

Remote I/O R3 Series

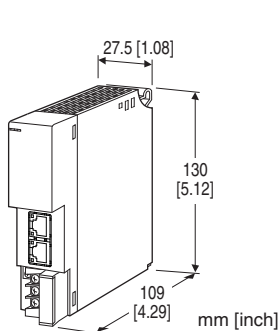
EtherNet/IP INTERFACE MODULE

Functions & Features

- Converts analog and discrete I/O data to the open network fieldbus (EtherNet/IP)

Typical Applications

- Remote I/O for DCS and PLC



MODEL:R3-NEIP2-[1][2]

ORDERING INFORMATION

- Code number: R3-NEIP2-[1][2]
Specify a code from below for each of [1] and [2].
(e.g. R3-NEIP2-R/CE/Q)
- Specify the specification for option code /Q
(e.g. /C01)

[1] POWER INPUT

N: No power supply

AC Power

M2: 100 – 240 V AC

(Operational voltage range 85 – 264 V, 47 – 66 Hz)*

(CE not available)

DC Power

R: 24 V DC

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

* Not selectable for use with independent power modules or network modules with the internal power input options.

[2] OPTIONS (multiple selections)

Standards & Approvals

blank: Without CE

/CE: CE marking

Other Options

blank: none

/Q: Option other than the above (specify the specification)

SPECIFICATIONS OF OPTION: Q

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

/C01: Silicone coating

/C02: Polyurethane coating

/C03: Rubber coating

RELATED PRODUCTS

- PC configurator software (model: R3CON)

- EDS file

The configurator software and EDS file are downloadable at our web site.

For connecting to PC, use commercially available Type-C USB cable. (provided by user)

GENERAL SPECIFICATIONS

Connection

Ethernet: RJ-45 Modular Jack

Internal bus: Via the Installation Base (model: R3-BSx)

Internal power: Via the Installation Base (model: R3-BSx)

Power input, RUN contact output: M3 separable screw terminal (torque 0.5 N·m)

Screw terminal: Nickel-plated steel

Isolation: EtherNet/IP to internal bus or internal power to power input to RUN contact output to FG

Input error data setting: Input value setting at input module error with side DIP SW

Dual communication setting: Set with the side DIP switch

Data allocation setting: Set with the side DIP switch

■ RUN CONTACT OUTPUT

RUN contact: Turns ON when both MS and NS LEDs are green (EtherNet/IP in normal communication).

Rated load: 250 V AC @ 0.5 A ($\cos \phi = 1$)

30 V DC @ 0.5 A (resistive load)

(Less than 50 V AC to conform with EU Directive)

Maximum switching voltage: 250 V AC or 30 V DC

Maximum switching power: 250 VA or 150 W

Minimum load: 1 V DC @ 1 mA

Mechanical life: 2×10^7 cycles (300 cycles/min.)

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

EtherNet/IP COMMUNICATION

Conformance test version: CT21

Communication standard: IEEE 802.3u

Transmission: 10BASE-T, 100BASE-TX

Baud rate: 10/100 Mbps (Auto Negotiation function)

Max. number of socket connections: 3

Connection type: Exclusive owner, Listen only, Input only

Protocol: EtherNet/IP

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

Max. length of fieldbus segment: 100 meters

IP address: 192.168.0.1 (factory setting); Selectable with PC Configurator Software (model: R3CON)

Default gateway: 192.168.0.100 (factory setting); Selectable with PC Configurator Software (model: R3CON)

DLR supported

Port No.: 2222, 44818

I/O data area size: Input and output data area size set with side DIP SW

Required data words:

Input: 35, 67, 131, 252 words

Output: 35, 67, 131, 252 words (3 words are used only for status)

Ethernet indicator LED: TX/RX, LINK

MS (Module Status) indicator: Bi-color (green/red) LED indicates device status.

NS (Network Status) indicator: Bi-color (green/red) LED indicates status of the communication link.

INSTALLATION

Power consumption

•AC:

Approx. 20 VA at 100 V

Approx. 28 VA at 200 V

•DC: Approx. 12 W

Current consumption (no power supply): 70 mA

Output current (power supply): 280 mA continuous at 20 V DC; 430 mA for 10 minutes

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

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

Atmosphere: No corrosive gas or heavy dust

Mounting: Installation Base (model: R3-BSx)

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

(EtherNet/IP to internal bus or internal power to power input to RUN contact output to FG)

STANDARDS & APPROVALS

EU conformity:

EMC Directive

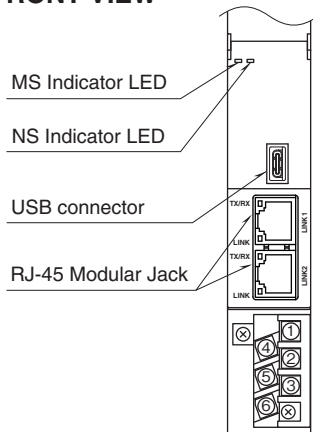
EMI EN 61000-6-4

EMS EN 61000-6-2

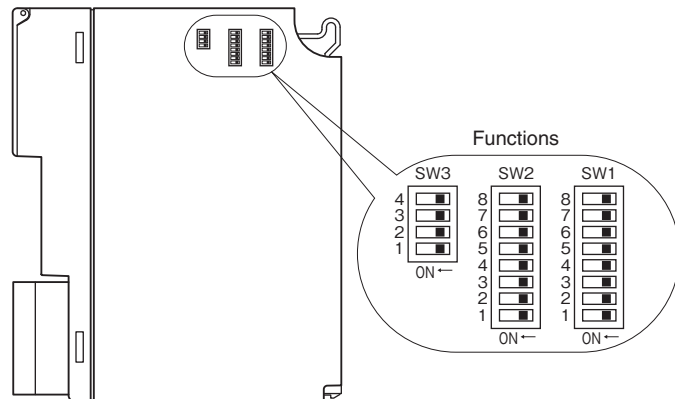
RoHS Directive

EXTERNAL VIEW

■ FRONT VIEW



■ SIDE VIEW



TRANSMISSION DATA DESCRIPTIONS

The DIP SW located at the side of the module specifies each I/O module's data allocation (occupied data area and size of the I/O data area).
For example, when the data areas are assigned as shown below:

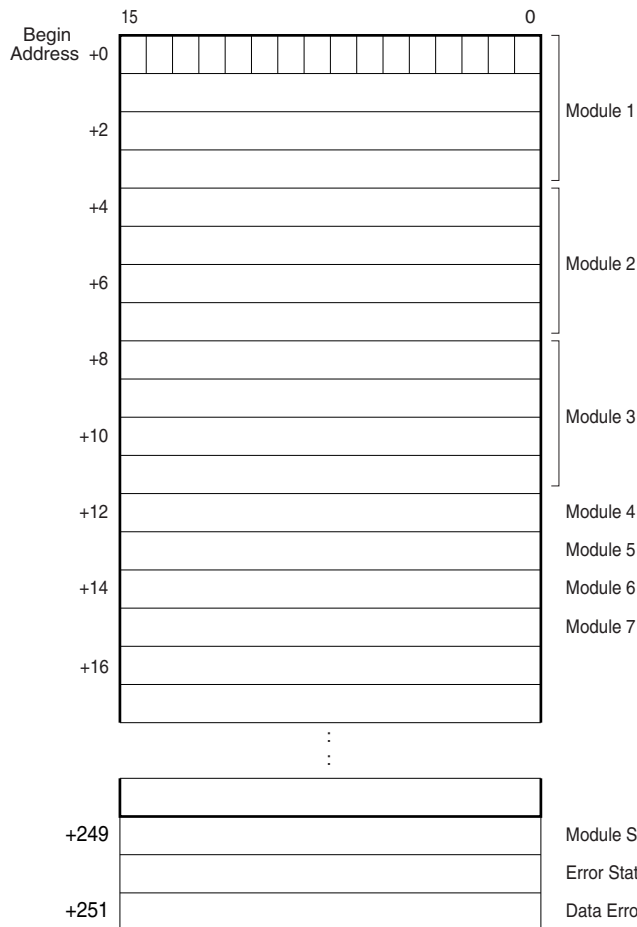
Module 1	4
Module 2	4
Module 3	4
Module 4	1
Module 5	1
Module 6	1
Module 7	1

I/O data area: 252 words each for input and output.

Then the I/O data are assigned as in the figures below:

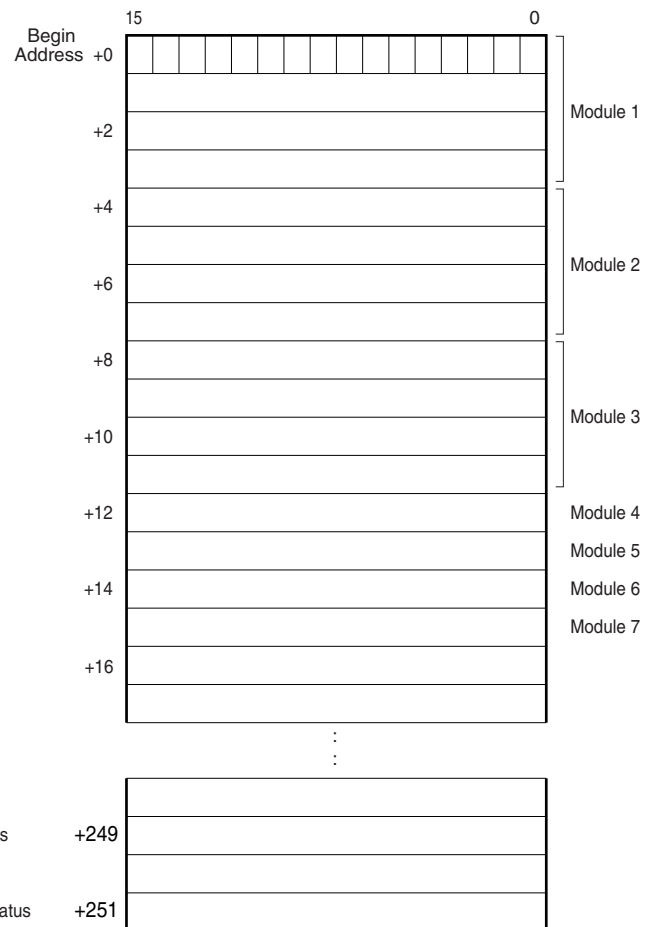
■ OUTPUT DATA

The figure below shows the allocation of the data sent from the network module to the master.



■ INPUT DATA

The figure below shows the allocation of the data sent from the master to the network module.



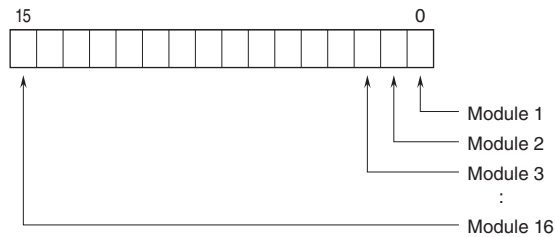
The area enclosed with bold line is assigned for I/O data

Module Status, Error Status and Data Error Status are assigned to the last three words of the output data respectively.
Each module can handle either input or output data.

- Module Status indicates whether individual I/O module are mounted or not. The bit corresponding to the mounted slots turns to "1," and the unmounted slots to "0."
- Error Status indicates error status for each module as described below. The bit corresponding to such modules turns to "1."
R3-TSx, R3-RSx, R3-US4 (T/C or RTD input): Input burnout
R3-DA16A: Power input in error or disconnected
R3-YSx: Output current error (e.g. load unconnected)
R3-PC16A: External power supply in error or disconnected
- Data Error Status indicates overrange (R3-US4: out of -10% to +110%; the other types: out of -15% to +115%) status for each module. The bit corresponding to such modules turns to "1."

MODULE STATUS, ERROR STATUS, DATA ERROR STATUS

Shows each module's availability and error status.



I/O DATA DESCRIPTIONS

The data allocations for typical I/O modules are shown below.

Refer to the manual for each module for detailed data allocations.

■ ANALOG DATA (16-bit data, models: R3-SV4, YV4, DS4, YS4, US4, etc.)

16-bit binary data.

Basically, 0 to 100% of the selected I/O range is converted into 0 to 10000 (binary).

-15 to 0 % is a negative range represented in 2's complement.

In case of R3-US4, -10 to 0% is a negative range represented in 2's complement.



■ TEMPERATURE DATA (16-bit data, models: R3-RS4, TS4, US4, etc.)

16-bit binary data.

With °C temperature unit, raw data is multiplied by 10. For example, 25.5°C is converted into 255.

With °F temperature unit, the integer section of raw data is directly converted into the data.

For example, 135.4°F is converted into 135.

Minus temperature is converted into negative values, represented in 2's complements.



■ ANALOG DATA (16-bit data, models: R3-CT4A, CT4B, etc.)

16-bit binary data.

Integer obtained by multiplying unit value (A) by 100.

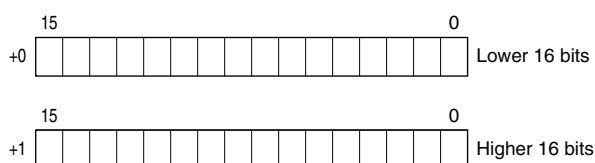
In case of CLSE-R5, integer obtained by multiplying unit value (A) by 1000.



■ ACCUMULATED COUNT DATA (32-bit data, models: R3-PA2, PA4A, WT1, WT4, etc.)

32-bit binary data is used for accumulated counts and encoder positions.

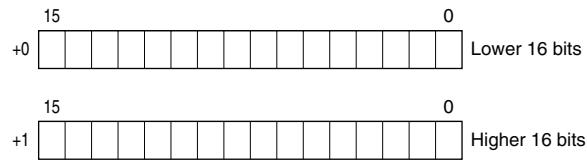
Lower 16 bits are allocated from the lowest address to higher ones, higher 16 bits in turn.



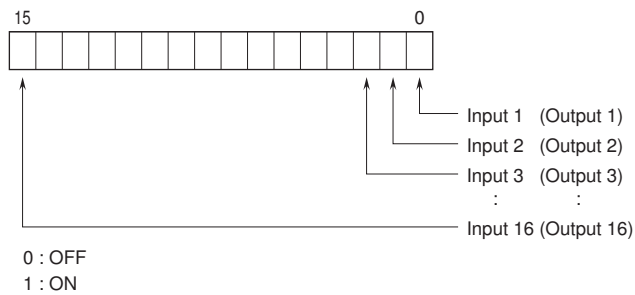
■ BCD DATA (32-bit data, models: R3-BA32A, BC32A, etc.)

32-bit binary data is used for BCD.

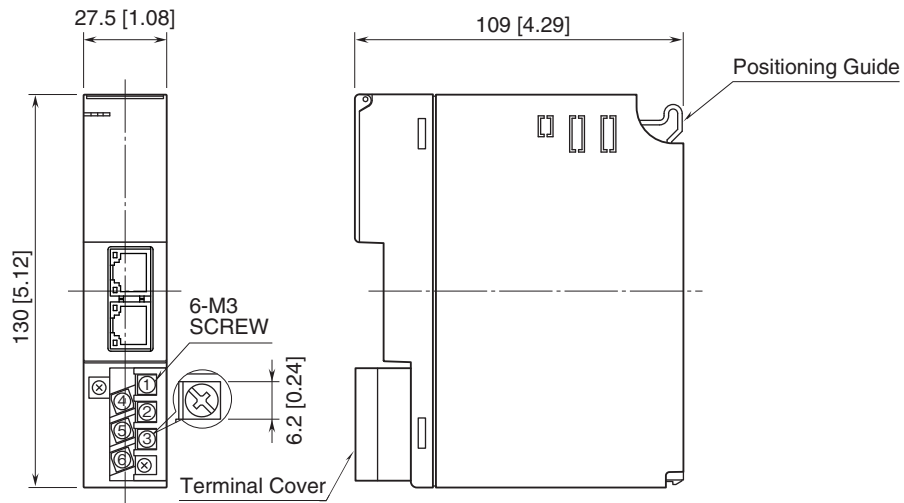
Lower 16 bits are allocated from the lowest address to higher ones, higher 16 bits in turn.



■ 16-POINT DISCRETE DATA (models: R3-DA16, DC16, etc.)



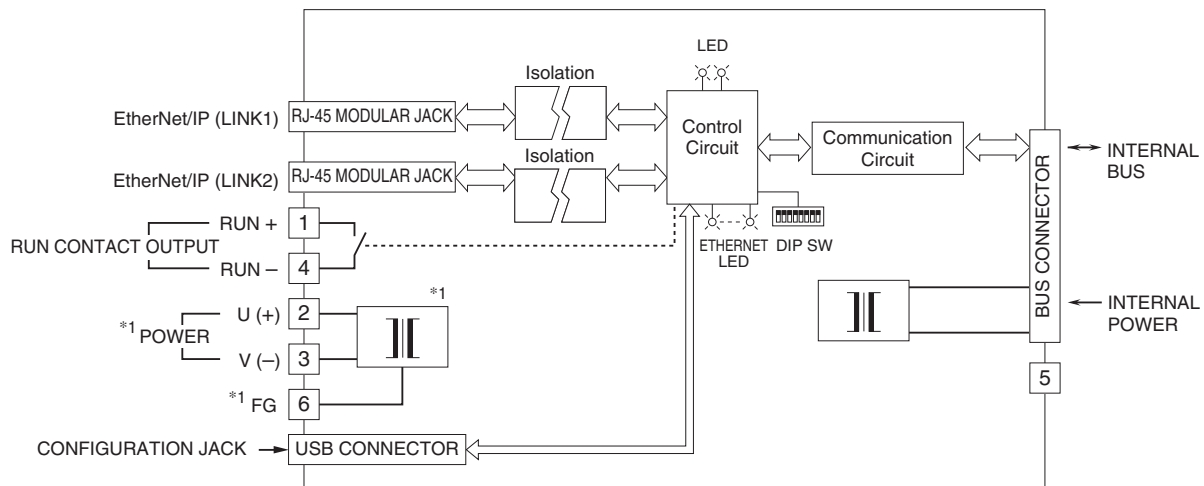
EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]



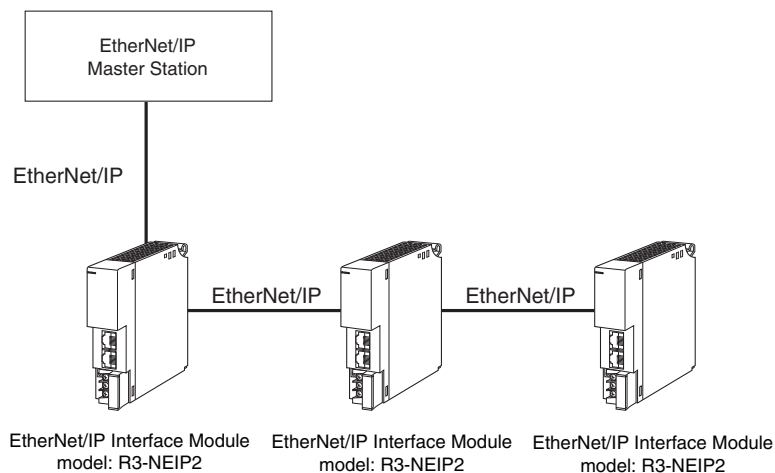
SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

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

Caution: FG terminal is NOT a protective conductor terminal.



SYSTEM CONFIGURATION EXAMPLES



Specifications are subject to change without notice.