

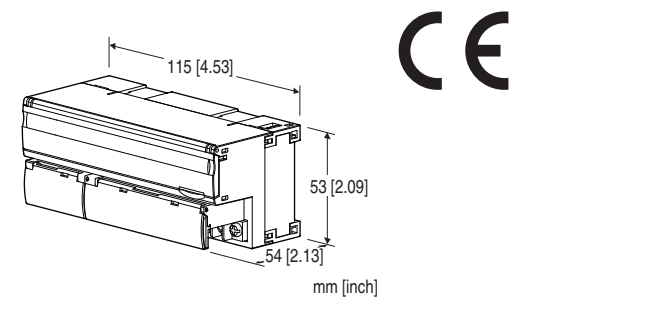
Remote I/O R7 Series

MODBUS I/O MODULE

(relay c contact output, 4 points, 115.2 kbps)

Functions & Features

- 4 points relay c contact output module for Modbus



MODEL:R7M-DC4G-R[1]

ORDERING INFORMATION

- Code number: R7M-DC4G-R[1]
- Specify a code from below for [1].
(e.g. R7M-DC4G-R/Q)
- Specify the specification for option code /Q
(e.g. /C01/SET)

I/O TYPE

DC4G: Relay c contact output, 4 points

POWER INPUT

DC Power

R: 24 V DC

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

[1] 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-BB)

CAUTION

- Extension modules cannot be connected.

RELATED PRODUCTS

- PC Configurator cable (model: MCN-CON or COP-US)
 - PC configurator software (model: R7CON)
- Downloadable at our web site.

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 at the loss of communication:

Hold the output (*), B contact output

Selectable with the front DIP SW

(*): factory default setting

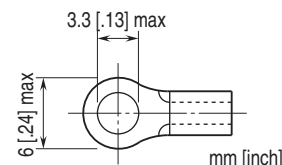
Status indicator LEDs: PWR, RUN, ERR, SD, RD

(Refer to the instruction manual)

Discrete output status indicator LED: LED turns on with 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 1 point

Maximum load current: 2.0 A per point

Maximum outputs applicable at once: No limit (at 24 V DC)

Output supply voltage/current: 24 V DC $\pm 10\%$ / approx. 70 mA

Rated load: 250 V AC¹ @ 2 A ($\cos \phi = 1$),

30 V DC @ 2 A (resistive load)

*1. > 50 V AC when it is used as a product relevant to EU directive.

Maximum switching voltage: 250 V AC, 30 V DC

Maximum switching power: 500 VA (AC), 60 W (DC)

Minimum applicable load: 5 V DC @ 10 mA

Mechanical life: 10^7 cycles (300 cycles per min.)

When driving an inductive load, external contact protection and noise quenching recommended.

ON delay time: ≤ 10 msec.

OFF delay time: ≤ 10 msec.

INSTALLATION

Current consumption

• DC: Approx. 35 mA

• Relay driving current: Approx. 70 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: ≥ 100 M Ω with 500 V DC

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

STANDARDS & APPROVALS

Refer to the manuals to comply with the standards.

EU conformity:

EMC Directive

EMI EN 61000-6-4

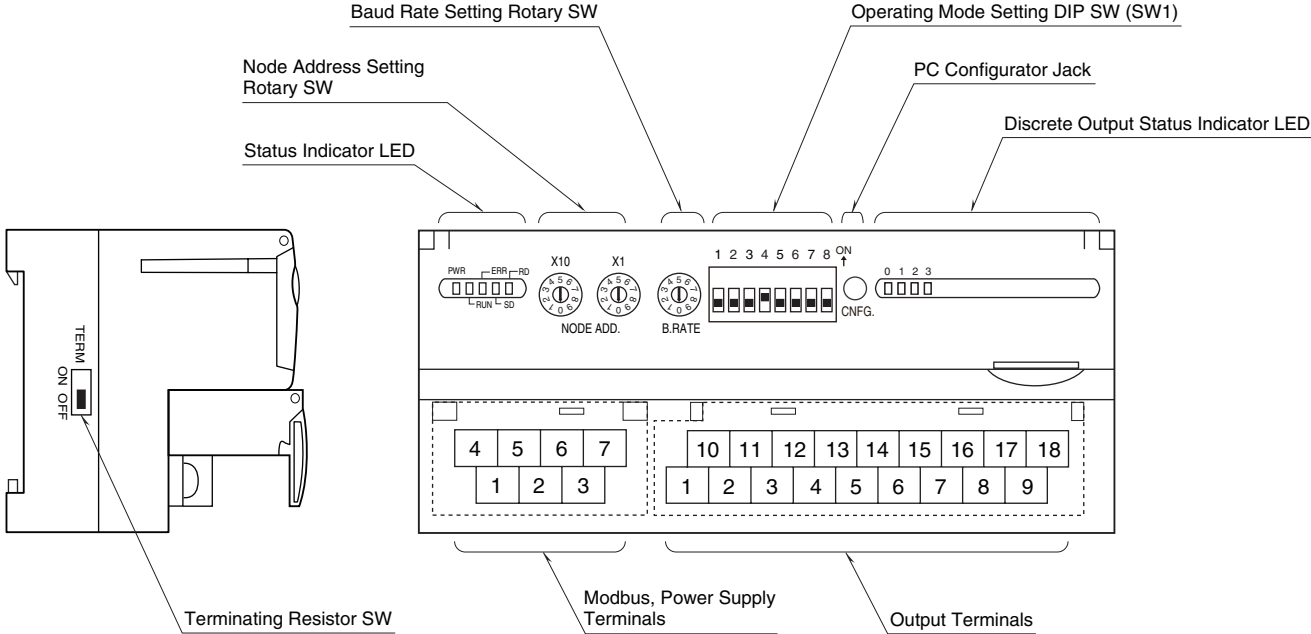
EMS EN 61000-6-2

RoHS Directive

EXTERNAL VIEW

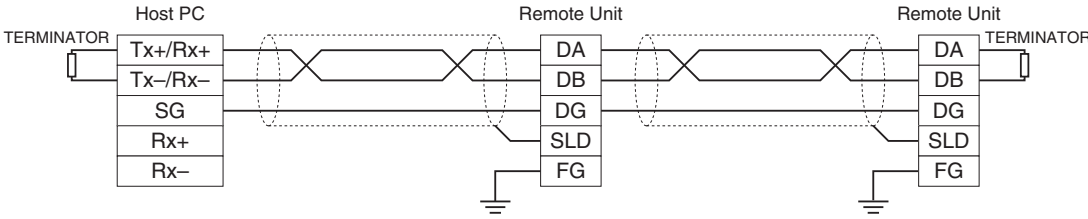
■ SIDE VIEW

■ 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 +24V	11 Y0A	12 Y0B	13 Y1A	14 Y1B	15 Y2A	16 Y2B	17 Y3A	18 Y3B
1 0V	2 COM0	3 COM0	4 COM1	5 COM1	6 COM2	7 COM2	8 COM3	9 COM3

PIN NO.	ID	FUNCTION	PIN NO.	ID	FUNCTION
1	0V	0V	10	+24V	24V DC
2	COM0	Output common 0	11	Y0A	Output 0 (NO)
3	COM0	Output common 0	12	Y0B	Output 0 (NC)
4	COM1	Output common 1	13	Y1A	Output 1 (NO)
5	COM1	Output common 1	14	Y1B	Output 1 (NC)
6	COM2	Output common 2	15	Y2A	Output 2 (NO)
7	COM2	Output common 2	16	Y2B	Output 2 (NC)
8	COM3	Output common 3	17	Y3A	Output 3 (NO)
9	COM3	Output common 3	18	Y3B	Output 3 (NC)

■ POWER SUPPLY, MODBUS TERMINAL ASSIGNMENT

4 DA	5 DG	6 +24 V	7 0V
1 DB	2 SLD	3 FG	

NO.	ID	FUNCTION, NOTES
1	DB	----
2	SLD	Shield
3	FG	FG
4	DA	-----
5	DG	----
6	+24 V	Power input (24 V DC)
7	0 V	Power input (0 V DC)

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

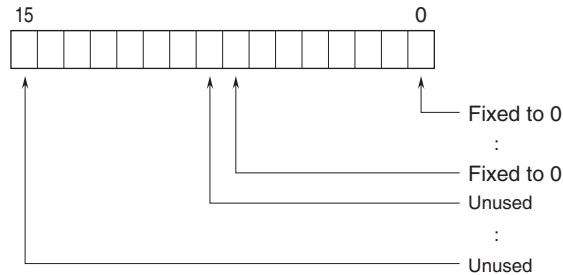
MODBUS I/O ASSIGNMENT

	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) (unused)
Inputs (1X)	1 – 16		Digital Input (discrete input of the basic module) (unused)
	17 – 32		Digital Input (discrete input of the extension module) (unused)
	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)

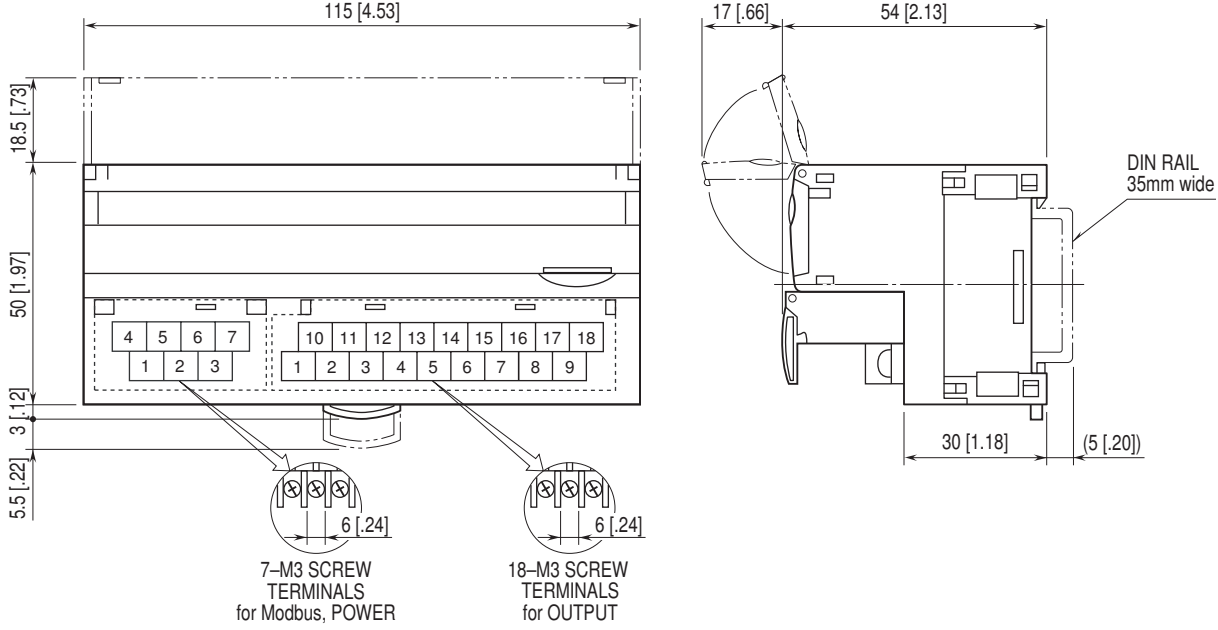
Note: DO NOT access addresses other than mentioned above. Such access may cause problems such as inadequate operation.

■ STATUS

Bit 0 to 7: Fixed to 0.

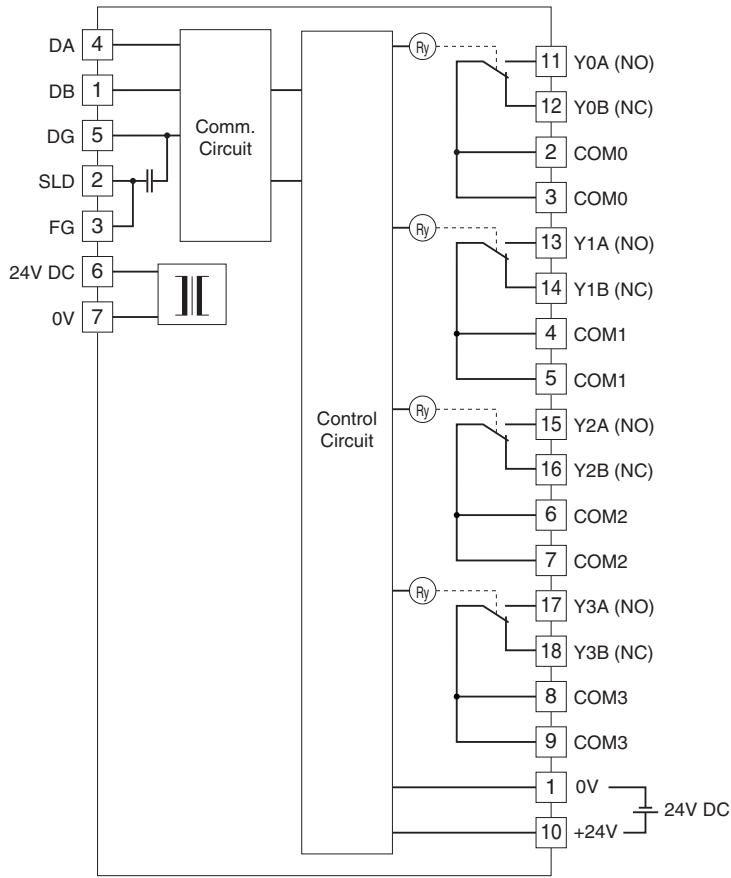


EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]



SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

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



 Specifications are subject to change without notice.