

**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:**

DC voltage output 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. 100mA

**■ GENERAL PRECAUTIONS**

- Before you remove the unit or mount it, 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**

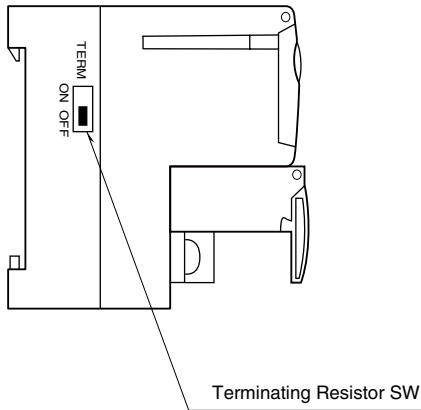
- Do not install cables close to noise sources (relay drive cable, high frequency line, etc.).
- Do not bind these cables together with those in which noises are present. Do not install them in the same duct.

**■ AND ....**

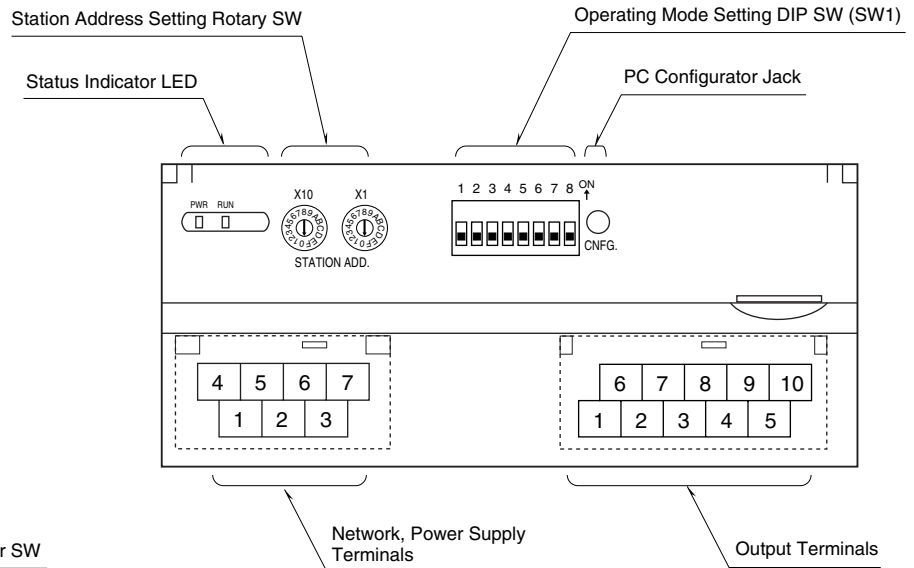
- The unit is designed to function as soon as power is supplied, however, a warm up for 10 minutes is required for satisfying complete performance described in the data sheet.

# COMPONENT IDENTIFICATION

## ■ SIDE VIEW



## ■ 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.

## ■ STATION ADDRESS

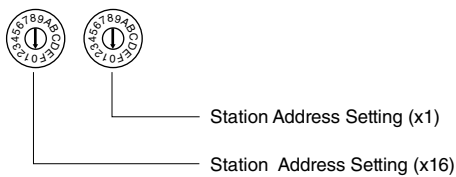
The left switch determines the sixteenths place digit, while the right switch does the ones place digit of the address. The data allocation is 2.

### • Full-duplex communication

Setting “n” with the rotary switches, the addresses are n and n+2. (Range: 01H to 3DH)

### • Half-duplex communication

Two (2) addresses are assigned from the one set with the rotary switch. (Range: 01H to 3EH)



## ■ 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 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 (to -15% or approx. -11.5V DC)

### • Transfer rate (SW1-8)

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

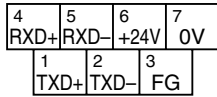
Note: Be sure to set unused SW1-1 and 1-2 to OFF.

## ■ TERMINATING RESISTOR

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

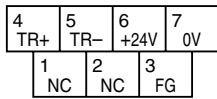
## NETWORK, POWER SUPPLY TERMINAL ASSIGNMENT

### Full-duplex communication



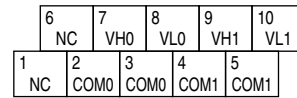
NO.	ID	FUNCTION, NOTES
1	TXD+	Network (slave, transmission +)
2	TXD-	Network (slave, transmission -)
3	FG	FG
4	RXD+	Network (master, transmission +)
5	RXD-	Network (master, transmission -)
6	+24V	Power input (24V DC)
7	0V	Power input (0V)

### 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)

## OUTPUT TERMINAL ASSIGNMENT



NO.	ID	FUNCTION	NO.	ID	FUNCTION
1	NC	No connection	6	NC	No connection
2	COM0	Common 0	7	VH0	Wide span volt. 0
3	COM0	Common 0	8	VL0	Narrow span volt. 0
4	COM1	Common 1	9	VH1	Wide span volt. 1
5	COM1	Common 1	10	VL1	Narrow span volt. 1

## OUTPUT RANGE

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

## PC CONFIGURATOR

With configurator software, settings shown below are available. Refer to the software manual of R7CON for detailed operation.

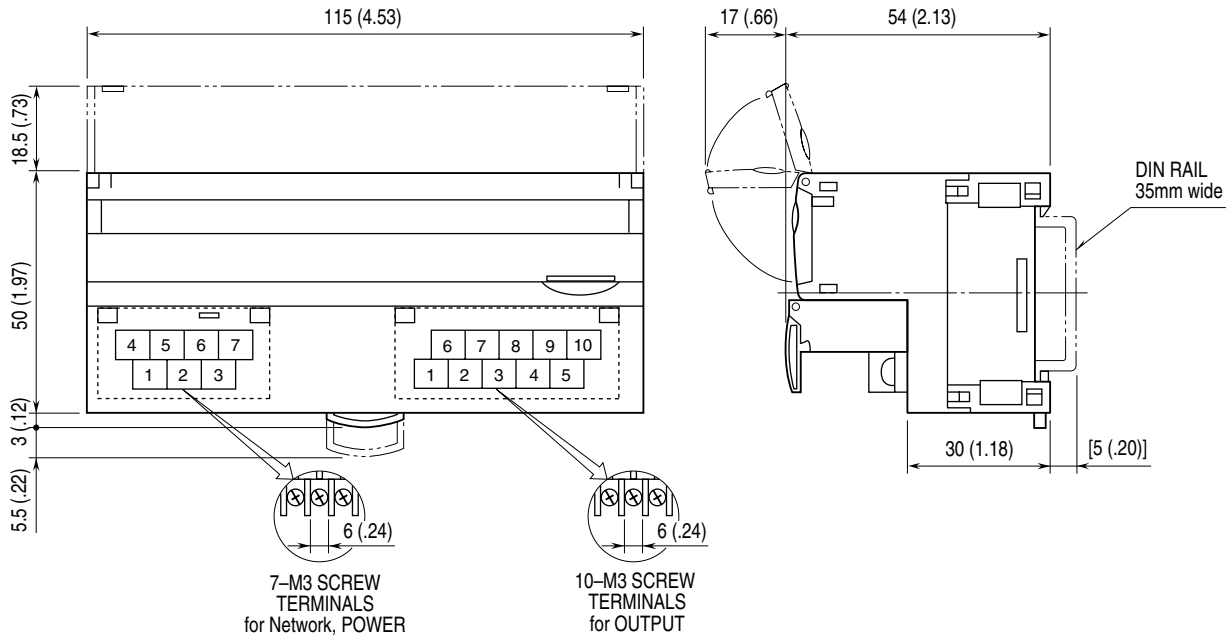
### CHANNEL INDIVIDUAL SETTING

PARAMETER	AVAILABLE RANGE	DEFAULT SETTING
Output Range	-10 to +10 V DC -5 to +5 V DC -1 to +1 V DC 0 to 10 V DC 0 to 5 V DC 1 to 5 V DC 0 to 1 V DC -0.5 to +0.5 V DC	-10 to +10 V DC
Zero scale	-32000 to +32000	0
Full scale	-32000 to +32000	10000
Bias	-320.00 to +320.00	0.00
Gain	-3.2000 to +3.2000	1.0000

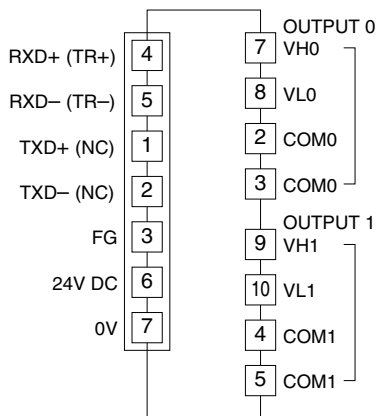
# TERMINAL CONNECTIONS

Connect the unit as in the diagram.

## EXTERNAL DIMENSIONS unit: mm (inch)



## CONNECTION DIAGRAM

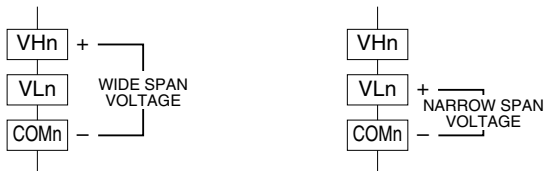


Note 1: Terminal numbers in parentheses are for half-duplex communication model.

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

Caution: FG terminal is NOT a protective conductor terminal.

## Output Connection Examples



## 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

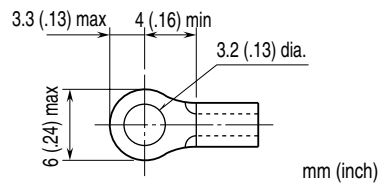
Applicable wire size: 0.2 to 0.5 mm<sup>2</sup> (AWG 26 to 22)

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

##### Others

Applicable wire size: 0.25 to 1.65 mm<sup>2</sup> (AWG 22 to 16)

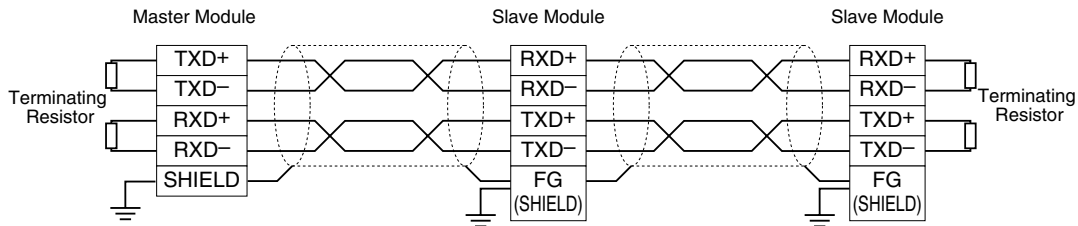
Recommended manufacturer: Japan Solderless Terminal MFG. Co., Ltd. or Nichifu Co., Ltd.



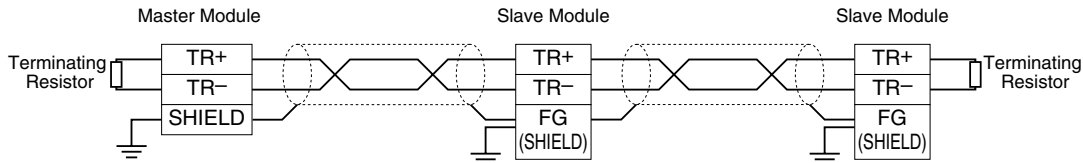
## COMMUNICATION CABLE CONNECTIONS

### ■ MASTER CONNECTION

#### • Full-duplex communication



#### • Half-duplex communication



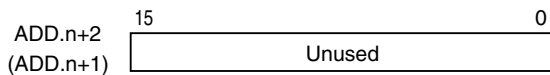
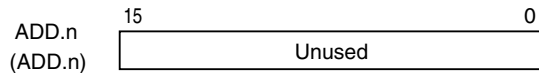
Note: Be sure to turn ON the switch of the terminating resistor located at both ends of the modules.

## I/O DATA DESCRIPTIONS

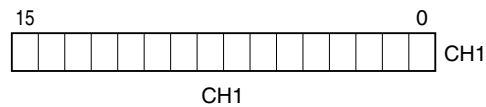
Scaling of analog output is configurable with the configurator software (model: R7CON). Refer to the software manual for details.

### ■ ANALOG OUTPUT

#### • Di



#### • Do



The data is 16-bit binary.

Negative value is represented in 2's complements.

Address in parentheses are for half-duplex mode.