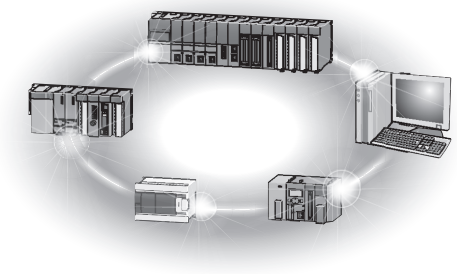
MITSUBISHI ELECTRIC

Mitsubishi Programmable Controller

RTD Input Module Type AJ65SBT2B-64RD3 User's Manual



●SAFETY PRECAUTIONS●

(Read these precautions before using this product.)

Before using this product, please read this manual and the relevant manuals introduced in this manual carefully and pay full attention to safety to handle the product correctly.
The instructions given in this manual are concerned with this product. For the safety instructions of the programmable controller system, please read the CPU module user's manual.

In this manual, the safety precautions are classified into two levels: "⚠WARNING" and "⚠CAUTION".

⚠WARNING	Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.
⚠CAUTION	Indicates that incorrect handling may cause hazardous conditions, resulting in minor or moderate injury or property damage.

Under some circumstances, failure to observe the precautions given under "⚠CAUTION" may lead to serious consequences.
Observe the precautions of both levels because they are important for personal and system safety.
Make sure that the end users read this manual and then keep the manual in a safe place for future reference.

[Design Precautions]

⚠ WARNING

- In the case of a data link error, the master module data is backed up.
  Using the communication status information, create an interlock circuit on the sequence program for the system to operate safely.

⚠ CAUTION

- Do not install the control or communication cable(s) together with the main circuit or power cables.
  Keep a distance of 100mm or more between them.
  Doing so may cause malfunctions due to noise.

[Security Precautions]

⚠ WARNING

- To maintain the security (confidentiality, integrity, and availability) of the programmable controller and the system against unauthorized access, denial-of-service (DoS) attacks, computer viruses, and other cyberattacks from external devices via the network, take appropriate measures such as firewalls, virtual private networks (VPNs), and antivirus solutions.

[Installation Precautions]

⚠ CAUTION
● Use the module in an environment that meets the general specifications given in this manual. Operating it in any other environment may cause an electric shock, fire, malfunction, product damage or deterioration. ● For protection of the switches, do not remove the cushioning material before installation. ● Securely fix the module with the DIN rail or fixing screws. Fixing screws must be tightened within the specified torque range. A loose screw may cause a drop of the module or malfunction. Overtightening can damage the screw and/or module, resulting in drop or malfunction. ● Do not directly touch any conductive part of the module. Doing so may result in a malfunction or failure of the module.

[Wiring Precautions]

⚠ CAUTION

- Be sure to shut off all phases of the external power supply used by the system before installation or wiring. Failure to do so may cause a damage to the product and/or malfunctions.

- Always ground the FG terminal to the protective ground conductor.
  Failure to do so may result in malfunctions.

- Be sure to tighten any unused terminal screws within a tightening torque range. Failure to do so may cause a short circuit due to contact with a solderless terminal.

- Use applicable solderless terminals and tighten them with the specified torque.
  If any solderless spade terminal is used, it may be disconnected when the terminal screw comes loose, resulting in failure.

- Check the rated voltage and terminal layout and then wire the module correctly.
  Connecting a power supply of a different voltage rating or incorrect wiring may cause a fire or failure.

- Tighten terminal screws within the specified torque range.
  A loose terminal screw may cause a short circuit or malfunction.
  Overtightening can cause a short circuit or malfunction due to damage of the screws or module.

- Take care to prevent foreign matter such as dust or wire chips from entering the module.
  Failure to do so may cause a fire, failure or malfunctions.

- Place the connection wires and cables in a duct or clamp them.
  If not, dangling cables may swing or inadvertently be pulled, resulting in damage to the module and/or cables or malfunctions due to poor cable connection.

[Wiring Precautions]

⚠ CAUTION

- Do not install the control cable(s) together with the communication cable(s).
  Doing so may cause malfunctions due to noise.

- When disconnecting the cables from the module, do not hold and pull the cable part.
  Disconnect the cables after loosening the screws in the portions connected to the module.
  Pulling the cable that is still connected to the module may damage the module and/or cable and cause malfunctions due to poor cable connection.

[Starting and Maintenance Precautions]

⚠ CAUTION

- Do not touch the terminals while the power is on.
  Doing so may cause malfunction.

- Be sure to shut off all phases of the external power supply used by the system before cleaning or retightening the terminal screws.
  Not doing so can cause the module to fail or malfunction.
  Undertightening can cause a drop, short circuit or malfunction.
  Overtightening can cause a drop, short circuit or malfunction due to damage of the screws or module.

- Never disassemble or modify the module.
  This may cause breakdowns, malfunction, injury and/or fire.

- Do not drop or apply any strong impact to the module.
  Doing so may damage the module.

- Be sure to shut off all phases of the external power supply used by the system before mounting or dismounting the module to or from the panel.
  Not doing so can cause the module to fail or malfunction.

- Do not install/remove the terminal block more than 50 times after the first use of the product. (IEC 61131-2 compliant)

- Before handling the module, always touch grounded metal, etc. to discharge static electricity from the human body. Failure to do so can cause the module to fail or malfunction.

[Disposal Precautions]

⚠ CAUTION
● When disposing of this product, treat it as industrial waste.

● CONDITIONS OF USE FOR THE PRODUCT ●

(1) MELSEC programmable controller ("the PRODUCT") shall be used in conditions;
i) where any problem, fault or failure occurring in the PRODUCT, if any, shall not lead to any major or serious accident; and
ii) where the backup and fail-safe function are systematically or automatically provided outside of the PRODUCT for the case of any problem, fault or failure occurring in the PRODUCT.

(2) The PRODUCT has been designed and manufactured for the purpose of being used in general industries.
MITSUBISHI ELECTRIC SHALL HAVE NO RESPONSIBILITY OR LIABILITY (INCLUDING, BUT NOT LIMITED TO ANY AND ALL RESPONSIBILITY OR LIABILITY BASED ON CONTRACT, WARRANTY, TORT, PRODUCT LIABILITY) FOR ANY INJURY OR DEATH TO PERSONS OR LOSS OR DAMAGE TO PROPERTY CAUSED BY the PRODUCT THAT ARE OPERATED OR USED IN APPLICATION NOT INTENDED OR EXCLUDED BY INSTRUCTIONS, PRECAUTIONS, OR WARNING CONTAINED IN MITSUBISHI ELECTRIC USER'S, INSTRUCTION AND/OR SAFETY MANUALS, TECHNICAL BULLETINS AND GUIDELINES FOR the PRODUCT.
("Prohibited Application")
Prohibited Applications include, but not limited to, the use of the PRODUCT in;
- Nuclear Power Plants and any other power plants operated by Power companies, and/or any other cases in which the public could be affected if any problem or fault occurs in the PRODUCT.
- Railway companies or Public service purposes, and/or any other cases in which establishment of a special quality assurance system is required by the Purchaser or End User.
- Aircraft or Aerospace, Medical applications, Train equipment, transport equipment such as Elevator and Escalator, Incineration and Fuel devices, Vehicles, Manned transportation, Equipment for Recreation and Amusement, and Safety devices, handling of Nuclear or Hazardous Materials or Chemicals, Mining and Drilling, and/or other applications where there is a significant risk of injury to the public or property.

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(3) Mitsubishi Electric shall have no responsibility or liability for any problems involving programmable controller trouble and system trouble caused by DoS attacks, unauthorized access, computer viruses, and other cyberattacks.

REVISIONS

*The manual number is given on the bottom left of the back cover.

Revision date	*Manual number	Description
Aug., 2008	SH(NA)-080770ENG-A	First edition
Dec., 2010	SH(NA)-080770ENG-B	Addition CONDITIONS OF USE FOR THE PRODUCT, Section 6.8 Partial addition SAFETY PRECAUTIONS, ABOUT MANUALS, GENERIC TERMS AND ABBREVIATIONS, Section 2.1, 2.2, 3.1, 3.2, 3.4.2, 4.2, 4.6.2, 4.7.2, 5.2, 6.4, 6.9
May, 2024	SH(NA)-080770ENG-C	Addition TRADEMARK, WARRANTY Partial addition SAFETY PRECAUTIONS, CONDITIONS OF USE FOR THE PRODUCT, Section 5.3 to 5.6
Jun., 2025	SH(NA)-080770ENG-D	Addition Appendix 1 Partial addition ABOUT MANUALS, Section 3.1, 4.3

Japanese Manual Version SH-080728-D

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INTRODUCTION

Thank you for purchasing the Mitsubishi Electric programmable controllers.
Before using this product, please read this manual carefully to fully understand the functions and performance of the programmable controller to ensure correct use.

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ABOUT MANUALS

The following manuals are relevant to this product.

Related manuals

Manual name	Manual number
CC-Link System Master/Local Module Type AJ61BT11/A1SJ61BT11 User's Manual Describes the system configuration, performance specifications, functions, handling, wiring, and troubleshooting of the AJ61BT11 and A1SJ61BT11.	IB-66721
CC-Link System Master/Local Module Type AJ61QBT11/A1SJ61QBT11 User's Manual Describes the system configuration, performance specifications, functions, handling, wiring, and troubleshooting of the AJ61QBT11 and A1SJ61QBT11.	IB-66722
CC-Link System Master/Local Module User's Manual Describes the system configuration, performance specifications, functions, handling, wiring, and troubleshooting of the CC-Link module.	SH-080394E
Type AnSHCPU/AnACPU/AnUCPU/QCPU-A (A Mode) Programming Manual (Dedicated Instructions) Describes the instructions extended for the AnSHCPU/AnACPU/AnUCPU.	IB-66251
MELSEC-L CC-Link System Master/Local Module UserAfs Manual Describes the system configuration, Performance specifications, functions, handling, wiring and troubleshooting of the L26CPU-BT and LJ61BT11.	SH-080895ENG

COMPLIANCE WITH THE EMC AND LOW VOLTAGE DIRECTIVES

(1) For programmable controller system

To configure a system meeting the requirements of the EMC and Low Voltage Directives when incorporating the Mitsubishi programmable controller (EMC and Low Voltage Directives compliant) into other machinery or equipment, refer to the "EMC AND LOW VOLTAGE DIRECTIVES" chapter of the User's Manual for the CPU module used. The CE mark, indicating compliance with the EMC and Low Voltage Directives, is printed on the rating plate of the programmable controller.

(2) For the product

For the compliance of this product with the EMC and Low Voltage Directives, refer to the "CC-Link module" section in the "EMC AND LOW VOLTAGE DIRECTIVES" chapter of the User's Manual for the CPU module used.

GENERIC TERMS AND ABBREVIATIONS

Unless otherwise specified, the following generic terms and abbreviations are used in this manual to describe the AJ65SBT2B-64RD3 RTD input module.

Generic term/ abbreviation	Description
GX Developer	Product name of the software package for the MELSEC programmable controllers
GX Works2	
ACPU	A generic term for the A0J2CPU, A0J2HCPU, A1CPU, A2CPU, A2CPU-S1, A3CPU, A1SCPU, A1SCPUC24-R2, A1SHCPU, A1SJCPU, A1SJCPU-S3, A1SJHCPU, A1NCPU, A2NCPU, A2NCPU-S1, A3NCPU, A3MCPU, A3HCPU, A2SCPU, A2SHCPU, A2ACPU, A2ACPU-S1, A3ACPU, A2UCPU, A2UCPU-S1, A2USCPU, A2USCPU-S1, A2USHCPU-S1, A3UCPU, and A4UCPU
QnACPU	A generic term for the Q2ACPU, Q2ACPU-S1, Q2ASCPU, Q2ASCPU-S1, Q2ASHCPU, Q2ASHCPU-S1, Q3ACPU, Q4ACPU, and Q4ARCPU
QCPU (A mode)	A generic term for the Q02CPU-A, Q02HCPU-A, and Q06HCPU-A
QCPU (Q mode)	A generic term for the Q00JCPU, Q00CPU, Q01CPU, Q02CPU, Q02HCPU, Q06HCPU, Q12HCPU, Q25HCPU, Q02PHCPU, Q06PHCPU, Q12PHCPU, Q25PHCPU, Q12PRHCPU, Q25PRHCPU, Q00UJCPU, Q00UCPU, Q01UCPU, Q02UCPU, Q03UDCPU, Q04UDHCPU, Q06UDHCPU, Q10UDHCPU, Q13UDHCPU, Q20UDHCPU, Q26UDHCPU, Q03UDECPU, Q04UDEHCPU, Q06UDEHCPU, Q10UDEHCPU, Q13UDEHCPU, Q20UDEHCPU, Q26UDEHCPU, Q50UDEHCPU, and Q100UDEHCPU
LCPU	A generic term for the L02CPU and L26CPU-BT
Master station	A station that controls data link system One master station is required for each system.
Local station	A station that has a programmable controller CPU and can communicate with the master and other local stations
Remote I/O station	A station that treats information in units of bits only (performs input and output with external devices.) (e.g. AJ65BTB1-16D and AJ65SBTB1-16D)
Remote device station	A station that treats information in units of bits and words (performs input and output with external devices and converts analog data.)
Remote station	A generic term for the remote I/O station and remote device station This station is controlled by the master station.
Intelligent device station	A station that can perform transient transmission, such as the AJ65BT-R2N (including local stations)
Master module	A generic term for the modules that can be used as the master station
SB	Link special relay (for CC-Link) Information in units of bits that indicates the data link status and module operating status of the master station/local stations
SW	Link special register (for CC-Link) Information in units of 16 bits that indicates the data link status and module operating status of the master station/local stations
RX	Remote input (for CC-Link) Information input in units of bits from the remote station to the master station
RY	Remote output (for CC-Link) Information output in units of bits from the master station to the remote station
RWw	Remote register (write area for CC-Link) Information output in units of 16 bits from the master station to the remote device station
RWr	Remote register (read area for CC-Link) Information input in units of 16 bits from the remote device station to the master station

PACKING LIST

The following table shows the packing list of the AJ65SBT2B-64RD3 RTD input module.

Product	Quantity
AJ65SBT2B-64RD3 RTD input module	1
RTD Input Module User's Manual (Hardware) AJ65SBT2B-64RD3	1

CHAPTER1 OVERVIEW

This manual describes the specifications, handling, and programming methods of the AJ65SBT2B-64RD3 RTD input module (hereafter abbreviated as AJ65SBT2B-64RD3) used as a remote device station in a CC-Link system.

The AJ65SBT2B-64RD3 converts temperature data [℃] input from Pt100 or JPt100 (3-conductor type platinum RTD), or nickel RTD Ni100 into a measured temperature value in 16-bit signed binary (stored by a value up to the first decimal place × 10).

1.1 Features

This section describes the features of the AJ65SBT2B-64RD3.

(1) One module can measure temperatures up to four channels.
One module can measure temperatures up to four channels.

(2) A RTD complying with the standard can be used.
Two types of platinum RTD (Pt100 and JPt100) complying with JIS standard and nickel RTD (Ni100) complying with DIN standard can be used.
The type and measurement range of RTD can be selected per channel with sequence program.

(3) Disconnection is detectable.
Disconnection occurs at RTD is detectable per channel by Disconnection detection flag.
Setting "Up scale" and "Down scale" to Disconnection detection upper/lower limit selection flag can detect disconnection from measured temperature value.

(4) Sampling processing/time average processing/count average processing/moving average processing are selectable.
The conversion processing method is selectable from sampling processing/time average processing/count average processing/moving average processing per channel.

(5) Saving man-hour

(a) The module has built-in terminating resistor of 110Ω, which eases wiring.

(b) The transmission speed of the AJ65SBT2B-64RD3 needs not be set by the user. It is set automatically according to the transmission speed set in the master station.

(6) Maximum 42 modules are connectable.
Maximum 42 modules of the AJ65SBT2B-64RD3 are connectable to one master station.

(7) Maintenance is easy.

Since 2-piece terminal block is used, the maintenance is easy.

CHAPTER2 SYSTEM CONFIGURATION

This chapter describes the system configuration for using the AJ65SBT2B-64RD3.

2.1 Overall Configuration

This section describes the overall configuration for using the AJ65SBT2B-64RD3.

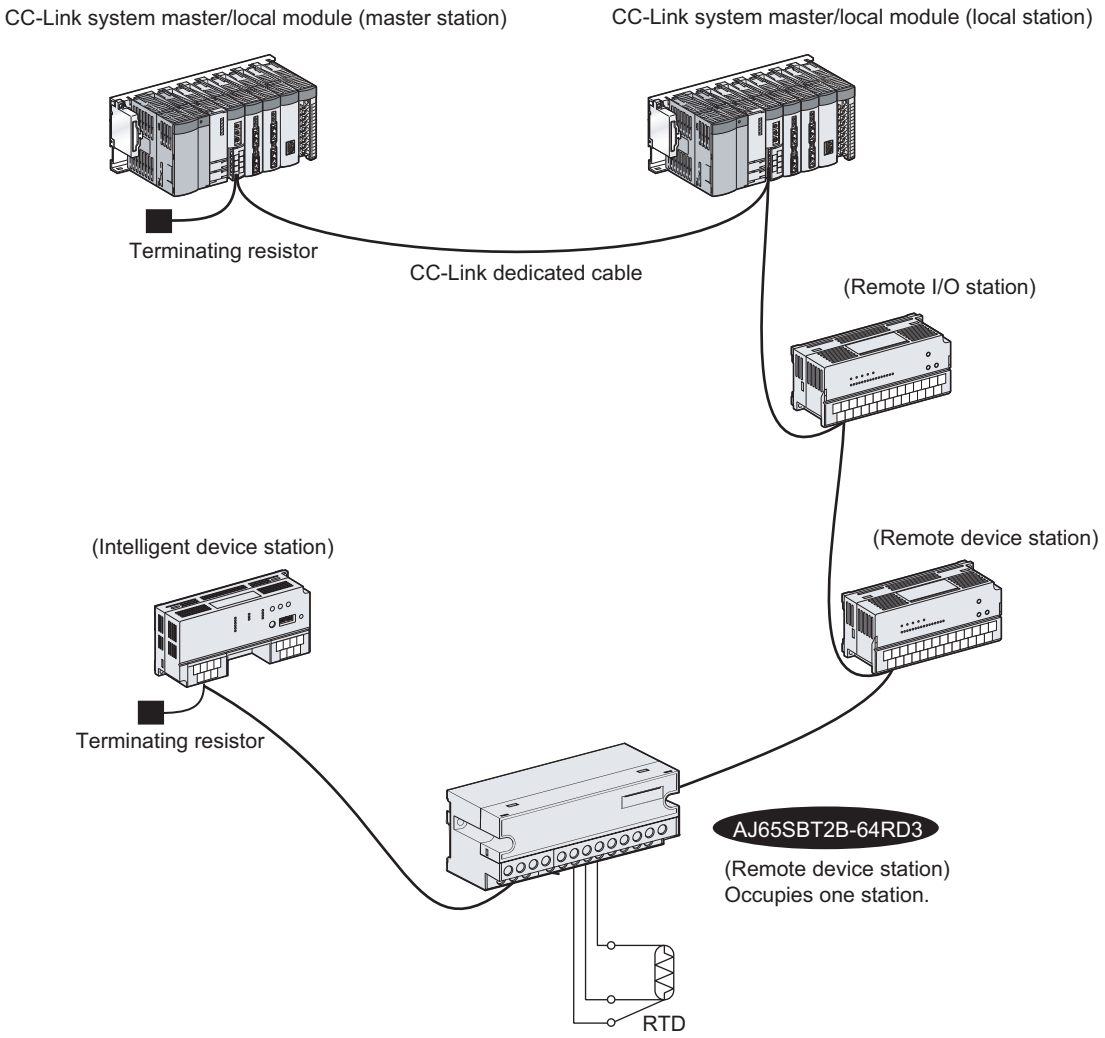


Figure 2.1 Overall configuration for using the AJ65SBT2B-64RD3

2.2 Applicable System

This section describes the applicable system.

(1) Applicable master modules

For available master modules, visit the CC-Link Partner Association (CLPA) website as shown below:
www.cc-link.org

Remark

Check the specifications of the master module before use.

(2) Restrictions on using the CC-Link dedicated instructions (RLPA, RRPA)

The CC-Link dedicated instructions (RLPA, RRPA) cannot be used depending on the programmable controller CPU and master module used.
For details on restrictions, refer to the user's manual of the master module for A series and Type AnSHCPU/AnACPU/AnUCPU/QCPU-A (A Mode) Programming Manual (Dedicated Instructions).
Dedicated instructions other than the RLPA and RRPA cannot be used for the module.
For a program example using the dedicated instructions (RLPA, RRPA), refer to Section 5.5.

CHAPTER3 SPECIFICATIONS

This chapter describes the specifications of the AJ65SBT2B-64RD3.

3.1 General Specifications

This section describes the general specifications of the AJ65SBT2B-64RD3.

Table 3.1 General specifications

<table>
<tr><th>Item</th><th colspan="6">Specifications</th></tr>
<tr><td>Operating ambient temperature</td><td colspan="6">0 to 55℃</td></tr>
<tr><td>Storage ambient temperature</td><td colspan="6">-20 to 75℃</td></tr>
<tr><td>Operating ambient humidity</td><td colspan="6">10 to 90% RH, non-condensing</td></tr>
<tr><td>Storage ambient humidity</td><td colspan="6">10 to 90% RH, non-condensing</td></tr>
<tr><td rowspan="5">Vibration resistance</td><td>—</td><td>Frequency</td><td>Constant acceleration</td><td>Half amplitude</td><td>Number of sweeps</td><td rowspan="5">IEC 61131-2:2007 /JIS B3502:2011</td></tr>
<tr><td rowspan="2">For intermittent vibration</td><td rowspan="2">5 to 8.4Hz
8.4 to 150Hz</td><td>—</td><td>3.5mm</td><td rowspan="2">10 times each in X, Y, and Z directions</td></tr>
<tr><td>9.8m/s^2</td><td>—</td></tr>
<tr><td rowspan="2">For continuous vibration</td><td rowspan="2">5 to 8.4Hz
8.4 to 150Hz</td><td>—</td><td>1.75mm</td><td rowspan="2">—</td></tr>
<tr><td>4.9m/s^2</td><td>—</td></tr>
<tr><td>Shock resistance</td><td colspan="5">Three shocks in each direction per axis, on 3 mutually perpendicular axes (total of 18 shocks)</td></tr>
<tr><td>Operating atmosphere</td><td colspan="6">No corrosive gases</td></tr>
<tr><td>Operating altitude*3</td><td colspan="6">2000m or lower</td></tr>
<tr><td>Installation location</td><td colspan="6">Inside control panel</td></tr>
<tr><td>Overvoltage category*1</td><td colspan="6">II or lower</td></tr>
<tr><td>Pollution degree*2</td><td colspan="6">2 or lower</td></tr>
</table>

* 1: This indicates the section of the power supply to which the device is assumed to be connected between the public distribution network and the machinery within premises.
Category II applies to devices to which a power is supplied from installed equipment.
The surge voltage withstand for devices with rated voltage of up to 300V is 2500V.

* 2: This index indicates the degree to which conductive material can be generated in terms of the environment where the devices are used.
In the environment corresponding to "Pollution level 2", basically only non-conductive pollution occurs. However, temporary conductivity may occur due to occasional condensation.

* 3: Do not operate or store the programmable controller in the environment where the pressure applied is equal to or greater than the atmospheric pressure at an altitude of 0m. Doing so may cause malfunction.
Please consult our branch office for more information.

3.2 Performance Specifications

This section describes the performance specifications of the AJ65SBT2B-64RD3.

Table 3.2 Performance specifications

<table>
<tr><th colspan="2">Item</th><th>AJ65SBT2B-64RD3</th></tr>
<tr><td colspan="2">Measurement method</td><td>3-conductor type</td></tr>
<tr><td colspan="2">Measured temperature value</td><td>16-bit signed binary (-2000 to 8500)</td></tr>
<tr><td colspan="2">Applicable RTD</td><td>Pt100 (IEC 751 1983/JIS C 1604-1997), JPt100 (JIS C 1604-1981), Ni100 (DIN 43760 1987)</td></tr>
<tr><td colspan="2">Detection current</td><td>1mA</td></tr>
<tr><td colspan="2">Measurement range, conversion accuracy, resolution</td><td>
<table>
<tr><th colspan="2" rowspan="2">Measurement range</th><th colspan="2">Conversion accuracy*1, *2</th><th rowspan="2">Resolution</th></tr>
<tr><th>Ambient temperature 0 to 55℃</th><th>Ambient temperature 25±5℃</th></tr>
<tr><td rowspan="3">Pt100</td><td>-200 to 850℃</td><td>±1.4℃</td><td>±0.5℃</td><td rowspan="6">0.1℃</td></tr>
<tr><td>-20 to 120℃</td><td>±0.6℃</td><td>±0.2℃</td></tr>
<tr><td>0 to 200℃</td><td>±0.6℃</td><td>±0.2℃</td></tr>
<tr><td rowspan="3">JPt100</td><td>-180 to 600℃</td><td>±1.0℃</td><td>±0.4℃</td></tr>
<tr><td>-20 to 120℃</td><td>±0.6℃</td><td>±0.2℃</td></tr>
<tr><td>0 to 200℃</td><td>±0.6℃</td><td>±0.2℃</td></tr>
<tr><td>Ni100</td><td>-60 to 180℃</td><td>±0.5℃</td><td>±0.2℃</td></tr>
</table>
</td></tr>
<tr><td colspan="2">Conversion speed</td><td>40ms/channel</td></tr>
<tr><td colspan="2">Number of temperature input points</td><td>4 channels/module</td></tr>
<tr><td colspan="2">Number of writes to Flash memory</td><td>Maximum 10,000 times</td></tr>
<tr><td colspan="2">CC-Link station type</td><td>Remote device station</td></tr>
<tr><td colspan="2">Number of occupied stations</td><td>1 station (RX/RY: 32 points each, RWr/RWw: 4 points each)</td></tr>
<tr><td colspan="2">Connection cable</td><td>CC-Link dedicated cable</td></tr>
<tr><td colspan="2">Withstand voltage</td><td>500VAC between all power supply and communication system terminals, and all RTD input terminals for one minute</td></tr>
<tr><td colspan="2">Isolation method</td><td>Between communication system terminal and all RTD input terminals: photocoupler isolation
Between power supply system terminal and all all RTD input terminals: transformer isolation
Between channels: non-isolation</td></tr>
<tr><td colspan="2">Noise immunity</td><td>Tested by a noise simulator with noise voltage of 500Vp-p, noise width of 1μs, and noise frequency of 25 to 60Hz.</td></tr>
<tr><td colspan="2">Disconnection detection</td><td>Available (for each channel)</td></tr>
<tr><td rowspan="2">External connection system</td><td>Communication part, module power supply part</td><td>7-point, 2-piece terminal block
M3 × 5.2 Tightening torque: 0.59 to 0.88N・m
Number of applicable solderless terminals: maximum 2</td></tr>
<tr><td>I/O part</td><td>18-point, 2-piece terminal block
M3 × 5.2 Tightening torque: 0.59 to 0.88N・m
Number of applicable solderless terminals: maximum 2</td></tr>
</table>

Table 3.2 Performance specifications

Item	AJ65SBT2B-64RD3
Applicable wire size	0.3 to 2.0mm^2
Applicable solderless terminal	· RAV1.25-3 (IEC 60715/JIS C 2805 compliant) [Applicable wire size: 0.3 to 1.25mm^2] · V2-MS3, RAP2-3SL, TGV2-3N [Applicable wire size: 1.25 to 2.0mm^2]
Module mounting screw	M4 screw × 0.7mm × 16mm or more (Tightening torque range: 0.78 to 1.08N · m) The module can also be mounted to a DIN rail.
Applicable DIN rail	TH35-7.5Fe, TH35-7.5Al (IEC 60715/JIS C 2812 compliant)
External power supply	24VDC (20.4 to 28.8VDC)
	Inrush current: 1.7A, 2.4ms
	Current consumption: 0.14A (24VDC)
Weight	0.25 kg

* 1: Except when noise is applied.
* 2: The accuracy for measured temperature value will be the sum of the conversion accuracy of the module and the tolerance of the connected RTD (refer to Table 3.3).

Example
RTD to be used: Pt100, Class A
Measurement range: -200 to 850℃
Ambient temperature: 40℃ (0 to 55℃)
The accuracy for measured temperature value at 800℃ is as follows:

(Accuracy of measured temperature value) = (Conversion accuracy) + (Tolerance of RTD (Refer to Table 3.3.))

= (±1.4℃) + (±(0.15℃+0.002 × 800℃))

= ±3.15℃

Since the resolution is ±0.1℃ = ±3.2℃

Table 3.3 Tolerance of RTD

RTD	Class	Tolerance
Pt100 (JIS C 1604-1997)	A	± (0.15+0.002|t|) ℃
	B	± (0.3+0.005|t|) ℃
JPt100 (JIS C 1604-1981)	0.15	± (0.15+0.0015|t|) ℃
	0.2	± (0.15+0.002|t|) ℃
	0.5	± (0.3+0.005|t|) ℃
Ni100 (DIN 43760 1987)	0 to 250℃	± (0.4+0.007|t|) ℃
	-60 to 0℃	± (0.4+0.0028|t|) ℃

t: Measured temperature

3.2.1 Specifications for connecting RTD

This section describes the specifications for connecting a RTD to the AJ65SBT2B-64RD3.

(a) The influence on the measured resistance by the discrepancy of the resistance values in the conductors connected to A and b is approximately 0.025℃/10mΩ.

(b) Connect an RTD so that the discrepancy of the conductor resistance values between 1) and 2) becomes 10Ω or less.

(c) Connect an RTD to the AJ65SBT2B-64RD3 so that the resistance value per conductor becomes 100Ω or less.

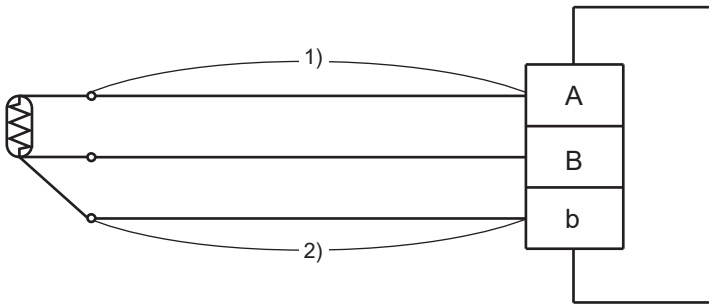


Figure 3.1 Specifications for connecting RTD

3.2.2 Conversion speed

Conversion speed of the AJ65SBT2B-64RD3 is 40ms per channel.
However, the time from when temperature data is converted into a measured temperature value till when the value is transmitted to the master station varies depending on "transmission delay time" of the CC-Link system.

(1) Remote device station processing time

Table 3.4 Remote device station processing time

Number of used channels of the AJ65SBT2B-64RD3	Remote device station processing time
1	80ms
2	120ms
3	160ms
4	200ms

(2) Transmission delay time

For details on transmission delay time, refer to user's manual of the master module used.

(Example) Data link processing time when the master module QJ61BT11N is used in asynchronous mode
(normal value)

[Calculation formula]
SM + LS × 1 + Remote device station processing time
SM: Scan time of master station sequence program
LS: Link scan time

3.3 Functions

This section describes the functions of the AJ65SBT2B-64RD3.

3.3.1 Function list

Table 3.5 lists the functions of the AJ65SBT2B-64RD3.

Table 3.5 Function list of the AJ65SBT2B-64RD3

Item	Description	Reference
Conversion enable/disable specification	Sets the conversion enable/disable status for each channel. Setting "Disable" for unused channels can shorten a sampling period.	Section 3.3.2
Sampling processing/ average processing specification	Specifies the conversion system, sampling processing or averaging processing (count average/time average/moving average) for each channel.	Section 3.3.3
Disconnection detection	Detects the disconnection status of the connected RTD for each channel.	Section 3.3.4
Measured temperature value storage	Stores the value rounded off to one decimal place (16-bit signed binary) in the remote register.	Section 3.3.5
RTD type selection	Specifies the RTD type to be used for each channel.	Section 3.3.6
Error correction by setting offset/gain values	Performs error correction by setting offset/gain values.	Section 4.8
Transmission speed auto-tracking function	Sets transmission speed automatically according to the setting in the master module.	-

3.3.2 Conversion enable/disable specification

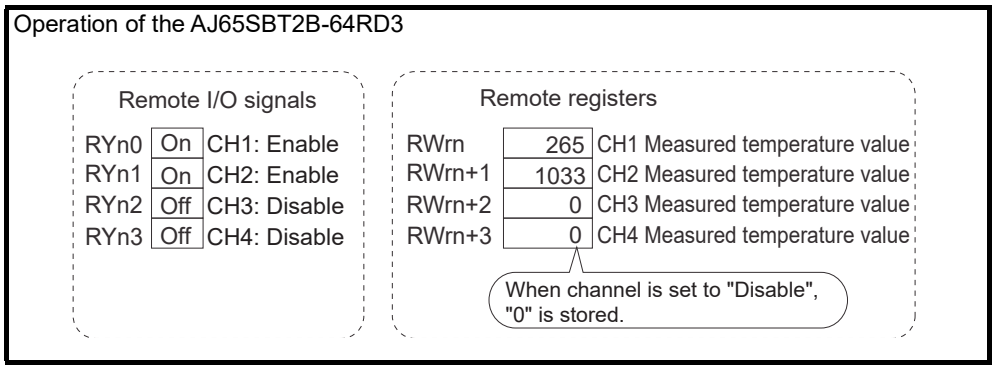
The AJ65SBT2B-64RD3 can set a conversion enable/disable status for each channel.

(1) Setting method

Conversion enable/disable status is set using CH□ Conversion enable flag (RYn0 to RYn3).

Table 3.6 Conversion enable/disable specification

Setting item	Description	
CH□ Conversion enable flag (RYn0 to RYn3) *1	On	Temperature of the target device can be measured.
	Off	Temperature of the target device cannot be measured.



(2) Relationship between conversion enable/disable specification and sampling period

Setting "Disable" for unused channels can shorten a sampling period.

(Example 1) Sampling period when all channels are set to "Enable"

Sampling period = 40ms × 4 channels = 160ms

(Example 2) Sampling period when only one channel is set to "Enable"

Sampling period = 40ms × 1 channel = 40ms

(3) Operation of the AJ65SBT2B-64RD3 according to the conversion status change

(a) When the conversion status is changed from "Disable" to "Enable"
The module starts sampling of the conversion-enabled channel.
The module stores the measured temperature value of the corresponding channel into the remote register and then turns on CH□ Conversion completion flag (RXn0 to RXn3).

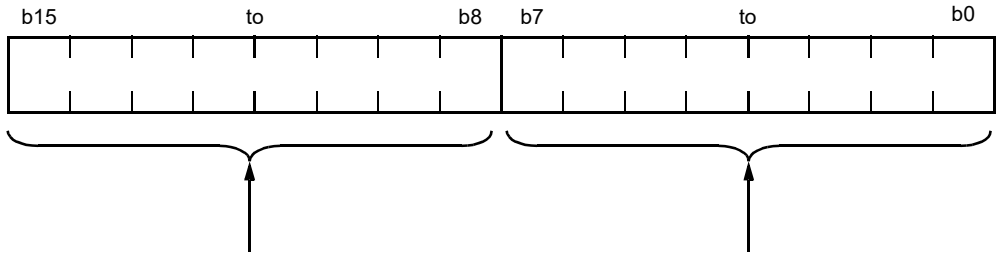
(b) When the conversion status is changed from "Enable" to "Disable"
The module stops sampling of the conversion-disabled channel.
The module turns off CH□ Conversion completion flag (RXn0 to RXn3) of the corresponding channel.
The measured temperature value of the corresponding channel immediately before the conversion status is changed to "Disable" is held in the remote register.

3.3.3 Sampling processing/average processing specification

The AJ65SBT2B-64RD3 can specify conversion system (sampling processing, count average, time average, or moving average) for each channel.

Conversion system is specified using CH☐ Averaging processing selection (RWwm to RWwm+3).

CH☐ Averaging processing selection (RWwm to RWwm+3) *1



[Count/time average setting]

Sampling processing: 00_H (fixed)

Count average: 01 to FF_H (1 to 255 times) *2

Time average: 10 to FF_H ((16 to 255) × 10ms) *3*4

Moving average: 00_H (fixed)

[Conversion system setting *5]

Sampling processing: 00_H

Count average: 01_H

Time average: 02_H

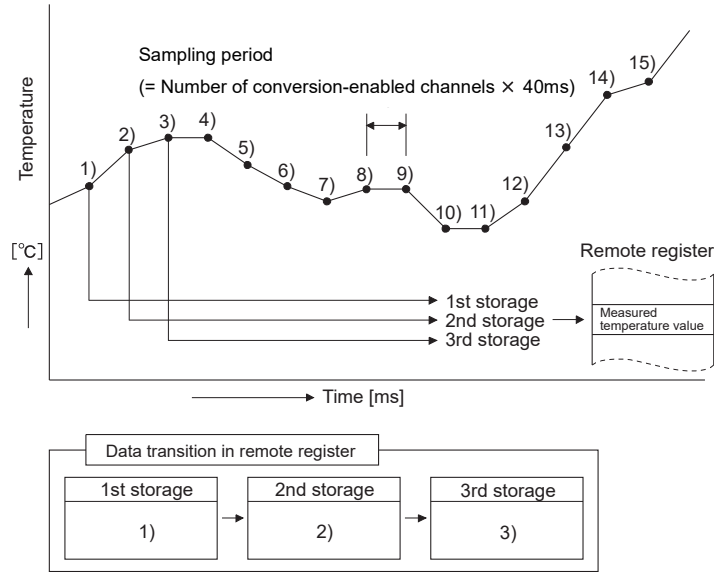
Moving average: 03_H

* 1: This setting is activated when Initial data setting request flag (RY(n+1)9) is turned from off to on.
* 2: When 0 times is set, it is regarded as 1 time.
* 3: Set a value in units of 10ms.
(Example) To set the time average of 480ms, input 30_H (48).
* 4: When a value less than 160ms is set, it is regarded as 160ms.
* 5: When a value 04_H or higher is set, Error flag (RX(n+1)A) turns on.

(1) Sampling processing

Measured temperature values are stored in the remote register once every sampling period.

Operation example

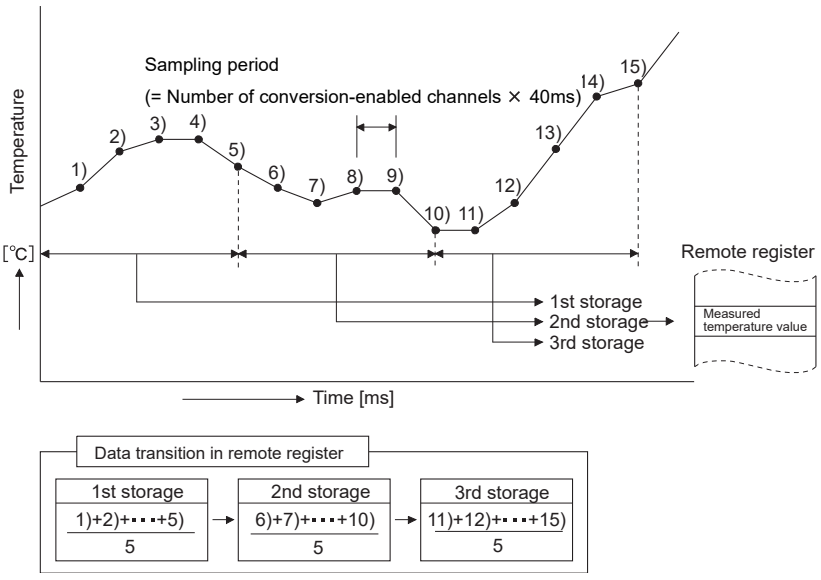


(2) Count average processing

Measured temperature values converted for a preset number of times are averaged and the averaged value is stored in the remote register.

The value in the remote register is updated once every sampling period × count average set by user.

Operation example (count average: 5 times)



(3) Time average processing

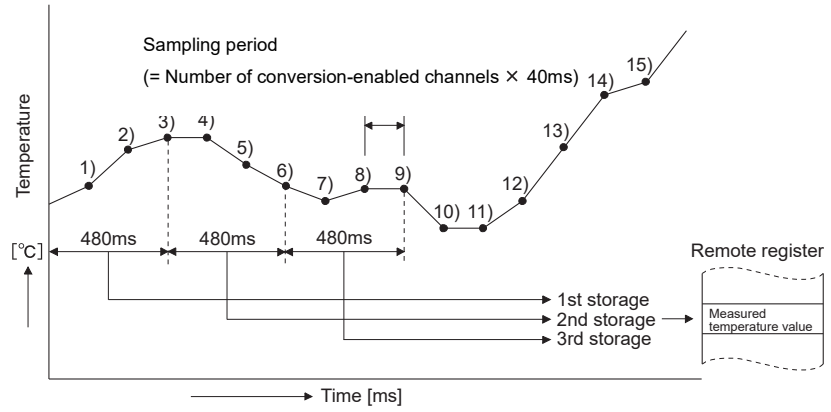
Measured temperature values measured every sampling period are averaged and the averaged value is stored in the remote register.

The values in the remote register are updated once every period set by user.

The number of processing times within the set period of time is calculated in the following formula.

$$\text{Number of processing times} = \frac{\text{Set period of time}}{\text{Number of conversion-enabled channels} \times 40\text{ms}}$$

Operation example (time average: 480ms, number of conversion-enabled channels: 4)



Data transition in remote register

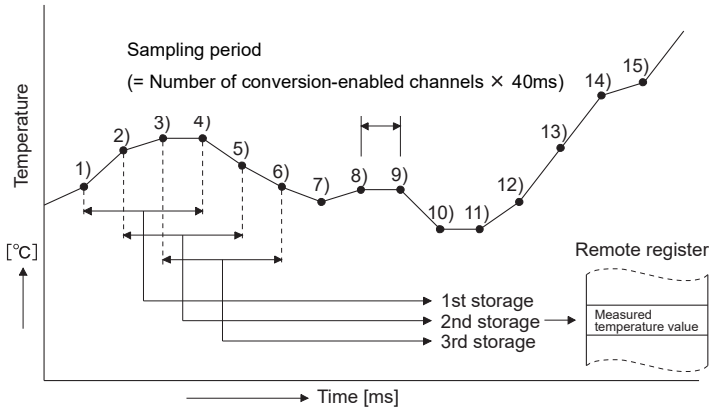
1st storage	2nd storage	3rd storage
$\frac{1)+2)+3)}{3}$	$\frac{4)+5)+6)}{3}$	$\frac{7)+8)+9)}{3}$

(4) Moving average processing

Measured temperature values which are measured every sampling period for four times (current value + values of the past three times) are averaged and the averaged value is stored in the remote register.

The latest measured temperature value can be obtained since averaging processing is performed moving for each sampling period.

Operation example



Data transition in remote register

1st storage	2nd storage	3rd storage
(1)+(2)+(3)+(4) / 4	(2)+(3)+(4)+(5) / 4	(3)+(4)+(5)+(6) / 4

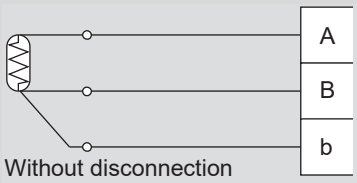
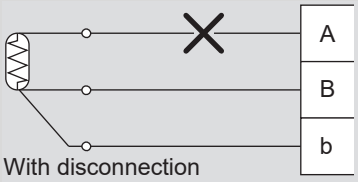
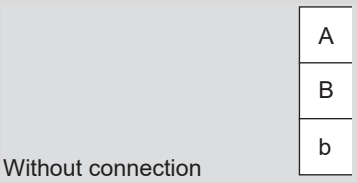
3.3.4 Disconnection detection

This function detects the disconnection status of the connected RTD for each channel.
The AJ65SBT2B-64RD3 performs the followings when disconnection is detected.

- Turns on CH□ Disconnection detection flag (RXn4 to RXn7).
- Stores up scale or down scale value in CH□ Measured temperature value (RWrn to RWrn+3) of the disconnected channel.

(1) Setting method

(a) Disconnection detection is performed only on conversion-enable channels (channels that CH□ Conversion enable flag (RYn0 to RYn3) is set to "Enable") only.

Connection status	CH□ Conversion enable/ disable specification (RYn0 to RYn3)	CH□ Disconnection detection flag (RXn4 to RXn7)
 Without disconnection	Enable	Off
	Disable	
 With disconnection	Enable	On
	Disable	Off
 Without connection	Enable	On
	Disable	Off

(b) When disconnection is detected, a value to be stored in CH□ Measured temperature value (RWrn to RWrn+3) can be set in Disconnection detection upper/lower limit selection flag (RY(n+1)4).

Setting item	Description	
Disconnection detection upper/lower limit selection flag (RY(n+1)4)*1	On	Stores an up scale value.
	Off	Stores a down scale value.

*1: This setting is activated when Initial data setting request flag (RY(n+1)9) is turned from off to on.

(c) Up scale/down scale values shown below varies depending on the measurement range to be used.

Measurement range		Measured temperature value when disconnection is detected	
		Up scale	Down scale
Pt100	-200 to 850℃	902.5℃	-252.5℃
	-20 to 120℃	127.0℃	-27.0℃
	0 to 200℃	210.0℃	-10.0℃
JPt100	-180 to 600℃	639.0℃	-219.0℃
	-20 to 120℃	127.0℃	-27.0℃
	0 to 200℃	210.0℃	-10.0℃
Ni100	-60 to 180℃	192.0℃	-72.0℃

POINT

- Always set "Disable" for any channel where no RTD is connected. If "Enable" is set, CH□ Disconnection detection flag (RXn4 to RXn7) of the channel where no RTD is connected turns on.
- When connection is restored, updating of CH□ Measured temperature value (RWrn to RWrn+3) will restart.
- Turn on Error reset request flag (RY(n+1)A) to turn off CH□ Disconnection detection flag (RXn4 to RXn7) after connection is restored.

3.3.5 Measured temperature value storage

The AJ65SBT2B-64RD3 can measure temperature within the range -200 to 850℃.

Temperature data measured is converted into measured temperature values and stored in CH□ Measured temperature value (RWrn to RWrn+3) for each channel.

The measured temperature value rounded off to one decimal place is multiplied by 10 and the result is stored in 16-bit signed binary.

(a) When the measured temperature value is 123.4℃ (1234 is stored)

b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
0	0	0	0	0	1	0	0	1	1	0	1	0	0	1	0

(b) When the measured temperature value is -123.4℃ (-1234 is stored)

b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
1	1	1	1	1	0	1	1	0	0	1	0	1	1	1	0

3.3.6 RTD type and measurement range specification

The AJ65SBT2B-64RD3 can select the RTD type to be used and measurement range for each channel.
Set the RTD type to be used and measurement range using CH□ Measurement range (RYn8 to RY(n+1)3). (Refer to Table 3.7.)

Table 3.7 RTD type to be used and measurement range setting

RTD type and measurement range	CH□ Measurement range (RYn8 to RY(n+1)3)*1, *2											
	CH4			CH3			CH2			CH1		
	RY (n+1)3	RY (n+1)2	RY (n+1)1	RY (n+1)0	RYnF	RYnE	RYnD	RYnC	RYnB	RYnA	RYn9	RYn8
Pt100 (-20 to 120℃)	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off
Pt100 (0 to 200℃)	Off	Off	On	Off	Off	On	Off	Off	On	Off	Off	On
Pt100 (-200 to 850℃)	Off	On	Off	Off	On	Off	Off	On	Off	Off	On	Off
JPt100 (-20 to 120℃)	Off	On	On	Off	On	On	Off	On	On	Off	On	On
JPt100 (0 to 200℃)	On	Off	Off	On	Off	Off	On	Off	Off	On	Off	Off
JPt100 (-180 to 600℃)	On	Off	On	On	Off	On	On	Off	On	On	Off	On
Ni100	On	On	Off	On	On	Off	On	On	Off	On	On	Off

* 1: This setting is activated when Initial data setting request flag (RY(n+1)9) is turned from off to on.
* 2: When a value is outside the setting range, Error flag (RX(n+1)A) turns on.

3.4 Remote I/O Signals

This section describes the assignment and functions of the remote I/O signals.

3.4.1 List of remote I/O signals

Remote input (RX) is an input signal from the AJ65SBT2B-64RD3 to the master module, and remote output (RY) is an output signal from the master module to the AJ65SBT2B-64RD3.
In communications with the master station, the AJ65SBT2B-64RD3 uses 32 points for the remote input (RX) and the remote output (RY), respectively.

Table 3.8 List of remote I/O signals

Signal direction: AJ65SBT2B-64RD3 → Master module		Signal direction: Master module → AJ65SBT2B-64RD3	
Remote input (RX)	Name	Remote output (RY)	Name
RXn0	CH1 Conversion completion flag	RYn0	CH1 Conversion enable flag
RXn1	CH2 Conversion completion flag	RYn1	CH2 Conversion enable flag
RXn2	CH3 Conversion completion flag	RYn2	CH3 Conversion enable flag
RXn3	CH4 Conversion completion flag	RYn3	CH4 Conversion enable flag
RXn4	CH1 Disconnection detection flag	RYn4	Reserved
RXn5	CH2 Disconnection detection flag	RYn5	
RXn6	CH3 Disconnection detection flag	RYn6	
RXn7	CH4 Disconnection detection flag	RYn7	
RXn8	Reserved	RYn8	CH1 Measurement range 0th bit
RXn9		RYn9	CH1 Measurement range 1st bit
RXnA	Flash memory read error flag	RYnA	CH1 Measurement range 2nd bit
RXnB	User range read error flag	RYnB	CH2 Measurement range 0th bit
RXnC	Flash memory write error flag	RYnC	CH2 Measurement range 1st bit
RXnD	Reserved	RYnD	CH2 Measurement range 2nd bit
RXnE		RYnE	CH3 Measurement range 0th bit
RXnF	Test mode flag	RYnF	CH3 Measurement range 1st bit
RX(n+1)0	Reserved	RY(n+1)0	CH3 Measurement range 2nd bit
RX(n+1)1		RY(n+1)1	CH4 Measurement range 0th bit
RX(n+1)2		RY(n+1)2	CH4 Measurement range 1st bit
RX(n+1)3		RY(n+1)3	CH4 Measurement range 2nd bit
RX(n+1)4		RY(n+1)4	Disconnection detection upper/lower limit selection flag (all channel batch-select)
RX(n+1)5		RY(n+1)5	Reserved
RX(n+1)6		RY(n+1)6	
RX(n+1)7		RY(n+1)7	Offset/gain value selection flag
RX(n+1)8	Initial data processing request flag	RY(n+1)8	Initial data processing completion flag
RX(n+1)9	Initial data setting completion flag	RY(n+1)9	Initial data setting request flag
RX(n+1)A	Error flag	RY(n+1)A	Error reset request flag
RX(n+1)B	Remote ready	RY(n+1)B	Reserved
RX(n+1)C	Reserved	RY(n+1)C	
RX(n+1)D		RY(n+1)D	
RX(n+1)E		RY(n+1)E	
RX(n+1)F		RY(n+1)F	

n: Address assigned to the master station by station number setting

POINT

The "Reserved" devices shown in Table 3.8 are used by the system and cannot be used by the user. If used (turned on/off), the functions of the AJ65SBT2B-64RD3 will not be guaranteed.

3.4.2 Details of the remote I/O signals

This section describes the functions of each remote I/O signal of the AJ65SBT2B-64RD3.

(1) CH□ Conversion completion flag (RXn0 to RXn3)

This flag turns on when converted measured temperature value of the conversion-enabled channel is stored into the remote register after power is supplied to the CC-Link system or the reset operation of the CPU module is performed.

When averaging processing is specified, this signal turns on when averaging processing is completed and the averaged measured temperature value is stored into the remote register.

(2) CH□ Disconnection detection flag (RXn4 to RXn7)

This flag of the corresponding channel turns on when any input signal line including RTD is disconnected.

For details on the disconnection detection function, refer to Section 3.3.4.

(3) Flash memory read error flag (RXnA)

This flag turns on when an error occurs while reading data from the Flash memory.

If the flag turns on, the AJ65SBT2B-64RD3 has failed (hardware failure). Therefore, the flag cannot be reset (turned off) by Error reset request flag (RY(n+1)A).

(4) User range read error flag (RXnB)

This flag turns on when an error occurs while reading the user setting data.

When this flag turns on, re-set the offset/gain values on all channels which use the user range setting.
If the flag turns on again, the module may have failed. Please consult your local Mitsubishi representative, explaining a detailed description of the problem.

(5) Flash memory write error flag (RXnC)

This flag turns on when the number of writes to the Flash memory exceeds the limit (10,000 times).

If the flag turns on, the AJ65SBT2B-64RD3 has failed (hardware failure). Therefore, the flag cannot be reset (turned off) by Error reset request flag (RY(n+1)A).

(6) Test mode flag (RXnF)

This flag turns on when the module enters test mode, which is the mode for offset/gain setting.

The flag turns off when the module exits test mode.

Use the flag for an interlock to prevent incorrect output during offset/gain setting.

(7) Initial data processing request flag (RX(n+1)8)

This flag turns on for the AJ65SBT2B-64RD3 to request the initial data setting after power-on.

The flag turns off when the initial data processing is completed (Initial data processing completion flag (RY(n+1)8) turns on).

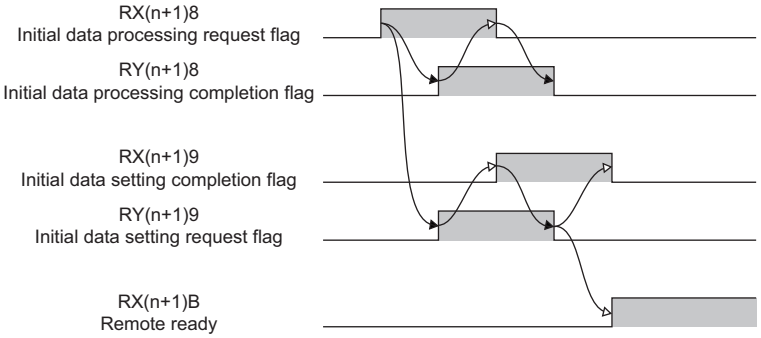


Figure 3.2 Operation at initial setting

(8) Initial data setting completion flag (RX(n+1)9)

This flag turns on after the initial data setting is completed when initial data setting has been requested (Initial data setting request flag (RY(n+1)9) is turned on).

The flag turns off when Initial data setting request flag (RY(n+1)9) is turned off after the initial data setting is completed.

For details on initial data setting, refer to Figure 3.2.

(9) Error flag (RX(n+1)A)

This flag turns on when the following errors occur.

- CH□ Measurement range error
- Averaging processing selection out-of-range error
- Flash memory write error

This flag does not turn on when the watchdog timer error occurs. (In this case, the "RUN" LED turns off.)

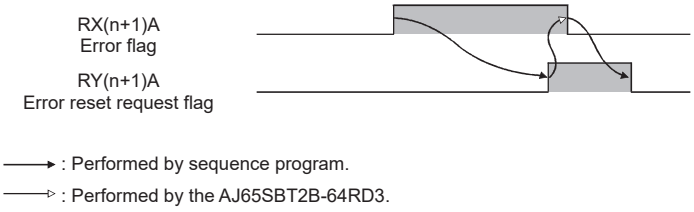


Figure 3.3 Operation at error occurrence and reset

(10) Remote ready (RX(n+1)B)

This flag turns on when initial data setting is completed after power-on or exiting test mode.

Use the flag for an interlock to read/write data from/to the master module.

(11) CH□ Conversion enable flag (RYn0 to RYn3)

Conversion enable/disable status can be set for each channel.
Setting "Disable" for unused channels can prevent unnecessary disconnection detection and shorten sampling period.

On: Enable ..... Temperature of the target device is measured.
OFF: Disable ... Temperature of the target device is not measured.

Operation of the AJ65SBT2B-64RD3 according to the conversion status change is described below.

- When the conversion status is changed from "Disable" to "Enable"
  The module starts sampling of the conversion-enabled channel.
  CH□ Conversion completion flag (RXn0 to RXn3) of the corresponding channel turns on after measured temperature value is stored into the remote register.
- When the conversion status is changed from "Enable" to "Disable"
  The module turns off CH□ Conversion completion flag (RXn0 to RXn3) of the corresponding channel.
  The measured temperature value of the corresponding channel immediately before the conversion status is changed to "Disable" is held in the remote register.

(12)CH□ Measurement range (RYn8 to RY(n+1)3)

The RTD type to be used and measured temperature range are set.

For details, refer to Section 3.3.6.

(13)Disconnection detection upper/lower limit selection flag (all channel batch-select) (RY(n+1)4)

A value to be stored in CH□ Measured temperature value (RWrn to RWrn+3) when disconnection is detected is set.

On: Up scale
Off: Down scale

(14)Offset/gain value selection flag (RY(n+1)7)

Offset/gain values to be used, "user range setting" or "factory default setting", are selected.

In the Flash memory where user range setting offset/gain values are to be registered, factory default setting offset/gain values are stored at the factory.

On: Factory default setting
Off: User range setting

(15)Initial data processing completion flag (RY(n+1)8)

This flag turns on when initial data processing is completed if initial data processing is requested after power-on or exiting test mode.

For details on initial data setting, refer to Figure 3.2.

(16)Initial data setting request flag (RY(n+1)9)

This flag is turned on to set or change the initial data.

For details on initial data setting, refer to Figure 3.2.

(17)Error reset request flag (RY(n+1)A)

This flag is turned on to reset (turns off) Error flag (RX(n+1)A).

However, Error flag (RX(n+1)A) cannot be reset when the Flash memory write error occurs (Flash memory write error flag (RXnC) turns on).

3.5 Remote Register

The AJ65SBT2B-64RD3 has a remote resister for data communications with a master module.
This section describes the assignment and data structure of the remote register.

3.5.1 Remote register list

Table 3.9 shows the assignment of remote register.

Table 3.9 Assignment of remote register

Communication direction	Address	Description	Default value	Reference
Master → Remote	RWwm	CH1 Averaging processing selection	0	Section 3.3.3
	RWwm+1	CH2 Averaging processing selection	0	
	RWwm+2	CH3 Averaging processing selection	0	
	RWwm+3	CH4 Averaging processing selection	0	
Remote → Master	RWrn	CH1 Measured temperature value (in units of 0.1℃)	0	Section 3.3.5
	RWwm+1	CH2 Measured temperature value (in units of 0.1℃)	0	
	RWwm+2	CH3 Measured temperature value (in units of 0.1℃)	0	
	RWwm+3	CH4 Measured temperature value (in units of 0.1℃)	0	

m, n: Addresses assigned to the master station by station number setting

CHAPTER4 PROCEDURES AND SETTINGS BEFORE OPERATION

4.1 Procedures before Operation

This section describes the procedures for operating the AJ65SBT2B-64RD3.

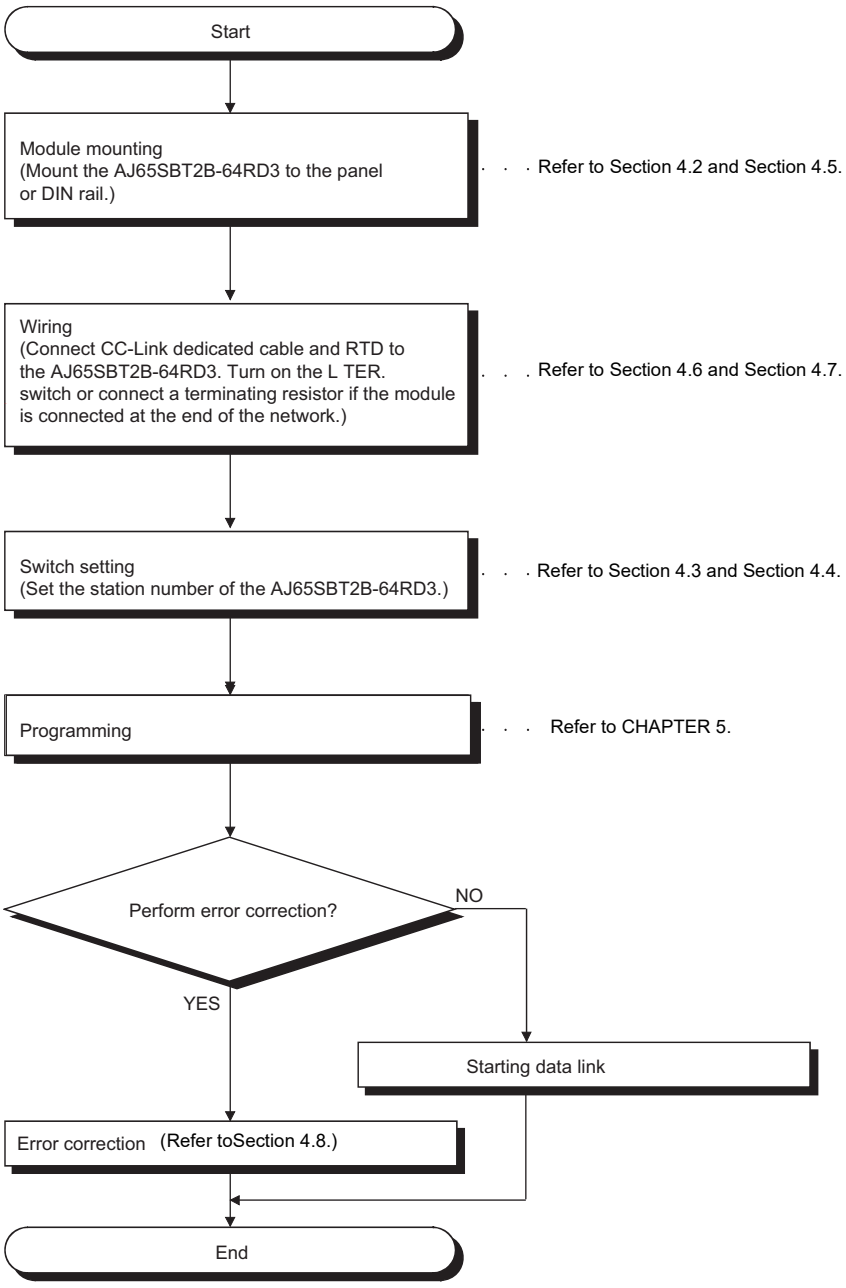


Figure 4.1 Procedures before operation

4.2 Handling Precautions

This section describes the precautions for handling the AJ65SBT2B-64RD3.

⚠ CAUTION

- Do not touch the terminals while the power is on. Doing so may cause malfunction.
- Take care to prevent foreign matter such as dust or wire chips from entering the module.
  Failure to do so may cause a fire, failure or malfunctions.
- Never disassemble or modify the module.
  This may cause breakdowns, malfunction, injury and/or fire.
- Do not directly touch the conductive area or electronic components of the module.
  Doing so may result in a malfunction or failure of the module.
- Because it is made of resin, do not drop or apply any strong impact to the module. Doing so may damage the module.
- Tighten terminal screws within the specified torque range.
  A loose terminal screw may cause a short circuit or malfunction.
  Overtightening a terminal screw may damage the screw, resulting in a short circuit or malfunction.
- When disposing of this product, treat it as industrial waste.
- Use the module in an environment that meets the general specifications given in this manual.
  Operating it in any other environment may cause an electric shock, fire, malfunction, product damage or deterioration.
- For protection of the switches, do not remove the cushioning material before installation.
- Securely fix the module with the DIN rail or installation screws. Installation screws must be tighten within the specified torque range.
  A loose screw may cause a drop of the module or malfunction.
  Overtightening may damage the screw, resulting in a drop of the module or malfunction.
- Be sure to shut off all phases of the external power supply used by the system before mounting or dismounting the module to or from the panel. Not doing so can cause the module to fail or malfunction.
- Before handling the module, always touch grounded metal, etc. to discharge static electricity from the human body.
  Failure to do so may cause a failure or malfunctions of the module.

(1) Tighten the module mounting screws and terminal screws within the following torque range.

Table 4.1 Tightening torque range

Screw location	Tightening torque range
Module mounting screw (M4 screw)	0.78 to 1.08N · m
Terminal block terminal screw (M3 screw)	0.59 to 0.88N · m
Terminal block installation screw (M3.5 screw)	0.68 to 0.98N · m

(2) To prevent defect during transportation, a protective film is attached on the surface of the module. Remove the film before using the module.

(3) When using the DIN rail, pay attention to the followings.

(a) Applicable DIN rail model (IEC 60715/JIS C 2812 compliant)
TH35-7.5Fe
TH35-7.5Al

(b) DIN rail installation screw pitch
When installing a DIN rail, tighten the screws at a pitch of 200mm or less.

(4) When mounting the AJ65SBT2B-64RD3 to the DIN rail, hold the center of the module and press it until the DIN rail hook at the bottom of the module clicks.

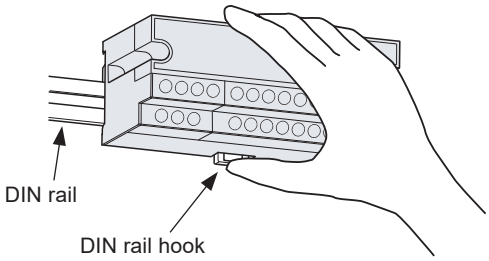


Figure 4.2 Mounting a module to the DIN rail

(5) For the models, specifications, and manufacturers of cables available for the AJ65SBT2B-64RD3, refer to the user's manual of the master module used.

4.3 Part Names

This section describes each part name of the AJ65SBT2B-64RD3.

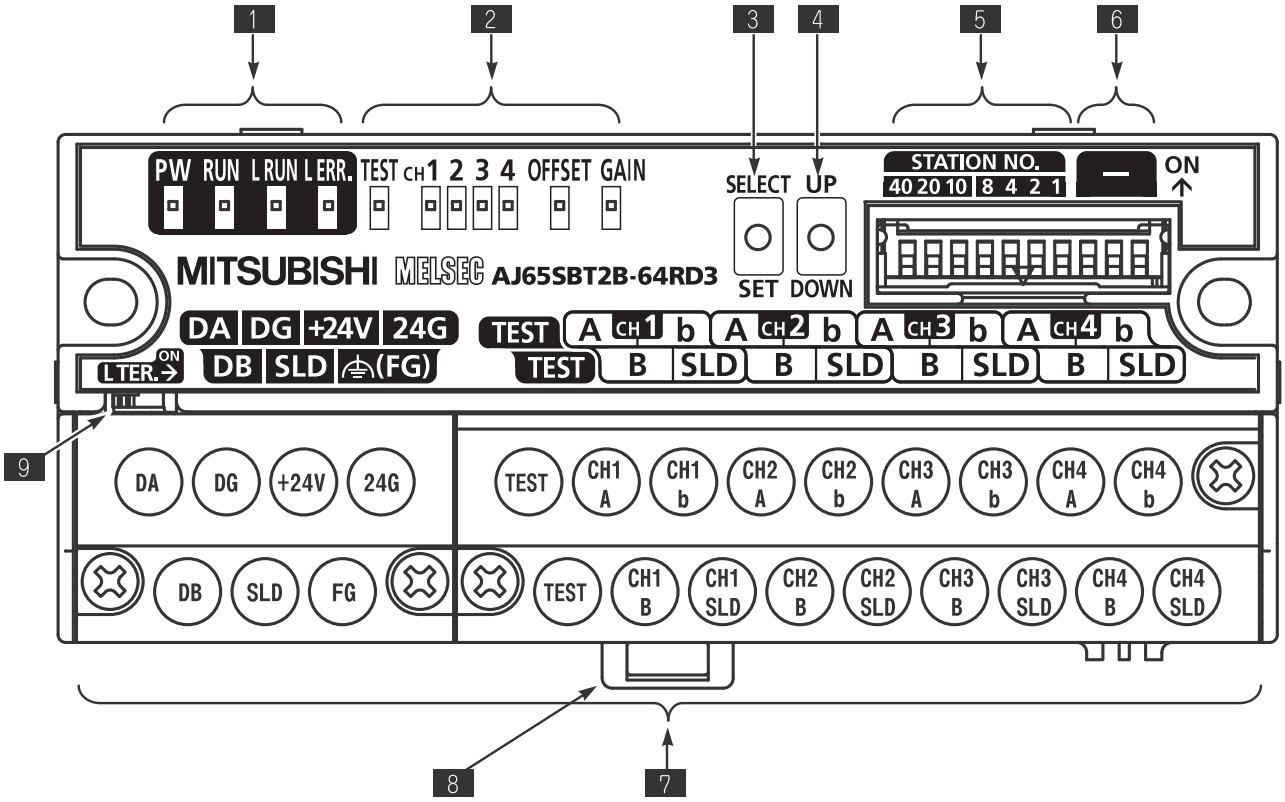


Figure 4.3 Appearance of the AJ65SBT2B-64RD3

Table 4.2 Part names

No.	Name	Description		
1	Operating status indication LED	PW LED	On: Power supply on Off: Power supply off	
		RUN LED	Normal mode	On: Normal operation Flashing: 0.1s intervals: CH☐ Measurement range error 0.5s intervals: Averaging processing setting out-of-range error Off: 24VDC power supply interrupted, watchdog timer error, or Flash memory write error
			Test mode	On: The SELECT/SET switch is in the SET position. Flashing: Corrected offset/gain values are outside the setting range (outside the measured temperature range or gain value - offset value < 10℃) Off: The SELECT/SET switch is in the SELECT or center position.
		L RUN LED	On: Normal communication Off: Communication cutoff (Timeout error)	
		L ERR. LED	On: Flashing regularly: Flashing irregularly: Off:	Station number is outside the setting range. Station number setting has been changed after power-on. Terminating resistor is not connected or the module or CC-Link dedicated cable is affected by noise. Normal communication

Table 4.2 Part names

<table>
<tr><th>No.</th><th>Name</th><th colspan="3">Description</th></tr>
<tr><td rowspan="2">2</td><td rowspan="2">Offset/gain adjusting LED</td><td rowspan="2">TEST
CH☐
OFFSET
GAIN</td><td>Normal mode</td><td>Normally off</td></tr>
<tr><td>Test mode</td><td>Every time the SELECT/SET switch is moved to the "SELECT" position, the LED status changes. (Refer to Section 4.8.)</td></tr>
<tr><td>3</td><td>SELECT/SET switch</td><td colspan="3">Performs offset/gain setting in test mode.</td></tr>
<tr><td>4</td><td>UP/DOWN switch</td><td colspan="3">Adjusts the offset/gain values of the channel specified by the SELECT/SET switch.</td></tr>
<tr><td>5</td><td>Station number setting switch</td><td colspan="3">Sets the tens place of station number using the switches, STATION NO. "10", "20", and "40".
Sets the ones place of station number using the switches, STATION NO. "1", "2", "4", and "8".
All switches are set to "off" at the factory.
Set the station number within the range 1 to 64.
If not, an error occurs and the "L ERR." LED turns on.
Station number setting should not be overlapped.</td></tr>
<tr><td>6</td><td>Reserved</td><td colspan="3">(Set all switches to off.)</td></tr>
<tr><td>7</td><td>Terminal block</td><td colspan="3">Used to connect the module power supply, transmission, and I/O signals.</td></tr>
<tr><td>8</td><td>DIN rail hook</td><td colspan="3">Used to mount the module to the DIN rail.</td></tr>
<tr><td>9</td><td>L TER. (Line Termination) switch</td><td colspan="3">Turned on to enable the terminating resistor built in the AS65SBT2B-64RD3.
Used when the AJ65SBT2B-64RD3 is connected at the end of the network.</td></tr>
</table>

Station number	Tens place			Ones place			
	40	20	10	8	4	2	1
1	Off	Off	Off	Off	Off	Off	On
2	Off	Off	Off	Off	Off	On	Off
3	Off	Off	Off	Off	Off	On	On
4	Off	Off	Off	Off	On	Off	Off
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
10	Off	Off	On	Off	Off	Off	Off
11	Off	Off	On	Off	Off	Off	On
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
64	On	On	Off	Off	On	Off	Off

(Example) For the station number "32", set the switches as shown below.

Station number	Tens place			Ones place			
	40	20	10	8	4	2	1
32	Off	On	On	Off	Off	On	Off

4.3.1 Transmission speed auto-tracking function

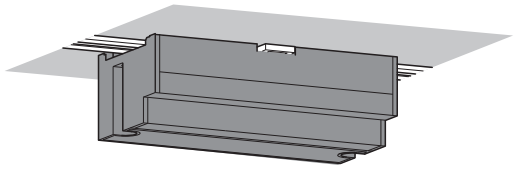
Transmission speed is set automatically according to the setting in the master module.

4.4 Station Number Setting

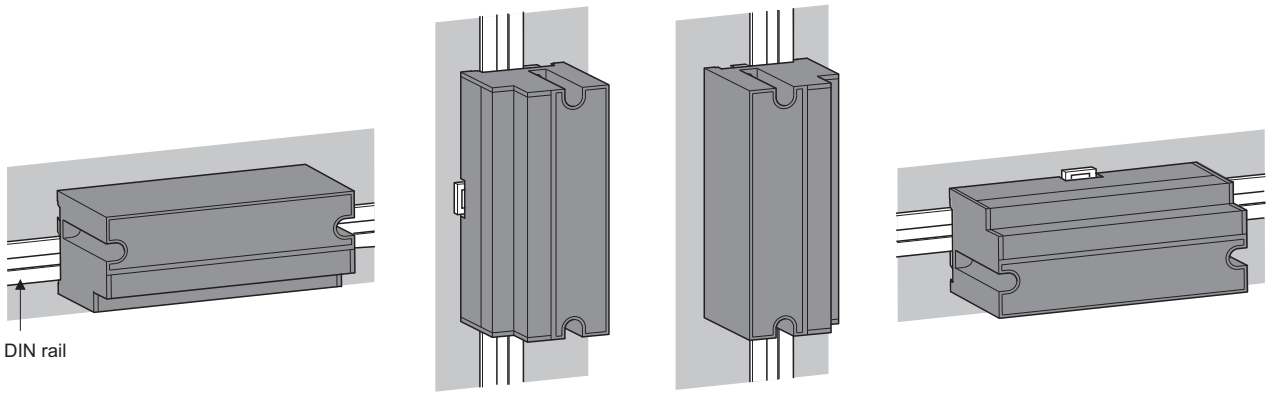
The buffer memory addresses of the master module, where the remote I/O signals and read/write data are stored, are determined by the station number setting of the AJ65SBT2B-64RD3.
For details, refer to the user's manual of the master module used.

4.5 Module Mounting Orientation

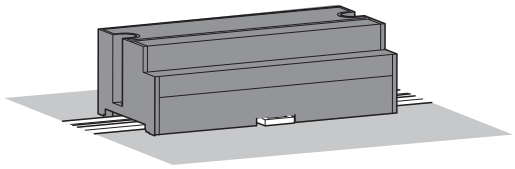
The AJ65SBT2B-64RD3 can be mounted in six different orientations.
(There are no restrictions on the mounting orientation.)
The module can also be mounted to a DIN rail.



Ceiling mounting



Front mounting



Flat surface mounting

Figure 4.4 Module mounting orientation

4.6 Wiring of Data Link Cable

This section describes the wiring of CC-Link dedicated cables for connecting the AJ65SBT2B-64RD3 to the CC-Link system.

4.6.1 Wiring precautions

When existing CC-Link dedicated cable is used, rewire the cable using communication terminal block dedicated for the AJ65SBT2B-64RD3.

4.6.2 CC-Link dedicated cable connection

The following shows a connection example of CC-Link dedicated cables for the AJ65SBT2B-64RD3.

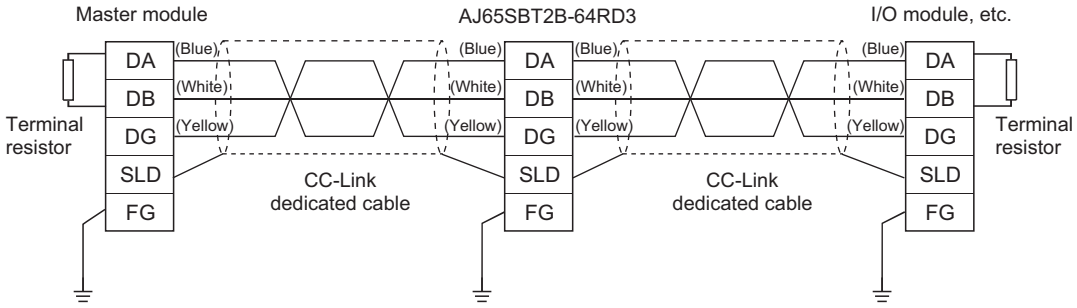


Figure 4.5 CC-Link dedicated cable connection

4.6.3 Terminating resistor connection

The AJ65SBT2B-64RD3 has a built-in terminating resister of 110Ω. Therefore, there is no need to connect a terminating resister externally.

(1) Precautions

(a) Move the L TER. switch until it clicks.

(b) Make sure that between DA and DB is high resistance (when the L TER. switch is off) or is 110Ω (when the L TER. switch is on) with a tester before wiring the system with CC-Link dedicated cables.

(c) The built-in terminating resistor cannot be used in the following cases. Connect a terminating resistor (110 or 130Ω).
- A CC-Link system is configured using CC-Link dedicated cables of 130Ω.
- The AJ65SBT2B-64RD3 may be replaced during data link.

4.7 Wiring of RTD

This section describes the precautions for wiring the AJ65SBT2B-64RD3 and its wiring with external devices.

4.7.1 Wiring precautions

External wiring that is less susceptible to noise is required as a condition of enabling a highly reliable system and making full use of the capabilities of AJ65SBT2B-64RD3.
The precautions when performing external wiring are described below.

(a) Use separate cables for the AC control circuit and the external output signals of the AJ65SBT2B-64RD3 to avoid the influence of the AC side surges and induction.

(b) Place the RTD at least 10cm away from the main circuit cables and AC control circuit lines. Fully keep it away from circuits which include harmonics, such as high voltage cables and load circuit for an inverter.
Not doing so will cause the module more susceptible to noises, surges, and inductions.

(c) The shield wire or the shielded cable must be grounded at one end.
However, grounding outside may be suitable depending on the noise circumstances.

4.7.2 Connecting method

Figure 4.6 shows the method for connecting a RTD to the AJ65SBT2B-64RD3.

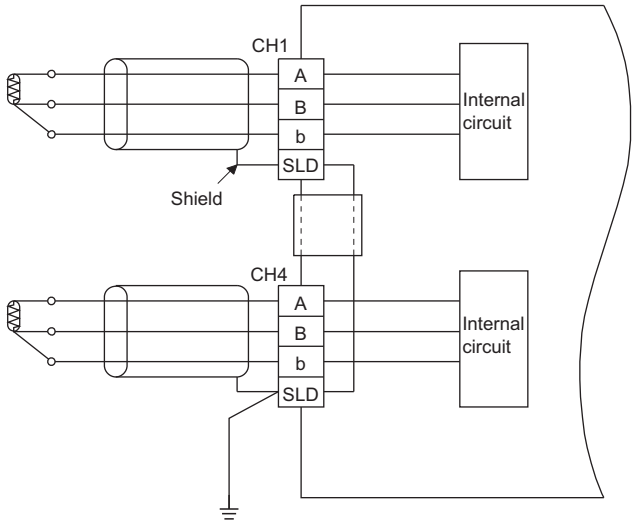


Figure 4.6 Wiring example of RTD

4.8 Error Correction

Error correction of the AJ65SBT2B-64RD3 is a function that corrects values at two points (offset/gain) within the used temperature range at system start-up or when a correct measured temperature value cannot be obtained.

Error correction is performed by reading CH☐ Measured temperature value (RWrn to RWrn+3) from the remote register using a sequence program and monitoring the values using a peripheral.

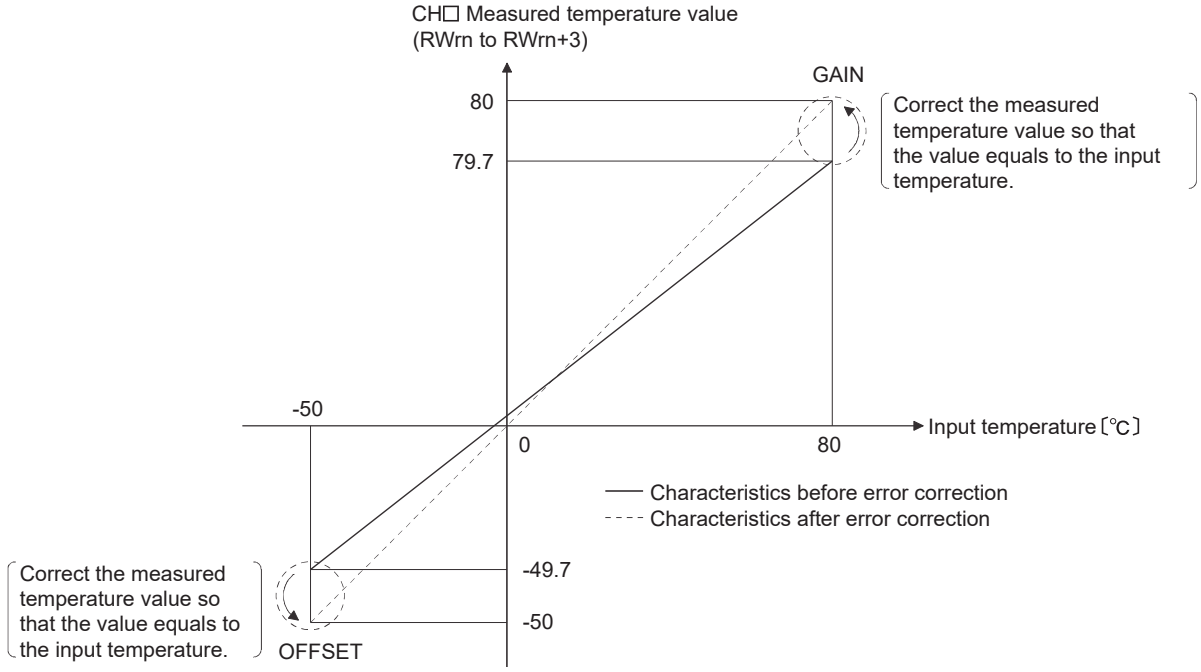


Figure 4.7 Error correction

POINT

(1) Perform error correction of offset/gain values using the minimum/maximum temperature within the used temperature range so that the high accuracy can be obtained.

(2) Set the offset/gain values by monitoring CH☐ Measured temperature value (RWrn to RWrn+3) using a peripheral.

(3) Set the offset/gain values under the following conditions.
- Within the measured temperature range
- Gain value - offset value > 10℃

(4) When corrected offset/gain values are outside the setting range, the "RUN" LED flashes at intervals of 0.1s. If this occurs, the corrected offset/gain values are not stored even when the SELECT/SET switch is moved to the SET position.

(5) The offset/gain values are stored in the Flash memory of the AJ65SBT2B-64RD3 and not cleared even at power-off.

Perform error correction following the procedure below.

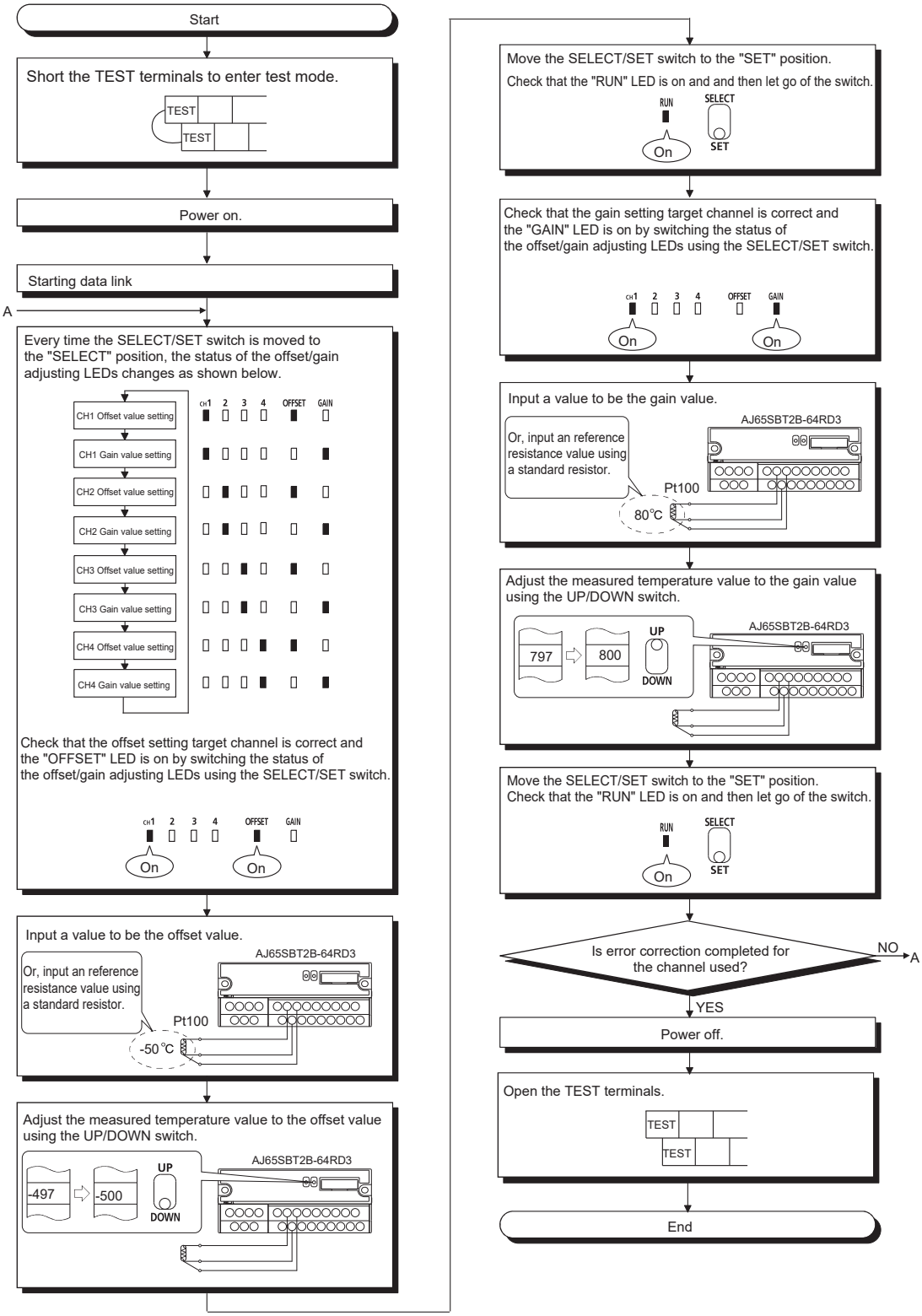


Figure 4.8 Offset/gain setting procedure

* : If the "RUN" LED does not turn on, Flash memory may have failed.
For details, refer to Section 3.4.2.

POINT

(1) Set the offset/gain values in the actual operating status.

(2) The offset/gain values are stored in the Flash memory of the AJ65SBT2B-64RD3 and not cleared even at power-off.

4.9 Maintenance and Inspection

There are no special inspection items for the AJ65SBT2B-64RD3. To keep the system in the best condition, however, perform inspection following the items described in the user's manual of the programmable controller CPU.

CHAPTER5 PROGRAMMING

This chapter describes the programming procedure, basic programs for reading/writing data, and program examples for the AJ65SBT2B-64RD3.
When applying any of the program examples introduced in this chapter to the actual system, make sure to examine the applicability and confirm that no problems will occur in the system control.
For the master module, refer to the user's manual of the master module used. For the remote register, refer to Section 3.5. For the details on the dedicated instructions, refer to the Type AnSHCPU/AnACPU/AnUCPU/QCPU-A (A Mode) Programming Manual (Dedicated Instructions).

5.1 Programming Procedure

Create programs for executing temperature measurement in the AJ65SBT2B-64RD3 in the following procedure.

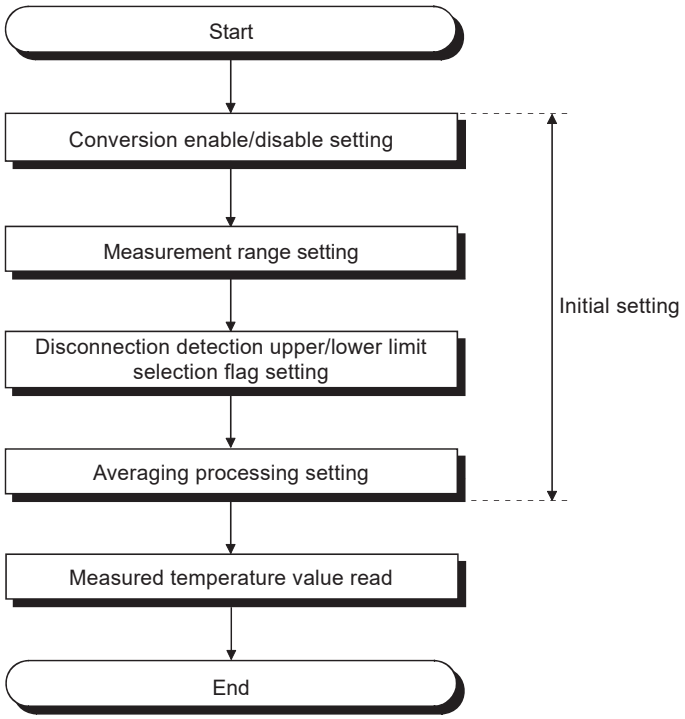


Figure 5.1 Programming procedure

5.2 Conditions of Program Examples

The program examples in this chapter are created under the following conditions.

(1) Conditions of the AJ65SBT2B-64RD3

- Channels to be used: CH1 and CH2
- Measurement range: Pt100, -200 to 850℃ for both CH1 and CH2
- Averaging processing selection: Sampling processing for CH1, count average (five times) for CH2
- When disconnection is detected or an error occurred, the status is notified by external output.

(2) System configuration

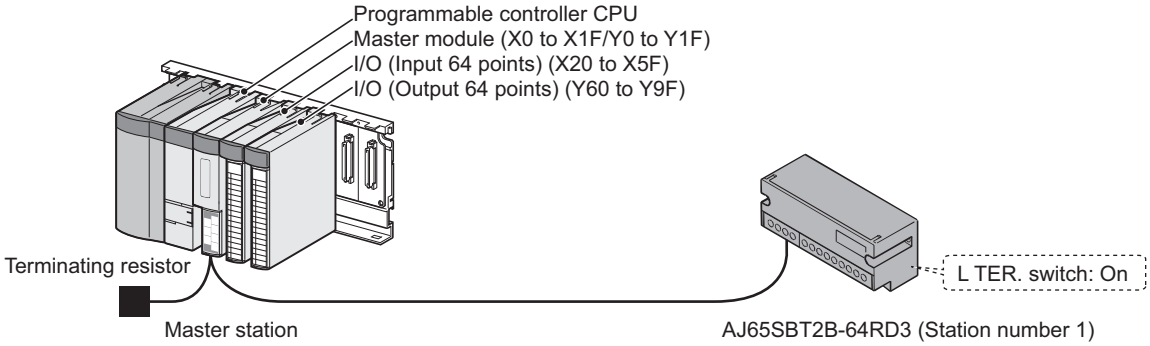


Figure 5.2 System configuration and wiring diagram

(3) Relationship between programmable controller CPU, master module, and AJ65SBT2B-64RD3

(a) When the QCPU (Q mode) or QnACPU is used

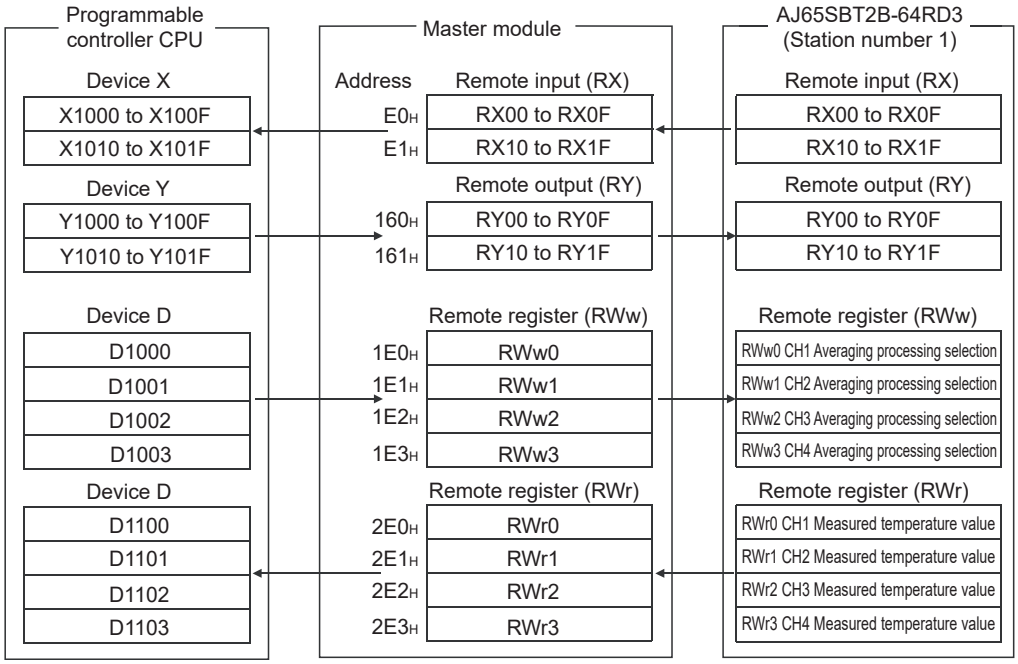


Figure 5.3 Relationship between programmable controller CPU, master module, and AJ65SBT2B-64RD3 (when the QCPU (Q mode) or QnACPU is used)

(b) When the ACPU/QCPU (A mode) is used

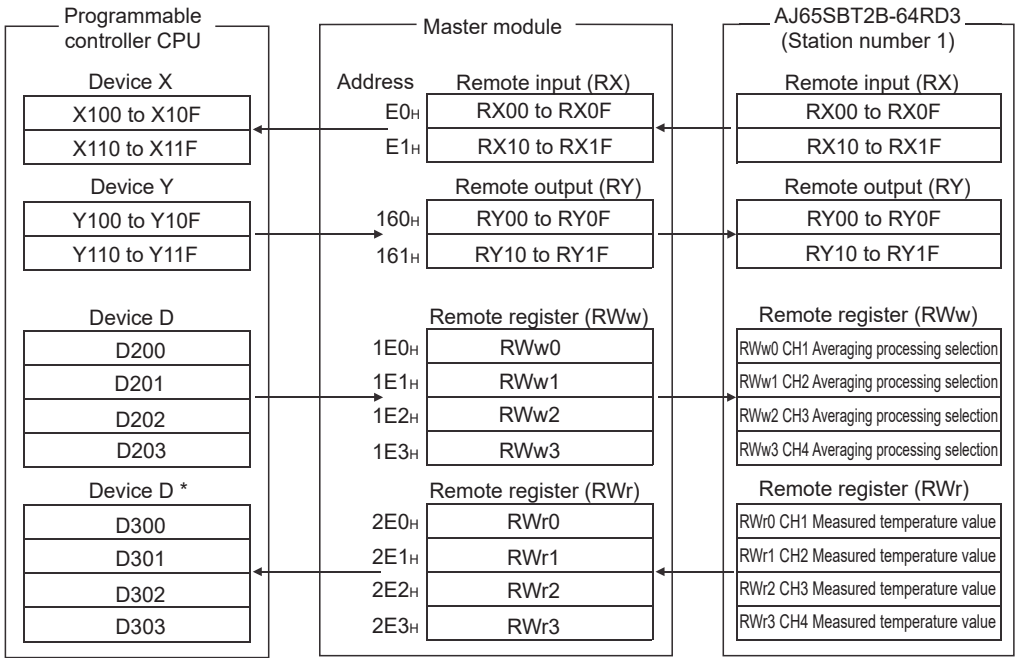


Figure 5.4 Relationship between programmable controller CPU, master module, and AJ65SBT2B-64RD3 (When the ACPU/QCPU (A mode) is used)

* : In the program example (refer to Section 5.5) that uses the RRPA instruction (auto refresh parameter setting) in the ACPU/QCPU (A mode), RWr0 to RWr3 are assigned to D456 to D459.

POINT

Devices used in the program examples described in this chapter may not be used depending on the CPU module.
For the available device setting range, refer to the user's manual of the CPU module used.
For example, when the A1SCPU is used, devices X100, Y100 and later cannot be used. Use devices such as B or M.

5.3 Program Example When the QCPU (Q mode) is Used

Parameters are set in Network parameter using GX Developer.
Initial setting of the AS65SBT2B-64RD3 cannot be performed using the remote device station initialization procedure registration function.

(1) Parameter setting

(a) Network parameter setting

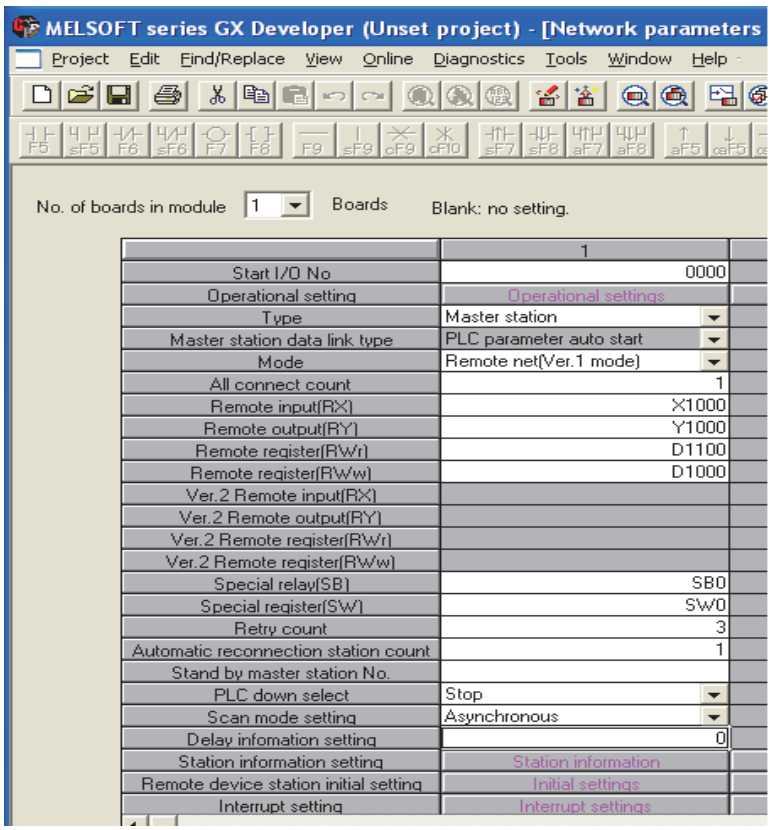


Figure 5.5 Network parameter setting screen for CC-Link (when the QCPU (Q mode) is used)

Table 5.1 Setting items on the Network parameter setting screen for CC-Link (when the QCPU (Q mode) is used)

Setting item	Setting value
No. of boards in module	1 (Boards)
Start I/O No	0000
Type	Master station
Mode	Remote net[Ver.1 mode]
All connect count	1 (module)
Remote input[RX]	X1000
Remote output[RY]	Y1000
Remote register[RWr]	D1100
Remote register[RWw]	D1000
Special relay[SB]	SB0
Special register[SW]	SW0
Station information setting	Refer to (1)(b) in this section.

(b) Station information setting

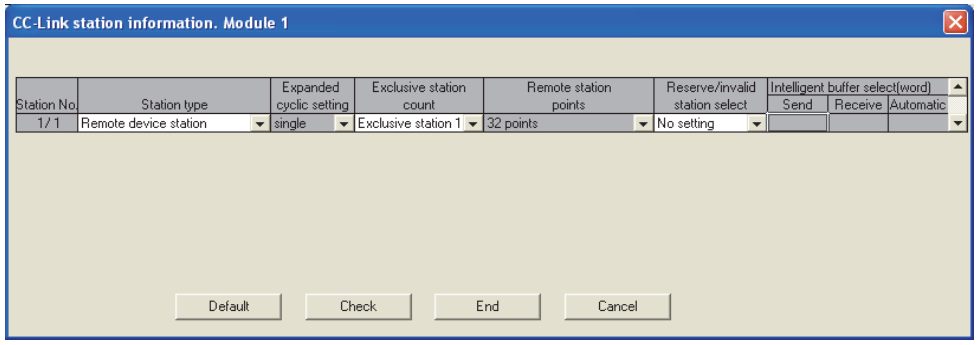


Figure 5.6 CC-Link station information. Module 1 screen (when the QCPU (Q mode) is used)

Table 5.2 Setting items on the CC-Link station information. Module 1 screen (when the QCPU (Q mode) is used)

Setting item	Setting value
Station type	Remote device station
Exclusive station count	Exclusive station 1
Reserve/invalid station select	No setting

(2) List of devices used in the program example

Table 5.3 List of devices used in the program example (when the QCPU (Q mode) is used)

Device	Description
X0	Module error
X1	Host station data link status
XF	Module ready
X20	Signal that is turned on to reset Disconnection detection flag
X21	Signal that is turned on to reset Error flag
X22	Signal that is turned on to change the initial setting
X1000	CH1 Conversion completion flag
X1001	CH2 Conversion completion flag
X1004	CH1 Disconnection detection flag
X1005	CH2 Disconnection detection flag
X1018	Initial data processing request flag
X1019	Initial data setting completion flag
X101A	Error flag
X101B	Remote ready
Y60	Signal that is output when a data link error occurs
Y61	Signal that is output when CH1 disconnection is detected
Y62	Signal that is output when CH2 disconnection is detected
Y63	Signal that is output when an error occurs
Y1000 to Y101A	Signal for settings of the AJ65SBT2B-64RD3
M0	Signal that stores the data link status of the AJ65SBT2B-64RD3 0 (Off): Data link normal 1 (On): Data link error
M100	Master control contact
D50	Device for reading CH1 Measured temperature value (Reading starts after CH1 Conversion completion flag turns on.)
D51	Device for reading CH2 Measured temperature value (Reading starts after CH2 Conversion completion flag turns on.)
D1000	CH1 Averaging processing selection
D1001	CH2 Averaging processing selection
D1100	CH1 Measured temperature value
D1101	CH2 Measured temperature value
SW80	Other station data link status

(3) Program example

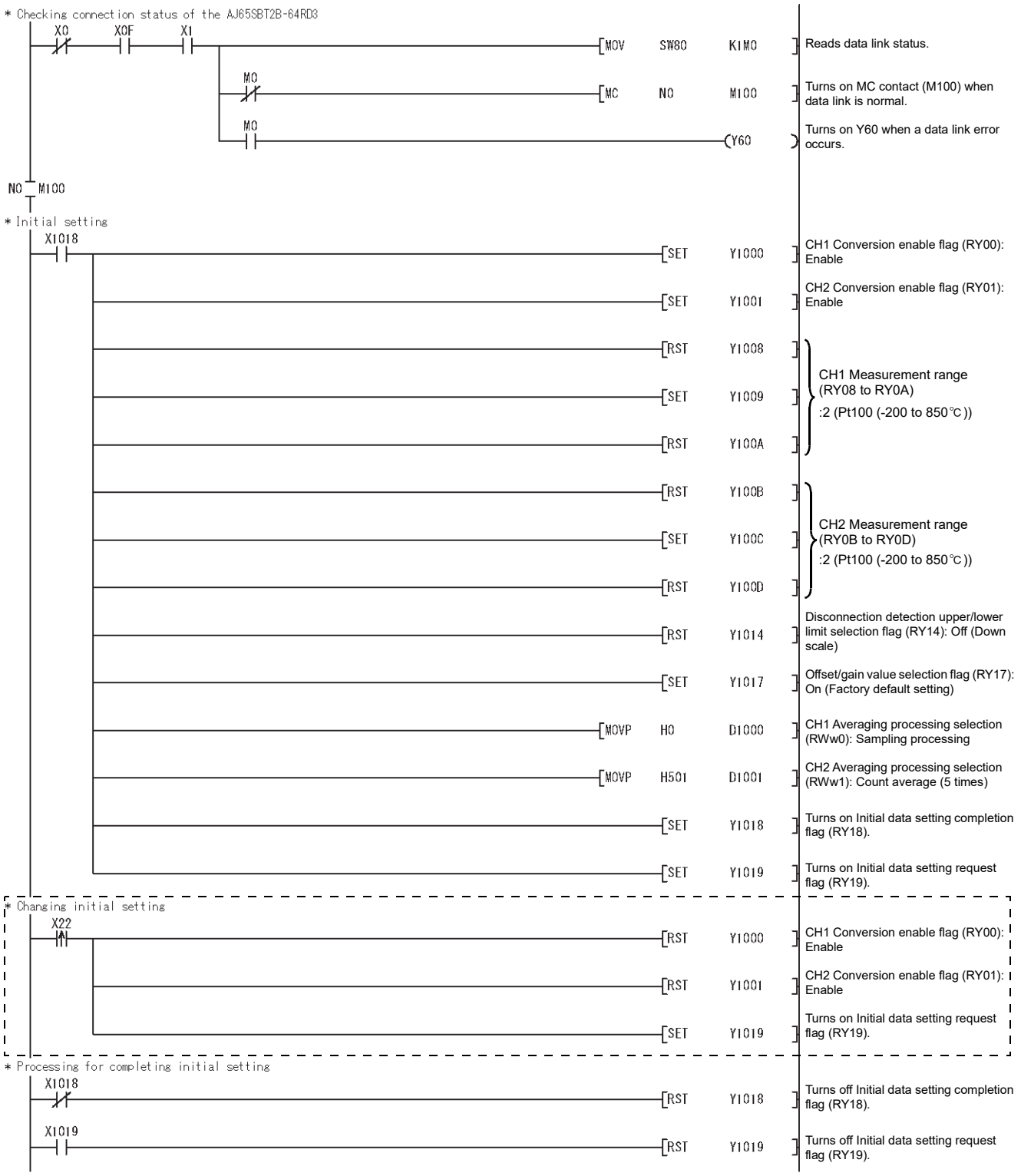


Figure 5.7 Program example (when the QCPU (Q mode) is used) 1/2

* 1: The program in the dotted area is required only when the initial setting is changed.

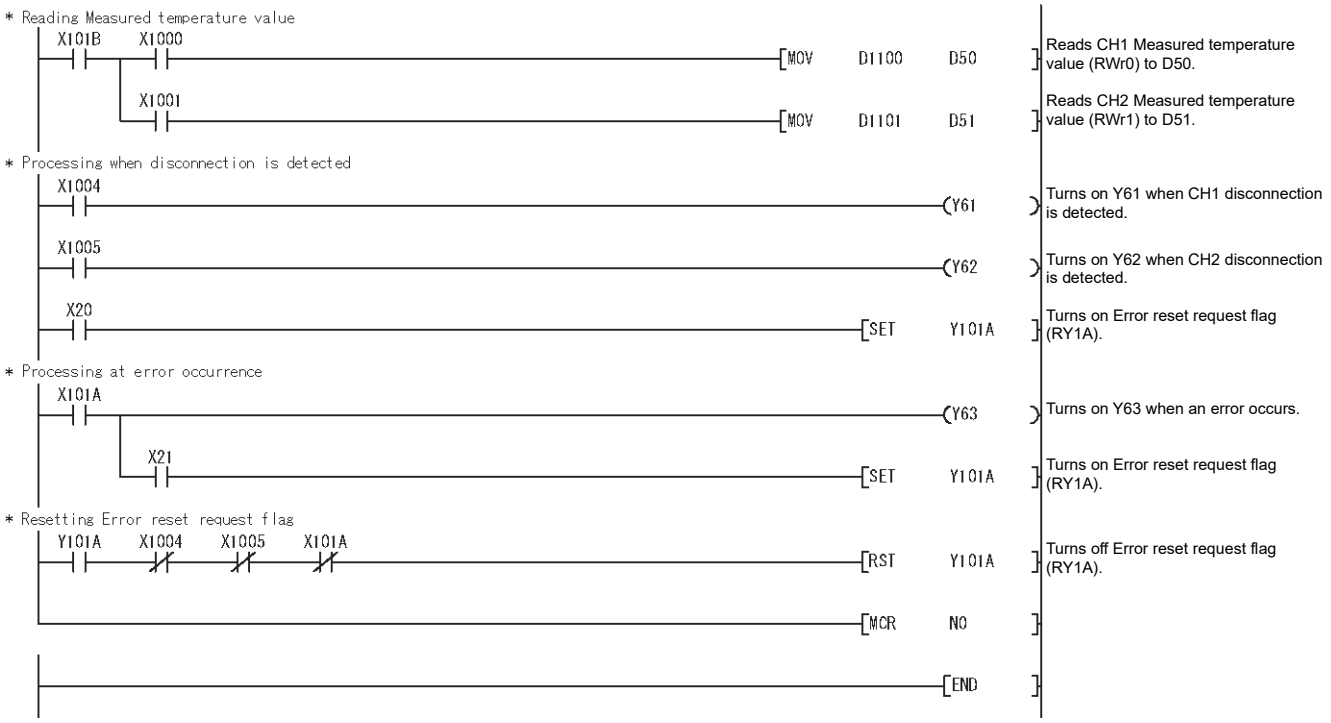


Figure 5.8 Program example (when the QCPU (Q mode) is used) 2/2

5.4 Program Example When the QnACPU is Used

Parameters are set in Network parameter using GX Developer.

(1) Parameter setting

(a) Network parameter setting

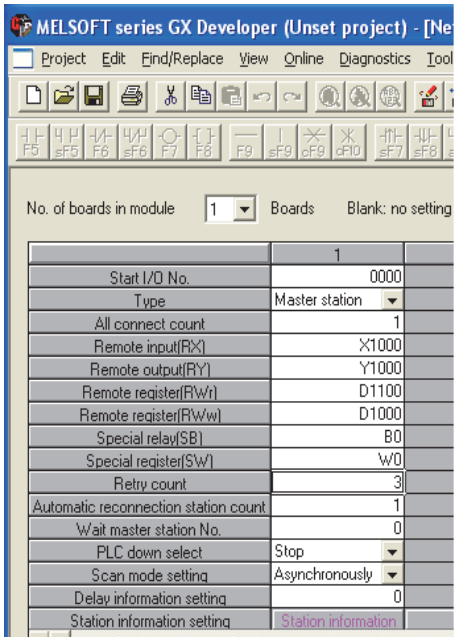


Figure 5.9 Network parameter setting screen for CC-Link (when the QnACPU is used)

Table 5.4 Setting items on the Network parameter setting screen for CC-Link (when the QnACPU is used)

Setting item	Setting value
No. of boards in module	1 (Boards)
Start I/O No	0000
Type	Master station
All connect count	1 (module)
Remote input[RX]	X1000
Remote output[RY]	Y1000
Remote register[RWr]	D1100
Remote register[RWw]	D1000
Special relay[SB]	B0
Special register[SW]	W0
Station information setting	Refer to(1)(b) in this section.

(b) Station information setting

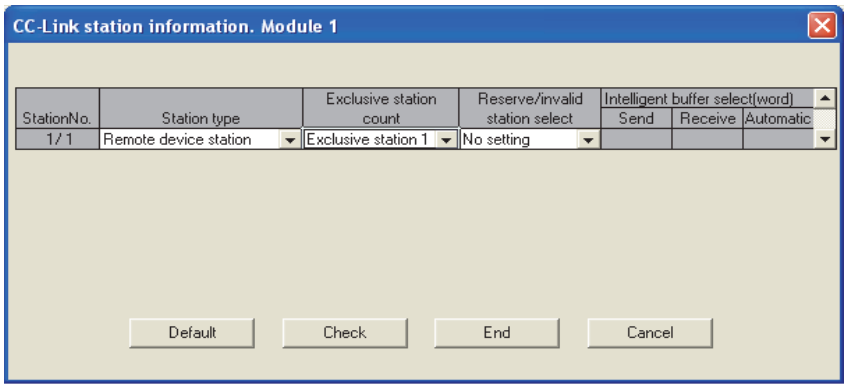


Figure 5.10 CC-Link station information. Module 1 screen (when the QnACPU is used)

Table 5.5 Setting items on the CC-Link station information. Module 1 screen (when the QnACPU is used)

Setting item	Setting value
Station type	Remote device station
Exclusive station count	Exclusive station 1
Reserve/invalid station select	No setting

POINT

When using the QnACPU, using "Y" as the remote output (RY) refresh device of the auto refresh parameter may not hold the analog value even in HOLD setting. In HOLD setting, use "M" or "B" as the remote output (RY) refresh device.

(2) List of devices used in the program example

Table 5.6 List of devices used in the program example (when the QnACPU is used)

Device	Description
X0	Module error
X1	Host station data link status
XF	Module ready
X20	Signal that is turned on to reset Disconnection detection flag
X21	Signal that is turned on to reset Error flag
X22	Signal that is turned on to change the initial setting
X1000	CH1 Conversion completion flag
X1001	CH2 Conversion completion flag
X1004	CH1 Disconnection detection flag
X1005	CH2 Disconnection detection flag
X1018	Initial data processing request flag
X1019	Initial data setting completion flag
X101A	Error flag
X101B	Remote ready
Y60	Signal that is output when a data link error occurs
Y61	Signal that is output when CH1 disconnection is detected
Y62	Signal that is output when CH2 disconnection is detected
Y63	Signal that is output when an error occurs
Y1000 to Y101A	Signal for settings of the AJ65SBT2B-64RD3
M0	Signal that stores the data link status of the AJ65SBT2B-64RD3 0 (Off): Data link normal 1 (On): Data link error
M100	Master control contact
D50	Device for reading CH1 Measured temperature value (Reading starts after CH1 Conversion completion flag turns on.)
D51	Device for reading CH2 Measured temperature value (Reading starts after CH2 Conversion completion flag turns on.)
D1000	CH1 Averaging processing selection
D1001	CH2 Averaging processing selection
D1100	CH1 Measured temperature value
D1101	CH2 Measured temperature value
W80	Other station data link status

(3) Program example

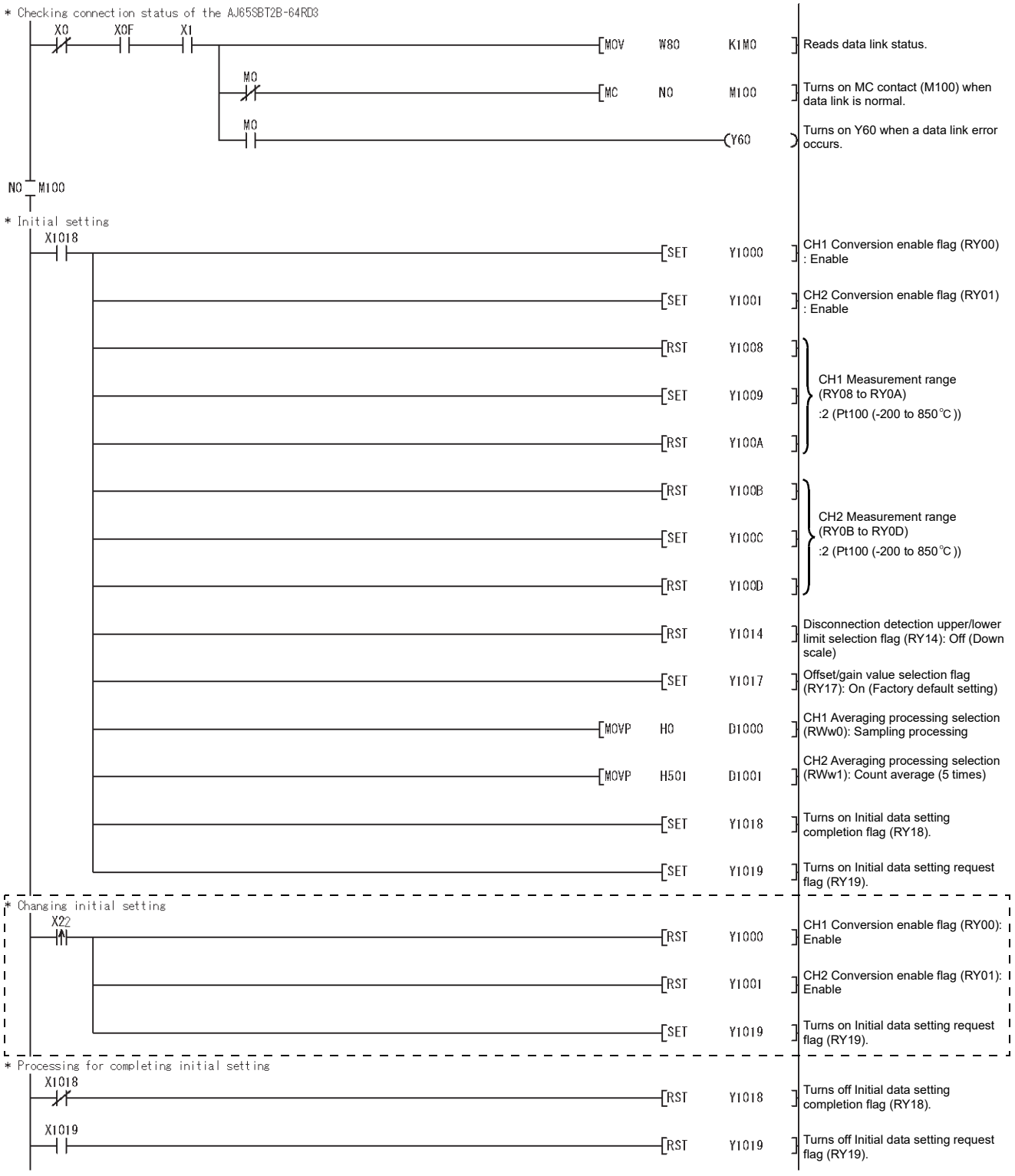


Figure 5.11 Program example (when the QnACPU is used) 1/2

* 1: The program in the dotted area is required only when the initial setting is changed.

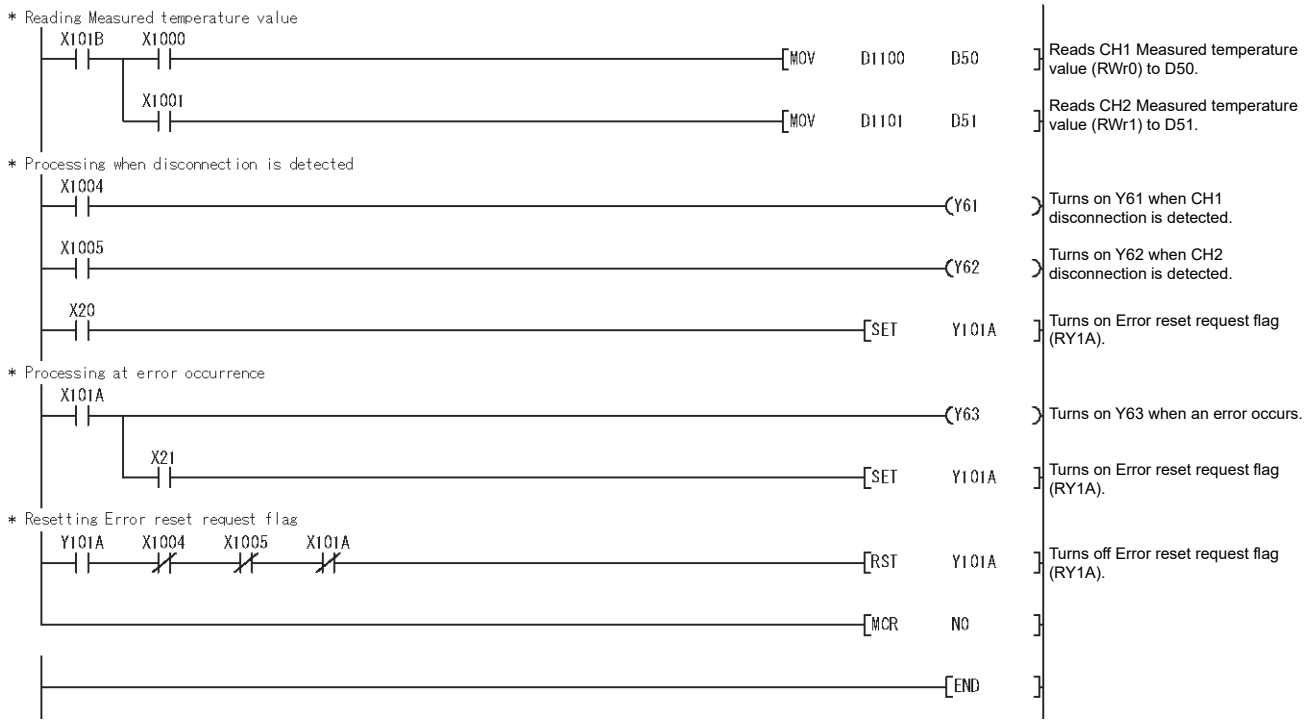


Figure 5.12 Program example (when the QnACPU is used) 2/2

5.5 Program Example When the ACPU/QCPU (A mode) is Used (Dedicated Instructions)

Parameters are set in the sequence program.

(1) List of devices used in the program example

Table 5.7 List of devices used in the program example (when the ACPU/QCPU (A mode) is used (dedicated instructions))

Device	Description
X0	Module error
X1	Host station data link status
XF	Module ready
X20	Signal that is turned on to reset Disconnection detection flag
X21	Signal that is turned on to reset Error flag
X22	Signal that is turned on to change the initial setting
X100	CH1 Conversion completion flag
X101	CH2 Conversion completion flag
X104	CH1 Disconnection detection flag
X105	CH2 Disconnection detection flag
X118	Initial data processing request flag
X119	Initial data setting completion flag
X11A	Error flag
X11B	Remote ready
Y60	Signal that is output when a data link error occurs
Y61	Signal that is output when CH1 disconnection is detected
Y62	Signal that is output when CH2 disconnection is detected
Y63	Signal that is output when an error occurs
Y100 to Y11A	Signal for settings of the AJ65SBT2B-64RD3
M0	Signal that stores the data link status of the AJ65SBT2B-64RD3 0 (Off): Data link normal 1 (On): Data link error
M10	Network parameter setting start pulse signal
M11	Signal that is turned on when parameter setting is completed normally
M12	Signal that is turned on when parameter setting is completed in error
M13	Auto refresh parameter setting start pulse signal
M20	Initial setting change command pulse
M100	Master control contact
D0 to D2	Device for Network parameter setting
D3	Device that stores host station parameter status when the instruction is completed in error
D10 to D29	Device for auto refresh parameter setting
D50	Device for reading CH1 Measured temperature value (Reading starts after CH1 Conversion completion flag turns on.)
D51	Device for reading CH2 Measured temperature value (Reading starts after CH2 Conversion completion flag turns on.)
D200	CH1 Averaging processing selection
D201	CH2 Averaging processing selection
D456	CH1 Measured temperature value
D457	CH2 Measured temperature value
W80	Other station data link status

(2) Program example

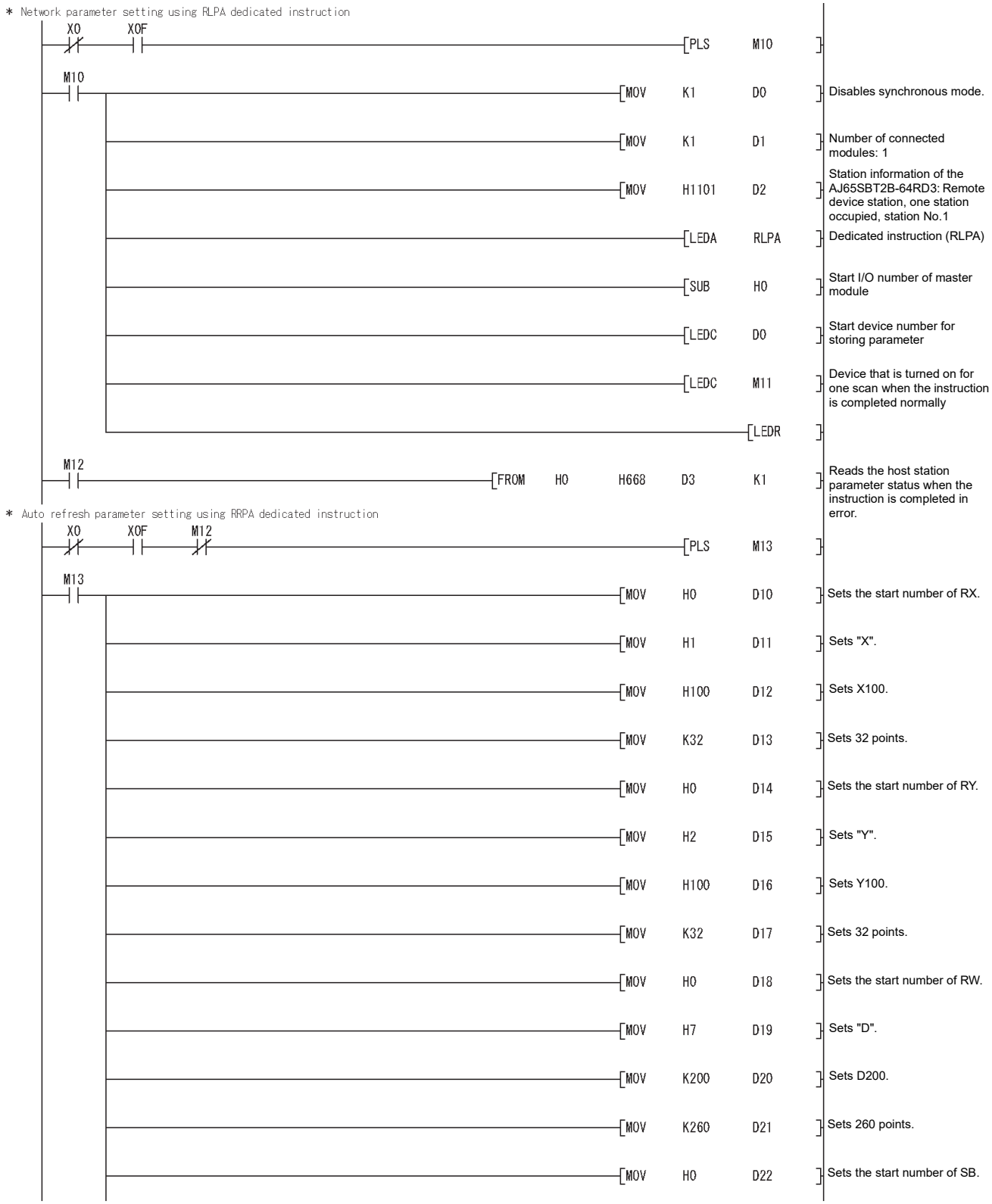


Figure 5.13 Program example (when the ACPU/QCPU (A mode) is used (dedicated instructions)) 1/3

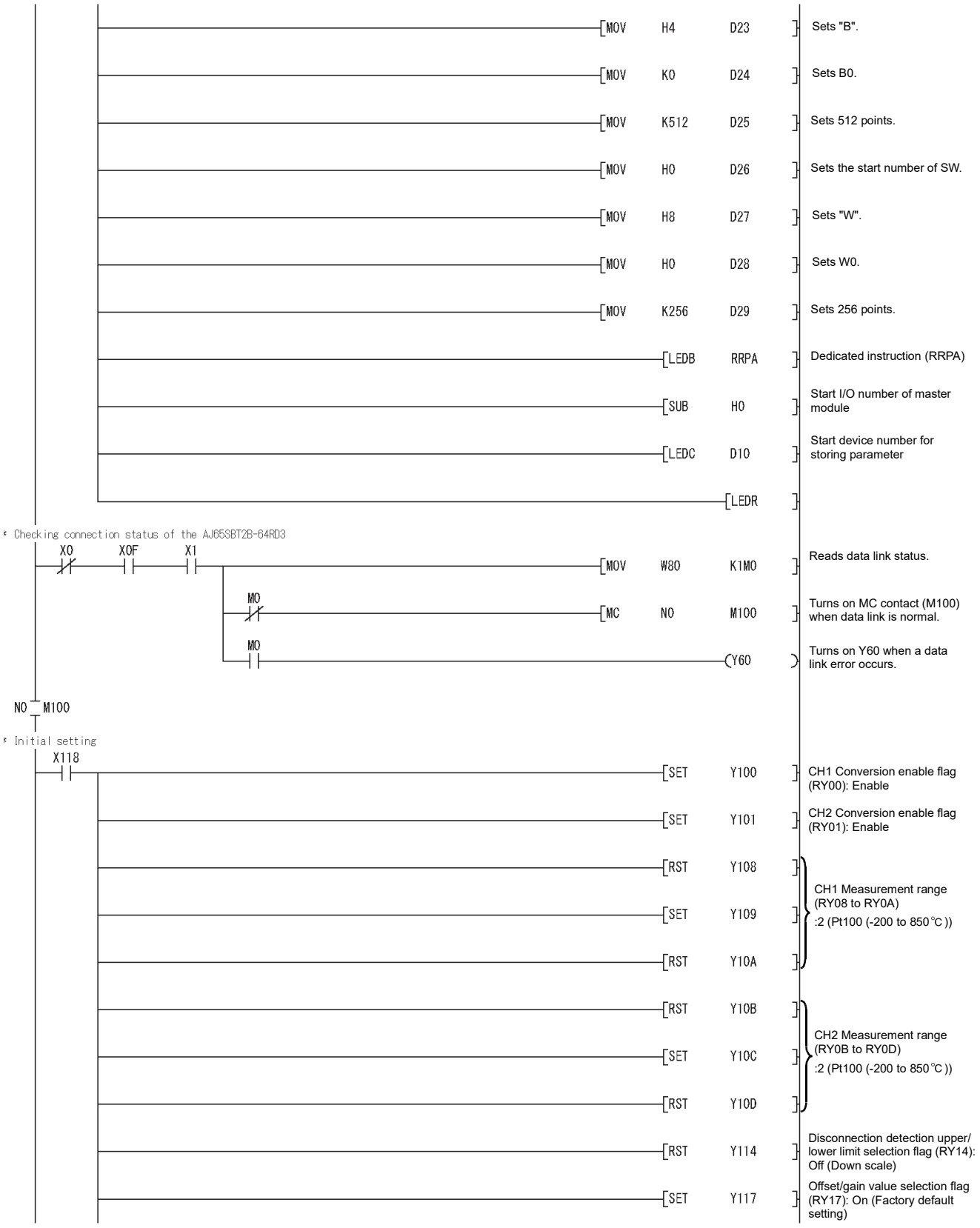


Figure 5.14 Program example (when the ACPU/QCPU (A mode) is used (dedicated instructions)) 2/3

* 1: The program in the dotted area is required only when the initial setting is changed.

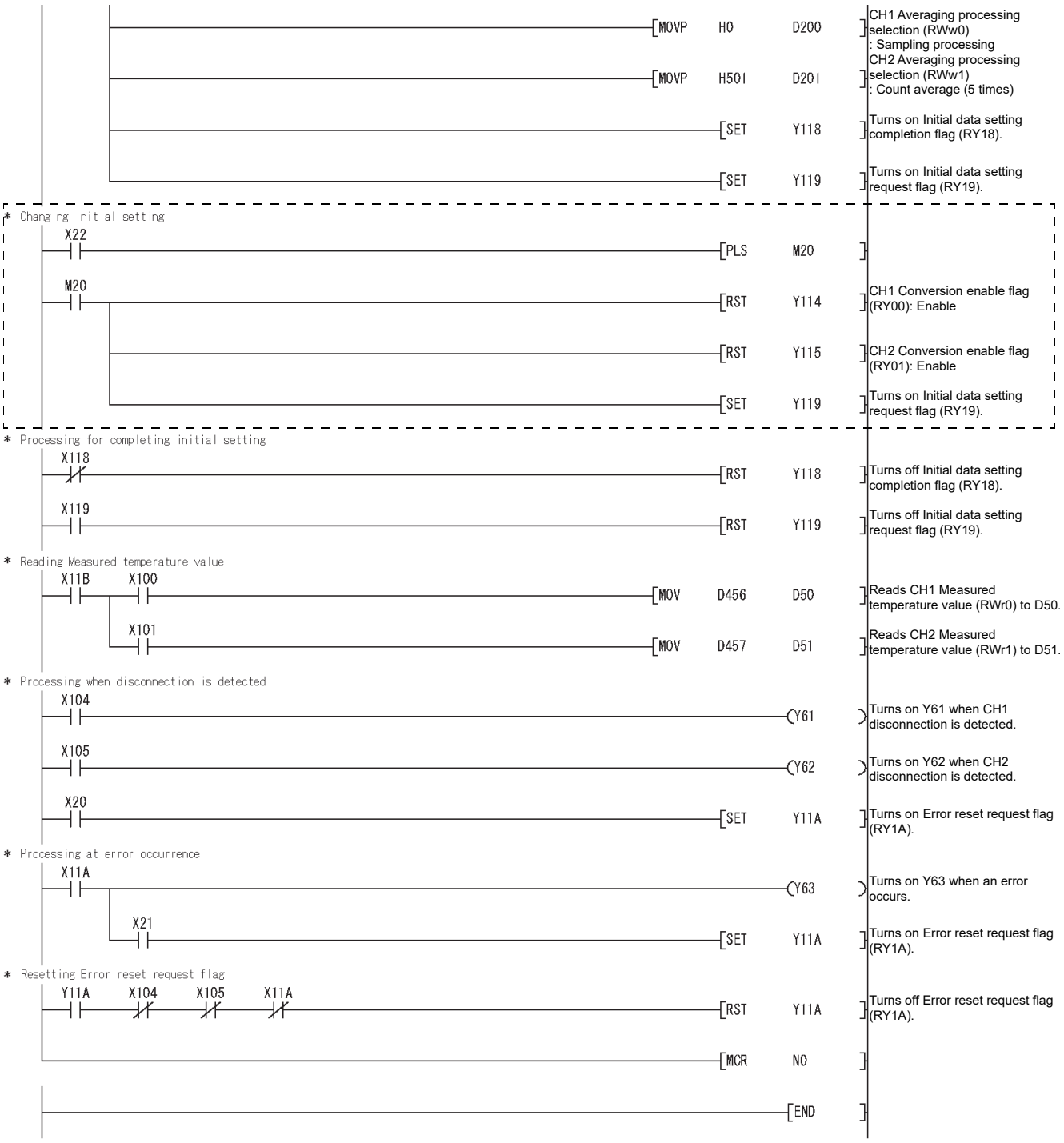


Figure 5.15 Program example (when the ACPU/QCPU (A mode) is used (dedicated instructions)) 3/3

5.6 Program Example When the ACPU/QCPU (A mode) is Used (FROM/TO Instructions)

Parameters are set in the sequence program.

(1) List of devices used in the program example

Table 5.8 List of devices used in the program example (when the ACPU/QCPU (A mode) is used (FROM/TO instructions))

Device	Description
X0	Module error
X1	Host station data link status
X6	Data link start by parameters in buffer memory normally completed
X7	Data link start by parameters in buffer memory failed
XF	Module ready
X20	Signal that is turned on to reset Disconnection detection flag
X21	Signal that is turned on to reset Error flag
X22	Signal that is turned on to change the initial setting
X100	CH1 Conversion completion flag
X101	CH2 Conversion completion flag
X104	CH1 Disconnection detection flag
X105	CH2 Disconnection detection flag
X118	Initial data processing request flag
X119	Initial data setting completion flag
X11A	Error flag
X11B	Remote ready
Y0	Refresh instruction
Y6	Request for data link start by parameters in buffer memory
Y60	Signal that is output when a data link error occurs
Y61	Signal that is output when CH1 disconnection is detected
Y62	Signal that is output when CH2 disconnection is detected
Y63	Signal that is output when an error occurs
Y100 to Y11A	Signal for settings of the AJ65SBT2B-64RD3
M0	Signal that stores the data link status of the AJ65SBT2B-64RD3 0 (Off): Data link normal 1 (On): Data link error
M10	Network parameter setting start pulse signal
M100	Master control contact
D0 to D4	Device for Network parameter setting
D100	Device that stores host station parameter status when the instruction is completed in error
D200	CH1 Averaging processing selection
D201	CH2 Averaging processing selection
D300	CH1 Measured temperature value
D301	CH2 Measured temperature value

(2) Program example

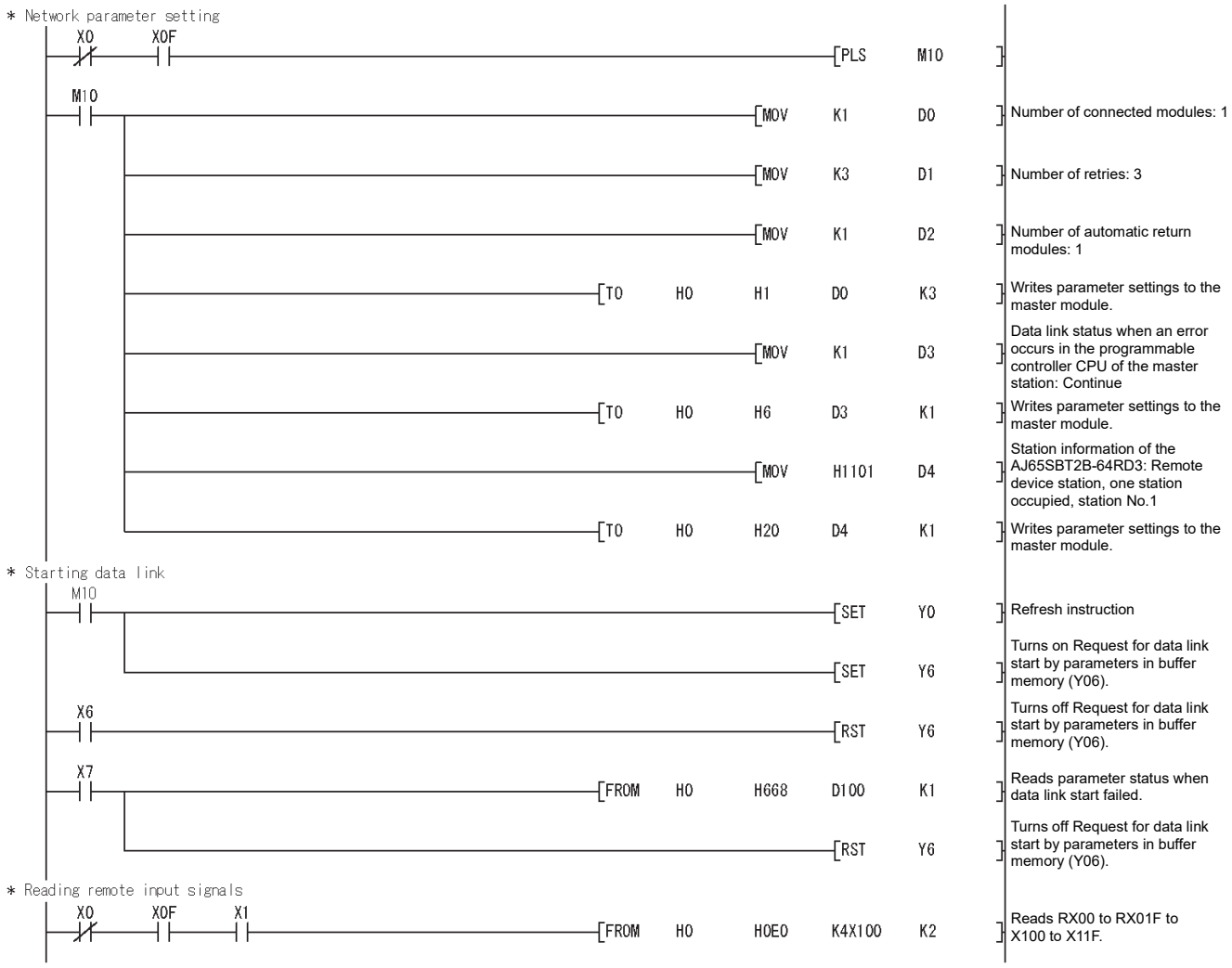


Figure 5.16 Program example (when the ACPU/QCPU (A mode) is used (FROM/TO instructions)) 1/3

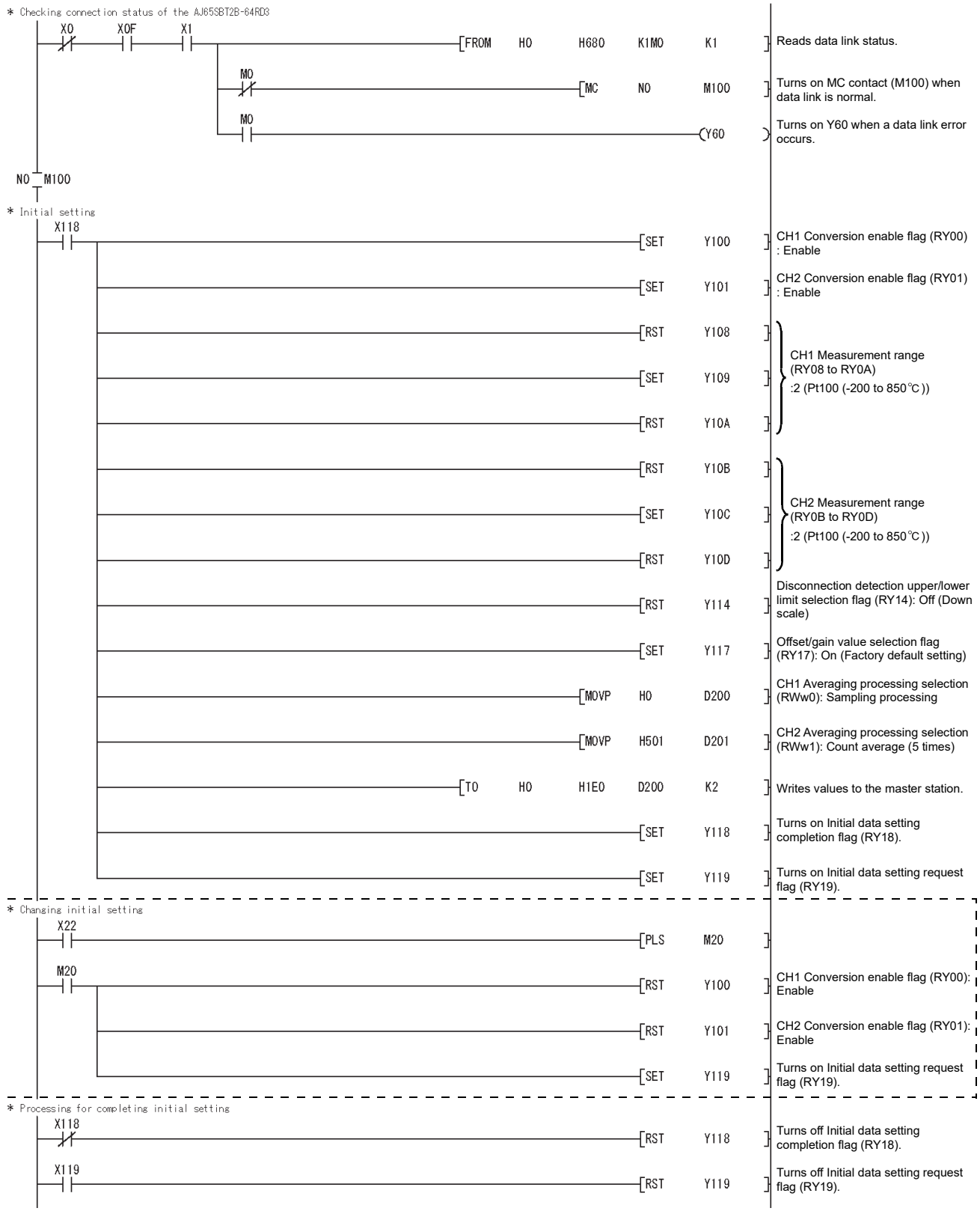


Figure 5.17 Program example (when the ACPU/QCPU (A mode) is used (FROM/TO instructions)) 2/3

* 1: The program in the dotted area is required only when the initial setting is changed.

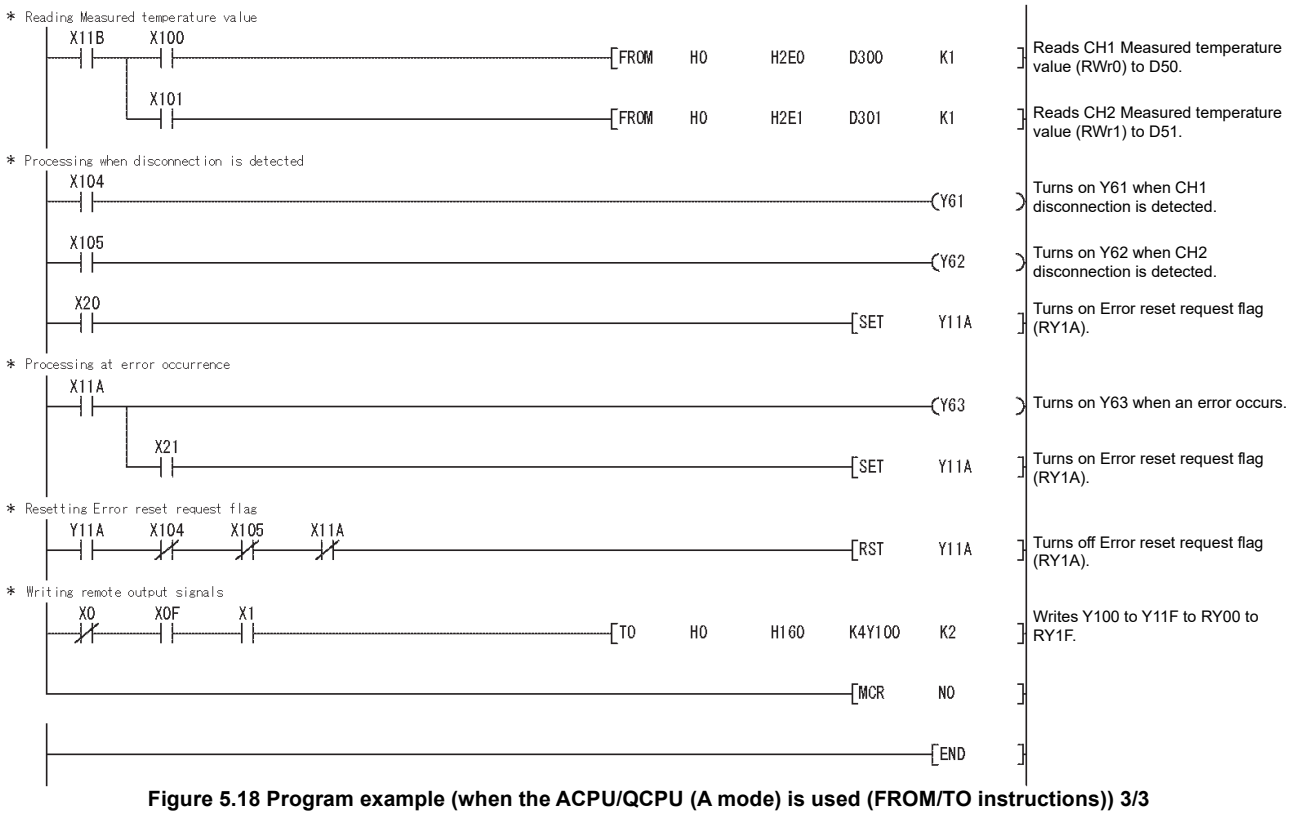


Figure 5.18 Program example (when the ACPU/QCPU (A mode) is used (FROM/TO instructions)) 3/3

CHAPTER6 TROUBLESHOOTING

This chapter describes the errors which may occur during the use of the AJ65SBT2B-64RD3 and troubleshooting.

6.1 Checking Errors Using LED Indications

This section describes how to check errors using the LED indications of the AJ65SBT2B-64RD3.
For the errors regarding the programmable controller CPU and master module, refer to the user's manuals of the programmable controller CPU and master module, respectively.

(1) When the "PW" LED of the AJ65SBT2B-64RD3 turns off

Table 6.1 When the "PW" LED of the AJ65SBT2B-64RD3 turns off

Check item	Corrective action
Is 24VDC power supplied?	Check the external power supply.
Is the voltage of the 24VDC power supply within the specified value?	Set the voltage value within the range 20.4 to 28.8V.

(2) When the "RUN" LED of the AJ65SBT2B-64RD3 flashes

Table 6.2 When the "RUN" LED of the AJ65SBT2B-64RD3 flashes

Check item	Corrective action
Is the LED flashing at 0.1s intervals in normal mode?	Set CH☐ Measurement range (RYn8 to RY(n+1)3) correctly.
Is the LED flashing at 0.5s intervals in normal mode?	Set CH☐ Averaging processing selection (RWwm to RWwm+3) correctly.
Is the LED flashing at 0.1s intervals in test mode?	Re-set the offset/gain values within the available setting range.

(3) When the "RUN" LED of the AJ65SBT2B-64RD3 turns off

Table 6.3 When the "RUN" LED of the AJ65SBT2B-64RD3 turns off

Check item	Corrective action
Has the watchdog timer error occurred?	Check the watchdog timer error using the link special register (SW0084 to SW0087) of the master module and supply power to the AJ65SBT2B-64RD3 once again. If the "RUN" LED does not turn on after power is supplied again, the module may have failed. Please consult your local Mitsubishi representative.
Has the TEST terminals been shorted to enter test mode?	Open the TEST terminals after performing error correction.

(4) When the "L RUN" LED of the AJ65SBT2B-64RD3 turns off

Communication has been disconnected.
For details, refer to the troubleshooting section in the user's manual of the master module used.

(5) When the "L ERR." LED of the AJ65SBT2B-64RD3 flashes regularly

Table 6.4 When the "L ERR." LED of the AJ65SBT2B-64RD3 flashes regularly

Check item	Corrective action
Have the station number setting switches been changed during normal operation?	Set the station number setting switches properly, and then supply power to the module once again.
Have the station number setting switches failed?	If the "L ERR." LED starts flashing without the switch setting being changed during operation, the module may have failed. Please consult your local Mitsubishi representative.

(6) When the "L ERR." LED of the AJ65SBT2B-64RD3 flashes irregularly

Table 6.5 When the "L ERR." LED of the AJ65SBT2B-64RD3 flashes irregularly

Check item	Corrective action
Is the terminating resistor connected?	Check that the terminating resistor is connected. If not, connect it and supply power to the module once again.
Is the L TER. switch on when the AJ65SBT2B-64RD3 is not connected at the end of the network?	Turn off the L TER. switch.
Is the module or CC-Link dedicated cable affected by noise?	Ground both ends of the shield part of CC-Link dedicated cable to the protective ground conductor via the SLD and FG terminals of each module. Ground the FG terminal of the module without fail. When wiring is performed using pipes, ground the pipes without fail.

(7) When the "L ERR." LED of the AJ65SBT2B-64RD3 turns on

Table 6.6 When the "L ERR." LED of the AJ65SBT2B-64RD3 turns on

Check item	Corrective action
Is the station number setting correct?	Set the correct station number.

6.2 When CH□ Disconnection Detection Flag (RXn4 to RXn7) Turns on

Table 6.7 When CH□ Disconnection detection flag (RXn4 to RXn7) turns on

Check item	Corrective action
Is the cable connected to the RTD without fail?	Connect the cable to the RTD without fail.
Are terminal screws tightened securely enough?	If terminal screws are too loose, retighten them within the specified torque range.
Is the connected RTD or cable disconnected?	Check conduction for the RTD and cable, and replace the disconnected RTD or cable.
Is the conversion status of the channel where no RTD is connected set to "Enable"?	Check the conversion-enabled channel and the channel where a RTD is connected, and set the conversion status correctly.

6.3 When Flash Memory Read Error Flag (RXnA) Turns on

This indicates that an error has occurred while reading data from the Flash memory.

When this flag turns on, supply power to the AJ65SBT2B-64RD3 once again.
If Flash memory read error flag (RXnA) is still on after power is supplied to the module once again, the AJ65SBT2B-64RD3 may have failed.
Please consult your local Mitsubishi representative, explaining a detailed description of the problem.

6.4 When User Range Read Error Flag (RXnB) Turns on

This indicates that an error has occurred while reading the user range setting data.

When this flag turns on, re-set the offset/gain values on all channels which use the user setting.
If User range read error flag (RXnB) is still on after the offset/gain values are re-set, the AJ65SBT2B-64RD3 may have failed. Please consult your local Mitsubishi representative, explaining a detailed description of the problem.

6.5 When Flash Memory Write Error Flag (RXnC) Turns on

This indicates that the number of writes to the Flash memory which is performed during offset/gain setting or transmission speed automatic setting exceeds the limit (10000 times).

When this flag turns on, supply power to the AJ65SBT2B-64RD3 once again.
If Flash memory write error flag (RXnC) is still on after power is supplied to the module once again, the AJ65SBT2B-64RD3 may have failed.
Please consult your local Mitsubishi representative, explaining a detailed description of the problem.

6.6 When CH□ Measured Temperature Value (RWrn to RWrn+3) Cannot be Read

Table 6.8 When CH□ Measured temperature value (RWrn to RWrn+3) cannot be read

Check item	Corrective action
Is the conversion status of the channel to be used set to "Disable"?	Check CH□ Conversion enable flag (RYn0 to RYn3) and set the conversion status of the channel to be used to "Enable".
Has any error occurred in the programmable controller CPU or master module?	Check the programmable controller CPU and master module.

6.7 When Incorrect Values are Stored in CH□ Measured Temperature Value (RWrn to RWrn+3)

Table 6.9 When incorrect values are stored in CH□ Measured temperature value (RWrn to RWrn+3)

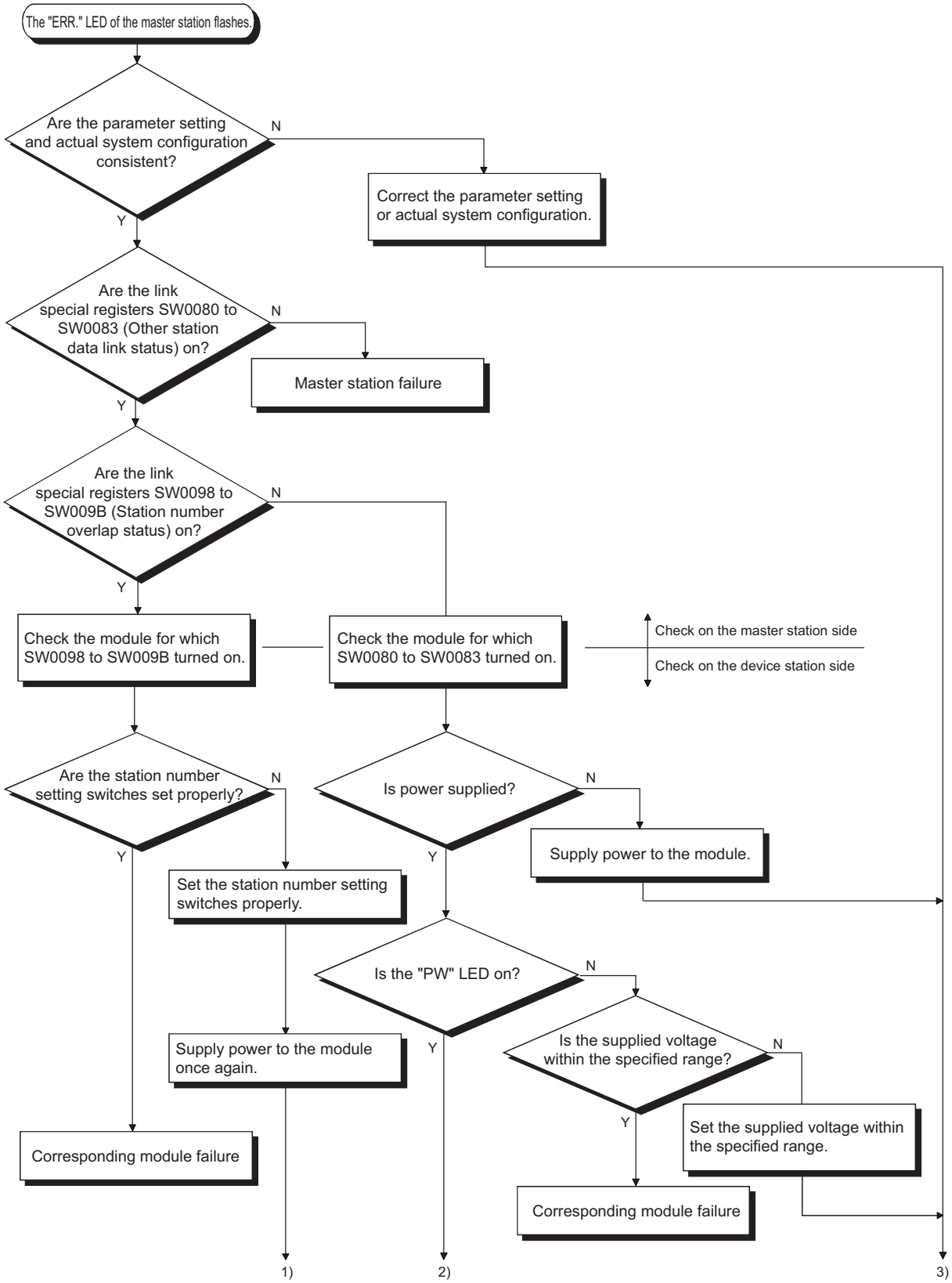
Check item	Corrective action
Is the connected RTD type different from the specified type?	Set Measurement range (RYn8 to RY(n+1)3) in accordance with the RTD connected.
Is the input value from the RTD affected by noise?	Check an effect from grounding or neighboring devices and take measures against noise.

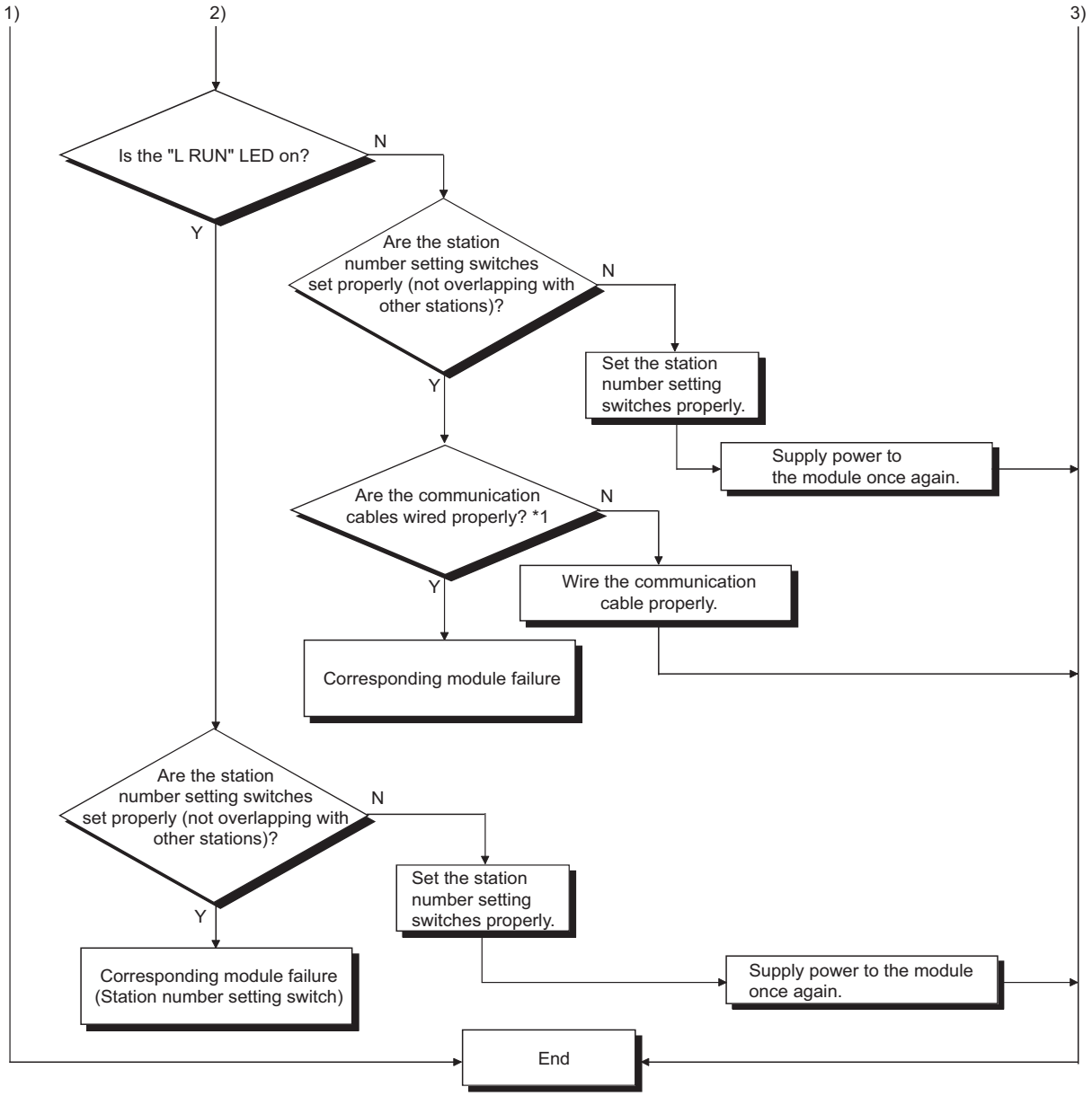
6.8 Troubleshooting When Data Link Execution Takes Much Time

Table 6.10 Troubleshooting when data link execution takes much time

Check item	Corrective action
Are "Number of automatic return modules" setting values of the master module small?	Set large values for the "Number of automatic return modules" in the GX Developer network parameter. For details of the setting method, refer to the user's manual of your master module.

6.9 Troubleshooting When the "ERR." LED of the Master Station Flashes





*1 Check for a short circuit, reversed connection, disconnection, terminating resistor, FG connection, overall cable distance, and station-to-station distance.

APPENDIX

Appendix 1 Reference Resistance Value of RTD

(1) New JIS/IEC type (Pt100)

Table App.1 Reference resistance value of Pt100

IEC 751 1983, JIS C 1604-1997 Unit: Ω

-200	-100	-0	Temperature [℃]	Temperature [℃]	0	100	200	300	400	500	600	700	800
18.52	60.26	100.00	-0	0	100.00	138.51	175.86	212.05	247.09	280.98	313.71	345.28	375.70
	56.19	96.09	-10	10	103.90	142.29	179.53	215.61	250.53	284.30	316.92	348.38	378.68
	52.11	92.16	-20	20	107.79	146.07	183.19	219.15	253.96	287.62	320.12	351.46	381.65
	48.00	88.22	-30	30	111.67	149.83	186.84	222.68	257.38	290.92	323.30	354.53	384.60
	43.88	84.27	-40	40	115.54	153.58	190.47	226.21	260.78	294.21	326.48	357.59	387.55
	39.72	80.31	-50	50	119.40	157.33	194.10	229.72	264.18	297.49	329.64	360.64	390.48
	35.54	76.33	-60	60	123.24	161.05	197.71	233.21	267.56	300.75	332.79	363.67	
	31.34	72.33	-70	70	127.08	164.77	201.31	236.70	270.93	304.01	335.93	366.70	
	27.10	68.33	-80	80	130.90	168.48	204.90	240.18	274.29	307.25	339.06	369.71	
	22.83	64.30	-90	90	134.71	172.17	208.48	243.64	277.64	310.49	342.18	372.71	

(2) Old JIS type (JPt100)

Table App.2 Reference resistance value of JPt100

JIS C 1604-1981 Unit: Ω

-100	-0	Temperature [℃]	Temperature [℃]	0	100	200	300	400	500	600
59.57	100.00	- 0	0	100.00	139.16	177.13	213.93	249.56	284.02	317.28
55.44	96.02	-10	10	103.97	143.01	180.86	217.54	253.06	287.40	
51.29	92.02	-20	20	107.93	146.85	184.58	221.15	256.55	290.77	
47.11	88.01	-30	30	111.88	150.67	188.29	224.74	260.02	294.12	
42.91	83.99	-40	40	115.81	154.49	191.99	228.32	263.49	297.47	
38.68	79.96	-50	50	119.73	158.29	195.67	231.89	266.94	300.80	
34.42	75.91	-60	60	123.64	162.08	199.35	235.45	270.38	304.12	
30.12	71.85	-70	70	127.54	165.86	203.01	238.99	273.80	307.43	
25.80	67.77	-80	80	131.42	169.63	206.66	242.53	277.22	310.72	
	63.68	-90	90	135.30	173.38	210.30	246.05	280.63	314.01	

(3) Old JIS type (JPt100)

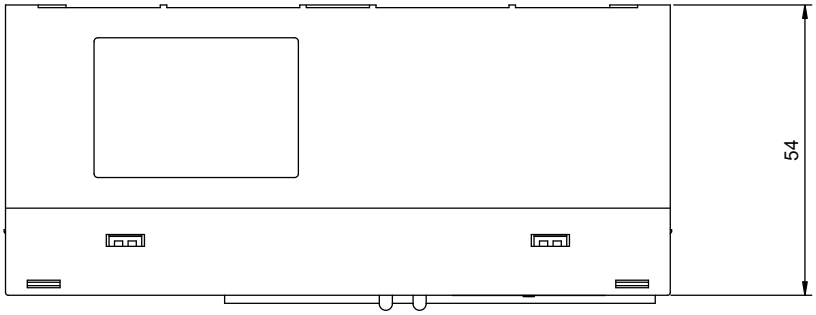
Table App.3 Reference resistance value of Ni100

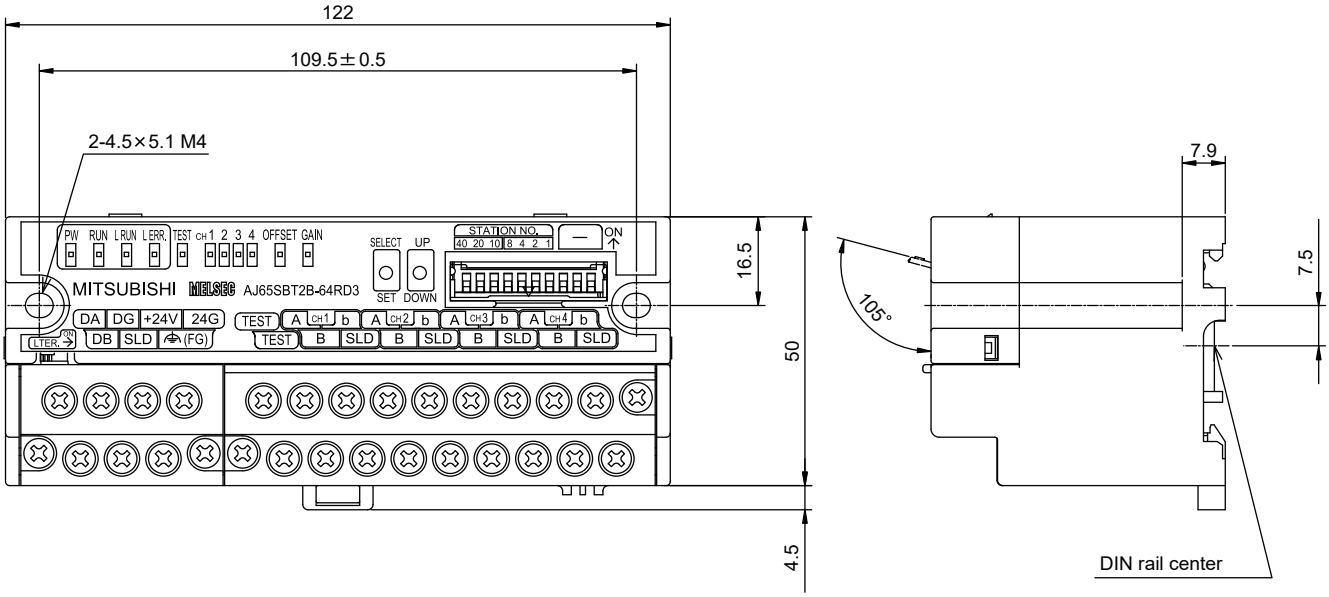
DIN 43760 1987 Unit: Ω

-0	Temperature [℃]	Temperature [℃]	0	100
100.0	-0	0	100.0	161.8
94.6	-10	10	105.6	168.8
89.3	-20	20	111.2	176.0
84.2	-30	30	117.1	183.3
79.1	-40	40	123.0	190.9
74.3	-50	50	129.1	198.7
69.5	-60	60	135.3	206.6
	-70	70	141.7	214.8
	-80	80	148.3	223.2
	-90	90	154.9	

Appendix 2 External Dimensions

The external dimensions of the AJ65SBT2B-64RD3 is shown below.





Unit: mm

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WARRANTY

Please confirm the following product warranty details before using this product.

1. Gratis Warranty Term and Gratis Warranty Range

If any faults or defects (hereinafter "Failure") found to be the responsibility of Mitsubishi occurs during use of the product within the gratis warranty term, the product shall be repaired at no cost via the sales representative or Mitsubishi Service Company.

However, if repairs are required onsite at domestic or overseas location, expenses to send an engineer will be solely at the customer's discretion. Mitsubishi shall not be held responsible for any re-commissioning, maintenance, or testing on-site that involves replacement of the failed module.

[Gratis Warranty Term]

The gratis warranty term of the product shall be for one year after the date of purchase or delivery to a designated place. Note that after manufacture and shipment from Mitsubishi, the maximum distribution period shall be six (6) months, and the longest gratis warranty term after manufacturing shall be eighteen (18) months. The gratis warranty term of repair parts shall not exceed the gratis warranty term before repairs.

[Gratis Warranty Range]

(1) The range shall be limited to normal use within the usage state, usage methods and usage environment, etc., which follow the conditions and precautions, etc., given in the instruction manual, user's manual and caution labels on the product.

(2) Even within the gratis warranty term, repairs shall be charged for in the following cases.

1. Failure occurring from inappropriate storage or handling, carelessness or negligence by the user. Failure caused by the user's hardware or software design.
2. Failure caused by unapproved modifications, etc., to the product by the user.
3. When the Mitsubishi product is assembled into a user's device, Failure that could have been avoided if functions or structures, judged as necessary in the legal safety measures the user's device is subject to or as necessary by industry standards, had been provided.
4. Failure that could have been avoided if consumable parts (battery, backlight, fuse, etc.) designated in the instruction manual had been correctly serviced or replaced.
5. Failure caused by external irresistible forces such as fires or abnormal voltages, and Failure caused by force majeure such as earthquakes, lightning, wind and water damage.
6. Failure caused by reasons unpredictable by scientific technology standards at time of shipment from Mitsubishi.
7. Any other failure found not to be the responsibility of Mitsubishi or that admitted not to be so by the user.

2. Onerous repair term after discontinuation of production

(1) Mitsubishi shall accept onerous product repairs for seven (7) years after production of the product is discontinued. Discontinuation of production shall be notified with Mitsubishi Technical Bulletins, etc.

(2) Product supply (including repair parts) is not available after production is discontinued.

3. Overseas service

Overseas, repairs shall be accepted by Mitsubishi's local overseas FA Center. Note that the repair conditions at each FA Center may differ.

4. Exclusion of loss in opportunity and secondary loss from warranty liability

Regardless of the gratis warranty term, Mitsubishi shall not be liable for compensation to:

(1) Damages caused by any cause found not to be the responsibility of Mitsubishi.

(2) Loss in opportunity, lost profits incurred to the user by Failures of Mitsubishi products.

(3) Special damages and secondary damages whether foreseeable or not, compensation for accidents, and compensation for damages to products other than Mitsubishi products.

(4) Replacement by the user, maintenance of on-site equipment, start-up test run and other tasks.

5. Changes in product specifications

The specifications given in the catalogs, manuals or technical documents are subject to change without prior notice.

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/

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SH(NA)-080770ENG-D(2506)MEE
MODEL: AJ65S-64RD3-U-SY-E

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

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Specifications subject to change without notice.