on and during the scan where the state of o\_bENO (Execution status) is changed from off to on.
- \*2 The 'n'th area of the buffer memory, where 'n' is the same number as i\_uRequestNo (Request No.) of this FB

## Parameter setting

Set the parameters for the EtherNet/IP communications using GX Works3.

Configure settings separately for the originator (the side that requests connection establishment) and the target (the side that receives the connection establishment request).

For the parameter setting, refer to the MELSEC iQ-F FX5-EIP EtherNet/IP Module User's Manual.

## Error code

| Error code | Description                                                                             | Action                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|------------|-----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 100H       | The value of i_uRequestNo (Request No.) is out of range.                                | After reviewing the setting, re-execute the FB.                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 101H       | The EtherNet/IP communications have stopped.                                            | Set a value other than 0 for 'EtherNet/IP communications start request' (Un\G272) and start the EtherNet/IP communications.                                                                                                                                                                                                                                                                                                                                                                  |
| 104H       | An area where Class3 communications parameters are not set was used.                    | <ul style="list-style-type: none"> <li>• Check the settings in "EtherNet/IP Configuration" of GX Works3 and check if the connection number for which Class3 communications parameters are set matches the number specified in i_uRequestNo (Request No.).</li> <li>• Check that the initial value in the area where Write is prohibited has not been changed using a ladder diagram or by other means within the request area of the message communications area (Request No. X).</li> </ul> |
| 107H       | An area where communications other than Class3 instance communications is set was used. | <ul style="list-style-type: none"> <li>• Check the settings for "EtherNet/IP Configuration" of GX Works3 and check that instance communications are set.</li> <li>• Check that the initial value in the area where Write is prohibited has not been changed using a ladder diagram or by other means within the request area of the message communications area (Request No. X).</li> </ul>                                                                                                  |
| 108H       | EtherNet/IP communication has been suspended.                                           | Set a value other than 0 for EtherNet/IP communications start request (Un\G4256) and re-execute the FB.                                                                                                                                                                                                                                                                                                                                                                                      |
| 113H       | i_bEN (Execution command) was turned off during the processing.                         | Maintain the on state of i_bEN (Execution command) until o_bOK (Normal completion) or o_bErr (Error completion) is turned on.                                                                                                                                                                                                                                                                                                                                                                |
| 114H       | The previous request is being executed.                                                 | Ensure that 'Message communications execution request' (Un\G4496 to Un\G4623) of the relevant connection is turned off, then execute again.                                                                                                                                                                                                                                                                                                                                                  |
| 200H       | A communication error has occurred.                                                     | <p>Check the value stored in o_uStatusId (Error code of communication error) by referring to the following.</p> <p>(When o_uStatusId (Error code of communication error) is set to 01FFH, the CIP response code is stored in pbo_u2CIPResponseCode (CIP response code).)</p> <p>If o_uStatusId (Error code of communication error) is 0010H, check the value of the request data size.</p> <p> MELSEC iQ-F FX5-EIP EtherNet/IP Module User's Manual</p>                                      |

# 6 FB FOR EtherNet/IP (FX5-ENET/IP)

This chapter describes the FBs dedicated to the FX5-ENET/IP.

Up to one FX5-ENET/IP can be connected. The module cannot be used with the FX5-EIP.

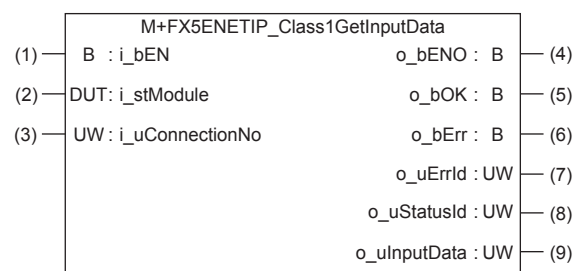
For details, refer to the following.

📖 MELSEC iQ-F FX5S/FX5UJ/FX5U/FX5UC User's Manual (Hardware)

## 6.1 M+FX5ENETIP\_Class1GetInputData (Class1 communications input data acquisition)

### Overview

This FB acquires the input data of the specified connection by Class1 communication.



### Labels

#### Input label

| No. | Variable name   | Name              | Data type                           | Range                                                    | Description                                                            |
|-----|-----------------|-------------------|-------------------------------------|----------------------------------------------------------|------------------------------------------------------------------------|
| (1) | i_bEN           | Execution command | Bit                                 | On, off                                                  | On: The FB is activated.<br>Off: The FB is not activated.              |
| (2) | i_stModule      | Module label      | Structure                           | The setting range differs depending on the module label. | Specify the module label of the FX5-ENET/IP.                           |
| (3) | i_uConnectionNo | Connection No.    | Word [Unsigned]/Bit String [16-bit] | 1 to 32                                                  | Specify the number of the connection where the input data is acquired. |

#### Output label

| No. | Variable name | Name                                         | Data type                           | Default value | Description                                                                                                                                                                                 |
|-----|---------------|----------------------------------------------|-------------------------------------|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (4) | o_bENO        | Execution status                             | Bit                                 | Off           | Outputs the execution state of the FB.<br>• On: Executed<br>• Off: Not executed                                                                                                             |
| (5) | o_bOK         | Normal completion                            | Bit                                 | Off           | When this label is on, it indicates that communication is established.                                                                                                                      |
| (6) | o_bErr        | Error completion                             | Bit                                 | Off           | When this label is on, it indicates that an error has occurred in the FB.                                                                                                                   |
| (7) | o_uErrId      | Error code                                   | Word [Unsigned]/Bit String [16-bit] | 0             | Stores the error code that occurred in the FB.                                                                                                                                              |
| (8) | o_uStatusId   | Error code of connection communication error | Word [Unsigned]/Bit String [16-bit] | 0             | When a connection communication error occurs (200 (hexadecimal) is stored in o_uErrId (Error code)), an error code is stored in o_uStatusId (Error code of connection communication error). |
| (9) | o_uInputData  | Input data storage device                    | Word [Unsigned]/Bit String [16-bit] | 0             | Specifies the head number of the device where the input data is stored.                                                                                                                     |

## FB details

### Available device

#### ■Module for EtherNet/IP

| Target module | Firmware version | Engineering tool                       |
|---------------|------------------|----------------------------------------|
| FX5-ENET/IP   | —                | GX Works3 with version 1.050C or later |

#### ■CPU module

FX5UJ/FX5U/FX5UC CPU module

### Basic specifications

| Item                           | Description                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Language                       | Ladder diagram                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Number of steps                | 814 steps<br>The number of steps of the FB embedded in the program varies depending on the CPU module used, the input/output definitions, and the option setting of GX Works3. For the option setting of GX Works3, refer to the  GX Works3 Operating Manual.                                                                                                   |
| Label usage                    | <ul style="list-style-type: none"><li>• Label: 0.02K points (Word)</li><li>• Latch label: 0K points (Word)</li></ul> The amount of labels used in the program varies depending on the CPU module used, the device specified in an argument, and the option setting of GX Works3. For the option setting of GX Works3, refer to the  GX Works3 Operating Manual. |
| Number of index register usage | <ul style="list-style-type: none"><li>• Index register: 0 points</li><li>• Long index register: 0 points</li></ul>                                                                                                                                                                                                                                                                                                                                 |
| File register usage            | 0 points                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| FB dependence                  | No dependence                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| FB compilation method          | Macro type                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| FB operation                   | Always executed                                                                                                                                                                                                                                                                                                                                                                                                                                    |

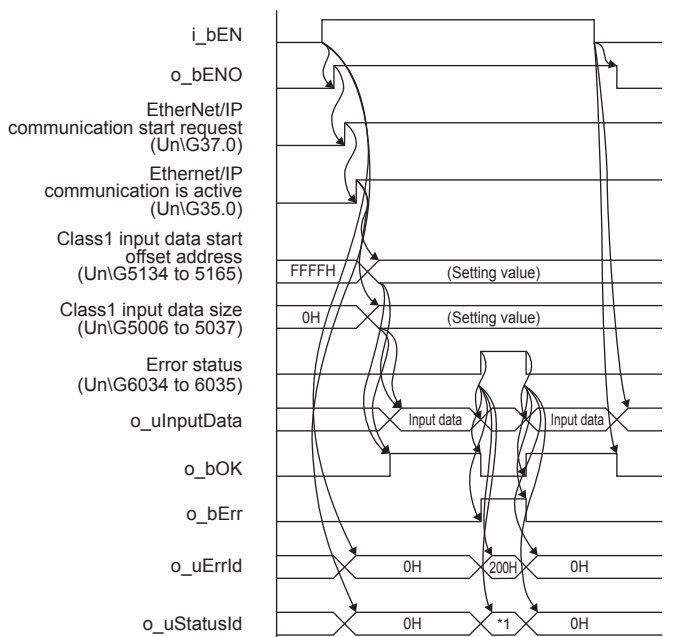
### Processing

- By turning i\_bEN (Execution command) on, the input data of the specified connection is acquired by Class1 communication.
- The input data is continuously stored in o\_ulInputData (Input data storage device) while i\_bEN (Execution command) and o\_bOK (Normal completion) are on.
- By turning i\_bEN (Execution command) on, the EtherNet/IP communication start request (Un\G37.0) turns on.
- Set the module parameters in GX Works3 in accordance with the connected equipment and system. For the module parameters, refer to  Page 279 Parameter setting.

## Timing chart of I/O signals

### ■For normal completion

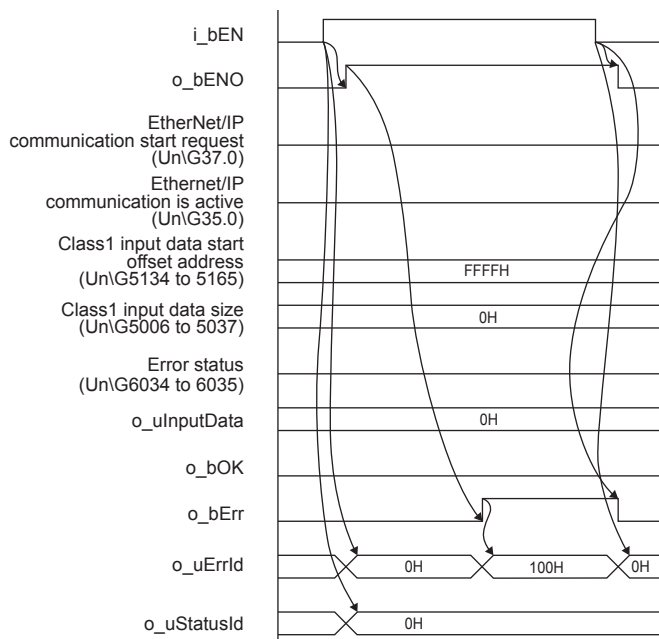
When the operation is recovered after an error occurs for a certain time during communication



\*1 Error code of connection communication error

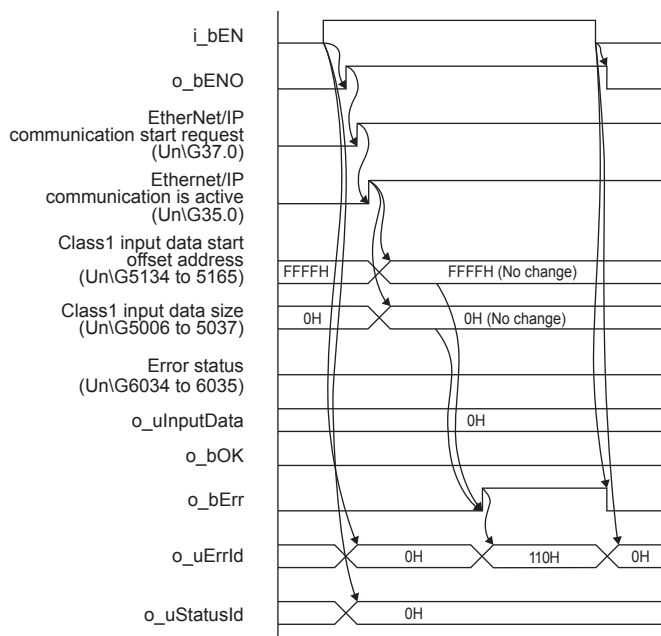
### ■For error completion

Out of setting range for i\_uConnectionNo (connection No.)





Input data is not allocated to the target connection



## Restrictions or precautions

- This FB does not include the error recovery processing. Program the error recovery processing separately in accordance with the required system operation.
- Turn off i\_bEN (Execution command) after o\_bOK (Normal completion) or o\_bErr (Error completion) is turned on. By turning i\_bEN (Execution command) off, o\_bOK (Normal completion) and o\_bErr (Error completion) turn off, and o\_uErrId (Error code) and o\_uStatusId (Error code of connection communication error) are cleared into 0.
- Even if i\_bEN (Execution command) is turned off, the EtherNet/IP communication start request (Un\G37.0) does not turn off. To stop the EtherNet/IP communication, turn off i\_bEN (Execution command) which is the FB of all FX5-ENET/IP in a program and then turn off the EtherNet/IP communication start request (Un\G37.0).
- When i\_uConnectionNo (Connection No.) is changed during i\_bEN (Execution command) is turned on, if i\_uConnection is changed to the value out of effective range, the change is not reflected on the FB operation.
- This FB cannot be used in an interrupt program.
- Do not use this FB in programs that are executed only once, such as a subroutine program or FOR-NEXT loop, because i\_bEN (Execution command) cannot be turned off and the normal operation cannot be acquired. Always use this FB in programs that can turn off i\_bEN (Execution command).
- Every input must be provided with a value for proper FB operation.

## Parameter setting

Set the target device connection configuration on Ethernet by using GX Works3.

[Navigation window] ⇒ [Parameter] ⇒ [Module Information] ⇒ [FX5-ENET/IP] ⇒ [Basic Settings] ⇒ [External Device Configuration]

In the target device connection configuration setting, set the TCP connection or UDP connection. Set the EtherNet/IP communication by using EtherNet/IP Configuration Tool for FX5-ENET/IP. For the parameter setting, refer to the MELSEC iQ-F FX5-ENET/IP Ethernet Module User's Manual.

For details on EtherNet/IP Configuration Tool for FX5-ENET/IP, refer to the MELSEC iQ-F FX5-ENET/IP Ethernet Module User's Manual.

## Performance value

| CPU module                  | Measurement conditions | Performance value |                   | Number of scans |
|-----------------------------|------------------------|-------------------|-------------------|-----------------|
|                             |                        | Processing time   | Maximum scan time |                 |
| FX5UJ                       | —                      | 37.5ms            | 1.060ms           | 33 scans        |
| FX5U, FX5UC <sup>*1*2</sup> | —                      | 32.0ms            | 0.866ms           | 31 scans        |

\*1 When the program capacity is set to 128K steps, the processing speed may be reduced.

\*2 The labels in the standard area are used.

## Error code

| Error code (hexadecimal) | Description                                                       | Action                                                                                                                                                                                                                                                |
|--------------------------|-------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 100H                     | The setting value of i_uConnectionNo (connection No.) is invalid. | After reviewing the setting, re-execute the FB.                                                                                                                                                                                                       |
| 110H                     | The input data is not allocated to the target connection.         | Try again after checking the setting of EtherNet/IP Configuration Tool for FX5-ENET/IP.                                                                                                                                                               |
| 200H                     | A connection communication error occurs on the target connection. | Confirms an error code stored in o_uStatusId (Error code of connection communication error).<br>Refer to the  MELSEC iQ-F FX5-ENET/IP Ethernet Module User's Manual. |

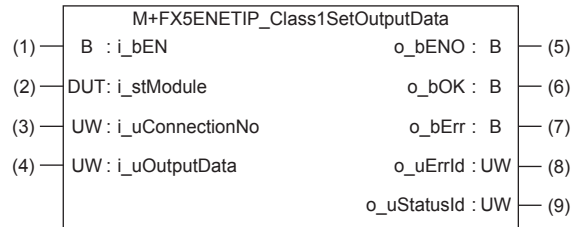
## Version upgrade history

| Version | Date         | Description                                     |
|---------|--------------|-------------------------------------------------|
| 00A     | October 2019 | First edition                                   |
| 01A     | October 2020 | Initialization processing in the FB is revised. |

## 6.2 M+FX5ENETIP\_Class1SetOutputData (Class1 communications output data setting)

### Overview

This FB updates the output data of the specified connection by Class1 communication.



### Labels

#### Input label

| No. | Variable name   | Name                       | Data type                           | Range                                                    | Description                                                             |
|-----|-----------------|----------------------------|-------------------------------------|----------------------------------------------------------|-------------------------------------------------------------------------|
| (1) | i_bEN           | Execution command          | Bit                                 | On, off                                                  | On: The FB is activated.<br>Off: The FB is not activated.               |
| (2) | i_stModule      | Module label               | Structure                           | The setting range differs depending on the module label. | Specify the module label of the FX5-ENET/IP.                            |
| (3) | i_uConnectionNo | Connection No.             | Word [Unsigned]/Bit String [16-bit] | 1 to 32                                                  | Specify the number of the connection where the output data is acquired. |
| (4) | i_uOutputData   | Output data storage device | Word [Unsigned]/Bit String [16-bit] | —                                                        | Specify the head number of the device where the output data is stored.  |

#### Output label

| No. | Variable name | Name                                         | Data type                           | Default value | Description                                                                                                                                                                                 |
|-----|---------------|----------------------------------------------|-------------------------------------|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (5) | o_bENO        | Execution status                             | Bit                                 | Off           | Outputs the execution state of the FB.<br>• On: Executed<br>• Off: Not executed                                                                                                             |
| (6) | o_bOK         | Normal completion                            | Bit                                 | Off           | When this label is on, it indicates that communication is established.                                                                                                                      |
| (7) | o_bErr        | Error completion                             | Bit                                 | Off           | When this label is on, it indicates that an error has occurred in the FB.                                                                                                                   |
| (8) | o_uErrId      | Error code                                   | Word [Unsigned]/Bit String [16-bit] | 0             | Stores the error code that occurred in the FB.                                                                                                                                              |
| (9) | o_uStatusId   | Error code of connection communication error | Word [Unsigned]/Bit String [16-bit] | 0             | When a connection communication error occurs (200 (hexadecimal) is stored in o_uErrId (Error code)), an error code is stored in o_uStatusId (Error code of connection communication error). |

## FB details

### Available device

#### ■Module for EtherNet/IP

| Target module | Firmware version | Engineering tool                       |
|---------------|------------------|----------------------------------------|
| FX5-ENET/IP   | —                | GX Works3 with version 1.050C or later |

#### ■CPU module

FX5UJ/FX5U/FX5UC CPU module

### Basic specifications

| Item                           | Description                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Language                       | Ladder diagram                                                                                                                                                                                                                                                                                                                                                 |
| Number of steps                | 814 steps<br>The number of steps of the FB embedded in the program varies depending on the CPU module used, the input/output definitions, and the option setting of GX Works3. For the option setting of GX Works3, refer to the  GX Works3 Operating Manual.                                                                                                  |
| Label usage                    | <ul style="list-style-type: none"> <li>Label: 0.02K points (Word)</li> <li>Latch label: 0K points (Word)</li> </ul> The amount of labels used in the program varies depending on the CPU module used, the device specified in an argument, and the option setting of GX Works3. For the option setting of GX Works3, refer to the  GX Works3 Operating Manual. |
| Number of index register usage | <ul style="list-style-type: none"> <li>Index register: 0 points</li> <li>Long index register: 0 points</li> </ul>                                                                                                                                                                                                                                              |
| File register usage            | 0 points                                                                                                                                                                                                                                                                                                                                                       |
| FB dependence                  | No dependence                                                                                                                                                                                                                                                                                                                                                  |
| FB compilation method          | Macro type                                                                                                                                                                                                                                                                                                                                                     |
| FB operation                   | Always executed                                                                                                                                                                                                                                                                                                                                                |

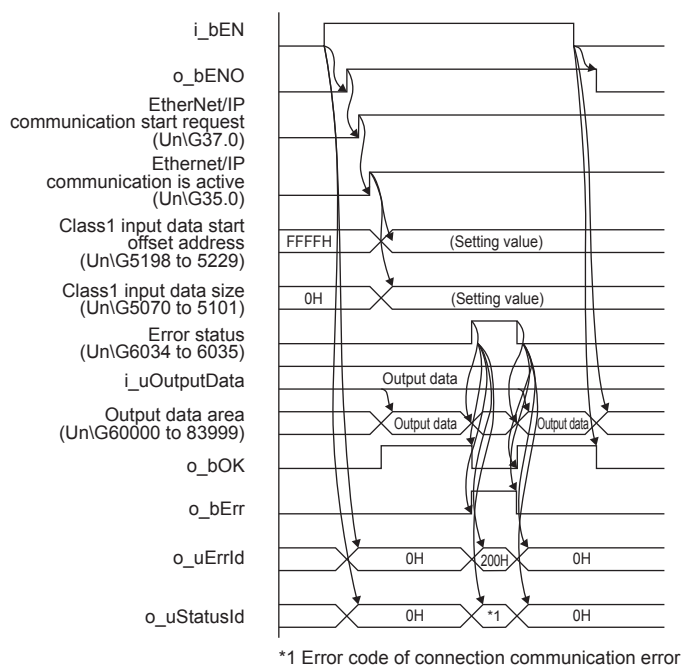
### Processing

- By turning i\_bEN (Execution command) on, the output data of the specified connection is set through Class1 communications.
- The designated number is continuously stored in the output area for the specified connection number from i\_uOutputData (Output data storage device) while i\_bEN (Execution command) and o\_bOK (Normal completion) are on. For the number of devices transferred from i\_uOutputData (Output data storage device), refer to the MELSEC iQ-F FX5-ENET/IP Ethernet Module User's Manual.
- By turning i\_bEN (Execution command) on, the EtherNet/IP communication start request (Un\G37.0) turns on.
- Set the module parameters in GX Works3 in accordance with the connected equipment and system. For the module parameters, refer to Page 279 Parameter setting.

## Timing chart of I/O signals

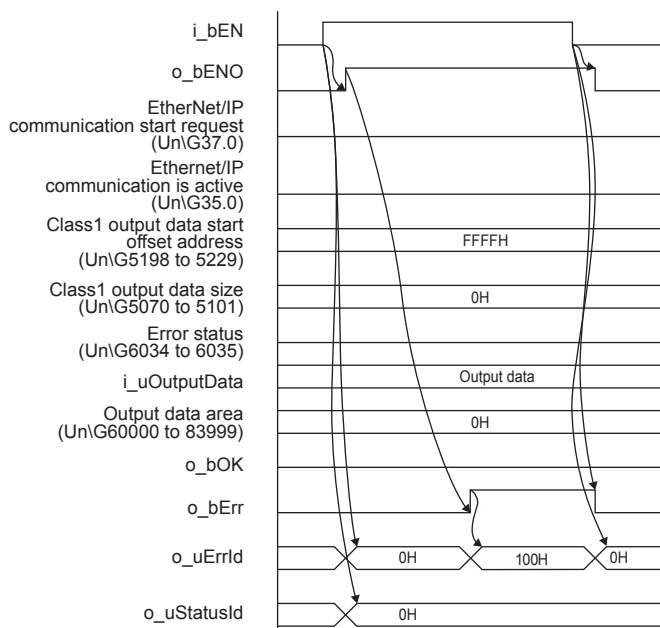
### ■For normal completion

When the operation is recovered after an error occurs for a certain time during communication

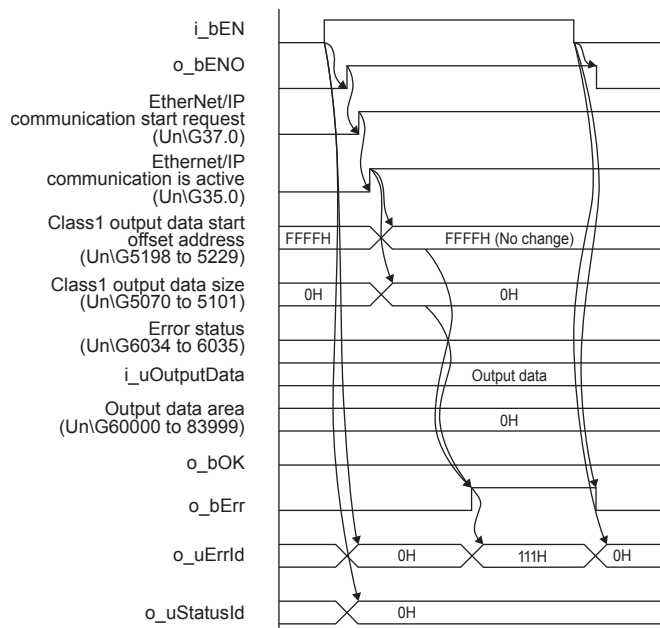


### ■For error completion

Out of setting range for i\_uConnectionNo (connection No.)



Output data is not allocated to the target connection



## Restrictions or precautions

- This FB does not include the error recovery processing. Program the error recovery processing separately in accordance with the required system operation.
- Turn off i\_bEN (Execution command) after o\_bOK (Normal completion) or o\_bErr (Error completion) is turned on. By turning i\_bEN (Execution command) off, o\_bOK (Normal completion) and o\_bErr (Error completion) turn off, and o\_uErrId (Error code) and o\_uStatusId (Error code of connection communication error) are cleared into 0.
- Even if i\_bEN (Execution command) is turned off, the Ethernet/IP communication start request (Un\G37.0) does not turn off. To stop the Ethernet/IP communication, turn off i\_bEN (Execution command) which is the FB of all FX5-ENET/IP in a program and then turn off the Ethernet/IP communication start request (Un\G37.0).
- When i\_uConnectionNo (Connection No.) is changed during i\_bEN (Execution command) is turned on, if i\_uConnection is changed to the value out of effective range, the change is not reflected on the FB operation.
- This FB cannot be used in an interrupt program.
- Do not use this FB in programs that are executed only once, such as a subroutine program or FOR-NEXT loop, because i\_bEN (Execution command) cannot be turned off and the normal operation cannot be acquired. Always use this FB in programs that can turn off i\_bEN (Execution command).
- Every input must be provided with a value for proper FB operation.

## Parameter setting

For the parameter setting, refer to  Page 279 Parameter setting.

## Performance value

| CPU module                  | Measurement conditions | Performance value |                   | Number of scans |
|-----------------------------|------------------------|-------------------|-------------------|-----------------|
|                             |                        | Processing time   | Maximum scan time |                 |
| FX5UJ                       | —                      | 36.7ms            | 1.060ms           | 33 scans        |
| FX5U, FX5UC <sup>*1*2</sup> | —                      | 32.2ms            | 0.882ms           | 32 scans        |

\*1 When the program capacity is set to 128K steps, the processing speed may be reduced.

\*2 The labels in the standard area are used.

## Error code

| Error code (hexadecimal) | Description                                                       | Action                                                                                                                                                                                                                                                  |
|--------------------------|-------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 100H                     | The setting value of i_uConnectionNo (connection No.) is invalid. | After reviewing the setting, re-execute the FB.                                                                                                                                                                                                         |
| 111H                     | The output data is not allocated to the target connection.        | Try again after checking the setting of EtherNet/IP Configuration Tool for FX5-ENET/IP.                                                                                                                                                                 |
| 200H                     | A connection communication error occurs on the target connection. | Confirms an error code stored in o_uStatusId (Error code of connection communication error).<br>Refer to the  MELSEC iQ-F FX5-ENET/IP Ethernet Module User's Manual. |

## Version upgrade history

| Version | Date         | Description                                     |
|---------|--------------|-------------------------------------------------|
| 00A     | October 2019 | First edition                                   |
| 01A     | October 2020 | Initialization processing in the FB is revised. |

# 7 EXAMPLE OF USE

## 7.1 M+FX5UCPU-EN\_SLMP\_DeviceRead\_IP (Reading of SLMP-compatible device)

Use M+FX5UCPU-EN\_DeviceRead\_IP (Reading of SLMP-compatible device) to read the device data specified by the target device.

### System configuration

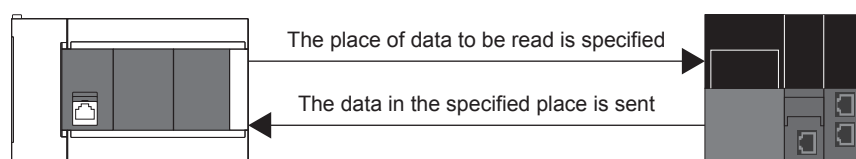
Refer to  Page 16 System Configuration.

### Outline of example of program

The value stored in device D100 of the target device is read into device D50 of the own device.

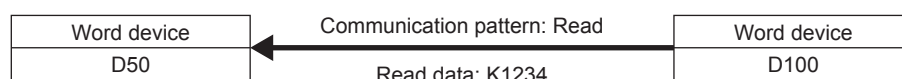
Own station: FX5U CPU module

External device: RCPU



Own station IP address: 192.168.3.250

IP address of target device: 192.168.3.251



### Preliminary setting

Set K1234 in device D100 of the target device.

### Parameter setting

The own station IP address and SLMP communication settings are set using GX Works3. For details on the setting methods, refer to the  MELSEC iQ-F FX5 User's Manual (Communication).

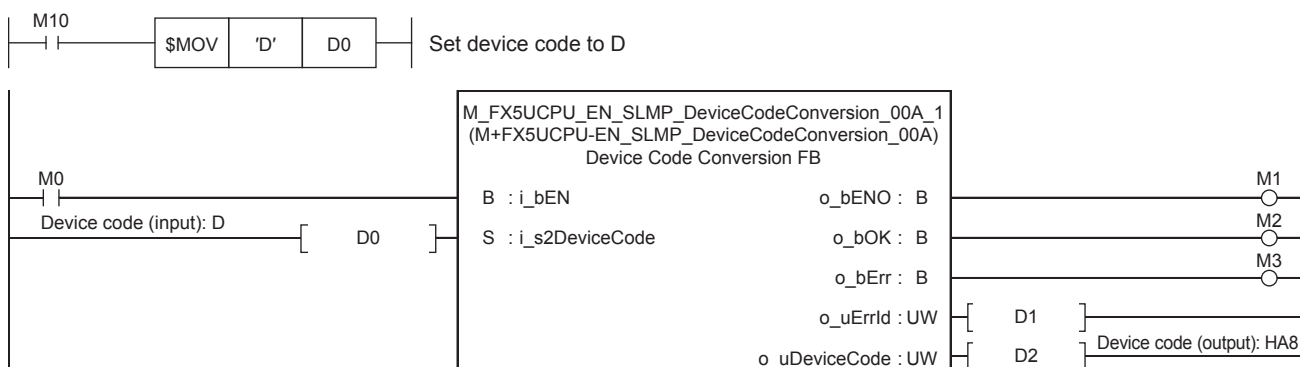


## Program

The device read out from the target device is converted into a binary code. After the conversion, the data from the device specified by the target device is read out with M+FX5UCPU-EN\_DeviceRead\_IP (Reading of SLMP-compatible device).

- Convert the device code to the binary code.

In M+FX5UCPU-EN\_SLMP\_DeviceRead\_IP (Reading of SLMP-compatible device), the device to be read is specified with a binary code. Therefore, the device to read is converted into a binary code with M+FX5UCPU-EN\_SLMP\_DeviceCodeConversion (Reading of device code for SLMP communication FB). In this example, the data is read from D100 of the target device, so the device code "D" is converted into a binary code. For details on FB, refer to  Page 65 M+FX5UCPU-EN\_SLMP\_DeviceCodeConversion (Reading of device code for SLMP communication FB).



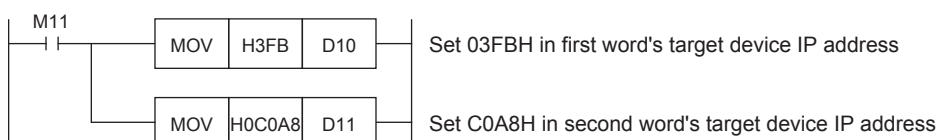
- Setting the IP address of the target device

Set the IP address of the target device to 192.168.3.251. Specify the third and fourth octets to the 1st word, and first and second octets to the 2nd word. The value must be converted from decimal to hexadecimal.

| Item                    | Decimal | Hexadecimal |
|-------------------------|---------|-------------|
| First octet (2nd word)  | 192     | C0          |
| Second octet (2nd word) | 168     | A8          |
| Third octet (1st word)  | 3       | 03          |
| Fourth octet (1st word) | 251     | FB          |

Set as shown below for this usage example.

|          |       |
|----------|-------|
| 1st word | 03FBH |
| 2nd word | C0A8H |



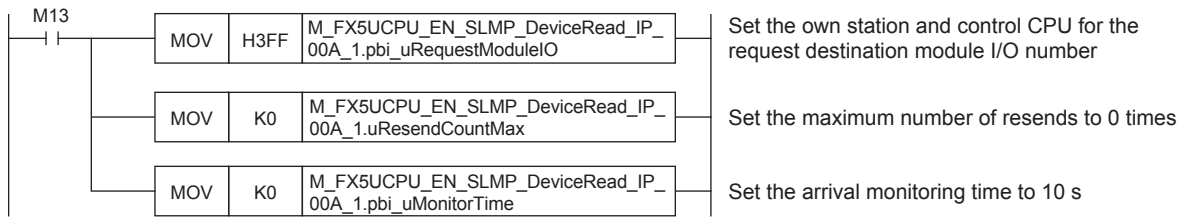
- Setting the head device number

Set the head device number of the device to read in D12.



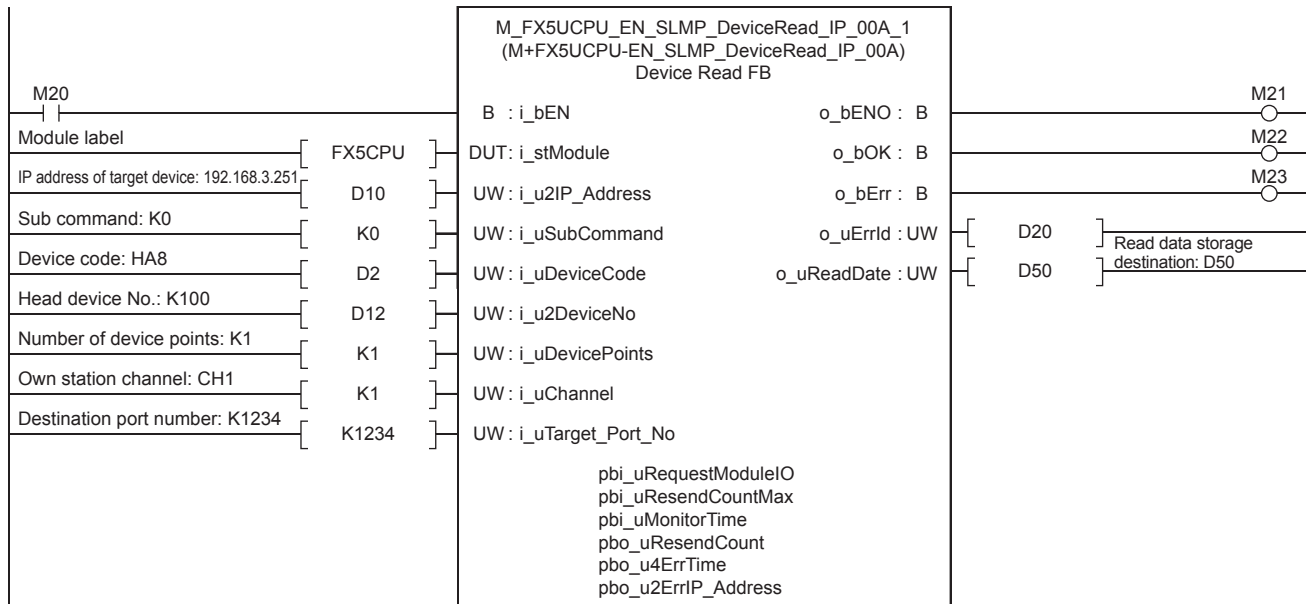
- Setting the operation parameter

Set the operation parameter used for M+FX5UCPU-EN\_SLMP\_DeviceRead\_IP (Reading of SLMP-compatible device) FB.



- Setting and executing reading of SLMP-compatible device

The value from target device D100 is read using M+FX5UCPU-EN\_SLMP\_DeviceRead\_IP (Reading of SLMP-compatible device) FB. The read value is stored in device D50 of the own station.



# 7.2 M+FX5UCPU-EN\_SLMP\_DeviceWrite\_IP (Writing to SLMP-compatible device)

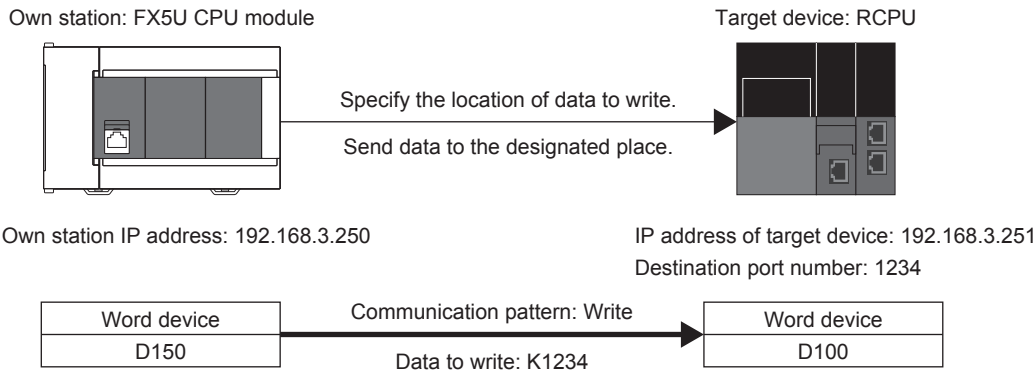
The data is written to the device specified by the target device using M+FX5UCPU-EN\_SLMP\_DeviceWrite\_IP (Writing to SLMP-compatible device).

## System configuration

Refer to Page 16 System Configuration.

## Outline of example of program

The value stored in device D150 of the own device is written to device D100 of the target device.



7

## Preliminary setting

No preliminary settings are required to use this FB.

## Parameter setting

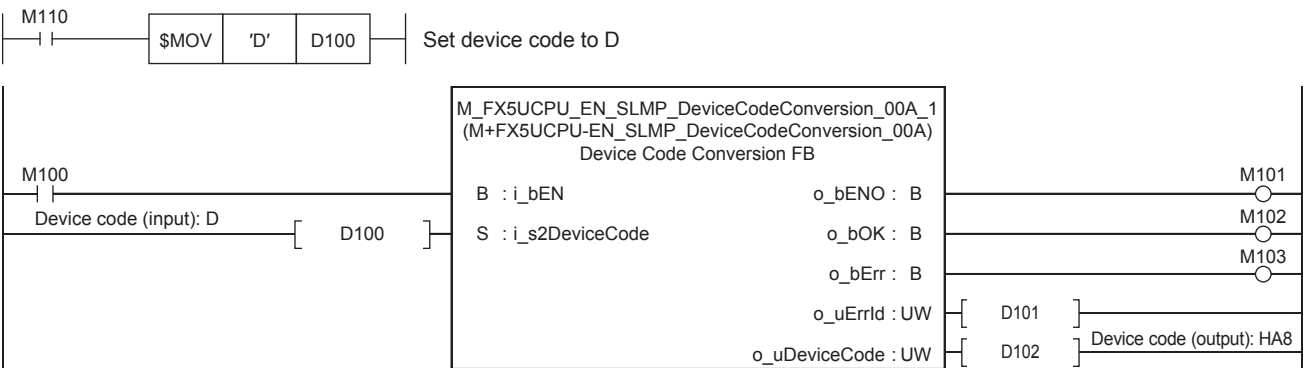
The own station IP address and SLMP communication settings are set using GX Works3. For details on the setting methods, refer to the MELSEC iQ-F FX5 User's Manual (Communication).

Program

The device written to the target device is converted into a binary code. After the conversion, the data from the device specified by the target device is written with M+FX5UCPU-EN\_SLMP\_DeviceWrite\_IP (Writing to SLMP-compatible device).

- Convert the device code to the binary code.

With M+FX5UCPU-EN\_SLMP\_DeviceWrite\_IP (Writing to SLMP-compatible device), the device to write is specified with a binary code. Therefore, the device to write is converted into binary code with M+FX5UCPU-EN\_SLMP\_DeviceCodeConversion (Reading of device code for SLMP communication FB). In this example, the data is written into D100 of the target device, so the device code "D" is converted into binary code. For details on FB, refer to [Page 65 M+FX5UCPU-EN\\_SLMP\\_DeviceCodeConversion \(Reading of device code for SLMP communication FB\)](#).

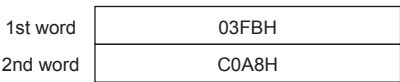
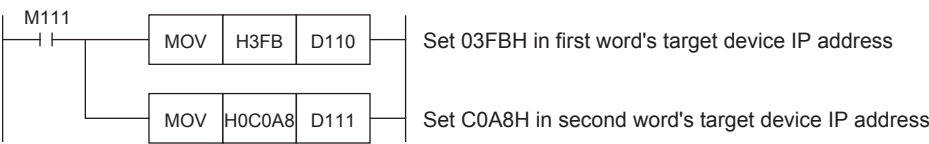


- Setting the IP address of the target device

Set the IP address of the target device to 192.168.3.251. Specify the third and fourth octets to the 1st word, and first and second octets to the 2nd word. The value must be converted from decimal to hexadecimal.

| Item                    | Decimal | Hexadecimal |
|-------------------------|---------|-------------|
| First octet (2nd word)  | 192     | C0          |
| Second octet (2nd word) | 168     | A8          |
| Third octet (1st word)  | 3       | 03          |
| Fourth octet (1st word) | 251     | FB          |

Set as shown below for this usage example.



- Setting the head device number

Set the head device number of the device to be written to D112.



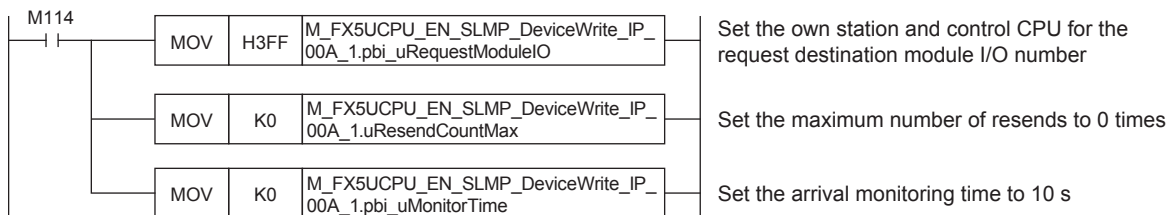
- Setting the write data storage destination

Set the data K1234 to be written to D150.



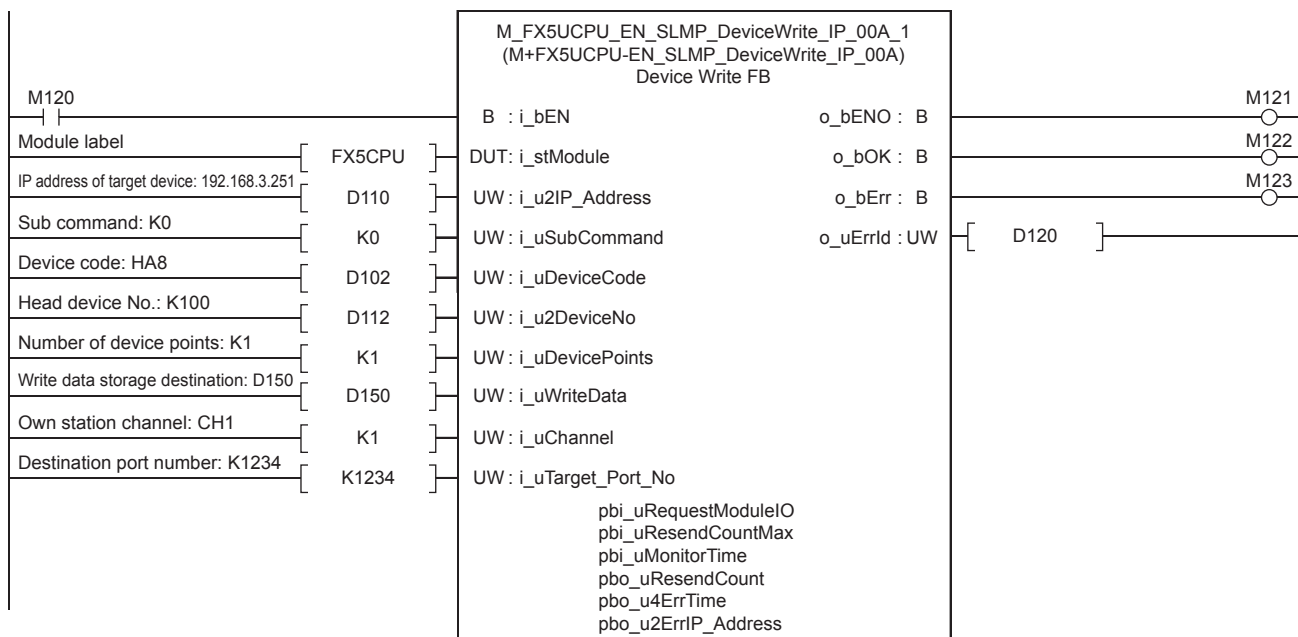
- Setting the operation parameter

Set the operation parameter to use in M+FX5UCPU-EN\_SLMP\_DeviceWrite\_IP (Writing to SLMP-compatible device) FB.



- Setting and executing writing to SLMP-compatible device

The value stored in the own device D150 is written into the set target device D100 using M+FX5UCPU-EN\_SLMP\_DeviceWrite\_IP (Writing to SLMP-compatible device) FB.



# 7.3 M+FX5UCPU-EN\_SLMP\_DeviceRead\_Active (Reading of SLMP-compatible device with Active connection)

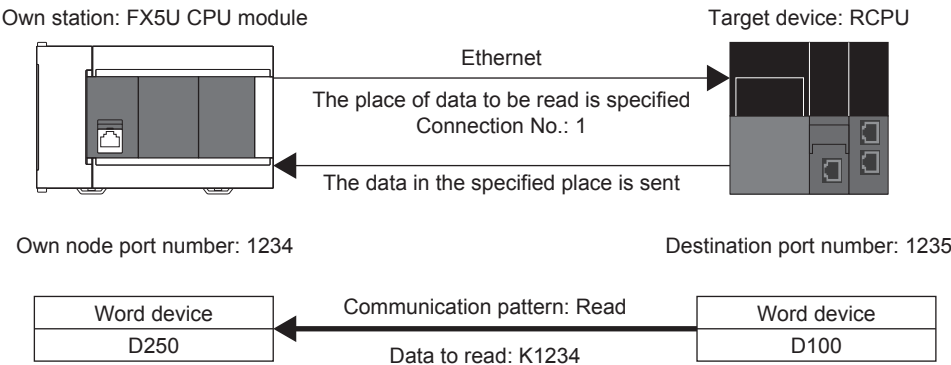
The data in the device specified by the target device is read using M+FX5UCPU-EN\_DeviceRead\_Active (Reading of SLMP-compatible device with Active connection).

## System configuration

Refer to  Page 16 System Configuration.

## Outline of example of program

The value stored in the target device D100 is read to the own device D250 with an Active connection.



## Preliminary setting

Set K1234 in device D100 of the target device.

## Parameter setting

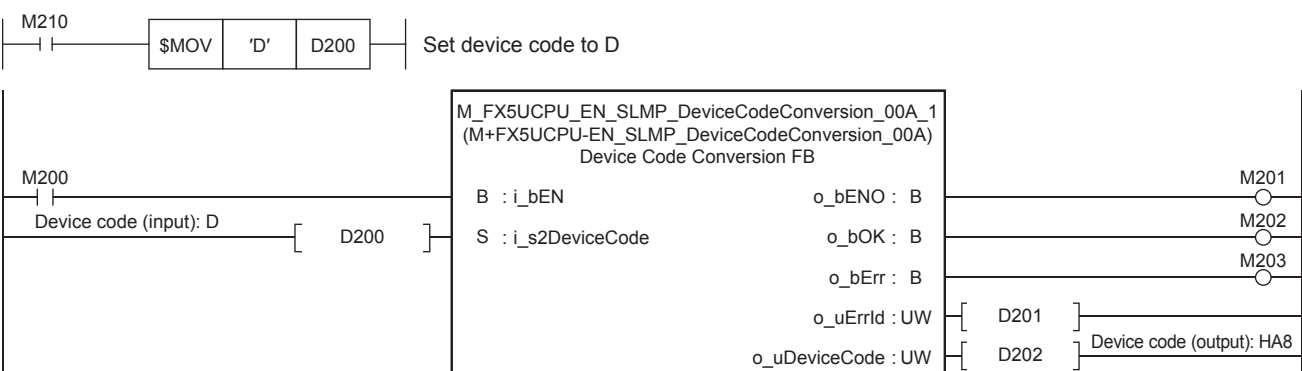
No parameter setting is required to use this FB.

Program

The device to be read in the target device is converted into a binary code. After the conversion, the data from the device specified by the target device is read with M+FX5UCPU-EN\_DeviceRead\_Active (Reading of SLMP-compatible device with Active connection).

- Convert the device code to the binary code.

With M+FX5UCPU-EN\_DeviceRead\_Active (Reading of SLMP-compatible device with Active connection), the device to be read is specified with a binary code. Therefore, the device to read is converted into a binary code with M+FX5UCPU-EN\_SLMP\_DeviceCodeConversion (Reading of device code for SLMP communication FB). In this usage example, D100 of the target device is read so the device code "D" is converted into a binary code. For details on FB, refer to  Page 65 M+FX5UCPU-EN\_SLMP\_DeviceCodeConversion (Reading of device code for SLMP communication FB).



- Setting the head device number

Set the head device number of the device to read in D212.

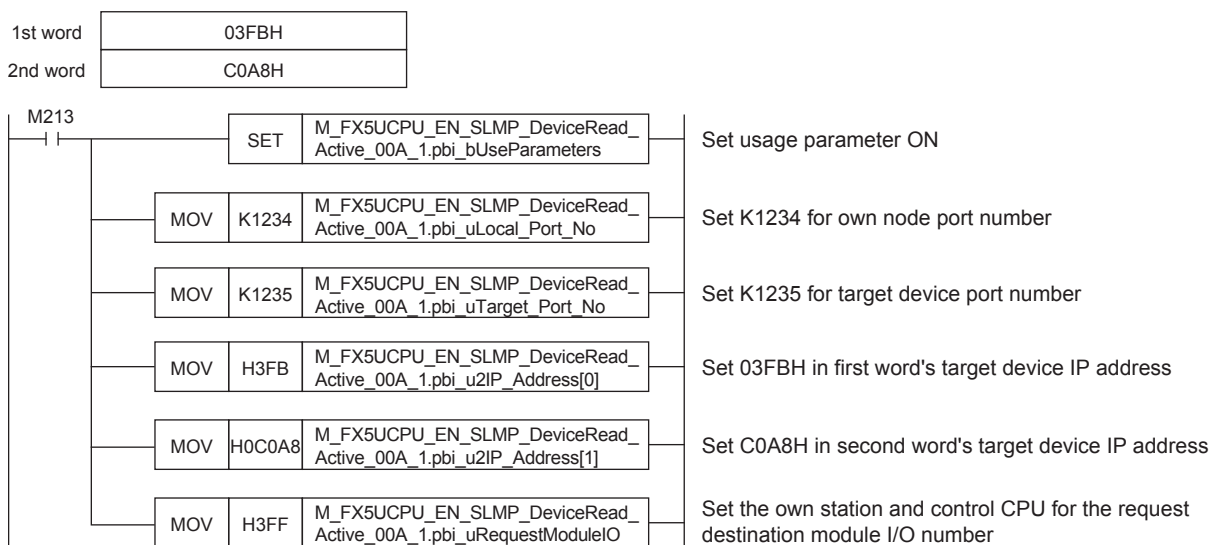


- Setting the operation parameter

In this usage example, the connection is opened with the operation parameter settings. Therefore, pbi\_bUseParameters (Usage parameters) is turned on. When the parameter is OFF, the opening process settings are configured with GX Works3. For details, refer to the MELSEC iQ-F FX5 User's Manual (Communication). Set pbi\_u2IP\_Address (Target device IP address) to 192.168.3.251. Specify the third and fourth octets to the 1st word, and first and second octets to the 2nd word. The value must be converted from decimal to hexadecimal.

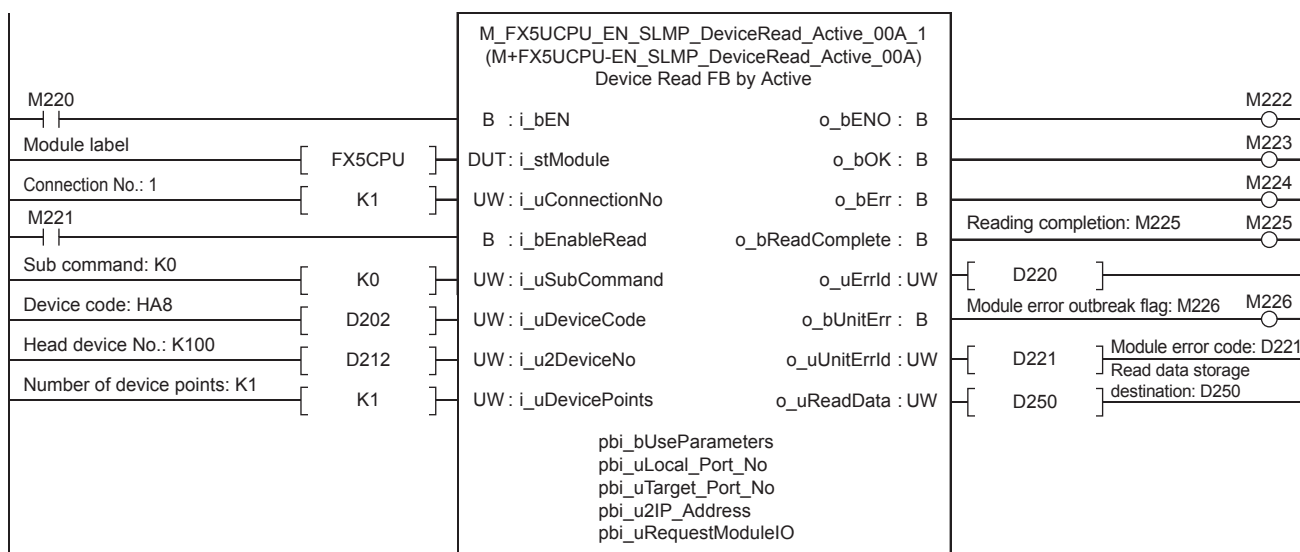
| Item                    | Decimal | Hexadecimal |
|-------------------------|---------|-------------|
| First octet (2nd word)  | 192     | C0          |
| Second octet (2nd word) | 168     | A8          |
| Third octet (1st word)  | 3       | 03          |
| Fourth octet (1st word) | 251     | FB          |

Set as shown below for this usage example.



- Setting and executing reading of SLMP-compatible device with Active connection

The Active open process is executed when i\_bEN (Execution command) is turned on by the M+FX5UCPU-EN\_DeviceRead\_Active (Reading of SLMP-compatible device with Active connection) FB. o\_bOK (Normal completion) turns on when the Active open process is completed. After o\_bOK (Normal completion) turns on, the value is read from D100 of the set target device when i\_bEnableRead (Reading execution) turns on. The read value is stored in D250 of the own device.





# 7.4 M+FX5UCPU-EN\_SLMP\_DeviceWrite\_Active (Writing to SLMP target device with Active connection)

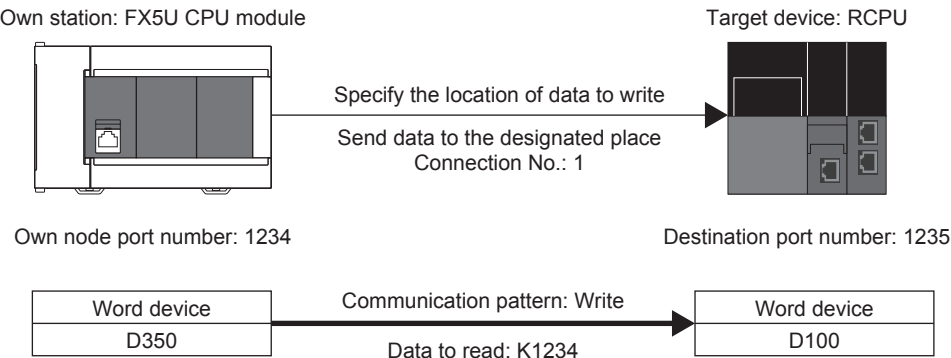
The data is written to the device specified with the target device using M+FX5UCPU-EN\_DeviceWrite\_Active (Writing to SLMP target device with Active connection).

## System configuration

Refer to  Page 16 System Configuration.

## Outline of example of program

The value stored in D350 of the own device is written to device D100 of the target device with an Active connection.



## Preliminary setting

No preliminary settings are required to use this FB.

## Parameter setting

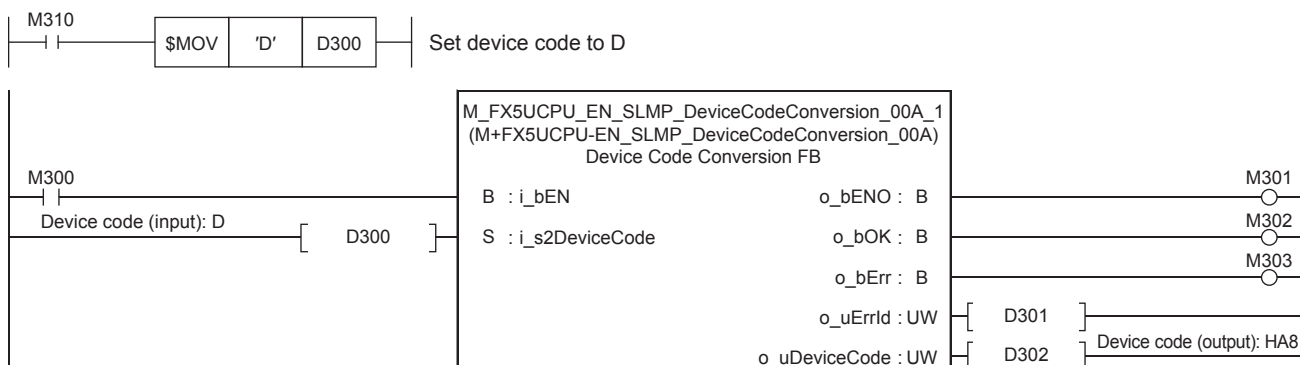
No parameter setting is required to use this FB.

## Program

The device written to the target device is converted into a binary code. After the conversion, the data from the device specified by the target device is written with M+FX5UCPU-EN\_DeviceWrite\_Active (Writing to SLMP target device with Active connection).

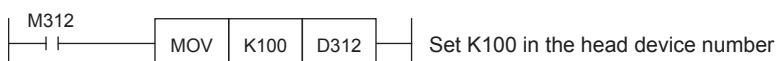
- Convert the device code to the binary code.

With M+FX5UCPU-EN\_DeviceWrite\_Active (Writing to SLMP target device with Active connection), the device to be written is specified with a binary code. Therefore, the device to write is converted into binary code with M+FX5UCPU-EN\_SLMP\_DeviceCodeConversion (Reading of device code for SLMP communication FB). In this example, the data is written into D100 of the target device, so the device code "D" is converted into binary code. For details on FB, refer to  Page 65 M+FX5UCPU-EN\_SLMP\_DeviceCodeConversion (Reading of device code for SLMP communication FB).



- Setting the head device number

Set the head device number of the device to be written to D312.



- Setting the write data storage destination

Set the data K1234 to be written to D350.



- Setting the operation parameter

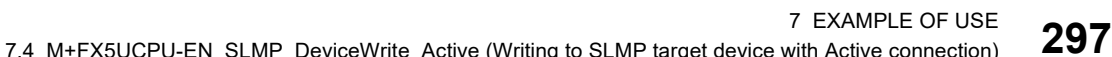
In this usage example, the connection is opened with the operation parameter settings. Therefore, pbi\_bUseParameters (Usage parameters) is turned on. When the parameter is OFF, the opening process settings are configured with GX Works3. For details, refer to the  MELSEC iQ-F FX5 User's Manual (Communication). Set pbi\_u2IP\_Address (Target device IP address) to 192.168.3.251. Specify the third and fourth octets to the 1st word, and first and second octets to the 2nd word. The value must be converted from decimal to hexadecimal.

| Item                    | Decimal | Hexadecimal |
|-------------------------|---------|-------------|
| First octet (2nd word)  | 192     | C0          |
| Second octet (2nd word) | 168     | A8          |
| Third octet (1st word)  | 3       | 03          |
| Fourth octet (1st word) | 251     | FB          |

7

- Setting and executing writing of SLMP-compatible device with Active connection

The Active open process is executed when i\_bEN (Execution command) is turned on by the M+FX5UCPU-EN\_DeviceWrite\_Active (Writing to SLMP-compatible device with Active connection) FB. o\_bOK (Normal completion) turns on when the Active open process is completed. After o\_bOK (Normal completion) turns on, the value stored in D350 of the own device is written to D100 of the set target device when i\_bEnableWrite (Writing execution) is turned on.



## 7.5 M+FX5CCLIEF\_DeviceRead (Reading of another station device)

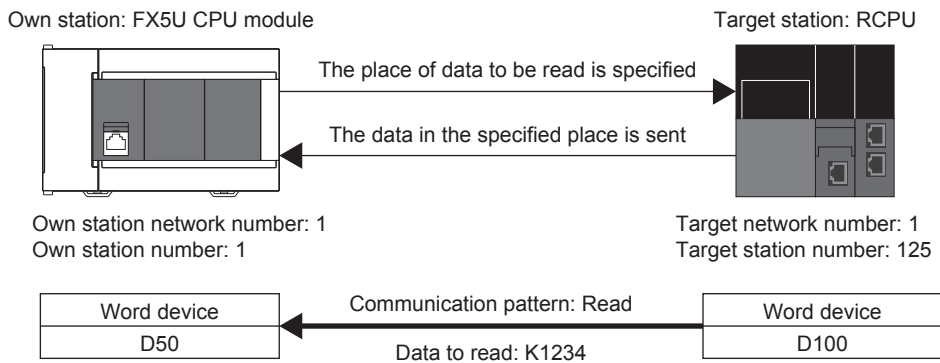
The data of the specified device in the target station is read using M+FX5CCLIEF\_DeviceRead (Reading of another station device).

### System configuration

Refer to  Page 16 System Configuration.

### Outline of example of program

The value stored in device D100 of the target station is read to device D50 in the own station.



### Preliminary setting

Set K1234 in device D100 of the target device.

### Parameter setting

Set the own station network number and station number.

- Network number setting

Set the own station network number to 1. The network number is set with GX Works3. For details on the setting methods, refer to the  MELSEC iQ-F FX5 CC-Link IE Field Network Module User's Manual.

- Station number setting

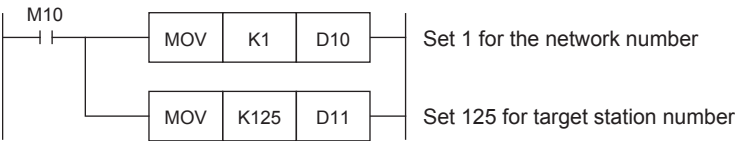
The own station number is set with GX Works3 or with M+FX5CCLIEF\_StationNoSet (Own station number setting). For details on setting with GX Works3, refer to the  MELSEC iQ-F FX5 CC-Link IE Field Network Module User's Manual. Refer to  Page 214 M+FX5CCLIEF\_StationNoSet (Own station number setting) for details on setting with M+FX5CCLIEF\_StationNoSet (Own station number setting).

Program

The data is read from the network number and station number of the target station with M+FX5CCLIEF\_DeviceRead (Reading of another station device).

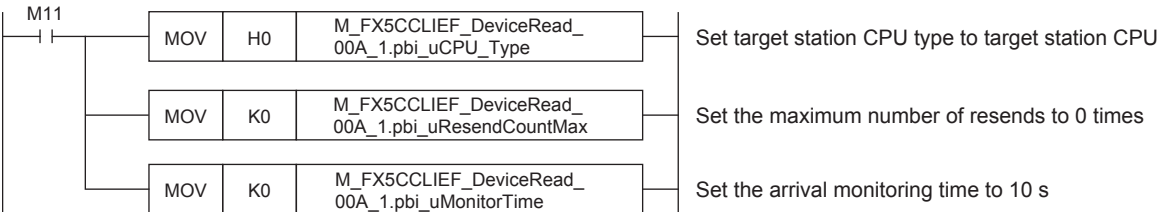
- Setting the network number and station number

Set the network number and station number of the target station for reading the value.



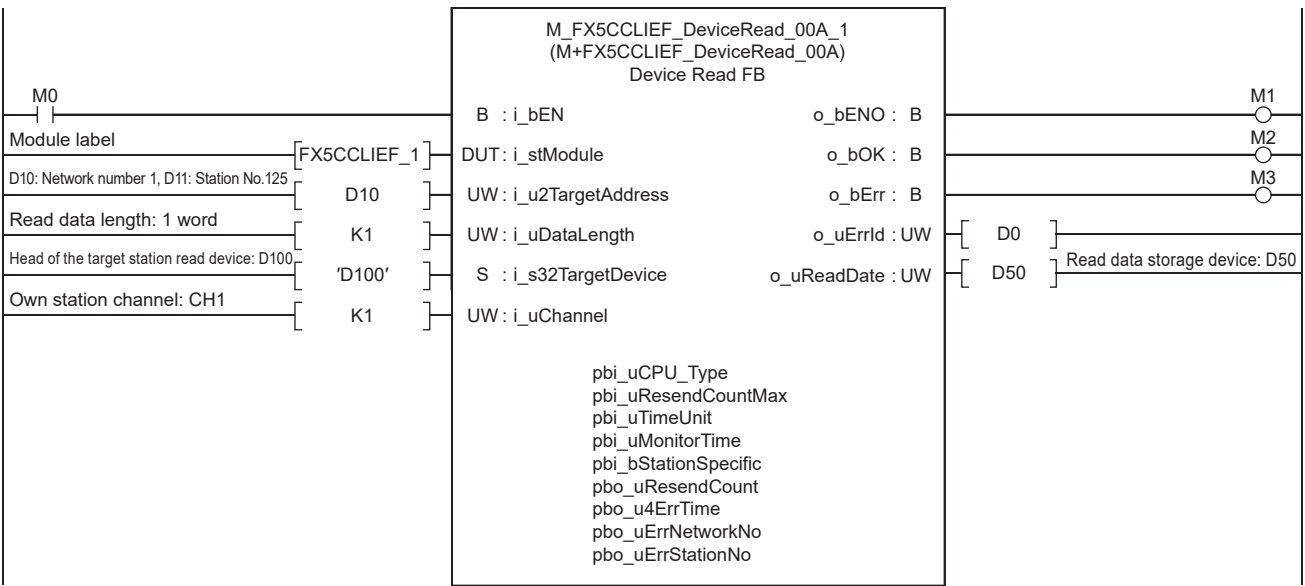
- Setting the operation parameter

Set the operation parameter used for M+FX5CCLIEF\_DeviceRead (Reading of another station device) FB.



- Setting and executing reading of another station device

The value is read from device D100 of the set target station using M+FX5CCLIEF\_DeviceRead (Reading of another station device) FB. The read value is stored in the own station's device D50.



## 7.6 M+FX5CCLIEF\_DeviceWrite (Writing to another station device)

Data is written to the specified device of the target station using M+FX5CCLIEF\_DeviceWrite (Writing to another station device).

### System configuration

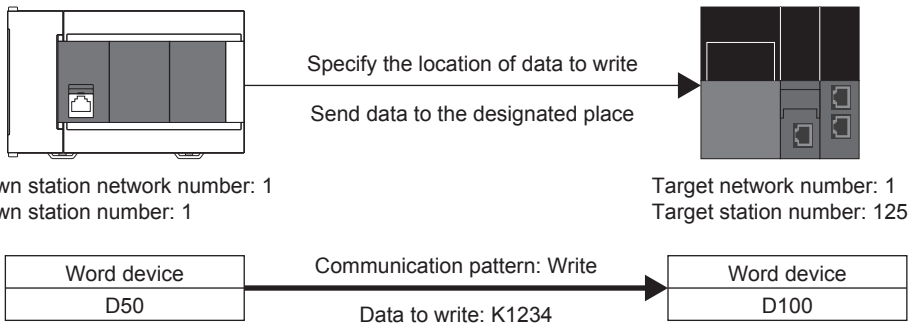
Refer to  Page 16 System Configuration.

### Outline of example of program

The value stored in device D50 of the own station is written to D100 of the target station.

Own station: FX5U CPU module

Target station: RCPU



### Preliminary setting

No preliminary settings are required to use this FB.

### Parameter setting

Set the own station network number and station number.

- Network number setting

Set the own station network number to 1. The network number is set with GX Works3. For details on the setting methods, refer to the  MELSEC iQ-F FX5 CC-Link IE Field Network Module User's Manual.

- Station number setting

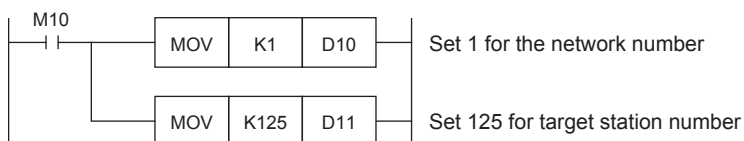
The own station number is set with GX Works3 or with M+FX5CCLIEF\_StationNoSet (Own station number setting). For details on setting with GX Works3, refer to the  MELSEC iQ-F FX5 CC-Link IE Field Network Module User's Manual. Refer to  Page 214 M+FX5CCLIEF\_StationNoSet (Own station number setting) for details on setting with M+FX5CCLIEF\_StationNoSet (Own station number setting).

## Program

Data is written from the target station's network number and station number using M+FX5CCLIEF\_DeviceWrite (Writing to another station device).

- Setting the network number and station number

Set the network number and station number of the target station in which the value is to be written.



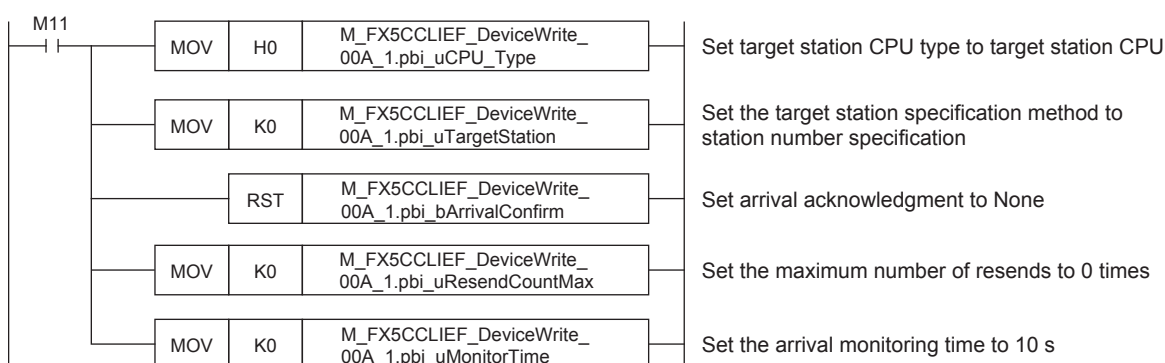
- Setting the write data storage device

Set the data K1234 to be written to D50.



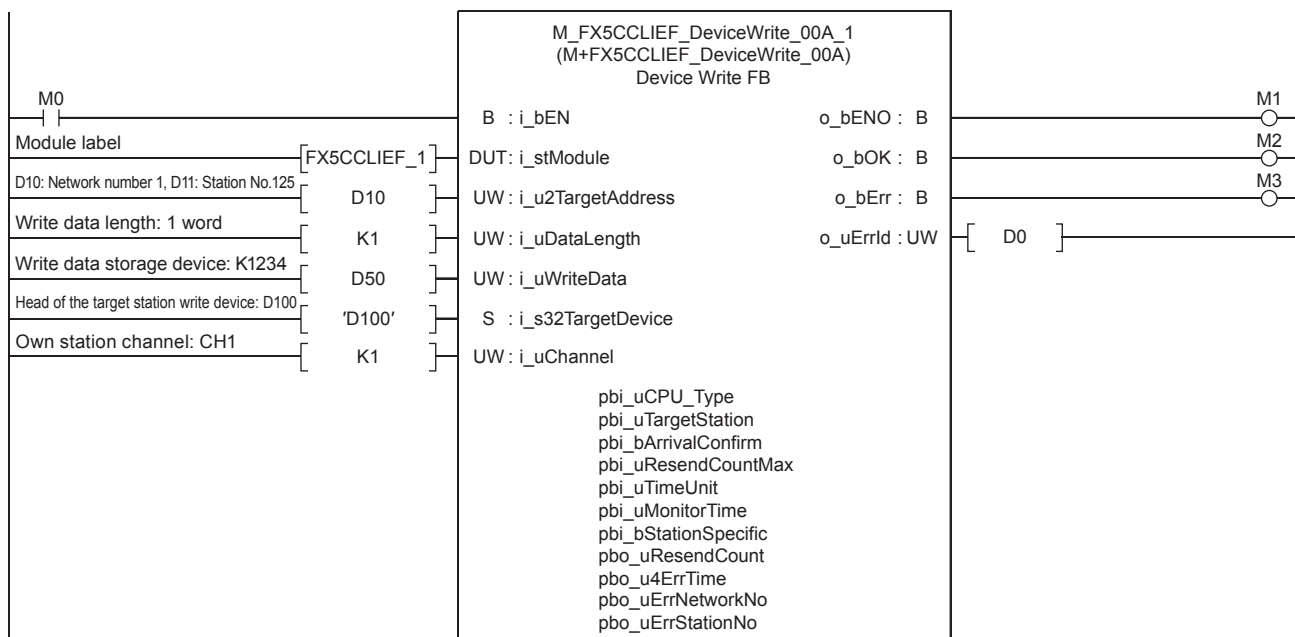
- Setting the operation parameter

Set the operation parameter used for M+FX5CCLIEF\_DeviceWrite (Writing to another station device) FB.



- Setting and executing writing to another station device

The value stored in the own station device D50 is written to device D100 of the set target station using the M+FX5CCLIEF\_DeviceWrite (Writing to another station device) FB.



## 7.7 M+FX5CCLGNMS\_DeviceRead (Reading of another station device)

The data of the specified device in the target station is read using M+FX5CCLGNMS\_DeviceRead (Reading of another station device). There are two methods of reading. The methods for when the target station address specification method is off and when the target station address specification method is on are given here.

### When the target station address specification method is off

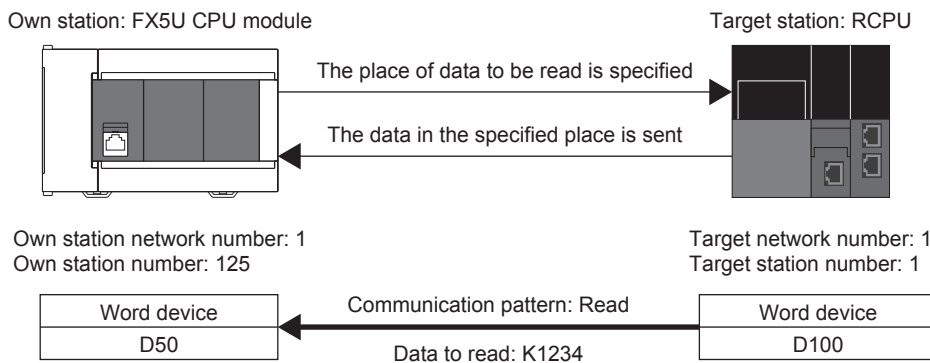
#### System configuration

Refer to  Page 16 System Configuration.

#### Outline of example of program

The value stored in device D100 of the target station is read to device D50 in the own station.

The target station is specified with the network number and station number.



#### Preliminary setting

Set K1234 in device D100 of the target device.

#### Parameter setting

Set the own station network number and station number.

- Network number setting

Set the own station network number to 1. The network number is set with GX Works3. Refer to the  MELSEC iQ-F FX5 CC-Link IE TSN Master/Local Module User's Manual for details on the setting method.

- Station number setting

The own station number is set with GX Works3 or M+FX5CCLGNMS\_SetAddress (Station number/IP address setting). Refer to the  MELSEC iQ-F FX5 CC-Link IE TSN Master/Local Module User's Manual for details on setting with GX Works3.

Refer to  Page 165 M+FX5CCLGNMS\_SetAddress (Station number/IP address setting) for details on setting with M+FX5CCLGNMS\_SetAddress (Station number/IP address setting).

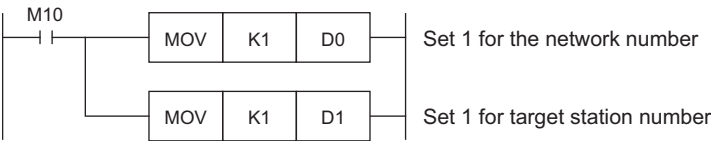


# Program

The data is read from the network number and station number of the target station with M+FX5CCLGNMS\_DeviceRead (Reading of another station device).

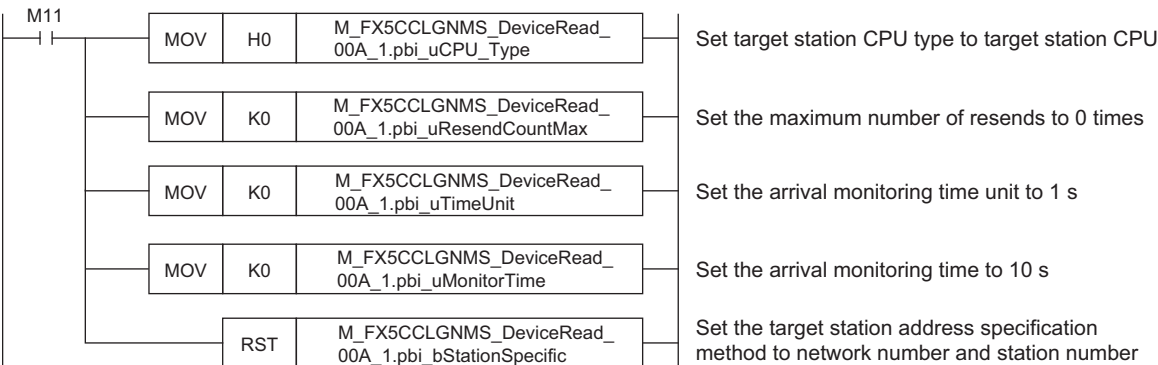
- Setting the network number and target station number

Set the network number and station number of the target station for reading the value.



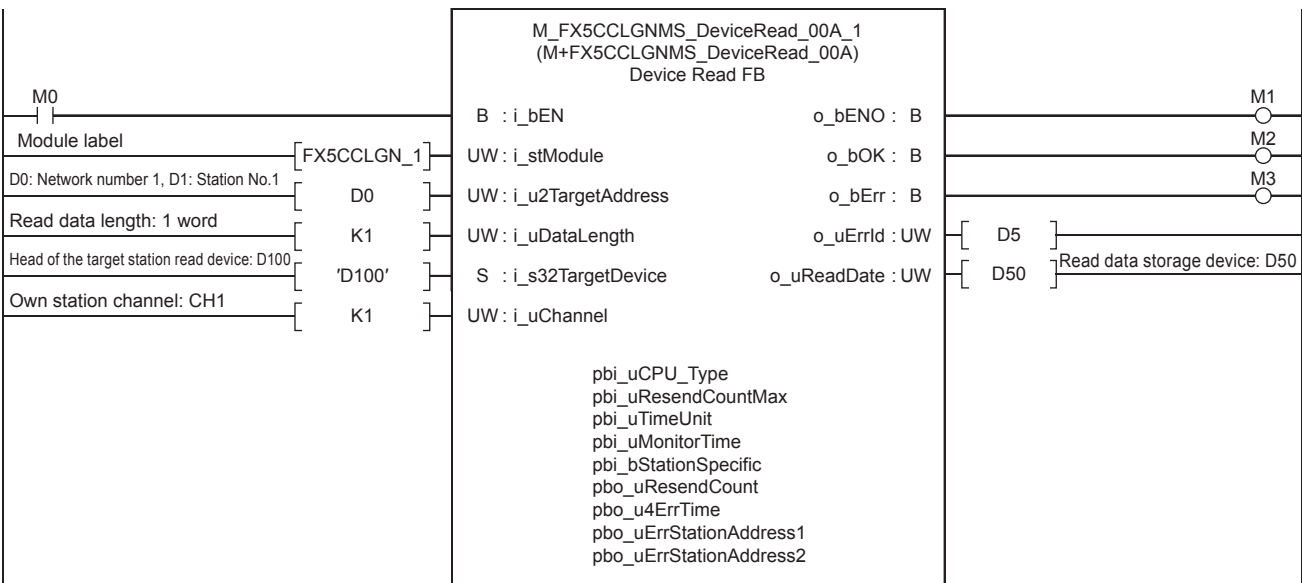
- Setting the operation parameter

Set the operation parameter used for M+FX5CCLGNMS\_DeviceRead (Reading of another station device) FB.



- Setting and executing reading of another station device

The value is read from device D100 of the set target station using M+FX5CCLGNMS\_DeviceRead (Reading of another station device) FB. The read value is stored in the own station's device D50.



# When the target station address specification method is on

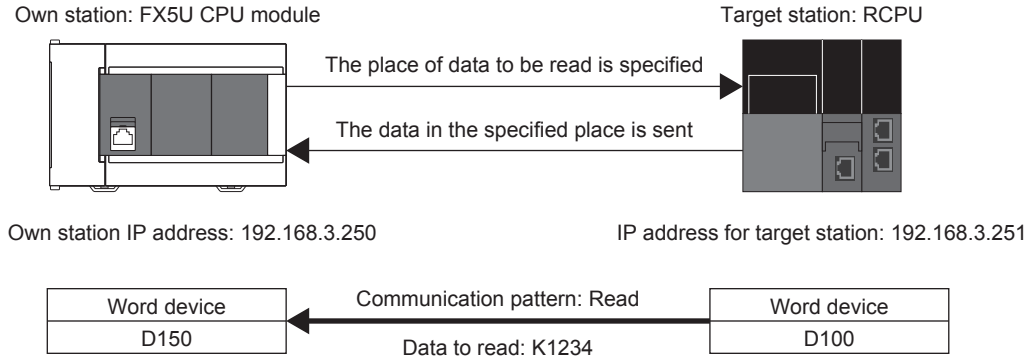
## System configuration

Refer to  Page 16 System Configuration.

## Outline of example of program

The value stored in device D100 of the target station is read to device D150 in the own station.

The target station is specified with the IP address.



## Preliminary setting

Set K1234 in device D100 of the target device.

## Parameter setting

The own station network number and IP address are set.

- Network number setting

Set the own station network number to 1. The network number is set with GX Works3. Refer to the  MELSEC iQ-F FX5 CC-Link IE TSN Master/Local Module User's Manual for details on the setting method.

- Setting the IP address

Set the own station IP address to 192.168.3.250. The own station IP address is set with GX Works3 or M+FX5CCLGNMS\_SetAddress (Station number/IP address setting). Refer to the  MELSEC iQ-F FX5 CC-Link IE TSN Master/Local Module User's Manual for details on setting with GX Works3.

Refer to  Page 165 M+FX5CCLGNMS\_SetAddress (Station number/IP address setting) for details on setting with M+FX5CCLGNMS\_SetAddress (Station number/IP address setting).

## Program

The data is read from the IP address of the target station using M+FX5CCLGNMS\_DeviceRead (Reading of another station device).

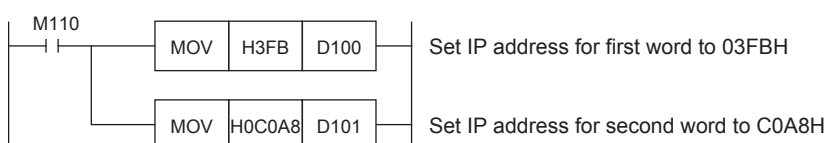
- Setting the target station IP address

Set the target station's IP address to 192.168.3.251. Specify the third and fourth octets to the 1st word, and first and second octets to the 2nd word. The value must be converted from decimal to hexadecimal.

| Item                    | Decimal | Hexadecimal |
|-------------------------|---------|-------------|
| First octet (2nd word)  | 192     | C0          |
| Second octet (2nd word) | 168     | A8          |
| Third octet (1st word)  | 3       | 03          |
| Fourth octet (1st word) | 251     | FB          |

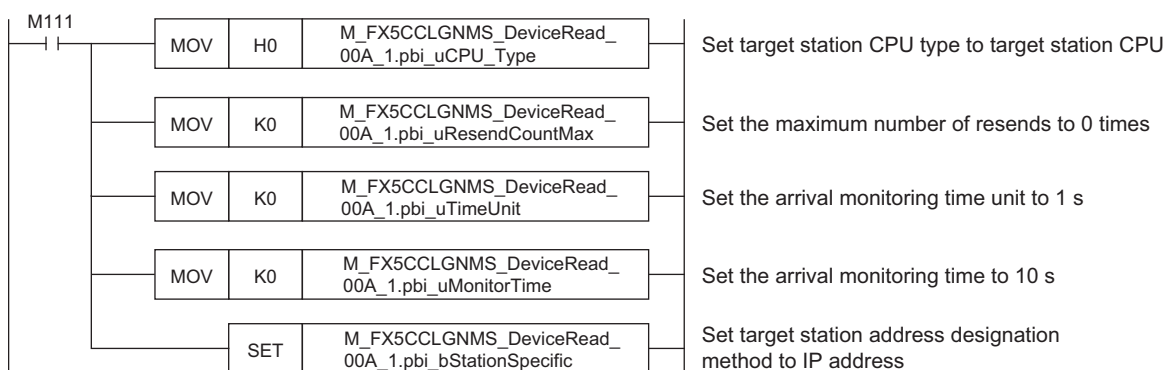
Set as shown below for this usage example.

|          |       |
|----------|-------|
| 1st word | 03FBH |
| 2nd word | C0A8H |



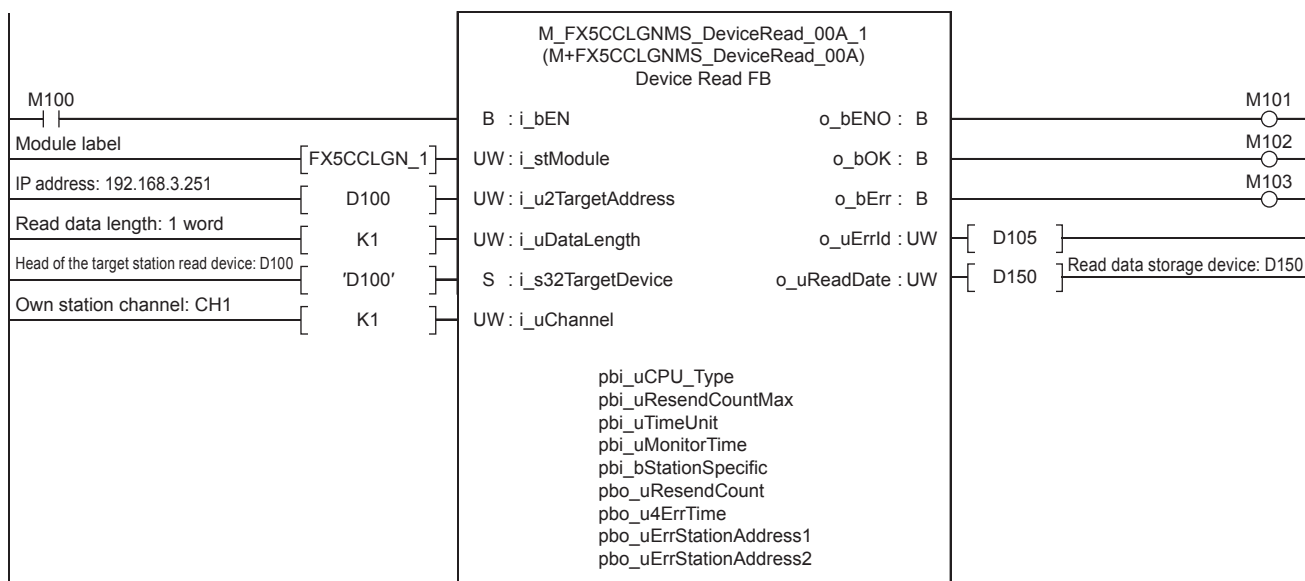
- Setting the operation parameter

Set the operation parameter used for M+FX5CCLGNMS\_DeviceRead (Reading of another station device) FB.



- Setting and executing reading of another station device

The value is read from device D100 of the set target station using M+FX5CCLGNMS\_DeviceRead (Reading of another station device) FB. The read value is stored in the own station's device D150.



## 7.8 M+FX5CCLGNMS\_DeviceWrite (Writing to another station device)

Data is written to the specified device of the target station using M+FX5CCLGNMS\_DeviceWrite (Writing to another station device). There are two methods of writing. The methods for when the target station address specification method is off and when the target station address specification method is on are given here.

### When the target station address specification method is off

#### System configuration

Refer to  Page 16 System Configuration.

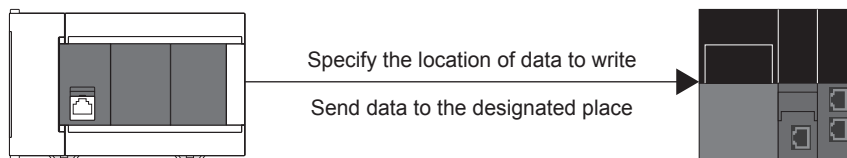
#### Outline of example of program

The value stored in the own station device D250 is written into device D100 of the target station.

The target station is specified with the network number and station number.

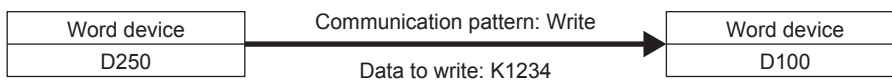
Own station: FX5U CPU module

Target station: RCPU



Own station network number: 1  
Own station number: 125

Target network number: 1  
Target station number: 1



#### Preliminary setting

No preliminary settings are required to use this FB.

#### Parameter setting

Set the own station network number and station number.

- Network number setting

Set the own station network number to 1. The network number is set with GX Works3. Refer to the  MELSEC iQ-F FX5 CC-Link IE TSN Master/Local Module User's Manual for details on the setting method.

- Station number setting

The own station number is set with GX Works3 or M+FX5CCLGNMS\_SetAddress (Station number/IP address setting). Refer to the  MELSEC iQ-F FX5 CC-Link IE TSN Master/Local Module User's Manual for details on setting with GX Works3.

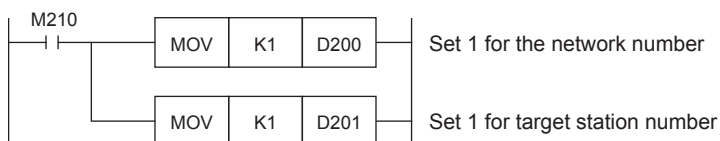
Refer to  Page 165 M+FX5CCLGNMS\_SetAddress (Station number/IP address setting) for details on setting with M+FX5CCLGNMS\_SetAddress (Station number/IP address setting).

## Program

Data is written to the target station's network number and station number with M+FX5CCLGNMS\_DeviceWrite (Writing to another station device).

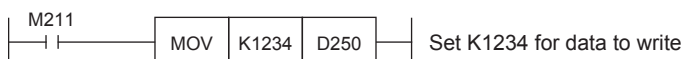
- Setting the network number and target station number

Set the network number and station number of the target station in which the value is to be written.



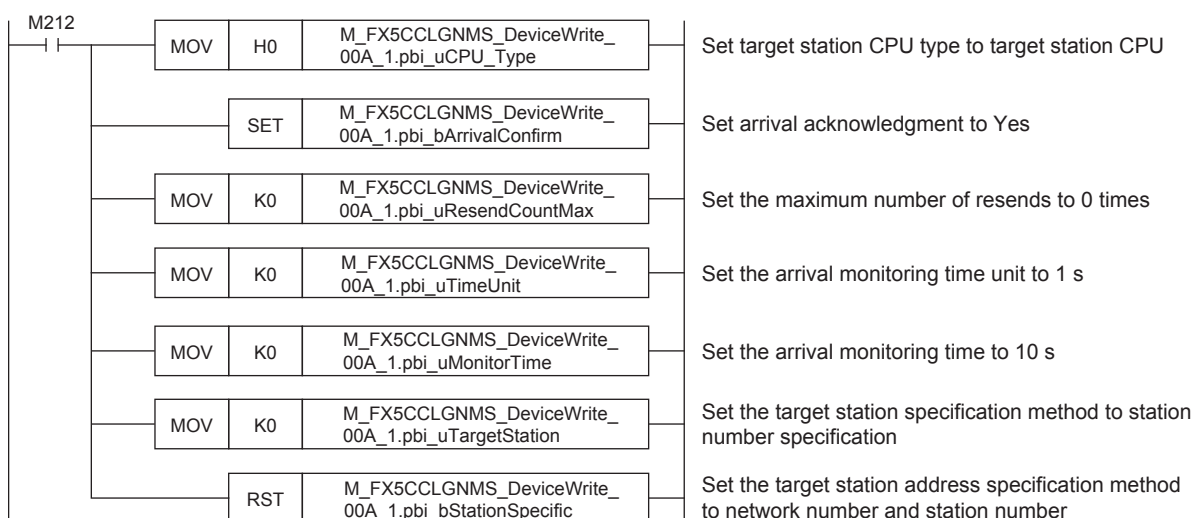
- Setting the write data storage device

Set the data K1234 to be written to D250.



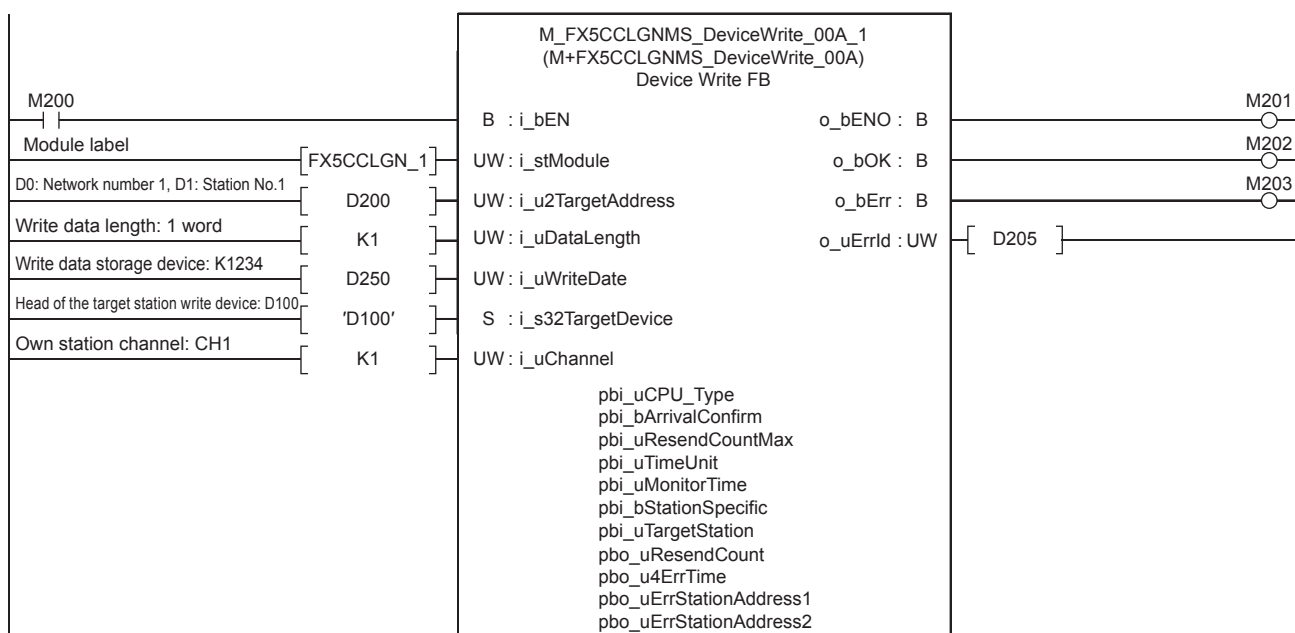
- Setting the operation parameter

Set the operation parameter used for M+FX5CCLGNMS\_DeviceWrite (Writing to another station device) FB.



- Setting and executing writing to another station device

The value stored in the own station device D250 is written to device D100 of the set target station using the M+FX5CCLGNMS\_DeviceWrite (Writing to another station device) FB.



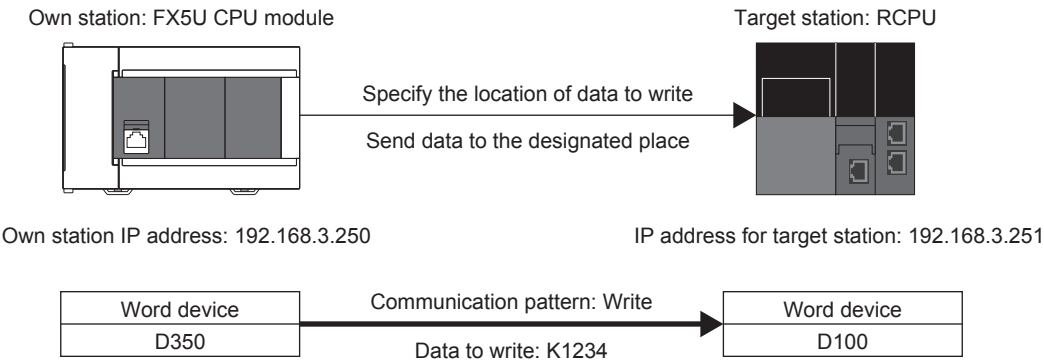
# When the target station address specification method is on

## System configuration

Refer to  Page 16 System Configuration.

## Outline of example of program

The value stored in the own station device D350 is written into device D100 of the target station.  
The target station is specified with the IP address.



## Preliminary setting

No preliminary settings are required to use this FB.

## Parameter setting

The own station network number and IP address are set.

- Network number setting

Set the own station network number to 1. The network number is set with GX Works3. Refer to the  MELSEC iQ-F FX5 CC-Link IE TSN Master/Local Module User's Manual for details on the setting method.

- Setting the IP address

Set the own station IP address to 192.168.3.250. The own station IP address is set with GX Works3 or M+FX5CCLGNMS\_SetAddress (Station number/IP address setting). Refer to the  MELSEC iQ-F FX5 CC-Link IE TSN Master/Local Module User's Manual for details on setting with GX Works3.

Refer to  Page 165 M+FX5CCLGNMS\_SetAddress (Station number/IP address setting) for details on setting with M+FX5CCLGNMS\_SetAddress (Station number/IP address setting).

## Program

Data is written to the IP address of the target station with M+FX5CCLGNMS\_DeviceWrite (Writing to another station device).

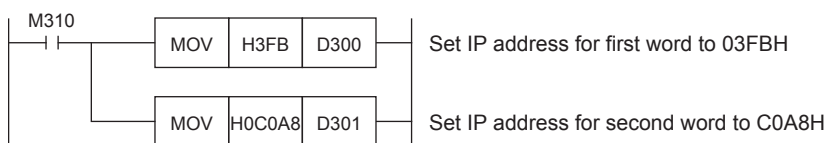
- Setting the target station IP address

Set the target station's IP address to 192.168.3.251. Specify the third and fourth octets to the 1st word, and first and second octets to the 2nd word. The value must be converted from decimal to hexadecimal.

| Item                    | Decimal | Hexadecimal |
|-------------------------|---------|-------------|
| First octet (2nd word)  | 192     | C0          |
| Second octet (2nd word) | 168     | A8          |
| Third octet (1st word)  | 3       | 03          |
| Fourth octet (1st word) | 251     | FB          |

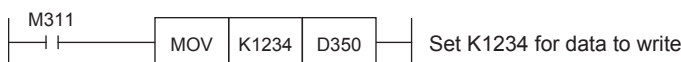
Set as shown below for this usage example.

|          |       |
|----------|-------|
| 1st word | 03FBH |
| 2nd word | C0A8H |



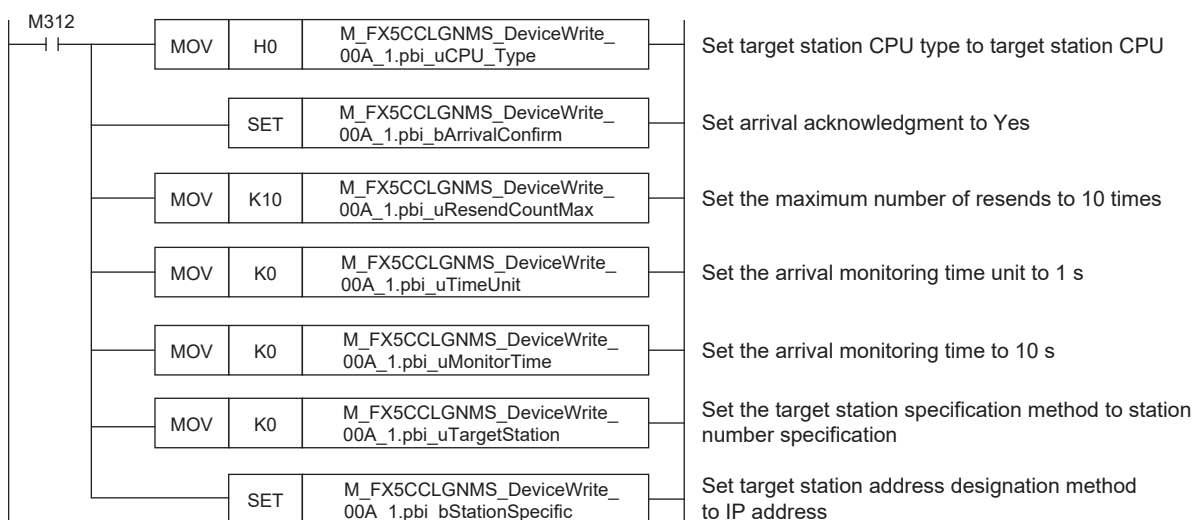
- Setting the write data storage device

Set the data K1234 to be written to D350.



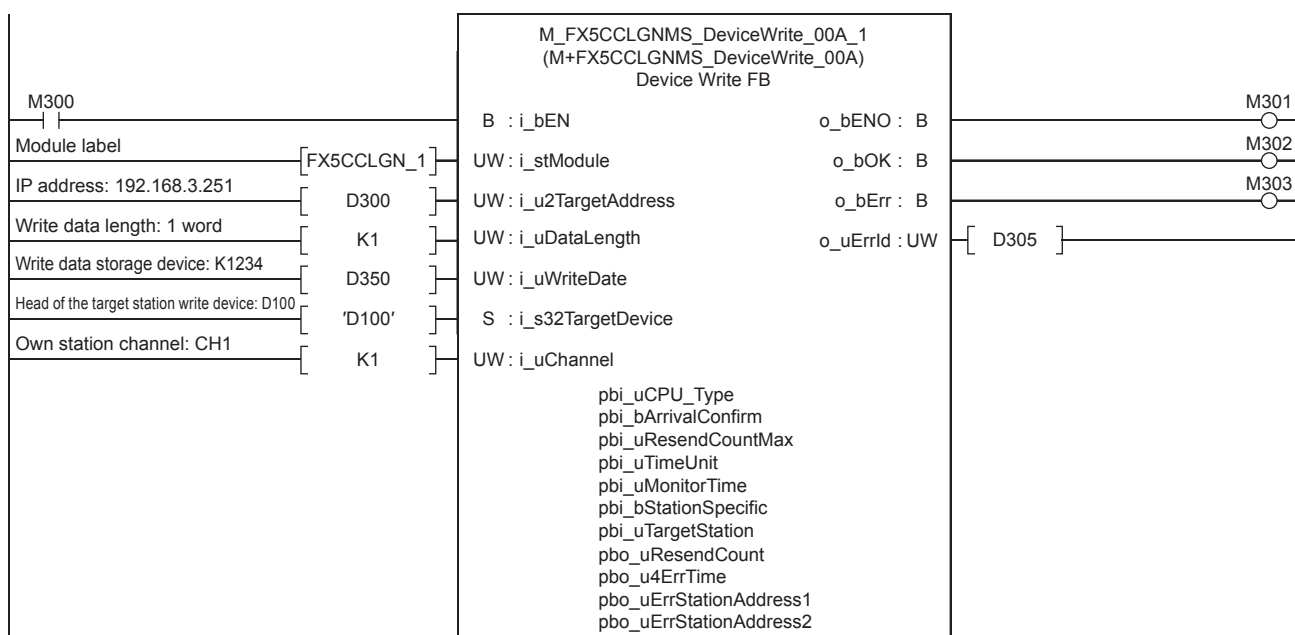
- Setting the operation parameter

Set the operation parameter used for M+FX5CCLGNMS\_DeviceWrite (Writing to another station device) FB.



- Setting and executing writing to another station device

The value stored in the own station device D350 is written to device D100 of the set target station using the M+FX5CCLGNMS\_DeviceWrite (Writing to another station device) FB.



# 7.9 M+FX5CCLGNMS\_Send (Sending of another station data)

The data equal to the send data length is sent from the send data storage device to the target station using M+FX5CCLGNMS\_Send (Sending of another station data). There are two methods of sending. The methods for when the target station address specification method is off and when the target station address specification method is on are given here.

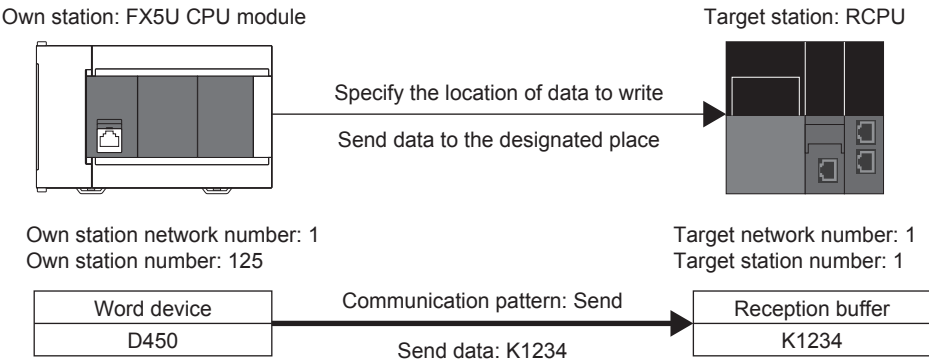
## When the target station address specification method is off

### System configuration

Refer to Page 16 System Configuration.

### Outline of example of program

The value stored in the own station's device D450 is sent to the reception buffer of the target station.  
The target station is specified with the network number and station number.



### Preliminary setting

No preliminary settings are required to use this FB.

### Parameter setting

Set the own station network number and station number.

- Network number setting

Set the own station network number to 1. The network number is set with GX Works3. Refer to the MELSEC iQ-F FX5 CC-Link IE TSN Master/Local Module User's Manual for details on the setting method.

- Station number setting

The own station number is set with GX Works3 or M+FX5CCLGNMS\_SetAddress (Station number/IP address setting). Refer to the MELSEC iQ-F FX5 CC-Link IE TSN Master/Local Module User's Manual for details on setting with GX Works3.

Refer to Page 165 M+FX5CCLGNMS\_SetAddress (Station number/IP address setting) for details on setting with M+FX5CCLGNMS\_SetAddress (Station number/IP address setting).

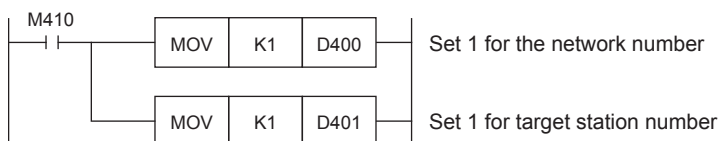


## Program

Data is sent to the target station's network number and station number with M+FX5CCLGNMS\_Send (Sending of another station data).

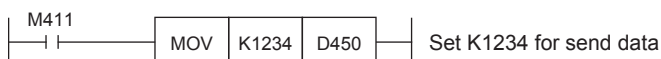
- Setting the network number and target station number

Set the network number and station number of the target station that is receiving the sent data.



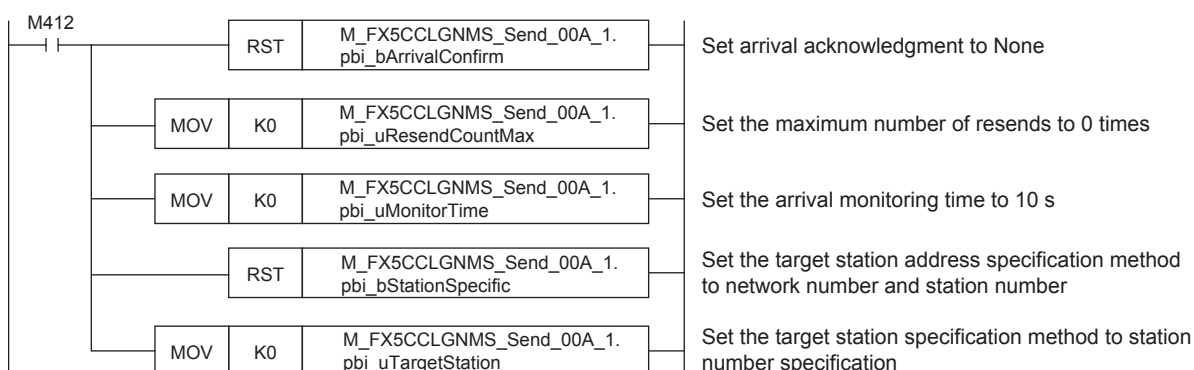
- Setting the send data storage device

In D450, set K1234 of the data to send to the target station.



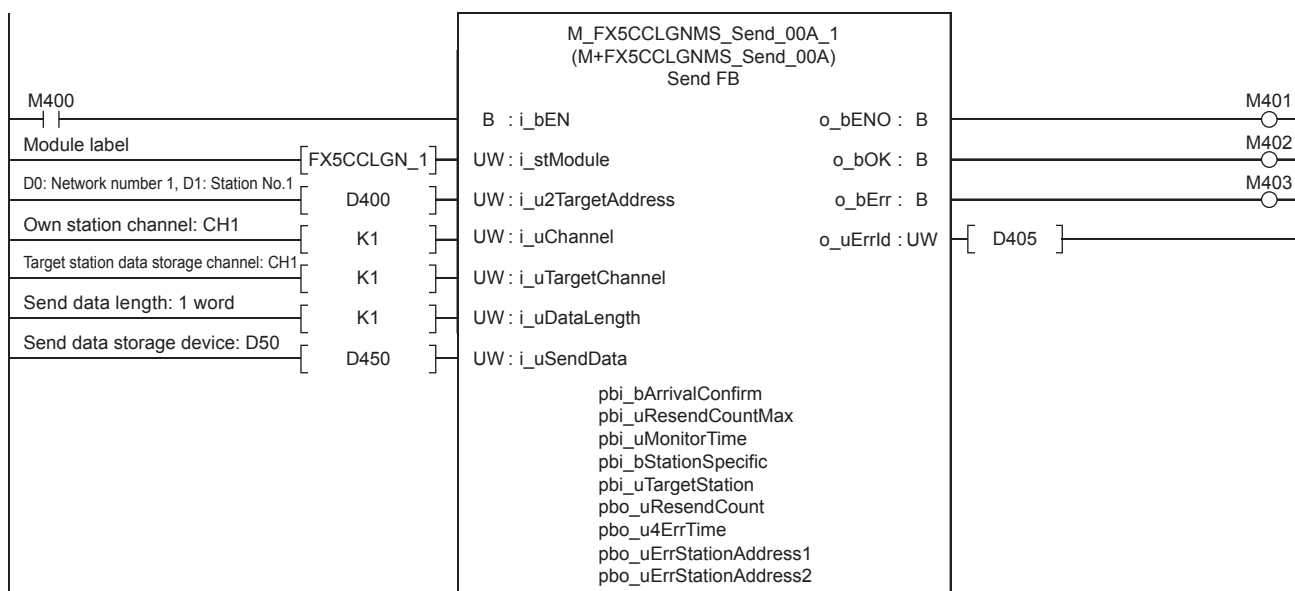
- Setting the operation parameter

Set the operation parameter used for M+FX5CCLGNMS\_Send (Sending of another station data) FB.



- Setting and executing sending data to another station

The value stored in the own station device D450 is sent to the channel of the set target station using the M+FX5CCLGNMS\_Send (Sending of another station data) FB.



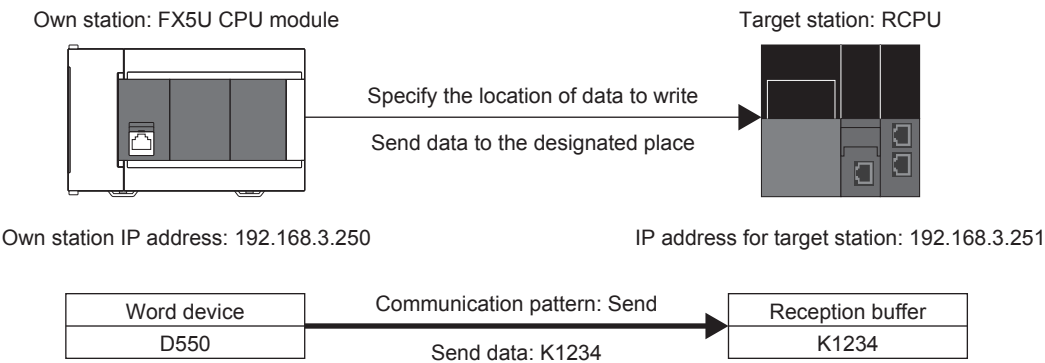
# When the target station address specification method is on

## System configuration

Refer to  Page 16 System Configuration.

## Outline of example of program

The value stored in the own station's device D550 is sent to the reception buffer of the target station.  
The target station is specified with the IP address.



## Preliminary setting

No preliminary settings are required to use this FB.

## Parameter setting

The own station network number and IP address are set.

- Network number setting

Set the own station network number to 1. The network number is set with GX Works3. Refer to the  MELSEC iQ-F FX5 CC-Link IE TSN Master/Local Module User's Manual for details on the setting method.

- Setting the IP address

Set the own station IP address to 192.168.3.250. The own station IP address is set with GX Works3 or M+FX5CCLGNMS\_SetAddress (Station number/IP address setting). Refer to the  MELSEC iQ-F FX5 CC-Link IE TSN Master/Local Module User's Manual for details on setting with GX Works3.

Refer to  Page 165 M+FX5CCLGNMS\_SetAddress (Station number/IP address setting) for details on setting with M+FX5CCLGNMS\_SetAddress (Station number/IP address setting).

## Program

Data is sent to the IP address of the target station with M+FX5CCLGNMS\_Send (Sending of another station data).

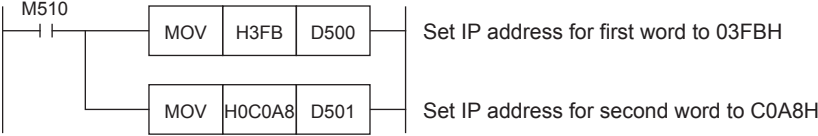
- Setting the target station IP address

Set the target station's IP address to 192.168.3.251. Specify the third and fourth octets to the 1st word, and first and second octets to the 2nd word. The value must be converted from decimal to hexadecimal.

| Item                    | Decimal | Hexadecimal |
|-------------------------|---------|-------------|
| First octet (2nd word)  | 192     | C0          |
| Second octet (2nd word) | 168     | A8          |
| Third octet (1st word)  | 3       | 03          |
| Fourth octet (1st word) | 251     | FB          |

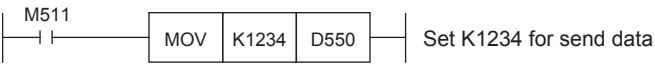
Set as shown below for this usage example.

|          |       |
|----------|-------|
| 1st word | 03FBH |
| 2nd word | C0A8H |



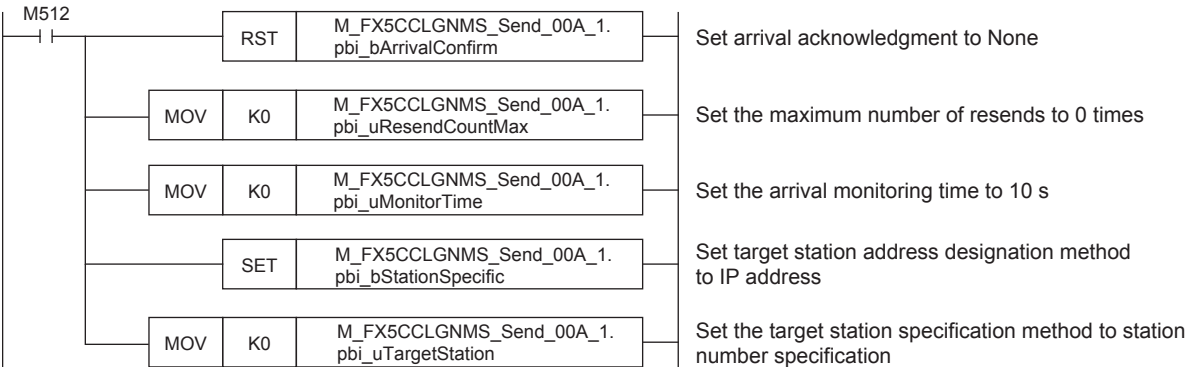
• Setting the send data storage device

In D550, set K1234 of the data to send to the target station.



• Setting the operation parameter

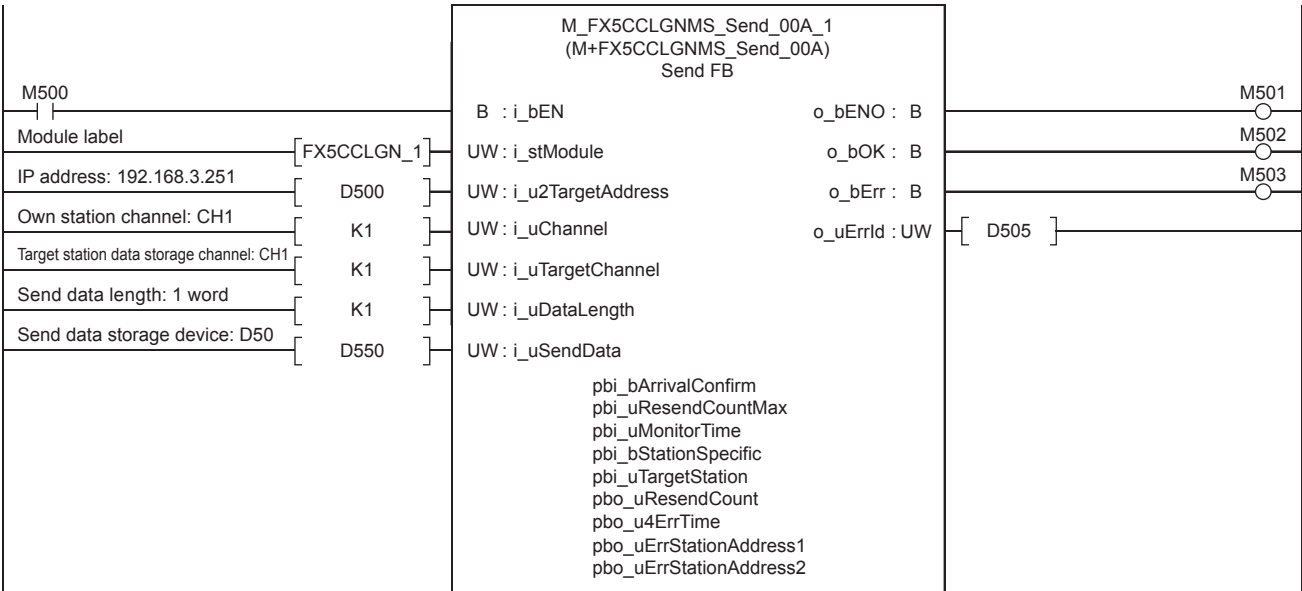
Set the operation parameter used for M+FX5CCLGNMS\_Send (Sending of another station data) FB.



• Setting and executing sending data to another station

The value stored in the own station device D550 is sent to the channel of the set target station using the

M+FX5CCLGNMS\_Send (Sending of another station data) FB.



# 7.10 M+FX5CCLGNMS\_SetAddress (Station number/IP address setting)

Set the station number and IP address of the own station using M+FX5CCLGNMS\_SetAddress (Station number/IP address setting).

## System configuration

Refer to  Page 16 System Configuration.

## Outline of example of program

The own station's station number and IP address are set with M+FX5CCLGNMS\_SetAddress (Station number/IP address setting). Set the following details.

- Station number: 0
- IP address: 192.168.3.250

## Preliminary setting

No preliminary settings are required to use this FB.

## Parameter setting

The module parameter "Parameter Setting Method" must be set to "Set with Program" with GX Works3. Refer to the  MELSEC iQ-F FX5 CC-Link IE TSN Master/Local Module User's Manual for details on the setting method.

## Program

The own station's station number and IP address are set with M+FX5CCLGNMS\_SetAddress (Station number/IP address setting).

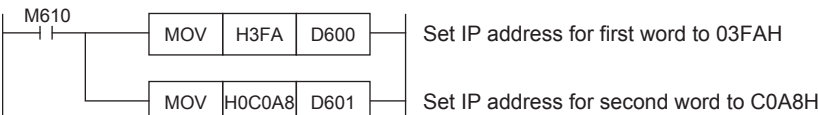
- Setting the IP address

Set the own station IP address to 192.168.3.250. Specify the third and fourth octets to the 1st word, and first and second octets to the 2nd word. The value must be converted from decimal to hexadecimal.

| Item                    | Decimal | Hexadecimal |
|-------------------------|---------|-------------|
| First octet (2nd word)  | 192     | C0          |
| Second octet (2nd word) | 168     | A8          |
| Third octet (1st word)  | 3       | 03          |
| Fourth octet (1st word) | 250     | FA          |

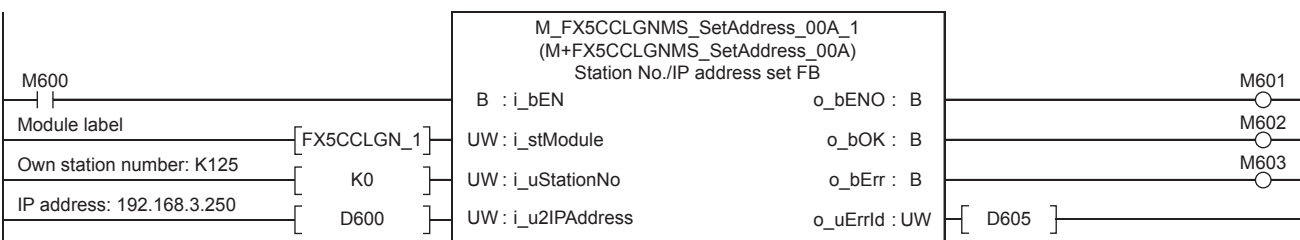
Set as shown below for this usage example.

|          |       |
|----------|-------|
| 1st word | 03FAH |
| 2nd word | C0A8H |



- Setting and executing station number/IP address

The own station's station number/IP address are set with the M+FX5CCLGNMS\_SetAddress (Station number/IP address setting) FB.



# 7.11 M+FX5CCLGNMS\_SLMP\_DeviceRead\_IP (Reading of SLMP-compatible device)

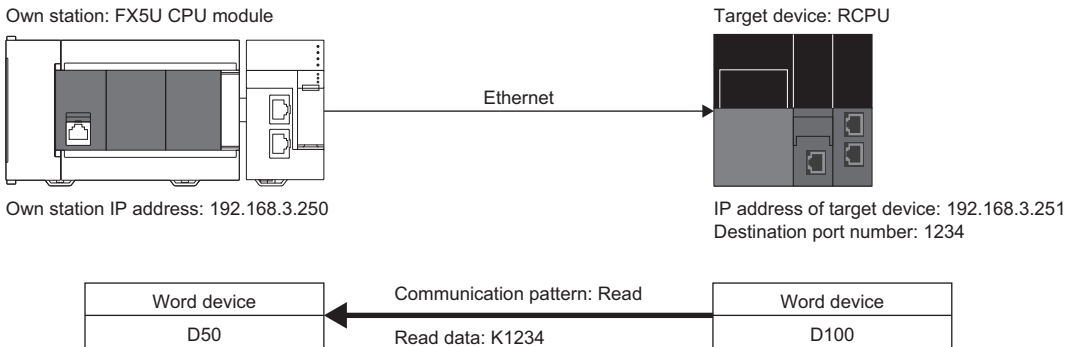
Use M+FX5CCLGNMS\_SLMP\_DeviceRead\_IP (Reading of SLMP-compatible device) to read the device data specified by the target device.

## System configuration

Refer to Page 16 System Configuration.

## Outline of example of program

The value stored in device D100 of the target device is read into device D50 of the own station.



## Preliminary setting

Set K1234 in device D100 of the target device.

## Parameter setting

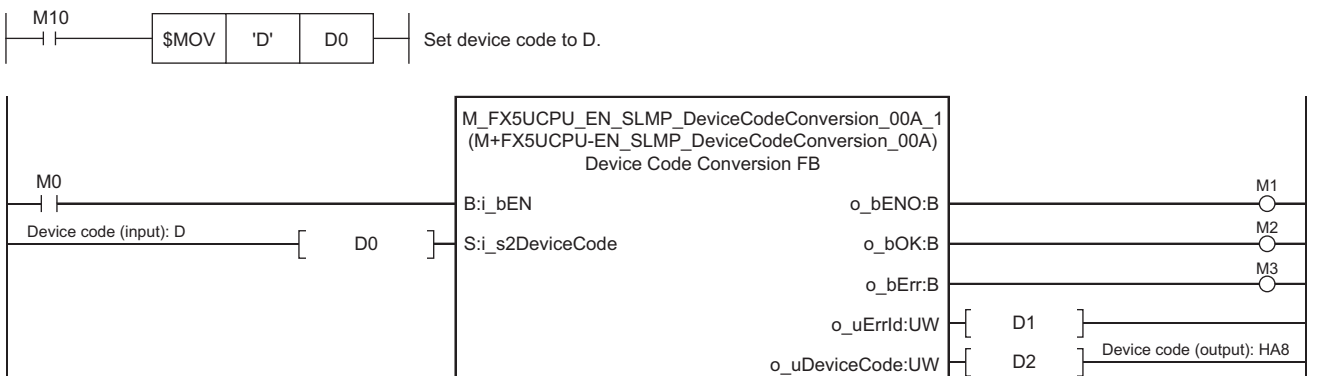
The own station IP address and SLMP communication settings are set using GX Works3. Refer to the MELSEC iQ-F FX5 CC-Link IE TSN Master/Local Module User's Manual for details on the setting method.

## Program

The device read out from the target device is converted into a binary code. After the conversion, the data from the device specified by the target device is read with M+FX5CCLGNMS\_SLMP\_DeviceRead\_IP (Reading of SLMP-compatible device).

- Convert the device code to the binary code.

In M+FX5CCLGNMS\_SLMP\_DeviceRead\_IP (Reading of SLMP-compatible device), the device to be read is specified with a binary code. Therefore, the device to read is converted into a binary code with M+FX5UCPU-EN\_SLMP\_DeviceCodeConversion (Reading of device code for SLMP communication FB). In this example, the data is read from D100 of the target device, so the device code "D" is converted into a binary code. For details on FB, refer to Page 65 M+FX5UCPU-EN\_SLMP\_DeviceCodeConversion (Reading of device code for SLMP communication FB).



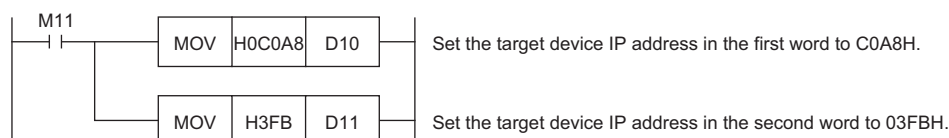
- Setting the IP address of the target device

Set the IP address of the target device to 192.168.3.251. Specify the first and second octets to the 1st word, and third and fourth octets to the 2nd word. The value must be converted from decimal to hexadecimal.

| Item                    | Decimal | Hexadecimal |
|-------------------------|---------|-------------|
| First octet (1st word)  | 192     | C0          |
| Second octet (1st word) | 168     | A8          |
| Third octet (2nd word)  | 3       | 03          |
| Fourth octet (2nd word) | 251     | FB          |

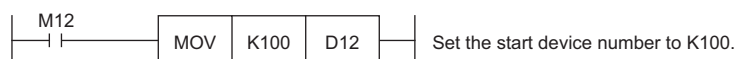
Set as shown below for this usage example.

|          |       |
|----------|-------|
| 1st word | C0A8H |
| 2nd word | 03FBH |



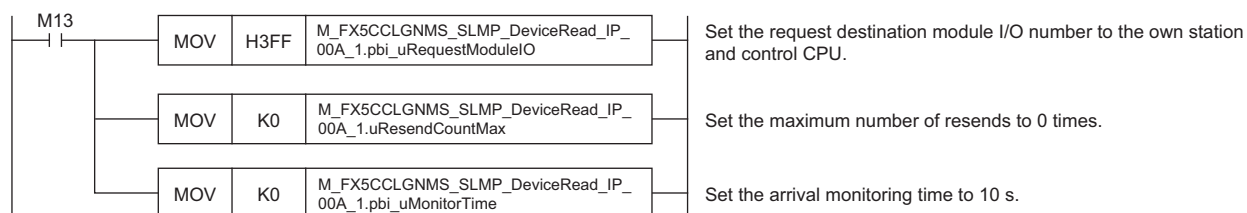
- Setting the head device number

Set the head device number of the device to read in D12.



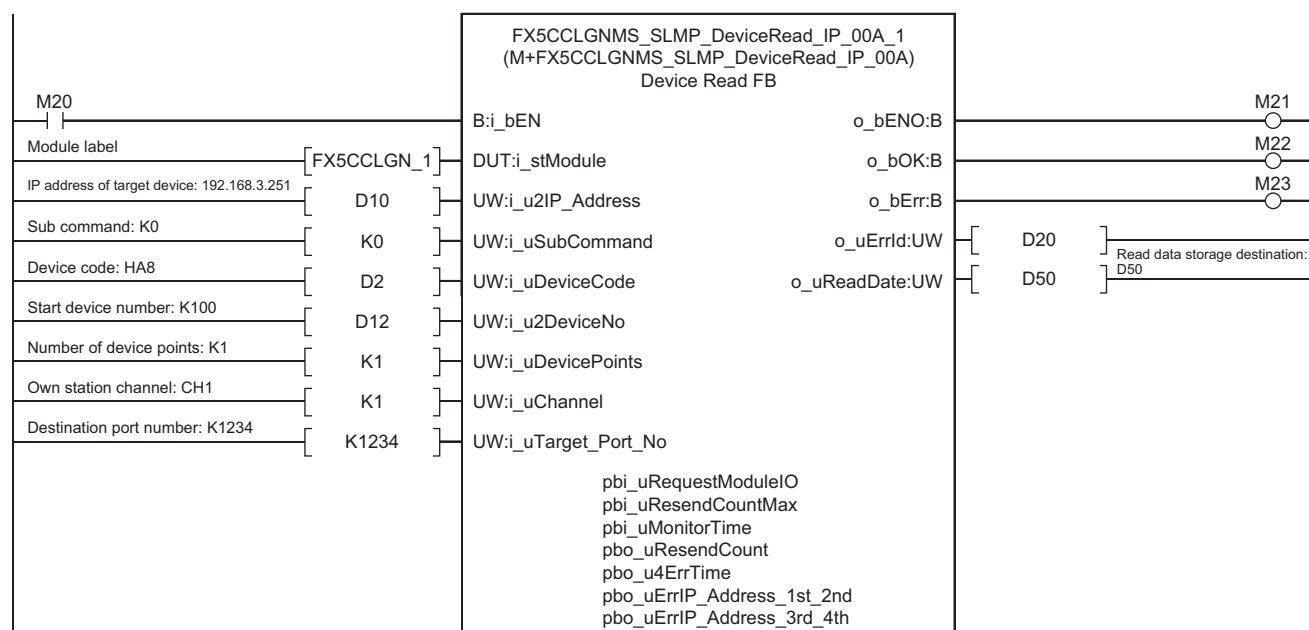
- Setting the operation parameter

Set the operation parameter used for M+FX5CCLGNMS\_SLMP\_DeviceRead\_IP (Reading of SLMP-compatible device) FB.



- Setting and executing reading of SLMP-compatible device

The value from target device D100 is read using M+FX5CCLGNMS\_SLMP\_DeviceRead\_IP (Reading of SLMP-compatible device) FB. The read value is stored in the own station's device D50.



# 7.12 M+FX5CCLGNMS\_SLMP\_DeviceWrite\_IP (Writing to SLMP-compatible device)

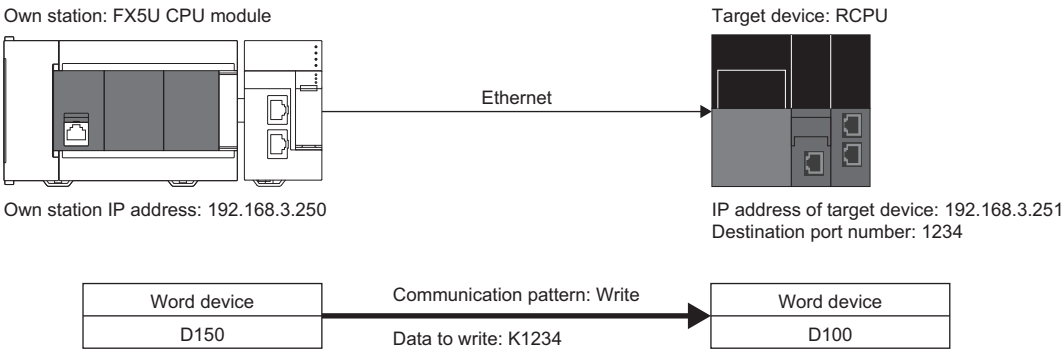
The data is written to the device specified by the target device using M+FX5CCLGNMS\_SLMP\_DeviceWrite\_IP (Writing to SLMP-compatible device).

## System configuration

Refer to Page 16 System Configuration.

## Outline of example of program

The value stored in device D150 of the own station is written to device D100 of the target device.



7

## Preliminary setting

No preliminary settings are required to use this FB.

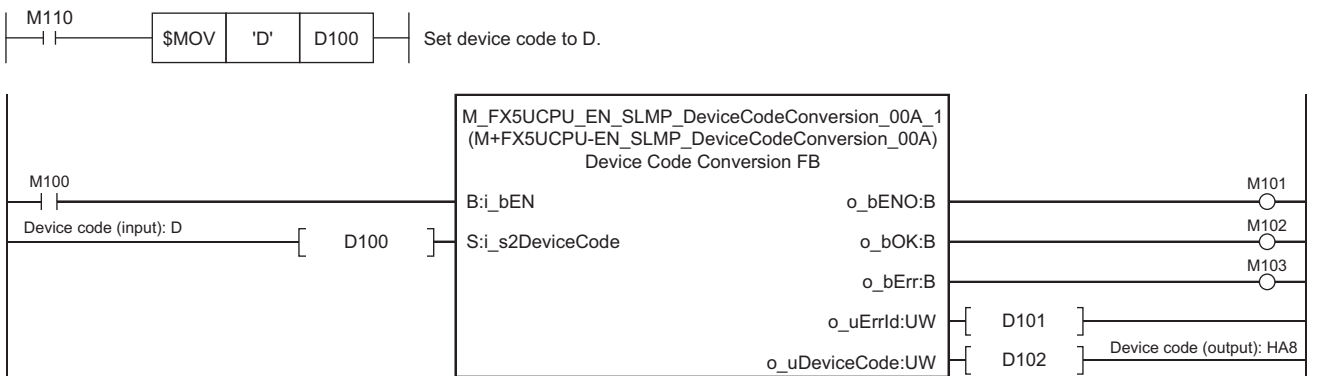
## Parameter setting

The own station IP address and SLMP communication settings are set using GX Works3. Refer to the MELSEC iQ-F FX5 CC-Link IE TSN Master/Local Module User's Manual for details on the setting method.

Program

The device written to the target device is converted into a binary code. After the conversion, the data from the device specified by the target device is written using M+FX5CCLGNMS\_DeviceWrite\_IP (Writing to SLMP-compatible device).

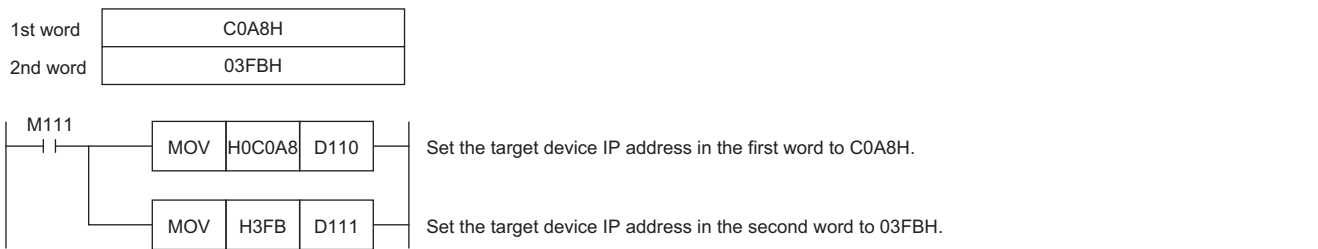
- Convert the device code to the binary code.
- In M+FX5CCLGNMS\_SLMP\_DeviceWrite\_IP (Writing to SLMP-compatible device), the device to be written is specified with a binary code. Therefore, the device to write is converted into binary code with M+FX5UCPU-EN\_SLMP\_DeviceCodeConversion (Reading of device code for SLMP communication FB). In this example, the data is written into D100 of the target device, so the device code "D" is converted into binary code. For details on FB, refer to  Page 65 M+FX5UCPU-EN\_SLMP\_DeviceCodeConversion (Reading of device code for SLMP communication FB).



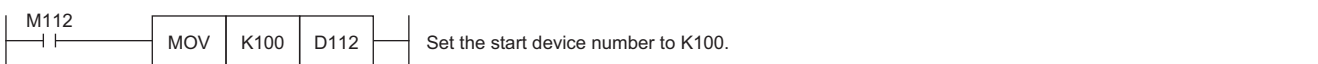
- Setting the IP address of the target device
- Set the IP address of the target device to 192.168.3.251. Specify the first and second octets to the 1st word, and third and fourth octets to the 2nd word. The value must be converted from decimal to hexadecimal.

| Item                    | Decimal | Hexadecimal |
|-------------------------|---------|-------------|
| First octet (1st word)  | 192     | C0          |
| Second octet (1st word) | 168     | A8          |
| Third octet (2nd word)  | 3       | 03          |
| Fourth octet (2nd word) | 251     | FB          |

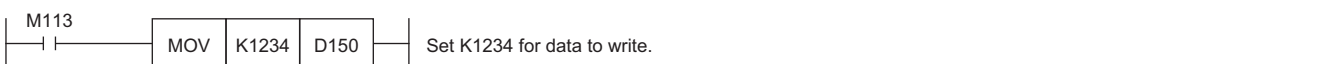
Set as shown below for this usage example.



- Setting the head device number
- Set the head device number of the device to read in D112.



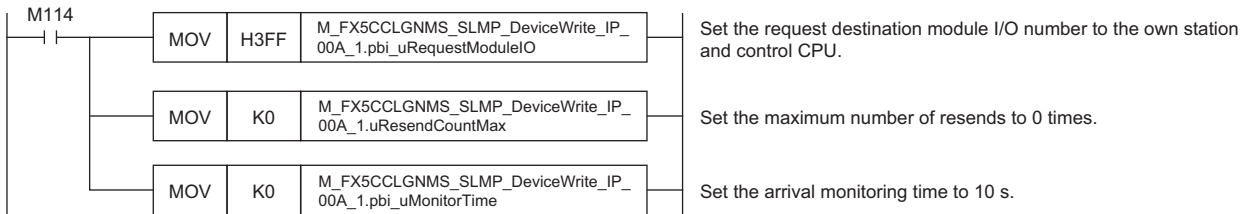
- Setting the write data storage destination
- Set the data K1234 to be written to D150.





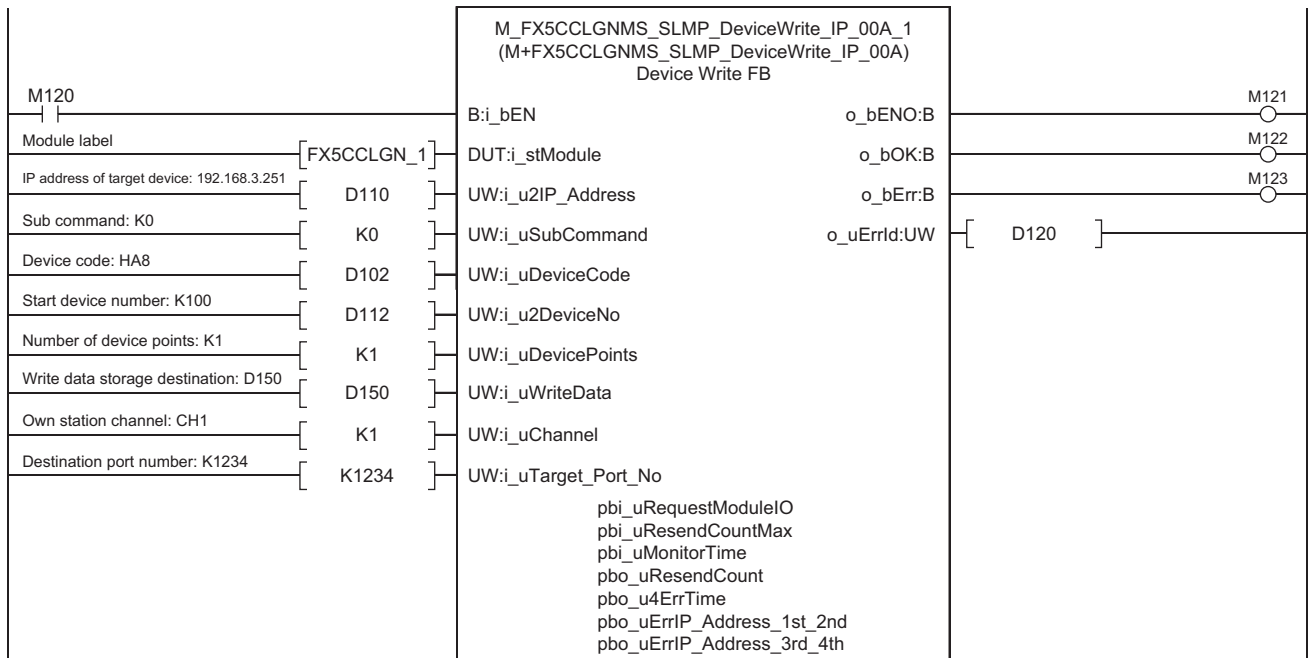
- Setting the operation parameter

Set the operation parameter used for M+FX5CCLGNMS\_DeviceWrite\_IP (Writing to SLMP-compatible device) FB.



- Setting and executing writing to SLMP-compatible device

The value stored in the own station D150 is written into the set target device D100 using M+FX5CCLGNMS\_DeviceWrite\_IP (Writing to SLMP-compatible device) FB.



## 7.13 M+FX5-EIP\_Class1GetInputData, M+FX5-EIP\_Class1SetOutputData (Class1 communications)

Performs Class1 communications between the FX5-EIP and EtherNet/IP devices using M+FX5-EIP\_Class1GetInputData (Class1 communications input data acquisition) and M+FX5-EIP\_Class1SetOutputData (Class1 communications output data setting).

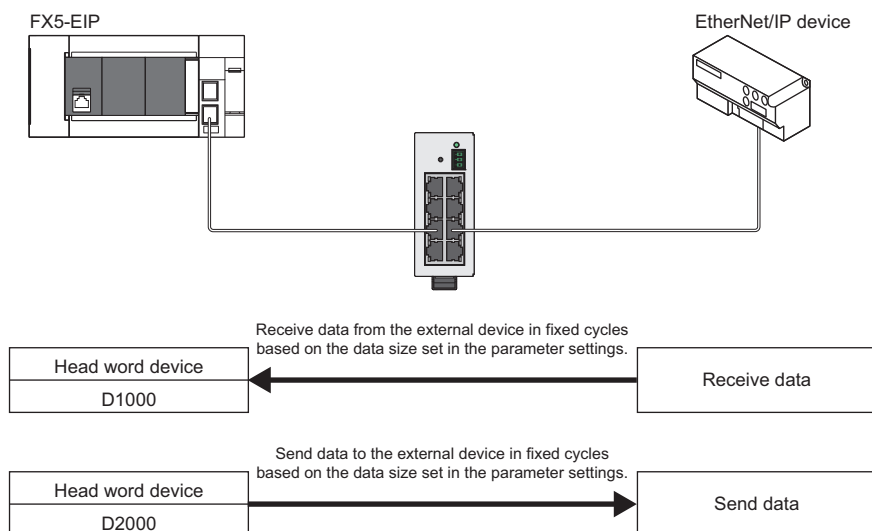
### Outline of example of program

- M+FX5-EIP\_Class1GetInputData

Reads the input data received from the external device into D1000 based on the data size of Connection No.1 (20 bytes) set in the parameter settings.

- M+FX5-EIP\_Class1SetOutputData

Writes the output data set in D2000 or later into the external device based on the data size of Connection No.1 (20 bytes) set in the parameter settings.



## Parameter setting

Set the parameters using GX Works3.

Use the same instance ID as the external device.

For the parameter settings for the external device, refer to the manual for the external device used.

For details on the parameter settings, refer to the following.

📖 MELSEC iQ-F FX5-EIP EtherNet/IP Module User's Manual

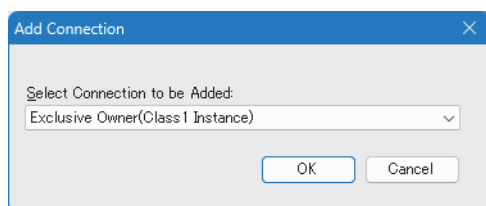
### 1. Set the IP address of the FX5-EIP.

🖱️ Navigation window ⇒ [Parameter] ⇒ [Module Information] ⇒ [FX5-EIP] ⇒ [Module Parameter] ⇒ [Basic Settings]  
IP address: 192.168.3.5

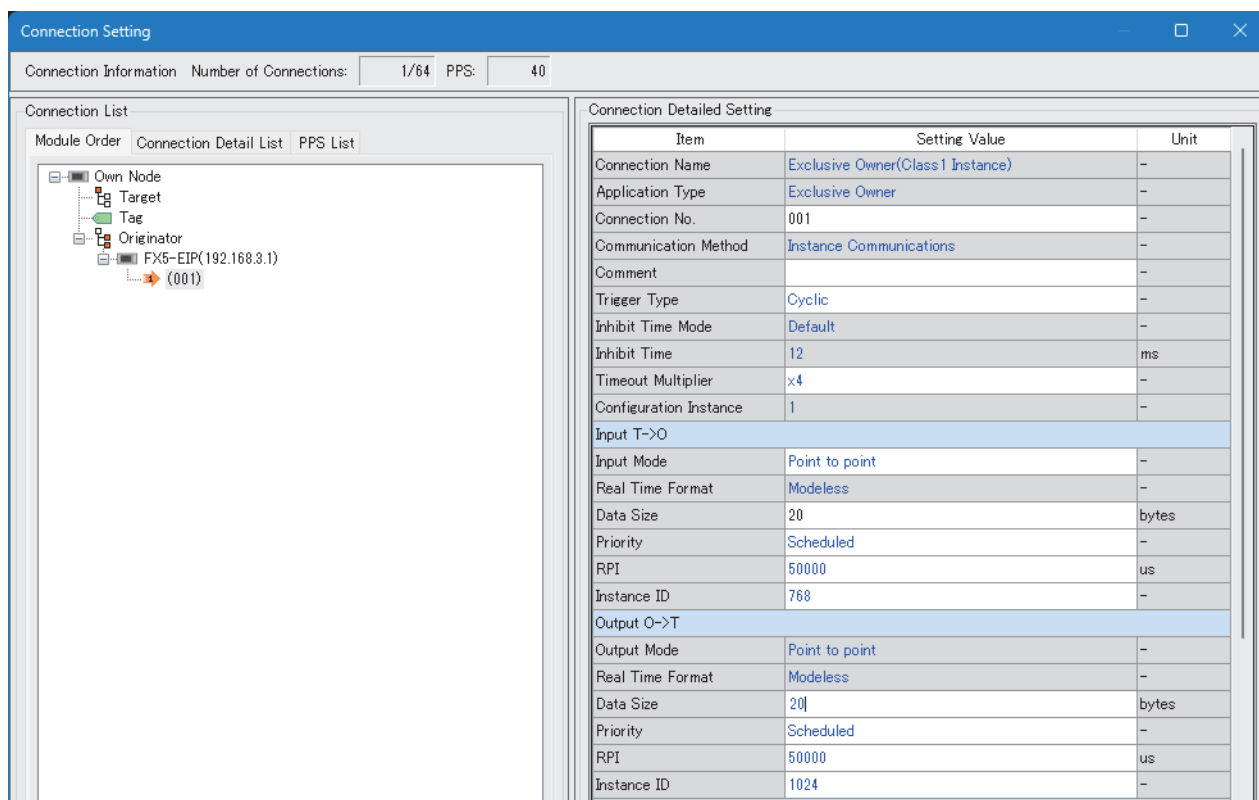
Do not change the settings for auto refresh.

### 2. Open the connection setting, and select [Exclusive Owner(Class1 Instance)] from [Add Connection].

🖱️ Navigation window ⇒ [Parameter] ⇒ [Module Information] ⇒ [FX5-EIP] ⇒ [Module Extended Parameter (EtherNet/IP Configuration)] ⇒ [FX5-EIP] ⇒ <Detailed Setting> ⇒ [Add Connection]



### 3. Configure settings for the connection detail.



| Item           |                  | Set value |
|----------------|------------------|-----------|
| Connection No. |                  | 001       |
| Input T->O     | Data size (byte) | 20        |
| Output O->T    | Data size (byte) | 20        |

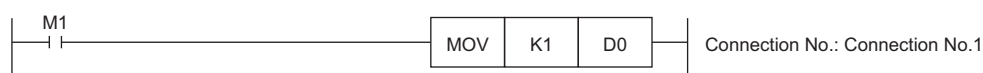
## Program

### ■M+FX5-EIP\_Class1GetInputData

- Devices to be used

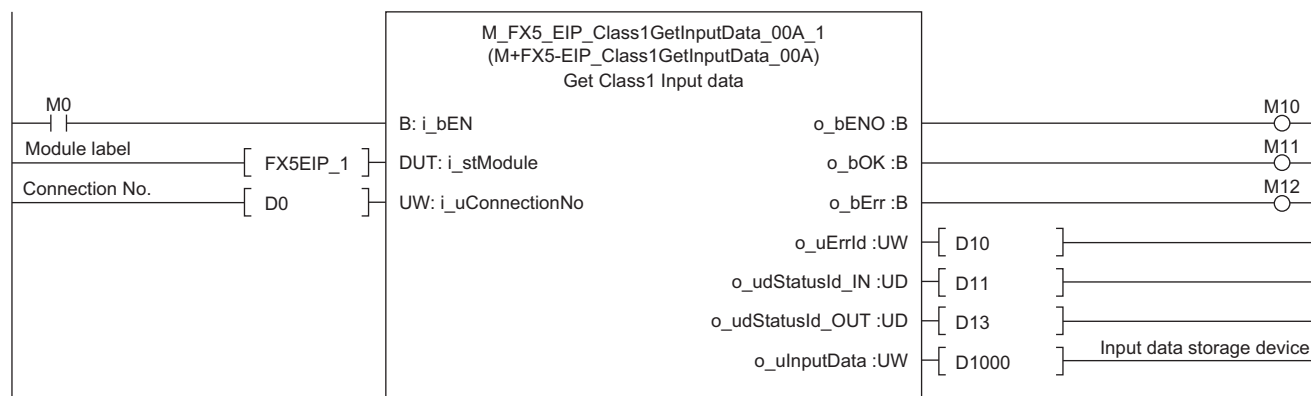
| Device         | Description                                                     | Set value |
|----------------|-----------------------------------------------------------------|-----------|
| M0             | Execution command                                               | —         |
| D0             | Connection No.                                                  | K1        |
| M10            | Execution status                                                | —         |
| M11            | Normal completion                                               | —         |
| M12            | Error completion                                                | —         |
| D10            | Error code                                                      | —         |
| D11, D12       | Error code of connection communication error on the input side  | —         |
| D13, D14       | Error code of connection communication error on the output side | —         |
| D1000 to D1009 | Input data storage device                                       | —         |

Set the input label by turning on M1.



Turning on M0 executes the FB, and starts EtherNet/IP communications by setting the data of Connection No.1.

While the FB operates normally, the input data received from the external device is stored in D1000 or later based on the data size set in Connection No.1 with the parameter settings, then M11 turns on.

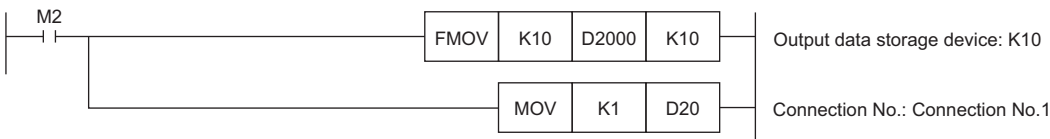


# ■M+FX5-EIP\_Class1SetOutputData

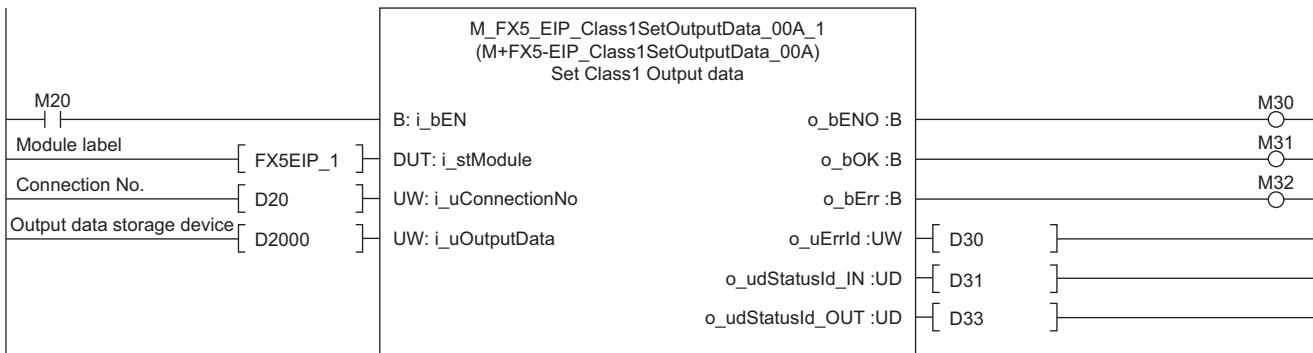
- Devices to be used

| Device         | Description                                                     | Set value |
|----------------|-----------------------------------------------------------------|-----------|
| M20            | Execution command                                               | —         |
| D20            | Connection No.                                                  | K1        |
| D2000 to D2009 | Output data storage device                                      | —         |
| M30            | Execution status                                                | —         |
| M31            | Normal completion                                               | —         |
| M32            | Error completion                                                | —         |
| D30            | Error code                                                      | —         |
| D31, D32       | Error code of connection communication error on the input side  | —         |
| D33, D34       | Error code of connection communication error on the output side | —         |

Set the input label by turning on M2.



Turning on M20 executes the FB, and starts EtherNet/IP communications by setting the data of Connection No.1. While the FB operates normally, the output data set for D2000 or later is sent to the external device based on the data size set in Connection No.1 with the parameter settings, then M31 turns on.

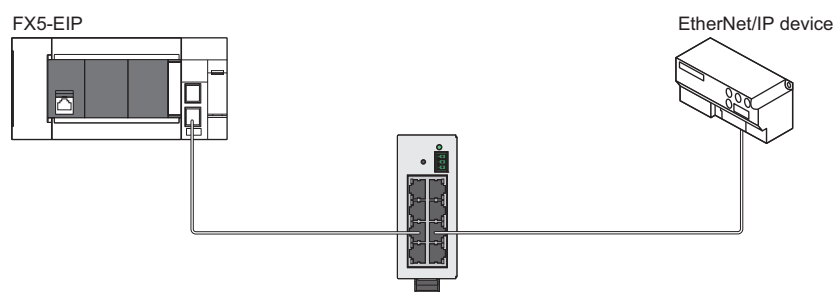
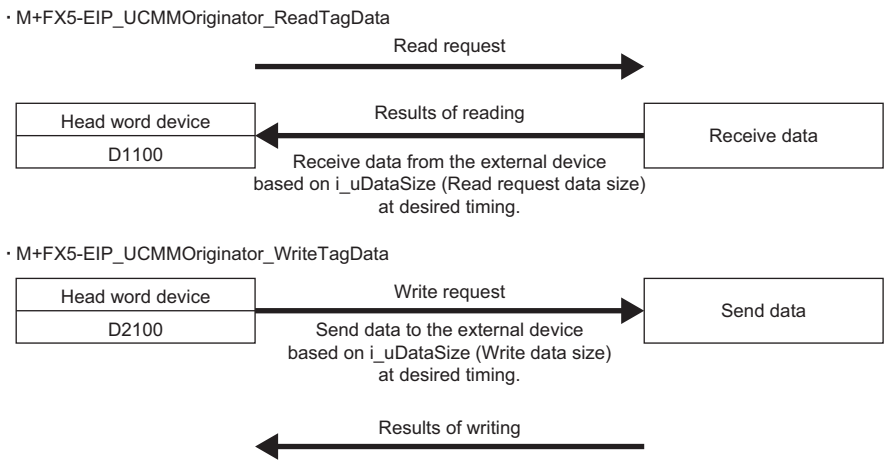


# 7.14 M+FX5-EIP\_UCMMOriginator\_ReadTagData, M+FX5-EIP\_UCMMOriginator\_WriteTagData (UCMM tag communications)

Performs UCMM tag communications between the FX5-EIP and EtherNet/IP devices using M+FX5-EIP\_UCMMOriginator\_ReadTagData (UCMM tag communications data acquisition) and M+FX5-EIP\_UCMMOriginator\_WriteTagData (UCMM tag communications data setting).

## Outline of example of program

- M+FX5-EIP\_UCMMOriginator\_ReadTagData  
Reads the input data received from the external device into D1100 based on i\_uDataSize (Read request data size) (10 words) using Connection No.2.
- M+FX5-EIP\_UCMMOriginator\_WriteTagData  
Writes the output data stored in D2100 or later into the external device based on i\_uDataSize (Write data size) (10 words) using Connection No.3.



# Parameter setting

Set the parameters using GX Works3.

For the parameter settings for the external device, refer to the manual for the external device used.

For details on the parameter settings, refer to the following.

 MELSEC iQ-F FX5-EIP EtherNet/IP Module User's Manual

## 1. Set the IP address of the FX5-EIP.

 Navigation window ⇒ [Parameter] ⇒ [Module Information] ⇒ [FX5-EIP] ⇒ [Module Parameter] ⇒ [Basic Settings]  
IP address: 192.168.3.5

Do not change the settings for auto refresh.

Ensure that Connection No.2 and Connection No.3 do not have connection settings.

# Program

## ■M+FX5-EIP\_UCMMOriginator\_ReadTagData

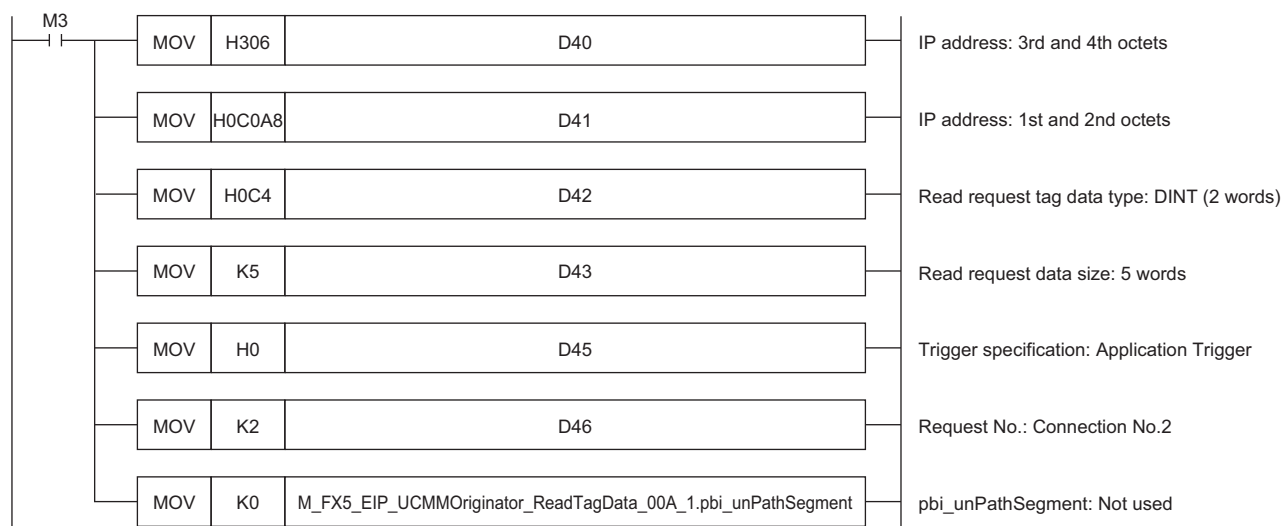
• Devices to be used

| Device         | Description                          | Set value |
|----------------|--------------------------------------|-----------|
| M40            | Execution command                    | —         |
| D40            | IP address (third and fourth octets) | H306      |
| D41            | IP address (first and second octets) | H0C0A8    |
| D42            | Read request tag data type           | H0C4      |
| D43            | Read request data size               | K5        |
| D45            | Trigger specification                | H0        |
| D46            | Request No.                          | K2        |
| M50            | Execution status                     | —         |
| M51            | Normal completion                    | —         |
| M52            | Error completion                     | —         |
| D50            | Error code                           | —         |
| D51            | Error code of communication error    | —         |
| D52            | Read tag data type                   | —         |
| D53            | Read data size                       | —         |
| D1100 to D1109 | Read data storage device             | —         |

Set EtherNet/IP communications start request (U\G272) by turning on M15.

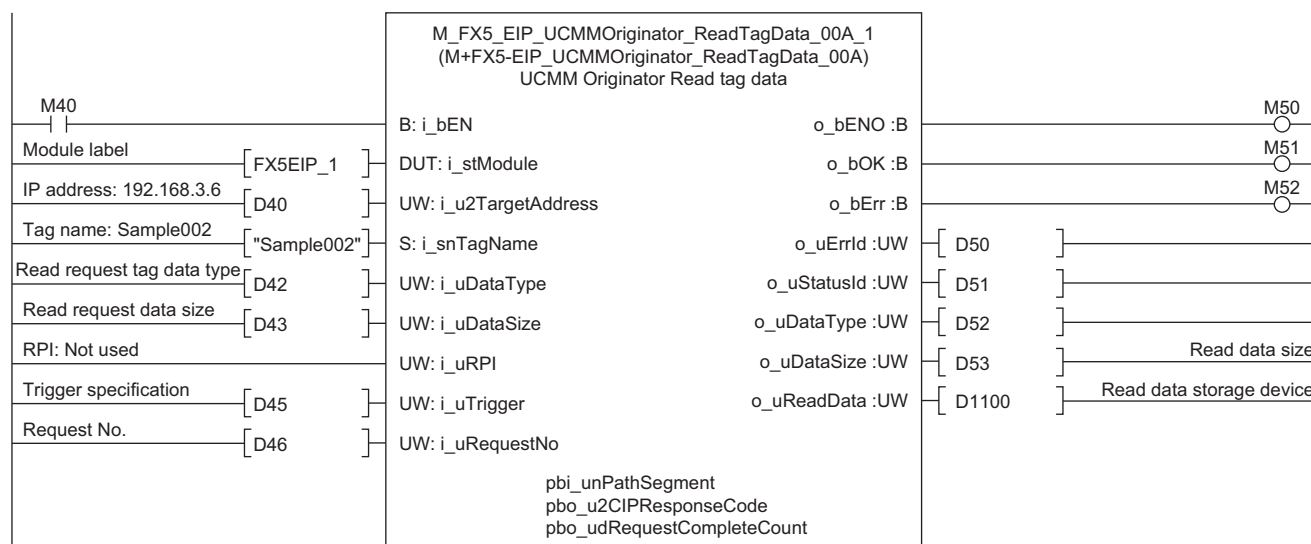


Set the input labels and operation parameters by turning on M3.



Executes the FB by turning on M40, and sends Read request to the external device side.

Once the FB execution completes normally, the input data received from the external device is stored in D1100 or later based on i\_uDataSize (Read request data size), then M51 turns on.



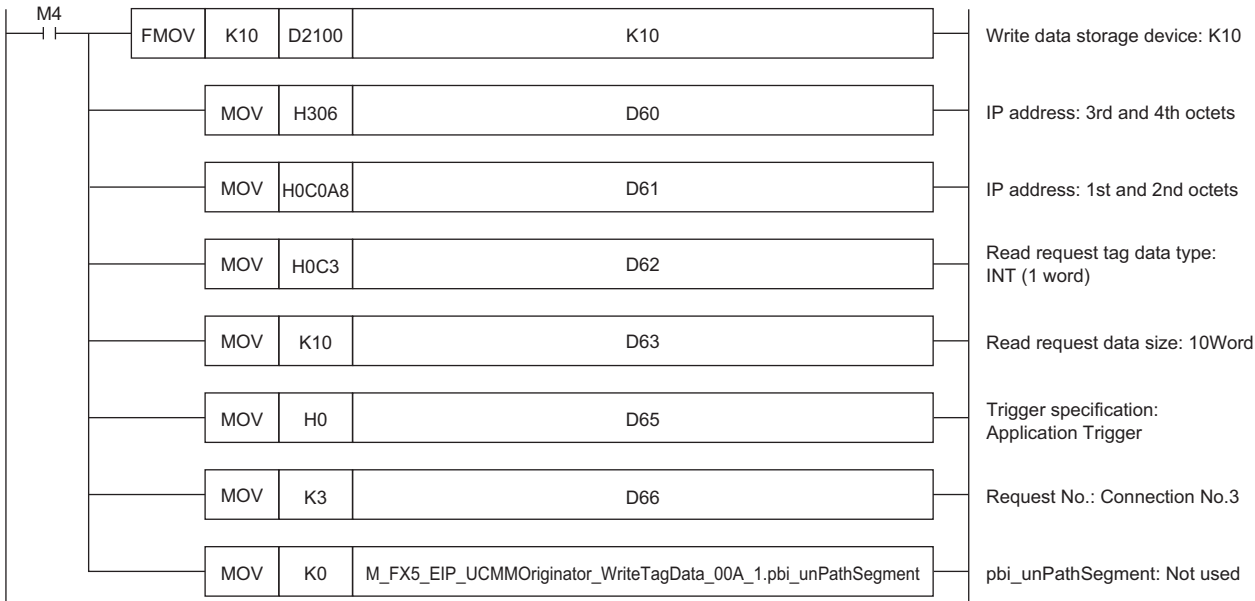
## ■M+FX5-EIP\_UCMMOriginator\_WriteTagData

• Devices to be used

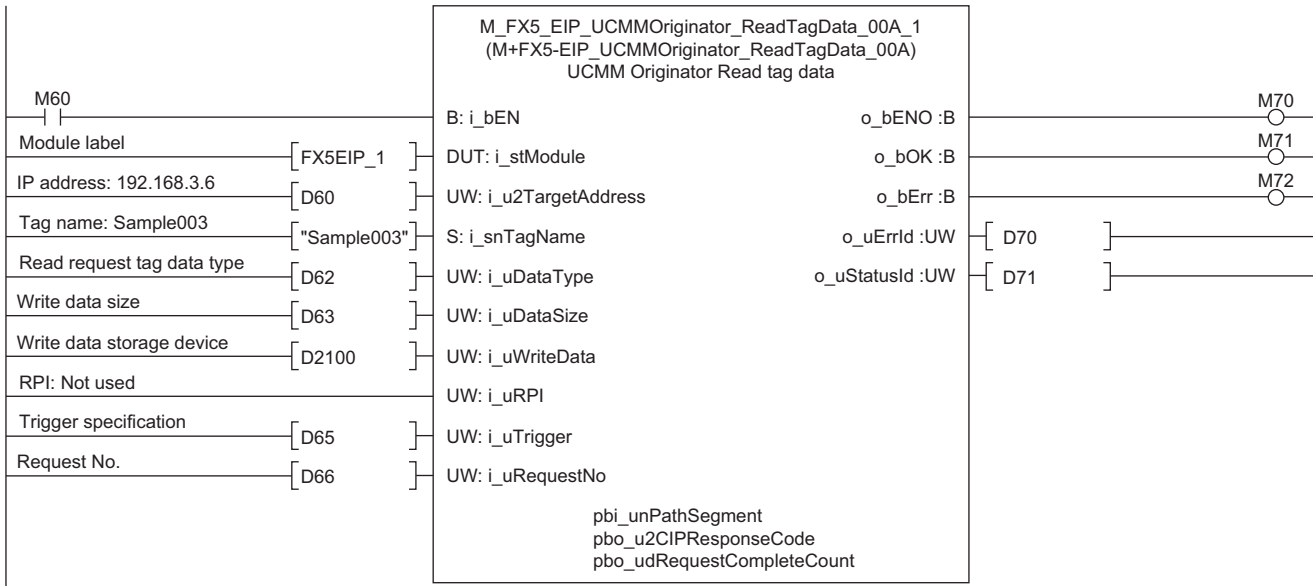
| Device         | Description                          | Set value |
|----------------|--------------------------------------|-----------|
| M60            | Execution command                    | —         |
| D60            | IP address (third and fourth octets) | H306      |
| D61            | IP address (first and second octets) | H0C0A8    |
| D62            | Tag data type                        | H0C3      |
| D63            | Write data size                      | K10       |
| D2100 to D2109 | Write data storage device            | Optional  |
| D65            | Trigger specification                | H0        |
| D66            | Request No.                          | K3        |
| M70            | Execution status                     | —         |
| M71            | Normal completion                    | —         |
| M72            | Error completion                     | —         |
| D70            | Error code                           | —         |
| D71            | Error code of communication error    | —         |



Set the input labels and operation parameters by turning on M4.



Executes the FB by turning on M60, and sends Write request to the external device side.  
Once the FB execution completes normally, the output data set for D2100 or later is sent to the external device based on i\_uDataSize (Write data size), then M71 turns on.



## 7.15 M+FX5-EIP\_Class3Originator\_ReadTagData, M+FX5-EIP\_Class3Originator\_WriteTagData (Class3 Tag communications)

Performs Class3 tag communications between the FX5-EIP and EtherNet/IP devices using M+FX5-EIP\_Class3Originator\_ReadTagData (Class3 tag communications data acquisition) and M+FX5-EIP\_Class3Originator\_WriteTagData (Class3 tag communications data setting).

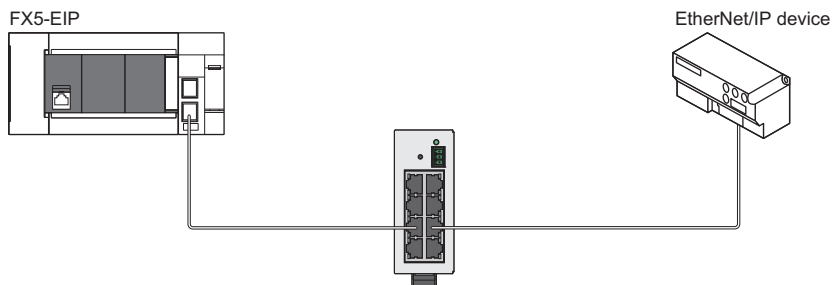
### Outline of example of program

- M+FX5-EIP\_Class3Originator\_ReadTagData

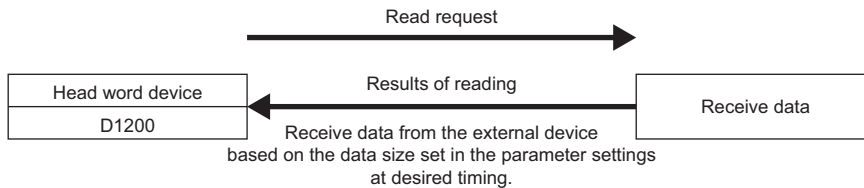
The input data received from the external device is read into D1200 based on the data size of Connection No.4 (20 bytes) set in the parameter settings.

- M+FX5-EIP\_Class3Originator\_WriteTagData

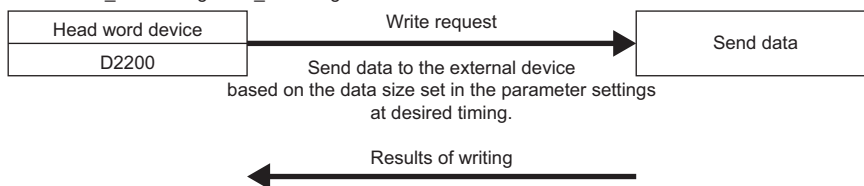
Writes the output data stored in D2200 or later into the external device based on the data size of Connection No.5 (20 bytes) set in the parameter settings.



- M+FX5-EIP\_Class3Originator\_ReadTagData



- M+FX5-EIP\_Class3Originator\_WriteTagData



# Parameter setting

Set the parameters using GX Works3.

For the parameter settings for the external device, refer to the manual for the external device used.

For details on the parameter settings, refer to the following.

MELSEC iQ-F FX5-EIP EtherNet/IP Module User's Manual

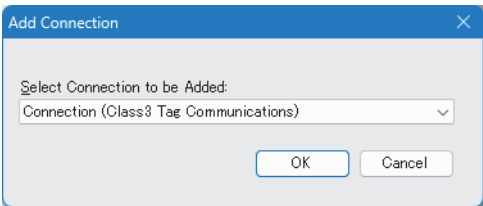
## 1. Set the IP address of the FX5-EIP.

Navigation window ⇒ [Parameter] ⇒ [Module Information] ⇒ [FX5-EIP] ⇒ [Module Parameter] ⇒ [Basic Settings]  
IP address: 192.168.3.5

Do not change the settings for auto refresh.

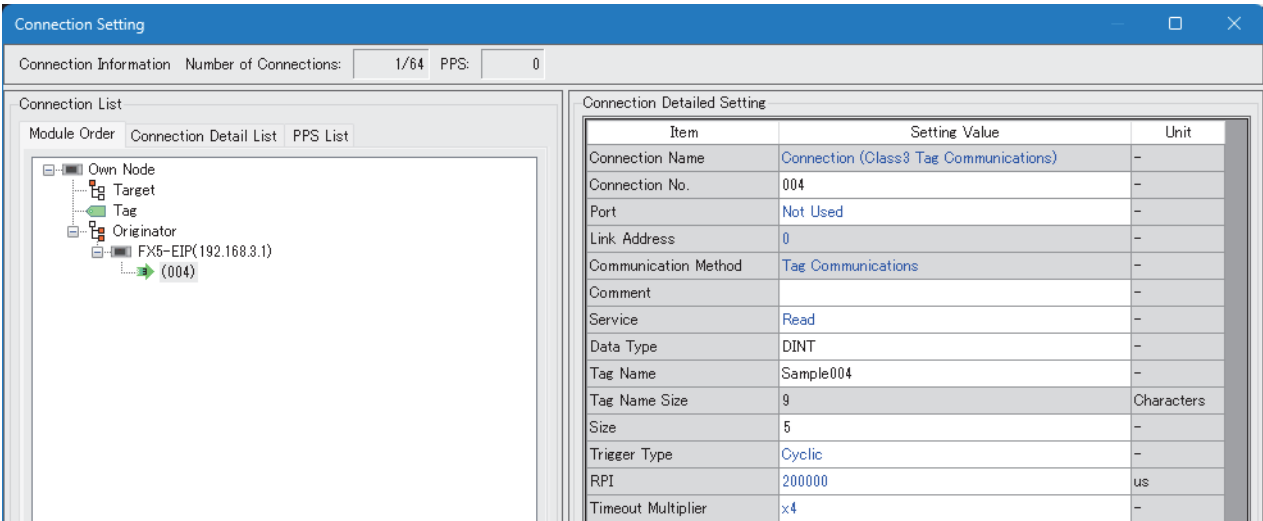
## 2. Open the connection setting, and select [Connection (Class3 Tag Communications)] from [Add Connection].

Navigation window ⇒ [Parameter] ⇒ [Module Information] ⇒ [FX5-EIP] ⇒ [Module Extended Parameter (EtherNet/IP Configuration)] ⇒ [FX5-EIP] ⇒ <Detailed Setting> ⇒ [Add Connection]



## 3. Configure settings for the connection detail.

- Connection No.4



| Item           | Set value |
|----------------|-----------|
| Connection No. | 004       |
| Service        | Read      |
| Tag name       | Sample004 |
| Data type      | DINT      |
| Data size      | 5         |

• Connection No.5

Connection Setting

Connection Information    Number of Connections: 2/64    PPS: 0

Connection List

Module Order    Connection Detail List    PPS List

```

graph TD
    OwnNode[Own Node] --> Target[Target]
    OwnNode --> Originator[Originator]
    Originator --> FX5EIP[FX5-EIP(192.168.3.1)]
    FX5EIP --> 004["(004)"]
    FX5EIP --> 005["(005)"]
        
```

Connection Detailed Setting

| Item                 | Setting Value                          | Unit       |
|----------------------|----------------------------------------|------------|
| Connection Name      | Connection (Class3 Tag Communications) | -          |
| Connection No.       | 005                                    | -          |
| Port                 | Not Used                               | -          |
| Link Address         | 0                                      | -          |
| Communication Method | Tag Communications                     | -          |
| Comment              |                                        | -          |
| Service              | Write                                  | -          |
| Data Type            | INT                                    | -          |
| Tag Name             | Sample005                              | -          |
| Tag Name Size        | 9                                      | Characters |
| Size                 | 10                                     | -          |
| Trigger Type         | Cyclic                                 | -          |
| RPI                  | 200000                                 | us         |
| Timeout Multiplier   | x4                                     | -          |

| Item           | Set value |
|----------------|-----------|
| Connection No. | 005       |
| Service        | Write     |
| Tag name       | Sample005 |
| Data type      | INT       |
| Data size      | 10        |

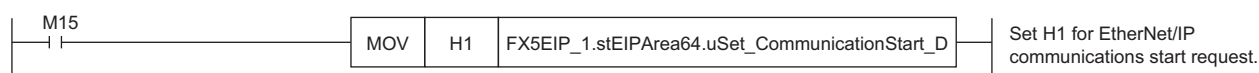
## Program

### ■M+FX5-EIP\_Class3Originator\_ReadTagData

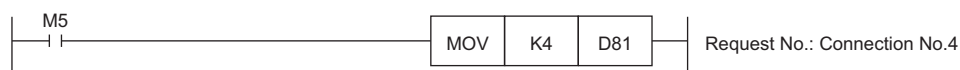
- Devices to be used

| Device         | Description                       | Set value |
|----------------|-----------------------------------|-----------|
| M80            | Execution command                 | —         |
| D81            | Request No.                       | K4        |
| M90            | Execution status                  | —         |
| M91            | Normal completion                 | —         |
| M92            | Error completion                  | —         |
| D90            | Error code                        | —         |
| D91            | Error code of communication error | —         |
| D1200 to D1209 | Read data storage device          | —         |
| D92            | Read data size                    | —         |

Set EtherNet/IP communications start request (U\G272) by turning on M15.

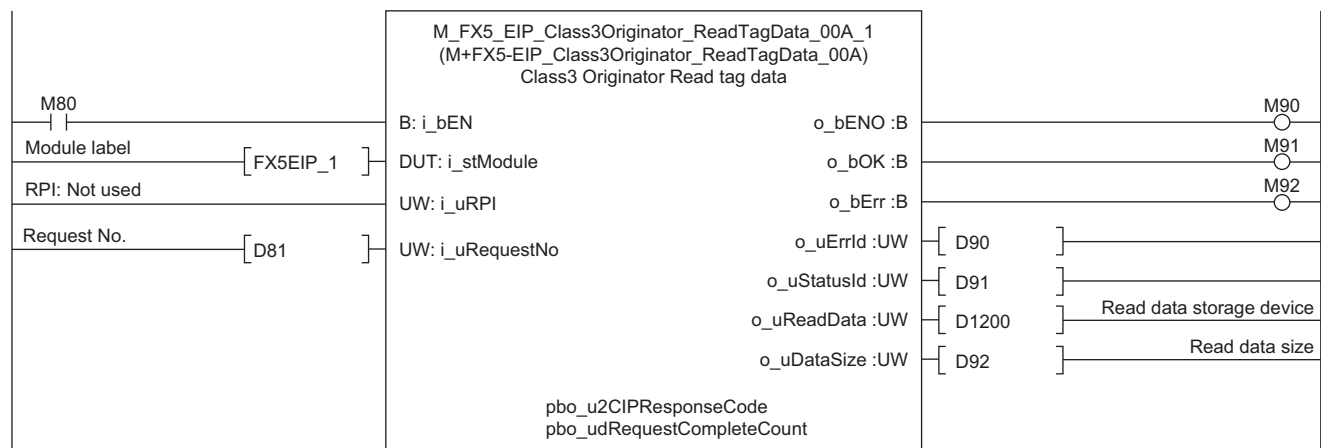


The input label is set by turning on M5.



Executes the FB by turning on M80, and sends Read request to the external device side.

Once the FB execution completes normally, the input data received from the external device is stored in D1200 or later based on the data size set in Connection No.4, then M91 turns on.

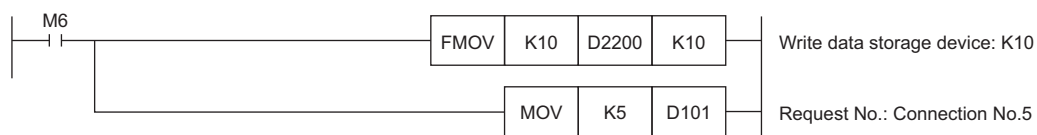


## ■M+FX5-EIP\_Class3Originator\_WriteTagData

- Devices to be used

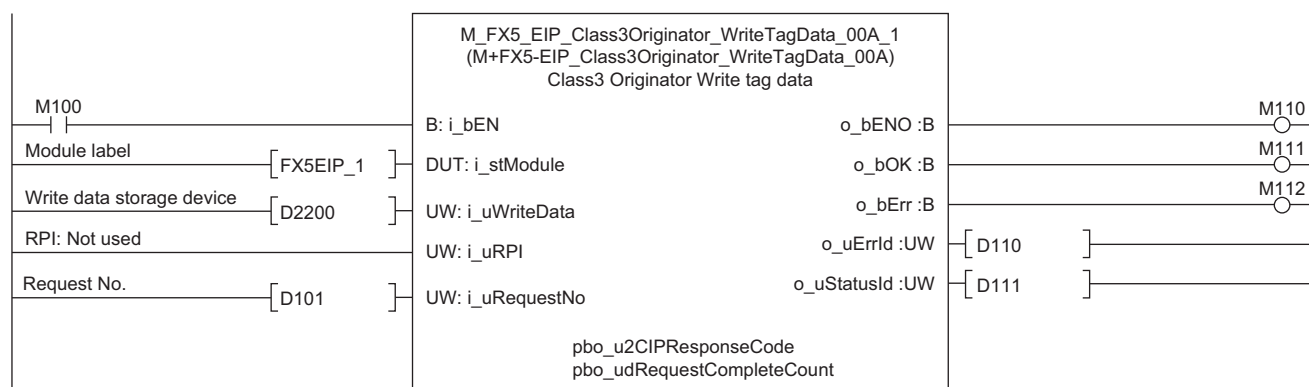
| Device         | Description                       | Set value |
|----------------|-----------------------------------|-----------|
| M100           | Execution command                 | —         |
| D2200 to D2209 | Write data storage device         | —         |
| D101           | Request No.                       | K5        |
| M110           | Execution status                  | —         |
| M111           | Normal completion                 | —         |
| M112           | Error completion                  | —         |
| D110           | Error code                        | —         |
| D111           | Error code of communication error | —         |

Set the input labels and operation parameters by turning on M6.



Executes the FB by turning on M100, and sends Write request to the external device side.

Once the FB execution completes normally, the output data set for D2200 or later is sent to the external device based on the data size set in Connection No.5, then M111 turns on.

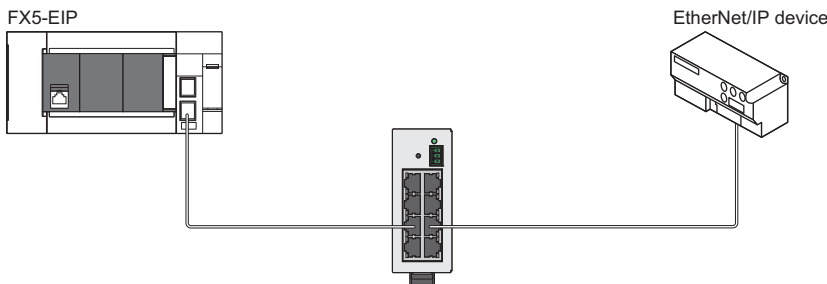
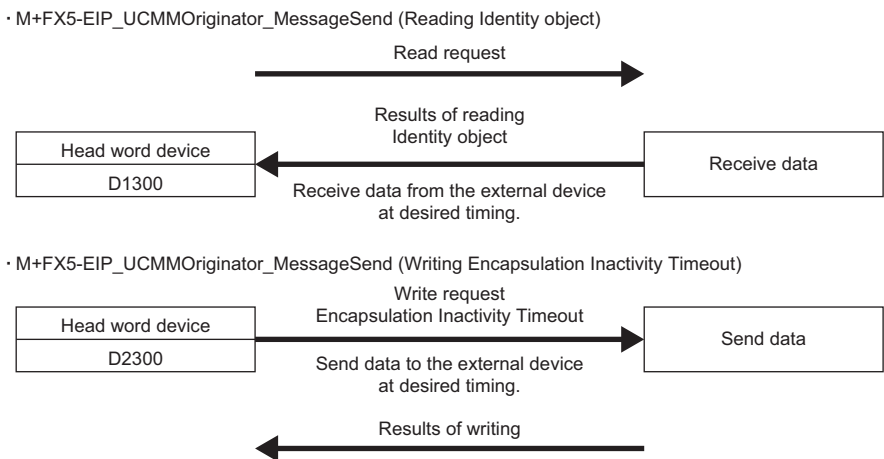


# 7.16 M+FX5-EIP\_UCMMOriginator\_MessageSend (UCMM instance communications)

Performs UCMM tag communications between the FX5-EIP and EtherNet/IP devices using M+FX5-EIP\_UCMMOriginator\_MessageSend (Sending of UCMM communications message).

## Outline of example of program

- M+FX5-EIP\_UCMMOriginator\_MessageSend (Reading Identity object)  
Reads Identity object of the external device into D1300 using Connection No.6.
  - M+FX5-EIP\_UCMMOriginator\_MessageSend (Writing Encapsulation Inactivity Timeout)  
Writes Encapsulation Inactivity Timeout set for the input label to the external device using Connection No.7.
- For the command support state and communication data size, refer to the manual for the external device used.



## Parameter setting

Set the parameters using GX Works3.  
For the parameter settings for the external device, refer to the manual for the external device used.  
For details on the parameter settings, refer to the following.

MELSEC iQ-F FX5-EIP EtherNet/IP Module User's Manual

1. Set the IP address of the FX5-EIP.

Navigation window ⇒ [Parameter] ⇒ [Module Information] ⇒ [FX5-EIP] ⇒ [Module Parameter] ⇒ [Basic Settings]  
IP address: 192.168.3.5

Do not change the settings for auto refresh.  
Ensure that Connection No.6 and Connection No.7 do not have connection settings.

## Program

### ■M+FX5-EIP\_UCMMOriginator\_MessageSend (Reading Identity object)

- Devices to be used

| Device         | Description                          | Set value |
|----------------|--------------------------------------|-----------|
| M120           | Execution command                    | —         |
| D120           | IP address (third and fourth octets) | H306      |
| D121           | IP address (first and second octets) | H0C0A8    |
| D122           | Request data size                    | K0        |
| D123           | Service                              | H1        |
| D124           | Class                                | H1        |
| D125           | Instance                             | H1        |
| D126           | Attribute                            | H0        |
| D128           | Trigger specification                | H0        |
| D129           | Request No.                          | K6        |
| M130           | Execution status                     | —         |
| M131           | Normal completion                    | —         |
| M132           | Error completion                     | —         |
| D130           | Error code                           | —         |
| D131           | Error code of communication error    | —         |
| D1300 to D1309 | Response data storage device         | —         |
| D132           | Response data size                   | —         |

Set EtherNet/IP communications start request (U\G272) by turning on M15.



The input label is set by turning on M7.





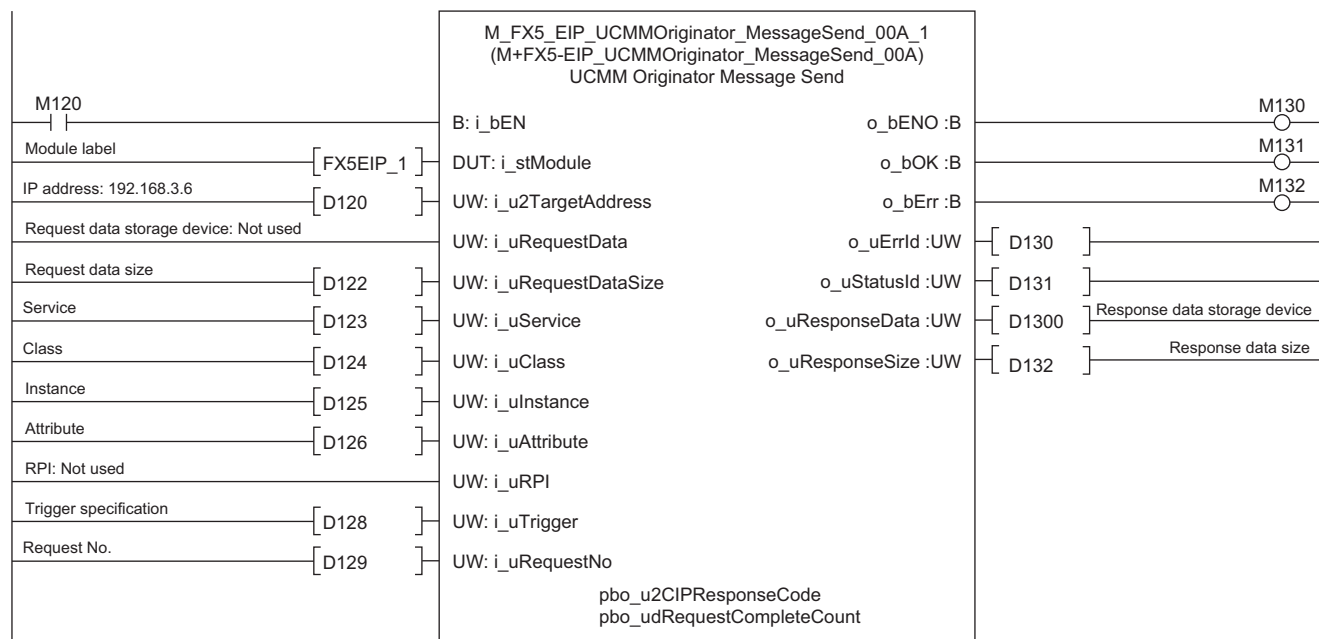
Executes the FB by turning on M120, and sends the following request command to the external device side.

| Item         | Specified data | Description*1                                                                                                |
|--------------|----------------|--------------------------------------------------------------------------------------------------------------|
| Class ID     | H1             | Specifies Identity object.                                                                                   |
| Instance ID  | H1             | —                                                                                                            |
| Service code | H1             | Get_Attributes_All (Acquires all attributes possessed by the instance specified by Class ID or Instance ID.) |
| Attribute ID | H0             | For Get_Attributes_All, no specific Attribute ID is specified.                                               |
| Request data | K0             | Specifies 0 for the request data size.                                                                       |

\*1 For Class ID, Instance ID, Service code, and Attribute ID, refer to the manual for the external device used because the support detail varies depending on the external device.

Once the FB execution completes normally, Identity object received from the external device is stored in D1300 or later, then M131 turns on.

When the response data size is an odd number, the data of only the lower 1 byte of the end device is stored.

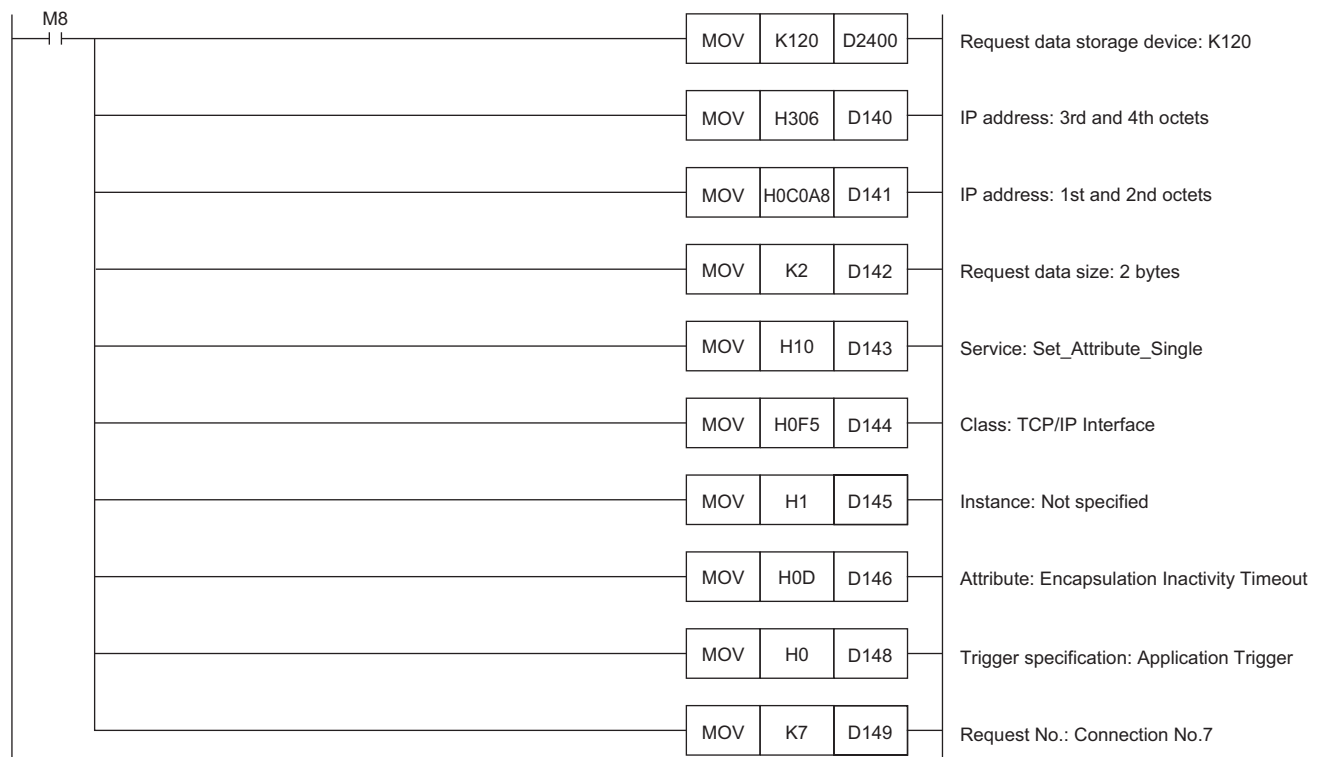


## ■M+FX5-EIP\_UCMMOriginator\_MessageSend (Writing Encapsulation Inactivity Timeout)

- Devices to be used

| Device | Description                          | Set value |
|--------|--------------------------------------|-----------|
| M140   | Execution command                    | —         |
| D140   | IP address (third and fourth octets) | H306      |
| D141   | IP address (first and second octets) | H0C0A8    |
| D2400  | Request data storage device          | K120      |
| D142   | Request data size                    | K2        |
| D143   | Service                              | H10       |
| D144   | Class                                | H0F5      |
| D145   | Instance                             | H1        |
| D146   | Attribute                            | H0D       |
| D148   | Trigger specification                | H0        |
| D149   | Request No.                          | K7        |
| M150   | Execution status                     | —         |
| M151   | Normal completion                    | —         |
| M152   | Error completion                     | —         |
| D150   | Error code                           | —         |
| D151   | Error code of communication error    | —         |

The input label is set by turning on M8.

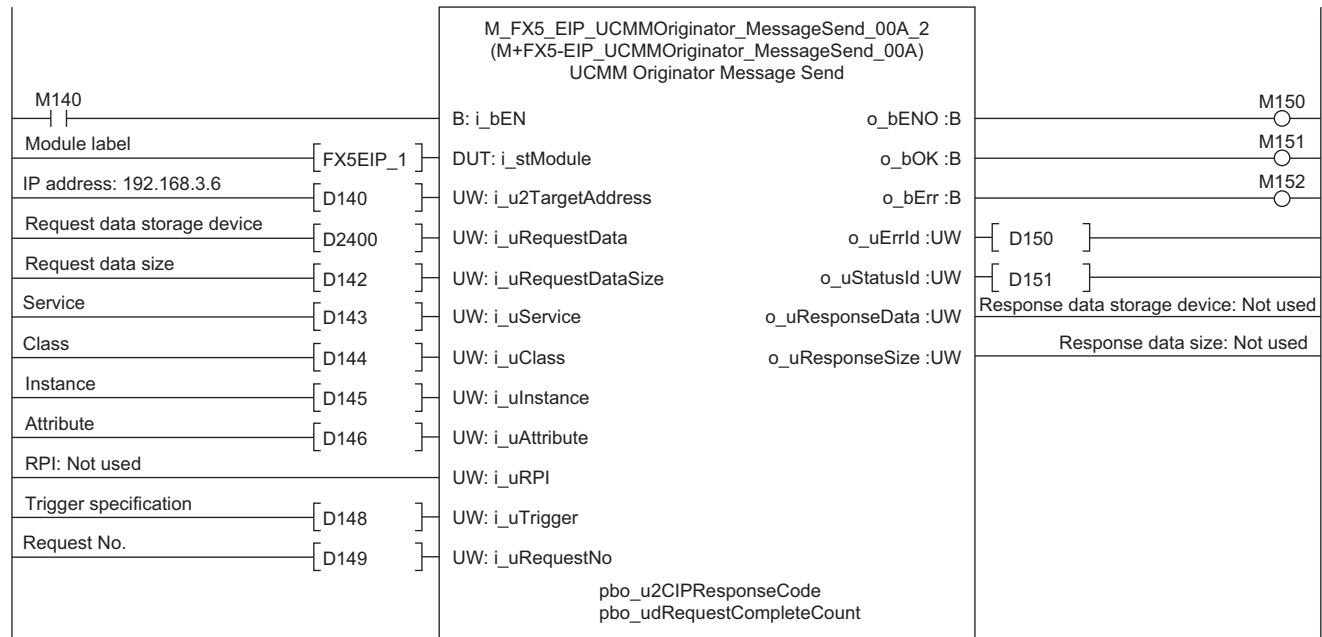


Executes the FB by turning on M140, and sends the following request command to the external device side.

| Item         | Specified data | Description*1                                                                                             |
|--------------|----------------|-----------------------------------------------------------------------------------------------------------|
| Class ID     | H0F5           | Specifies TCP/IP Interface object.                                                                        |
| Instance ID  | H1             | —                                                                                                         |
| Service code | H10            | Set_Attribute_Single (Sets one attribute possessed by the instance specified by Class ID or Instance ID.) |
| Attribute ID | H0D            | Specifies Encapsulation Inactivity Timeout.                                                               |
| Request data | K20            | —                                                                                                         |

\*1 For Class ID, Instance ID, Service code, and Attribute ID, refer to the manual for the external device used because the support detail varies depending on the external device.

Once the FB execution completes normally, Encapsulation Inactivity Timeout set for the input label is sent to the external device, then M151 turns on.

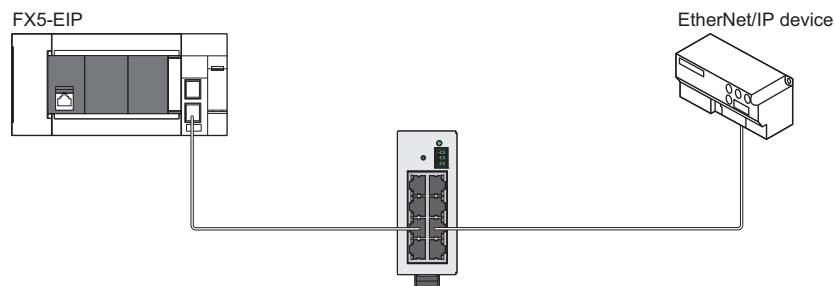
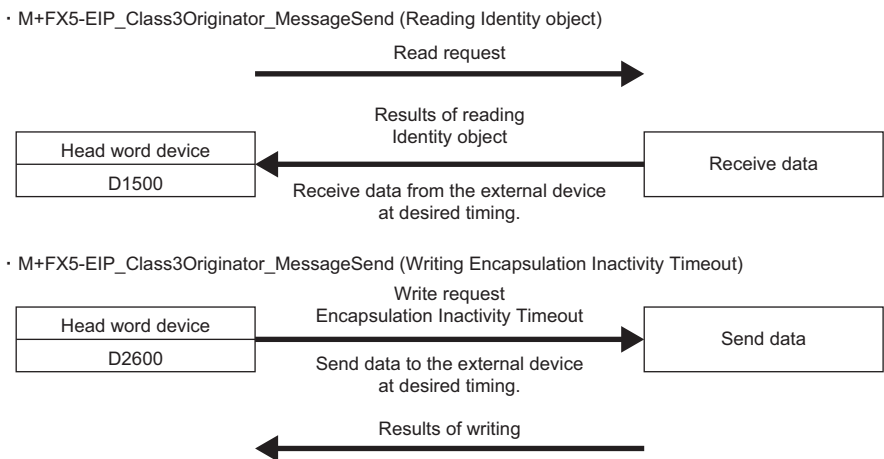


# 7.17 M+FX5-EIP\_Class3Originator\_MessageSend (Class3 instance communications)

Performs Class3 tag communications between the FX5-EIP and EtherNet/IP devices using M+FX5-EIP\_Class3Originator\_MessageSend (Sending of Class3 communications message).

## Outline of example of program

- M+FX5-EIP\_Class3Originator\_MessageSend (Reading Identity object)  
Reads Identity object of the external device of Connection No.8 into D1500.
  - M+FX5-EIP\_Class3Originator\_MessageSend (Writing Encapsulation Inactivity Timeout)  
Writes Encapsulation Inactivity Timeout of the external device of Connection No.9 to the external device.
- For the command support state and communication data size, refer to the manual for the external device used.



# Parameter setting

Set the parameters using GX Works3.

For the parameter settings for the external device, refer to the manual for the external device used.

For details on the parameter settings, refer to the following.

MELSEC iQ-F FX5-EIP EtherNet/IP Module User's Manual

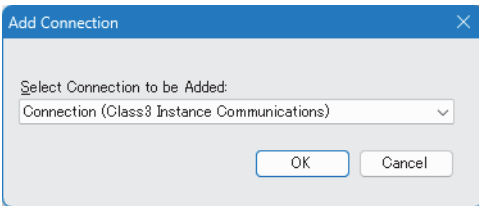
## 1. Set the IP address of the FX5-EIP.

Navigation window ⇒ [Parameter] ⇒ [Module Information] ⇒ [FX5-EIP] ⇒ [Module Parameter] ⇒ [Basic Settings]  
IP address: 192.168.3.5

Do not change the settings for auto refresh.

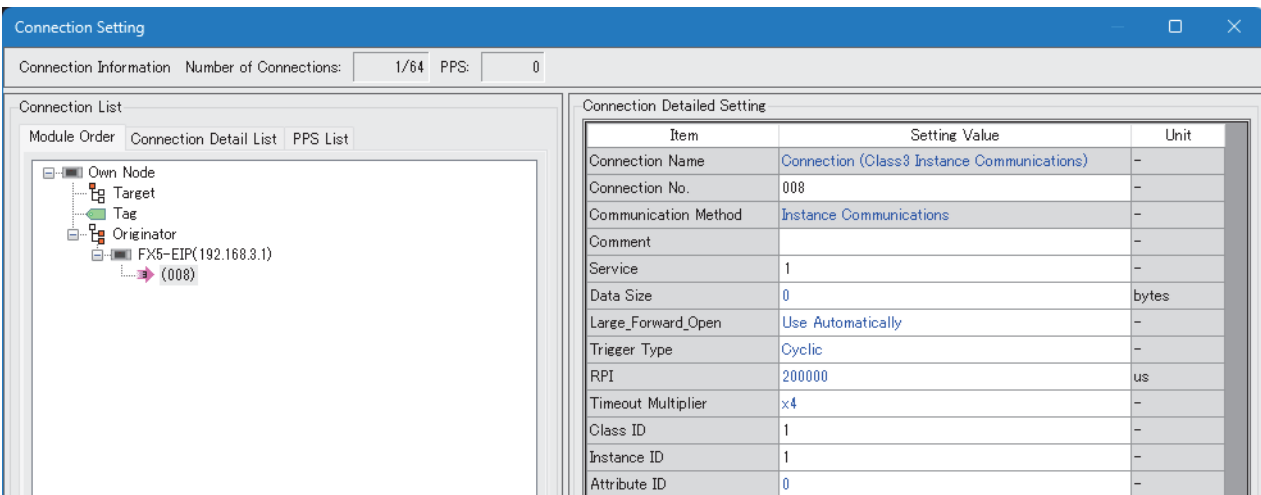
## 2. Open the connection setting. Select [Connection (Class3 Instance Communications)] from [Add Connection].

Navigation window ⇒ [Parameter] ⇒ [Module Information] ⇒ [FX5-EIP] ⇒ [Module Extended Parameter (EtherNet/IP Configuration)] ⇒ [FX5-EIP] ⇒ <Detailed Setting> ⇒ [Add Connection]



## 3. Configure settings for the connection detail.

- Connection No.8



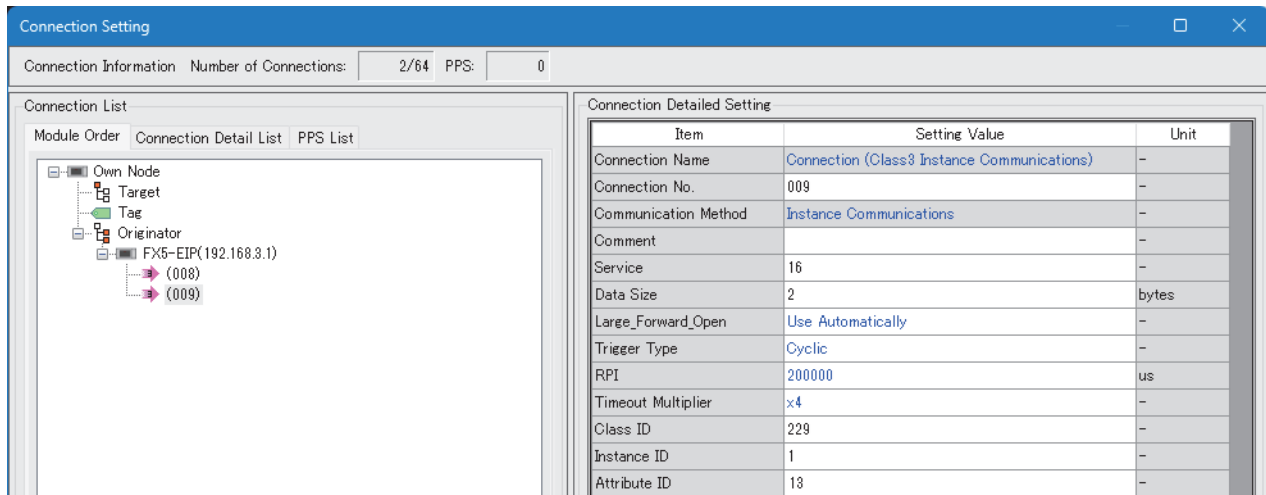
| Item           | Set value |
|----------------|-----------|
| Connection No. | 008       |
| Service        | 1*1       |
| Class ID       | 1*2       |
| Instance ID    | 1         |
| Attribute ID   | 0*3       |

\*1 Get\_Attributes\_All (Acquires all attributes possessed by the instance specified by Class ID or Instance ID.)

\*2 Specifies Identity object.

\*3 Set\_Attribute\_Single (Sets one attribute possessed by the instance specified by Class ID or Instance ID.)

• Connection No.9



| Item           | Set value         |
|----------------|-------------------|
| Connection No. | 009               |
| Service        | 16 <sup>*1</sup>  |
| Data size      | 2                 |
| Class ID       | 229 <sup>*2</sup> |
| Instance ID    | 1                 |
| Attribute ID   | 13 <sup>*3</sup>  |

\*1 Get\_Attributes\_All (Acquires all attributes possessed by the instance specified by Class ID or Instance ID.)

\*2 Specifies TCP/IP Interface object.

\*3 Specifies Encapsulation Inactivity Timeout.

## Program

### ■M+FX5-EIP\_Class3Originator\_MessageSend (Reading Identity object)

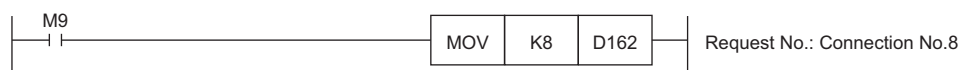
- Devices to be used

| Device         | Description                       | Set value |
|----------------|-----------------------------------|-----------|
| M160           | Execution command                 | —         |
| D162           | Request No.                       | K8        |
| M170           | Execution status                  | —         |
| M171           | Normal completion                 | —         |
| M172           | Error completion                  | —         |
| D170           | Error code                        | —         |
| D171           | Error code of communication error | —         |
| D1500 to D1530 | Response data storage device      | —         |
| D172           | Response data size                | —         |

Set EtherNet/IP communications start request (U\G272) by turning on M15.



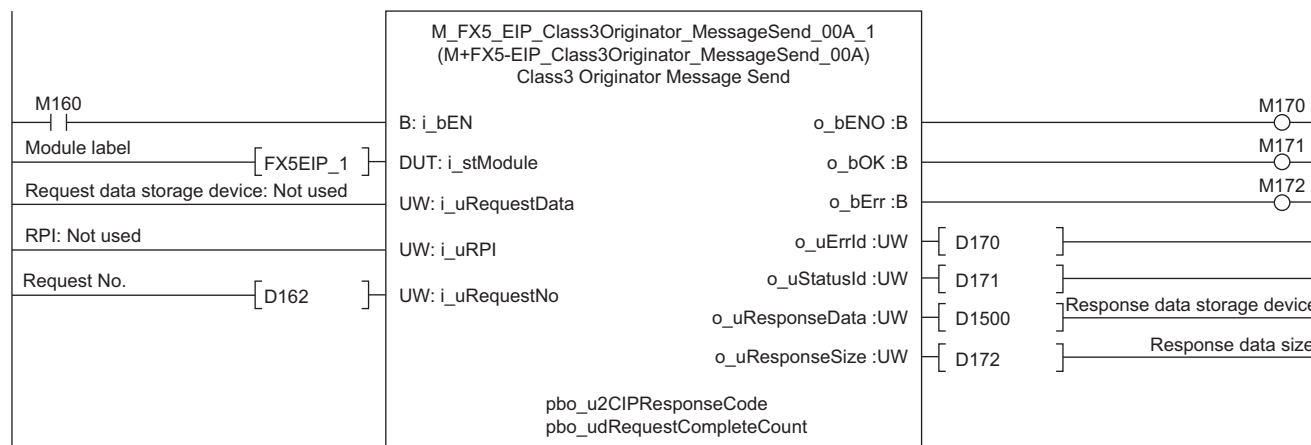
The input label is set by turning on M9.



Executes the FB by turning on M160, and sends request commands based on the parameter settings to the external device side.

Once the FB execution completes normally, the input data received from the external device is stored in D1500 or later based on the response data size set in Connection No.8, then M171 turns on.

When the response data size is an odd number, the data of only the lower 1 byte of the end device is stored.

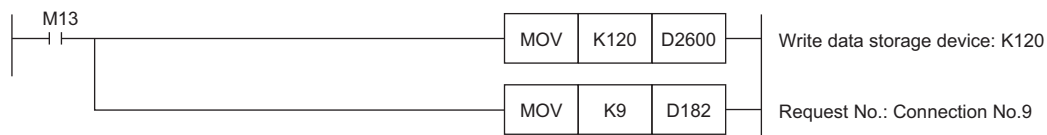


## ■M+FX5-EIP\_Class3Originator\_MessageSend (Writing Encapsulation Inactivity Timeout)

- Devices to be used

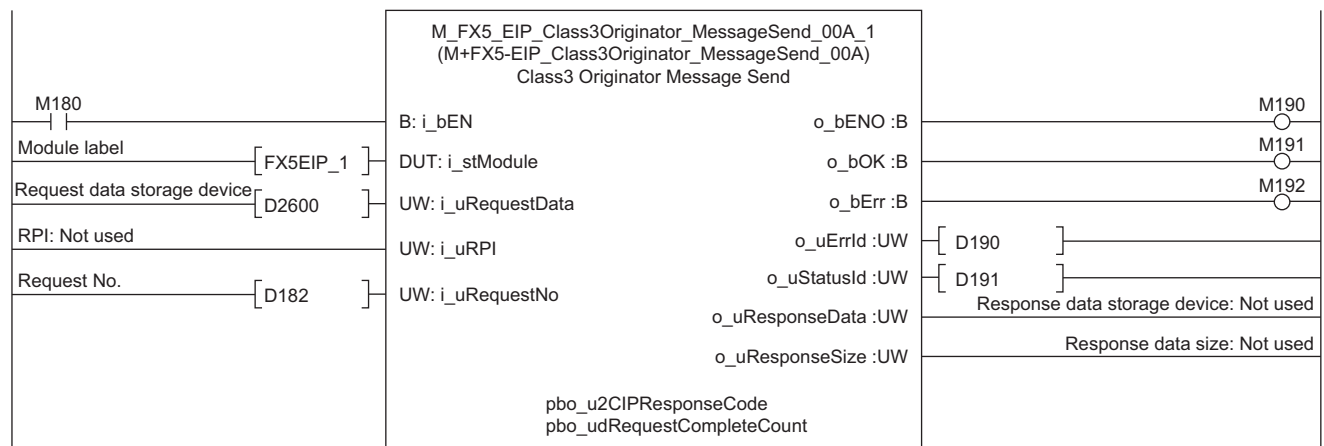
| Device | Description                       | Set value |
|--------|-----------------------------------|-----------|
| M180   | Execution command                 | —         |
| D2600  | Request data storage device       | K120      |
| D182   | Request No.                       | K9        |
| M190   | Execution status                  | —         |
| M191   | Normal completion                 | —         |
| M192   | Error completion                  | —         |
| D190   | Error code                        | —         |
| D191   | Error code of communication error | —         |

The input label is set by turning on M13.



Executes the FB by turning on M180, and sends request commands based on the parameter settings to the external device side.

Once the FB execution completes normally, Encapsulation Inactivity Timeout of the external device set for Connection No.9 is sent to the external device, then M191 turns on.





## 7.18 M+FX5ENET\_MQTT\_Connect (MQTT connection establishment)

M+FX5ENET\_MQTT\_Connect (MQTT connection establishment) is used for controlling the connection with an MQTT broker (server).

### System configuration

Refer to the following.

 Page 16 System Configuration

### Workflow

#### 1. FB library registration

Register the FB library. For the operating procedures, refer to the following.

 GX Works3 Operating Manual

#### 2. Preliminary setting

Set the area of data to be sent. ( Page 343 Preliminary setting)

#### 3. Parameter setting

Set the parameter. ( Page 87 Parameter setting)

#### 4. Program creation

Create a program. ( Page 346 Program)

### Preliminary setting

Set the data to be sent in the following areas.

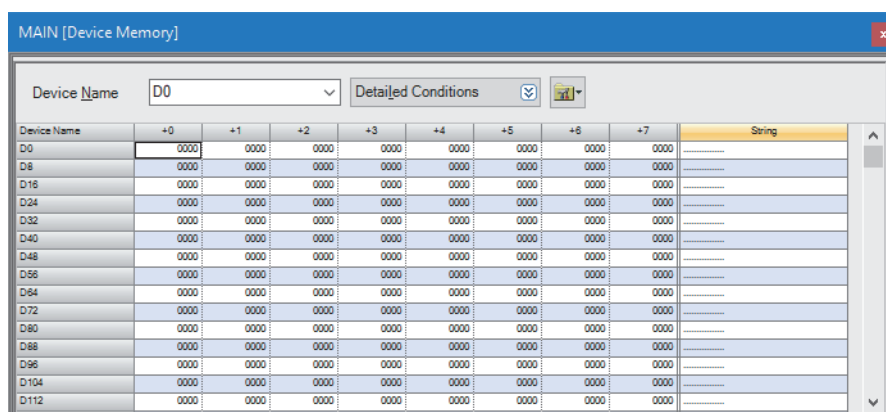
- Will topic name: R0 to R5
- Will message: R300 to R305

### Operating procedure

#### 1. Write the sample project into the CPU module and set the CPU module to RUN.

#### 2. Open the device memory editor. Set the display format as follows.

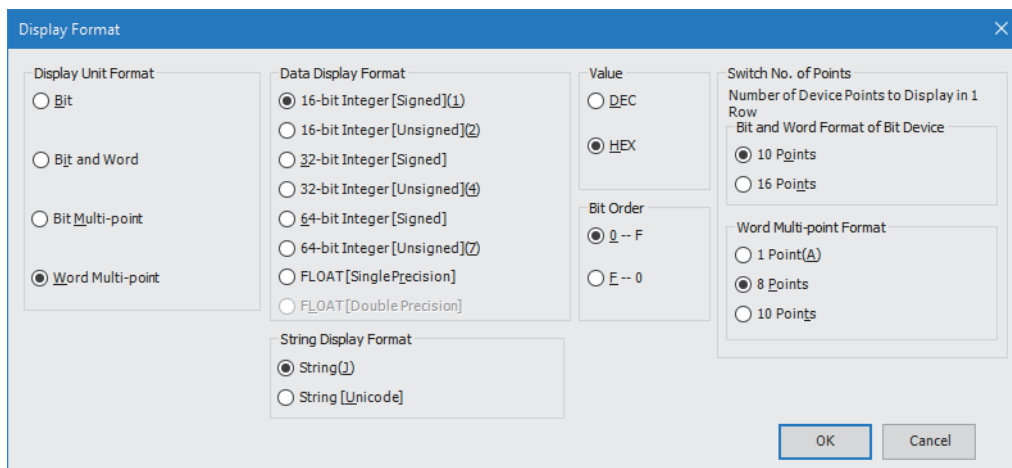
 Navigation window ⇒ [Device] ⇒ [Device Memory] ⇒ [MAIN (data name)]



| Device Name | +0   | +1   | +2   | +3   | +4   | +5   | +6   | +7   | String |
|-------------|------|------|------|------|------|------|------|------|--------|
| D0          | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 |        |
| D8          | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 |        |
| D16         | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 |        |
| D24         | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 |        |
| D32         | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 |        |
| D40         | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 |        |
| D48         | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 |        |
| D56         | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 |        |
| D64         | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 |        |
| D72         | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 |        |
| D80         | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 |        |
| D88         | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 |        |
| D96         | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 |        |
| D104        | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 |        |
| D112        | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 |        |

### 3. Set the display format as follows.

 [View] ⇒ [Display Format Detailed Setting]



The 'Display Format' dialog box is shown with the following settings:

- Display Unit Format:** ☒ Word Multi-point
- Data Display Format:**
  - ☒ 16-bit Integer [Signed](1)
  - ☐ 16-bit Integer [Unsigned](2)
  - ☐ 32-bit Integer [Signed]
  - ☐ 32-bit Integer [Unsigned](4)
  - ☐ 64-bit Integer [Signed]
  - ☐ 64-bit Integer [Unsigned](8)
  - ☐ FLOAT [Single Precision]
  - ☐ FLOAT [Double Precision]
- String Display Format:**
  - ☒ String(1)
  - ☐ String [Unicode]
- Value:**
  - ☐ DEC
  - ☒ HEX
- Bit Order:**
  - ☒ 0 -- F
  - ☐ E -- 0
- Switch No. of Points:**
  - ☒ 10 Points
  - ☐ 16 Points
- Word Multi-point Format:**
  - ☐ 1 Point(A)
  - ☒ 8 Points
  - ☐ 10 Points

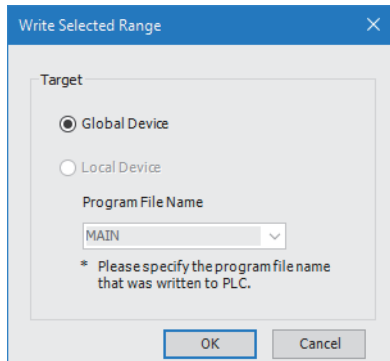
Buttons: OK, Cancel

### 4. Input the following data into the table of the device memory editor.

| Item                      | Device name | Input data |      |      |      |      |      |      |      |
|---------------------------|-------------|------------|------|------|------|------|------|------|------|
|                           |             | +0         | +1   | +2   | +3   | +4   | +5   | +6   | +7   |
| Will topic name data      | R0          | 6957       | 6C6C | 6F54 | 6970 | 4163 | 0000 | 0000 | 0000 |
| Will message data         | R300        | 6957       | 6C6C | 654D | 7373 | 6761 | 4165 | 0000 | 0000 |
| Subscribe topic name data | R600        | 7553       | 7362 | 7263 | 6269 | 5465 | 706F | 6369 | 0041 |
| Publish topic name data   | R700        | 7550       | 6C62 | 7369 | 5468 | 706F | 6369 | 0041 | 0000 |

### 5. Select "R0" (R0(+0)) to "R707" (R704(+3)) from the table of the device memory editor and write the data into the CPU module.

 Select data ⇒ Right-click ⇒ [Online] ⇒ [Write Selected Range] ⇒ "Use Common File Register in All Programs" ⇒ [OK]

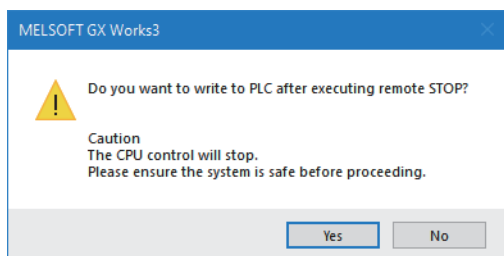


The 'Write Selected Range' dialog box is shown with the following settings:

- Target:**
  - ☒ Global Device
  - ☐ Local Device
- Program File Name:** MAIN (selected from a dropdown menu)
- \* Please specify the program file name that was written to PLC.**

Buttons: OK, Cancel

### 6. When the following window appears, click the [Yes] button.



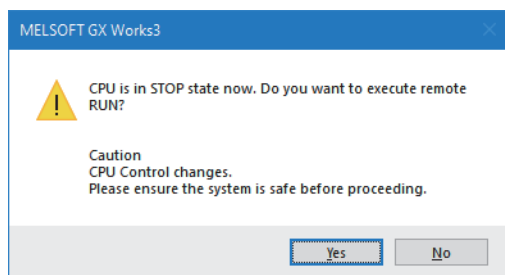
The 'MELSOFT GX Works3' dialog box displays a warning:

**Do you want to write to PLC after executing remote STOP?**

**Caution**  
The CPU control will stop.  
Please ensure the system is safe before proceeding.

Buttons: Yes, No

7. Write the data into the CPU module. When the following windows appears, click the [Yes] button.



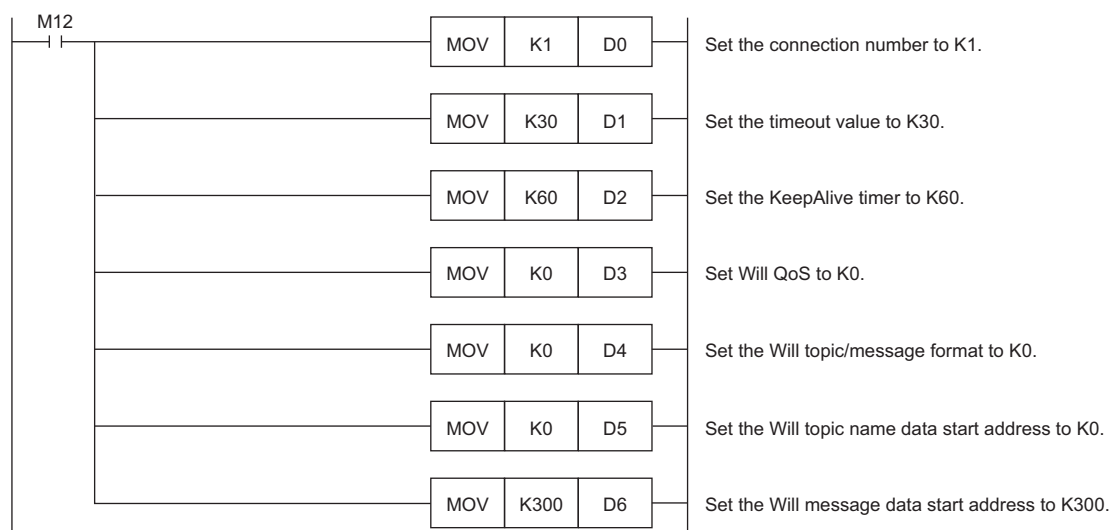
## Parameter setting

Refer to the following.

☞ Page 87 Parameter setting

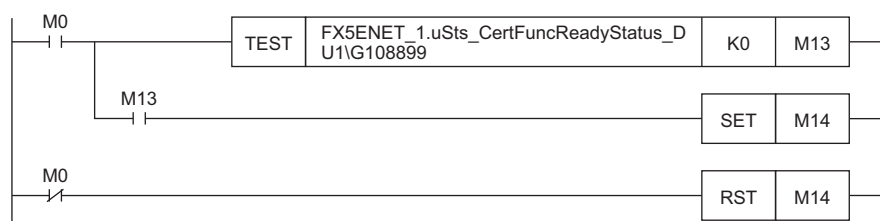
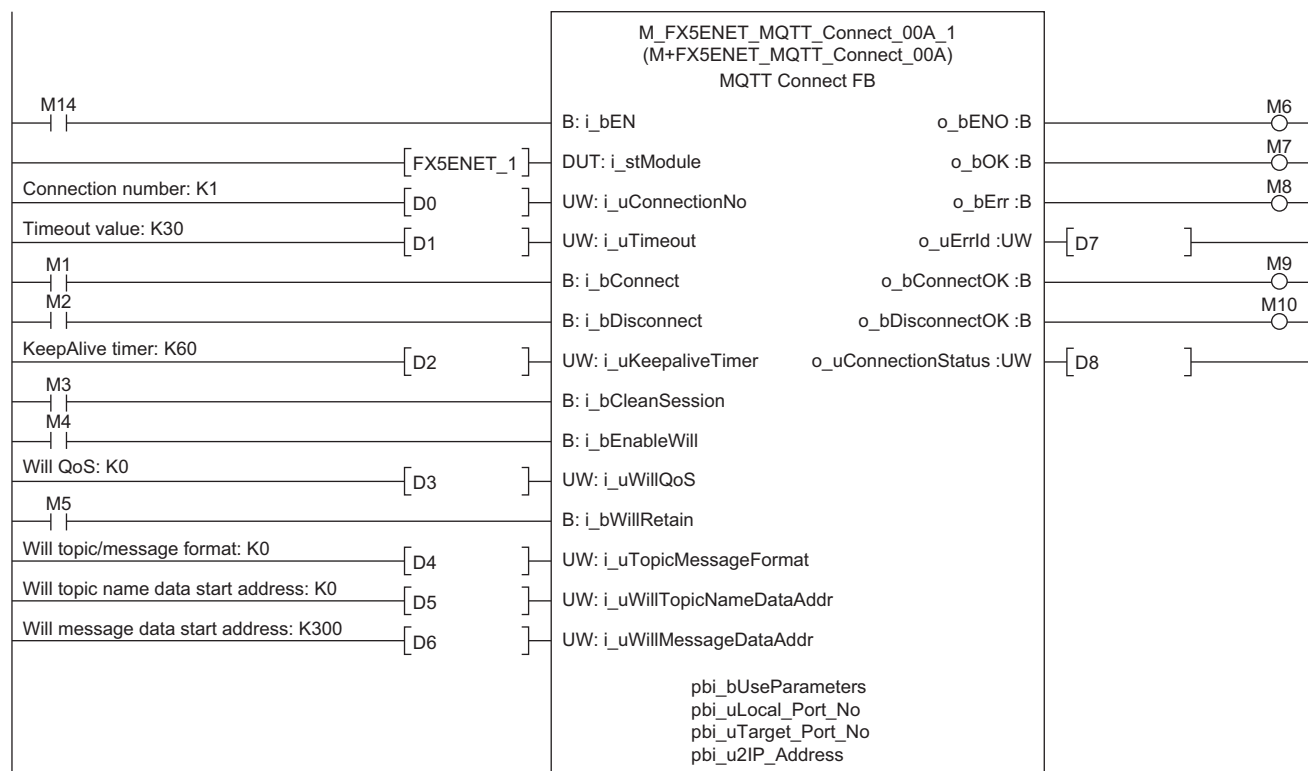
## Program

M12 turns on for setting the information used for M+ENET\_MQTT\_Connect (MQTT connection establishment).



After M4 (Enable Will) turns on, M0 turns on. When FX5ENET\_1.uSts\_CertFuncReadyStatus\_D (Certificate function ready-to-enable state) turns on, M14 (Execution command) turns on. M1 (CONNECT instruction) subsequently turns on to establish the connection.

When the connection is successfully established, M9 (Establishment completion) turns on.



## 7.19 M+FX5ENET\_MQTT\_Subscribe (Sending of Subscribe command)

M+FX5ENET\_MQTT\_Subscribe (Sending of Subscribe command) is used for sending a SUBSCRIBE/UNSUBSCRIBE command to an MQTT broker (server).

### System configuration

Refer to the following.

 Page 16 System Configuration

### Workflow

#### 1. FB library registration

Register the FB library. For the operating procedures, refer to the following.

 GX Works3 Operating Manual

#### 2. Preliminary setting

Set the area of data to be sent. ( Page 347 Preliminary setting)

#### 3. Parameter setting

Set the parameter. ( Page 87 Parameter setting)

#### 4. Program creation

Create a program. ( Page 348 Program)

### Preliminary setting

Set the data to be sent in the following areas.

- Subscribe topic name: R600 to R607

### Operating procedure

Refer to the following.

 Page 343 Preliminary setting

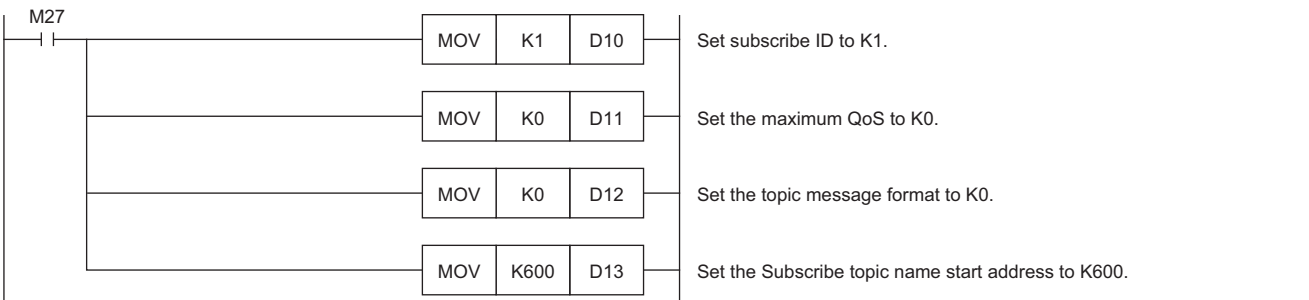
### Parameter setting

Refer to the following.

 Page 87 Parameter setting

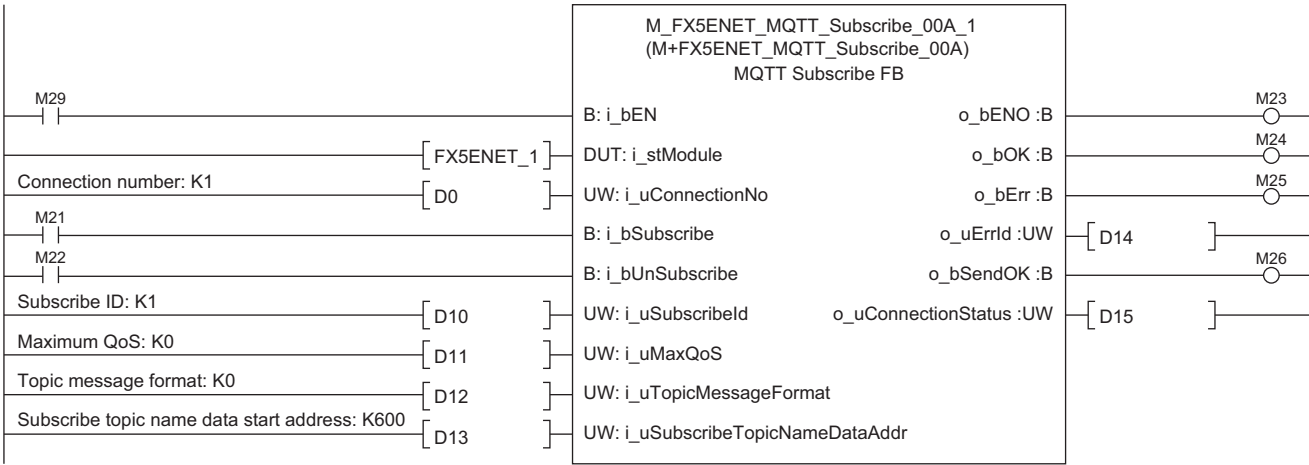
Program

M27 turns on for setting the information used for M+ENET\_MQTT\_Subscribe (Sending of Subscribe command).



M29 (Execution command) turns on. After M23 (Execution status) turns on, M21 (SUBSCRIBE instruction) turns on for sending the SCRIBE command.

After the Subscribe is successfully sent, M26 (Send completion) turns on.



## 7.20 M+FX5ENET\_MQTT\_Receive (Receiving of MQTT data)

M+FX5ENET\_MQTT\_Receive (Receiving of MQTT data) is used for reading a message received from an MQTT broker (server).

### System configuration

Refer to the following.

 Page 16 System Configuration

### Workflow

#### 1. FB library registration

Register the FB library. For the operating procedures, refer to the following.

 GX Works3 Operating Manual

 MELSEC iQ-F Character String Operation Function Block Library Reference

#### 2. Parameter setting

Set the parameter. ( Page 87 Parameter setting)

#### 3. Create a program.

Create a program. ( Page 350 Program)

### Preliminary setting

No preliminary settings are required to use this FB.

### Parameter setting

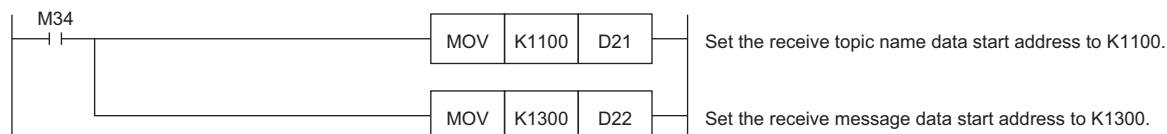
Refer to the following.

 Page 87 Parameter setting

## Program

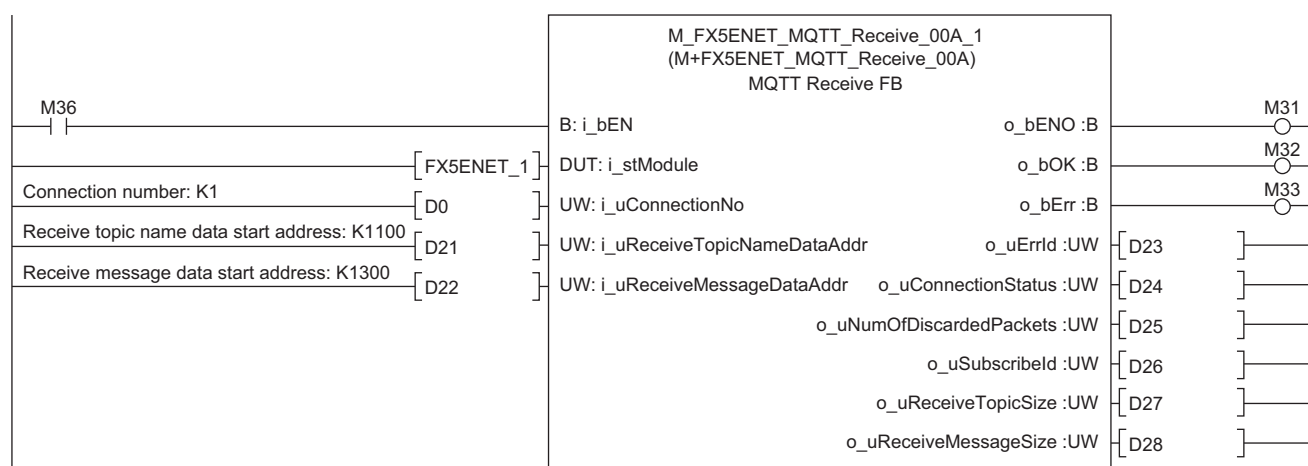
### ■Receiving of message data

M34 turns on for setting the information used for M+ENET\_MQTT\_Receive (Receiving of MQTT data).



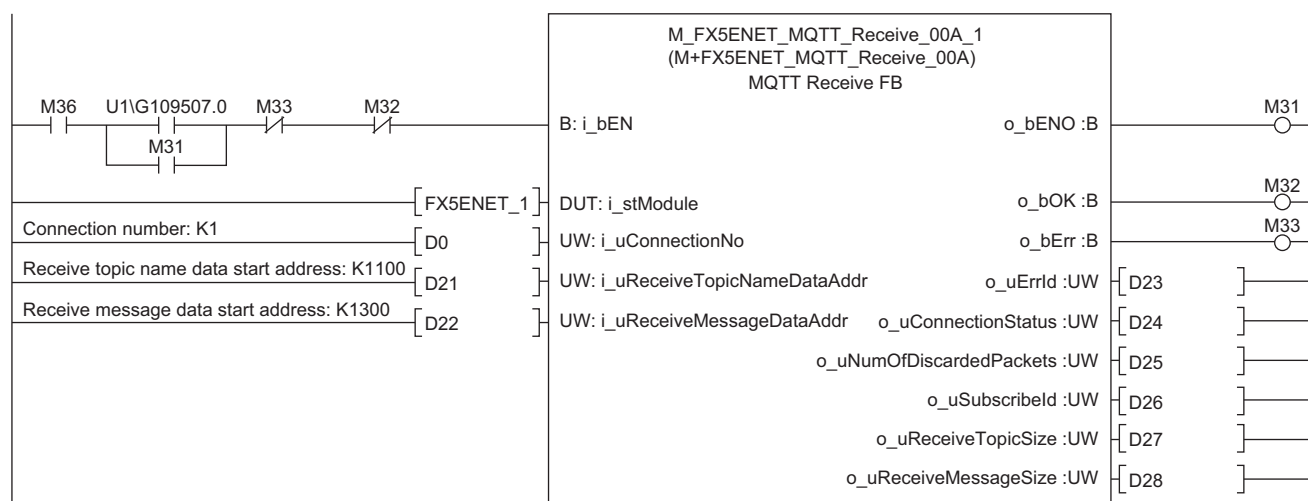
M36 (Execution command) turns on for storing the receive data into the specified file register.

After the data is successfully received, M32 (Normal completion) turns on. The receive data is stored in the file register set with i\_uReceiveTopicNameDataAddr (Receive topic name data start address) and i\_uReceiveMessageDataAddr (Receive message data start address).



- When the FX5-ENET firmware version is 1.210 or later

Un\G109507.0 (MQTT receive notification message received or not) can be used to check whether a message is received from the MQTT (broker) server. After M36 (Execution command) turns on, when Un\G109507.0 (MQTT receive notification message received or not) is on, the receive data can be stored in the specified file register until M32 (Normal completion) or M33 (Error completion) turns on.



After the data is successfully received, M32 (Normal completion) turns on. The receive data is stored in the file register set with i\_uReceiveTopicNameDataAddr (Receive topic name data start address) and i\_uReceiveMessageDataAddr (Receive message data start address).



■Acquisition of only the required strings from receive data

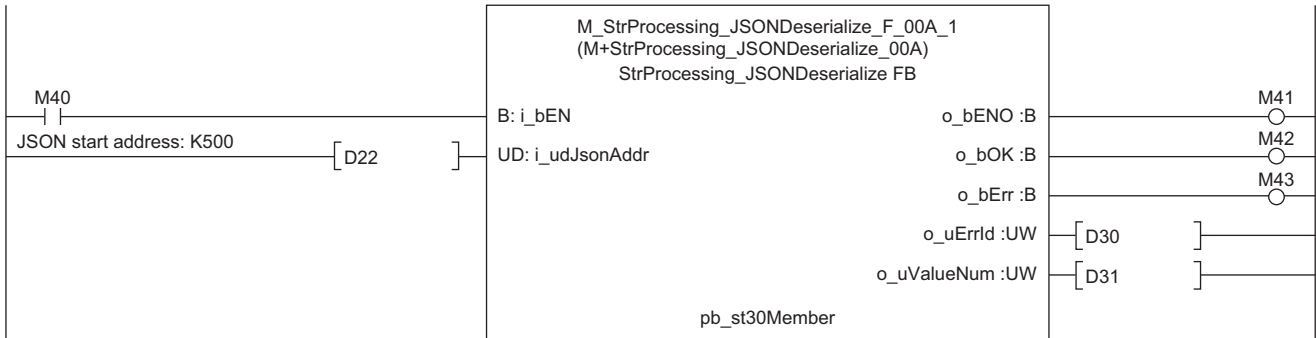
- Settings for required member information

M40 (Execution command) turns on for setting the member information to be acquired.

|     |    |                                                                                                                                       |
|-----|----|---------------------------------------------------------------------------------------------------------------------------------------|
| M40 | 1  | M_StrProcessing_JSONDeserialize_F_00A_1.pb_st30Member[0].uType := K4; //Set K4 (numerical value) to the Value type.                   |
|     | 2  | M_StrProcessing_JSONDeserialize_F_00A_1.pb_st30Member[0].s32Key := 'id1'; //Set "id1" to the Key name.                                |
|     | 3  | M_StrProcessing_JSONDeserialize_F_00A_1.pb_st30Member[0].uDepth := K1; //Set K1 to the depth of layer.                                |
|     | 4  | M_StrProcessing_JSONDeserialize_F_00A_1.pb_st30Member[1].uType := K3; //Set K3 (character string) to the Value type.                  |
|     | 5  | M_StrProcessing_JSONDeserialize_F_00A_1.pb_st30Member[1].s32Key := 'date'; //Set "date" to the Key name.                              |
|     | 6  | M_StrProcessing_JSONDeserialize_F_00A_1.pb_st30Member[1].uDepth := K1; //Set K1 to the depth of layer.                                |
|     | 7  | M_StrProcessing_JSONDeserialize_F_00A_1.pb_st30Member[2].uType := K1; //Set K1 (object) to the Value type.                            |
|     | 8  | M_StrProcessing_JSONDeserialize_F_00A_1.pb_st30Member[2].s32Key := 'detail'; //Set "detail" to the Key name.                          |
|     | 9  | M_StrProcessing_JSONDeserialize_F_00A_1.pb_st30Member[2].uDepth := K1; //Set K1 to the depth of layer.                                |
|     | 10 | M_StrProcessing_JSONDeserialize_F_00A_1.pb_st30Member[3].uType := K2; //Set K2 (array) to the Value type.                             |
|     | 11 | M_StrProcessing_JSONDeserialize_F_00A_1.pb_st30Member[3].s32Key := 'size'; //Set "size" to the Key name.                              |
|     | 12 | M_StrProcessing_JSONDeserialize_F_00A_1.pb_st30Member[3].uDepth := K2; //Set K2 to the depth of layer.                                |
|     | 13 | M_StrProcessing_JSONDeserialize_F_00A_1.pb_st30Member[4].uType := K3; //Set K3 (character string) to the Value type.                  |
|     | 14 | M_StrProcessing_JSONDeserialize_F_00A_1.pb_st30Member[4].s32Key := 'color_No.'; //Set "color_No." to the Key name.                    |
|     | 15 | M_StrProcessing_JSONDeserialize_F_00A_1.pb_st30Member[4].uDepth := K2; //Set K2 to the depth of layer.                                |
|     | 16 | M_StrProcessing_JSONDeserialize_F_00A_1.pb_st30Member[5].uType := K0; //Set K0 (end of the member structure array) to the Value type. |

- Acquisition of JSON string

When M40 (Execution command) turns on, the function block acquires the Value strings that exactly match the values of uType (Value type), s32Key (Key name), and uDepth (depth of layer) in the set member list (pb\_st30Member) from JSON strings stored at the JSON start address, and it stores the values into the s64Value (Value) values in the member list (pb\_st30Member).



## 7.21 M+FX5ENET\_MQTT\_PublishSend (Sending of MQTT data)

M+FX5ENET\_MQTT\_PublishSend (Sending of MQTT data) is used for sending the message to the MQTT broker (server).

### System configuration

Refer to the following.

 Page 16 System Configuration

### Workflow

#### 1. FB library registration

Register the FB library. For the operating procedures, refer to the following.

 GX Works3 Operating Manual

 MELSEC iQ-F Character String Operation Function Block Library Reference

#### 2. Preliminary setting

Set the area of data to be sent. ( Page 352 Preliminary setting)

#### 3. Parameter setting

Set the parameter. ( Page 87 Parameter setting)

#### 4. Program creation

Create a program. ( Page 353 Program)

### Preliminary setting

Set the data to be sent in the following areas.

- Publish topic name: R700 to R707
- Publish message: R1000 to R1095

### Operating procedure

Refer to the following.

 Page 343 Preliminary setting

### Parameter setting

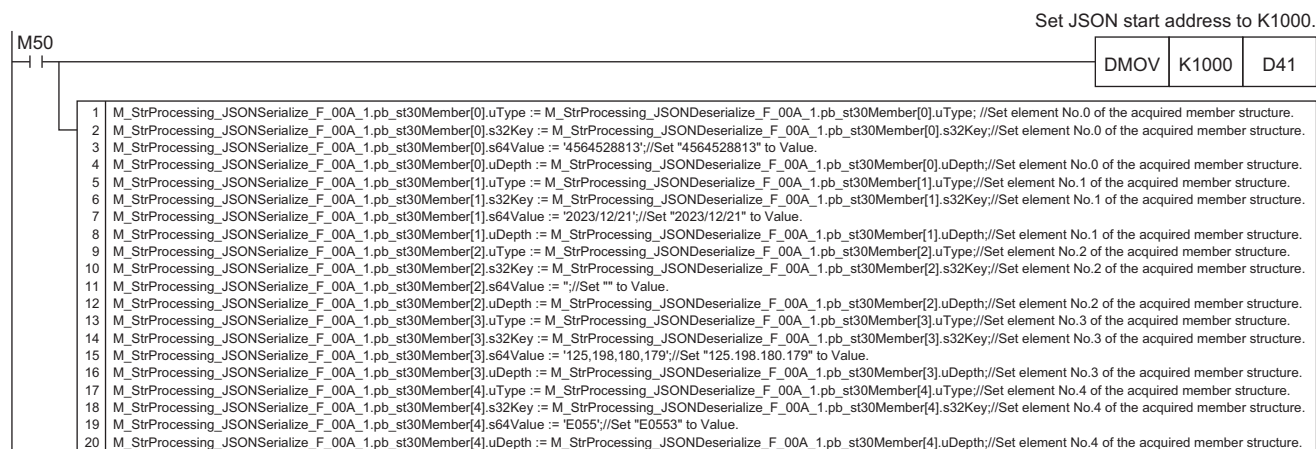
Refer to the following.

 Page 87 Parameter setting

### ■ Send data creation

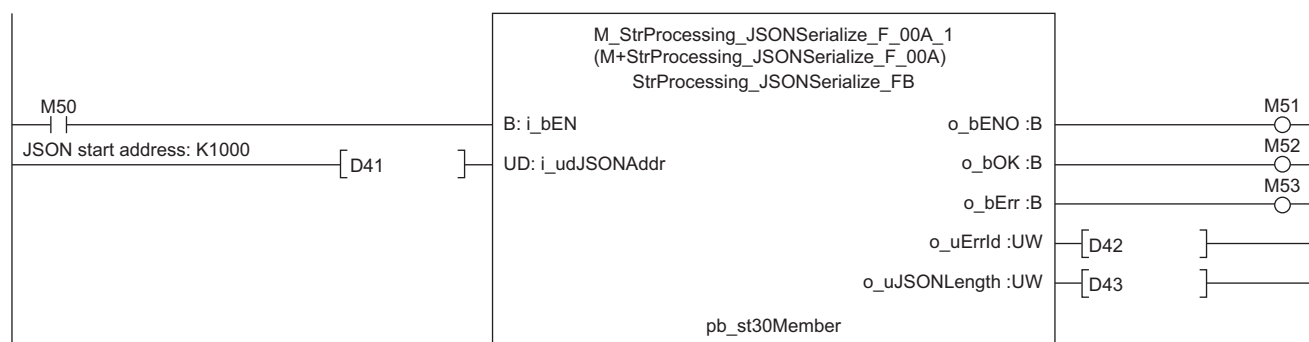
- Settings for data to be sent

M50 (Execution command) turns on for setting the data to be sent.



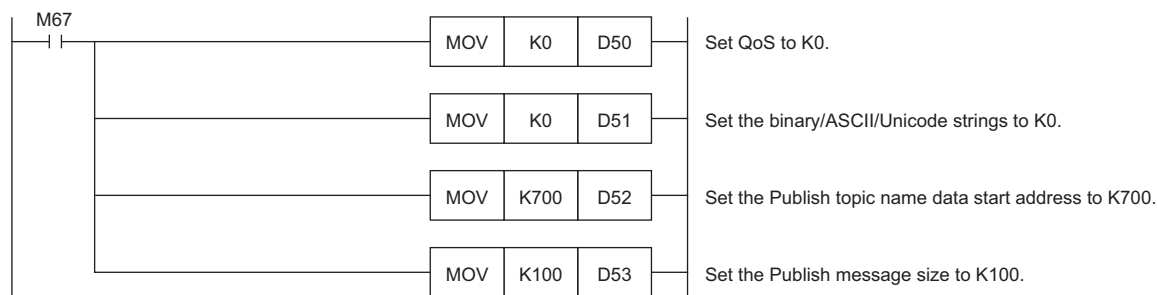
- JSON string creation

When M50 (Execution command) turns on, the function block creates a JSON string in accordance with the information of uType (Value type), s32Key (Key name), s64Value (value of Value), and uDepth (depth of layer) in the set member list (pb\_st30Member) and it outputs the string to the file register at the address specified with the start address of the JSON string storage destination.

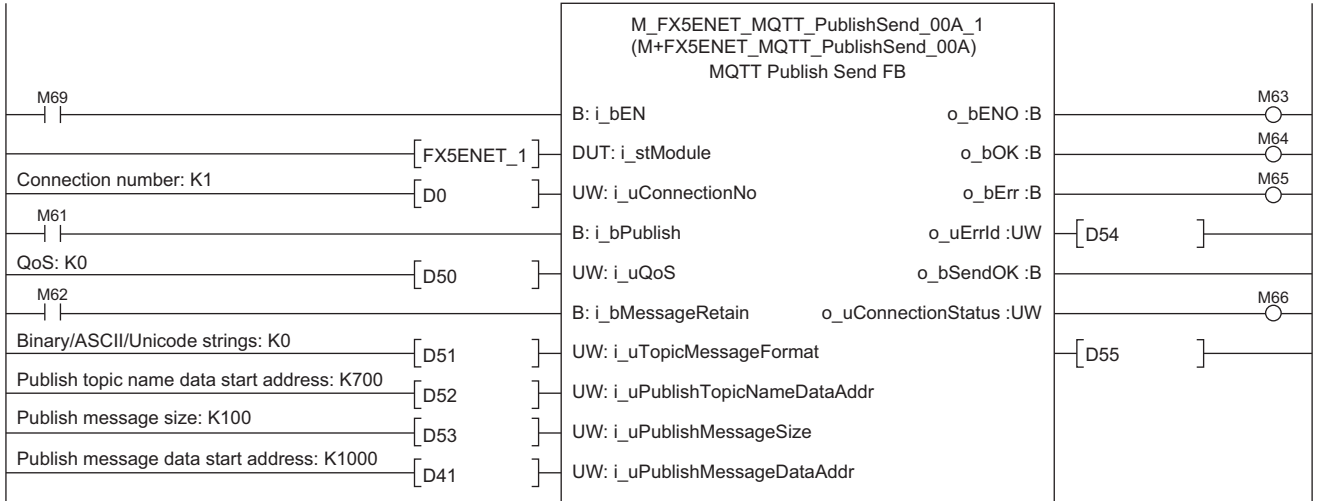


## ■Sending of message data

M67 turns on for setting the information used for M+ENET MQTT PublishSend (Sending of MQTT data).



M69 (Execution command) turns on. After M63 (Execution status) turns on, M61 (PUBLISH instruction (Rise detection)) turns on for sending a message.



# 7.22 M+FX5ENET\_Mail\_Send (Sending of E-mail)

M+FX5ENET\_Mail\_Send (Sending of E-mail) is used for establishing a TLS/TCP session with an SMTP server. Then, it sends E-mail data.

## Overview

This FB establishes a TLS/TCP session with an SMTP server. Then, it sends E-mail data.

## System configuration

Refer to the following.

📖 Page 16 System Configuration

## Workflow

### 1. Settings for E-mail

Configure settings for E-mail. For the operating procedures, refer to the following.

📖 MELSEC iQ-F FX5 Ethernet Module User's Manual

### 2. Preliminary setting

Set the area of data to be sent. (📖 Page 355 Preliminary setting)

### 3. Program creation

Create a program. (📖 Page 358 Program)

## Preliminary setting

Set the data to be sent in the following areas.

- Send destination address: R0 to R7
- Subject data: R130 to R135
- Message body data: R250 to R254
- Attachment data: R300 to R305

## Operating procedure

### 1. Write the sample project into the CPU module and set the CPU module to RUN.

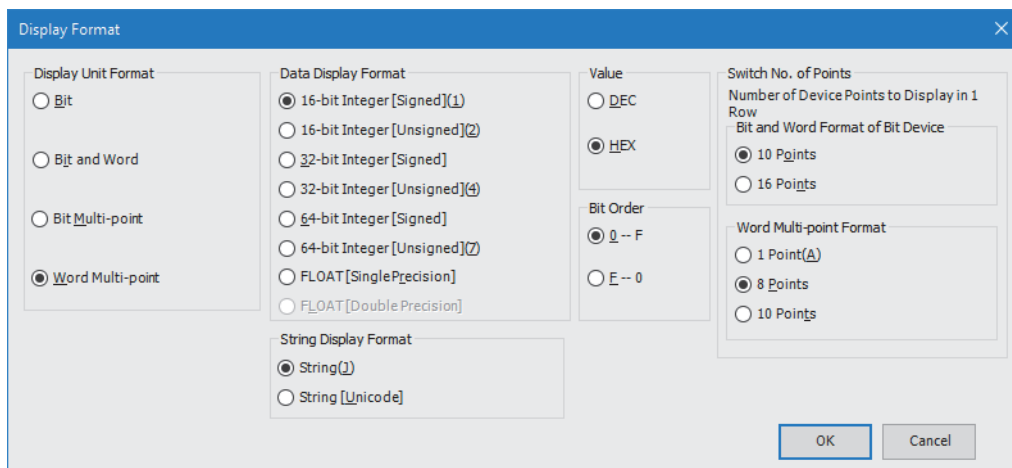
### 2. Open the device memory editor. Set the display format as follows.

🖱️ Navigation window ⇒ [Device] ⇒ [Device Memory] ⇒ [MAIN (data name)]

| Device Name | +0   | +1   | +2   | +3   | +4   | +5   | +6   | +7   | String |
|-------------|------|------|------|------|------|------|------|------|--------|
| D0          | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 |        |
| D8          | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 |        |
| D16         | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 |        |
| D24         | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 |        |
| D32         | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 |        |
| D40         | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 |        |
| D48         | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 |        |
| D56         | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 |        |
| D64         | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 |        |
| D72         | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 |        |
| D80         | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 |        |
| D88         | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 |        |
| D96         | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 |        |
| D104        | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 |        |
| D112        | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 |        |

### 3. Set the display format as follows.

 [View] ⇒ [Display Format Detailed Setting]



The 'Display Format' dialog box contains the following settings:

- Display Unit Format:** ☒ Word Multi-point
- Data Display Format:**
  - ☒ 16-bit Integer [Signed] (1)
  - ☐ 16-bit Integer [Unsigned] (2)
  - ☐ 32-bit Integer [Signed]
  - ☐ 32-bit Integer [Unsigned] (4)
  - ☐ 64-bit Integer [Signed]
  - ☐ 64-bit Integer [Unsigned] (7)
  - ☐ FLOAT [Single Precision]
  - ☐ FLOAT [Double Precision]
- String Display Format:**
  - ☒ String (1)
  - ☐ String [Unicode]
- Value:** ☒ HEX
- Bit Order:** ☒ 0 -- F
- ☐ E -- 0
- Switch No. of Points:**
  - Number of Device Points to Display in 1 Row: ☒ 10 Points
  - ☐ 16 Points
- Word Multi-point Format:**
  - ☐ 1 Point (A)
  - ☒ 8 Points
  - ☐ 10 Points

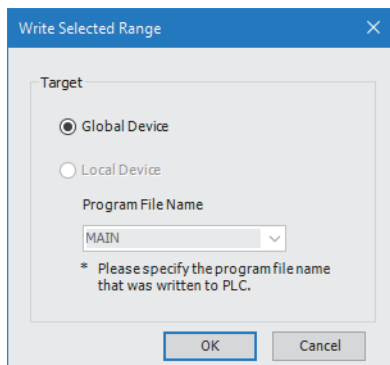
Buttons: OK, Cancel

### 4. Input the following data into the table of the device memory editor.

| Item                     | Device name | Input data |      |      |      |      |      |      |      |
|--------------------------|-------------|------------|------|------|------|------|------|------|------|
|                          |             | +0         | +1   | +2   | +3   | +4   | +5   | +6   | +7   |
| Send destination address | R0          | 6564       | 4066 | 7856 | 6D61 | 6C70 | 2E65 | 6F63 | 006D |
| Subject data             | R130        | 7533       | 6A62 | 6365 | 4474 | 7461 | 4161 | 0000 | 0000 |
| Message body data        | R250        | 6F42       | 7964 | 6144 | 6174 | 0041 | 0000 | 0000 | 0000 |
| Attachment data          | R300        | 7441       | 6174 | 6863 | 6144 | 6174 | 0041 | 0000 | 0000 |

### 5. Select "R0" (R0(+0)) to "R307" (R304(+3)) from the table of the device memory editor and write the data into the CPU module.

 Select data ⇒ Right-click ⇒ [Online] ⇒ [Write Selected Range] ⇒ "Use Common File Register in All Programs" ⇒ [OK]

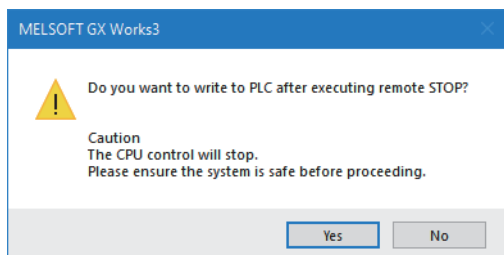


The 'Write Selected Range' dialog box contains the following settings:

- Target:**
  - ☒ Global Device
  - ☐ Local Device
- Program File Name:** MAIN (selected from a dropdown menu)
- \* Please specify the program file name that was written to PLC.

Buttons: OK, Cancel

### 6. When the following window appears, click the [Yes] button.



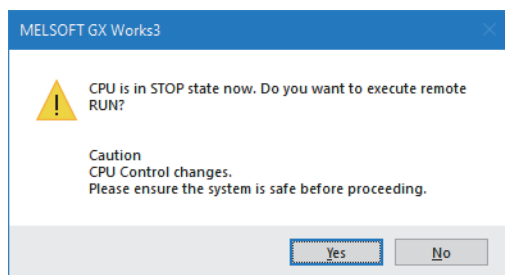
The 'MELSOFT GX Works3' dialog box displays a warning:

**Do you want to write to PLC after executing remote STOP?**

**Caution**  
The CPU control will stop.  
Please ensure the system is safe before proceeding.

Buttons: Yes, No

7. Write the data into the CPU module. When the following windows appears, click the [Yes] button.



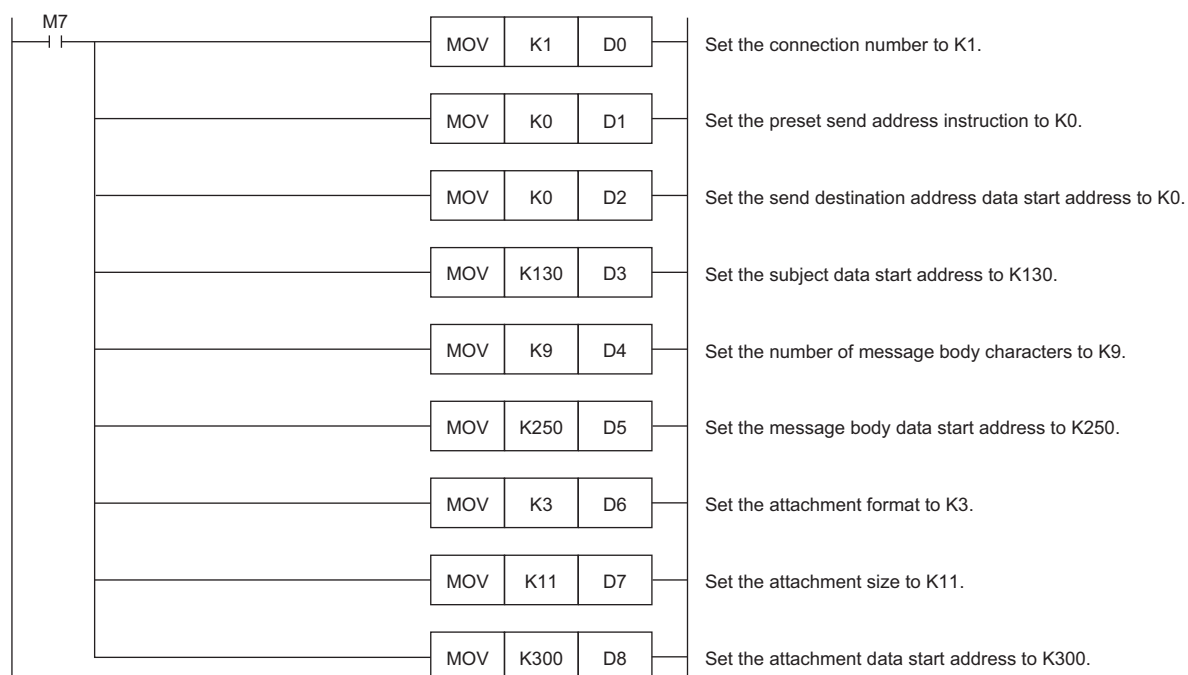
## Parameter setting

Refer to the following.

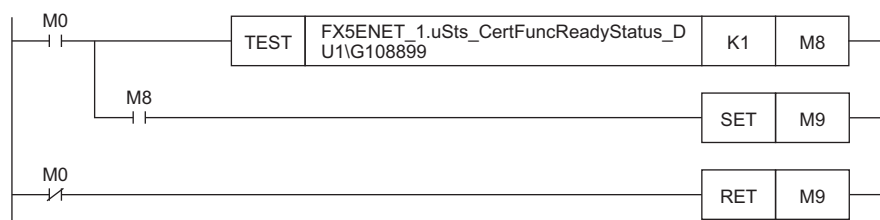
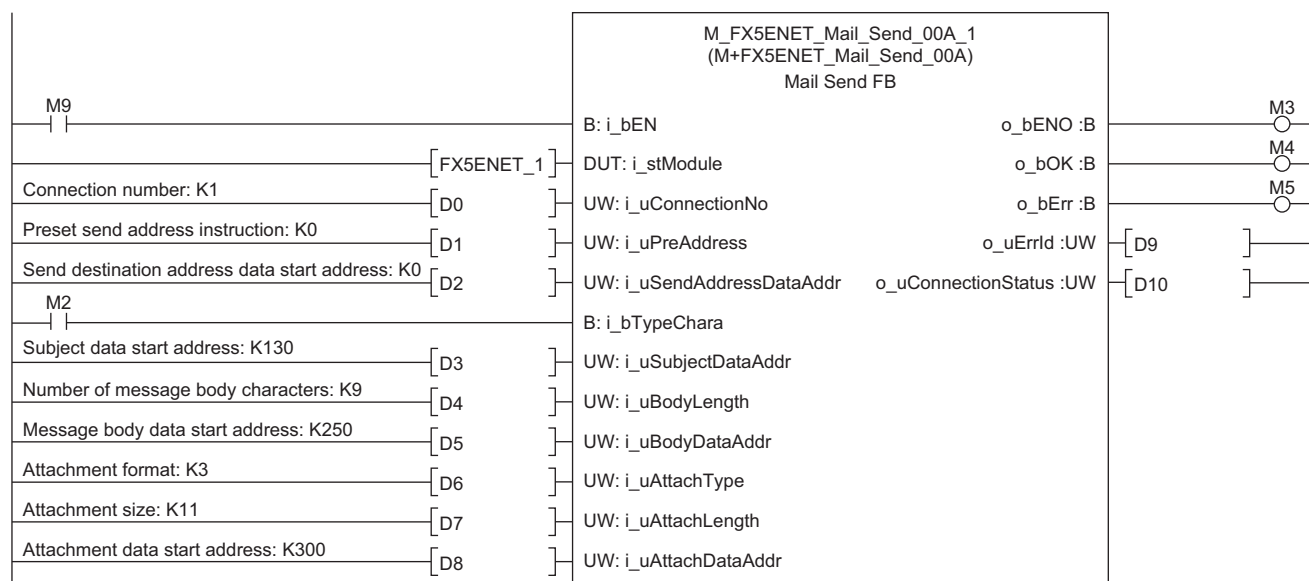
☞ Page 109 Parameter setting

## Program

M7 turns on for setting the information used for M+ENET\_Mail\_Send (Sending of E-mail).



After M2 (ASCII/UTF-16 string specification) turns on, M0 turns on. When FX5ENET\_1.uSts\_CertFuncReadyStatus\_D (Certificate function ready-to-enable state) turns on, M9 (Execution command) turns on to send an E-mail. After the E-mail is successfully sent, M4 (Normal completion) turns on.





# INSTRUCTION INDEX

---

## M

|                                                     |     |
|-----------------------------------------------------|-----|
| M+FX5CCLGNMS_DeviceRead . . . . .                   | 138 |
| M+FX5CCLGNMS_DeviceWrite . . . . .                  | 144 |
| M+FX5CCLGNMS_Recv . . . . .                         | 159 |
| M+FX5CCLGNMS_Send . . . . .                         | 152 |
| M+FX5CCLGNMS_SetAddress . . . . .                   | 165 |
| M+FX5CCLGNMS_SLMP_DeviceRead_IP . . . .             | 169 |
| M+FX5CCLGNMS_SLMP_DeviceWrite_IP . . . .            | 177 |
| M+FX5CCLIEF_DeviceRead . . . . .                    | 185 |
| M+FX5CCLIEF_DeviceWrite . . . . .                   | 191 |
| M+FX5CCLIEF_Recv . . . . .                          | 204 |
| M+FX5CCLIEF_Send . . . . .                          | 198 |
| M+FX5CCLIEF_SetParameter . . . . .                  | 209 |
| M+FX5CCLIEF_StationNoSet . . . . .                  | 214 |
| M+FX5-EIP_Class1GetInputData . . . . .              | 220 |
| M+FX5-EIP_Class1SetOutputData . . . . .             | 226 |
| M+FX5-EIP_Class3Originator_MessageSend . .          | 269 |
| M+FX5-EIP_Class3Originator_ReadTagData . .          | 247 |
| M+FX5-EIP_Class3Originator_WriteTagData . .         | 254 |
| M+FX5-EIP_UCMMOriginator_MessageSend . .            | 261 |
| M+FX5-EIP_UCMMOriginator_ReadTagData . .            | 232 |
| M+FX5-EIP_UCMMOriginator_WriteTagData . .           | 239 |
| M+FX5ENET_ConnectionClose . . . . .                 | 24  |
| M+FX5ENET_ConnectionOpen . . . . .                  | 19  |
| M+FX5ENETIP_Class1GetInputData . . . . .            | 276 |
| M+FX5ENETIP_Class1SetOutputData . . . . .           | 281 |
| M+FX5ENETIP_ConnectionClose . . . . .               | 24  |
| M+FX5ENETIP_ConnectionOpen . . . . .                | 19  |
| M+FX5ENETIP_Recv_Socket . . . . .                   | 28  |
| M+FX5ENETIP_Send_Socket . . . . .                   | 32  |
| M+FX5ENET_Mail_Send . . . . .                       | 104 |
| M+FX5ENET_Mail_Send_MF . . . . .                    | 133 |
| M+FX5ENET_MQTT_Connect . . . . .                    | 82  |
| M+FX5ENET_MQTT_Connect_MF . . . . .                 | 110 |
| M+FX5ENET_MQTT_PublishSend . . . . .                | 89  |
| M+FX5ENET_MQTT_PublishSend_MF . . . . .             | 117 |
| M+FX5ENET_MQTT_Receive . . . . .                    | 94  |
| M+FX5ENET_MQTT_Receive_MF . . . . .                 | 123 |
| M+FX5ENET_MQTT_Subscribe . . . . .                  | 99  |
| M+FX5ENET_MQTT_Subscribe_MF . . . . .               | 128 |
| M+FX5ENET_Recv_Socket . . . . .                     | 28  |
| M+FX5ENET_Send_Socket . . . . .                     | 32  |
| M+FX5UCPU-EN_ConnectionClose . . . . .              | 24  |
| M+FX5UCPU-EN_ModbusTcp_ClientRead . . . .           | 69  |
| M+FX5UCPU-EN_ModbusTcp_ClientWrite . . . .          | 75  |
| M+FX5UCPU-EN_Recv_Socket . . . . .                  | 28  |
| M+FX5UCPU-EN_Send_Socket . . . . .                  | 32  |
| M+FX5UCPU-EN_SLMP_DeviceCodeConversion<br>. . . . . | 65  |
| M+FX5UCPU-EN_SLMP_DeviceRead_Active . . .           | 50  |
| M+FX5UCPU-EN_SLMP_DeviceRead_IP . . . .             | 36  |
| M+FX5UCPU-EN_SLMP_DeviceWrite_Active . . .          | 58  |
| M+FX5UCPU-EN_SLMP_DeviceWrite_IP . . . .            | 43  |

# MEMO

---

# REVISIONS

| Revision date | Revision | Description                                                                                                                                      |
|---------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| May 2016      | A        | First Edition                                                                                                                                    |
| October 2016  | B        | ■Added or modified parts<br>Chapter 1, 2                                                                                                         |
| April 2017    | C        | ■Added or modified parts<br>Chapter 2, 3                                                                                                         |
| October 2017  | D        | ■Added or modified parts<br>Chapter 1, Section 2.7, 2.8, 2.9                                                                                     |
| April 2018    | E        | ■Added or modified parts<br>Chapter 1, Section 2.10, 2.11                                                                                        |
| October 2018  | F        | ■Added or modified parts<br>Chapter 1, Section 2.1, 2.2, 2.3, 2.4                                                                                |
| October 2019  | G        | ■Added or modified parts<br>SAFETY PRECAUTIONS, INTRODUCTION, RELEVANT MANUALS, TERMS, GENERIC TERMS<br>AND ABBREVIATIONS, Chapter 1, 2, 3, 4, 5 |
| May 2020      | H        | ■Added or modified parts<br>INTRODUCTION, RELEVANT MANUALS, TERMS, Chapter 1, 4, 6, TRADEMARKS                                                   |
| October 2020  | J        | ■Added or modified parts<br>RELEVANT MANUALS, Section 2.1, 3.1, 3.2                                                                              |
| October 2021  | K        | ■Added or modified parts<br>RELEVANT MANUALS, Chapter 1, 2                                                                                       |
| April 2022    | L        | ■Added or modified parts<br>INTRODUCTION, RELEVANT MANUALS, TERMS, GENERIC TERMS AND ABBREVIATIONS,<br>Chapter 1, 2, 4                           |
| April 2023    | M        | ■Added or modified parts<br>GENERIC TERMS AND ABBREVIATIONS, Section 1.1, 1.3, Chapter 2, 6                                                      |
| October 2023  | N        | ■Added or modified parts<br>RELEVANT MANUALS, GENERIC TERMS AND ABBREVIATIONS, Chapter 2, 3, 4, 5, 6                                             |
| May 2024      | P        | ■Added or modified parts<br>RELEVANT MANUALS, Section 1.1, 2.5, 2.6, 2.7, 2.8, 4.5, 4.6, 4.7, 6.11, 6.12                                         |
| July 2024     | Q        | ■Added or modified part<br>GENERIC TERMS AND ABBREVIATIONS                                                                                       |
| October 2025  | R        | ■Added or modified parts<br>INTRODUCTION, RELEVANT MANUALS, GENERIC TERMS AND ABBREVIATIONS, Chapter 1, 2,<br>3, 4, 5, 6, 7                      |
| February 2026 | S        | ■Added or modified part<br>Chapter 6                                                                                                             |

Japanese manual number: JY997D64801S

This manual confers no industrial property rights or any rights of any other kind, nor does it confer any patent licenses. Mitsubishi Electric Corporation cannot be held responsible for any problems involving industrial property rights which may occur as a result of using the contents noted in this manual.

© 2016 MITSUBISHI ELECTRIC CORPORATION

# INFORMATION AND SERVICES

---

For further information and services, please contact your local Mitsubishi Electric sales office or representative.  
Visit our website to find our locations worldwide.

MITSUBISHI ELECTRIC Factory Automation Global Website

Locations Worldwide

[www.MitsubishiElectric.com/fa/about-us/overseas/](http://www.MitsubishiElectric.com/fa/about-us/overseas/)

# TRADEMARKS

---

The company names, system names and product names mentioned in this manual are either registered trademarks or trademarks of their respective companies.

In some cases, trademark symbols such as '™' or '®' are not specified in this manual.



Manual number: JY997D64901S

## **mitsubishi electric corporation**

HEAD OFFICE: TOKYO BLDG., 2-7-3, MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN  
NAGOYA WORKS: 1-14, YADA-MINAMI 5-CHOME, HIGASHI-KU, NAGOYA 461-8670, JAPAN

When exported from Japan, this manual does not require application to the  
Ministry of Economy, Trade and Industry for service transaction permission.

Specifications subject to change without notice.