

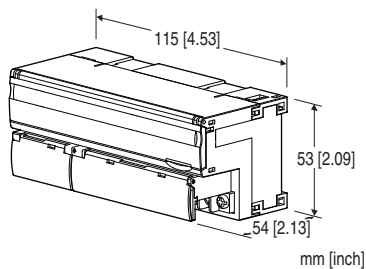
## Remote I/O R7 Series

### ETHERNET I/O MODULE

(AC current input, 4 points, isolated, RMS sensing, clamp-on current sensor CLSE use, Modbus/TCP use)

#### Functions & Features

- 4 points AC current I/O module for Modbus/TCP (Ethernet)
- Extension module can be connected
- Input range can be selected with the front DIP switches for all channels.
- Individual channels, zero adjustment, span adjustment, and scaling can be set with the configurator software (model: R7CON)



### MODEL:R7E-CT4E-R[1]

#### ORDERING INFORMATION

- Code number: R7E-CT4E-R[1]
- Specify a code from below for [1].  
(e.g. R7E-CT4E-R/Q)
- Specify the specification for option code /Q  
(e.g. /C01/SET)

#### I/O TYPE

**CT4E:** AC current input, 4 points, clamp-on current sensor CLSE use

#### 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-R)

#### RELATED PRODUCTS

- PC Configurator cable (model: MCN-CON or COP-US)

- PC configurator software (model: R7CON)

Downloadable at our web site.

- Clamp-on current sensor (model: CLSE)

The clamp-on current sensors, not included in this product package, must be ordered separately. Required number depends upon the system configuration.

- 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 connector

**Power, input:** 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:** Input 0 to input 1 to input 2 to input 3 to Ethernet to power to FG

##### Input waveform

**RMS sensing:** Up to 15 % of 3rd harmonic content

**Zero adjustments:** Configurable via R7CON

**Span adjustments:** Configurable via R7CON

**Input range:** Selectable with the DIP SW on the front of the unit or configurable via R7CON

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

Selectable with the front DIP SW

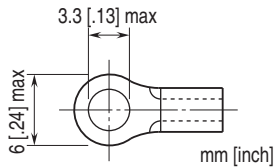
(\* ) Factory default setting

**Conversion rate:** Selectable with the front DIP SW

**Status indicator LEDs:** PWR, RUN

**Configurator connection:** 2.5 dia. miniature jack

## ■Recommended solderless terminal



**Mounting:** DIN rail (35 mm rail)

**Weight:** 200 g (0.44 lb)

## PERFORMANCE

**Conversion rate / conversion accuracy:**

10 msec./ $\pm 2.0\%$ , 20 msec./ $\pm 1.0\%$ , 40 msec./ $\pm 0.5\%$ ,

80 msec./ $\pm 0.5\%$  (\*)

(\*) Factory setting

(The conversion accuracy does not include the accuracy of the sensor)

**Data range:** Engineering unit value (A)  $\times 100$  (integer)

(For CLSE-R5, engineering unit value (A)  $\times 1000$  (integer))

**Temp. coefficient:**  $\pm 0.015\%/^{\circ}\text{C}$  ( $\pm 0.008\%/^{\circ}\text{F}$ )

**Response time:**  $\leq 1.0$  sec. (0 - 90 %)

**Insulation resistance:**  $\geq 100$  M $\Omega$  with 500 V DC

**Dielectric strength:** 1500 V AC @ 1 minute (input 0 to input 1 to input 2 to input 3 to Ethernet to power to FG)

## STANDARDS & APPROVALS

**EU conformity:**

EMC Directive

EMI EN 61000-6-4

EMS EN 61000-6-2

RoHS Directive

## 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

## INPUT SPECIFICATIONS

**Input range (Optional)**

CLSE-R5: 0 - 5 A AC

CLSE-05: 0 - 50 A AC

CLSE-10: 0 - 100 A AC

CLSE-20: 0 - 200 A AC

CLSE-40: 0 - 400 A AC

CLSE-60: 0 - 600 A AC (\*)

(\*) Factory setting

**Frequency:** 50 / 60 Hz (45 - 65 Hz)

**Operational range:** 5 - 115 % of rating (Operational range for the CLSE-60 is limited up to approx. 109 % (65535).)

**Overload capacity:** 120 % of rating (continuous)

Note: Use in the circuits below 480 V.

## INSTALLATION

**Current consumption**

•DC: Approx. 90 mA

**Operating temperature:** -10 to +55 $^{\circ}\text{C}$  (14 to 131 $^{\circ}\text{F}$ )

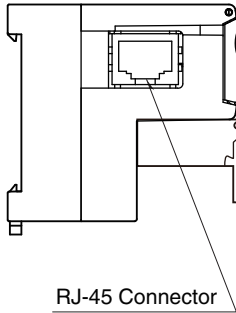
**Storage temperature:** -20 to +65 $^{\circ}\text{C}$  (-4 to +149 $^{\circ}\text{F}$ )

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

**Atmosphere:** No corrosive gas or heavy dust

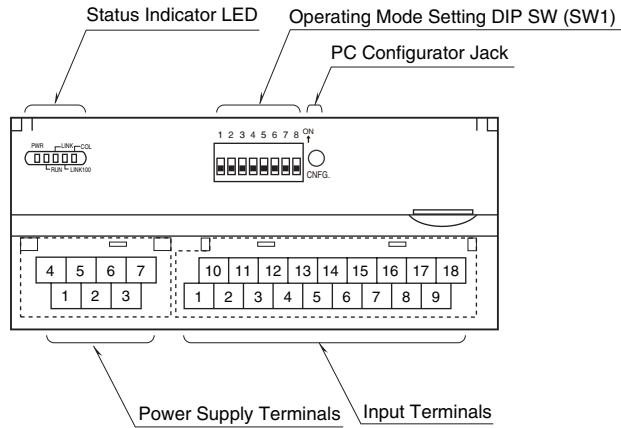
## EXTERNAL VIEW

### ■ SIDE VIEW



RJ-45 Connector

### ■ FRONT VIEW



## TERMINAL ASSIGNMENTS

### ■ INPUT TERMINAL ASSIGNMENT

10	11	12	13	14	15	16	17	18
K0	L0	K1	L1	NC	K2	L2	K3	L3
1	2	3	4	5	6	7	8	9
NC	NC	NC	NC	NC	NC	NC	NC	NC

NO.	ID	FUNCTION	NO.	ID	FUNCTION
1	NC	No connection	10	K0	AC current K0
2	NC	No connection	11	L0	AC current L0
3	NC	No connection	12	K1	AC current K1
4	NC	No connection	13	L1	AC current L1
5	NC	No connection	14	NC	No connection
6	NC	No connection	15	K2	AC current K2
7	NC	No connection	16	L2	AC current L2
8	NC	No connection	17	K3	AC current K3
9	NC	No connection	18	L3	AC current L3

### ■ 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

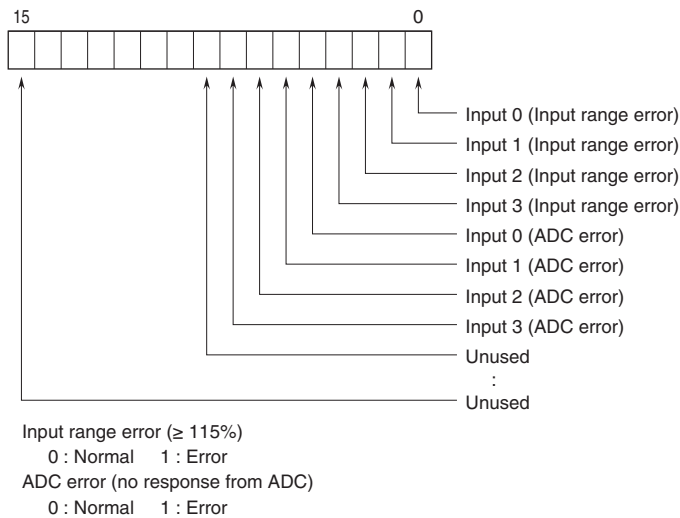
	ADDRESS	DATA TYPE	DATA
Coil (0X)	1 – 16		Digital Output (discrete output of the basic module) (unused)
	17 – 32		Digital Output (discrete output of the extension module)
Inputs (1X)	1 – 16		Digital Input (discrete input of the basic module) (unused)
	17 – 32		Digital Input (discrete input of the extension module)
	33 – 48		Reserved (unused)
	49 – 64		Module Status
	65 – 80		Reserved (unused)
Input Registers (3X)	1 – 4	I	Analog Input
	5 – 16	----	Reserved (unused)
	17 – 24	F	Analog Input
	25 – 48	----	Reserved (unused)
Holding Registers (4X)	1 – 48	----	Analog Output (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



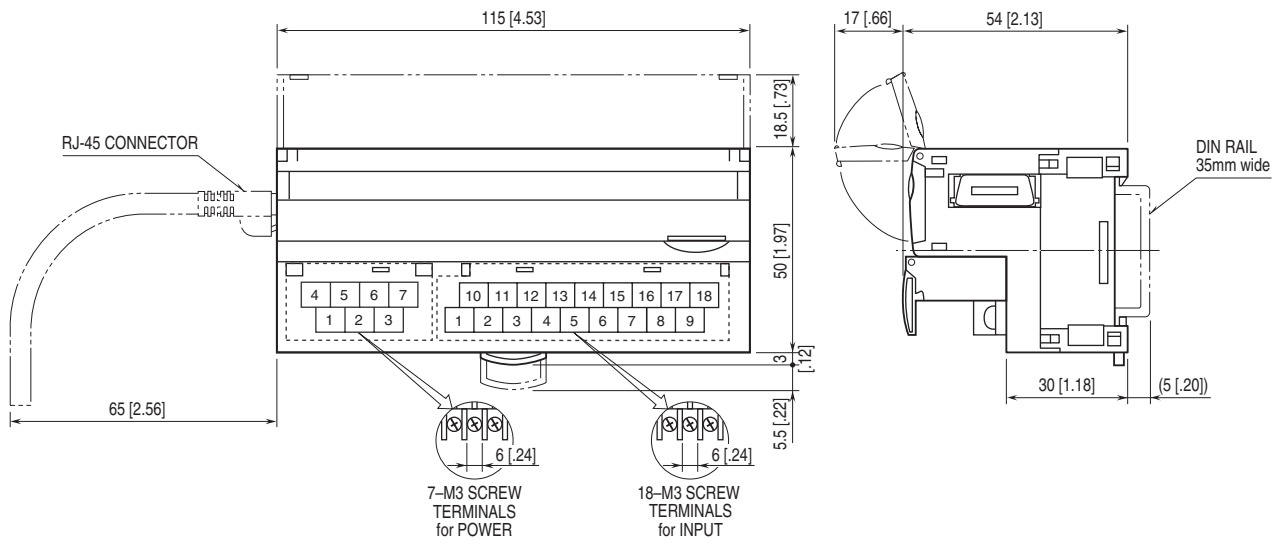
## DATA CONVERSION

### ■ ENGINEERING UNIT CONVERSION

Integer obtained by multiplying engineering unit value (A) by 100 is represented in 16-bit.

(For CLSE-R5, integer obtained by multiplying engineering unit value (A) by 1000.)

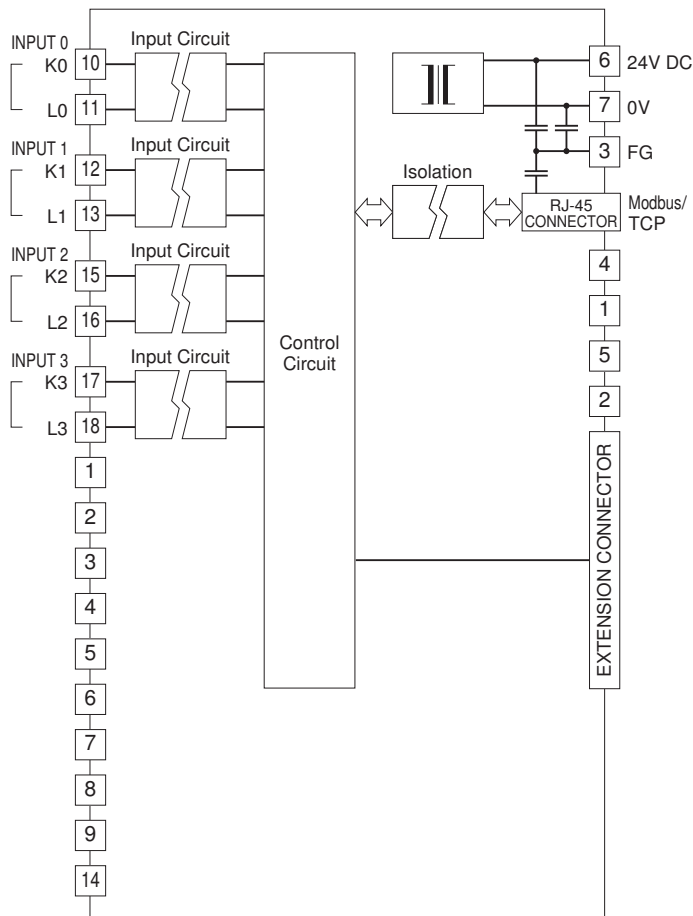
**EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS** unit: mm [inch]



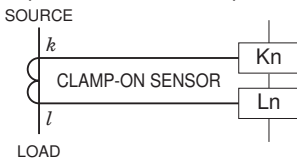
## SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

Note: In order to improve EMC performance, bond the FG terminal to ground.

Caution: FG terminal is NOT a protective conductor terminal.



### Input Connection Example



Specifications are subject to change without notice.