



FX3U-232-BD

INSTALLATION MANUAL



Manual Number	JY997D12901
Revision	B
Date	June 2005

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 June 2005 Specifications are subject to change without notice. © 2005 Mitsubishi Electric Corporation

Safety Precaution (Read these precautions before use.)

This manual classify the safety precautions into two categories:

⚠DANGER and ⚠CAUTION.

⚠DANGER	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 circumstances, procedures indicated by ⚠CAUTION may also be linked to serious results. In any case, it is important to follow the directions for usage.

Associated Manuals

Manual name	Manual No.	Description
FX3U Series User's Manual - Hardware Edition	JY997D16501 MODEL CODE: 09R516	Explains FX3U Series PLC specification details for I/O, wiring, installation, and maintenance.
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 link, parallel link, computer link, no protocol communication by RS instructions/FX2N-232IF.

Note: FX3UC Series PLC specification details for I/O, wiring, installation, and maintenance can only be found in the Japanese Manual.

This manual describes installation and specification details for the FX3U-232-BD. For the wiring (including use of terminal resistor and preparation of cable) with communication equipment, the system configuration, the communication setting, and program examples, refer to the "FX Series User's Manual - Data Communication Edition".

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-232-BD made in June, 2005 or later complies with EC directive (EMC Directive). Further information can be found in the following manual. However, FX3UC-32 MTLT does not comply with EC directive (EMC Directive). → Refer to FX3U Series Hardware Manual (Manual No. JY997D18801)

1. Outline

FX3U-232-BD is an expansion board equipped with a 9-pin D-Sub for RS-232C communication. FX3U-232-BD exchanges data RS-232C devices. For wiring, specifications, settings, and program examples, refer to the following manual. → Refer to FX Series User's Manual - Data Communication Edition

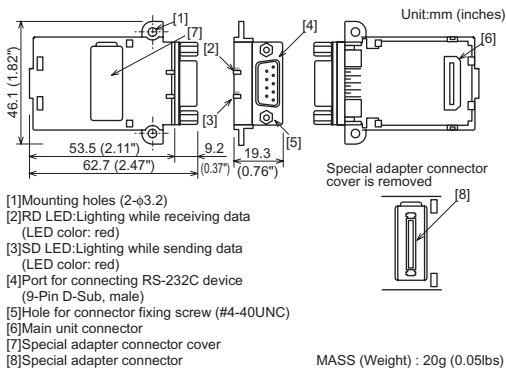
1.1 Incorporated Items

Product	RS-232C communication expansion board FX3U-232-BD
Included items	M3 tapping screws for installation: 2 pcs. Installation Manual (This manual)

1.2 Communication Function

Communication type	Function
Computer link	Data transfer via dedicated protocol between PLC and computer (specified as the master station).
Non-protocol communication	Serial communication via non-protocol between PLC and RS-232C device.
Programing communication	Programming communication via port of 232BD installed in PLC.
Remote maintenance	Program transfer or monitoring enabled via modem and phone line connected to serial port of PLC.

1.3 External Dimensions and Part Names



The communication port of the 232BD is 9-Pin D-Sub male type. The table below shows the pin arrangement.

Pin No.	Signal	Name	Function
1	CD	Receive carrier detection	Turns ON when carrier for data receive is detected.
2	RD (RXD)	Receive data input	Receive data (RS-232C equipment → 232BD)
3	SD (TXD)	Send data input	Send data (232BD → RS-232C equipment)
4	ER (DTR)	Send request	Turns ON when RS-232C equipment becomes ready for receive.
5	SG (GND)	Signal ground	Signal ground
6	DR (DSR)	Send enabled	Turns ON when send request is given to RS-232C equipment
7,8,9		Not used	

2. Installation

INSTALLATION PRECAUTIONS ⚠DANGER

- Cut off all phases of the power source externally before starting the installation or wiring work, thus avoiding electric shock or damages to the product.

INSTALLATION PRECAUTIONS ⚠CAUTION

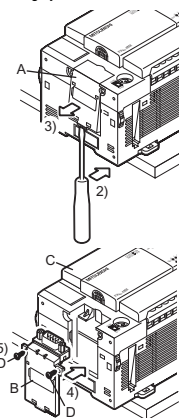
- Use the product in the environment within the general specifications described in PLC main unit manual (Hardware Edition). Never use the product in areas with dust, oily smoke, conductive dusts, corrosive gas (salt air, Cl₂, H₂S, NH₃, SO₂, or NO_x), flammable gas, vibrations or impacts, or expose it to high temperature, condensation, or wind and rain. If the product is used in such a place described above, electrical shock, fire, malfunction, damage, or deterioration may be caused.
- Use screwdrivers carefully when performing installation work, thus avoiding accident or product damage.
- When drilling screw holes or wiring, cutting chips or wire chips should not enter ventilation slits. Such an accident may cause fire, failure or malfunction.
- Do not touch the conductive parts of the product directly, thus avoiding failure or malfunction.
- Fix the expansion board securely to the specified connector. Incorrect connection may cause malfunction.

The following explains the installation method to FX3U/FX3UC Series PLC (FX3U Series PLC is used for the following example). For removing and installing details, refer to the PLC main unit manual. However, FX3UC Series PLC manual is only available in Japanese. → Refer to FX3U Series User's Manual - Hardware Edition

2.1 Installation Method

- Refer to the procedure 2) for configuring a new system.
- Refer to the procedure 1) for adding product to an existing system.

- Power off the PLC. Disconnect all the cables connected to the PLC. Dismount the PLC from the DIN rail.
- Using a flat blade screwdriver as shown in the right figure, lift the little dummy expansion board cover (right fig. A). Do not damage the circuit board or electronic parts.
- Remove the dummy expansion board cover (right fig. A) in a parallel motion away from the main unit.
- Make sure the expansion board (right fig. B) is in parallel with the main unit (right fig. C) and fix it to the expansion board connector.
- Fix the expansion board (right fig. B) to the main unit using the M3 tapping screws of the provided (right fig. D). Tighten to a torque: 0.3 to 0.6 N·m



3. Specification

STARTUP AND MAINTENANCE PRECAUTIONS ⚠CAUTION

- Do not disassemble or modify the unit. Doing so may cause failure, malfunction or fire. * For repair, contact your local Mitsubishi Electric distributor.
- Do not drop the product or do not exert strong impact, doing so may cause damage.

DISPOSAL PRECAUTIONS ⚠CAUTION

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

TRANSPORT AND STORAGE PRECAUTIONS ⚠CAUTION

- During transportation avoid any impact as the product is a precision instrument. Check the operation of the product after transportation.

3.1 Applicable PLC

Model name	Applicability
FX3U Series PLC	Ver.2.00 or later (from the first product)
FX3UC Series PLC	Ver.1.00 or later

Only one function expansion board can be used for one main unit. Two or more FX3U-232-BD cannot be used, or other expansion boards such as FX3U-422-BD or FX3U-485-BD cannot be installed/used together with FX3U-232-BD. For details of the system configuration, refer to the following manual. → Refer to FX Series User's Manual - Data Communication Edition

3.2 General Specifications

General specifications are equivalent to the PLC main unit. For general specifications, refer to the following manual. However, since the product is not isolated between communication lines and the CPU of main unit, please don't perform any dielectric withstand voltage test and insulation resistance test to this product. → Refer to FX3U Series User's Manual - Hardware Edition

3.3 Power supply specifications

5V DC, 20 mA is supplied from the internal power supply in main unit.

3.4 Communication specifications

Item	Specification
Transmission standard	In conformance to RS-232C
Maximum transmission distance	15 m (49ft) maximum
Connection method	9-pin D-Sub type (male)
Indication (LED)	RD, SD
Communication method	Full-duplex
Communication format	Non-protocol communication, computer link (dedicated protocol format 1 and 4), and programming communication
Baud rate	Following baud rate can be specified when using computer link or non-protocol communication: 300/600/1200/2400/4800/9600/19200 bps
Insulation	Not insulated (Between communication line and CPU)

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; machine damage 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.