## INSTRUCTION MANUAL

# REMOTE CONTROL RELAY CONTROL MODULE, 8 points
### (Modbus 115.2 kbps)

MODEL **R7M-RR8**

## 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:

Remote control relay control 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

### ■ POWER INPUT RATING & OPERATIONAL RANGE

• Locate the power input rating marked on the product and confirm its operational range as indicated below:
  24V AC rating: 24V ±10%, 50/60 Hz, approx. 140mA
  24V DC rating: 24V ±10%, approx. 60mA

### ■ GENERAL PRECAUTIONS

• Before you remove the unit or mount it, turn off the power supply and output signal for safety.

### ■ 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.
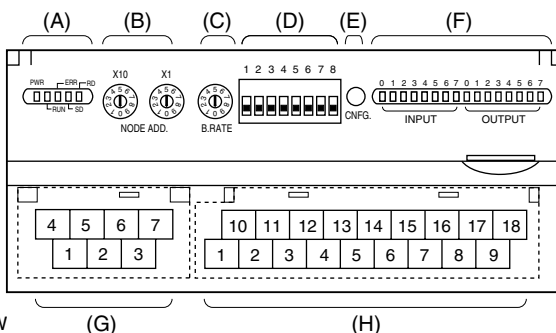
# COMPONENT IDENTIFICATION

■ **SIDE VIEW**

■ **FRONT VIEW**

(A)   (B)   (C)   (D)   (E)   (F)
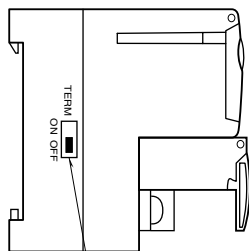
(I)Terminating Resistor SW    (G)    (H)

(A) Status Indicator LED
(B) Node Address Setting Rotary SW
(C) Baud Rate Setting Rotary SW
(D) Operating Mode Setting DIP SW (SW1)
(E) PC Configurator Jack
(F) I/O Status Indicator LED
(G) Modbus, Power Supply Terminals
(H) Output Terminals
( I ) Terminating Resistor SW

■ **STATUS INDICATOR LED**

| ID | COLOR | FUNCTION |
|---|---|---|
| PWR | Red | Turns on when the internal 5V is supplied normally. |
| RUN | Red | Turns on when the refresh data is received normally. |
| ERR | Red | Turns on when the received data is abnormal. |
| SD | Red | Turns on when the module is transmitting. |
| RD | Red | Turns on when the module is receiving. |

■ **NODE ADDRESS**

Node Address is selected between 1 and 99 in decimal. The left switch determines the tenths place digit, while the right switch does the ones place digit of the address.
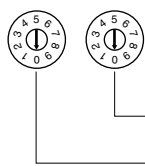
Factory setting : 00

Node Address Setting (x1)

Node Address Setting (x10)

■ **BAUD RATE**

Baud Rate is selected with the rotary switch.

0: 38.4 kbps    5: 1200 bps
1: 19.2 kbps    6: 14.4 kbps
2: 9600 bps    7: 28.8 kbps
3: 4800 bps    8: 57.6 kbps
4: 2400 bps    9: 115.2 kbps

Baud Rate Setting

■ **OPERATING MODE**

• **Extension (SW1-1, 1-2)**

| SW1-1 | SW1-2 | EXTENSION |
|---|---|---|
| OFF | OFF | No extension (*) |
| ON | OFF | Discrete input 8 or 16 points |
| OFF | ON | Discrete output 8 or 16 points |

(*) Factory setting
Note : Be sure to set unused SW1-3 through 1-8 to OFF.

• **Output of the extension module at the loss of communication**

Select "Output Clear (OFF)" or "Output Hold (factory default setting)" using the Configurator Software (model: R7CON).

• **Output of the extension module when the communication is restored**

(Ver1.xx)
"Output Clear": The output is reset to off when the communication is restored. However, if a query instructs ON or OFF about output of the extension module when the communication is restored, the instructed content is output.
"Output Hold": The output at the moment of communication loss is held.

(Ver2.xx or later)
"Output Clear": The output value before the communication loss is output when the communication is restored. However, if a query instructs ON or OFF about output of the extension module when the communication is restored, the instructed content is output.
"Output Hold": The output at the moment of communication loss is held.

■ **PC CONFIGURATOR**

The following parameters can be set with using PC Configurator Software.
• Modbus parameters: Parity, bit length, stop bit

■ **I / O STATUS INDICATOR LED**

Output and feedback input status are indicated with LED.
ON: LED ON
OFF: LED OFF

■ **POWER SUPPLY, MODBUS TERMINAL ASSIGNMENT**

| 4 DA | 5 DG | 6 U(+) | 7 V(−) |
|---|---|---|---|
| 1 DB | 2 SLD | 3 FG | |

(1) DB    –
(2) SLD    Shield
(3) FG    FG
(4) DA    –
(5) DG    –
(6) U(+)    Power input
(7) V(−)    Power input

## ■ OUTPUT TERMINAL ASSIGNMENT

| 10 NC | 11 Y0 | 12 Y1 | 13 Y2 | 14 Y3 | 15 Y4 | 16 Y5 | 17 Y6 | 18 Y7 |
|---|---|---|---|---|---|---|---|---|

| 1 NC | 2 C0 | 3 C1 | 4 C2 | 5 C3 | 6 C4 | 7 C5 | 8 C6 | 9 C7 |
|---|---|---|---|---|---|---|---|---|

| NO. | ID | FUNCTION | NO. | ID | FUNCTION |
|---|---|---|---|---|---|
| 1 | NC | No connection | 10 | NC | No connection |
| 2 | C0 | Common | 11 | Y0 | Output 0 |
| 3 | C1 | Common | 12 | Y1 | Output 1 |
| 4 | C2 | Common | 13 | Y2 | Output 2 |
| 5 | C3 | Common | 14 | Y3 | Output 3 |
| 6 | C4 | Common | 15 | Y4 | Output 4 |
| 7 | C5 | Common | 16 | Y5 | Output 5 |
| 8 | C6 | Common | 17 | Y6 | Output 6 |
| 9 | C7 | Common | 18 | Y7 | Output 7 |

## ■ TERMINATING RESISTOR

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

## ■ EXTENSION MODULE

Combinations with all extension modules are available.

# I/O DATA DESCRIPTION

## ■ OUTPUT

| BIT | CHANNEL | DATA | STATE |
|---|---|---|---|
| 0 | Y0 | 0 | OFF Output |
| | | 1 | ON Output |
| 1 | Y1 | 0 | OFF Output |
| | | 1 | ON Output |
| 2 | Y2 | 0 | OFF Output |
| | | 1 | ON Output |
| 3 | Y3 | 0 | OFF Output |
| | | 1 | ON Output |
| 4 | Y4 | 0 | OFF Output |
| | | 1 | ON Output |
| 5 | Y5 | 0 | OFF Output |
| | | 1 | ON Output |
| 6 | Y6 | 0 | OFF Output |
| | | 1 | ON Output |
| 7 | Y7 | 0 | OFF Output |
| | | 1 | ON Output |
| 8 | — | — | Invalid |
| 9 | — | — | Invalid |
| 10 | — | — | Invalid |
| 11 | — | — | Invalid |
| 12 | — | — | Invalid |
| 13 | — | — | Invalid |
| 14 | — | — | Invalid |
| 15 | — | — | Invalid |

## ■ FEEDBACK INPUT

| BIT | CHANNEL | DATA | STATE |
|---|---|---|---|
| 0 | Y0 | 0 | OFF Output |
| | | 1 | ON Output |
| 1 | Y1 | 0 | OFF Output |
| | | 1 | ON Output |
| 2 | Y2 | 0 | OFF Output |
| | | 1 | ON Output |
| 3 | Y3 | 0 | OFF Output |
| | | 1 | ON Output |
| 4 | Y4 | 0 | OFF Output |
| | | 1 | ON Output |
| 5 | Y5 | 0 | OFF Output |
| | | 1 | ON Output |
| 6 | Y6 | 0 | OFF Output |
| | | 1 | ON Output |
| 7 | Y7 | 0 | OFF Output |
| | | 1 | ON Output |
| 8 | — | — | Invalid |
| 9 | — | — | Invalid |
| 10 | — | — | Invalid |
| 11 | — | — | Invalid |
| 12 | — | — | Invalid |
| 13 | — | — | Invalid |
| 14 | — | — | Invalid |
| 15 | — | — | Invalid |

# TERMINAL CONNECTIONS

Connect the unit as in the diagram below.

## ■ EXTERNAL DIMENSIONS  unit: mm [inch]

115 [4.53]

18.5 [.73]

50 [1.97]

3 [.12]

5.5 [.22]

17 [.66]

54 [2.13]

DIN RAIL
35 mm wide

30 [1.18]

(5 [.20])

| 4 | 5 | 6 | 7 |
|---|---|---|---|
| 1 | 2 | 3 |   |

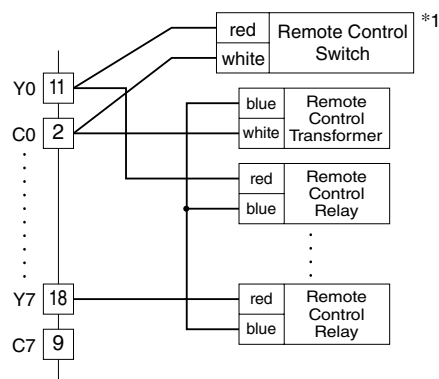| 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
|----|----|----|----|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

6 [.24]

6 [.24]

7–M3 SCREW
TERMINALS
for Modbus, POWER

18–M3 SCREW
TERMINALS
for OUTPUT
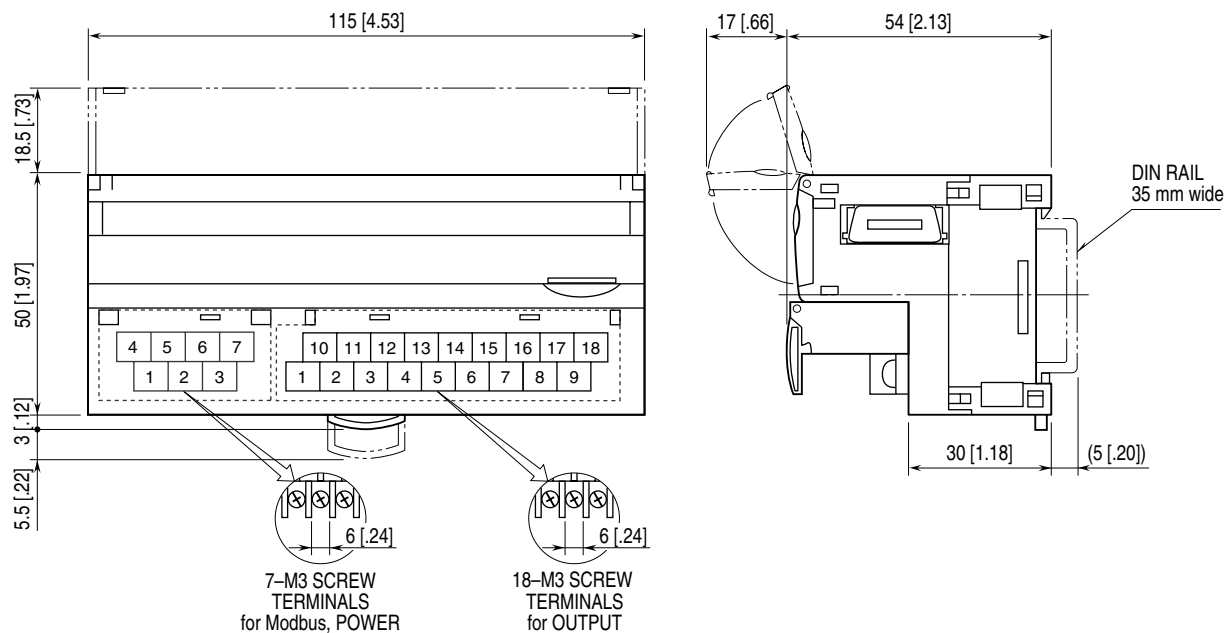
## ■ CONNECTION DIAGRAM

Caution: FG terminal is NOT a protective conductor terminal.

| DA | 4 | | 11 | Y0 |
| DB | 1 | | 2 | C0 |
| DG | 5 | | 12 | Y1 |
| SLD | 2 | | 3 | C1 |
| FG | 3 | | 13 | Y2 |
| U(+) | 6 | | 4 | C2 |
| V(−) | 7 | | 14 | Y3 |

EXTENSION CONNECTOR

| 5 | C3 |
| 15 | Y4 |
| 6 | C4 |
| 16 | Y5 |
| 7 | C5 |
| 17 | Y6 |
| 8 | C6 |
| 18 | Y7 |
| 9 | C7 |
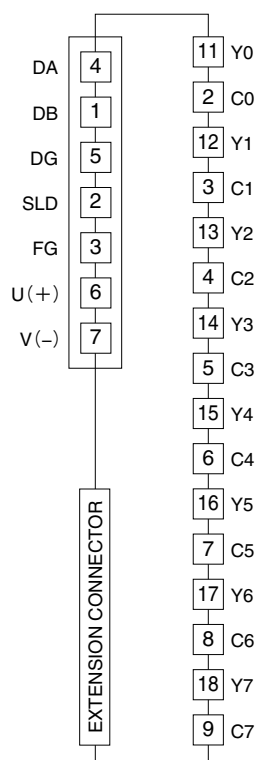
## ■ Output Connection Example

| red | Remote Control |
| white | Switch |

*1

Y0 | 11

C0 | 2

| blue | Remote Control |
| white | Transformer |

| red | Remote Control Relay |
| blue | |

Y7 | 18

C7 | 9

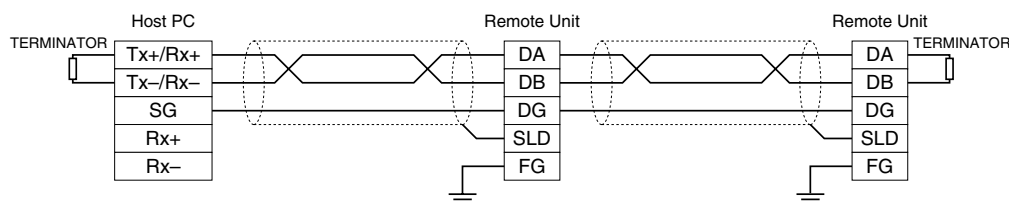| red | Remote Control Relay |
| blue | |

*1. Maximum four remote control switches can be connected in parallel.

# COMMUNICATION CABLE CONNECTIONS

## ■ MASTER CONNECTION



Be sure to connect the terminating resistor included in the product package to the unit at both ends of transmission line.
The terminator must be connected across DA and DB.
The Host PC can be located other than at the extreme ends of transmission line.

# 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.
**Applicable wire size**: 0.25 to 1.65 mm² (AWG 22 to 16)
**Recommended manufacturer**: Japan Solderless Terminal MFG. Co., Ltd, Nichifu Co., Ltd