MITSUBISHI ELECTRIC

PROGRAMMABLE CONTROLLERS
MELSEC-F

FX3U-ENET-ADP

INSTALLATION MANUAL

FX3U

Manual Number	JY997D47401
Revision	B
Date	May 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:
Ethernet is a trademark of Xerox Corporation.
The company and product names described in this manual are registered trademarks or the trademarks of their respective companies.

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
FX3U-ENET-ADP User's Manual	JY997D45801 MODEL CODE: 09R725	Describes details of the FX3U-ENET-ADP Ethernet communication special adapter.
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.
FX3S Series User's Manual - Hardware Edition	JY997D48601 MODEL CODE: 09R535	Explains FX3S Series PLC specifications for I/O, wiring, installation, and maintenance.
FX3G Series User's Manual - Hardware Edition	JY997D31301 MODEL CODE: 09R521	Explains FX3G Series PLC specifications for I/O, wiring, installation, and maintenance.
FX3GC Series User's Manual - Hardware Edition	JY997D45401 MODEL CODE: 09R533	Explains FX3GC Series PLC specifications for I/O, wiring, installation, and maintenance.
FX3U Series User's Manual - Hardware Edition	JY997D16501 MODEL CODE: 09R516	Explains FX3U Series PLC specifications for I/O, wiring, installation, and maintenance.
FX3UC Series User's Manual - Hardware Edition	JY997D28701 MODEL CODE: 09R519	Explains FX3UC Series PLC specifications for I/O, wiring, installation, and maintenance.
GX Works2 Version 1 Operating Manual (Common)	SH-080779ENG MODEL CODE: 13JU63	Explains the system configuration of GX Works2, the operation method of parameter setting and the online function, etc.

How to obtain manuals

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

Certification of UL, cUL standards

FX3U-ENET-ADP adapter comply with the UL standards (UL, cUL).
UL, cUL File Number: E95239
Regarding the standards that comply with the main unit, please refer to either the FX series product catalog or consult with your nearest Mitsubishi product provider.

Compliance with EC directive (CE Marking)

This note does not guarantee that an entire mechanical module produced in accordance with the contents of this note will comply with the following standards.
Compliance to EMC directive and LVD directive for the entire mechanical module should be checked by the user / manufacturer. For more information please consult with your nearest Mitsubishi product provider.
Regarding the standards that comply with the main unit, please refer to either the FX series product catalog or consult with your nearest Mitsubishi product provider.

Requirement for Compliance with EMC directive
The following products have shown compliance through direct testing (of the identified standards below) and design analysis (through the creation of a technical construction file) to the European Directive for Electromagnetic Compatibility (2004/108/EC) when used as directed by the appropriate documentation.

Attention
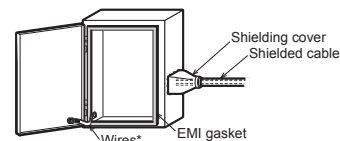• This product is designed for use in industrial applications.

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:
  Mitsubishi Electric Europe B.V.
  Gothaer Str. 8, 40880 Ratingen, Germany

Type: Programmable Controller (Open Type Equipment)
Models: MELSEC FX3U series manufactured
from February 1st, 2012 FX3U-ENET-ADP

Standard	Remark
EN61131-2:2007 Programmable controllers - Equipment requirements and tests	Compliance with all relevant aspects of the standard. **EMI** • Radiated Emission • Conducted Emission **EMS** • Radiated electromagnetic field • Fast transient burst • Electrostatic discharge • High-energy surge • Voltage drops and interruptions • Conducted RF • Power frequency magnetic field

Caution for EC Directive
• Installation in Enclosure
  Programmable logic controllers are open-type devices that must be installed and used within conductive control cabinets. Please use the programmable logic controller while installed within a conductive shielded control cabinet. Please secure the cabinet door to the control cabinet (for conduction). Installation within a control cabinet greatly affects the safety of the system and aids in shielding noise from the programmable logic controller.
• Control cabinet
  - The control cabinet must be conductive.
  - Ground the control cabinet with the thickest possible grounding cable.
  - To ensure that there is electric contact between the control cabinet and its door, connect the cabinet and its doors with thick wires.
  - In order to suppress the leakage of radio waves, the control cabinet structure must have minimal openings. Also, wrap the cable holes with a shielding cover or other shielding devices.
  - The gap between the control cabinet and its door must be as small as possible by attaching EMI gaskets between them.

Shielding cover
Shielded cable
Wires*
EMI gasket

*1 These wires are used to improve the conductivity between the door and control cabinet.

1. Outline

FX3U-ENET-ADP is an Ethernet adapter for the FX3S/FX3G/FX3GC/FX3U/FX3UC Series PLC that is compliant with 100BASE-TX/10BASE-T and has the features as follows.
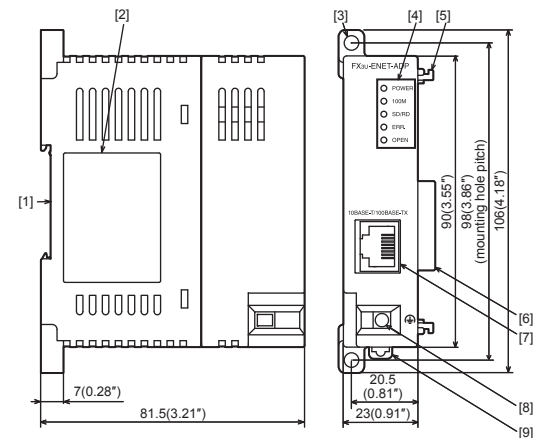1) Users can read and write data and programs from/to the PLC using MELSOFT products such as GX Works2 within the company LAN, etc.
2) Users can develop custom software to communicate with the PLC by using MC (MELSEC Communication) protocol (A-compatible 1E frame subset, for details, refer to user's manual). (TCP/IP or UDP/IP)
3) The FX3U-ENET-ADP can be connected directly (simple connection) to GX Works2 with only one Ethernet cable without using the hub.
4) Users can search "FX3U-ENET-ADP + Main unit" connected in the network using the find CPU function of GX Works2.
5) The FX3U-ENET-ADP can automatically set the time of the main unit using the time setting function.
6) The FX3U-ENET-ADP parameters can be set easily using GX Works2.
7) The diagnostic functions of GX Works2 enables easy diagnostics and troubleshooting of the FX3U-ENET-ADP.
8) Users can monitor the information and device values stored in the main unit and FX3U-ENET-ADP from a browser in a personal computer using the data monitoring function.

1.1 Incorporated Items

Verify that the following product and items are included in the package:

Product	FX3U-ENET-ADP Ethernet communication special adapter
Accessories	Installation Manual (This manual)

1.2 External Dimensions and Each Part Names

Unit: mm(inches)
MASS(Weight): 0.1kg(0.22lbs)

DIN rail mounting groove
[1] (DIN rail: DIN46277, 35mm (1.38") width)

[2] Nameplate

Direct mounting hole
[3] 2 holes of φ 4.5 (0.18") (mounting screw: M4 screw)

[4] Status LEDs

[5] Special adapter fixing hook

[6] Special adapter connector

[7] 10BASE-T/100BASE-TX connector (RJ45)

[8] External ground terminal (M2.5 terminal block screw)

[9] DIN rail mounting hook

1.3 Indications of LEDs

LED display	LED color	Status	Description
POWER	Green	ON	Power is on
		OFF	Power is off
100M	Green	ON	100Mbps communication
		OFF	10Mbps communication or not connected
SD/RD	Green	ON	Data being sent or received.
		OFF	Data is not sent or received.
ERR.	Red	ON	Setting errors, hardware errors, etc.
		Flicker	Communication errors
		OFF	Setting normal, communication normal
OPEN	Green	ON	TCP/IP: 1 or more connections are established. UDP: 1 or more connections are open.
		OFF	TCP/IP: All connections are unestablished. UDP: All connections are closed.

2. Installation

For installation details, refer to the following manuals.
→ **Refer to the FX3U-ENET-ADP User's Manual.**

INSTALLATION PRECAUTIONS	⚠WARNING

• Make sure to cut off all phases of the power supply externally before attempting installation work.
  Failure to do so may cause electric shock.

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.
• Do not touch the conductive parts of the product directly.
  Doing so may cause device failures or malfunctions.
• Install the product securely using a DIN rail or mounting screws.
• Install the product on a flat surface.
  If the mounting surface is rough, undue force will be applied to the PC board, thereby causing nonconformities.
• When drilling screw holes or wiring, make sure that cutting and wiring debris do not enter the ventilation slits.
  Failure to do so may cause fire, equipment failures or malfunctions.
• Connect the FX3U-ENET-ADP securely to special adapter connector.
  Loose connections may cause malfunctions.

2.1 Connection to the PLC

A connector conversion adapter is required to connect the special adapters with FX3S/FX3G PLCs.
An expansion board is required to connect the special adapters with the FX3U/FX3UC-32MT-LT(-2) PLCs.
For installation method to PLCs, refer to the User's Manual - Hardware Edition of the connected PLC.
Connection precautions
Only one FX3U-ENET-ADP unit can be connected in the final stage (leftmost position) of the main unit, special adapter, etc.
Connect all the high-speed I/O special adapters before connecting other special adapters when they are used in combination.
Do not connect a high-speed I/O special adapter on the left side of any special adapters other than other high-speed I/O special adapters.

2.2 Mounting

The product is mounted by the following method.
• DIN rail mounting
• Direct mounting (mounting screw: M4 screw)
For details, refer to the User's Manual - Hardware Edition of the connected PLC.

3. Wiring

3.1 Applicable Connector and Cable

3.1.1 Applicable connector
- RJ45 type modular jack

3.1.2 Pin Configuration
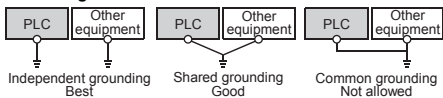The pin configuration of FX3U-ENET-ADP RJ45 type modular jack is as follows:

Pin No.	Signal	Direction	Contents
1	TD+	Out	+ side of sending data
2	TD−	Out	− side of sending data
3	RD+	In	+ side of receiving data
4	Not used	-	
5	Not used	-	
6	RD−	In	− side of receiving data
7	Not used	-	
8	Not used	-	

3.1.3 Applicable cable

10BASE-T	Cable conforming to Ethernet standard practice: Category 3 or better (STP cable)
100BASE-TX	Cable conforming to Ethernet standard practice: Category 5 or better (STP cable)

A straight cable is used. A cross cable can also be used when using direct connection (simple connection) between the personal computer and the FX3U-ENET-ADP.
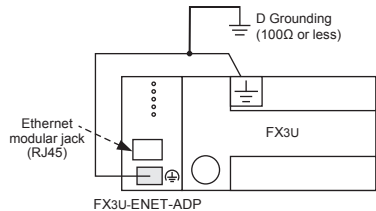
3.2 Grounding

Independent grounding Best | Shared grounding Good | Common grounding Not allowed

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Terminal block arrangement

Terminal name	Content
⏚ (Ground terminal)	Perform class D grounding. (Grounding resistance: 100Ω or less)

Grounding wiring
Example usage of FX3U

FX3U-ENET-ADP

Ground cable

Electric wire size	0.5 to 1.5mm² (AWG20 to 16)
Terminal screw	M2.5
Tightening torque*1	0.4 to 0.5N•m

*1 When tightening a grounding terminal, use a screwdriver suitable for the terminal screw. The screwdriver which does not suit the thread groove is used, tightening torque will not be able to be achieved. To achieve the appropriate tightening torque shown in the upper table, use the following screwdriver or an appropriate replacement.
<Reference>

Manufacturer	Model name	Model number
Weidmuller Interface GmbH & Co. KG	SDIK PH0	9008560000
Weidmuller Interface GmbH & Co. KG	SD 0.6×3.5×100	9008330000

4. Specification
For details on specifications, refer to the following manual.
→ **FX3U-ENET-ADP User's Manual**

4.1 Applicable PLC

Model name	Applicability	Number of connectable units
FX3S Series PLC*1*2	Ver. 1.00 or later	One unit
FX3G Series PLC*1	Ver. 2.00 or later	One unit
FX3GC Series PLC	Ver. 2.00 or later	One unit
FX3U Series PLC*3	Ver. 3.10 or later	One unit
FX3UC Series PLC*3	Ver. 3.10 or later	One unit

The version number can be checked by reading the last three digits of device D8001 or D8101.
*1 A connector conversion adapter is required to connect the FX3U-ENET-ADP with FX3S/FX3G PLCs.
*2 The FX3S PLC is supported by FX3U-ENET-ADP Ver. 1.20 or later.
*3 An expansion board is required to connect the FX3U-ENET-ADP with the FX3U/FX3UC-32MT-LT(-2) PLCs.

4.2 Related software

Software	Model name	Applicable software version
GX Works2 (SW☐DNC-GXW2-E)	FX3S Series PLC	Ver. 1.492N or later
	FX3G/FX3GC Series PLC	Ver. 1.87R or later
	FX3U/FX3UC Series PLC	Ver. 1.73B or later*1

*1 GX Works2 Ver. 1.87R or later supports the data monitoring function setting.
Parameter setting of FX3U-ENET-ADP etc. can be performed by GX Works2.

4.3 General Specifications
Items other than the following are equivalent to those of the PLC main unit.
For general specifications, refer to the User's Manual - Hardware Edition of the connected PLC.

Item	Specification	
Dielectric withstand voltage	500V AC for one minute	Between all PLC terminals and ground terminal
Insulation resistance	5MΩ or more by 500V DC megger	

4.4 Power Supply Specification

Item	Specification
Driving power supply	30mA / 5V DC 5V DC power is supplied internally from the main unit.

Since driving power supply (current consumption) specifications differ for other special adapters, please take the power capacity of the main unit into consideration.
For system configuration information (calculation of the power supply capacity of the main unit etc.), refer to the User's Manual - Hardware Edition of the connected PLC.

4.5 Communication Specification

Item	Specification	
Transmission specifications	Data transmission speed	100Mbps/10Mbps
	Communication method	Full-duplex/Half-duplex
	Transmission method	Base band
	Maximum segment length	100m (328'1'')

4.6 Functions

Item	Specification
Functions	MELSOFT connections
	Communication Using MC Protocol
	MELSOFT Direct Connection (Simple Connection)
	Find CPU function
	Time setting function*1
	Diagnostics function from MELSOFT
	Data monitoring function
Number of simultaneously open connections allowed	MELSOFT connection + MC protocol + Data monitoring <= 4
Number of connectable units to the main unit	1 unit*2

*1 The time setting function (SNTP client) is enabled only after the trigger condition is established.
*2 The FX3U-ENET-ADP occupies 1 communication channel in the same way as communication expansion boards and other communication special adapters.

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PROGRAMMABLE CONTROLLERS
MELSEC-F

FX3U-ENET-ADP

INSTALLATION MANUAL

FX3U

Manual Number	JY997D47401
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Registration:
Ethernet is a trademark of Xerox Corporation.
The company and product names described in this manual are registered trademarks or the trademarks of their respective companies.

Effective May 2013
Specifications are subject to change without notice.
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Safety Precaution (Read these precautions before use.)

This manual classifies the safety precautions into two categories:
⚠WARNING and ⚠CAUTION.

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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
FX3U-ENET-ADP User's Manual	JY997D45801 MODEL CODE: 09R725	Describes details of the FX3U-ENET-ADP Ethernet communication special adapter.
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.
FX3S Series User's Manual - Hardware Edition	JY997D48601 MODEL CODE: 09R535	Explains FX3S Series PLC specifications for I/O, wiring, installation, and mounting.
FX3G Series User's Manual - Hardware Edition	JY997D31301 MODEL CODE: 09R521	Explains FX3G Series PLC specifications for I/O, wiring, installation, and mounting.
FX3GC Series User's Manual - Hardware Edition	JY997D45401 MODEL CODE: 09R533	Explains FX3GC Series PLC specifications for I/O, wiring, installation, and mounting.
FX3U Series User's Manual - Hardware Edition	JY997D16501 MODEL CODE: 09R516	Explains FX3U Series PLC specifications for I/O, wiring, installation, and mounting.
FX3UC Series User's Manual - Hardware Edition	JY997D28701 MODEL CODE: 09R519	Explains FX3UC Series PLC specifications for I/O, wiring, installation, and mounting.
GX Works2 Version 1 Operating Manual (Common)	SH-080779ENG MODEL CODE: 13JU63	Explains the system configuration of GX Works2, the operation method of parameter setting and the online function, etc.

How to obtain manuals

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

Certification of UL, cUL standards

FX3U-ENET-ADP adapter comply with the UL standards (UL, cUL).
UL, cUL File Number: E95239
Regarding the standards that comply with the main unit, please refer to either the FX series product catalog or consult with your nearest Mitsubishi product provider.

Compliance with EC directive (CE Marking)

This note does not guarantee that an entire mechanical module produced in accordance with the contents of this note will comply with the following standards. Compliance to EMC directive and LVD directive for the entire mechanical module should be checked by the user / manufacturer. For more information please consult with your nearest Mitsubishi product provider.
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Requirement for Compliance with EMC directive

The following products have shown compliance through direct testing (of the identified standards below) and design analysis (through the creation of a technical construction file) to the European Directive for Electromagnetic Compatibility (2004/108/EC) when used as directed by the appropriate documentation.

Attention
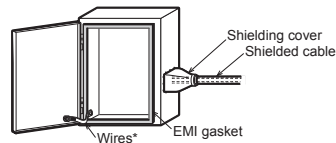- This product is designed for use in industrial applications.

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:
  Mitsubishi Electric Europe B.V.
  Gothaer Str. 8, 40880 Ratingen, Germany

Type: Programmable Controller (Open Type Equipment)
Models: MELSEC FX3U series manufactured
from February 1st, 2012 FX3U-ENET-ADP

Standard	Remark
EN61131-2:2007 Programmable controllers - Equipment requirements and tests	Compliance with all relevant aspects of the standard. **EMI** • Radiated Emission • Conducted Emission **EMS** • Radiated electromagnetic field • Fast transient burst • Electrostatic discharge • High-energy surge • Voltage drops and interruptions • Conducted RF • Power frequency magnetic field

Caution for EC Directive

- **Installation in Enclosure**
  Programmable logic controllers are open-type devices that must be installed and used within conductive control cabinets. Please use the programmable logic controller while installed within a conductive shielded control cabinet. Please secure the cabinet door to the control cabinet (for conduction). Installation within a control cabinet greatly affects the safety of the system and aids in shielding noise from the programmable logic controller.

- **Control cabinet**
  - The control cabinet must be conductive.
  - Ground the control cabinet with the thickest possible grounding cable.
  - To ensure that there is electric contact between the control cabinet and its door, connect the cabinet and its doors with thick wires.
  - In order to suppress the leakage of radio waves, the control cabinet structure must have minimal openings. Also, wrap the cable holes with a shielding cover or other shielding devices.
  - The gap between the control cabinet and its door must be as small as possible by attaching EMI gaskets between them.

Shielding cover
Shielded cable
Wires*
EMI gasket

*1 These wires are used to improve the conductivity between the door and control cabinet.

1. Outline

FX3U-ENET-ADP is an Ethernet adapter for the FX3S/FX3G/FX3GC/FX3U/FX3UC Series PLC that is compliant with 100BASE-TX/10BASE-T and has the features as follows.
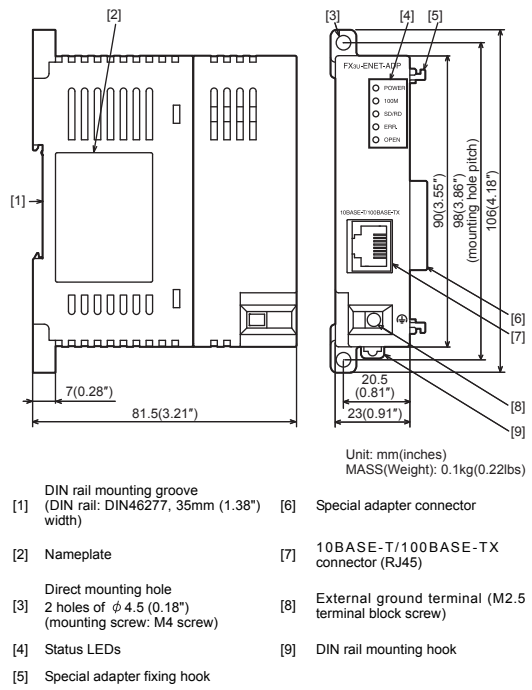
1) Users can read and write data and programs from/to the PLC using MELSOFT products such as GX Works2 within the company LAN, etc.
2) Users can develop custom software to communicate with the PLC by using MC (MELSEC Communication) protocol (A-compatible 1E frame subset, for details, refer to user's manual). (TCP/IP or UDP/IP)
3) The FX3U-ENET-ADP can be connected directly (simple connection) to GX Works2 with only one Ethernet cable without using the hub.
4) Users can search "FX3U-ENET-ADP + Main unit" connected in the network using the find CPU function of GX Works2.
5) The FX3U-ENET-ADP can automatically set the time in the main unit using the time setting function.
6) The FX3U-ENET-ADP parameters can be set easily using GX Works2.
7) The diagnostic functions of GX Works2 enables easy diagnostics and troubleshooting of the FX3U-ENET-ADP.
8) Users can monitor the information and device values stored in the main unit and FX3U-ENET-ADP from a browser in a personal computer using the data monitoring function.

1.1 Incorporated Items

Verify that the following product and items are included in the package:

Product	FX3U-ENET-ADP Ethernet communication special adapter
Accessories	Installation Manual (This manual)

1.2 External Dimensions and Each Part Names

Unit: mm(inches)
MASS(Weight): 0.1kg(0.22lbs)

	DIN rail mounting groove (DIN rail: DIN46277, 35mm (1.38") width)
[1]	
[2]	Nameplate
[3]	Direct mounting hole 2 holes of φ4.5 (0.18") (mounting screw: M4 screw)
[4]	Status LEDs
[5]	Special adapter fixing hook
[6]	Special adapter connector
[7]	10BASE-T/100BASE-TX connector (RJ45)
[8]	External ground terminal (M2.5 terminal block screw)
[9]	DIN rail mounting hook

1.3 Indications of LEDs

LED display	LED color	Status	Description
POWER	Green	ON	Power is on
		OFF	Power is off
100M	Green	ON	100Mbps communication
		OFF	10Mbps communication or not connected
SD/RD	Green	ON	Data being sent or received.
		OFF	Data is not sent or received.
ERR.	Red	ON	Setting errors, hardware errors, etc.
		Flicker	Communication errors
		OFF	Setting normal, communication normal
OPEN	Green	ON	TCP/IP: 1 or more connections are established. UDP: 1 or more connections are open.
		OFF	TCP/IP: All connections are unestablished. UDP: All connections are closed.

2. Installation

For installation details, refer to the following manuals.
→ **Refer to the FX3U-ENET-ADP User's Manual.**

INSTALLATION PRECAUTIONS	⚠WARNING

- Make sure to cut off all phases of the power supply externally before attempting installation work.
  Failure to do so may cause electric shock.

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.
- Do not touch the conductive parts of the product directly.
  Doing so may cause device failures or malfunctions.
- Install the product securely using a DIN rail or mounting screws.
- Install the product on a flat surface.
  If the mounting surface is rough, undue force will be applied to the PC board, thereby causing nonconformities.
- When drilling screw holes or wiring, make sure that cutting and wiring debris do not enter the ventilation slits.
  Failure to do so may cause fire, equipment failures or malfunctions.
- Connect the FX3U-ENET-ADP securely to special adapter connector.
  Loose connections may cause malfunctions.

2.1 Connection to the PLC

A connector conversion adapter is required to connect the special adapters with FX3S/FX3G PLCs.
An expansion board is required to connect the special adapters with the FX3U/FX3UC-32MT-LT(-2) PLCs.
For installation method to PLCs, refer to the User's Manual - Hardware Edition of the connected PLC.

Connection precautions
Only one FX3U-ENET-ADP can be connected in the final stage (leftmost position) of the main unit, special adapter, etc.
Connect all the high-speed I/O special adapters before connecting other special adapters when they are used in combination.
Do not connect a high-speed I/O special adapter on the left side of any special adapters other than other high-speed I/O special adapters.

2.2 Mounting

The product is mounted by the following method.
- DIN rail mounting
- Direct mounting (mounting screw: M4 screw)
For details, refer to the User's Manual - Hardware Edition of the connected PLC.

3. Wiring

WIRING PRECAUTIONS	⚠WARNING

- Make sure to cut off all phases of the power supply externally before attempting wiring work.
  Failure to do so may cause electric shock or damage to the product.

WIRING PRECAUTIONS	⚠CAUTION

- Perform class D grounding (grounding resistance: 100Ω or less) to the grounding terminal on the FX3U-ENET-ADP with a wire of cross-sectional area 0.5 to 1.5mm².
  Do not use common grounding with heavy electrical systems (refer to the Section 3.2).
- When drilling screw holes or wiring, make sure that cutting and wiring debris do not enter the ventilation slits.
  Failure to do so may cause fire, equipment failures or malfunctions.
- Make sure to properly wire to the terminal block (European type) in accordance with the following precautions.
  Failure to do so may cause electric shock, equipment failures, a short-circuit, wire breakage, malfunctions, or damage to the product.
  - The disposal size of the cable end should follow the dimensions described in the manual.
  - Tightening torque should follow the specifications in the manual.
  - Twist the end of strand wire and make sure that there are no loose wires.
  - Do not solder-plate the electric wire ends.
  - Do not connect more than the specified number of wires or electric wires of unspecified size.
  - Affix the electric wires so that neither the terminal block nor the connected parts are directly stressed.
- Make sure to observe the following precautions in order to prevent any damage to the machinery or accidents due to abnormal data written to the PLC under the influence of noise:
  1) Do not bundle the main circuit line together with or lay it close to the main circuit, high-voltage line or load line.
     Otherwise, noise disturbance and/or surge induction are likely to take place. As a guideline, lay the control line at least 100mm (3.94") or more away from the main circuit or high-voltage lines.
  2) Ground the shield wire or shield of the shielded cable at one point on the PLC. However, do not use common grounding with heavy electrical systems.

3.1 Applicable Connector and Cable

3.1.1 Applicable connector
- RJ45 type modular jack

3.1.2 Pin Configuration
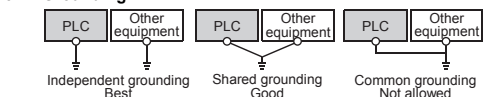The pin configuration of FX3U-ENET-ADP RJ45 type modular jack is as follows:

Pin No.	Signal	Direction	Contents
1	TD+	Out	+ side of sending data
2	TD−	Out	− side of sending data
3	RD+	In	+ side of receiving data
4	Not used	-	
5	Not used	-	
6	RD−	In	− side of receiving data
7	Not used	-	
8	Not used	-	

3.1.3 Applicable cable

10BASE-T	Cable conforming to Ethernet standard practice: Category 3 or better (STP cable)
100BASE-TX	Cable conforming to Ethernet standard practice: Category 5 or better (STP cable)

A straight cable is used. A cross cable can also be used when using direct connection (simple connection) between the personal computer and the FX3U-ENET-ADP.
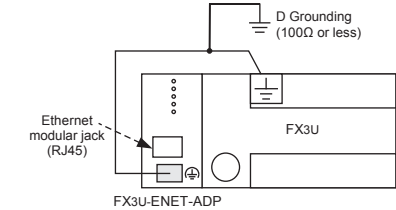
3.2 Grounding

Independent grounding Best   Shared grounding Good   Common grounding Not allowed

Terminal block arrangement

Terminal name	Content
⏚ (Ground terminal)	Perform class D grounding. (Grounding resistance: 100Ω or less)

Grounding wiring
Example usage of FX3U

Ground cable

Electric wire size	0.5 to 1.5mm² (AWG20 to 16)
Terminal screw	M2.5
Tightening torque*1	0.4 to 0.5N•m

*1 When tightening a grounding terminal, use a screwdriver suitable for the terminal screw. The screwdriver which does not suit the thread groove is used, tightening torque will not be able to be achieved. To achieve the appropriate tightening torque shown in the upper table, use the following screwdriver or an appropriate replacement.
<Reference>

Manufacturer	Model name	Model number
Weidmuller Interface GmbH & Co. KG	SDIK PH0	9008560000
Weidmuller Interface GmbH & Co. KG	SD 0.6×3.5×100	9008330000

4. Specification

For details on specifications, refer to the following manual.
→ **FX3U-ENET-ADP User's Manual**

DESIGN PRECAUTIONS	⚠WARNING

- Make sure to include the following safety circuits outside the PLC to ensure safe system operation even during external power supply problems or PLC failure. Otherwise, malfunctions may cause serious accidents.
  1) Above all, the following components should be included: an emergency stop circuit, a protection circuit, an interlock circuit for opposite movements (such as normal vs. reverse rotation), and an interlock circuit (to prevent damage to the equipment at the upper and lower positioning limits).
  2) Note that when the PLC main unit detects an error during self diagnosis, such as a watchdog timer error, all outputs are turned off. Also, when an error that cannot be detected by the PLC main unit occurs in an input/output control block, output control may be disabled.
     External circuits and mechanisms should be designed to ensure safe machinery operation in such cases.

DESIGN PRECAUTIONS	⚠CAUTION

- Observe the following items. Failure to do so may cause incorrect data-writing through noise to the PLC and result in PLC failure, machine damage or other accident.
  1) Do not bundle the control line together with or lay it close to the main circuit or power line. As a guideline, lay the control line at least 100mm (3.94") or more away from the main circuit or power line.
     Noise may cause malfunctions.
  2) Ground the shield wire or shield of a shielded cable. Do not use common grounding with heavy electrical systems.

STARTUP AND MAINTENANCE PRECAUTIONS	⚠WARNING

- Do not touch any terminals or connector while the PLC's power is on.
  Doing so may cause electrical shock or malfunctions.
- Before cleaning or retightening screws, externally cut off all phases of the power supply.
  Failure to do so may cause malfunction or failure of the special adapter. When the screws are tightened insufficiently, they may fall out and cause a shortcircuit or malfunction. When tightened too much, the screws or the special adapter may be damaged, resulting in short-circuit, or malfunction.
- When controlling the PLC (especially when changing data, the program or changing the operating conditions) during operation, ensure that it is safe to do so.

STARTUP AND MAINTENANCE PRECAUTIONS	⚠CAUTION

- Do not disassemble or modify the special adapter.
  Doing so may cause fire, equipment failures, or malfunctions.
- The special adapter case is made of resin. If dropped or subjected to strong impact, the special adapter may be damaged.
- When the special adapter is installed or removed from the panel, make sure to externally cut off all phases of the power supply. Failure to do so may cause malfunction or failure of the special adapter.

DISPOSAL PRECAUTIONS	⚠CAUTION

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

TRANSPORT 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.

4.1 Applicable PLC

Model name	Applicability	Number of connectable units
FX3S Series PLC*1*2	Ver. 1.00 or later	One unit
FX3G Series PLC*1	Ver. 2.00 or later	One unit
FX3GC Series PLC	Ver. 2.00 or later	One unit
FX3U Series PLC*3	Ver. 3.10 or later	One unit
FX3UC Series PLC*3	Ver. 3.10 or later	One unit

The version number can be checked by reading the last three digits of device D8001 or D8101.
*1 A connector conversion adapter is required to connect the FX3U-ENET-ADP with FX3S/FX3G PLCs.
*2 The FX3S PLC is supported by FX3U-ENET-ADP Ver. 1.20 or later.
*3 An expansion board is required to connect the FX3U-ENET-ADP with the FX3U/FX3UC-32MT-LT(-2) PLCs.

4.2 Related software

Software	Model name	Applicable software version
GX Works2 (SW□DNC-GXW2-E)	FX3S Series PLC	Ver. 1.492N or later
	FX3G/FX3GC Series PLC	Ver. 1.87R or later
	FX3U/FX3UC Series PLC	Ver. 1.73B or later*1

*1 GX Works2 Ver. 1.87R or later supports the data monitoring function setting.
Parameter setting of FX3U-ENET-ADP etc. can be performed by GX Works2.

4.3 General Specifications

Items other than the following are equivalent to those of the PLC main unit.
For general specifications, refer to the User's Manual - Hardware Edition of the connected PLC.

Item	Specification	
Dielectric withstand voltage	500V AC for one minute	Between all PLC terminals and ground terminal
Insulation resistance	5MΩ or more by 500V DC megger	

4.4 Power Supply Specification

Item	Specification
Driving power supply	30mA / 5V DC 5V DC power is supplied internally from the main unit.

Since driving power supply (current consumption) specifications differ for other special adapters, please take the power capacity of the main unit into consideration.
For system configuration information (calculation of the power supply capacity of the main unit etc.), refer to the User's Manual - Hardware Edition of the connected PLC.

4.5 Communication Specification

Item	Specification	
Transmission specifications	Data transmission speed	100Mbps/10Mbps
	Communication method	Full-duplex/Half-duplex
	Transmission method	Base band
	Maximum segment length	100m (328'1")

4.6 Functions

Item	Specification
Functions	MELSOFT connections
	Communication Using MC Protocol
	MELSOFT Direct Connection (Simple Connection)
	Find CPU function
	Time setting function*1
	Diagnostics function from MELSOFT
	Data monitoring function
Number of simultaneously open connections allowed	MELSOFT connection + MC protocol + Data monitoring <= 4
Number of connectable units to the main unit	1 unit*2

*1 The time setting function (SNTP client) is enabled only after the trigger condition is established.
*2 The FX3U-ENET-ADP occupies 1 communication channel in the same way as communication expansion boards and other communication special adapters.

⚠ 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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