



Table with Manual Number (JY997D74101) and Date (October 2023)

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

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Effective October 2023. Specifications are subject to change without notice. © 2017 MITSUBISHI ELECTRIC CORPORATION

Safety Precautions (Read these precautions before use.)

Table with WARNING and CAUTION symbols and descriptions of hazardous conditions.

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

Associated Manual

Table listing manuals such as MELSEC IQ-F FX5 Positioning Module User's Manual and MELSEC IQ-F FX5S/FX5UJ/FX5UC User's Manual.

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

Applicable standards

FX5-20PG-□ complies with the EU Directive (EMC Directive), UL standards (UL, cUL) and UKCA marking.

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

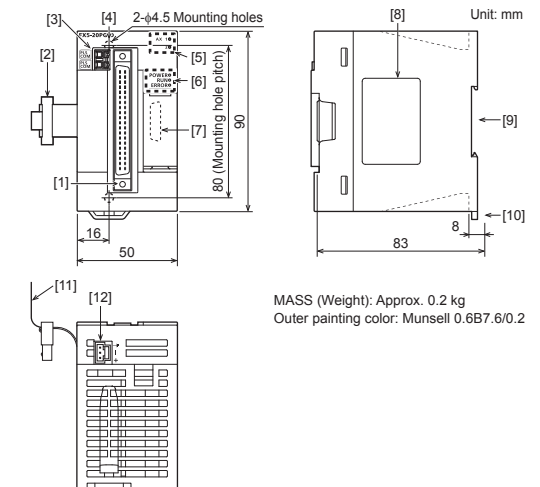
1. Outline

FX5-20PG-□ 2-axis pulse train positioning module (hereinafter referred to as FX5-20PG-□) is an intelligent function module for high speed, high precision positioning with servo motors or stepping motors via drive units.

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

Table listing included items like FX2NC-100MPCB power cable, dust proof protection sheet, and manuals.

1.2 External Dimensions, Part Names



- List of part names: [1] Connector for external devices, [2] Extension cable, [3] Differential driver common terminal, etc.

1.3 Indications of LEDs

Table showing LED status (AX1, AX2) and corresponding indications (Power OFF, Normal operation, Operation failure).

Table showing FX5-20PG-□ status, LED display (POWER, RUN, ERROR), and Indication (Error).

1.4 Signal Layouts

The signal layout of the FX5-20PG-□ connector for external devices is as follows:

1.4.1 40-pin connectors

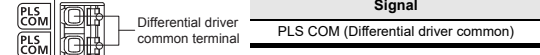
Table mapping pin numbers (B20-B1) to signals (A20-A1) for Axis 2 (AX2) and Axis 1 (AX1).

*1 The signal layouts of FX5-20PG-D are as follows.

Table mapping pin numbers (B18-B15) to signals (A18-A15) for FX5-20PG-D.

For further information on signal, refer to the following manual.

1.4.2 Differential driver common terminal (FX5-20PG-D only)

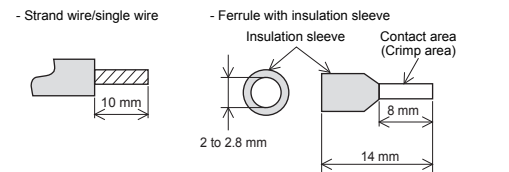


2. Installation

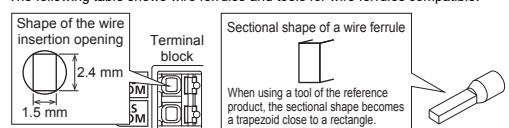
INSTALLATION PRECAUTIONS: WARNING and CAUTION symbols with detailed instructions for safe installation and handling.

3.2.2 Wire end treatment

Strip the cable about 10 mm from the tip to connect a wire ferrule at the stripped area. Failure to do so may result in electric shock or short circuit between adjacent terminals.



Check the shape of the wire insertion opening with the following chart, and use the smaller wire ferrule than the described size. Also, insert the wire with care so that the wire ferrule is in proper orientation.



The following table shows wire ferrules and its associated tools compatible with the terminal block.

Table showing wire ferrules (Ferrules with/without insulation sleeve) and crimp tools (CRIMPFOX 6).

3.2.3 Connecting a cable

- When ferrules with insulation sleeve are used, insert a wire with the ferrule with insulation sleeve into the wire insertion opening and push the wire.

Table showing wire colors: (Green), (Black), (Red) and their corresponding terminal connections.

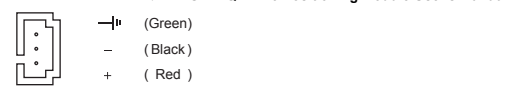
3.2.4 Disconnection of the cable

Push the open/close button of the wire to be disconnected with a flathead screwdriver.

3.3 Power Connector

For further information on the power supply wiring and power cable, refer to the following manual.

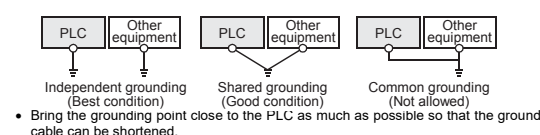
→ MELSEC IQ-F FX5 Positioning Module User's Manual



3.4 Grounding

- Ground the PLC as stated below. Perform class D grounding. (Grounding resistance: 100 Ω or less)

→ MELSEC IQ-F FX5S/FX5UJ/FX5U/FX5UC User's Manual (Hardware)



4. Specification

DESIGN PRECAUTIONS: WARNING symbol with detailed instructions for safe system operation, handling, and installation.

DESIGN PRECAUTIONS: CAUTION symbol with instructions for power supply connections.

STARTUP AND MAINTENANCE PRECAUTIONS: CAUTION symbol with instructions for handling the PLC.

DISPOSAL PRECAUTIONS: CAUTION symbol with instructions for electronic waste disposal.

TRANSPORTATION PRECAUTIONS: CAUTION symbol with instructions for handling during transport.

Table for 4.1 Applicable CPU Module showing model names and applicability.

Table for 4.2 Applicable Software Package showing software names and applicability.

4.3 General Specifications: The items other than the following are equivalent to those of the CPU module.

Table showing general specifications: Dielectric withstand voltage (500 V AC), Insulation resistance (10 MΩ).

4.4 Power Supply Specifications

Table showing power supply specifications: Items (Power supply voltage, Allowable instantaneous power failure time, Current consumption) and Specifications.

4.5 Performance Specifications

Table showing performance specifications: Items (Number of control axes, Pulse output form, Interpolation function, Control method, Control unit, Positioning data, Maximum connection distance between servos, Number of write accesses to flash ROM, Number of occupied I/O points) and Specifications.

4.6 Input Specifications

Table for 4.6.1 Drive unit READY signal (READY), Stop signal (STOP), Upper limit signal (FLS), Lower limit signal (RLS) showing items and specifications.

4.6.2 Zero signal (PG05/PG024)

Table for 4.6.2 Zero signal (PG05/PG024) showing items and specifications.

Table for 4.6.3 Manual pulse generator A phase (PULSER A)/ Manual pulse generator B phase (PULSER B) showing items and specifications.

4.6.4 Near-point dog signal (DOG)

Table for 4.6.4 Near-point dog signal (DOG) showing items and specifications.

INSTALLATION PRECAUTIONS CAUTION

- The dust proof sheet should be affixed to the ventilation slits before installation and wiring work to block foreign objects such as cutting and wiring debris.

For further information on mounting, refer to the following manual. → MELSEC IQ-F FX5S/FX5UJ/FX5U/FX5UC User's Manual (Hardware)

3. Wiring

WIRING PRECAUTIONS WARNING

- Make sure to cut off all phases of the power supply externally before attempting installation or wiring work.

WIRING PRECAUTIONS CAUTION

- Securely connect the connector to the module. Poor contact may cause malfunction.

For further information on wiring, refer to the following manual. → MELSEC IQ-F FX5 Positioning Module User's Manual

3.1 Applicable Connector

Use the following 40 pin connectors.

Table showing suitable wiring for soldering and crimping type connectors with specifications for size, material, and temperature rating.

*1 Use wire with a sheath outside diameter of 1.3 mm or less when the 40 pins are used.

3.2 Differential Driver Common Terminal

Table for 3.2.1 Suitable wiring showing no. of wire per terminal and one wire specifications.

Table for 4.4 External command signal (CHG) showing items and specifications for signal format, response time, insulation, etc.

4.7 Output Specifications

4.7.1 Deviation counter clear signal (CLEAR)

Table for 4.7.1 Deviation counter clear signal (CLEAR) showing items and specifications.

4.7.2 Pulse output (PULSE R/ PULSE F) [FX5-20PG-P]

Table for 4.7.2 Pulse output (PULSE R/ PULSE F) [FX5-20PG-P] showing items and specifications.

4.7.3 Pulse output (PULSE R+/PULSE F+) [FX5-20PG-D]

Specification of a differential driver (equivalent to AM26C31).

This manual confers no industrial property rights or any rights of any other kind, nor does it confer any patent licenses.

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:

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.