



PROGRAMMABLE CONTROLLERS
MELSEC-F

FX3U-7DM-HLD

USER'S MANUAL



Manual Number	JY997D15401
Revision	G
Date	April 2015

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 April 2015
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**.

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 Series User's Manual - Hardware Edition	JY997D16501 MODEL CODE: 09R516	Explains the FX3U Series PLC specifications for I/O, wiring, installation, and maintenance.
FX3UC Series User's Manual - Hardware Edition	JY997D28701 MODEL CODE: 09R519	Explains the FX3UC 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.

For the operation of the display module, refer to the PLC main unit manual.

→ Refer to the **FX3U Series User's Manual - Hardware Edition**
→ Refer to the **FX3UC Series User's Manual - Hardware Edition**

How to obtain manuals

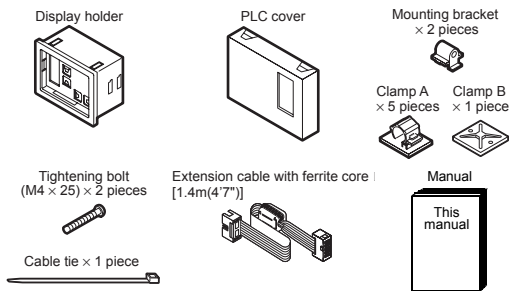
For product manuals or documents, consult with the Mitsubishi Electric dealer from who you purchased your product.

1. Outline

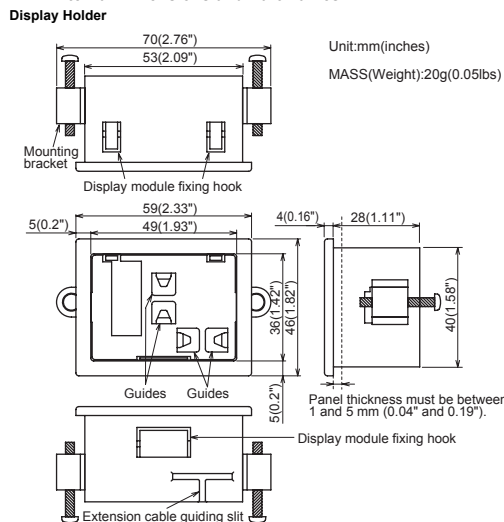
The FX3U-7DM-HLD display module holder is the attachment (cable accessory) which installs the display module (FX3U-7DM) for the FX3U or FX3UC-32MT-LT PLC to near by control panel.

1.1 Incorporated Items

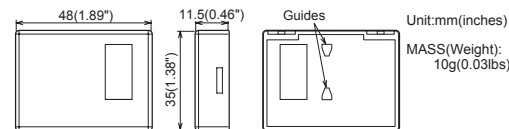
Verify that the product and accessories shown below are included in the package:



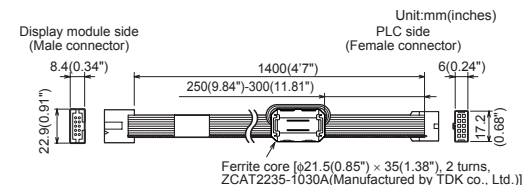
1.2 External Dimensions and Part Names



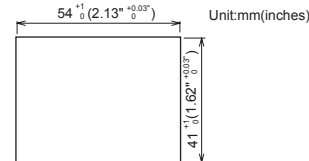
PLC Cover



Extension Cable



2. Panel Cut Dimension



In addition to the dimension above, space for mounting brackets is required by approximately 10 mm (0.4'') in the right and left directions respectively.

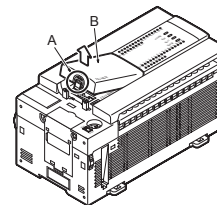
3. Installation

INSTALLATION PRECAUTIONS	WARNING
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INSTALLATION PRECAUTIONS	CAUTION
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3.1 Before Installation

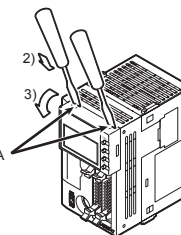
3.1.1 FX3U Series PLC

- Power off the PLC.
- Pushing the top cover hook (fig. A), remove the top cover (fig. B), as shown in the right figure.



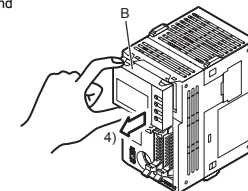
3.1.2 FX3UC-32MT-LT PLC

- Power off the PLC.
- Gently place the tip of a flat head screwdriver to the Display module fixing hooks (fig. A).
- Tilt the flat head screwdriver at the two Display module fixing hooks (fig. A) to lift the display module from the main unit by about 1 mm (0.04'').



Carefully perform the above trying not to bend or break the Display module fixing hooks (fig. A).

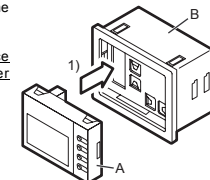
- Hold the display module (fig. B) and remove the display module.



3.2 Installation to Display Holder

- Install the display module (fig. A) to the display holder (fig. B).

Press in until the display module surface becomes level with the display holder surface.



3.3 Mounting to Control Panel (Cabinet)

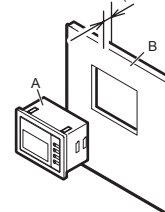
Mount the display module to the control panel after installing it to the display holder.

- Drill an mounting hole on the panel face. → For panel cut dimension, refer to chapter 2

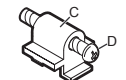
The panel thickness to which the display module is mounted must be between 1 and 5 mm (0.04'' and 0.19'').

- Insert the display holder (fig. A) from the front of the panel (fig. B).

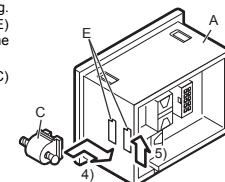
Panel thickness: 1 to 5 mm (0.04'' to 0.19'').



- Insert the tightening bolt (fig. D) into the mounting hook holes (fig. E) on display holder (fig. A) as shown in the right figure. Be careful of the direction and insert correctly as indicated on the right.

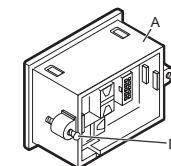


- Inset the hook of mounting bracket (fig. C) into the mounting hook holes (fig. E) on display holder (fig. A) as shown in the right figure.
- Slide the mounting bracket (fig. C) upward to fix it.



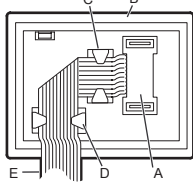
- Tighten two tightening bolts (fig. D) on the right and left until the display holder (fig. A) is securely fastened.

Tightening torque 0.18 to 0.22 N·m

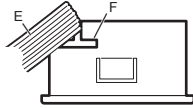


3.4 Connecting Extension Cable to Display Holder

- 1) Connect the male connector side (fig. A) of the extension cable to the main unit connector on the display module.
- 2) Pass the extension cable (fig. E) into the guides (fig. C, D) on the display holder (fig. B).



- 3) Pass the extension cable (fig. E) through the extension cable guiding slit (fig. F).

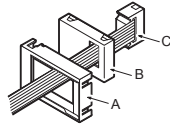


3.5 Connecting Extension Cable to Main Unit

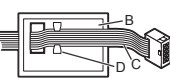
3.5.1 Connecting to FX3U Series PLC

- 1) Pass the female connector side (fig. C) of extension cable through the display module mounting top cover*1 (fig. A) and PLC cover (fig. B).

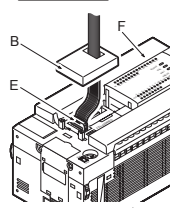
*1 It is an accessory of the FX3U-7DM.



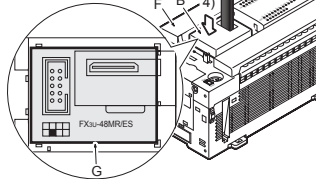
- 2) Pass the extension cable (fig. C) into the guides (fig. D) through the PLC cover (fig. B).



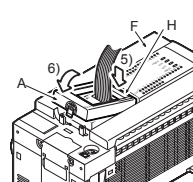
- 3) Connect the female connector side (fig. E) of the extension cable to the display module connector on the main unit (fig. F).



- 4) Insert the sliding PLC cover (fig. B) to G position as per the right figure of the main unit (fig. F).



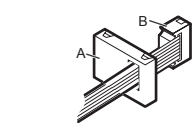
- 5) Place the right figure H side of the display module mounting top cover (fig. A) on the main unit (fig. F).



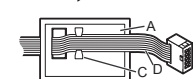
- 6) The display module mounting top cover (fig. A) is installed in the main unit (fig. F) as shown in the right figure.

3.5.2 Connecting to FX3UC-32MT-LT PLC

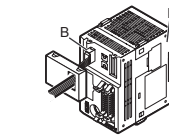
- 1) Pass the female connector side (fig. B) of extension cable through the PLC cover (fig. A).



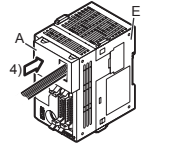
- 2) Pass the extension cable (fig. D) into the guides (fig. C) through the PLC cover (fig. A).



- 3) Connect the female connector side (fig. B) of the extension cable to the display module connector on the main unit (fig. E).



- 4) Slide PLC cover (fig. A), and install to the main unit (fig. E), as shown in the right figure.



4. Wiring

WIRING 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.

WIRING PRECAUTIONS **CAUTION**

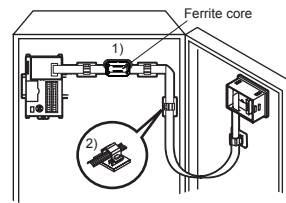
- Install module so that excessive force will not be applied to extension cable. Failure to do so may result in wire damage/breakage or PLC failure.
- When drilling screw holes or wiring, make sure cutting or wire debris does not enter the ventilation slits. Failure to do so may cause fire, equipment failures or malfunctions.
- 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:
 - 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.

When wiring the extension cable, keep a safe distance of more than 100 mm (3.94") from the noise source such as output cables of a PLC or power source.

4.1 Wiring inside Control Panel

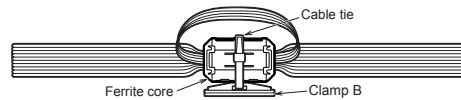
Effects of noise are likely to take place if the extension cable touches the control panel.

Use the clamps offered as an accessory to space the extension cable from the cabinet and the panel face as much as possible. Moreover, the ferrite core with extension cable should be fixed so that it will not move.

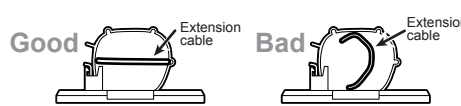


Caution on using a clamp

- 1) When fixing ferrite core to the extension cable with clamp B, fix them together as the figure shown below.



- 2) When fixing the extension cable with clamp A, Do not twist the cable as the figure shown left below.



5. Remove

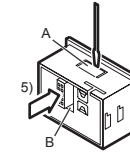
Follow the below procedures when uninstalling the display module in such a case as display module replacement.

5.1 Removing Display Module from Display Holder

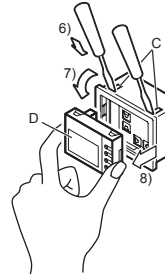
Take these steps after dismantling the holder from the control panel.

- 1) Turn OFF the power.
- 2) Disconnect the extension cable.
- 3) Remove the display holder from the panel face.
- 4) Float the display module fixing hook (fig. A) at the bottom of the display holder a little using a flat head screwdriver.
- 5) Push out the main unit connector (fig. B) part of the display module from the rear while keeping the display module fixing hook (fig. A) up a little.

Be careful not to drop the display module.



- 6) Gently place the tip of the flat head screwdriver to the display module fixing hooks (fig. C) on the top face of the display holder.
- 7) Float the two display module fixing hook (fig. C) at the top of the display holder a little by the flat head screwdriver.
- 8) Hold the display module (fig. D) and remove the display module (fig. D) from the front side.



5.2 Removing PLC Cover from PLC

→ For the FX3U PLC, refer to the FX3U Series User's Manual - Hardware Edition

- Removing PLC Cover from FX3UC-32MT-LT PLC

The removing method from PLC is the same as the removing method of display module (FX3U-7DM).

→ For the FX3UC-32MT-LT PLC, refer to subsection 3.1.2

6. Specification

6.1 Applicable PLC

Item	Description
Applicable PLC	FX3U Series PLC (from first production) FX3UC-32MT-LT PLC (from first production)

6.2 General Specifications

Item	Specification					
Ambient temperature	0 to 55°C (32 to 131°F) when operating and -25 to 75°C (-4 to 158°F) when stored					
Ambient humidity	5 to 95%RH (no condensation) when operating					
Working atmosphere	Free from corrosive or flammable gas and excessive conductive dusts					
Vibration resistance	Frequency (Hz)	Acceleration (m/s ²)	Half amplitude (mm)	Sweep Count for X, Y, Z: 10 times (80 min in each direction)		
	Under intermittent vibration	10 to 57Hz	-		0.075mm	
	Under continuous vibration	57 to 150Hz	9.8m/s ²		-	
		10 to 57Hz	-		0.035mm	
Shock resistance	147 m/s ² Acceleration, Action time: 11ms, 3 times in each direction X, Y, and Z					
Working altitude	<2000m					
Protection	Equivalent to IP40 (Non - watertight type construction)					

7. Caution on use

STARTUP AND MAINTENANCE PRECAUTIONS	CAUTION
<ul style="list-style-type: none"> • Do not disassemble or modify the PLC. Doing so may cause fire, equipment failures, or malfunctions. * For repair, contact your local Mitsubishi Electric distributor. • Do not drop the product or exert strong impact to it. Doing so may cause damage. 	

DISPOSAL PRECAUTIONS	CAUTION
<ul style="list-style-type: none"> • Please contact a certified electronic waste disposal company for the environmentally safe recycling and disposal of your device. 	

TRANSPORT AND STORAGE PRECAUTIONS	CAUTION
<ul style="list-style-type: none"> • 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. 	

This product or display module does not have protective construction against water and such. Do not let a drop of water touch either.

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
<ul style="list-style-type: none"> • 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.



PROGRAMMABLE CONTROLLERS
MELSEC-F

Side A JAPANESE
Side B ENGLISH

FX3U-7DM-HLD

USER'S MANUAL

FX3U

Manual Number	JY997D15401
Revision	G
Date	April 2015

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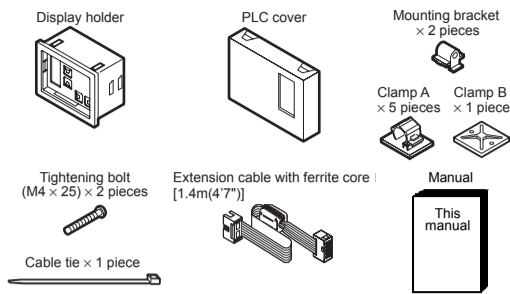
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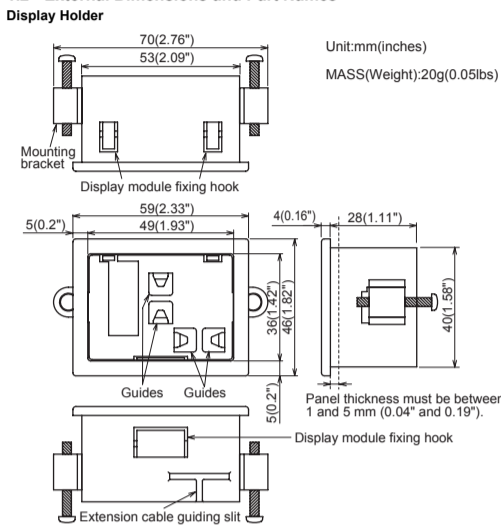
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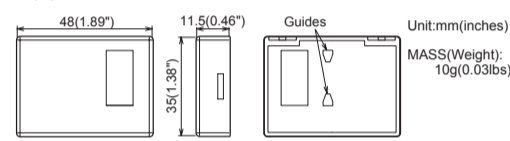
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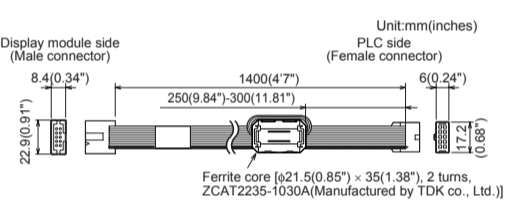
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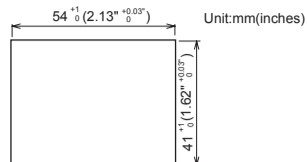
PLC Cover



Extension Cable



2. Panel Cut Dimension



In addition to the dimension above, space for mounting brackets is required by approximately 10 mm (0.4") in the right and left directions respectively.

3. Installation

INSTALLATION PRECAUTIONS **WARNING**

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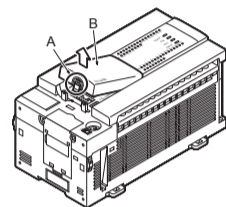
INSTALLATION PRECAUTIONS **CAUTION**

- Use the product within the generic environment specifications described in this manual. 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 exposed 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. Failure to do so may cause fire, equipment failures or malfunctions.
- When drilling screw holes or wiring, make sure cutting or wire debris does not enter the ventilation slits.
- Do not touch the conductive parts of the product directly. Doing so may cause device failures or malfunctions.
- Connect product securely to their designated connectors. Loose connections may cause malfunctions.
- Do not pull the cable when attaching or detaching the connector. Doing so may cause wire breakage.

3.1 Before Installation

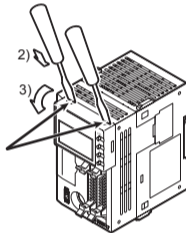
3.1.1 FX3U Series PLC

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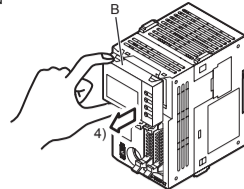
3.1.2 FX3UC-32MT-LT PLC

- Power off the PLC.
- Gently place the tip of a flat head screwdriver to the Display module fixing hooks (fig. A).
- Tilt the flat head screwdriver at the two Display module fixing hooks (fig. A) to lift the display module from the main unit by about 1 mm (0.04").



Carefully perform the above trying not to bend or break the Display module fixing hooks (fig. A).

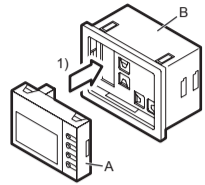
- Hold the display module (fig. B) and remove the display module.



3.2 Installation to Display Holder

- Install the display module (fig. A) to the display holder (fig. B).

Press in until the display module surface becomes level with the display holder surface.



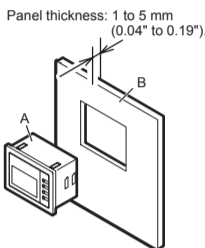
3.3 Mounting to Control Panel (Cabinet)

Mount the display module to the control panel after installing it to the display holder.

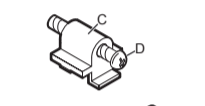
- Drill an mounting hole on the panel face. → For panel cut dimension, refer to chapter 2

The panel thickness to which the display module is mounted must be between 1 and 5 mm (0.04" and 0.19").

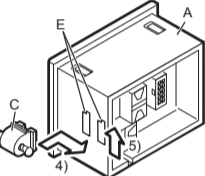
- Insert the display holder (fig. A) from the front of the panel (fig. B).



- Insert the tightening bolt (fig. D) into the mounting bracket (fig. C). Be careful of the direction and insert correctly as indicated on the right.

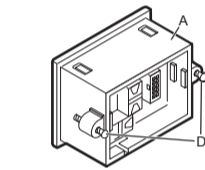


- Insert the hook of mounting bracket (fig. C) into the mounting hook holes (fig. E) on display holder (fig. A) as shown in the right figure.



- Slide the mounting bracket (fig. C) upward to fix it.

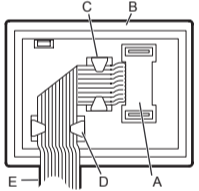
- Tighten two tightening bolts (fig. D) on the right and left until the display holder (fig. A) is securely fastened.



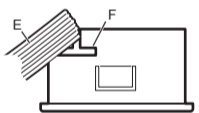
Tightening torque 0.18 to 0.22 N·m

3.4 Connecting Extension Cable to Display Holder

- Connect the male connector side (fig. A) of the extension cable to the main unit connector on the display module.
- Pass the extension cable (fig. E) into the guides (fig. C, D) on the display holder (fig. B).



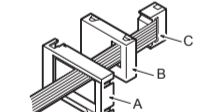
- Pass the extension cable (fig. E) through the extension cable guiding slit (fig. F).



3.5 Connecting Extension Cable to Main Unit

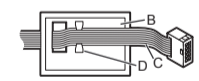
3.5.1 Connecting to FX3U Series PLC

- Pass the female connector side (fig. C) of extension cable through the display module mounting top cover*1 (fig. A) and PLC cover (fig. B).

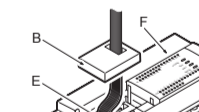


*1 It is an accessory of the FX3U-7DM.

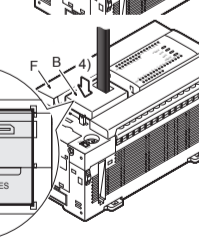
- Pass the extension cable (fig. C) into the guides (fig. D) through the PLC cover (fig. B).



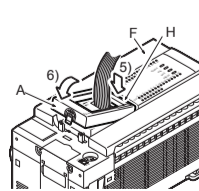
- Connect the female connector side (fig. E) of the extension cable to the display module connector on the main unit (fig. F).



- Insert the sliding PLC cover (fig. B) to G position as per the right figure of the main unit (fig. F).

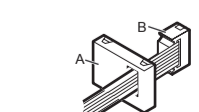


- Place the right figure H side of the display module mounting top cover (fig. A) on the main unit (fig. F).
- The display module mounting top cover (fig. A) is installed in the main unit (fig. F) as shown in the right figure.

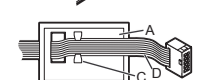


3.5.2 Connecting to FX3UC-32MT-LT PLC

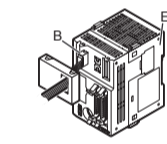
- Pass the female connector side (fig. B) of extension cable through the PLC cover (fig. A).



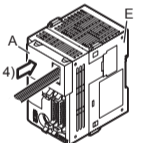
- Pass the extension cable (fig. D) into the guides (fig. C) through the PLC cover (fig. A).



- Connect the female connector side (fig. B) of the extension cable to the display module connector on the main unit (fig. E).



- Slide PLC cover (fig. A), and install to the main unit (fig. E), as shown in the right figure.



4. Wiring

WIRING PRECAUTIONS **WARNING**

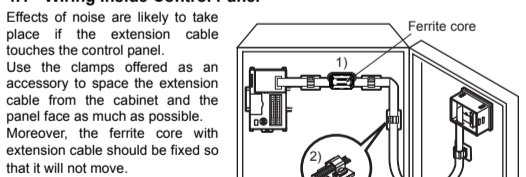
- Make sure to cut off all phases of the power supply externally before attempting installation or wiring work. Failure to do so may cause electric shock or damage to the product.

WIRING PRECAUTIONS **CAUTION**

- Install module so that excessive force will not be applied to extension cable. Failure to do so may result in wire damage/breakage or PLC failure.
- 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.
- 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:
 - 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.

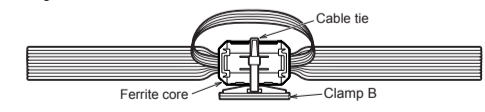
When wiring the extension cable, keep a safe distance of more than 100 mm (3.94") from the noise source such as output cables of a PLC or power source.

4.1 Wiring inside Control Panel

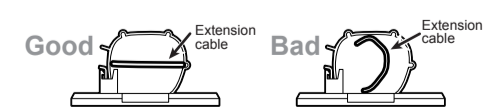


Caution on using a clamp

- When fixing ferrite core to the extension cable with clamp B, fix them together as the figure shown below.



- When fixing the extension cable with clamp A, Do not twist the cable as the figure shown left below.



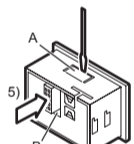
5. Remove

Follow the below procedures when uninstalling the display module in such a case as display module replacement.

5.1 Removing Display Module from Display Holder

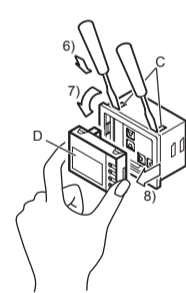
Take these steps after dismounting the holder from the control panel.

- Turn OFF the power.
- Disconnect the extension cable.
- Remove the display holder from the panel face.
- Float the display module fixing hook (fig. A) at the bottom of the display holder a little using a flat head screwdriver.
- Push out the main unit connector (fig. B) part of the display module from the rear while keeping the display module fixing hook (fig. A) up a little.



Be careful not to drop the display module.

- Gently place the tip of the flat head screwdriver to the display module fixing hooks (fig. C) on the top face of the display holder.
- Float the two display module fixing hook (fig. C) at the top of the display holder a little by the flat head screwdriver.
- Hold the display module (fig. D) and remove the display module (fig. D) from the front side.



5.2 Removing PLC Cover from PLC

→ For the FX3U PLC, refer to the FX3U Series User's Manual - Hardware Edition

Removing PLC Cover from FX3UC-32MT-LT PLC
The removing method from PLC is the same as the removing method of display module (FX3U-7DM).

→ For the FX3UC-32MT-LT PLC, refer to subsection 3.1.2

6. Specification

6.1 Applicable PLC

Item	Description
Applicable PLC	FX3U Series PLC (from first production) FX3UC-32MT-LT PLC (from first production)

6.2 General Specifications

Item	Specification				
Ambient temperature	0 to 55°C (32 to 131°F) when operating and -25 to 75°C (-4 to 158°F) when stored				
Ambient humidity	5 to 95%RH (no condensation) when operating				
Working atmosphere	Free from corrosive or flammable gas and excessive conductive dusts				
Vibration resistance	Frequency (Hz)	Acceleration (m/s ²)	Half amplitude (mm)	Sweep Count for X, Y, Z: 10 times (80 min in each direction)	
	Under intermittent vibration	10 to 57Hz	-		0.075mm
	Under continuous vibration	57 to 150Hz	9.8m/s ²		-
Shock resistance	147 m/s ² Acceleration, Action time: 11ms, 3 times in each direction X, Y, and Z				
	Working altitude	<2000m			
Protection	Equivalent to IP40 (Non - watertight type construction)				

7. Caution on use

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 distributor.
- 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.

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.

This product or display module does not have protective construction against water and such. Do not let a drop of water touch either.

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.