

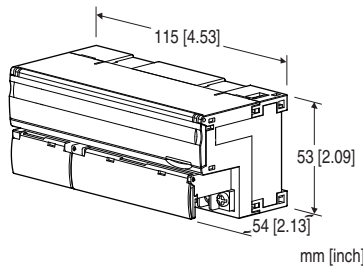
Remote I/O R7 Series

MODBUS I/O MODULE

(remote control relay control, 8 points, 115.2 kbps)

Functions & Features

- 8 points remote control relay control module for Modbus
- Extension module can be connected



MODEL:R7M-RR8-1[1][2]

ORDERING INFORMATION

- Code number: R7M-RR8-1[1][2]
- Specify a code from below for each of [1] and [2].
(e.g. R7M-RR8-AR/Q)
- Specify the specification for option code /Q
(e.g. /C01/SET)

I/O TYPE

RR8: Remote control relay control, 8 points

[1] POWER INPUT

DC Power

R: 24 V DC

(Operational voltage range 24 V \pm 10 %, ripple 10 %p-p max.)

Universal

AR: 24 V AC/24 V DC (universal)

(Operational voltage range 24 V AC \pm 10 %, 50 - 60 Hz /
24 V DC \pm 10 %, ripple 10 %p-p max.)

[2] OPTIONS

blank: none

/Q: With options (specify the specification)

SPECIFICATIONS OF OPTION: Q (multiple selections)

COATING (For the detail, refer to our web site.)

/C01: Silicone coating

/C02: Polyurethane coating

/C03: Rubber coating

EX-FACTORY SETTING

/SET: Preset according to the Ordering Information Sheet
(No. ESU-7803-T)

RELATED PRODUCTS

- PC Configurator cable (model: MCN-CON or COP-US)
 - PC configurator software (model: R7CON)
- Downloadable at our web site.
- Discrete input extension module (model: R7M-EAx)
 - Discrete output extension module (model: R7M-ECx)

RECOMMENDED PRODUCTS (OPERATION CHECKED)

Remote control relay:

BR-12D, BR-22D (Mitsubishi Electric)

WR6165 (Panasonic)

Remote control transformer:

BRT-10B, BRT-20B (Mitsubishi Electric)

WR2301 (Panasonic)

Remote control switch

WR8501 (Panasonic)

GENERAL SPECIFICATIONS

Connection: M3 separable screw terminal (torque 0.5 N·m)

Solderless terminal: Refer to the drawing at the end of the section.

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

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

Screw terminal: Nickel-plated steel

Housing material: Flame-resistant resin (gray)

Isolation: Output to Modbus or FG to power

Output data length: Selectable between 8-bit (*) and 16-bit with the front DIP switch

(*) Factory default setting

Note: Output data length setting is compatible with Ver.2.01 or later.

Extension: No extension (*), Discrete input 8 or 16 points,

Discrete output 8 or 16 points

Selectable with the front DIP SW

(*) Factory default setting

Status indicator LEDs: PWR, RUN, ERR, SD, RD

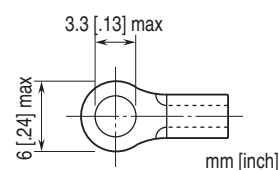
(Refer to the instruction manual)

I/O status indicator: Feedback input status turns on with the input supplied.

Output status LED turns on with the output ON.

Configurator connection: 2.5 dia. miniature jack

■Recommended solderless terminal



MODBUS COMMUNICATION

Standard: Conforms to TIA/EIA-485-A

Transmission distance: 500 meters max.

Transmission media: Shielded twisted-pair cable
(CPEV-S 0.9 dia.)

Communication parameter: With Configurator Software
(model: R7CON)

- **Data Mode:** RTU (default) or ASCII
- **Parity:** NONE (default), ODD or EVEN
- **Data bit:** 8: RTU (default), 7: ASCII
- **Stop bit:** 1 or 2 (default)

Baud rate setting: With rotary switch

115.2 kbps, 57.6 kbps, 38.4 kbps (default), 28.8 kbps,
19.2 kbps, 14.4 kbps, 9600 bps, 4800 bps, 2400 bps,
1200 bps

Node address setting: 1 - 99 (with rotary switch) (factory
default setting: 00)

Terminating resistor: Built-in (Selected with the DIP SW;
factory setting: disabled)

OUTPUT SPECIFICATIONS

Common: 1 common per 8 points (8 terminals)

Maximum outputs applicable at once: No limit

Pulse output time: 100 msec.

Rated load voltage: 24 V AC $\pm 10\%$ (supplied by the remote
control transformer)

Load voltage frequency: 50 / 60 Hz

INSTALLATION

Current consumption

- **AC:** Approx. 140 mA
- **DC:** Approx. 60 mA

Operating temperature: -10 to +55°C (14 to 131°F)

Storage temperature: -20 to +65°C (-4 to +149°F)

Operating humidity: 30 to 90 %RH (non-condensing)

Atmosphere: No corrosive gas or heavy dust

Mounting: DIN rail (35 mm rail)

Weight: 200 g (0.44 lb)

PERFORMANCE

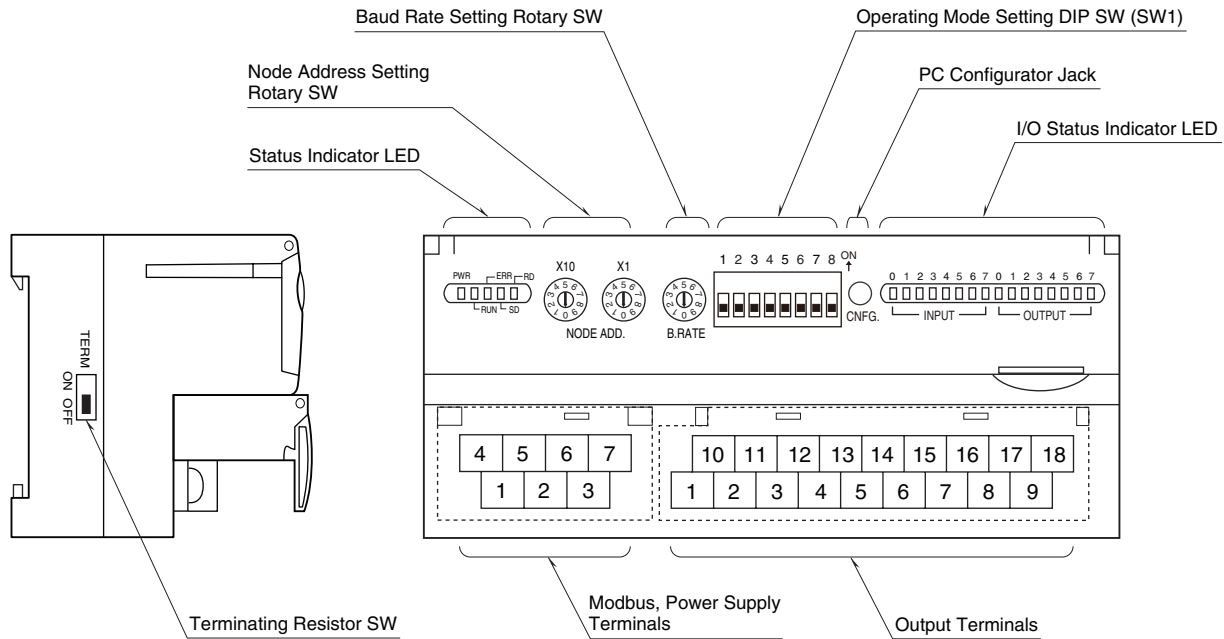
Insulation resistance: $\geq 100\text{ M}\Omega$ with 500 V DC

Dielectric strength: 1500 V AC @ 1 minute (output to
Modbus or FG to power)

EXTERNAL VIEW

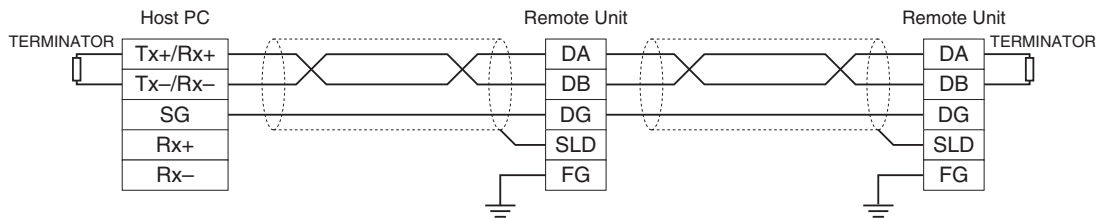
■ SIDE VIEW

■ FRONT VIEW



COMMUNICATION CABLE CONNECTIONS

■ MASTER CONNECTION



Be sure to turn on the terminating resistor setting of the units at both ends of transmission line.
 When the unit does not have a terminating resistor setting, connect a terminating resistor (110Ω, 0.25W) across DA and DB.
 The Host PC can be located other than at the extreme ends of transmission line.

TERMINAL ASSIGNMENTS

■ **OUTPUT TERMINAL ASSIGNMENT**

10	11	12	13	14	15	16	17	18
NC	Y0	Y1	Y2	Y3	Y4	Y5	Y6	Y7
1	2	3	4	5	6	7	8	9
NC	C0	C1	C2	C3	C4	C5	C6	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

■ **POWER SUPPLY, MODBUS TERMINAL ASSIGNMENT**

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

NO.	ID	FUNCTION, NOTES
1	DB	----
2	SLD	Shield
3	FG	FG
4	DA	----
5	DG	----
6	U (+)	Power input (+)
7	V (-)	Power input (-)

MODBUS FUNCTION CODES & SUPPORTED CODES

■ Data and Control Functions

CODE	NAME	
01	Read Coil Status	Digital output from the slave
02	Read Input Status	Status of digital inputs to the slave
03	Read Holding Registers	General purpose register within the slave
04	Read Input Registers	Collected data from the field by the slave
05	Force Single Coil	Digital output from the slave
06	Preset Single Register	General purpose register within the slave
08	Diagnostics	
11	Fetch Comm. Event Counter	Fetch a status word and an event counter
12	Fetch Comm. Event Log	A status word, an event counter, a message count and a field of event bytes
15	Force Multiple Coils	Digital output from the slave
16	Preset Multiple Registers	General purpose register within the slave
17	Report Slave ID	Slave type/ 'RUN' status

■ Exception Codes

CODE	NAME	
01	Illegal Function	Function code is not allowable for the slave
02	Illegal Data Address	Address is not available within the slave
03	Illegal Data Value	Data is not valid for the function

■ Diagnostic Subfunctions

CODE	NAME	
00	Return Query Data	Loop back test

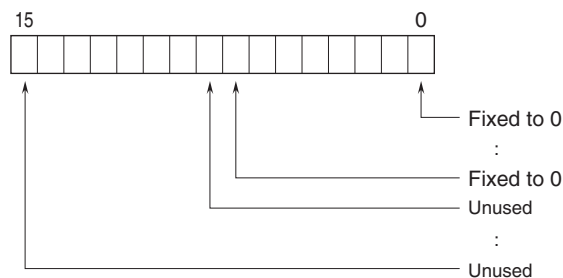
MODBUS I/O ASSIGNMENT

	ADDRESS	DATA TYPE	DATA
Coil (0X)	1 – 16		Digital Output (discrete output of the basic module)
	17 – 32		Digital Output (discrete output of the extension module)
Inputs (1X)	1 – 16		Digital Input (discrete input of the basic module)
	17 – 32		Digital Input (discrete input of the extension module)
	33 – 48		Reserved (unused)
	49 – 64		Module Status
	65 – 80		Reserved (unused)
Input Registers (3X)	1 – 48	----	Analog Input (unused)
Holding Registers (4X)	1 – 48	----	Analog Output (unused)

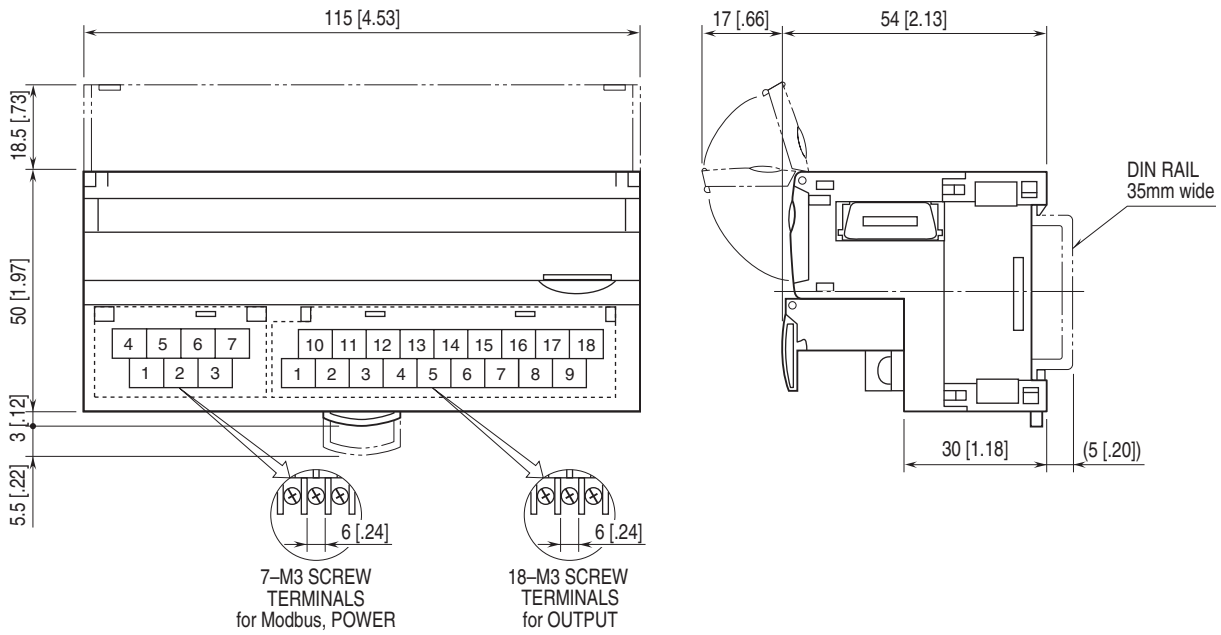
Note: DO NOT access addresses other than mentioned above. Such access may cause problems such as inadequate operation.

■ STATUS

Bit 0 to 7: Fixed to 0.

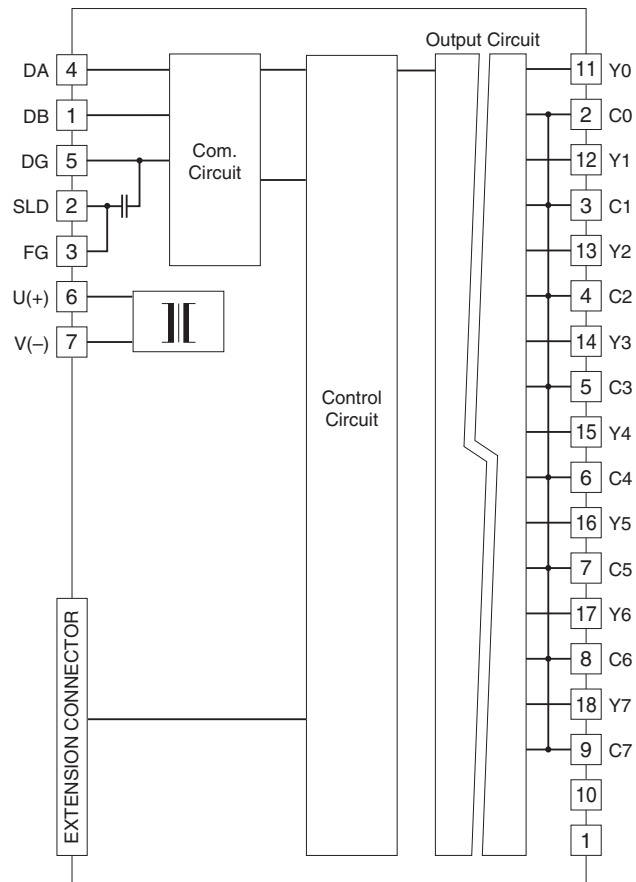


EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]

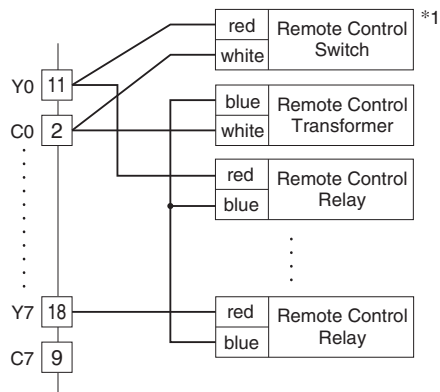


SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

Caution: FG terminal is NOT a protective conductor terminal.



Output Connection Example



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



Specifications are subject to change without notice.