

BEFORE USE

Thank you for choosing M-System. Before use, please check contents of the package you received as outlined below.

If you have any problems or questions with the product, please contact M-System's Sales Office or representatives.

■ PACKAGE INCLUDES:

Discrete I/O module(1)

■ MODEL NO.

Confirm Model No. marking on the product to be exactly what you ordered.

■ INSTRUCTION MANUAL

This manual describes necessary points of caution when you use this product, including installation, connection and basic maintenance procedures.

POINTS OF CAUTION**■ CONFORMITY WITH EU DIRECTIVE**

- Use dual-shield cables (Shinko Seisen Industry Model ZHY262 PBA) for the network. If it is not sufficient, use a ferrite core (Kitagawa Industries Model GRFC-13) for the network cable.
- The equipment must be mounted inside the instrument panel of a metal enclosure.
- The actual installation environments such as panel configurations, connected devices, connected wires, may affect the protection level of this unit when it is integrated in a panel system. The user may have to review the CE requirements in regard to the whole system and employ additional protective measures to ensure the CE conformity.

■ POWER INPUT RATING & OPERATIONAL RANGE

- Locate the power input rating marked on the product and confirm its operational range as indicated below:
24V DC rating: 24V \pm 10%, approx. 40mA

■ GENERAL PRECAUTIONS

- Before you remove the unit or mount it, turn off the power supply, input signal and output signal for safety.
- DO NOT set the switches on the module while the power is supplied. The switches are used only for maintenance without the power.

■ ENVIRONMENT

- Indoor use.
- When heavy dust or metal particles are present in the air, install the unit inside proper housing with sufficient ventilation.
- Do not install the unit where it is subjected to continuous vibration. Do not subject the unit to physical impact.
- Environmental temperature must be within -10 to +55°C (14 to 131°F) with relative humidity within 30 to 90% RH in order to ensure adequate life span and operation.

■ WIRING

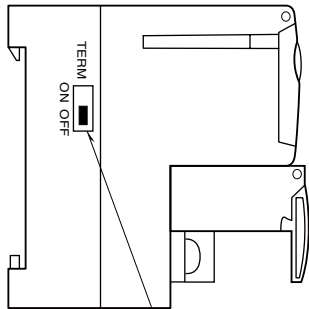
- Do not install cables close to noise sources (relay drive cable, high frequency line, etc.).
- Do not bind these cables together with those in which noises are present. Do not install them in the same duct.

■ AND

- The unit is designed to function as soon as power is supplied, however, a warm up for 10 minutes is required for satisfying complete performance described in the data sheet.

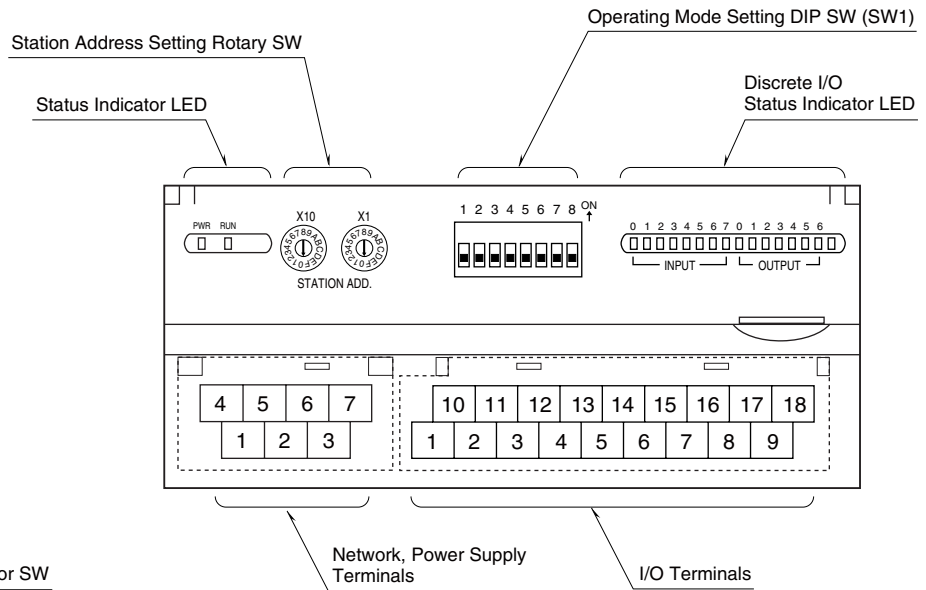
COMPONENT IDENTIFICATION

■ SIDE VIEW



Terminating Resistor SW

■ FRONT VIEW



■ STATUS INDICATOR LED

| ID | COLOR | FUNCTION |
|-----|-------|--|
| PWR | Green | Turns on when the internal 5V is supplied normally. |
| RUN | Green | Turns on when the refresh data is received normally. |

■ DISCRETE I/O STATUS INDICATOR LED

LED indicators shows the signal status.
 ON : LED ON (red)
 OFF : LED OFF

■ STATION ADDRESS

The left switch determines the sixteenths place digit, while the right switch does the ones place digit of the address. (Range: 01H to 3FH)



Station Address Setting (x1)

Station Address Setting (x16)

■ OPERATING MODE

(*) Factory setting

• Output at the loss of communication (SW1-7)

| SW1-7 | OUTPUT AT THE LOSS OF COMMUNICATION |
|-------|---|
| OFF | Hold the output (*) (maintains the last data received normally) |
| ON | Reset the output (turned off) |

• Transfer rate (SW1-8)

| SW1-8 | TRANSFER RATE |
|-------|---------------|
| OFF | 12 Mbps (*) |
| ON | 6 Mbps |

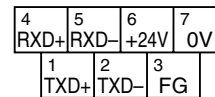
Note: Be sure to set unused SW1-1 through 1-6 to OFF.

■ TERMINATING RESISTOR

To use the terminating resistor, turn the switch ON, and OFF to invalidate. (Factory setting OFF)

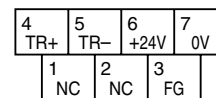
■ NETWORK, POWER SUPPLY TERMINAL ASSIGNMENT

• Full-duplex communication



| NO. | ID | FUNCTION, NOTES |
|-----|------|----------------------------------|
| 1 | TXD+ | Network (slave, transmission +) |
| 2 | TXD- | Network (slave, transmission -) |
| 3 | FG | FG |
| 4 | RXD+ | Network (master, transmission +) |
| 5 | RXD- | Network (master, transmission -) |
| 6 | +24V | Power input (24V DC) |
| 7 | 0V | Power input (0V) |

• Half-duplex communication



| NO. | ID | FUNCTION, NOTES |
|-----|------|----------------------|
| 1 | NC | No connection |
| 2 | NC | No connection |
| 3 | FG | FG |
| 4 | TR+ | Network |
| 5 | TR- | Network |
| 6 | +24V | Power input (24V DC) |
| 7 | 0V | Power input (0V) |

■ I/O TERMINAL ASSIGNMENT

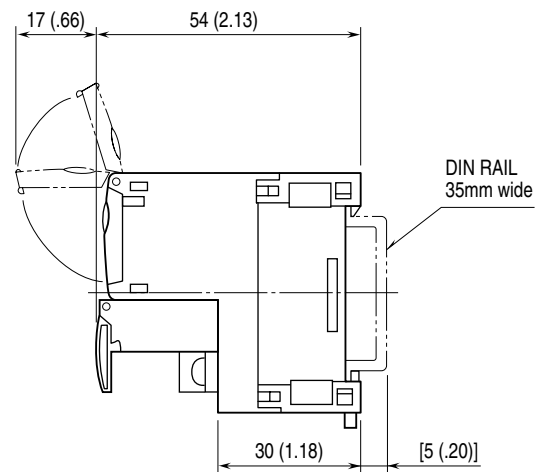
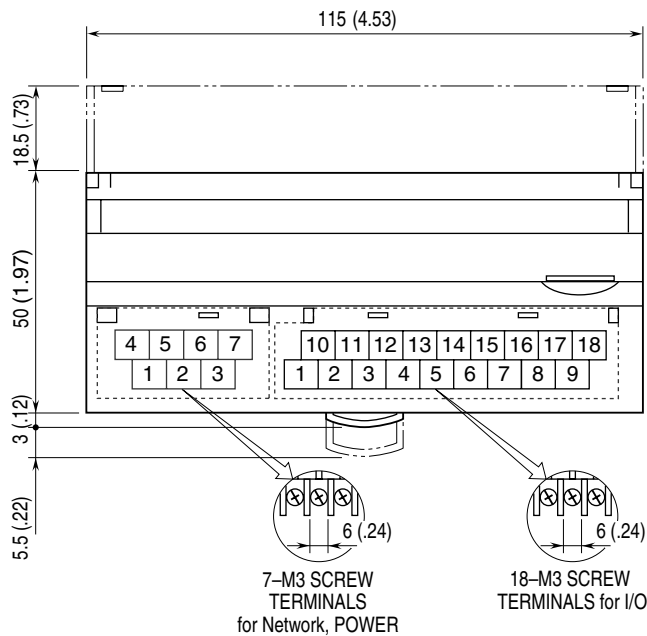
| | | | | | | | | |
|------|----|----|----|----|----|----|----|----|
| 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
| +24V | X1 | X3 | X5 | X7 | Y1 | Y3 | Y5 | Y7 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| COM | X0 | X2 | X4 | X6 | Y0 | Y2 | Y4 | Y6 |

| NO. | ID | FUNCTION | NO. | ID | FUNCTION |
|-----|-----|----------|-----|------|----------|
| 1 | COM | Common | 10 | +24V | 24V DC |
| 2 | X0 | Input 0 | 11 | X1 | Input 1 |
| 3 | X2 | Input 2 | 12 | X3 | Input 3 |
| 4 | X4 | Input 4 | 13 | X5 | Input 5 |
| 5 | X6 | Input 6 | 14 | X7 | Input 7 |
| 6 | Y0 | Output 0 | 15 | Y1 | Output 1 |
| 7 | Y2 | Output 2 | 16 | Y3 | Output 3 |
| 8 | Y4 | Output 4 | 17 | Y5 | Output 5 |
| 9 | Y6 | Output 6 | 18 | Y7 | Output 7 |

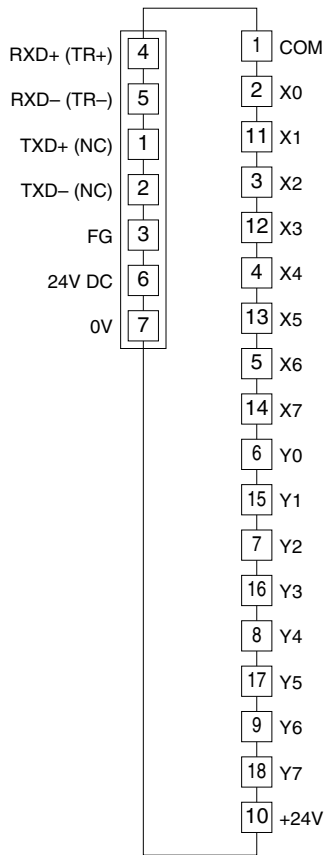
TERMINAL CONNECTIONS

Connect the unit as in the diagram below.

■ EXTERNAL DIMENSIONS unit: mm (inch)



■ CONNECTION DIAGRAM

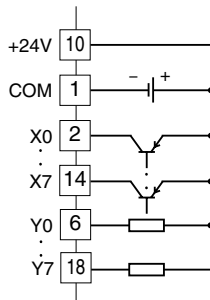


Note 1: Terminal numbers in parentheses are for half-duplex communication models.

Note 2: In order to improve EMC performance, bond the FG terminal to ground.

Caution: FG terminal is NOT a protective conductor terminal.

■ I/O Connection Example



WIRING INSTRUCTIONS

■ SCREW TERMINAL

Torque: 0.5 N·m

■ SOLDERLESS TERMINAL

Refer to the drawing below for recommended ring tongue terminal size. Spade tongue type is also applicable.

Recommended solderless terminal:

• Communication cables

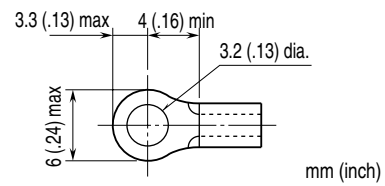
Applicable wire size: 0.2 to 0.5 mm² (AWG 26 to 22)

Recommended manufacturer: Japan Solderless Terminal MFG. Co., Ltd.

• Others

Applicable wire size: 0.25 to 1.65 mm² (AWG 22 to 16)

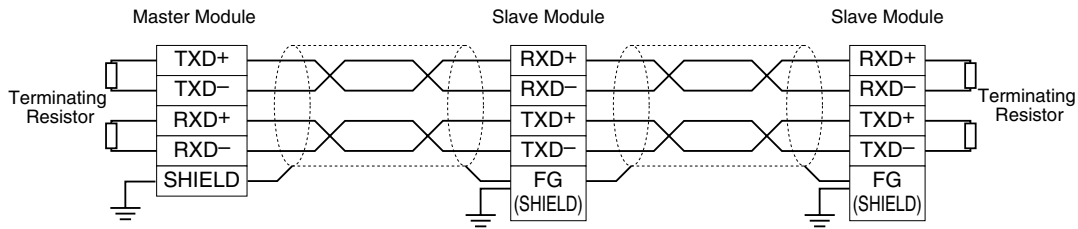
Recommended manufacturer: Japan Solderless Terminal MFG. Co., Ltd. or Nichifu Co., Ltd.



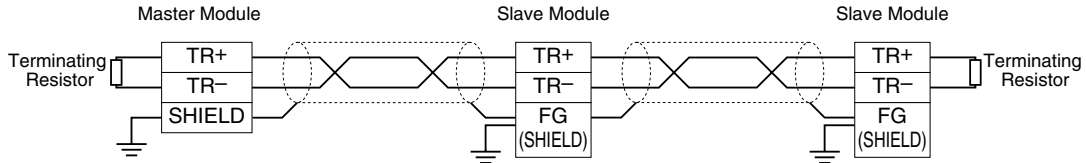
COMMUNICATION CABLE CONNECTIONS

■ MASTER CONNECTION

• Full-duplex communication



• Half-duplex communication

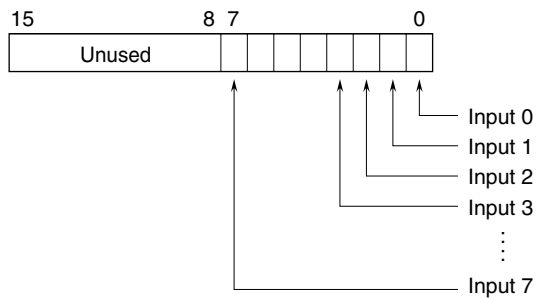


Note: Be sure to turn ON the switch of the terminating resistor located at both ends of the modules.

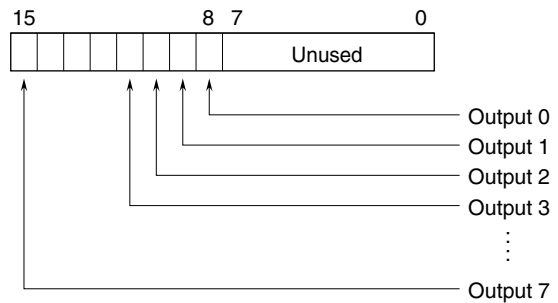
I/O DATA DESCRIPTIONS

■ DISCRETE I/O

• Di



• Do



0: OFF

1: ON