MITSUBISHI ELECTRIC

Side A JAPANESE
Side B ENGLISH
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Programmable Controller
MELSEC iQ-F

MELSEC iQ-F FX5-232ADP

Hardware Manual

FX5

Manual Number	JY997D53701
Revision	F
Date	April 2018

This manual describes the part names, dimensions, installation, 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:
MODBUS® is a registered trademark of Schneider Electric SA.
The company name and the product name to be described in this manual are the registered trademarks or trademarks of each company.

Effective April 2018
Specifications are subject to change without notice.
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Safety Precautions (Read these precautions before use.)

This manual classifies the safety precautions into two categories:

⚠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.

Depending on the circumstances, procedures indicated by ⚠CAUTION may also cause severe injury.
It is important to follow all precautions for personal safety.

Associated Manuals

Manual name	Manual No.	Description
MELSEC iQ-F FX5U User's Manual (Hardware)	JY997D55301	Explains FX5U CPU module specification details for I/O, wiring, installation, and maintenance.
MELSEC iQ-F FX5UC User's Manual (Hardware)	JY997D61401	Explains FX5UC CPU module specification details for I/O, wiring, installation, and maintenance.
MELSEC iQ-F FX5 User's Manual (Serial Communication)	JY997D55901	Explains N:N network, parallel link, MELSEC Communication protocol, inverter communication, non-protocol communication, and predefined protocol support.
MELSEC iQ-F FX5 User's Manual (MODBUS Communication)	JY997D56101	Explains the MODBUS serial communication network.

For wiring with communication equipment, system configuration, communication settings, and program examples, refer to the following manuals.
→ **MELSEC iQ-F FX5 User's Manual (Serial Communication)**
→ **MELSEC iQ-F FX5 User's Manual (MODBUS Communication)**

How to obtain manuals
For the necessary product manuals or documents, consult with your local Mitsubishi Electric representative.

Applicable standards

FX5-232ADP comply with the EC Directive (EMC Directive) and UL standards (UL, cUL). Further information can be found in the following manual.
→ **MELSEC iQ-F FX5U User's Manual (Hardware)**
→ **MELSEC iQ-F FX5UC User's Manual (Hardware)**
Regarding the standards that relate to the CPU module, please refer to either the product catalog or consult with your nearest Mitsubishi product provider.
Attention
This product is designed for use in industrial applications.

1. Outline

The FX5-232ADP communication adapter is an expansion adapter for RS-232C communication with a 9-pin D-Sub connector.
FX5-232ADP is an insulated signal exchange module of the RS-232C serial data communication between the PLC and RS-232C device.

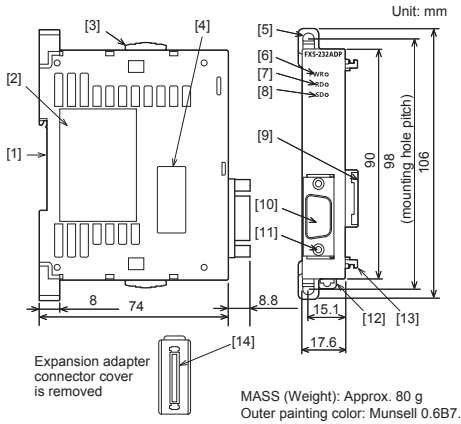
1.1 Incorporated Items

Product	FX5-232ADP communication adapter
Included Items	Hardware manual (This manual)

1.2 Communication Function

MELSOFT connection, MELSEC Communication protocol (3C/4C frames), Non-protocol communication, MODBUS RTU, Predefined protocol support

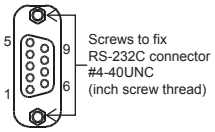
1.3 External Dimensions and Part Names



MASS (Weight): Approx. 80 g
Outer painting color: Munsell 0.6B7.6/0.2

[1] DIN rail mounting groove (DIN rail: DIN46277, 35 mm wide)
[2] Name plate
[3] Expansion adapter slide lock
[4] Expansion adapter connector cover
[5] Direct mounting hole: 2 holes of ϕ4.5 (mounting screw: M4 screw)
[6] PWR LED (green)
[7] RD LED (green): Lighting while receiving data
[8] SD LED (green): Lighting while sending data
[9] Expansion adapter connector
[10] RS-232C connector (9-pin D-sub, male)
[11] Screws to fix a connector
[12] DIN rail mounting hook
[13] Expansion adapter fixing hook
[14] Expansion adapter connector

1.4 Pin Configuration



Pin No.	Signal	Name
1	CD (DCD)	Receive carrier detection
2	RD (RXD)	Receive data
3	SD (TXD)	Send data
4	ER (DTR)	Send request
5	SG (GND)	Signal ground
6	DR (DSR)	Send enable
	7, 8, 9	Not used

2. Installation

INSTALLATION PRECAUTIONS ⚠WARNING

- 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.
- Use the product within the generic environment specifications described in the User's Manual (Hardware) of the CPU module used.
  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.

INSTALLATION PRECAUTIONS ⚠CAUTION

- Do not touch the conductive parts of the product directly.
  Doing so may cause device failures or malfunctions.
- When drilling screw holes or wiring, make sure that cutting and wiring debris do not enter the ventilation slits of the PLC.
  Failure to do so may cause fire, equipment failures or malfunctions.
- Install the product on a flat surface.
  If the mounting surface is rough, undue force will be applied to the PC board, thereby causing nonconformities.
- Install the product securely using a DIN rail or mounting screws.
- Connect the expansion board and expansion adapter securely to their designated connectors.
  Loose connections may cause malfunctions.

For the installation, refer to the following manual.
→ **MELSEC iQ-F FX5U User's Manual (Hardware)**
→ **MELSEC iQ-F FX5UC User's Manual (Hardware)**

3. Specification

STARTUP AND MAINTENANCE PRECAUTIONS ⚠CAUTION

- Do not disassemble or modify the PLC.
  Doing so may cause fire, equipment failures, or malfunctions.
  For repair, contact your local Mitsubishi Electric representative.
- Do not drop the product or exert strong impact to it.
  Doing so may cause damage.

DISPOSAL PRECAUTIONS ⚠CAUTION

- Please contact a certified electronic waste disposal company for the environmentally safe recycling and disposal of your device.

TRANSPORTATION PRECAUTIONS ⚠CAUTION

- The product is a precision instrument. During transportation, avoid impacts larger than those specified in the general specifications by using dedicated packaging boxes and shock-absorbing palettes.
  Failure to do so may cause failures in the product. After transportation, verify operation of the product and check for damage of the mounting part, etc.

3.1 Applicable CPU module

Model name	Applicability
FX5U CPU module	From first production
FX5UC CPU module	

For details on the system configuration, refer to the following manuals.
→ **MELSEC iQ-F FX5 User's Manual (Serial Communication)**
→ **MELSEC iQ-F FX5 User's Manual (MODBUS Communication)**

3.2 General Specifications

The items other than the following are equivalent to those of the CPU module. For general specifications, refer to the following manual.
→ **MELSEC iQ-F FX5U User's Manual (Hardware)**
→ **MELSEC iQ-F FX5UC User's Manual (Hardware)**

Item	Specification	
Dielectric withstand voltage	500 V AC for one minute	Between 9-pin D-Sub connector and ground terminal of CPU module
Insulation resistance	10 MΩ or higher by 500 V DC insulation resistance tester	

3.3 Power Supply Specification

Item	Specification
Rated voltage*1	5 V DC 24 V DC
Current consumption*1	30 mA / 5 V DC 30 mA / 24 V DC

*1 Power is supplied internally from the CPU module.

3.4 Performance Specification

Item	Specification
Transmission standard	Conforming to RS-232C
Maximum transmission distance	15 m
Connection method	9-pin D-sub, male
Insulation	Photo-coupler isolation (Between communication line and CPU module)
Communication method*1	Half-duplex/Full-duplex
Baud rate*1	300/600/1200/2400/4800/9600/19200/38400 57600/115200 (bps)

*1 The communication method and baud rate vary depending on the types of the communication.

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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.

⚠ For safe use

- 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.

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