



Programmable Controller MELSEC iQ-F

Powered by Anywire

MELSEC iQ-F FX5-ASL-M

Hardware Manual



Table with Manual Number (JY997D73301), Revision (G), and Date (April 2022)

This manual describes the part names, dimensions, installation, and specifications of the product.

Effective April 2022. Specifications are subject to change without notice.

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Safety Precautions (Read these precautions before use.)

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

Table defining WARNING and CAUTION symbols and their implications for hazardous conditions.

Depending on the circumstances, procedures indicated by CAUTION may also cause severe injury.

PRECAUTIONS REGARDING WARRANTY

Note that there is precaution regarding warranty of this product.

Table showing repair terms for FX5-ASL-M (1 year) and other programmable controller products (7 years).

Associated Manual

Table listing associated manuals: MELSEC iQ-F FX5 User's Manual and MELSEC iQ-F FX5S/FX5UJ/FX5UC User's Manual (Hardware).

How to obtain manuals: For the necessary product manuals or documents, consult with your local Mitsubishi Electric representative.

Applicable standards

FX5-ASL-M complies with the EC Directive (EMC Directive), UL standards (UL, cUL) and UKCA marking.

Regarding the standards that relate to the CPU module, please refer to either the product catalog or consult with your local Mitsubishi Electric representative.

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

1. Outline

The FX5-ASL-M type AnyWireASLINK system master module (hereinafter referred to as FX5-ASL-M) is an intelligent function module for building an AnyWireASLINK system with FX5 CPU module.

The FX5-ASL-M is jointly developed and manufactured by Mitsubishi Electric and AnyWire Corporation.

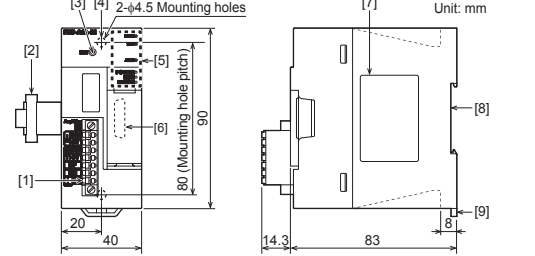
The AnyWireASLINK system is a sensor network system.

1.1 Incorporated Items

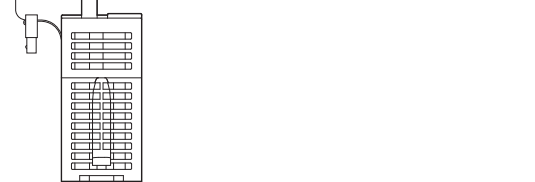
Check that the following product and items are included in the package:

Table listing incorporated items: FX5-ASL-M type AnyWireASLINK system master module, Dust proof protection sheet, Hardware manual, and Hardware manual (Chinese).

1.2 External Dimensions, Part Names



MASS (Weight): Approx. 0.2 kg Outer painting color: Munsell 0.6B7.6/0.2



- Legend for terminal block diagram: [1] Transmission cable terminal block, [2] Extension cable, [3] SET switch, etc.

1.3 Indications of LEDs

Table mapping LED display (POWER, RUN, ERROR, LINK, SET, ALM) to color and status (On, Off, Flashing) and their indications.

1.4 Terminal Layout

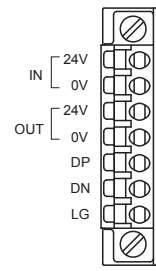


Table detailing terminal names and descriptions: IN (24V, 0V), OUT (24V, 0V), DP, DN, LG.

For further information for wiring to the terminal block, refer to the following manual: MELSEC iQ-F FX5 User's Manual (AnyWireASLINK)

2. Installation

Two boxes: INSTALLATION PRECAUTIONS (WARNING) and CAUTION, detailing safety measures for power supply and installation.

For further information on mounting, refer to the following manual: MELSEC iQ-F FX5S/FX5UJ/FX5UC User's Manual (Hardware)

3. Wiring

Table with WIRING PRECAUTIONS (WARNING) detailing safety measures for power supply, terminal block, and wiring connections.

WIRING PRECAUTIONS CAUTION

- Connect the power supply wiring to the dedicated terminals described in this manual.
If an AC power supply is connected to a DC input/output terminal or DC power supply terminal, the PLC will burn out.

3.1 Transmission Cable Terminal Block

For details on the terminal block layout, refer to section 1.4.

Table for transmission cable terminal block: Item (Tightening torque), Description (0.2 to 0.3 N·m).

- To tighten the terminal block, a flathead screwdriver having a tip size of 0.4x2.5 mm is required.

Suitable wiring and cable

Table for suitable wiring and cable with columns for Classification, Name, Diameter, Type, Material, and Temperature rating.

3.2 Cable Treatment

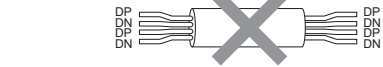
Bare cables can be connected to the transmission cable terminal block; however, for safety reasons, it is recommended to connect crimped wire ferrules.

Recommended wire ferrules (PHOENIX CONTACT GmbH & Co. KG)

Table for recommended wire ferrules: Electric wire size vs Recommended wire ferrule model name.

3.3 Wiring Precautions

- Do not run multiple transmission cables (DP, DN) using a multicore cable.



- The voltage should not fall below the lower limit of the allowable voltage range due to voltage drop caused by the cable.

- Do not connect soldered cables directly to the terminals. Doing so may loosen the screws, resulting in a poor contact.

- It is recommended to use a 1.25 mm² lead wire for the main line because the power supply is superimposed on the signal wire in the AnyWireASLINK system.

- Use a crimping tool to connect a bar solderless terminal to a cable.

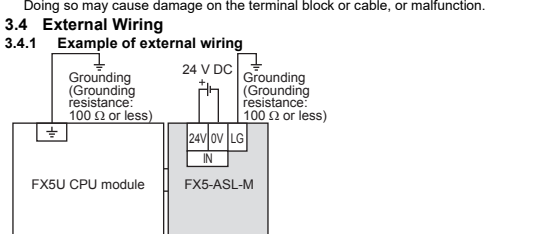
- Before inserting a bar solderless terminal, check the shapes of the wire insertion opening and bar solderless terminal. Then, insert the terminal in the correct orientation.

- Signal names are not printed on the transmission cable terminal block. To avoid damage of the device by incorrect wiring, wire cables to the terminal block attached to the FX5-ASL-M.

- Do not insert multiple bar solderless terminals into one wire insertion opening. Doing so may cause damage on the terminal block or cable, or malfunction.

3.4 External Wiring

3.4.1 Example of external wiring



3.4.2 Power on timing

The AnyWireASLINK system external power supply should be turned ON simultaneously with or before the power supply of the CPU module it is connected to.

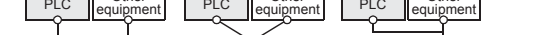
3.5 Grounding

Ground the PLC as stated below.

- Perform class D grounding. (Grounding resistance: 100 Ω or less)

Ground the PLC independently if possible.

If the PLC cannot be grounded independently, perform the "Shared grounding" shown below.



- Bring the grounding point close to the PLC as much as possible so that the ground cable can be shortened.

4. Specification

DESIGN PRECAUTIONS CAUTION

- An AnyWireASLINK system has no control function for ensuring safety.

- Make sure to set up the following safety circuits outside the PLC to ensure safe system operation even during external power supply problems or PLC failure.

- Most importantly, set up the following: 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).

- Note that when the CPU module detects an error, such as a watchdog timer error, during self-diagnosis, all outputs are turned off. Also, when an error that cannot be detected by the CPU module 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 a case.

- Construct an interlock circuit in the program so that the whole system always operates on the safe side before executing the control (for data change) of the PLC in operation.

- Especially, when a remote programmable controller is controlled by an external device, immediate action cannot be taken if a problem occurs in the programmable controller due to a communication failure. To prevent this, configure an interlock circuit in the program, and determine corrective actions to be taken between the external device and CPU module in case of a communication failure.

DESIGN PRECAUTIONS CAUTION

- Configure safety circuits, such as an emergency stop circuit and interlock circuit, external to the AnyWireASLINK system.

- Install module so that excessive force will not be applied to the terminal blocks.

- Failure to do so may result in wire damage/breakage or PLC failure.

- Simultaneously turn on and off the power supplies of the CPU module and extension modules.

STARTUP AND MAINTENANCE PRECAUTIONS CAUTION

- Do not disassemble or modify the PLC. Doing so may cause fire, equipment failures, or malfunctions.

- Do not drop the product or exert strong impact to it. Doing so may cause damage.

DISPOSAL PRECAUTIONS CAUTION

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

TRANSPORTATION PRECAUTIONS CAUTION

- The product is a precision instrument. During transportation, avoid impacts larger than those specified in the general specifications by using dedicated packaging boxes and shock-absorbing pallets.

- Failure to do so may cause failures in the product. After transportation, verify operation of the product and check for damage of the mounting part, etc.

4.1 Applicable CPU Module

Table for applicable CPU modules: Model name vs Applicability.

*1 FX5-CNV-IFC or FX5-C1PS-5V is necessary to connect FX5-ASL-M to the FX5UC CPU module.

4.2 General Specifications

The items other than the following are equivalent to those of the CPU module.

For the general specification, refer to the following manual: MELSEC iQ-F FX5S/FX5UJ/FX5UC User's Manual (Hardware)

Table for general specifications: Items vs Specifications.

*1 The simultaneous ON ratio of available PLC inputs or outputs changes with respect to the ambient temperature. For details, refer to the following manual.

*2 In the case where operating ambient temperature is lower than 0°C, the specifications are different from the above description. For details, refer to the following manual.

*3 When used in a low-temperature environment, use in an environment with no sudden temperature changes.

*4 The PLC cannot be used at a pressure higher than the atmospheric pressure to avoid damage.

4.3 Power Supply Specifications

Table for power supply specifications: Items vs Specifications.

4.4 Performance Specifications

Table for performance specifications: Items vs Specifications.

*1 For slave modules with integrated transmission cables (DP, DN), the length of the transmission cables (DP, DN) is included in the total length.

*2 The number of available remote I/O points per system varies depending on the number of I/O points of the extension devices. For the limit of I/O points, refer to the following manual.

*3 The maximum number of points that can be used differs depending on the version of the CPU module used. For details, refer to the following manual.

*4 FX5-ASL-M and FX3U-128ASL-M cannot be used together.

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 fail-safe functions in the system.

Warranty: Exclusion of loss in opportunity and secondary loss from warranty liability

Regardless of the gratis warranty term, Mitsubishi shall not be liable for compensation to:

- (1) Damages caused by any cause found not to be the responsibility of Mitsubishi.

- (2) Loss in opportunity, lost profits incurred to the user by Failures of Mitsubishi products.

- (3) Special damages and secondary damages whether foreseeable or not, compensation for accidents, and compensation for damages to products other than Mitsubishi products.

- (4) Replacement by the user, maintenance of on-site equipment, start-up test run and other tasks.

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