



Programmable Controller
MELSEC iQ-F

Side A JAPANESE
Side B ENGLISH
Side C CHINESE

MELSEC iQ-F FX5-232-BD

Hardware Manual



Manual Number	JY997D53901
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:

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Effective April 2018
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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 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

FX5-232-BD comply with the EC Directive (EMC Directive). Further information can be found in the following manual.

→ MELSEC iQ-F FX5U 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

FX5-232-BD is an expansion board equipped with a 9-pin D-Sub for RS-232C communication. The FX5-232-BD exchanges data with RS-232C devices.

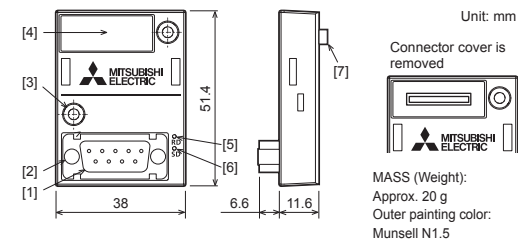
1.1 Incorporated Items

Product	FX5-232-BD communication board
Included items	M3×8 tapping screws for installation: 2 pcs. Hardware Manual (This manual)

1.2 Communication Function

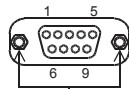
MELSOFT connection, MELSEC Communication protocol (3C/4C frames), Non-protocol communication, MODBUS RTU, Predefined protocol support

1.3 External Dimensions and Part Names



- [1] RS-232C connector (9-pin D-sub, male)
- [2] Screws to fix a connector
- [3] Mounting holes (2-φ3.2)
- [4] Connector cover
- [5] RD LED (green) Lighting while receiving data
- [6] SD LED (green) Lighting while sending data
- [7] CPU module connector

1.4 Pin Configuration



Screws to fix RS-232C connector #4-40UNC (inch screw thread)

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 enabled
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.
- Connect the expansion board and expansion adapter securely to their designated connectors. Loose connections may cause malfunctions.
- Make sure to affix the expansion board with tapping screws. Tightening torque should follow the specifications in the manual. If the screws are tightened outside of the specified torque range, poor connections may cause malfunctions.
- Work carefully when using a screwdriver such as installation of the product. Failure to do so may cause damage to the product or accidents.

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

3. Specifications

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 pallets. 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

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 general specifications are equivalent to the CPU module. For general specifications, refer to the following manual. However, since the product is not isolated between communication lines and the CPU module, please do not perform any dielectric withstand voltage tests or insulation resistance tests to this product.

→ MELSEC iQ-F FX5U User's Manual (Hardware)

3.3 Power Supply Specification

Item	Specification
Rated voltage ^{*1}	5 V DC
Current consumption ^{*1}	20 mA

*1 Power is supplied internally from the CPU module.

3.4 Performance specifications

Item	Specification
Transmission standard	Conforming to RS-232C
Maximum transmission distance	15 m
Connection method	9-pin D-sub, male
Insulation	Not insulated (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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Exclusion of loss in opportunity and secondary loss from warranty liability
Regardless of the gratis warranty term, 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.

(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.