

MITSUBISHI ELECTRIC
 PROGRAMMABLE CONTROLLERS
 MELSEC-F

FX3G-485-BD-RJ

INSTALLATION MANUAL

Manual Number	JY997D51501
Revision	A
Date	September 2013

This manual describes the part names, dimensions, mounting, and specifications of the product. Before use, read this manual and the manuals of all relevant products fully to acquire proficiency in handling and operating the product. Make sure to learn all the product information, safety information, and precautions. Store this manual in a safe place so that it can be taken out and read whenever necessary. Always forward it to the end user. Registration: The company and product names described in this manual are registered trademarks or the trademarks of their respective companies. Effective Sep. 2013. Specifications are subject to change without notice. © 2013 Mitsubishi Electric Corporation

Safety Precaution (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 medium or slight personal injury or physical 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
FX3S Series User's Manual - Hardware Edition	JY997D48601 MODEL CODE: 09R535	Explains the FX3S Series PLC specifications for I/O, wiring, installation, and maintenance.
FX3G Series User's Manual - Hardware Edition	JY997D31301 MODEL CODE: 09R521	Explains the FX3G Series PLC specifications for I/O, wiring, installation, and maintenance.
FX3S/FX3G/FX3GC/FX3U/FX3UC Series Programming Manual - Basic & Applied Instruction Edition	JY997D16601 MODEL CODE: 09R517	Describes PLC programming for basic/applied instructions and devices.
FX Series User's Manual - Data Communication Edition	JY997D16901 MODEL CODE: 09R715	Explains N:N network, Parallel Link, Computer Link, Non-Protocol communication by RS and RS2 instructions/FX2N-232F.

This manual describes the specifications and installation details for the FX3G-485-BD-RJ. For wiring with communication equipment, system configuration, communication settings, and program examples, refer to the "FX Series User's Manual - Data Communication Edition".

How to obtain manuals

For product manuals or documents, consult with the Mitsubishi Electric dealer from who you purchased your product.

Applicable standards

FX3G-485-BD-RJ units made in September, 2013 or later comply with the EC Directive (EMC Directive). Further information can be found in the following manual. → FX3S Series User's Manual - Hardware Edition → FX3G Series User's Manual - Hardware Edition

Regarding the standards that relate to the main unit, please refer to either the FX series product catalog or consult with your nearest Mitsubishi product provider.

Attention

- This product is designed for use in industrial applications.

Note

- Manufactured by: Mitsubishi Electric Corporation
2-7-3 Marunouchi, Chiyoda-ku, Tokyo, 100-8310 Japan
- Manufactured at: Mitsubishi Electric Corporation Himeji Works
840 Chiyoda-machi, Himeji, Hyogo, 670-8677 Japan
- Authorized Representative in the European Community:
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Gothaer Str. 8, 40880 Ratingen, Germany

1. Outline

FX3G-485-BD-RJ is an expansion board equipped with an RJ45 connector for RS-485 communication. The FX3G-485-BD-RJ exchanges data with RS-485 devices. For wiring, specifications, settings, and program examples, refer to the following manual. → FX Series User's Manual - Data Communication Edition

1.1 Incorporated Items

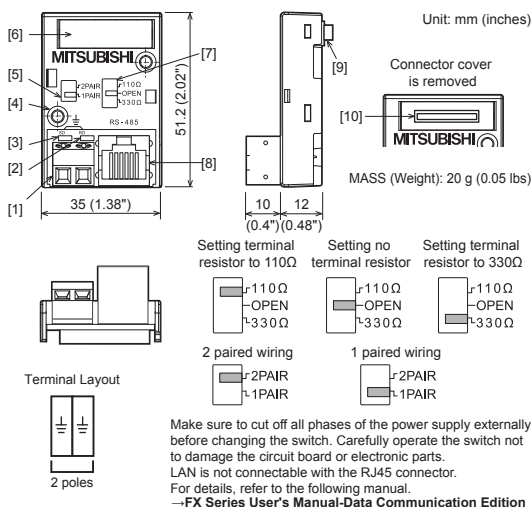
Product	RS-485 communication expansion board FX3G-485-BD-RJ
Included items	<ul style="list-style-type: none"> M3×8 tapping screws for installation: 2 pcs. Station number labels for linking Side cover Installation Manual (This manual)

1.2 Communication Function

Communication type	Function
N:N network	Data transfer connecting up to eight FX Series PLCs.
Parallel link	Data transfer between two PLCs relationship specifying master/slave station.
Computer link	Data transfer between PLC and computer (specified as the master station) via dedicated protocol.
Non-protocol communication	Serial communication between PLC and RS-485 device via non-protocol.
Inverter communication*1	Controlling Mitsubishi's FREQROL inverter using Inverter communication instructions.

*1 The FX3G Series PLC Ver. 1.10 or later in applicable.

1.3 External Dimensions and Part Names



- [1] Terminal block to connect ground (European terminal block)
- [2] RD LED: Lighting while receiving data (Red)
- [3] SD LED: Lighting while sending data (Red)
- [4] Mounting holes (2-φ3.2)
- [5] Wiring circuit changing switch (1 pair/2 pair)
- [6] Connector cover
- [7] Terminal resistor changing-over switch (110Ω/OPEN/330Ω)
- [8] RJ45 connector (RS-485)
- [9] Main unit connector
- [10] Memory cassette/Display module connector

Pin Configuration

The pin configuration of RJ45 connector is as follows:

Pin No.	Signal	Contents
1	SG	Signal ground
2	Not used	-
3	SDA	Sending data (FX3G-485-BD-RJ to RS-485 devices)
4	RDB	Receiving data (RS-485 devices to FX3G-485-BD-RJ)
5	RDA	Receiving data (RS-485 devices to FX3G-485-BD-RJ)
6	SDB	Sending data (FX3G-485-BD-RJ to RS-485 devices)
7	Not used	-
8	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.

INSTALLATION PRECAUTIONS **CAUTION**

- 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.
- Make sure to affix the expansion board with tapping screws. Tightening torque should follow the specifications in the manual. Loose connections may cause malfunctions.
- Use screwdrivers carefully when performing installation work, thus avoiding accident or product damage.
- When drilling screw holes or wiring, make sure cutting or wire debris does 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 expansion board securely to their designated connectors. Loose connections may cause malfunctions.

For the installation, refer to the following manual. → FX3S Series User's Manual - Hardware Edition → FX3G Series User's Manual - Hardware Edition

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 AND STORAGE PRECAUTIONS **CAUTION**

- The product is a precision instrument. During transportation, avoid any impacts. Failure to do so may cause failures in the product. After transportation, verify the operations of the product.

3.1 Applicable PLC

Model name	Applicability
FX3S Series PLC	Ver. 1.00 or later (from first production)
FX3G Series PLC	Ver. 1.00 or later (from first production)

- The number of connectable expansion boards varies depending on the main unit as follows:
FX3S, FX3G-14M□, FX3G-24M□ Main units: 1 unit
FX3G-40M□, FX3G-60M□ Main units: 2 units
Never stack up two or more expansion boards.

For details on the system configuration, refer to the following manual. → FX Series User's Manual - Data Communication Edition

3.2 General Specifications

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

→ FX3S Series User's Manual - Hardware Edition
→ FX3G Series User's Manual - Hardware Edition

3.3 Communication specifications

Item	Specification
Transmission standard	In conformance to RS-485/RS-422
Maximum transmission distance	50 m (164 ft) maximum
Connection method	RJ45 connector
Indication (LED)	RD, SD
Communication method	Half-duplex
Communication format	Non-Protocol Communication, Computer Link (dedicated protocol format 1 and 4), Parallel Link, N:N network, and Inverter communication*1
Baud rate	Non-Protocol Communication, Computer Link : 300/600/1200/2400/4800/9600/19200/38400 bps Parallel Link : 115200 bps N:N network : 38400 bps Inverter communication*1 : 4800/9600/19200/38400 bps
Insulation	Not insulated (Between communication line and CPU)

*1 The FX3G Series PLC Ver. 1.10 or later in applicable.

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

Mitsubishi will not be held liable for damage caused by factors found not to be the cause of Mitsubishi; opportunity loss or lost profits caused by faults in the Mitsubishi products; damage, secondary damage, accident compensation caused by special factors unpredictable by Mitsubishi; damages to products other than Mitsubishi products; and to other duties.

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.