

NETWORK MODULE (EtherNet/IP)

MODEL **R30NEIP1**

BEFORE USE

Thank you for choosing us. Before use, please check contents of the package you received as outlined below.

If you have any problems or questions with the product, please contact our sales office or representatives.

■ PACKAGE INCLUDES:

Network module.....(1)

■ MODEL NO.

Confirm Model No. marking on the product to be exactly what you ordered.

■ INSTRUCTION MANUAL

This manual describes necessary points of caution when you use this product, including installation, connection and basic maintenance procedures.

■ EDS FILE

EDS files are downloadable at our web site.

POINTS OF CAUTION

■ CONFORMITY WITH EU DIRECTIVES

- The equipment must be mounted inside the instrument panel of a metal enclosure.
- The actual installation environments such as panel configurations, connected devices, connected wires, may affect the protection level of this module when it is integrated in a panel system. The user may have to review the CE requirements in regard to the whole system and employ additional protective measures* to ensure the CE conformity.

* For example, installation of noise filters and clamp filters for the power source, input and output connected to the module, etc.

■ HOT SWAPPABLE MODULES

- It is possible to replace a module with the power supplied provided that the module is replaced with one with the same model number and installed in the same base slot.
- Be sure to replace a module when it is not communicating with the host as it may affect the system. Note that replacing multiple modules at one time may greatly change line voltage levels. We strongly recommend to replace them one by one.

■ ENVIRONMENT

- Indoor use.
- When heavy dust or metal particles are present in the air, install the module inside proper housing with sufficient ventilation.
- Do not install the module where it is subjected to continuous vibration. Do not subject the module to physical impact.
- Environmental temperature must be within -10 to +55°C (14 to 131°F) with relative humidity within 10 to 90% RH in order to ensure adequate life span and operation.

■ WIRING

- Do not install cables close to noise sources (relay drive cable, high frequency line, etc.).
- Do not bind these cables together with those in which noises are present. Do not install them in the same duct.

■ R3 I/O MODULE EXTENSION

The internal bus communication period for R3 series I/O modules installed on the R30EBS is as follows.

Internal bus communication period = 6 msec. × number of I/O module + 10 msec. (Data update period of main CPU)

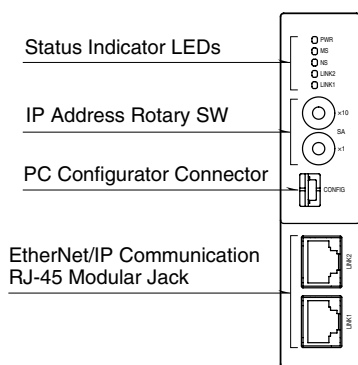
Example: Four R3 I/O modules

$$6 \text{ msec.} \times 4 + 10 \text{ msec.} = 34 \text{ msec.}$$

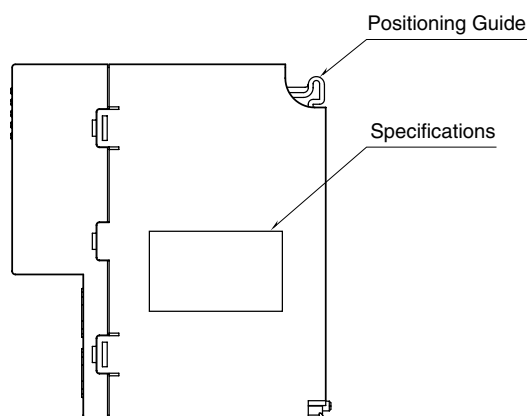
Even when the R30EBS is mounted to the R30BS, the internal bus communication period of R30 series is kept to approx. 1 msec.

COMPONENT IDENTIFICATION

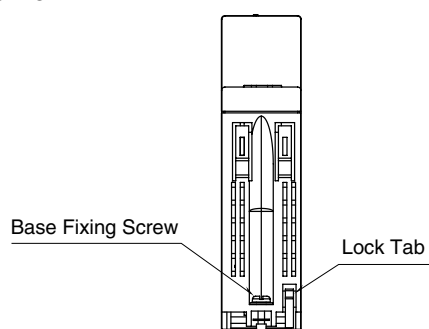
■ FRONT VIEW



■ SIDE VIEW



■ BOTTOM VIEW



■ STATUS INDICATOR LED

ID	STATUS	COLOR	DESCRIPTION
PWR	ON	Green	Normal internal power
MS	ON	Green	Normal operation
	Blinking	Red	Duplicated IP address, Internal data error
NS	ON	Green	Connections are established
	Blinking	Green	Connections are not established
	ON	Red	Duplicated IP address
	Blinking	Red	Communication timeout
LINK2	ON	Green	Link 2 established
LINK1	ON	Green	Link 1 established

■ IP ADDRESS ROTARY SW

Set the host address (2-digit hexadecimal number) in the IP address using rotary switches x10 and x1 for the first digit and the second digit, respectively.

Set 00H when using the IP host address set by PC Configurator Software (model: R30CFG). Use PC Configurator Software to configure Network Address, Subnet Mask, and Default Gateway.

(Setting range: 00H to FFH) (Factory setting: 0H)



IP Address Setting (x10)



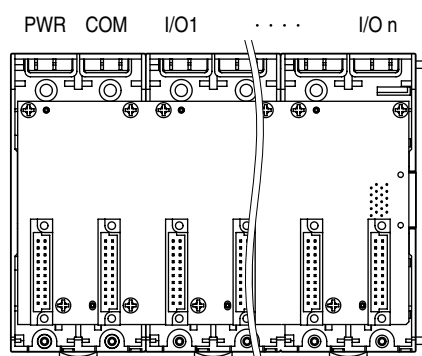
IP Address Setting (x1)

INSTALLATION

■ INSTALLATION TO THE BASE

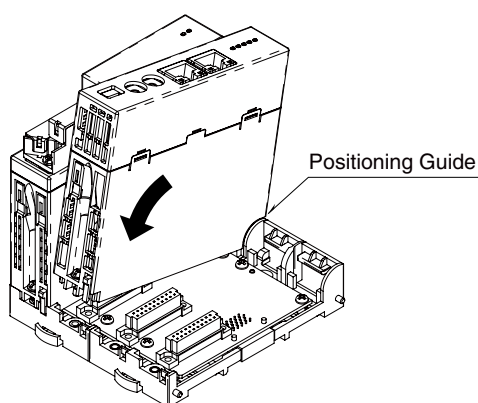
Use the Installation Base (model: R30BS).

The mounting slot for the network card is fixed to COM.
Do not mount the network card to any other slot.

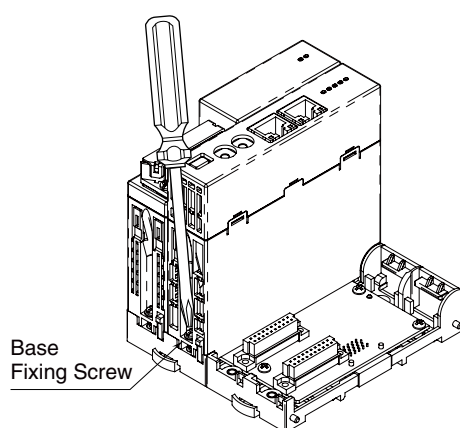


■ HOW TO MOUNT THE MODULE

- 1) Engage the positioning guide of the module with the Installation Base.
- 2) Pivot the module on the positioning guide and press it down until the lock tab clicks into place.

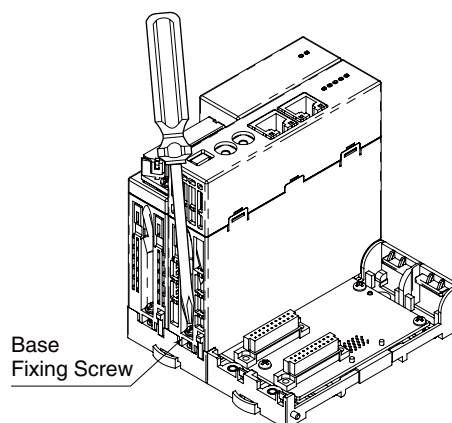


- 3) Tighten the base fixing screw using a screwdriver (stem length: 70 mm/2.76" or more) (torque 0.5 N·m).

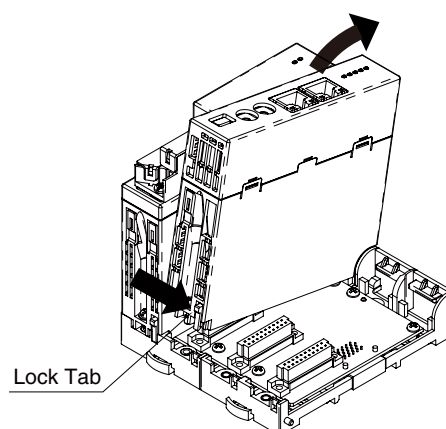


■ HOW TO REMOVE THE MODULE

- 1) Loosen the base fixing screw using a screwdriver (stem length: 70 mm/2.76" or more).



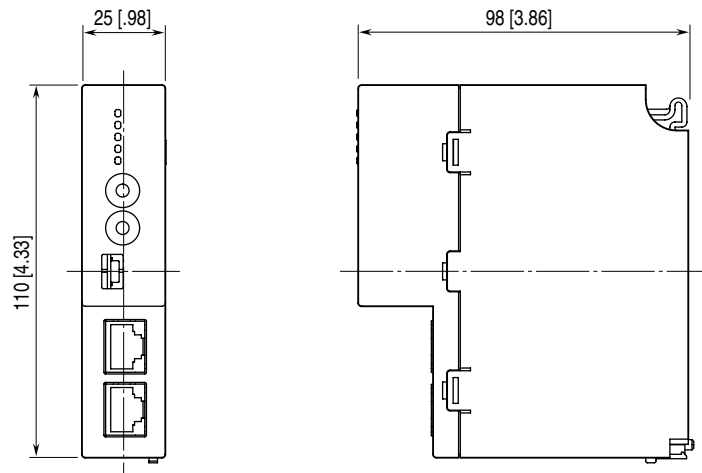
- 2) While pressing the projection on the lock tab, push the module upward.
- 3) Detach the positioning guide of the module from the Installation Base.



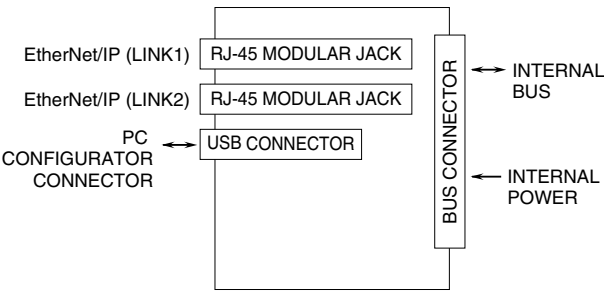
TERMINAL CONNECTIONS

Connect the module as in the diagram below.

■ EXTERNAL DIMENSIONS unit: mm [inch]



■ CONNECTION DIAGRAM



PC CONFIGURATOR

With configurator software, settings shown below are available.
Refer to the software manual of R30CFG for detailed operation.

■ NETWORK MODULE SETTING

PARAMETER	SETTING RANGE	DEFAULT SETTING
IP Address	0.0.0.0 to 255.255.255.255	192.168.0.250
Subnet Mask	0.0.0.0 to 255.255.255.255	255.255.255.0
Default Gateway	0.0.0.0 to 255.255.255.255	192.168.0.1
Timeout	0.2 to 3200.0 (sec.)	3.0 (sec.)
I/O data area size	38, 70, 134, 252 (word)	38 (word)

CHECKING ETHERNET/IP CONNECTION

■ IP ADDRESS

Set the host address in the IP address using the front rotary switches.

When using the host address in the IP address set on the PC configurator software (model:R30CFG), set the switches to '00H'.
When the network address, Subnet Mask, and Default Gateway need to be changed, do so on R30CFG.

■ CHECK WIRING

Connect an Ethernet cable to the front RJ-45 modular jack.

To configure a DLR (Device Level Ring) network, perform wiring so as to form a ring topology.

The DLR network requires at least one node as a ring supervisor.

The customer shall prepare one or more ring supervisors separately as the R30NEIP1 module does not function as one.

■ CHECK LED

When wiring is correct, LNK1 or LNK2 is turned on.

■ CHECK R30NEIP1 CONNECTION

Open Command Prompt in Windows, and enter "ping command" as follows:

```
C:\WINDOWS>ping ***.***.***.***
(***.***.***.***: Enter IP address in decimal.)
ping ***.***.***.*** with 32 bytes of data:
Reply from ***.***.***.*** : bytes=32 time<10ms TTL=64
Reply from ***.***.***.*** : bytes=32 time<10ms TTL=64
Reply from ***.***.***.*** : bytes=32 time<10ms TTL=64
Reply from ***.***.***.*** : bytes=32 time<10ms TTL=64
Ping statistics for ***.***.***.***
    Packets: Sent=4, Received=4, Lost=0(0% loss)
```

Replies in case of normal connection are as shown above. If the connection cannot be established normally due to e.g. wrong IP address, other replies such as "time over" will be received.

■ CHECK CONNECTION TO THE APPLICATION SOFTWARE

Check Point 1: LINK LED

LNK1 or LNK2 turns on when the module has established normal connections with PC, PLC, hub, and so on, regardless of data sending/receiving status.

In the case that they are not on, check power supply to the hub.

Check Point 2: MS AND NS INDICATOR

When the module has transmitted/received data correctly to/from the application software, MS and NS indicators turn on in green.

DATA ASSIGNMENT

This module recognize type of I/O module (number of occupied station) configured the same base, and assign it to I/O Modules data with slot order automatically. However, I/O module assignment is performed only when power is turned on, in the case of changing configuration of I/O module, please turn on power again. Keep number of station occupied of I/O module under 64, because max. number of occupied station is 64 per a node.

When the I/O module has space, data is transmitted close to HOST PC/PLC.

For example, the configuration is as below, data areas are assigned as shown below.

■ I/O DATA AREA SETTING: 252 WORDS FOR EACH AREA

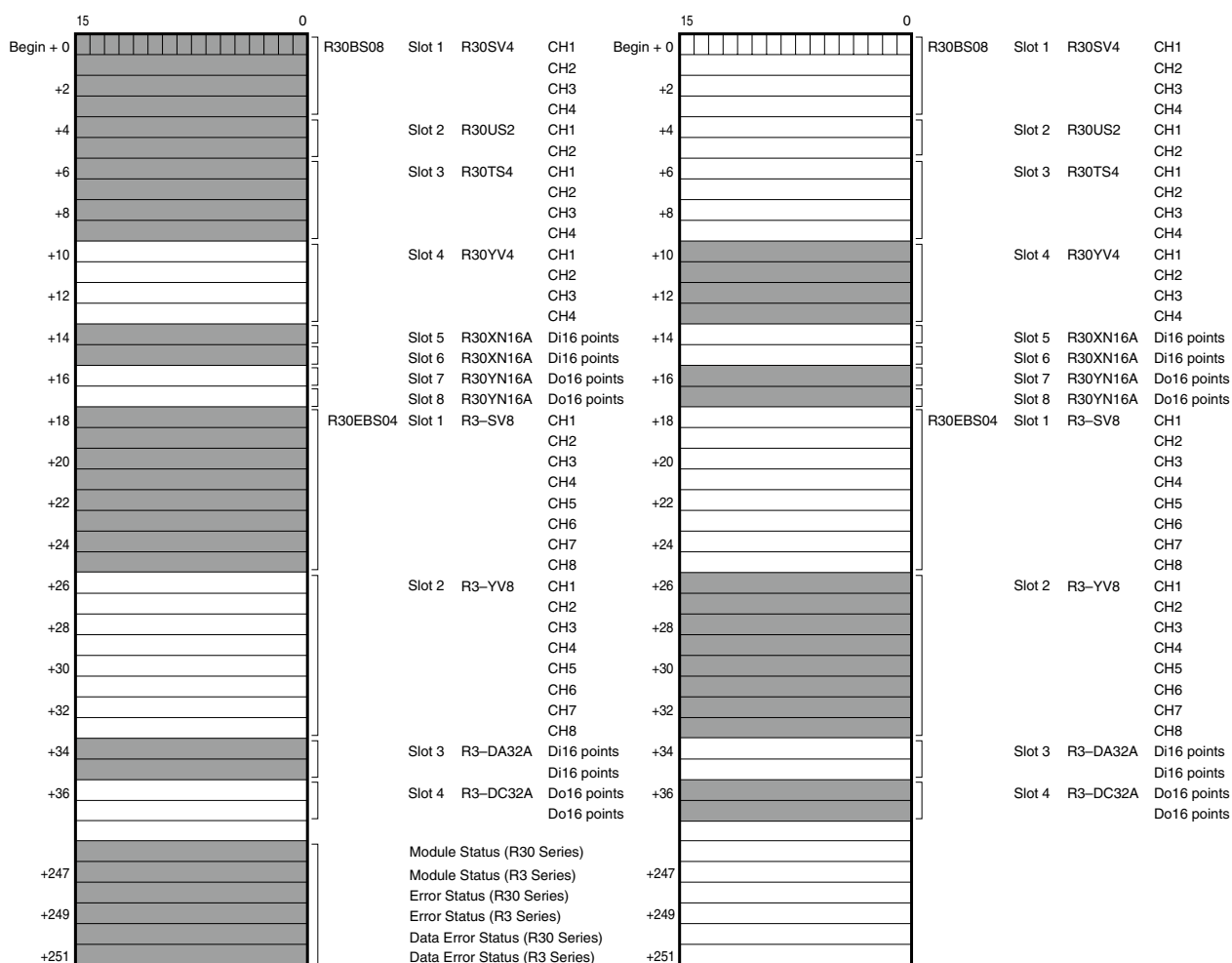
BASE	SLOT NUMBER	MODEL	NUMBER OF OCCUPIED STATION
R30BS08	PWR	R30PS1	—
	COM	R30NEIP1	—
	1	R30SV4	4
	2	R30US2	2
	3	R30TS4	4
	4	R30YV4	4
	5	R30XN16A	1
	6	R30XN16A	1
	7	R30YN16A	1
	8	R30YN16A	1
R30EBS04	1	R3-SV8	8
	2	R3-YV8	8
	3	R3-DA32A	2
	4	R3-DC32A	2

■ OUTPUT AREA

The figure below shows the data sent from the device to the master.

■ INPUT AREA

The figure below shows the data received from the master.



The output area and input area are secured for the number of occupied stations regardless of whether the module type is input or output.

For input module, input data is set in the module's output area. The input area is secured though not used for an input module.

1. Module Status

Whether individual I/O modules are mounted or not is indicated.

The bit corresponding to the mounted slot turns to "1", and the unmounted slot to "0".

2) Error Status indicates occurrence of an error of each module as described below.

The bit corresponding to the module having an error turns to '1'.

- R3-TSx, R3x-RSx, R3-US4 (input type: T/C or RTD): Input burnout
- R3x-DA16A: Power input error or disconnection
- R3x-YS4: Output disconnection
- R3-PC16A: External power supply in error or disconnected

3) Data Error Status indicates occurrence of an error of each module as described below.

The bit corresponding to the module having an error turns to '1'.

- Analog input modules transmitting 0 to 100% scaling value: Input overrange ($\leq -15\%$ or $\geq 115\%$)
- R30YS4: Output disconnection
- R30TS4, R30RS4, R30USx (input type: T/C or RTD): Input burnout
- R3-TSx, R3x-RSx, R3-US4 (input type: T/C or RTD): Input burnout
- R3-US4 (input type: voltage): Input overrange ($\leq -10\%$ or $\geq 110\%$)

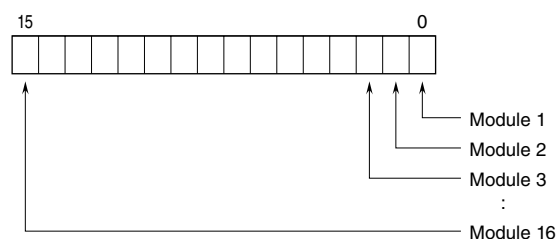
I/O DATA DESCRIPTIONS

■ OPERATION IN CASE OF A COMMUNICATION ERROR WITH I/O MODULES

When the communication between the network module and the I/O modules is lost due to an error in an input module, the last process values are cleared until the communication is re-established.

■ MODULE STATUS, ERROR STATUS, DATA ERROR STATUS

Shows each module's availability and error status.



■ ANALOG DATA (16-bit data, models: R30SV4, R30SV2, R30YV4, R30YS4, R30US4, etc.)

16-bit binary data.

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

Negative percentage is represented in 2's complements.



■ ANALOG DATA (16-bit data, models: R30RS4, R30TS4, R30US4, 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: R30CT4E etc.)

16-bit binary data.

Integer that engineering unit value (A) multiplied by 100 (for CLSE-R5, integer that engineering unit value (A) multiplied by 1000).

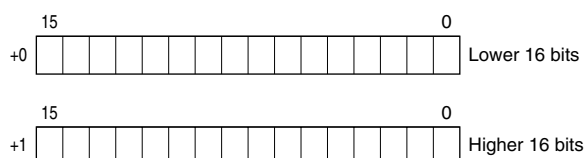


■ ANALOG DATA (32-bit data, models: R3-PA2, PA4A, WT1, WT4, etc.)

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

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

32-bit data cannot be accessed using floating addresses.



■ ANALOG 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.

32-bit data cannot be accessed using floating addresses.



■ DISCRETE DATA (models: R30XN16A, R30YN16x, etc.)

