

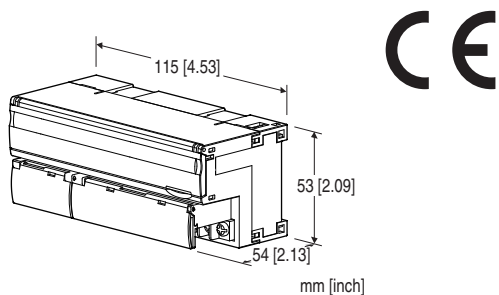
Remote I/O R7 Series

ETHERNET I/O MODULE

(NPN transistor output, 16 points, Modbus/TCP use)

Functions & Features

- 16 points NPN transistor output module for Modbus/TCP (Ethernet)
- Extension module can be connected



MODEL:R7E-DC16A-R[1]

ORDERING INFORMATION

- Code number: R7E-DC16A-R[1]
Specify a code from below for [1].
(e.g. R7E-DC16A-R/Q)
- Specify the specification for option code /Q
(e.g. /C01/SET)

I/O TYPE

DC16A: NPN transistor output, 16 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-7807-G)

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: R7E-EAx)
- Discrete output extension module (model: R7E-ECx)

Note: PC Configurator Software is required to set IP address.

GENERAL SPECIFICATIONS

Connection

Ethernet: RJ-45 Modular Jack

Power, output: 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 Ethernet to power to FG

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

Selectable with the front DIP SW

(* Factory default setting)

Output at the loss of communication:

Hold the output (*), Reset the output

Selectable with the front DIP SW

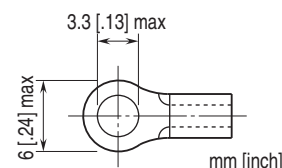
(* Factory default setting)

Status indicator LEDs: PWR, RUN

Discrete output status indicator LED: LED turns on with output ON

Configurator connection: 2.5 dia. miniature jack

Recommended solderless terminal



ETHERNET COMMUNICATION

Physical layer standard: IEEE 802.3u

Data link layer: 10BASE-T / 100BASE-TX

Baud rate: 10 / 100 Mbps, Auto Negotiation

Protocol: Modbus/TCP

Data: RTU (binary)

Max. number of socket connections: Two (2)

Transmission media: 10BASE-T (STP cable, category 5)
100BASE-TX (STP cable, category 5e)

Max. segment length: 100 meters

IP address: Can be set and changed with PC Configurator Software (model: R7CON) (default: 192.168.0.1)
Subnet Mask: Can be set and changed with PC Configurator Software (model: R7CON) (default: 255.255.255.0)
Default Gateway: Can be set and changed with PC Configurator Software (model: R7CON) (Ver.2.41 or later) (default: 192.168.0.100)
Port No.: 502
DHCP available (Ver.3.00 or later)
Ethernet indicator LEDs: LINK, LINK100, COL

OUTPUT SPECIFICATIONS

Common: Negative common (NPN) per 16 points
Maximum outputs applicable at once: No limit (at 24 V DC)
Rated load voltage: 24 V DC $\pm 10\%$
Rated output current: 0.25 A per point, 2.0 A per common
Residual voltage: ≤ 1.2 V
Leakage current: ≤ 0.1 mA
ON delay: ≤ 0.5 msec.
OFF delay: ≤ 1.5 msec.
(When driving an inductive load, connect a diode in parallel with the load.)

INSTALLATION

Current consumption
•DC: Approx. 86 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

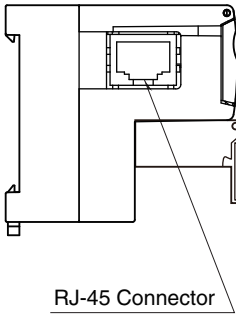
Insulation resistance: ≥ 100 M Ω with 500 V DC
Dielectric strength: 1500 V AC @ 1 minute (output to Ethernet to power to FG)

STANDARDS & APPROVALS

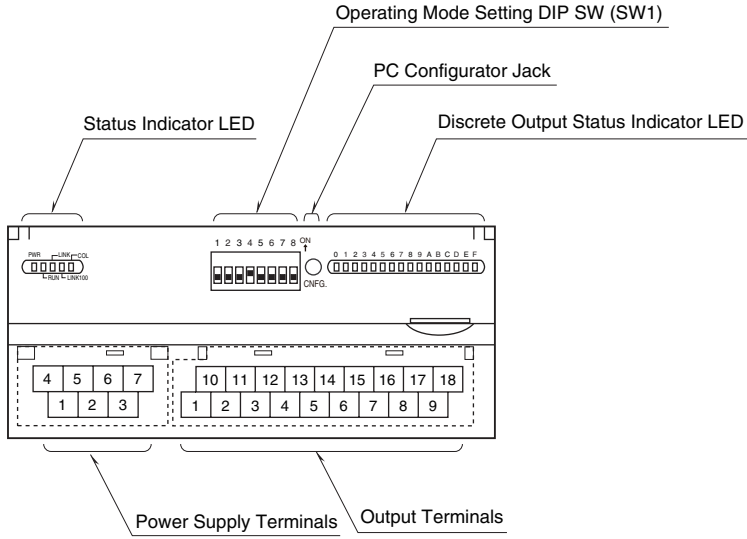
EU conformity:
EMC Directive
EMI EN 61000-6-4
EMS EN 61000-6-2
RoHS Directive

EXTERNAL VIEW

■ SIDE VIEW



■ FRONT VIEW



TERMINAL ASSIGNMENTS

■ OUTPUT TERMINAL ASSIGNMENT

10	11	12	13	14	15	16	17	18
+24V	Y1	Y3	Y5	Y7	Y9	YB	YD	YF
1	2	3	4	5	6	7	8	9
0V	Y0	Y2	Y4	Y6	Y8	YA	YC	YE

NO.	ID	FUNCTION	NO.	ID	FUNCTION
1	0V	0V (common)	10	+24V	24V DC
2	Y0	Output 0	11	Y1	Output 1
3	Y2	Output 2	12	Y3	Output 3
4	Y4	Output 4	13	Y5	Output 5
5	Y6	Output 6	14	Y7	Output 7
6	Y8	Output 8	15	Y9	Output 9
7	YA	Output 10	16	YB	Output 11
8	YC	Output 12	17	YD	Output 13
9	YE	Output 14	18	YF	Output 15

■ POWER SUPPLY TERMINAL ASSIGNMENT

4	5	6	7
NC	NC	+24V	0V
1	2	3	
NC	NC	FG	

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

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

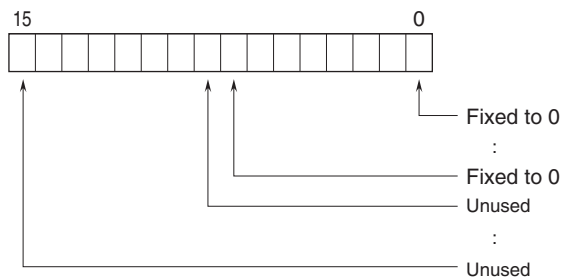
MODBUS I/O ASSIGNMENT

	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) (unused)
	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)

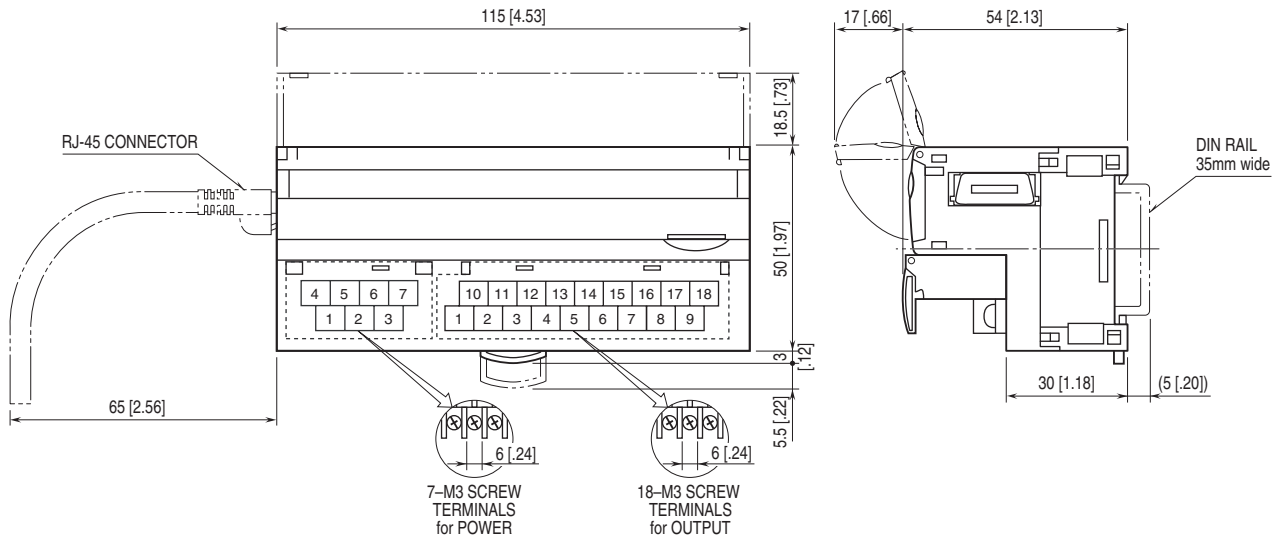
Note: DO NOT access addresses other than mentioned above. Such access may cause problems such as inadequate operation.

■ STATUS

Bit 0 to 7: Fixed to 0.

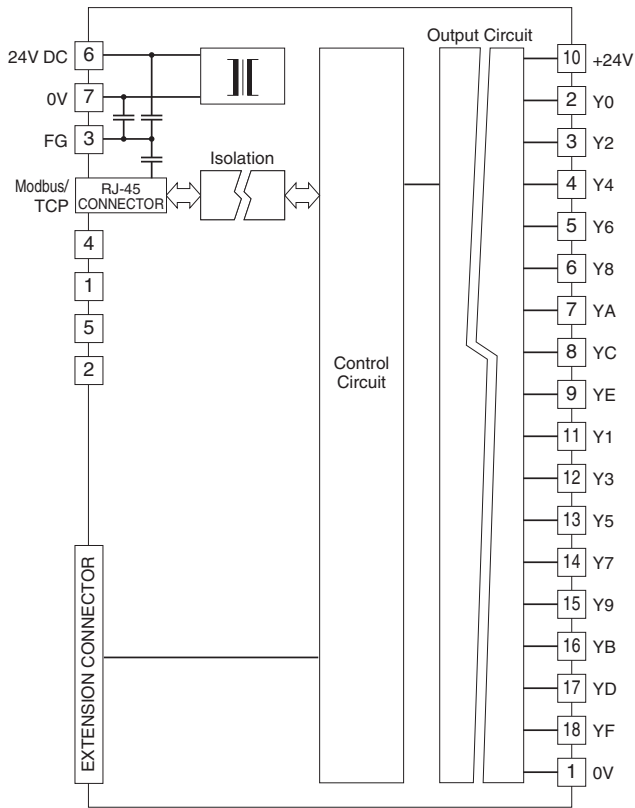


EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]

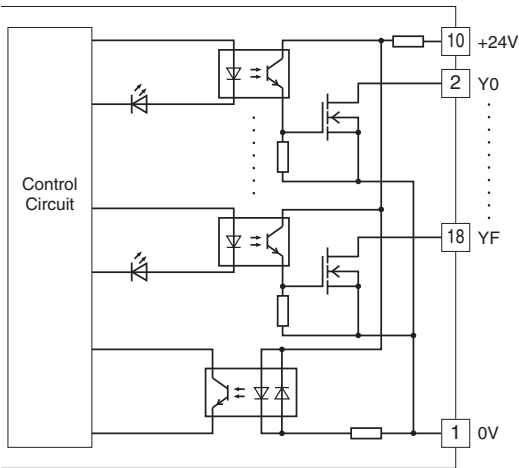


SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

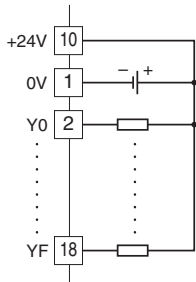
Note: In order to improve EMC performance, bond the FG terminal to ground.
 Caution: FG terminal is NOT a protective conductor terminal.



■ Output Circuit



■ Output Connection Example





Specifications are subject to change without notice.