JY997D32001H Side B

MITSUBISHI ELECTRIC

Side A JAPANESE

Side B ENGLISH

Programmable Controller
MELSEC-F

FX3G-232-BD

INSTALLATION MANUAL

Manual Number	JY997D32001
Revision	H
Date	June 2017

FX3G

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 June 2017
Specifications are subject to change without notice.

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 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-232IF.

This manual describes the specifications and installation details for the FX3G-232-BD.
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-232-BD units made in November, 2008 or later comply with the EC Directive (EMC Directive). Further information can be found in the following manual.
→ **FX3S Series Hardware Manual (Manual No. JY997D48301)**
→ **FX3G Series Hardware Manual (Manual No. JY997D46001)**

Attention
This product is designed for use in industrial applications.

1. Outline

FX3G-232-BD is an expansion board equipped with a 9-pin D-Sub for RS-232C communication. The FX3G-232-BD exchanges data with RS-232C devices. For wiring, specifications, settings, and program examples, refer to the following manual.
→ **FX Series User's Manual - Data Communication Edition**

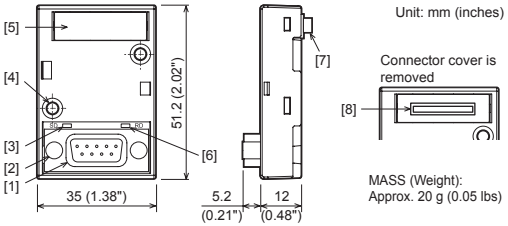
1.1 Incorporated Items

Product	RS-232C communication expansion board FX3G-232-BD
Included items	• M3×8 tapping screws for installation: 2 pcs. • Side cover • Installation Manual (This manual)

1.2 Communication Function

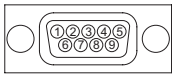
Communication type	Function
Computer link	Data transfer between PLC and computer (specified as the master station) via dedicated protocol.
Non-protocol communication	Serial communication between PLC and RS-232C device via non-protocol.
Programming communication	Programming transfer or monitoring enabled via port of the FX3G-232-BD.
Remote maintenance	Program transfer or monitoring enabled via modem and phone line connected to port of the FX3G-232-BD.

1.3 External Dimensions and Part Names



[1]Port for connecting RS-232C device (9-Pin D-Sub, male)
[2]Hole for connector fixing screw (#4-40UNC)
[3]SD LED: Lighting while sending data
[4]Mounting holes (2-φ3.2)
[5]Connector cover
[6]RD LED: Lighting while receiving data
[7]Main unit connector
[8]Memory cassette/Display module connector

The communication port of the FX3G-232-BD is a 9-Pin D-Sub male type. The table below shows the pin arrangement.



PinNo.	Signal	Name	Function
1	CD(DCD)	Receive carrier detection	Turns ON when carrier for data transfer is detected.
2	RD(RXD)	Receive data input	Receives data (RS-232C equipment → FX3G-232-BD)
3	SD(TXD)	Send data input	Sends data (FX3G-232-BD → RS-232C equipment)
4	ER(DTR)	Send request	Turns ON when RS-232C equipment becomes ready for data transfer.
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 ⚠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, Cl_2, H_2S, SO_2 or NO_2), 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.
- 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 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 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-232C
Maximum transmission distance	15 m (49 ft) 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), Programming Communication, and Remote maintenance
Baud rate	Non-Protocol Communication, Computer Link : 300/600/1200/2400/4800/9600/19200/38400 bps Programming Communication : 9600/19200/38400/57600/115200 bps Remote maintenance : 9600 bps
Insulation	Not insulated (Between communication line and CPU)

「电器电子产品有害物质限制使用标识要求」的表示方式

Note: This symbol mark is for China only.

含有有害6物质的名称，含有量，含有部品
本产品中所含有的有害6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量

部件名称		有害物质					
		铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr (VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
可编程控制器	外壳	○	○	○	○	○	○
	印刷基板	×	○	○	○	○	○

本表格依据SJ/T 11364的规定编制。

○:表示该有害物质在该部件所有均质材料中的含量均在GB/T 26572规定的限量要求以下。
×:表示该有害物质至少在该部件的某一均质材料中的含量超出GB/T 26572规定的限量要求。

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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