

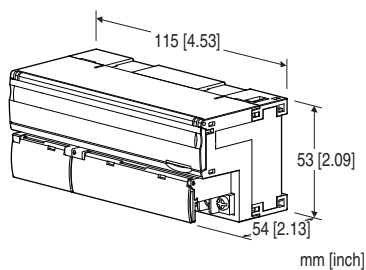
## Remote I/O R7 Series

### ETHERNET I/O MODULE

(DC current output, 2 points, isolated, Modbus/TCP use)

#### Functions & Features

- 2 points DC current output module for Modbus/TCP (Ethernet)
- Extension module can be connected
- Individual channels, zero adjustment, span adjustment, and scaling can be set with the configurator software (model: R7CON)



### MODEL:R7E-YS2-R[1]

#### ORDERING INFORMATION

- Code number: R7E-YS2-R[1]  
Specify a code from below for [1].  
(e.g. R7E-YS2-R/Q)
- Specify the specification for option code /Q  
(e.g. /C01/SET)

#### I/O TYPE

YS2: DC current output, 2 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-E)

#### 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 mm<sup>2</sup> (AWG 22 to 16)

Screw terminal: Nickel-plated steel

Housing material: Flame-resistant resin (gray)

Isolation: Output 0 to output 1 to Ethernet to power to FG

Zero adjustments: Configurable via R7CON

Span adjustments: Configurable via R7CON

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

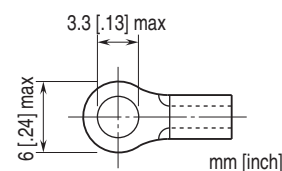
Selectable with the front DIP SW

(\* Factory default setting)

Status indicator LEDs: PWR, RUN

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

## FUNCTIONS

### Output hold function:

Output at the loss of communication is selectable from output clear (fix the output at -15 %) and output hold (last normally received data) with DIP switch.

At the startup, it outputs -15 % until the communication is established and normal data is received.

## OUTPUT SPECIFICATIONS

**Output range:** 4 to 20 mA DC  
**Load resistance:**  $\leq 600 \Omega$   
**Operational range:** -15 to +115 % of output range

## INSTALLATION

**Current consumption**  
•DC: Approx. 161 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:** 180 g (0.40 lb)

## PERFORMANCE

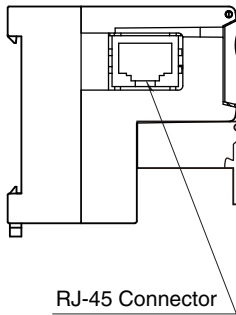
**Conversion accuracy:**  $\pm 0.1 \%$   
**Data range:** 0 - 10000 of the output range  
(Scaling of converted data is configurable with the configurator software (model: R7CON))  
**Temp. coefficient:**  $\pm 0.015 \%/^{\circ}\text{C}$  ( $\pm 0.008 \%/^{\circ}\text{F}$ )  
**Response time:** 250 msec. (0 - 90 %)  
**Insulation resistance:**  $\geq 100 \text{ M}\Omega$  with 500 V DC  
**Dielectric strength:** 1500 V AC @ 1 minute (output 0 to output 1 to Ethernet to power to FG)

## STANDARDS & APPROVALS

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

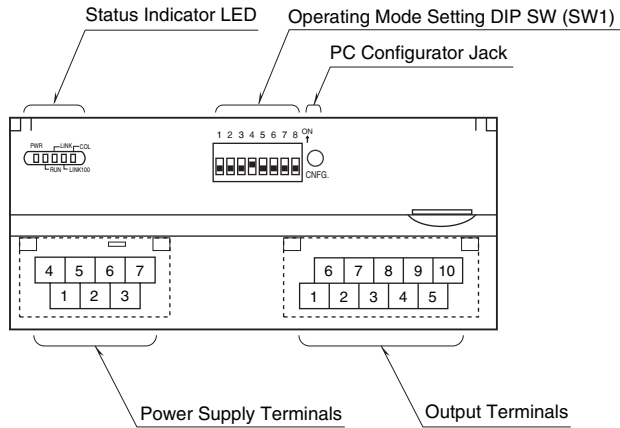
## EXTERNAL VIEW

### ■ SIDE VIEW



RJ-45 Connector

### ■ FRONT VIEW



## TERMINAL ASSIGNMENTS

### ■ OUTPUT TERMINAL ASSIGNMENT

6	7	8	9	10
NC	I0	NC	I1	NC
1	2	3	4	5
NC	COM0	NC	COM1	NC

NO.	ID	FUNCTION	NO.	ID	FUNCTION
1	NC	No connection	6	NC	No connection
2	COM0	Common 0	7	I0	Current 0
3	NC	No connection	8	NC	No connection
4	COM1	Common 1	9	I1	Current 1
5	NC	No connection	10	NC	No connection

### ■ 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)

<b>MODBUS FUNCTION CODES &amp; SUPPORTED CODES</b>
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**■ 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) (unused)
	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 – 2	I	Analog Output
	3 – 16	----	Reserved (unused)
	17 – 20	F	Analog Output
	21 – 48	----	Reserved (unused)

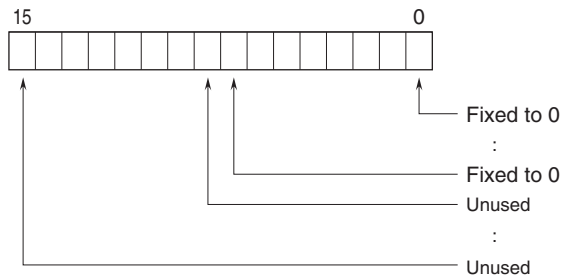
I : Integer, -1500 – +11500 (-15 – +115%)

F : Floating

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.



## DATA CONVERSION

### ■ OUTPUT RANGE AND DATA CONVERSION (FACTORY DEFAULT SETTING)

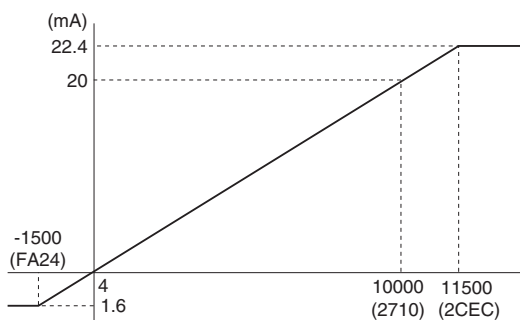
Digital output data is converted into analog representations of 0 – 100% proportional to each scaled range.

Overrange output is possible from -15 to +115% of the nominal range.

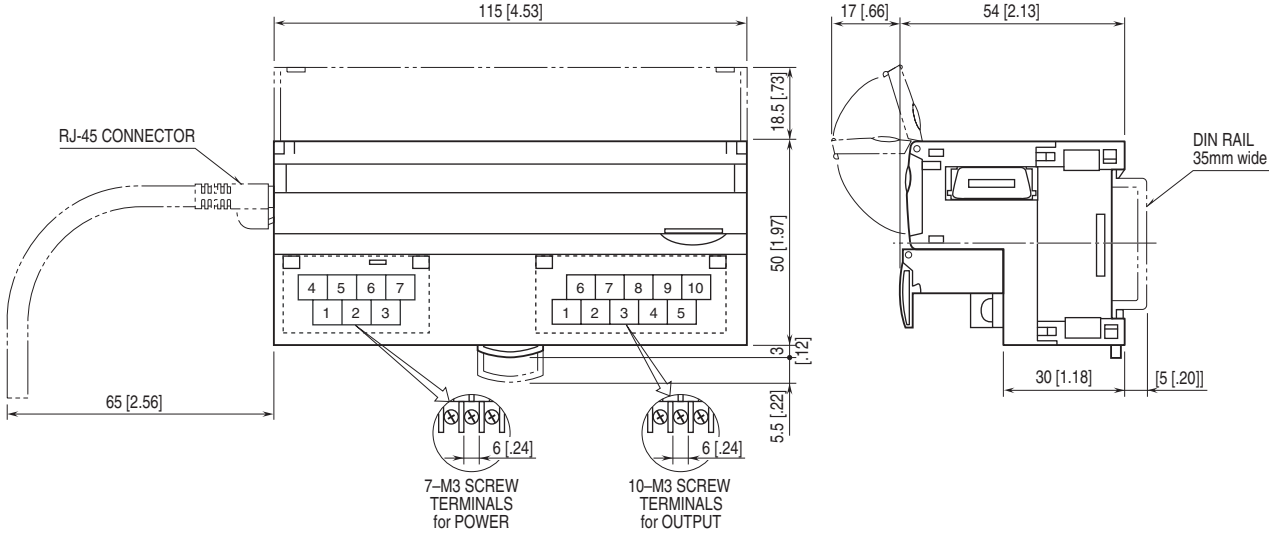
When the signal exceeds the limit, the data is fixed at -15% or +115%.

#### • Output Range 4 – 20 mA DC

Digital Value, Decimal	Digital Value, HEX	Output Value, Engineering Unit	Output Value, %
-1500	FA24	≤ 1.6 mA	-15%
0	0	4 mA	0%
10000	2710	20 mA	100%
11500	2CEC	≥ 22.4 mA	115%

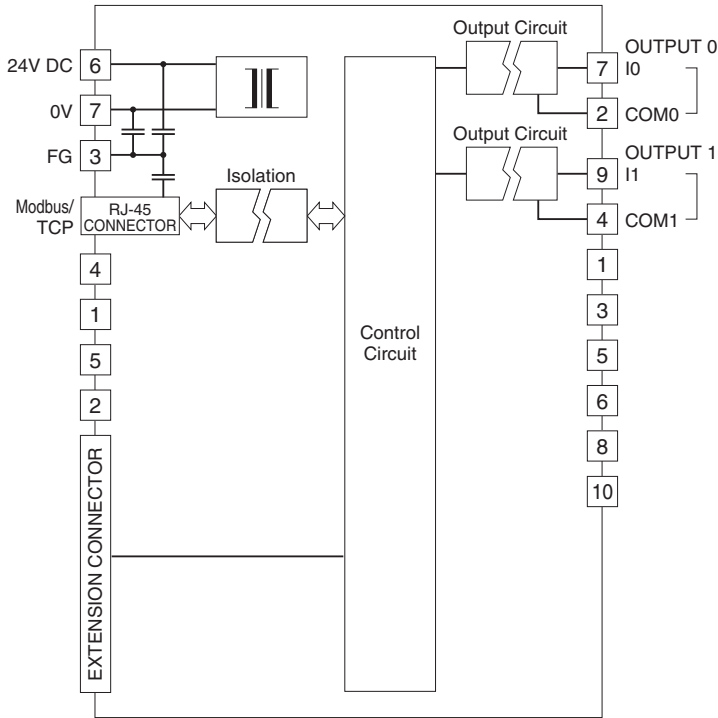


## EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]



## 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.