Section 1.1: Additional function from the FX3G series

The FX3GE series PLCs are equipped with an Ethernet communication function, enabling high-speed communication for users with more demanding requirements. This function is compatible with Ethernet/IP, Profinet, and EtherCAT protocols, allowing for seamless integration with various industrial automation systems.

This article introduces the Ethernet communication function and provides guidelines for its effective use. By mastering this function, users can enhance their system performance and efficiency.

### 1.1.1 Additional function from the FX3G series

- **Ethernet communication function:** The FX3GE series PLCs are equipped with an Ethernet communication function, allowing for high-speed communication with various industrial automation systems.
- **Specifications:** The Ethernet communication function supports Ethernet/IP, Profinet, and EtherCAT protocols, ensuring compatibility with a wide range of systems.
- **Implementation:** Implementing the Ethernet communication function involves configuring the PLC settings, configuring the target system, and testing the communication. Users are encouraged to consult the relevant manuals for detailed implementation steps.

### 1.1.2 Programming tool

The FX3GE Series Programming Tool is an essential tool for programming the FX3GE series PLCs. It provides a user-friendly interface for creating and downloading programs, monitoring the PLC status, and configuring the communication settings.

### 1.1.3 Using the built-in Ethernet

When using the built-in Ethernet, users should ensure that the settings and connection parameters are configured correctly to prevent communication errors and ensure smooth operation.

### 1.1.4 Terminal block

The FX3GE series PLCs are equipped with a terminal block for wiring. Users should follow the manufacturer's guidelines for proper wiring and connection to avoid operational issues and ensure system reliability.
The input/output terminal block of FX3GE series PLC is built-in.

1.3 Using the built-in Ethernet

In the case that the version does not support FX3G, the programming tool can still be used to configure the wiring. The necessary wiring is already configured in the FX3GE series PLC. Please refer to the following for details.

2.1 Part names


2.2 Pin connections

Refer to FX3U Series Controller - FX3GE Series PLC.

3.1 PIN Diagrams


4.1 Logic diagram

### 2.3.2 Installation

- **Installation**

**Precautions**

1. For the input/output extension units/blocks and special adapters, refer to the following manual.

2. For the terminals of FX3GE series PLC, M3 screws are used.

**Mounting**

1. Use M3 screws for the installation of the main unit. For the details of the installation of the main unit, refer to the FX3GE Series main unit - Hardware Edition.

**Input/output terminals**

- The input/output terminals are used to connect the input/output devices. For the details of the input/output terminals, refer to FX3GE Series main unit - Hardware Edition.

**Output terminals**

- The output terminals are used to connect the output devices. For the details of the output terminals, refer to FX3GE Series main unit - Hardware Edition.

**Power supply terminals**

- The power supply terminals are used to connect the power supply. For the details of the power supply terminals, refer to FX3GE Series main unit - Hardware Edition.

**Connector**

- The connector is used to connect the main unit to the expansion unit. For the details of the connector, refer to FX3GE Series main unit - Hardware Edition.

**Power supply terminals**

- The power supply terminals are used to connect the power supply. For the details of the power supply terminals, refer to FX3GE Series main unit - Hardware Edition.

**Connector**

- The connector is used to connect the main unit to the expansion unit. For the details of the connector, refer to FX3GE Series main unit - Hardware Edition.

**Input/output terminals**

- The input/output terminals are used to connect the input/output devices. For the details of the input/output terminals, refer to FX3GE Series main unit - Hardware Edition.

**Output terminals**

- The output terminals are used to connect the output devices. For the details of the output terminals, refer to FX3GE Series main unit - Hardware Edition.

**Power supply terminals**

- The power supply terminals are used to connect the power supply. For the details of the power supply terminals, refer to FX3GE Series main unit - Hardware Edition.

**Connector**

- The connector is used to connect the main unit to the expansion unit. For the details of the connector, refer to FX3GE Series main unit - Hardware Edition.

**Input/output terminals**

- The input/output terminals are used to connect the input/output devices. For the details of the input/output terminals, refer to FX3GE Series main unit - Hardware Edition.

**Output terminals**

- The output terminals are used to connect the output devices. For the details of the output terminals, refer to FX3GE Series main unit - Hardware Edition.

**Power supply terminals**

- The power supply terminals are used to connect the power supply. For the details of the power supply terminals, refer to FX3GE Series main unit - Hardware Edition.

**Connector**

- The connector is used to connect the main unit to the expansion unit. For the details of the connector, refer to FX3GE Series main unit - Hardware Edition.

### 3.2 Installation location

- Install the PLC in an environment conforming to the general specifications (section 3.3) installation conditions and criteria. For more details, refer to FX3GE Series User's Manual - Hardware Edition, Section 3.1 Installation, subsection Installation location.
### Installation

**1. General specifications**
- **Ambient temperature**
  - 5°C to +55°C (When operating inside a cabinet, 0°C to +40°C)
- **Relative humidity**
  - 5% to 95% RH (non-condensing)
- **Vibration resistance**
  - 10 to 550 Hz, < 0.2g (sinusoidal sweep, half-power point)
- **Shock resistance**
  - 50 g (2 ms pulse; half-sine)

**2. Power supply/input/output specifications and external dimensions of the main unit**

<table>
<thead>
<tr>
<th>Item</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
<td>100V AC or 120V AC (±10%) 50/60Hz 1,000VA or less</td>
</tr>
<tr>
<td>Input/output</td>
<td>24V DC, 20mA or less</td>
</tr>
</tbody>
</table>

**3.2 (0.13") to (0.18") for the pin pitches and 1.25 (0.05") to 1.5 (0.06") for the terminal block.**

**Notes**
- For the mounting dimensions, refer to the instructions on the dustproof sheet.
- The terminal can be used for the main unit or PLC output only.
- Do not use the terminal for the main unit or PLC output.
- For the installation location, refer to the instructions on the dustproof sheet.
- The terminal can be used for the main unit or PLC output only.
- Do not use the terminal for the main unit or PLC output.
- For the mounting dimensions, refer to the instructions on the dustproof sheet.
4.3 Example of relay output wiring (DC power type)

24V DC power is supplied to the relay output terminals.

**Refer to Section 4.4.1 for details.**

4.4 Input specifications and external wiring

As for the details of the input specifications of 120V extension modules and external wiring, refer to the following manual.


4.4.1 Input specifications (24V DC input type)

<table>
<thead>
<tr>
<th>Item</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of input points</strong></td>
<td>10 points (16 points)*1</td>
</tr>
<tr>
<td><strong>Input voltage</strong></td>
<td>AC power type: 250V or less (250V or less)</td>
</tr>
<tr>
<td><strong>Input impedance</strong></td>
<td>3.3k</td>
</tr>
<tr>
<td><strong>Input current</strong></td>
<td>3.5mA or more</td>
</tr>
</tbody>
</table>

4.4.3 Examples of input wiring (DC power type)

1. **Sink input**
   - [1] Fuse
   - [2] Load
   - [3] DC power supply
   - [4] PLC

2. **Source input**
   - [1] Load
   - [2] DC power supply
   - [3] PLC
   - [4] Fuse

4.6 Terminal block layouts

For details of the terminal block layout, refer to the following manual.


4.6.2 External wiring of transistor output

1. External Wiring of Sink Output Type

As for the details of instructions for connecting input devices, refer to the following manual.


1. **Sink input**
   - Fuse
   - [2] Load
   - [3] DC power supply
   - [4] PLC

2. **Source input**
   - [1] Load
   - [2] DC power supply
   - [3] PLC
   - [4] Fuse

4.7 Time out specifications of IO extension units

As for the details of the time out specifications of IO extension units, refer to the following manual.


1. **Sink input**
   - Fuse
   - [2] Load
   - [3] DC power supply
   - [4] PLC

2. **Source input**
   - [1] Load
   - [2] DC power supply
   - [3] PLC
   - [4] Fuse
4.3 Example of electronic wiring (DC power type)

24V DC power is supplied to the main unit and input/output extension unit.

- Common mode Loads, such as contactors for normal and reverse rotations, that must not be turned on simultaneously should have an isolation in the PLC program and an external interlock circuit.

4.3.1 Wiring diagram

![Wiring Diagram](image)

- Use a two-wire proximity switch whose leakage current is 1.5mA or less when switches are ON.
- Use a device with a parallel resistance of 15k\(\Omega\) or more.
- Connect the terminal block (M3 screw) with the terminal block of the PLC.
- Use ground wires thicker than AWG14 (2mm²).

4.5.4 Cautions in external wiring

- Observe the following items. Failure to do so may cause incorrect data or PLC failures.
- As for the details of Instructions for connecting input devices, refer to the following manual.

4.6.1 Output specifications and example of external wiring

**Example of wiring (DC power type)**

As for the details of the input specifications of DC extension units and external wiring, refer to the following manual.

- Do not connect ac terminals with live supply voltage. Contact Mitsubishi Electric for assistance.
- To prevent abnormal operation, connect the AC power supply to the terminal block and use a load power supply capacity that is at least 2 times larger than the total rated fuse output.

**4.5 Relay output specifications and example of external wiring**

As for the details of the relay output specifications of DC extension units and external wiring, refer to the following manual.

**5. Terminal block layout**


**6. Builtin Ethernet specifications and wiring**

Refer to FX3G-ENET-APP User’s Manual.
## 5.1 Communication specifications

### 5.1.1 Specification

- **Item**: Maximum segment length
- **Value**: 100m (328'1")
- ** specification**

### 5.1.2 Performance specification

- **specification**

### 5.1.3 Cautions regarding powering the hub, PLC and Ethernet simultaneously

- **Cautions**
  - Do not bundle the main circuit line together with or lay it close to the main block. Installing 10BASE-T or 100BASE-TX networks. Consult a specialist when connecting to the main circuit line.

## 5.2 Connecting to the 10BASE-T/100BASE-TX network

### 5.2.1 Connecting to the network

- **Connecting the hub**: The following explains how to connect the hub to the 10BASE-T/100BASE-TX network. Please take the necessary care to ensure that the network is properly connected.

### 5.2.2 Applicable cable and connector

- **Applicable cable**: Category 3 or higher (STP cable)
- **Connector**: RJ45 type modular jack

### 5.2.3 Connecting to the 10BASE-T/100BASE-TX network

- **Connecting to the network**: This section explains how to connect the hub to the 10BASE-T/100BASE-TX network. The following shows the connection diagram for the desired point.

### 5.2.4 Connecting via the PLC

- **Connecting via the PLC**: In order to connect to the PLC, follow the steps below:
  1. Connect the hub to the PLC via the network.
  2. Select the correct network connection for the PLC.

## 5.3 Wiring

### 5.3.1 Wiring to the hub

- **Wiring**: When wiring to the hub, please follow the guidelines provided.

## 6. Analog output performance specifications

### 6.1 Analog output terminal block (European type)

- **Wire size**: 20~26 AWG wire
- **Applicable cable**: PTFE, PFA, or PTFE-Teflon

### 6.2 Analog output configuration

- **Configuration**: An analog output configuration diagram is provided in the following section.

### 6.3 List of Special Devices

- **Special Devices**: The list of special devices is provided in the following section.

## Note:

- **Note**: This symbol mark is for China only.

## Products sold in the Chinese market

- **Products**: A list of products sold in the Chinese market is provided.

## Environmental protection

- **Standard**: The product is manufactured under ISO14001 certification.

## Quality assurance

- **Warranty**: Mitsubishi Electric shall not be responsible for any problems involving industrial properties which may arise as a result of the use of this product.
### 6.1 Analog input terminal block (European type)

<table>
<thead>
<tr>
<th>Item</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wire size</td>
<td>AWG 20 (0.25 mm²)</td>
</tr>
<tr>
<td>Applicable cable</td>
<td>Any</td>
</tr>
</tbody>
</table>


1.2 Programming tool

Incorporated Items

- Carefully. For users of proprietary cables (integral with sensors or actuators), as analog devices are sensitive by nature, their use should be considered.

- For details of the battery Directive in EU countries, refer to FX3S Users Manual (Hardware Edition).

- The communication channel of the built-in Ethernet is CH1. When a special adapter connector is used, the communication channel of the built-in Ethernet is CH2.

- The communication function is not supported in FX3G-2DA-BD.

- To increase the battery life, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.

- To ensure the battery is not dropped during transportation, use the battery when its battery capacity is over 50%.
2.3 Installation

MALING PRECAUTIONS

- When you install your equipment, please refer to the installation location in enclosure section (3.2).
- When installing your equipment, please refer to the operation characteristic section (4.1).
- When you install the equipment, please refer to the dust prevention section (3.2.1 Affixing The Dust Proof Sheet).
- When installing your equipment, please refer to the wiring section (3.4).
- When installing your equipment, please refer to the external dimensions and weight section (2.2).
- When installing your equipment, please refer to the power supply specification section (4.1).
- When installing your equipment, please refer to the switch section (5.1).

Installation of the main units

- This section explains the installation of the main units.
- For the details of the installation of the main unit, please refer to the following manual.
- For the details of the installation of the main unit, please refer to the hardware edition.
- For the details of the installation of the main unit, please refer to the FX3G Series User's Manual - Hardware Edition.

2.3.1 Installation

1. Prior to installation

- Prior to installation, make sure of the following points:
  - Prior to installation, make sure that the control system is configured correctly.
  - Prior to installation, make sure that the control system is configured correctly.
  - Prior to installation, make sure that the control system is configured correctly.
  - Prior to installation, make sure that the control system is configured correctly.
  - Prior to installation, make sure that the control system is configured correctly.
  - Prior to installation, make sure that the control system is configured correctly.
  - Prior to installation, make sure that the control system is configured correctly.

2.2 External dimensions and weight

- The product can be installed directly on the panel (with screws).
- The product can be installed directly on the panel (with screws).
- The product can be installed directly on the panel (with screws).
- The product can be installed directly on the panel (with screws).
- The product can be installed directly on the panel (with screws).
- The product can be installed directly on the panel (with screws).
- The product can be installed directly on the panel (with screws).

2.3.2 Installation of the main units

- This section explains the installation of the main units.
- For the details of the installation of the main units, please refer to the following manual.
- For the details of the installation of the main units, please refer to the hardware edition.
- For the details of the installation of the main units, please refer to the FX3G Series User's Manual - Hardware Edition.

2.3.3 Installation of the main units

- This section explains the installation of the main units.
- For the details of the installation of the main units, please refer to the following manual.
- For the details of the installation of the main units, please refer to the hardware edition.
- For the details of the installation of the main units, please refer to the FX3G Series User's Manual - Hardware Edition.

2.3.4 Installation of the main units

- This section explains the installation of the main units.
- For the details of the installation of the main units, please refer to the following manual.
- For the details of the installation of the main units, please refer to the hardware edition.
- For the details of the installation of the main units, please refer to the FX3G Series User's Manual - Hardware Edition.

2.3.5 Installation of the main units

- This section explains the installation of the main units.
- For the details of the installation of the main units, please refer to the following manual.
- For the details of the installation of the main units, please refer to the hardware edition.
- For the details of the installation of the main units, please refer to the FX3G Series User's Manual - Hardware Edition.

2.3.6 Installation of the main units

- This section explains the installation of the main units.
- For the details of the installation of the main units, please refer to the following manual.
- For the details of the installation of the main units, please refer to the hardware edition.
- For the details of the installation of the main units, please refer to the FX3G Series User's Manual - Hardware Edition.

2.3.7 Installation of the main units

- This section explains the installation of the main units.
- For the details of the installation of the main units, please refer to the following manual.
- For the details of the installation of the main units, please refer to the hardware edition.
- For the details of the installation of the main units, please refer to the FX3G Series User's Manual - Hardware Edition.

2.3.8 Installation of the main units

- This section explains the installation of the main units.
- For the details of the installation of the main units, please refer to the following manual.
- For the details of the installation of the main units, please refer to the hardware edition.
- For the details of the installation of the main units, please refer to the FX3G Series User's Manual - Hardware Edition.

2.3.9 Installation of the main units

- This section explains the installation of the main units.
- For the details of the installation of the main units, please refer to the following manual.
- For the details of the installation of the main units, please refer to the hardware edition.
- For the details of the installation of the main units, please refer to the FX3G Series User's Manual - Hardware Edition.

2.3.10 Installation of the main units

- This section explains the installation of the main units.
- For the details of the installation of the main units, please refer to the following manual.
- For the details of the installation of the main units, please refer to the hardware edition.
- For the details of the installation of the main units, please refer to the FX3G Series User's Manual - Hardware Edition.

2.3.11 Installation of the main units

- This section explains the installation of the main units.
- For the details of the installation of the main units, please refer to the following manual.
- For the details of the installation of the main units, please refer to the hardware edition.
- For the details of the installation of the main units, please refer to the FX3G Series User's Manual - Hardware Edition.

2.3.12 Installation of the main units

- This section explains the installation of the main units.
- For the details of the installation of the main units, please refer to the following manual.
- For the details of the installation of the main units, please refer to the hardware edition.
- For the details of the installation of the main units, please refer to the FX3G Series User's Manual - Hardware Edition.

2.3.13 Installation of the main units

- This section explains the installation of the main units.
- For the details of the installation of the main units, please refer to the following manual.
- For the details of the installation of the main units, please refer to the hardware edition.
- For the details of the installation of the main units, please refer to the FX3G Series User's Manual - Hardware Edition.

2.3.14 Installation of the main units

- This section explains the installation of the main units.
- For the details of the installation of the main units, please refer to the following manual.
- For the details of the installation of the main units, please refer to the hardware edition.
- For the details of the installation of the main units, please refer to the FX3G Series User's Manual - Hardware Edition.

2.3.15 Installation of the main units

- This section explains the installation of the main units.
- For the details of the installation of the main units, please refer to the following manual.
- For the details of the installation of the main units, please refer to the hardware edition.
- For the details of the installation of the main units, please refer to the FX3G Series User's Manual - Hardware Edition.

2.3.16 Installation of the main units

- This section explains the installation of the main units.
- For the details of the installation of the main units, please refer to the following manual.
- For the details of the installation of the main units, please refer to the hardware edition.
- For the details of the installation of the main units, please refer to the FX3G Series User's Manual - Hardware Edition.
4.3 Example of external wiring (DC power type)

24V DC power is supplied to the main unit and input/output extension unit. For the details of wiring, refer to section 4.4.

4.4 Input specifications and external wiring

As for the details of the input specifications of 100 extension units and external wiring, refer to the following manual. 


4.4.1 Input specifications [24V DC input type]

<table>
<thead>
<tr>
<th>Number of input</th>
<th>Terminal block (M3 screw)</th>
<th>Terminal block (M3 screw)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sink/Source</td>
<td>Terminal block (M3 screw)</td>
<td>Terminal block (M3 screw)</td>
</tr>
<tr>
<td>Input signal voltage</td>
<td>24V DC power</td>
<td>24V DC power</td>
</tr>
<tr>
<td>Input impedance</td>
<td>100 ohms maximum</td>
<td>100 ohms maximum</td>
</tr>
<tr>
<td>Input signal current</td>
<td>5mA maximum</td>
<td>5mA maximum</td>
</tr>
<tr>
<td>DC power supply</td>
<td>24V DC +10%, -10%</td>
<td>24V DC +10%, -10%</td>
</tr>
<tr>
<td>Contact resistance</td>
<td>100 ohms maximum</td>
<td>100 ohms maximum</td>
</tr>
</tbody>
</table>

4.4.2 Output specifications and example of external wiring

As for the details of the output specifications of I/O extension units and external wiring, refer to the following manual. 


4.4.3 External wiring of sink output type

For details of the sink output specifications and external wiring, refer to the following manual. 


4.5 Relay output specifications and example of external wiring

As for the details of the relay output specifications of I/O extension units and external wiring, refer to the following manual. 


4.6 Terminal block inputs

For details of the terminal input, refer to the following manual. 


4.6.1 Terminal input specifications

As for the details of the input specifications of 100 extension units and external wiring, refer to the following manual. 


5.3 Cautions in external wiring

For details of the cabling precautions, refer to the following manual. 


6.7 Terminals and external wiring

For details of the terminal input, refer to the following manual. 


7.3 Cautions in external wiring

For details of the cabling precautions, refer to the following manual. 


8.7 Terminals and external wiring

For details of the terminal input, refer to the following manual. 


9.3 Cautions in external wiring

For details of the cabling precautions, refer to the following manual. 


10.3 Cautions in external wiring

For details of the cabling precautions, refer to the following manual. 


11.3 Cautions in external wiring

For details of the cabling precautions, refer to the following manual. 


12.3 Cautions in external wiring

For details of the cabling precautions, refer to the following manual. 


13.3 Cautions in external wiring

For details of the cabling precautions, refer to the following manual. 


14.3 Cautions in external wiring

For details of the cabling precautions, refer to the following manual. 


15.3 Cautions in external wiring

For details of the cabling precautions, refer to the following manual. 


16.3 Cautions in external wiring

For details of the cabling precautions, refer to the following manual. 


17.3 Cautions in external wiring

For details of the cabling precautions, refer to the following manual. 


18.3 Cautions in external wiring

For details of the cabling precautions, refer to the following manual. 


19.3 Cautions in external wiring

For details of the cabling precautions, refer to the following manual. 


20.3 Cautions in external wiring

For details of the cabling precautions, refer to the following manual. 


21.3 Cautions in external wiring

For details of the cabling precautions, refer to the following manual. 


22.3 Cautions in external wiring

For details of the cabling precautions, refer to the following manual. 


23.3 Cautions in external wiring

For details of the cabling precautions, refer to the following manual. 

### 5.1 Specification

#### 5.1.1 Communication specification

<table>
<thead>
<tr>
<th>Item</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus communication</td>
<td>Specifications</td>
</tr>
<tr>
<td>Transmission protocol</td>
<td>10BASE-T/100BASE-TX</td>
</tr>
<tr>
<td>Transmission medium</td>
<td>Twisted pair cable</td>
</tr>
</tbody>
</table>

#### 5.1.2 Performance specification

<table>
<thead>
<tr>
<th>Item</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analog output</td>
<td>±2.5mV (10V/4000)</td>
</tr>
<tr>
<td>Analog input</td>
<td>±0.5% (±50mV) for 10V</td>
</tr>
</tbody>
</table>

#### 5.2 Wiring

- **5.2.1 Connecting to the network**
  - The following explains how to connect the built-in Ethernet to 10BASE-T/100BASE-TX.
  - For connection to a hub without the auto detection function, set the half-duplex mode on the hub side.

- **5.2.2 Applicable cable and connector**
  - A straight cable is used. A cross cable can also be used when using direct connection (simple connection) between the personal computer and the PLC.
  - The temperature rating of the cable should be 80°C or more.

### 6. Analog specifications and wiring

#### 6.1 Analog input terminal block (European type)

- **6.1.1 Wire size**
  - Wiring terminal block should use 20-26 AWG wires.

- **6.1.2 Applicable cable**
  - Suitable for use with block terminal and connecting wire.

#### 6.2 List of Special Devices

<table>
<thead>
<tr>
<th>Special Device</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>M8280</td>
<td>Switches the input mode of channel 1</td>
</tr>
<tr>
<td>M8281</td>
<td>Switches the input mode of channel 2</td>
</tr>
</tbody>
</table>

#### 6.3 List of Programs

- **6.3.1 Example of analog input**
  - When using an analog input, make sure that the output is within the range specified in the manual.

- **6.3.2 Example of analog output**
  - When using an analog output, make sure that the output is within the range specified in the manual.

### 7.1 Precautions

- **7.1.1 Handling**
  - Care should be taken when handling the product to prevent damage.

- **7.1.2 Storage**
  - When storing the product, ensure that it is kept in a cool and dry environment.

### 7.2 Product information

- **7.2.1 Qualified personnel**
  - Only qualified personnel should install and operate the product.

- **7.2.2 Applicable country**
  - The product is approved for use in Europe.

### 7.3 Regulatory information

- **7.3.1 Standards compliance**
  - The product complies with all relevant standards and regulations.