

BEFORE USE

Thank you for choosing us. 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 our sales office or representatives.

■ PACKAGE INCLUDES:

High-speed DC voltage output module(1)
DIN rail mounter slider(2)

■ 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 DIRECTIVES**

- 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 DC $\pm 10\%$, approx. 70mA

■ GENERAL PRECAUTIONS

- Before you remove the unit or mount it, turn off the power supply and output signal for safety.
- Before you remove the terminal block or mount it, make sure to turn off the power supply 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

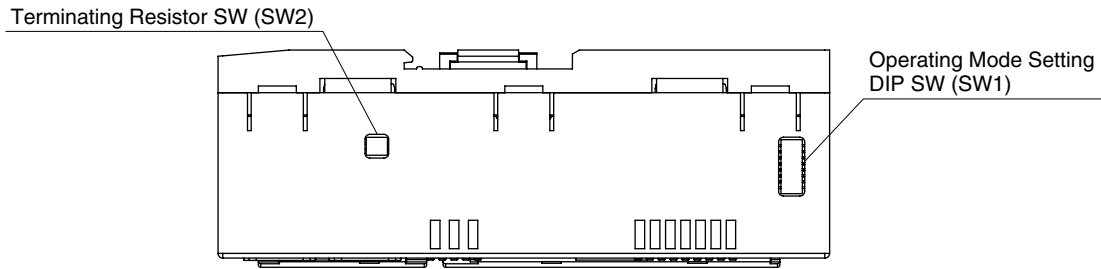
- Do not install cables close to noise sources (relay drive cable, high frequency line, etc.).
- Do not bind these cables together with those in which noises are present. Do not install them in the same duct.
- Be sure to close the terminal cover for safety.

■ AND

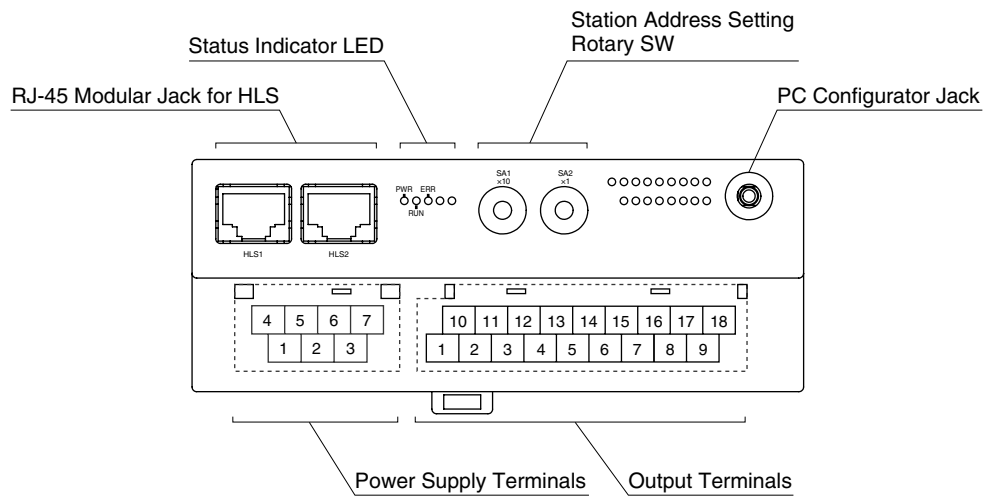
- The unit is designed to function as soon as power is supplied, however, a warm up for 10 minutes is required for satisfying complete performance described in the data sheet.

COMPONENT IDENTIFICATION

■ TOP VIEW



■ FRONT VIEW



■ STATUS INDICATOR LED

ID	COLOR	FUNCTION
PWR	Green	Turns on when the internal power is normal. Turns off when the internal power is abnormal.
RUN	Green	Turns on when the refresh data is received normally. Turns off when no communication or communication error.
ERR	Red	Turns off when output circuit is normal. Turns on when output value is not greater than -15% or not lower than 115%.

■ STATION ADDRESS

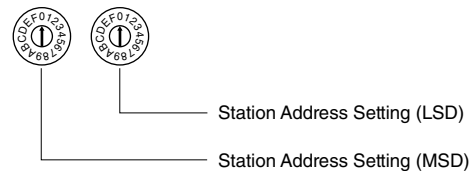
The left switch determines the sixteenths place digit, while the right switch does the ones place digit of the address. The data allocation is 4.

• Full-duplex communication

Setting “n” with the rotary switches, the addresses are n, n+2, n+4 and n+6. (Range: 01H to 39H)

• Half-duplex communication

Four (4) addresses are assigned from the one set with the rotary switch. (Range: 01H to 3CH)



■ OPERATING MODE

(*) Factory setting

• Output Range: SW1-3, 1-4, 1-5, 1-6

SW1-3	SW1-4	SW1-5	SW1-6	OUTPUT RANGE
OFF	OFF	OFF	OFF	-10 – +10V DC (*)
ON	OFF	OFF	OFF	-5 – +5V DC
OFF	ON	OFF	OFF	-1 – +1V DC
ON	ON	OFF	OFF	0 – 10V DC
OFF	OFF	ON	OFF	0 – 5V DC
ON	OFF	ON	OFF	1 – 5V DC
OFF	ON	ON	OFF	0 – 1V DC
ON	ON	ON	OFF	-0.5 – +0.5V DC
ON	ON	ON	ON	PC Configurator setting

OUTPUT RANGE

- **Wide span:** -10 – +10V DC, -5 – +5V DC, 0 – 10V DC, 0 – 5V DC, 1 – 5V DC
- **Narrow span:** -1 – +1V DC, 0 – 1V DC, -0.5 – +0.5V DC

• Output at the Loss of Communication: SW1-7

SW1-7	OUTPUT AT THE LOSS OF COMMUNICATION
OFF	Hold the output (*) (Hold the last received normal data.)
ON	Output reset value (Output is fixed to the output reset value.)

• Transfer Rate: SW1-8

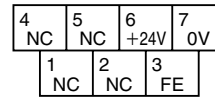
SW1-8	TRANSFER RATE
OFF	12Mbps (*)
ON	6Mbps

Note: Be sure to set unused SW1-1 and 1-2 to OFF.

■ TERMINATING RESISTOR

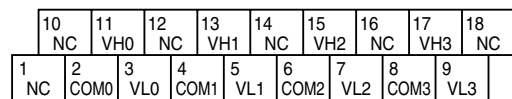
To use the terminating resistor, turn the switch ON, and OFF to invalidate. (Factory setting OFF)

■ POWER SUPPLY TERMINAL ASSIGNMENT



- | | |
|---------|-----------------------|
| 1. NC | - |
| 2. NC | - |
| 3. FE | Functional earth |
| 4. NC | - |
| 5. NC | - |
| 6. +24V | Power supply (24V DC) |
| 7. 0V | Power supply (0V) |

■ OUTPUT TERMINAL ASSIGNMENT



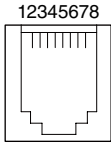
NO.	ID	FUNCTION	NO.	ID	FUNCTION
1	NC	No connection	10	NC	No connection
2	COM0	Common 0	11	VH0	Wide span volt. 0
3	VL0	Narrow span volt. 0	12	NC	No connection
4	COM1	Common 1	13	VH1	Wide span volt. 1
5	VL1	Narrow span volt. 1	14	NC	No connection
6	COM2	Common 2	15	VH2	Wide span volt. 2
7	VL2	Narrow span volt. 2	16	NC	No connection
8	COM3	Common 3	17	VH3	Wide span volt. 3
9	VL3	Narrow span volt. 3	18	NC	No connection

■ NETWORK

Recommended cable connector: TM21P-88LP (Hirose Electric)
(not included in the package)

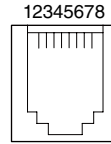
- **Communication connector pin assignment Blank:** 3, 4 – 5, 6 pair wiring
(Our HLS related device standard pin assignment)

Full-duplex communication



- | | |
|---------|----------------------------------|
| 1. NC | Unused |
| 2. NC | Unused |
| 3. TXD+ | Network (slave, transmission +) |
| 4. TXD- | Network (slave, transmission -) |
| 5. RXD+ | Network (master, transmission +) |
| 6. RXD- | Network (master, transmission -) |
| 7. NC | Unused |
| 8. SLD | Shield |

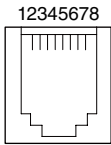
Half-duplex communication



- | | |
|--------|-------------|
| 1. NC | Unused |
| 2. NC | Unused |
| 3. TR+ | Network (+) |
| 4. TR- | Network (-) |
| 5. NC | Unused |
| 6. NC | Unused |
| 7. NC | Unused |
| 8. SLD | Shield |

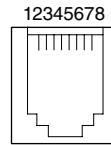
- **Communication connector pin assignment /E:** 4, 5 – 3, 6 pair wiring (Ethernet cable pin assignment)

Full-duplex communication



- | | |
|---------|----------------------------------|
| 1. NC | Unused |
| 2. NC | Unused |
| 3. TXD+ | Network (slave, transmission +) |
| 4. RXD- | Network (master, transmission -) |
| 5. RXD+ | Network (master, transmission +) |
| 6. TXD- | Network (slave, transmission -) |
| 7. NC | Unused |
| 8. SLD | Shield |

Half-duplex communication



- | | |
|--------|-------------|
| 1. NC | Unused |
| 2. NC | Unused |
| 3. NC | Unused |
| 4. TR- | Network (-) |
| 5. TR+ | Network (+) |
| 6. NC | Unused |
| 7. NC | Unused |
| 8. SLD | Shield |

PC CONFIGURATOR

The following parameter items can be set with using PC Configurator Software (model: R7CFG).
Refer to the users manual for the R7CFG for detailed operation of the software program.

■ CHANNEL INDIVIDUAL SETTING

PARAMETER	SETTING RANGE	DEFAULT SETTING
Validating/ Invalidating	Valid Invalid	Valid
Output range	-10 to +10V DC -5 to +5V DC -1 to +1V DC 0 to 10V DC 0 to 5V DC 1 to 5V DC 0 to 1V DC -0.5 to +0.5V DC	-10 to +10V DC
Bias	-320.00 to +320.00 (%)	0.00 (%)
Gain	-3.2000 to +3.2000	1.0000
Zero scale	-32000 to +32000	0
Full scale	-32000 to +32000	10000
Output clear value*1	-15.00 to +115.00 (%)	-15.00 (%)

■ CHANNEL BATCH SETTING

PARAMETER	SETTING RANGE	DEFAULT SETTING
Setting output at the loss of commu- nication	Hold Clear	Hold

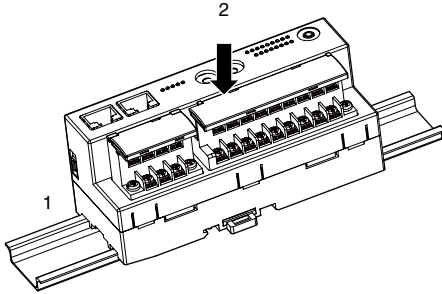
*1. When output range is -10 to +10V DC, approx. -11.5V DC at approx. -7.5 to -15% and approx. 11.5V DC at approx. 107.5 to 115% are outputted respectively.

MOUNTING INSTRUCTIONS

■ DIN RAIL MOUNTING (PARALLEL)

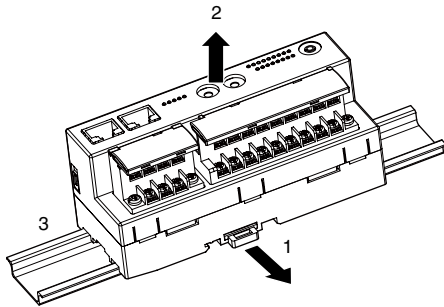
• Mounting

- 1) Set the upper hook at the rear side of the unit on the DIN rail.
- 2) Push in the lower.

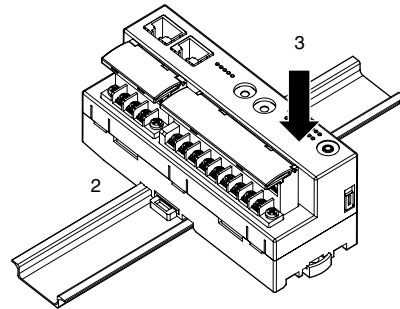


• Dismounting

- 1) Push down the DIN rail mouter slider with tip of a minus screwdriver.
- 2) Pull the lower of the unit.
- 3) Remove the upper hook of the unit from the DIN rail.

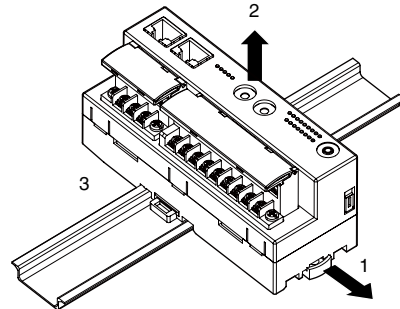


- 2) Set the upper hook at the rear side of the unit on the DIN rail.
- 3) Push in the lower.



• Dismounting

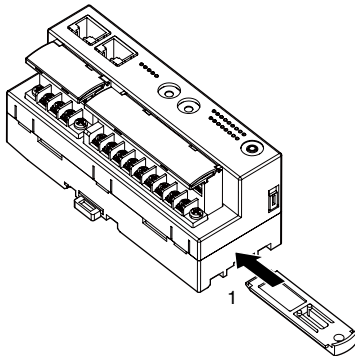
- 1) Push down the DIN rail mouter slider with tip of a minus screwdriver.
- 2) Pull the lower of the unit.
- 3) Remove the upper hook of the unit from the DIN rail.



■ DIN RAIL MOUNTING (RIGHT ANGLE)

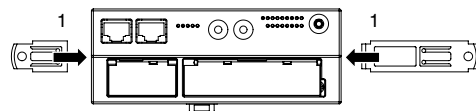
• Mounting

- 1) Insert the longer DIN rail mouter slider until it clicks twice, as shown below.

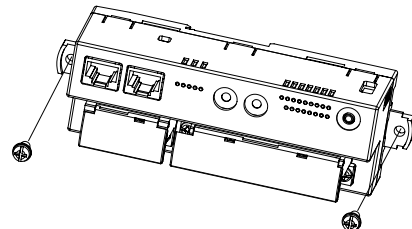


■ SURFACE MOUNTING

- 1) Insert the two DIN rail mouter sliders until it clicks once, as shown below.



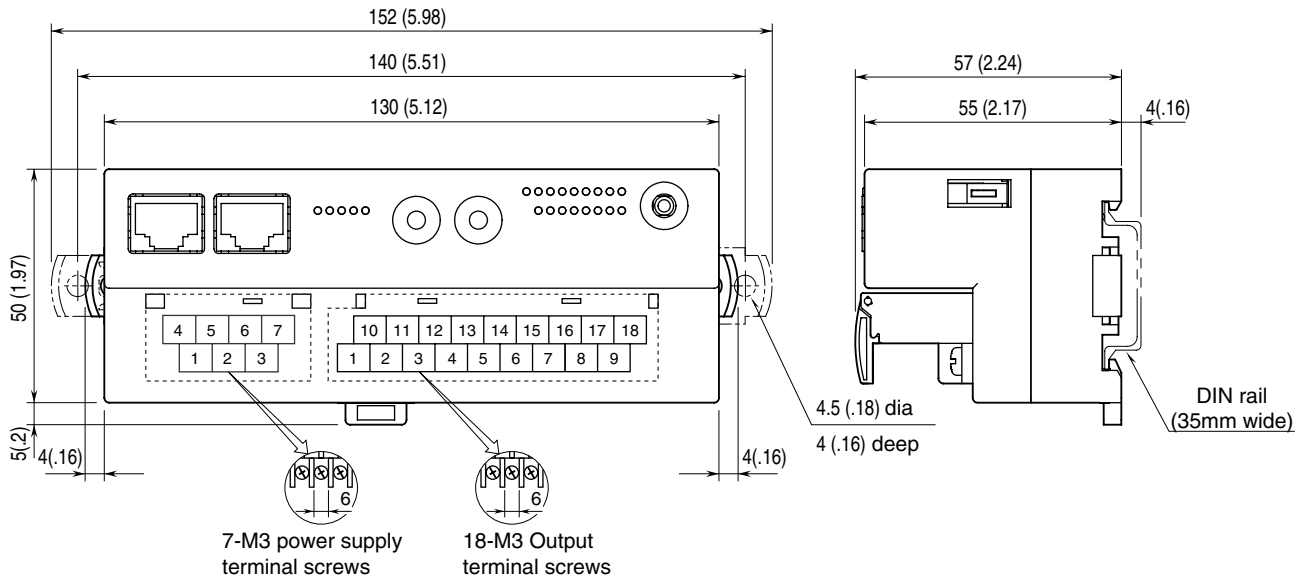
- 2) Mount the unit with M4 screws referring the Mounting Requirements. (Torque: 1.4 N·m)



TERMINAL CONNECTIONS

Connect the unit as in the diagram below.

EXTERNAL DIMENSIONS unit: mm (inch)

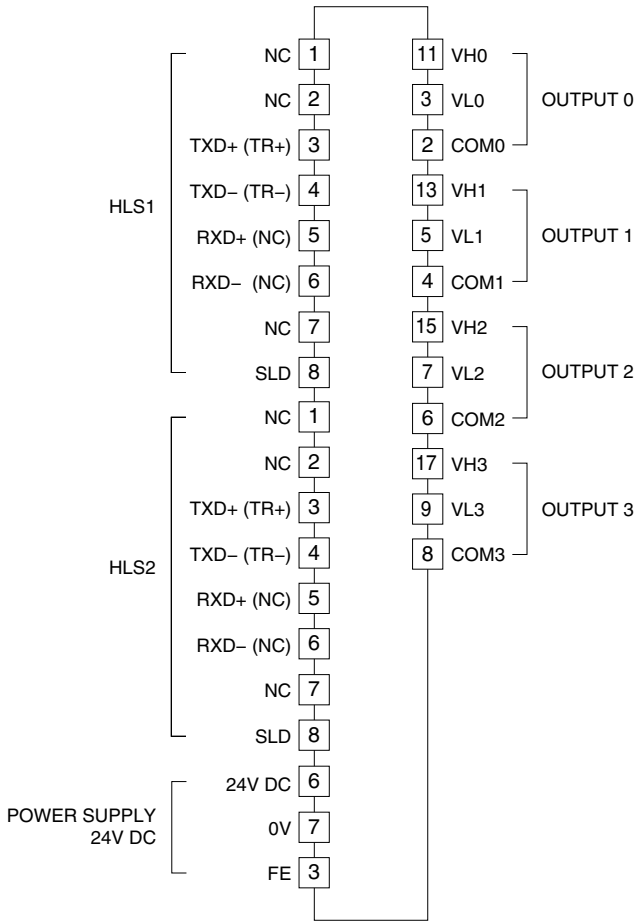


■ CONNECTION DIAGRAM

Note: In order to improve EMC performance, bond the FE terminal to ground.
 Caution: FE terminal is NOT a protective conductor terminal.

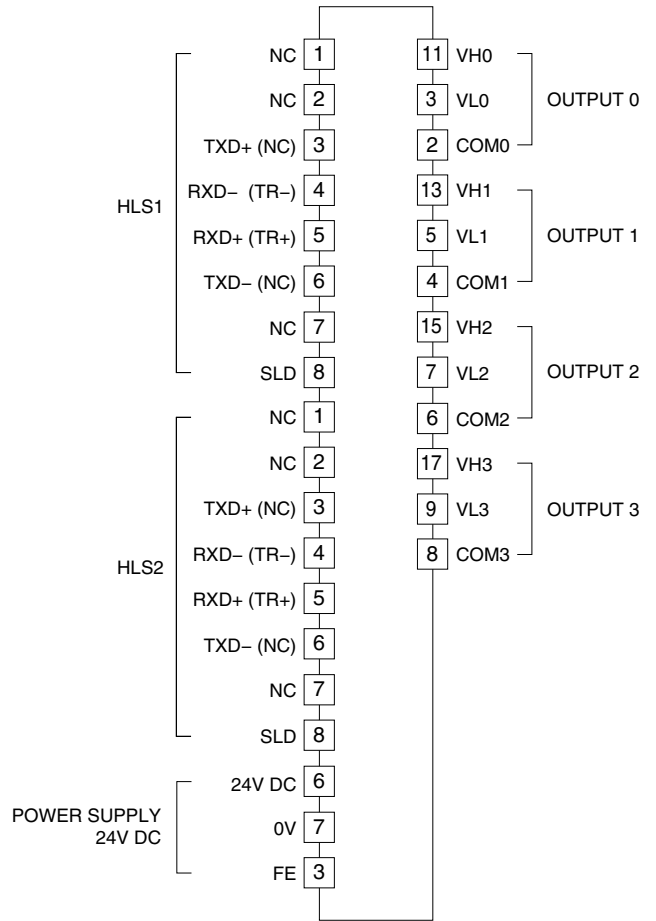
• 3, 4 – 5, 6 PAIR WIRING

(Our HLS related device standard pin assignment)



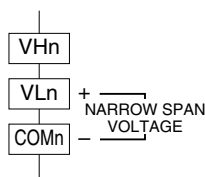
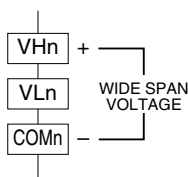
• 4, 5 – 3, 6 PAIR WIRING

(Ethernet cable pin assignment)



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

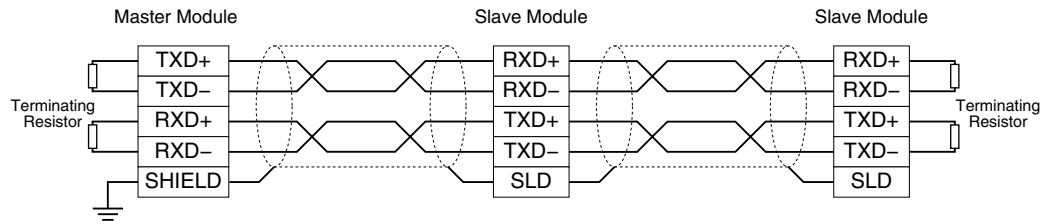
■ OUTPUT CONNECTION EXAMPLES



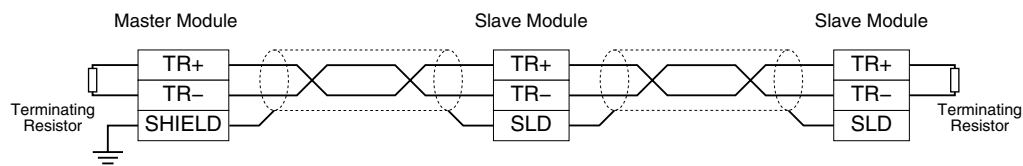
COMMUNICATION CABLE CONNECTIONS

■ MASTER CONNECTION

• Full-duplex communication

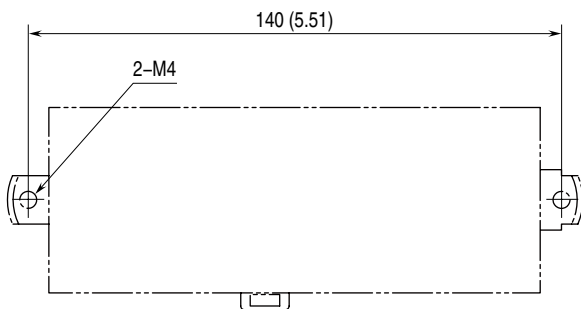


• Half-duplex communication



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

MOUNTING REQUIREMENTS unit: mm (inch)



WIRING INSTRUCTIONS

■ TORQUE

Wiring screw for separable terminal: 0.5 N·m

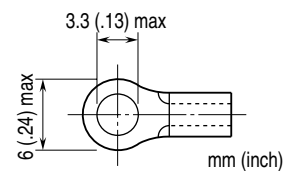
Fixing screw for separable terminal: 0.5 N·m

■ SOLDERLESS TERMINAL

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

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

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



■ HOW TO UNMOUNT THE SEPARABLE TERMINAL

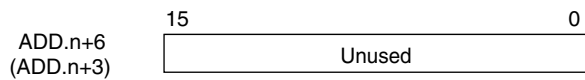
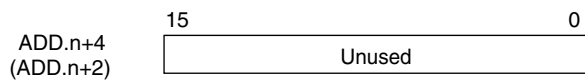
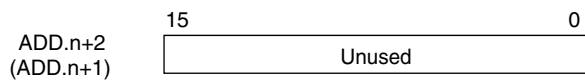
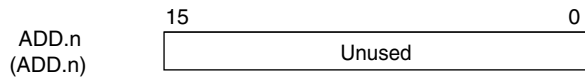
The separable terminal of the unit is 2 piece constructions. It is possible to remove the terminal by loosening two screws of terminal alternately.

I/O DATA DESCRIPTIONS

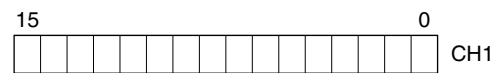
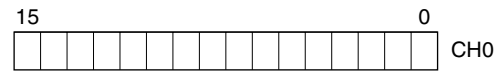
Scaling of analog output is configurable with the configurator software (model: R7CFG). Refer to the software manual for details.

■ ANALOG OUTPUT DATA

· Di area



· Do area



Data is represented in 16-bit binary.
 Negative value is represented in 2's complements.
 Assignment for half-duplex communication in parentheses.