



Programmable Controller

FX3U-4HSX-ADP

INSTALLATION MANUAL

Manual Number	JY997D16301
Revision	G
Date	December 2025

This manual describes the part names, dimensions, mounting, and specifications of the product. Before use, read this manual and manuals of relevant products fully to acquire proficiency in handling and operating the product. Make sure to learn all the product information, safety information, and precautions. And, store this manual in a safe place so that you can take it out and read it whenever necessary. Always forward it to the end user.

Registration
The company name and the product name to be described in this manual are the registered trademarks or trademarks of each company.

Effective December 2025
Specifications are subject to change without notice.
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Safety Precaution (Read these precautions before use.)
This manual classify the safety precautions into two categories:

⚠WARNING

 and

⚠CAUTION

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<div>⚠WARNING</div>	Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.
<div>⚠CAUTION</div>	Indicates that incorrect handling may cause hazardous conditions, resulting in medium or slight personal injury or physical damage.

Depending on circumstances, procedures indicated by

⚠CAUTION

 may also be linked to serious results.
In any case, it is important to follow the directions for usage.

Manual name	Manual No.	Description
FX3U Series User's Manual - Hardware Edition	JY997D16501	Explains FX3U Series PLC specification details for I/O, wiring, installation, and maintenance.
FX3S/FX3G/FX3GC/FX3U/FX3UC Series Programming Manual - Basic & Applied Instruction Edition	JY997D16601	Describes PLC programming for basic/applied instructions and devices.

How to obtain manuals
For the necessary product manuals or documents, consult with the Mitsubishi Electric dealer from where you purchase your product.

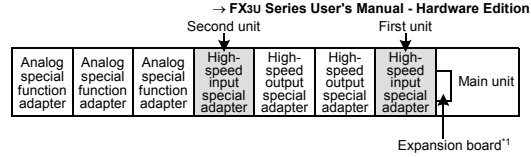
Applicable Standard
FX3U-4HSX-ADP complies with EC directive (EMC Directive) and UL standards (UL, cUL). Further information can be found in the following manual.
→ **FX3u Series Hardware Manual (Manual No. JY997D50301)**

Attention
This product is designed for use in industrial applications.

1. Outline
FX3U-4HSX-ADP high-speed input special adapter (hereinafter called high-speed input special adapter) is a special adapter dedicated to FX3u Series PLC. It retrieves pulse signals from a rotary encoder of which the output type is a differential line driver to a high-speed counter or SPD instruction (FNC 56).
Up to two units of this high-speed special adapter can be connected to the main unit per system. For details on system configuration, refer to the following manual.
→ **FX3u Series User's Manual - Hardware Edition**

1.1 Incorporated Items Check if the following product and items are included in the package:	
Product	FX3u-4HSX-ADP high-speed input special adapter
Accessories	Installation manual (This manual)

1.2 Input Allocation and Usable High-Speed Counter Number
When the power is turned on, input numbers of the high-speed input special adapters are allocated as shown in the table below in the order of unit position to the main unit. See the table below for usable device number of associated high-speed counter. For details on high-speed counters, refer to the following manual.
→ **FX3u Series User's Manual - Hardware Edition**



*1 An expansion board is required to use any special adapters other than high-speed I/O special adapters. For system configuration, refer to the following manual.
→ **FX3u Series User's Manual - Hardware Edition**

	Input number	Associated high-speed counters
First unit	X000 to X002, X006	C235, C236, C237, C241, C242*2, C244, C244(OP), C245*3, C246, C247, C249, C251, C252, C254
Second unit	X003 to X005, X007	C238, C239, C240, C243, C245(OP), C248, C248(OP), C250, C253, C253(OP), C255

*2 Use the terminal of the main unit for reset input if the second high-speed input special adapter is not connected.
*3 Use the terminal of the main unit for start input and reset input if the second high-speed input special adapter is not connected.

Caution
When connecting a high-speed input special adapter, same input numbers are allocated to the main unit and this special adapter. Must use either one of the input terminals. If both input terminals are used, assumed action may not be executed because inputs of the high-speed input special adapter and main unit are operated in an OR relationship to each other.

- Do not use (wire) the input terminal in main unit corresponding to the input number used in the high-speed input special adapter.
- Do not use (wire) the input terminal in high-speed input special adapter corresponding to the input number used in the main unit.

3. Used cables and Tightening Torque on Terminal
For connection example and wiring, refer to the following manual.
→ **FX3u Series User's Manual - Hardware Edition**

WIRING PRECAUTIONS	<div>⚠WARNING</div>
<ul style="list-style-type: none">Make sure to cut off all phases of the power supply externally before attempting installation or wiring work. Failure to do so may cause electric shock or damage to the product.	

WIRING PRECAUTIONS	<div>⚠CAUTION</div>
<ul style="list-style-type: none">When wiring, make sure cutting or wire debris does not enter the ventilation slits. Failure to do so may cause fire, equipment failures or malfunctions.Make sure to observe the following precautions in order to prevent any damage to the machinery or accidents due to abnormal data written to the PLC under the influence of noise:<ul style="list-style-type: none">1) Do not bundle the main circuit line together with or lay it close to the main circuit, high-voltage line or load line. Otherwise, noise disturbance and/or surge induction are likely to take place. As a guideline, lay the control line at least 100mm (3.94") or more away from the main circuit or high-voltage lines.2) Ground the shield wire or shield of the shielded cable at one point on the PLC. However, do not use common grounding with heavy electrical systems.Make sure to properly wire to the European terminal block in accordance with the following precautions. Failure to do so may cause electric shock, equipment failures, a short-circuit, wire breakage, malfunctions, or damage to the product.<ul style="list-style-type: none">The disposal size of the cable end should follow the dimensions described in the manual.Tightening torque should follow the specifications in the manual.Twist the end of strand wire and make sure that there are no loose wires.Do not solder-plate the electric wire ends.Do not connect more than the specified number of wires or electric wires of unspecified size.Affix the electric wires so that neither the terminal block nor the connected parts are directly stressed.	

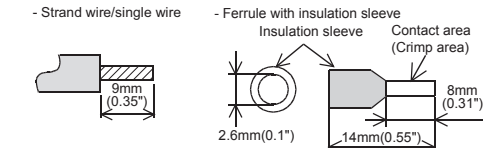
1) Wire size
To connect to the desired unit, use a shielded twisted pair cable having a conductor(s) of size AWG22-20.

Type	Wire size
Single-wire	0.3mm ² to 0.5mm ² (AWG22 to 20)
2-wire	2 pieces of 0.3mm ² (AWG22)

3) Termination of cable end
Strip the coating of strand wire and twist the cable core before connecting it, or strip the coating of single wire before connecting it.
An alternative connection is to use a ferrule with insulating sleeve.

Manufacturer	Model	Caulking tool
Phoenix Contact Co., Ltd.	AI 0.5-8WH	CRIMPFOX 6*1 (or CRIMPFOX 6T-F*2)

*1 Old model name: CRIMPFOX ZA 3
*2 Old model name: CRIMPFOX UD 6

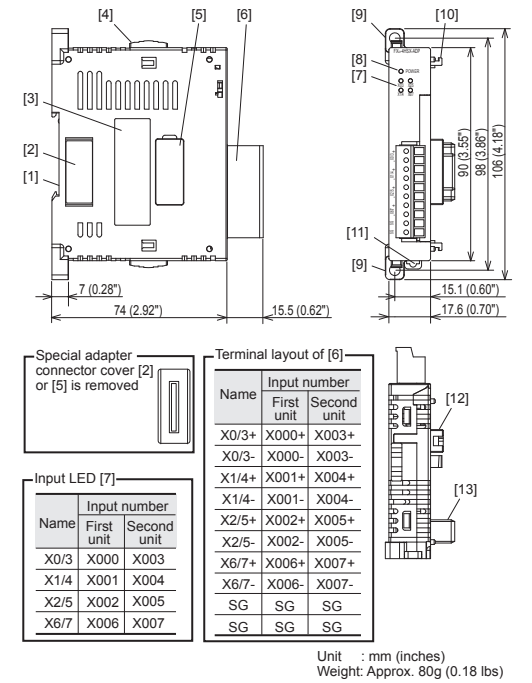


When using a ferrule with insulation sleeve, choose a wire with proper cable sheath referring to the above outside dimensions, or otherwise, the wire cannot be inserted easily.
The tightening torque must be 0.22 to 0.25N·m. Do not tighten terminal screws with a torque outside the above-mentioned range.
Failure to do so may cause equipment failures or malfunctions.

4. Specification

STARTUP AND MAINTENANCE PRECAUTIONS	<div>⚠CAUTION</div>
<ul style="list-style-type: none">Do not disassemble or modify the PLC. Doing so may cause fire, equipment failures, or malfunctions. * For repair, contact your local Mitsubishi Electric distributor.Do not drop the product or exert strong impact to it. Doing so may cause damage.	

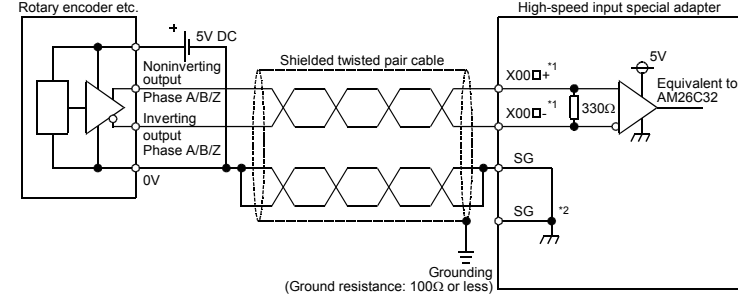
1.3 External Dimensions, Part Names, and Terminal Layout



- DIN rail mounting groove (DIN rail: DIN46277)
- High-speed I/O special adapter connector cover:
Remove this cover for connecting high-speed I/O special adapter on the left side.
- Name plate
- Special adapter slide lock:
Used to connect special adapter on left side of this special adapter.
- Special adapter connector cover:
Remove this cover for connecting special adapter on the left side.
- Terminal block for inputs (European type):
Connects output signals of differential line driver type.
- Input LED (red):
Lit when input turns ON (if input turns ON and OFF alternately at high speed, the LED flickers fast).
- POWER LED (green):
Lit while power is properly supplied from main unit.
- Direct mounting hole: 2 holes of $\phi 4.5$ (0.18") (mounting screw: M4 screw)
- Special adapter fixing hook
- DIN rail mounting hook
- Special adapter connector:
Used to connect the communication special adapter or analog special adapter to this adapter on left side.
- High-speed I/O special adapter connector:
Used to connect the high-speed I/O special adapter to this adapter on left side.

4.6 Internal Circuit of Input Interface

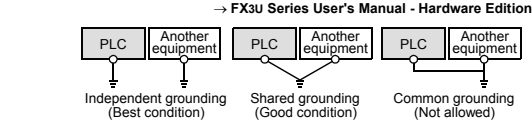
For connection example and wiring, refer to the following manual.
→ **FX3u Series User's Manual - Hardware Edition**



*1 X00□ indicates input number of the high-speed input special adapter.
*2 SG of the first unit and SG of the second unit are insulated from each other.

Grounding
Grounding should be performed as stated below.

- The grounding resistance should be 100Ω or less.
- Independent grounding should be performed for best results.
When independent grounding is not performed, perform "shared grounding" of the following figure.
For details, refer to the following manual.
→ **FX3u Series User's Manual - Hardware Edition**



- The grounding wire size should be AWG 14 (2 mm²) or larger.
- The grounding point should be close to the PLC, and all grounding wire should be as short as possible.

「电器电子产品有害物质限制使用标识要求」的表示方式	
15	

产品正常使用终结废弃时，有关电子信息产品的回收，再利用等要遵守各自自治体的法律法规的要求。
Note: This symbol mark is for China only.

含有有害10物质的名称，含有量，含有部品
本产品中所含有的有害10物质的名称，含有量，含有部品如下表所示。

产品中有害物质的名称及含信息表						
部件名称	有害物质					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr (VI))	多溴联苯 (PBBs)	多溴二苯醚 (PBDEs)
外壳	○	○	○	○	○	○
印刷基板	×	○	○	○	○	○
部件名称	有害物质					
	邻苯二甲酸 二正丁酯 (DBP)	邻苯二甲酸 二异丁酯 (DIBP)	邻苯二甲酸 丁苯酯 (BBP)	邻苯二甲酸二 (2-乙基)己酯 (DEHP)		
外壳	○	○	○	○		
印刷基板	○	○	○	○		

注1 ○:表示该有害物质在该部件所有均质材料中的含量均不超出电器电子产品有害物质限制使用国家标准要求。
×:表示该有害物质至少在該部件的某一均质材料中的含量超出电器电子产品有害物质限制使用国家标准要求。

注2 以上未列出的部件，表明其有害物质含量均不超出电器电子产品有害物质限制使用国家标准要求。

基于中国标准法的参考规格:GB/T15969. 2

2. Installation

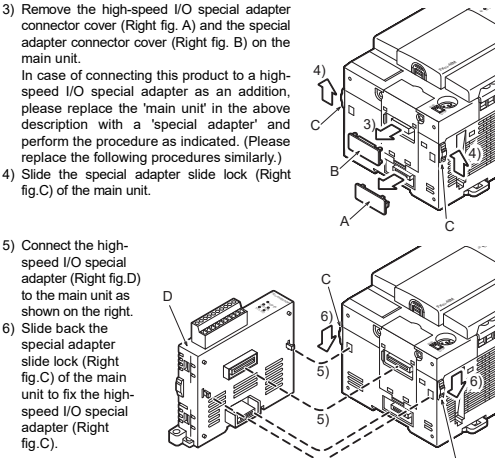
The product can be mounted on DIN rail (DIN46227) or mounted directly using screws.
For installation/uninstallation and safety precautions, refer to the following manual:
→ **FX3u Series User's Manual - Hardware Edition**

INSTALLATION PRECAUTIONS	<div>⚠WARNING</div>
<ul style="list-style-type: none">Make sure to cut off all phases of the power supply externally before attempting installation or wiring work. Failure to do so may cause electric shock or damage to the product.	

INSTALLATION PRECAUTIONS	<div>⚠CAUTION</div>
<ul style="list-style-type: none">Use the product within the generic environment specifications described in PLC main unit manual (Hardware Edition). Never use the product in areas with excessive dust, oily smoke, conductive dusts, corrosive gas (salt air, Cl₂, H₂S, SO₂ or NO₂), flammable gas, vibration or impacts, or expose it to high temperature, condensation, or rain and wind. If the product is used in such conditions, electric shock, fire, malfunctions, deterioration or damage may occur.When drilling screw holes or wiring, make sure that cutting and wiring debris do not enter the ventilation slits. Failure to do so may cause fire, equipment failures or malfunctions.Do not touch the conductive parts of the product directly. Doing so may cause device failures or malfunctions.Connect the special adapter securely to their designated connectors. Loose connections may cause malfunctions.	

2.1 Connection to the FX3u Series PLC
Refer to the procedure 2) for configuring a new system.
Refer to the procedure 1) for adding product to an existing system.

Procedure
1) Turn off the power.
Disconnect all the cables connected to the PLC main unit and special adapter. Dismount the main unit and special adapter mounted on DIN rail or mounted directly using screws.
2) Install an expansion board to the main unit.
For installation of expansion board, refer to the following manual:
→ **FX3u Series User's Manual - Hardware Edition**



Connection precautions

- Install the expansion board to be used before connecting a special adapter.
- Install an expansion board when using a special adapter other than a high-speed I/O special adapter in combination with a high-speed I/O special adapter.
- Connect all the high-speed I/O special adapters before connecting other special adapters when they are used in combination.
Do not connect a high-speed I/O special adapter on the left side of any special adapters other than other high-speed I/O special adapters.

This manual confers no industrial property rights or any rights of any other kind, nor does it confer any patent licenses. Mitsubishi Electric Corporation cannot be held responsible for any problems involving industrial property rights which may occur as a result of using the contents noted in this manual.

Warranty
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.

<div>⚠ For safe use</div>
<ul style="list-style-type: none">This product has been manufactured as a general-purpose part for general industries, and has not been designed or manufactured to be incorporated in a device or system used in purposes related to human life.Before using the product for special purposes such as nuclear power, electric power, aerospace, medicine or passenger movement vehicles, consult with Mitsubishi Electric.This product has been manufactured under strict quality control. However when installing the product where major accidents or losses could occur if the product fails, install appropriate backup or failsafe functions in the system.