

ETHERNET INTERFACE MODULE (Modbus/TCP, for Modbus master gateway module)

MODEL **R3-NE2**

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 interface 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.

■ SYMBOLS USED ON THE PRODUCT AND IN THIS MANUAL



This symbol on the product indicates that the operator must refer to an explanation in the user's manual in order to avoid the risk of injury or death of personnel or damage to the instrument.

POINTS OF CAUTION

■ CAUTION

- If the equipment is used in a manner not specified by this manual, the protection provided by the equipment may be impaired.

■ CONFORMITY WITH EU DIRECTIVES

- This equipment is suitable for Pollution Degree 2 and Installation Category II (power input, transient voltage 2500V). And insulation class of this unit is as following.

Power input or RUN contact output to internal power or internal bus or Modbus/TCP: Reinforced insulation (300V)
Power input to RUN contact output:

Reinforced insulation (300V)

Prior to installation, check that the insulation class of this unit satisfies the system requirements.

- The equipment must be mounted inside a panel.
- Altitude up to 2000 meters.
- The equipment must be installed such that appropriate clearance and creepage distances are maintained to conform to CE requirements. Failure to observe these requirements may invalidate the CE conformance.
- The actual installation environments such as panel configurations, connected devices, connected wires, may affect the protection level of this unit 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 unit, etc.

■ HOT SWAPPABLE MODULES

- The module can be replaced while the power is ON. Be sure to replace it when the module is not communicating with a host, as it may affect the system. Replacing multiple modules at once may greatly change line voltage levels. We highly recommend to replace them one by one.

■ POWER INPUT RATING & OPERATIONAL RANGE

- Locate the power input rating marked on the product and confirm its operational range as indicated below:

100 – 240V AC rating, 50 – 60 Hz:
85 – 264V, 47 – 66 Hz,
approx. 20VA at 100V AC
approx. 28VA at 200V AC
approx. 30VA at 240V AC
24V DC rating: 24V $\pm$ 10%, approx. 13W

■ GENERAL PRECAUTIONS

- DO NOT set the switches while the power is supplied. The switches are used only for maintenance without the power.

■ ENVIRONMENT

- Indoor use.
- When heavy dust or metal particles are present in the air, install the unit inside proper housing with sufficient ventilation.
- Do not install the unit where it is subjected to continuous vibration. Do not subject the unit to physical impact.
- Environmental temperature must be within -10 to +55°C (14 to 131°F) with relative humidity within 30 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.

■ SECURITY PRECAUTIONS

- In the network environment where this module is installed, to maintain the security of the system (availability, integrity, confidentiality) against unauthorized access from external devices via the network such as the Internet, DoS attacks, and other cyber attacks, take measures such as installing firewalls or VPNs.
- We will not be responsible for any issues arising from system troubles caused by cyber attacks.

■ AND

- This unit cannot be used in combination with anything other than the Modbus gateway module (model: R3-GMM1). If you install anything other than R3-GMM1, the system will not operate normally.
- For compatible Modbus function codes and Modbus I/O assignment, refer to the instruction manual of R3-GMM1.
- The number of connections is 2. If 3 or more units are connected to the unit, the system will not operate normally.

- The unit is designed to function as soon as power is supplied, however, a warm up for 10 minutes is required for satisfying complete performance described in the data sheet.

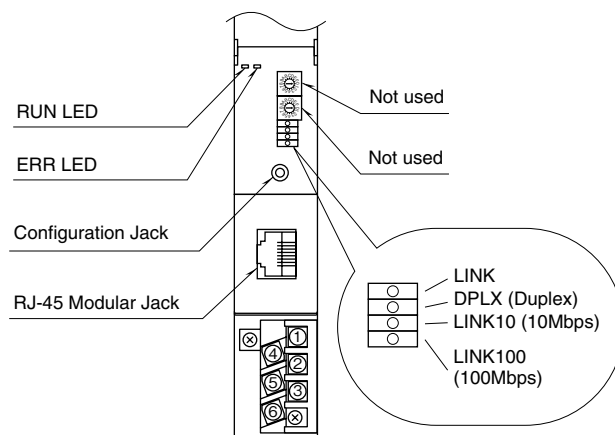
INSTALLATION

Use the Installation Base Model R3-BS, or Model R3-BSW for free I/O address capability.

■ NETWORK SLOTS ON THE BASE

This unit does not depend on the slot position on the base.
There is no problem installing it in any slot.

COMPONENT IDENTIFICATION



■ ETHERNET INDICATORS

ID	COLOR	FUNCTION
LINK	Red	ON at LINK
DPLX	Red	ON with full-duplex communication
LINK10	Red	ON with 10 Mbps connection
LINK100	Red	ON with 100 Mbps connection

PC CONFIGURATOR

The following parameter items can be set with using PC Configurator Software (model: R3CON).
Refer to the users manual for the R3CON for detailed operation of the software program.

■ NETWORK MODULE SETTING

PARAMETER	SETTING RANGE	DEFAULT SETTING
Time (no communication time)	2 – 32000 (0.1 sec.)	30 (0.1 sec.)

■ ETHERNET SETTING

PARAMETER	SETTING RANGE	DEFAULT SETTING
IP Address	0.0.0.0 – 255.255.255.255	192.168.0.1
Subnet Mask	0.0.0.0 – 255.255.255.255	255.255.255.0
Default Gateway	0.0.0.0 – 255.255.255.255* ¹	192.168.0.100
TCP Socket	1 – 32000	502* ²
Linger	0 – 32767 (0.1 sec.)	1800 (0.1 sec.)

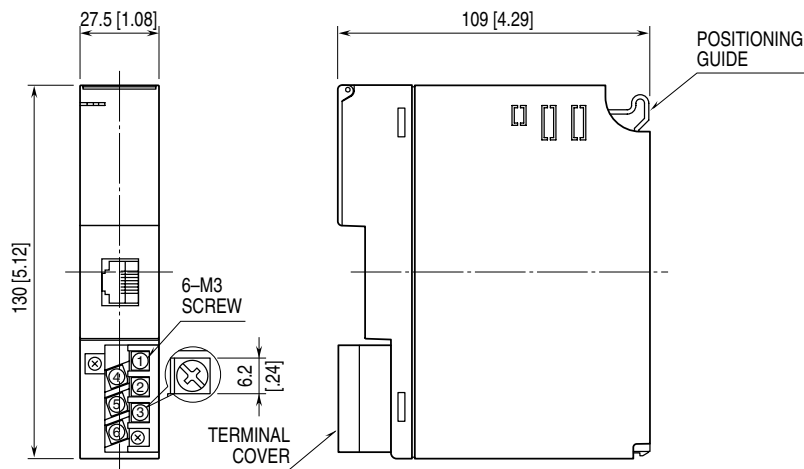
*1. Except 0.0.0.0.

*2. Basically, set 502 for Modbus/TCP.

TERMINAL CONNECTIONS

Connect the unit as in the diagram below.

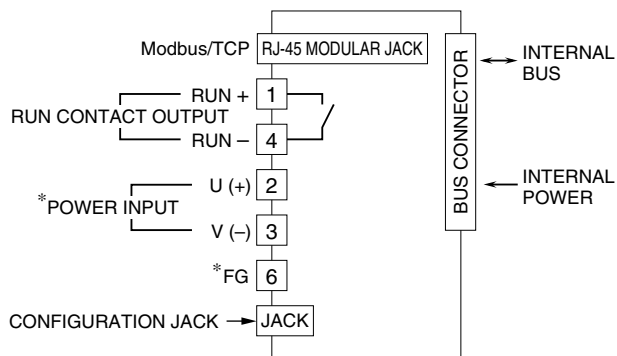
EXTERNAL DIMENSIONS unit: mm [inch]



CONNECTION DIAGRAM

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

Caution: FG terminal is NOT a protective conductor terminal.



* Not provided with 'No Power Supply' type module.

WIRING INSTRUCTIONS

M3 SCREW TERMINAL

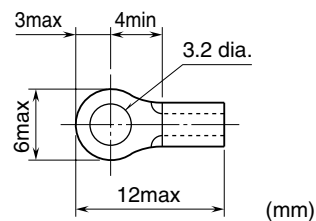
Torque: 0.5 N·m

SOLDERLESS TERMINAL

Refer to the drawing below for recommended ring tongue terminal size. Spade tongue type is also applicable. Solderless terminals with insulation sleeve do not fit.

Recommended manufacturer: J.S.T. Mfg. Co., Ltd.,
NICHIFU Co., Ltd.

Applicable wire size: 0.75 to 1.25 mm²



CHECKING ETHERNET CONNECTION

■ IP ADDRESS

The R3-NE2 does not support BootP Table Software.

The IP Address and Subnet Mask can be specified at the time of ordering or configured by using the R3CON Configurator Software.

The Modbus/TCP Port No. is fixed to 502.

■ CHECK WIRING

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

■ CHECK LED

When wiring is correct, LINK and LINK10, or LINK and LINK100 are turned on.

When the module is receiving or sending data, LINK10 or LINK100 turns on.

■ CHECK R3-NE2 CONNECTION

Enter “ping command” on the Windows MS-DOS 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 LEDs

When a normal connection is established, the front LINK and LINK10 or LINK100 are turned on regardless of data sending/receiving status. Check power supply to the hub in case that these LEDs are not on.

Check Point 2: RUN Indicator LED

The RUN Indicator LED turns to Green in normal data sending/receiving.

CONNECTION

The unit can be connected only to the Modbus gateway module (model: R3-GMM1).

Up to four R3-GMM1 can be connected.

For usable address range, etc., refer to the R3-GMM1 instruction manual.

MODBUS FUNCTION CODES & SUPPORTED CODES

There is no Modbus function code that R3-NE2 supports.

When R3-NE2 detects an error in communication between R3-NE2 and R3-GMM1, the following Exception codes are returned.

■ Exception Codes

CODE	NAME	
06	Device Busy	Communication with R3-GMM1 is busy
11	Gateway target Device fail to response	Communication with R3-GMM1 timed out
100	CRC Error	Communication data with R3-GMM1 has CRC error