



Side A JAPANESE
Side B ENGLISH

Programmable Controller
MELSEC iQ-F

MELSEC iQ-F FX5-20PG-□

Hardware Manual



| | |
|---------------|--------------|
| Manual Number | JY997D74101 |
| Revision | B |
| Date | October 2018 |

This manual describes the part names, dimensions, installation, and specifications of the product. Before use, read this manual and manuals of relevant products fully to acquire proficiency in handling and operating the product. Make sure to learn all the product information, safety information, and precautions.

And, store this manual in a safe place so that you can take it out and read it whenever necessary. Always forward it to the end user.

Registration:
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Effective October 2018
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Safety Precautions (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 minor or moderate injury or property 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 Manual

| Manual name | Manual No. | Description |
|-----------------------------------------------------------------------------------|--------------|-------------------------------------------------------------------------------------------------|
| MELSEC iQ-F FX5 User's Manual (Positioning Control - Intelligent function module) | SH-081805ENG | Explains positioning module. |
| MELSEC iQ-F FX5U User's Manual (Hardware) | JY997D55301 | Explains FX5U CPU module specification details for I/O, wiring, installation, and maintenance. |
| MELSEC iQ-F FX5UC User's Manual (Hardware) | JY997D61401 | Explains FX5UC CPU module specification details for I/O, wiring, installation, and maintenance. |

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 EC Directive (EMC Directive) and UL standards (UL, cUL). Further information can be found in the following manual.

→ MELSEC iQ-F FX5 User's Manual (Positioning Control - Intelligent function module)

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

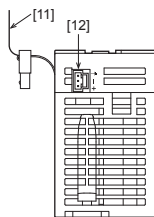
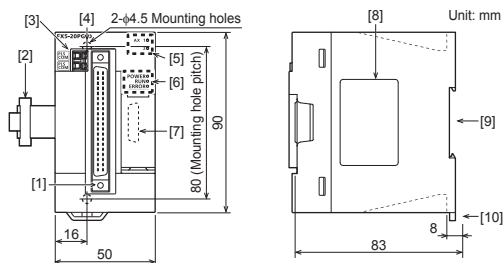
FX5-20PG-□ 2-axis pulse train positioning module (hereinafter referred to as FX5-20PG-□) is an intelligent function module for high speed, high precision positioning with servo motors or stepping motors via drive units.

1.1 Incorporated Items

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

| Product | FX5-20PG-□ 2 axis pulse train positioning module |
|----------------|---------------------------------------------------|
| Included Items | FX2NC-100MPCB power cable: (1 m, three wire) |
| | Dust proof protection sheet (1 sheet) |
| | Hardware manual [Japanese /English] (This manual) |
| | Hardware manual [Chinese] |

1.2 External Dimensions, Part Names



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

- [1] Connector for external devices
- [2] Extension cable
- [3] Differential driver common terminal^{*1}
- [4] Direct mounting hole: 2 holes of φ4.5 (mounting screw: M4 screw)
- [5] Axis display LED (AX1, AX2)
- [6] Operation status display LEDs
- [7] Extension connector (for next module)
- [8] Name plate
- [9] DIN rail mounting groove (DIN rail: DIN 46277, 35 mm wide)
- [10] DIN rail mounting hook
- [11] Pullout tab
- [12] Power connector

*1 FX5-20PG-D only

1.3 Indications of LEDs

□: OFF, ■: ON, ●: Flashing (Flashing interval ON: 200 ms/OFF: 200 ms)

| FX5-20PG-□ status | LED display | Indication |
|----------------------------------------------------|-------------------------------------|---------------------------------|
| Power OFF | AX1 □ POWER AX2 □ RUN ERROR □ | Power OFF |
| Normal operation (RUN LED is ON, ERROR LED is OFF) | AX1 □ POWER AX2 □ RUN ERROR ■ | Axes stopped Axes on standby |
| | AX1 ■ POWER AX2 □ RUN ERROR □ | Axes in operation |
| Operation failure | AX1 ● POWER AX2 □ RUN ERROR ■ | Minor error |
| | AX1 □ POWER AX2 □ RUN ERROR ● | Moderate error |

| FX5-20PG-□ status | LED display | Indication |
|-------------------|-------------------------------------|-------------------------------|
| Operation failure | AX1 □ POWER AX2 □ RUN ERROR □ | Error (Initial not completed) |

1.4 Signal Layouts

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

1.4.1 40-pin connectors

| Pin No. | Axis 2 (AX2) | | Axis 1 (AX1) | |
|---------|--------------|--------|--------------|-------------------------|
| | Pin No. | Signal | Pin No. | Signal |
| B20 | A20 | | A20 | PULSER B+ |
| B19 | A19 | B20 | A19 | PULSER B+ |
| B18 | A18 | B19 | A18 | PULSER A+ |
| B17 | A17 | B18 | A17 | PULSE COM ^{*1} |
| B16 | A16 | B17 | A16 | PULSE R ^{*1} |
| B15 | A15 | B16 | A15 | PULSE COM ^{*1} |
| B14 | A14 | B15 | A14 | PULSE F ^{*1} |
| B13 | A13 | B14 | A13 | CLRCOM |
| B12 | A12 | B13 | A12 | CLEAR |
| B11 | A11 | B12 | A11 | RDYCOM |
| B10 | A10 | B11 | A10 | READY |
| B9 | A9 | B10 | A9 | PG0COM |
| B8 | A8 | B9 | A8 | PG05 |
| B7 | A7 | B8 | A7 | PG024 |
| B6 | A6 | B7 | A6 | COM |
| B5 | A5 | B6 | A5 | COM |
| B4 | A4 | B5 | A4 | CHG |
| B3 | A3 | B4 | A3 | STOP |
| B2 | A2 | B3 | A2 | DOG |
| B1 | A1 | B2 | A1 | RLS |
| | | B1 | A1 | FLS |

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

| Axis 2 (AX2) | | Axis 1 (AX1) | |
|--------------|----------|--------------|----------|
| Pin No. | Signal | Pin No. | Signal |
| B18 | PULSE R- | A18 | PULSE R- |
| B17 | PULSE R+ | A17 | PULSE R+ |
| B16 | PULSE F- | A16 | PULSE F- |
| B15 | PULSE F+ | A15 | PULSE F+ |

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

→ MELSEC iQ-F FX5 User's Manual (Positioning Control - Intelligent function module)

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



2. Installation

INSTALLATION 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.
- Use the product within the generic environment specifications described in the User's Manual (Hardware) for the CPU module to be used. 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.

INSTALLATION PRECAUTIONS CAUTION

- Do not touch the conductive parts of the product directly. Doing so may cause device failures or malfunctions.
- When drilling screw holes or wiring, make sure that cutting and wiring debris do not enter the ventilation slits of the PLC. Failure to do so may cause fire, equipment failures or malfunctions.

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. However, when the installation work is completed, make sure to remove the sheet to provide adequate ventilation. Failure to do so may cause fire, equipment failures or malfunctions.
- 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.
- Install the product securely using a DIN rail or mounting screws.
- Connect the extension cables securely to their designated connectors. Loose connections may cause malfunctions.

For further information on mounting, refer to the following manual.
→ MELSEC iQ-F FX5U User's Manual (Hardware)
→ MELSEC iQ-F 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. Failure to do so may cause electric shock or damage to the product.
- The temperature rating of the cable should be 80°C or more.
- Make sure to properly wire to the spring clamp terminal block in accordance with the following precautions. Failure to do so may cause electric shock, equipment failures, a shortcircuit, wire breakage, malfunctions, or damage to the product.
 - The disposal size of the cable end should follow the dimensions described in the manual.
 - Twist the ends of stranded wires 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.

WIRING PRECAUTIONS CAUTION

- Securely connect the connector to the module. Poor contact may cause malfunction.
- Make sure to observe the following precautions in order to prevent any damage to the machinery or accidents due to malfunction of the PLC caused by abnormal data written to the PLC due to the effects of noise:
 - Do not bundle the power line and communication cables together with or lay them close to the main circuit, high-voltage line, load line or power line. As a guideline, lay the power line, control line and communication cables at least 100 mm away from the main circuit, high-voltage line, load line or power line.

3.1 Applicable Connector

Use the following 40 pin connectors.

| Type | Model | Suitable wiring | | | |
|-----------------------------------------------------------------|----------------------|---------------------------------------------|-------------|-------------|--------------------|
| | | Size | Type | Material | Temperature rating |
| Soldering type connector (straight type) | A6CON1 ^{*1} | 0.088 to 0.3 mm ² (AWG28 to 22) | | | |
| Crimping type connector (straight type) | A6CON2 | 0.088 to 0.24 mm ² (AWG28 to 24) | Strand wire | Copper wire | 80°C or more |
| Soldering type connector (dual purpose (straight/oblique type)) | A6CON4 ^{*1} | 0.088 to 0.3 mm ² (AWG28 to 22) | | | |

*1 Use wire with a sheath outside diameter of 1.3 mm or less when the 40 pins are used. Select appropriate cables according to the current value used.

3.2 Differential Driver Common Terminal

3.2.1 Suitable wiring

| No. of wire per terminal | One wire | |
|--------------------------|--------------------------------------------------|---------------------------------------------|
| Wire size | Single wire, Strand wire (Material: Copper wire) | AWG24 to 16 (0.2 to 1.5 mm ²) |
| | Ferrules with insulation sleeve | AWG23 to 19 (0.25 to 0.75 mm ²) |
| | Ferrules without insulation sleeve | AWG23 to 16 (0.25 to 1.5mm ²) |
| Temperature rating | 80°C or more | |

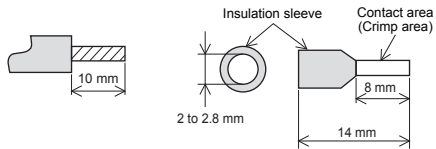
3.2.2 Wire end treatment

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 because of the conductive part. If the wire strip length is too short, it may result in the poor contact to the spring clamp terminal part.

When using a wire ferrule with an insulating sleeve, choose a wire with proper cable sheath referring to the above outside dimensions, otherwise the wire cannot be inserted easily

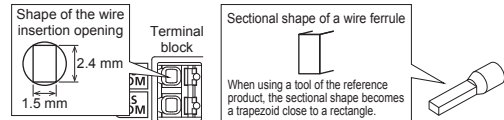
- Strand wire/single wire

- Ferrule with insulation sleeve



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. Failure to do so may cause the bite of the terminal and the damage of the terminal block.

The following table shows wire ferrules and tools for wire ferrules compatible.



The following table shows wire ferrules and its associated tools compatible with the terminal block. The shape of the wire ferrule differs depending on the crimp tool to be used, use the reference product. If the product other than referenced products is used, the wire ferrule cannot be removed. Sufficiently confirm that the wire ferrule can be removed before use.

<Reference product>

| Manufacturer | Sleeve | Ferrules model | Suitable wiring size | Crimp tool |
|-------------------------------|------------------------------------|---------------------------|---------------------------|------------|
| PHOENIX CONTACT GmbH & Co. KG | Ferrules with insulation sleeve | AI 0.25-8 YE | 0.25 mm ² | CRIMPFOX 6 |
| | | AI 0.34-8 TQ | 0.3, 0.34 mm ² | |
| | | AI 0.5-8 WH | 0.5 mm ² | |
| | | AI 0.75-8 GY | 0.75 mm ² | |
| | Ferrules without insulation sleeve | A 0,25-7 | 0.25 mm ² | |
| | | A 0,34-7 | 0.3, 0.34 mm ² | |
| | | A 0,5-8 | 0.5 mm ² | |
| | | A 0,75-8 | 0.75 mm ² | |
| | AI 1.0-8 | 1.0 mm ² | | |
| | AI 1.5-7 | 1.25, 1.5 mm ² | | |

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.
- When stranded wires and solid wires are used
Push the open/close button of the terminal block with a flathead screwdriver. While pushing the open/close button, insert the wire into the insertion opening until the wire reaches the back, and then release the open/close button.

Then, pull the wire lightly and check that it is clamped securely.

<Reference>

| Manufacturer | Model |
|-------------------------------|-----------------|
| PHOENIX CONTACT GmbH & Co. KG | SZS 0.4×2.5 VDE |

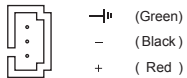
3.2.4 Disconnection of the cable

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

3.3 Power Connector

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

→ MELSEC IQ-F FX5 User's Manual (Positioning Control - Intelligent function module)



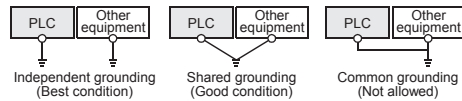
3.4 Grounding

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. For details, refer to the following manual.

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



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

4. Specification

| DESIGN PRECAUTIONS | WARNING |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| <ul style="list-style-type: none"> 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. Otherwise, malfunctions may cause serious accidents. <ul style="list-style-type: none"> 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. Note that the output current of the 24 V DC service power supply varies depending on the model and the absence/presence of extension modules. If an overload occurs, the voltage automatically drops, inputs in the PLC are disabled, and all outputs are turned off. External circuits and mechanisms should be designed to ensure safe machinery operation in such a case. Note that when an error occurs in a relay, transistor or triac of an output circuit, the output might stay on or off. For output signals that may lead to serious accidents, external circuits and mechanisms should be designed to ensure safe machinery operation in such a case. At Forward/Reverse rotation limits, make sure to wire the contacts with NC, negative-logic. Wiring contacts with NO, positive-logic may cause serious accidents. In an output circuit, when a load current exceeding the current rating or an overcurrent caused by a load short-circuit flows for a long time, it may cause smoke and fire. To prevent this, configure an external safety circuit, such as a fuse. | |

| DESIGN PRECAUTIONS | CAUTION |
|----------------------------------------------------------------------------------------------------------------------------------------------|---------|
| <ul style="list-style-type: none"> Simultaneously turn on and off the power supplies of the CPU module and extension modules. | |

| 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 representative. 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. | |

| TRANSPORTATION PRECAUTIONS | CAUTION |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| <ul style="list-style-type: none"> 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

| Model name | Applicability |
|--------------------------------|---------------------|
| FX5U CPU module | Ver. 1.050 or later |
| FX5UC CPU module ^{*1} | Ver. 1.050 or later |

*1 FX5-CNV-IFC or FX5-C1PS-5V is necessary to connect FX5-20PG-P to the FX5UC CPU module.

4.2 Applicable Software Package

| Software | Applicability | |
|-----------|----------------------|----------------------|
| | FX5-20PG-P | FX5-20PG-D |
| GX Works3 | Ver. 1.035M or later | Ver. 1.050C or later |

4.3 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 FX5U User's Manual (Hardware)
→ MELSEC IQ-F FX5UC User's Manual (Hardware)

| Items | Specifications | |
|------------------------------|----------------------------------------------------------|-------------------------------------------|
| Dielectric withstand voltage | 500 V AC for 1 minute | Between all terminals and ground terminal |
| Insulation resistance | 10 MΩ or higher by 500 V DC insulation resistance tester | |

4.4 Power Supply Specifications

| Items | Specifications | |
|--------------------------------------------|--------------------------------------------------------------------------------|------------|
| | FX5-20PG-P | FX5-20PG-D |
| Power supply voltage | 24 V DC +20%, -15% | |
| Allowable instantaneous power failure time | Operation continues when the instantaneous power failure is shorter than 5 ms. | |
| Current consumption | 120 mA | 165 mA |

4.5 Performance Specifications

| Items | Specifications | |
|--------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| | FX5-20PG-P | FX5-20PG-D |
| Number of control axes | 2 axes | |
| Pulse output form | Transistor | Differential driver |
| Interpolation function | 2-axis linear interpolation, 2-axis circular interpolation | |
| Control method | PTP (Point To Point) control, path control (line and arc can be set), speed control, speed-position switching control, position-speed switching control | |
| Control unit | mm, inch, degree, pulse | |
| Positioning data | 600 data/axis | |
| Maximum connection distance between servos | 2 m | 10 m |
| Number of write accesses to flash ROM | 100000 times maximum | |
| Number of occupied I/O points | 8 points | |

4.6 Input Specifications

4.6.1 Drive unit READY signal (READY), Stop signal (STOP), Upper limit signal (FLS), Lower limit signal (RLS)

| Items | Specifications |
|-------------------------|----------------------------------------------------------------------------------------------------------|
| Signal voltage | 24 V DC |
| Input current | 5 mA |
| ON current | 3.5 mA or more |
| OFF current | 1.7 mA or less |
| Signal format | No-voltage contact input Sink: NPN open collector transistor Source: PNP open collector transistor |
| Response time | 4 ms or less |
| Insulation of circuit | Photo-coupler insulation |
| Indication of operation | None (Operation check via buffer memory is possible.) |

4.6.2 Zero signal (PG05/PG024)

| Items | Specifications | |
|-------------------------|-------------------------------------------------------|----------------|
| | PG05 | PG024 |
| Signal voltage | 5 V DC | 24 V DC |
| Input current | 5 mA | |
| ON current | 2 mA or more | 3 mA or more |
| OFF current | 0.5 mA or less | 0.2 mA or less |
| Signal format | NPN open collector transistor | |
| Response time | 1 ms or less | |
| Insulation of circuit | Photo-coupler insulation | |
| Indication of operation | None (Operation check via buffer memory is possible.) | |

4.6.3 Manual pulse generator A phase (PULSER A) / Manual pulse generator B phase (PULSER B)

| Items | Specifications | |
|-------------------------|-------------------------------------------------------|--|
| Signal voltage | 5 V DC | |
| Input current | 14 mA | |
| ON current | 2 mA or more | |
| OFF current | 0.2 mA or less | |
| Signal format | NPN open collector transistor | |
| Response frequency | 100 kHz | |
| Insulation of circuit | Photo-coupler insulation | |
| Indication of operation | None (Operation check via buffer memory is possible.) | |

4.6.4 Near-point dog signal (DOG)

| Items | Specifications | |
|----------------|----------------|--|
| Signal voltage | 24 V DC | |
| Input current | 5 mA | |
| ON current | 3.5 mA or more | |
| OFF current | 1.7 mA or less | |

| Items | Specifications |
|-------------------------|----------------------------------------------------------------------------------------------------------|
| Signal format | No-voltage contact input Sink: NPN open collector transistor Source: PNP open collector transistor |
| Response time | 1 ms or less |
| Insulation of circuit | Photo-coupler insulation |
| Indication of operation | None (Operation check via buffer memory is possible.) |

4.6.5 External command signal (CHG)

| Items | Specifications |
|-------------------------|----------------------------------------------------------------------------------------------------------|
| Signal voltage | 24 V DC |
| Input current | 5 mA |
| ON current | 2.7 mA or more |
| OFF current | 0.8 mA or less |
| Signal format | No-voltage contact input Sink: NPN open collector transistor Source: PNP open collector transistor |
| Response time | 20 μs |
| Insulation of circuit | Photo-coupler insulation |
| Indication of operation | None (Operation check via buffer memory is possible.) |

4.7 Output Specifications

4.7.1 Deviation counter clear signal (CLEAR)

| Items | Specifications |
|-------------------------|-------------------------------------------------------|
| Pulse output form | Transistor |
| Signal output time | 1 to 65535 ms |
| Rated load voltage | 5 to 24 V DC |
| Max. load current | 100 mA |
| Output ON voltage | 1.5 V or less |
| Indication of operation | None (Operation check via buffer memory is possible.) |

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

| Items | Specifications |
|-------------------------|------------------------------------------------------------------------------------------------------|
| Pulse output form | Transistor |
| Output form | PULSE/SIGN mode, CW/CCW mode, A phase/B phase (multiple of 4), A phase/B phase (multiple of 1) |
| Output frequency | 1 pps to 200 kpps |
| Rated load voltage | 5 to 24 V DC |
| Max. load current | 50 mA |
| Output ON voltage | 1.0 V or less |
| Indication of operation | None (Operation check via buffer memory is possible.) |

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. 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

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.

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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