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PROGRAMMABLE CONTROLLERS
MELSEC-F

FX2NC-232ADP

INSTALLATION MANUAL

FX2NC

Manual Number	JY997D01101
Revision	C
Date	8/2006

This manual contains text, diagrams and explanations which will guide the reader in the correct installation, safe use and operation of the FX2NC-232ADP (hereafter abbreviated to "232ADP") and should be read and understood before attempting to install or use the unit. Further information can be found in the associated manuals mentioned below.
Specifications are subject to change without notice.

Effective August 2006
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Safety guidelines for the user and protection of the FX2NC-232ADP

This manual has been written to be used by trained and competent personnel. The definition of such a person or persons is as follows:

a) Any engineer using the product associated with this manual, should be of a competent nature, trained and qualified to the local and national standards. These engineers should be fully aware of all aspects of safety with regards to automated equipment.

b) Any commissioning or service engineer must be of a competent nature, trained and qualified to the local and national standards.

c) All operators of the completed equipment should be trained to use this product in a safe and coordinated manner in compliance to established safety practices.

Note: The term "completed equipment" refers to a third party constructed device which contains or uses the product associated with this manual.

Notes on the Symbols Used in this Manual
At various times throughout this manual certain symbols will be used to highlight points of information which are intended to ensure the users personal safety and protect the integrity of equipment.

1) Indicates that the identified danger **WILL** cause physical and property damage.

2) Indicates that the identified danger could **POSSIBLY** cause physical and property damage.

- Under no circumstances will Mitsubishi Electric be liable or responsible for any consequential damage that may arise as a result of the installation or use of this equipment.
- All examples and diagrams shown in this manual are intended only as an aid to understanding the text, not to guarantee operation. Mitsubishi Electric will accept no responsibility for the actual use of the product based on these illustrative examples.
- Please contact a Mitsubishi distributor for more information concerning applications in life critical situations or high reliability.

Associated Manuals
PROGRAMMING MANUAL, PROGRAMMING MANUAL II, or FX series User's Manual - Data Communication Edition mentioned below are not provided in sets with a product. Contact our agent where the product was purchased to request the manuals accordingly.
★ Indispensable manual   ☆ Either manual is necessary.

	Manual name	Manual Number	Description
This manual	FX2NC-232ADP INSTALLATION MANUAL	JY997D01101	Describes contents related to installation of the FX2NC-232ADP Module.
★	FX series User's Manual - Data Communication Edition	JY997D16901	Describes the various communications supported by FX PLCs.
☆	FX1S HARDWARE MANUAL	JY992D83901	
☆	FX0/FX0N HARDWARE MANUAL	JY992D47501	Describes contents related to hardware of FX Series PLC such as specifications, wiring, and installation.
☆	FX1N HARDWARE MANUAL	JY992D89301	
☆	FX2N HARDWARE MANUAL	JY992D66301	
☆	FX2NC HARDWARE MANUAL (DSS/DS)(D/UL)	JY992D76401 JY992D87201	
☆	PROGRAMMING MANUAL	JY992D76401	Describes contents related to instruction in FX0/FX0S/FX0N/ FX1/FX2/FX2C Series PLC.
☆	PROGRAMMING MANUAL II	JY992D88101	Describes contents related to instruction in FX1S/FX1N/FX2N/ FX2NC Series PLC.
☆	FX1N-CNV-BD Special Adapter Connection Board	JY992D84701	Describes contents related to installation of the each board.
☆	FX2N-CNV-BD Special Adapter Connection Board	JY992D63601	

This manual describes the installation and specifications of the 232ADP.
For details on wiring with communication equipment, system configuration and communication setting, and program examples, refer to the "FX series User's Manual - Data Communication Edition".

1. Outline of Product
The 232ADP is an insulated RS-232C communication adapter with a 9-Pin D-Sub. It is an insulated unit for signal exchange. Connected to the main unit of the FX Series PLC, it enables serial data transfer between the PLC and equipment via an RS-232C port.

2. Communication Functions and Applicable PLC (Available in indicated version or later)

Communication type	FX0N	FX1N FX1S	FX2N	FX2NC	Function
Computer link	V1.20	First product	V1.06	First product	Data transfer via link protocol between PLC and computer (specified as the master station).
No protocol communication	V1.20	First product	V1.06	First product	Serial communication without protocol between PLC and equipment via RS-232C interface.
Optional programming port	—	First product	First product	First product	Optional port available for suitable programming tool when 232ADP is connected to PLC.
Remote maintenance	—	First product	First product	First product	Program transfer or monitoring enabled via modem and phone line connected to serial port of PLC.

3. Installation

Caution
- Use in the environments specified under the general specification in the manual.
  Do not use the product in environments with excessive or conductive dust, corrosive or flammable gas, oily smoke, moisture or rain, excessive heat, regular impact shocks or excessive vibration, as it may result in electrical shock, fire, malfunction, damage or deterioration on the product.
- Make sure to shut off the power outside the product before installing or wiring it.
  Otherwise, electric shock or serious damage to the product may occur.
- Never drop wire chips or shavings into the vent slits when drilling screw holes or performing wiring, as they may cause fire, breakdown, or malfunction.
- Securely install the 232ADP to the designated port.
  Poor connection may cause malfunction.

3.1 How to Install to FX Series PLC

Installation to FX1S/FX1N/FX2N
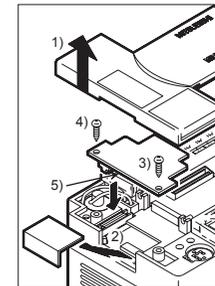Turn OFF the PLC before beginning any work.
1) Remove the panel cover from the top face of the main unit.
2) Take off the resin cover from the left side of the main unit.
3) Install the following board to the port on the main unit.

Board name	Corresponding model
FX1N-CNV-BD	FX1N, FX1S
FX2N-CNV-BD	FX2N

4) Fix the above board using the M3 screws supplied.
   Tightening torque: 0.3 to 0.6 N·m
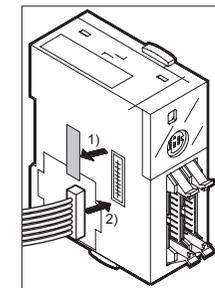5) Connect the in-built cable of the 232ADP to the port on the board from the left side.

(FX2N in the diagram)

Installation to FX0N/FX2NC
Turn OFF the PLC before beginning any work.
1) Remove the cover of the port for a special adapter provided on the left side of the main unit.
2) Connect the in-built cable of the 232ADP to the port for a special adapter.
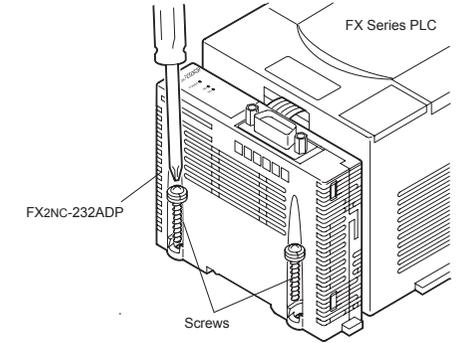

(FX2NC in the diagram)

3.2 How to Install to Panel Face
Direct installation to the panel face
Directly fix to the panel face using 2 sets of a screw (M4), a spring washer, and a flat washer in the mounting holes.
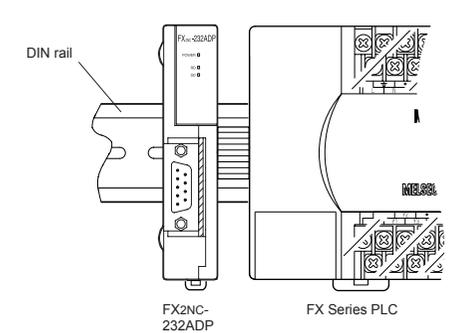Tightening torque: 0.7 to 1.0 N·m
For the pitch and positions of mounting screw holes, refer to the external dimensions.
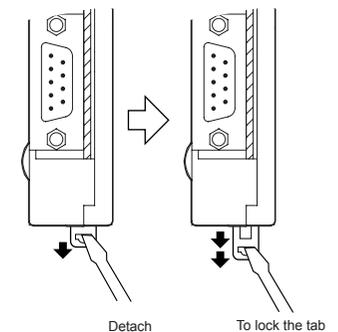

Mounting on DIN rail
Fix the 232ADP to the DIN rail, DIN46277 (35 mm (1.37") wide).

Dismounting from DIN rail
Slightly pull down the DIN rail mounting clip using a tool such as a slotted screwdriver.
Pull down the clip further, and the rail will be locked with the clip left open.
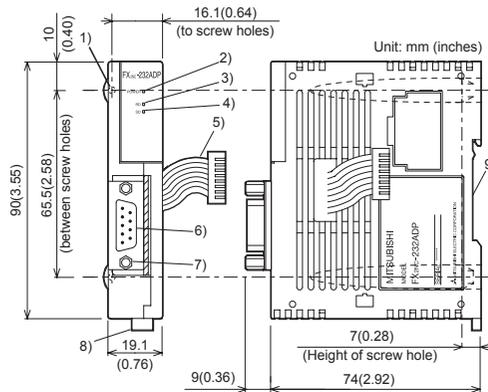

Detach   To lock the tab

4. Product Specification

4.1 Specification

All other specifications than the followings are equivalent to those of the FX Series PLC main unit.

	Item	Specification
General specification	Withstand voltage	500V AC, 1 min (between 9-pin D-Sub type port and FX Series PLC main unit)
	Insulation resistance	5 MΩ or more, 500V DC by Megger (between 9-pin D-Sub type port and FX Series PLC main unit)
Power supply specification	Power supply voltage, current	5V DC (supplied from PLC main unit), max. 100 mA
Performance specification	Transmission standard	Conforming to RS-232C
	Type of isolation	Photo-coupler isolation
	Transmission distance	15 m or less
	Connection method	9-pin D-Sub type (male)
	Number of occupied I/O points	0 point (unrelated to maximum number of controlled points of the PLC)
	Communication method — FX1S/FX0N/FX1N	Half-duplex
	Communication method — FX2N	Full-duplex (Ver. 2.00 or later)/ Half-duplex (Earlier than Ver. 2.00)
	Communication method — FX2NC	Full-duplex (Half-duplex also possible)
	Baud rate	Following baud rate can be specified when using computer link or no protocol communication: 300/600/1200/2400/4800/9600/19200 bps
	Communication format	Computer link (dedicated protocol: format 1/ format 4), no protocol, optional programming port
	LED display (LED color)	Power: green, RD: red, SD: red

4.2 Outside Dimensions and Part Names

Unit: mm (inches)
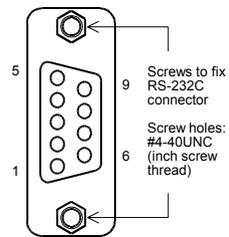
Weight: Approx. 0.1 kg (0.22 lbs)
Color: Munsell 0.08GY 7.64/0.81
DIN rail width: 35 mm (1.37")

1) Mounting hole 2- φ4.2 (0.16)
   Used when mounting the 232ADP directly.
   Not used when mounting the DIN rail.
2) POWER LED
   Lit while 5V DC power is supplied from main unit.
3) RD LED
   Lit while receiving data from connected equipment via RS-232C port.
4) SD LED
   Lit while sending data to connected equipment via RS-232C port.
5) Cable
   Used to connect to the main unit.
6) RS-232C port (9-pin D-Sub, male)
   Used to connect with equipment via RS-232C port
7) Screws to fix a cable connector
   Screw holes: #4-40UNC (inch screw thread)
8) DIN rail mounting clip
9) DIN rail mounting slot

4.3 Pin Configuration

The pin configuration of the RS-232C port on the 232ADP is as shown below.

Screws to fix RS-232C connector

Screw holes: #4-40UNC (inch screw thread)

Pin No.	Signal name	Function	Signal direction	
			232ADP	RS-232C equipment
2	RD (RXD)	Receive data	←	
3	SD (TXD)	Send data	→	
4	ER (DTR)	Send request (Data Terminal Ready)	→	
5	SG (GND)	Signal ground	—	
6	DR (DSR)	Send enable (Data Set Ready)	←	
1,7,8,9	Not used	—	—	

⚠ 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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FX2NC-232ADP

INSTALLATION MANUAL

FX2NC

Manual Number	JY997D01101
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© 2002 Mitsubishi Electric Corporation

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☆	FX0/FX0N HARDWARE MANUAL	JY992D47501	
☆	FX1N HARDWARE MANUAL	JY992D89301	
☆	FX2N HARDWARE MANUAL	JY992D66301	
☆	FX2NC HARDWARE MANUAL (DSS/DS)(D/UL)	JY992D76401 JY992D87201	
☆	PROGRAMMING MANUAL	JY992D76401	Describes contents related to instruction in FX0/FX0S/FX0N/FX1/FX2/FX2c Series PLC.
☆	PROGRAMMING MANUAL II	JY992D88101	Describes contents related to instruction in FX1S/FX1N/FX2N/FX2NC Series PLC.
☆	FX1N-CNV-BD Special Adapter Connection Board	JY992D84701	Describes contents related to installation of the each board.
☆	FX2N-CNV-BD Special Adapter Connection Board	JY992D63601	

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1. Outline of Product

The 232ADP is an insulated RS-232C communication adapter with a 9-Pin D-Sub.
It is an insulated unit for signal exchange. Connected to the main unit of the FX Series PLC, it enables serial data transfer between the PLC and equipment via an RS-232C port.

2. Communication Functions and Applicable PLC (Available in indicated version or later)

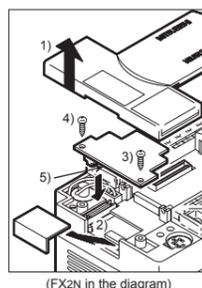| Communication type	FX0N	FX1N FX1S	FX2N	FX2NC	Function
Computer link	V1.20	First product	V1.06	First product	Data transfer via link protocol between PLC and computer (specified as the master station).
No protocol communication	V1.20	First product	V1.06	First product	Serial communication without protocol between PLC and equipment via RS-232C interface.
Optional programming port	—	First product	First product	First product	Optional port available for suitable programming tool when 232ADP is connected to PLC.
Remote maintenance	—	First product	First product	First product	Program transfer or monitoring enabled via modem and phone line connected to serial port of PLC.

3. Installation

Caution

- Use in the environments specified under the general specification in the manual.
  Do not use the product in environments with excessive or conductive dust, corrosive or flammable gas, oily smoke, moisture or rain, excessive heat, regular impact shocks or excessive vibration, as it may result in electrical shock, fire, malfunction, damage or deterioration on the product.
- Make sure to shut off the power outside the product before installing or wiring it.
  Otherwise, electric shock or serious damage to the product may occur.
- Never drop wire chips or shavings into the vent slits when drilling screw holes or performing wiring, as they may cause fire, breakdown, or malfunction.
- Securely install the 232ADP to the designated port.
  Poor connection may cause malfunction.

3.1 How to Install to FX Series PLC

Installation to FX1S/FX1N/FX2N
Turn OFF the PLC before beginning any work.
1) Remove the panel cover from the top face of the main unit.
2) Take off the resin cover from the left side of the main unit.
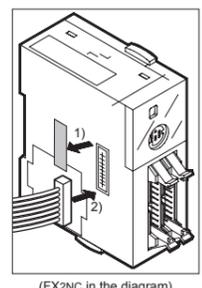3) Install the following board to the port on the main unit.

Board name	Corresponding model
FX1N-CNV-BD	FX1N, FX1S
FX2N-CNV-BD	FX2N

4) Fix the above board using the M3 screws supplied.
   Tightening torque: 0.3 to 0.6 N·m
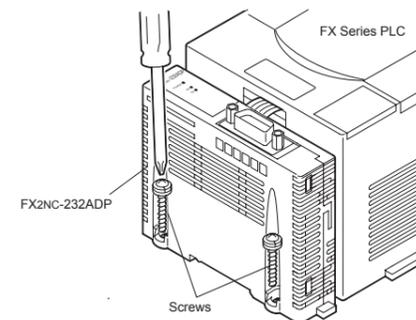5) Connect the in-built cable of the 232ADP to the port on the board from the left side.

(FX2N in the diagram)

Installation to FX0N/FX2NC
Turn OFF the PLC before beginning any work.
1) Remove the cover of the port for a special adapter provided on the left side of the main unit.
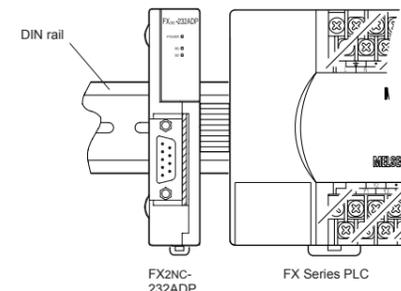2) Connect the in-built cable of the 232ADP to the port for a special adapter.

(FX2NC in the diagram)

3.2 How to Install to Panel Face

Direct installation to the panel face
Directly fix to the panel face using 2 sets of screw (M4), a spring washer, and a flat washer in the mounting holes.
Tightening torque: 0.7 to 1.0 N·m
For the pitch and positions of mounting screw holes, refer to the external dimensions.
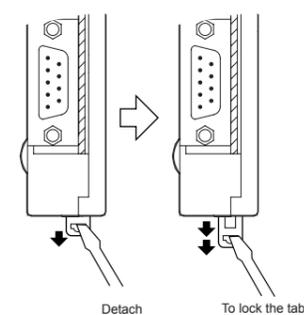

Mounting on DIN rail
Fix the 232ADP to the DIN rail, DIN46277 (35 mm (1.37") wide).

Dismounting from DIN rail
Slightly pull down the DIN rail mounting clip using a tool such as a slotted screwdriver.
Pull down the clip further, and the rail will be locked with the clip left open.
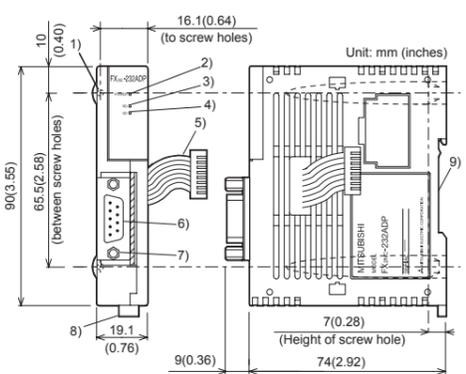

Detach / To lock the tab

4. Product Specification

4.1 Specification
All other specifications than the followings are equivalent to those of the FX Series PLC main unit.

Item		Specification
General specification	Withstand voltage	500V AC, 1 min (between 9-pin D-Sub type port and FX Series PLC main unit)
	Insulation resistance	5 MΩ or more, 500V DC by Megger (between 9-pin D-Sub type port and FX Series PLC main unit)
Power supply specification	Power supply voltage, current	5V DC (supplied from PLC main unit), max. 100 mA
Performance specification	Transmission standard	Conforming to RS-232C
	Type of isolation	Photo-coupler isolation
	Transmission distance	15 m or less
	Connection method	9-pin D-Sub type (male)
	Number of occupied I/O points	0 point (unrelated to maximum number of controlled points of the PLC)
	Communication method FX1S/FX0N/FX1N	Half-duplex
	FX2N	Full-duplex (Ver. 2.00 or later)/ Half-duplex (Earlier than Ver. 2.00)
	FX2NC	Full-duplex (Half-duplex also possible)
	Baud rate	Following baud rate can be specified when using computer link or no protocol communication: 300/600/1200/2400/4800/9600/19200 bps
	Communication format	Computer link (dedicated protocol: format 1/ format 4), no protocol, optional programming port
	LED display (LED color)	Power: green, RD: red, SD: red

4.2 Outside Dimensions and Part Names
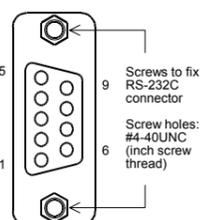

Unit: mm (inches)

Weight: Approx. 0.1 kg (0.22 lbs)
Color: Munsell 0.08GY 7.64/0.81
DIN rail width: 35 mm (1.37")

1) Mounting hole 2- φ4.2 (0.16)
   Used when mounting the 232ADP directly.
   Not used when mounting the DIN rail.
2) POWER LED
   Lit while 5V DC power is supplied from main unit.
3) RD LED
   Lit while receiving data from connected equipment via RS-232C port.
4) SD LED
   Lit while sending data to connected equipment via RS-232C port.
5) Cable
   Used to connect to the main unit.
6) RS-232C port (9-pin D-Sub, male)
   Used to connect with equipment via RS-232C port
7) Screws to fix a cable connector
   Screw holes: #4-40UNC (inch screw thread)
8) DIN rail mounting clip
9) DIN rail mounting slot

4.3 Pin Configuration
The pin configuration of the RS-232C port on the 232ADP is as shown below.

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

Pin No.	Signal name	Function	Signal direction 232ADP	Signal direction RS-232C equipment
2	RD (RXD)	Receive data	←	
3	SD (TXD)	Send data	→	
4	ER (DTR)	Send request (Data Terminal Ready)	→	
5	SG (GND)	Signal ground	—	
6	DR (DSR)	Send enable (Data Set Ready)	←	
1,7,8,9	Not used	—	—	

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