

<p>T-Link INTERFACE MODULE (Fuji Electric T-Link capsule equivalent)</p>	<p>MODEL R3-NF3</p>
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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.

POINTS OF CAUTION

■ 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: 85 – 264V, 47 – 66 Hz, ≤ 22VA
 24V DC rating: 24V ±10%, ≤ 9W

■ 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.

■ AND

- 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.

Before mounting the Network Interface Module onto the Base, make sure to configure the module as explained below.

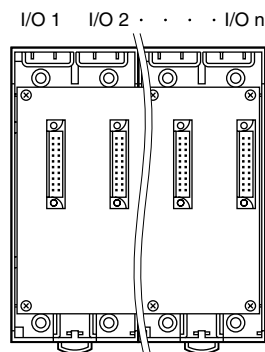
■ DATA ALLOCATION

The setting determines the data area size assigned to each I/O module mounted on the base. The data sent/received via T-Link is mapped according to this setting. See “COMPONENT IDENTIFICATION.”

■ NODE ADDRESS

See “COMPONENT IDENTIFICATION.”

■ NETWORK SLOTS ON THE BASE



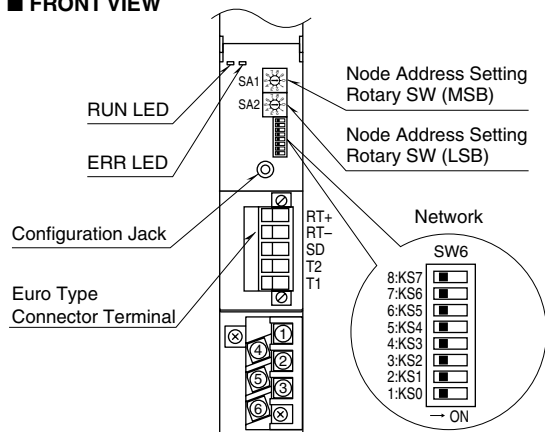
With Model R3-BS base, mount the I/O Modules without any space between them from the left end (I/O 1) to the right in order that the Network Module assigns data areas from I/O 1. If the I/O module 1 is not mounted, or there is any empty slot between the modules, communication error occurs.

Network Module(s) and Power Module are mounted basically at the right end though technically they could be mounted in any position.

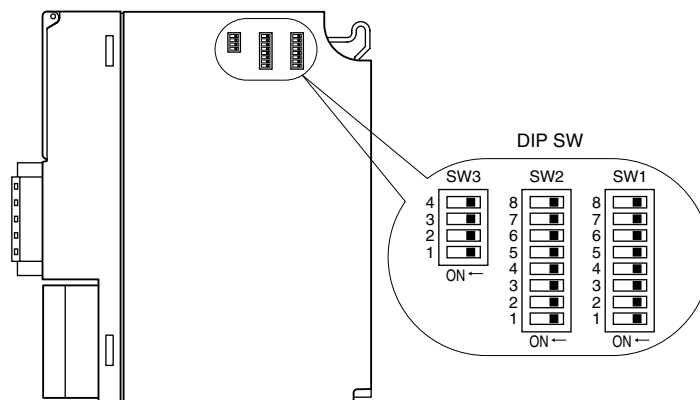
With Model R3-BSW base, there is no limitation in mounting positions as I/O address can be assigned freely to each module using rotary switches equipped on the base.

COMPONENT IDENTIFICATION

FRONT VIEW



SIDE VIEW



FRONT ROTARY SW

• Node Address: SA1, SA2

Node Address is set in decimal. (Setpoint adjustment: 00 – 99)

FRONT DIP SW

(*)Factory Setting

• I/O Points setting: KS0, KS1

SW	I/O POINTS			
	DIGITAL: 16 POINTS ANALOG: 4 POINTS	DIGITAL: 32 POINTS ANALOG: 8 POINTS	DIGITAL: 64 POINTS ANALOG: 16 POINTS	DIGITAL: 256 POINTS ANALOG: 64 POINTS
KS0	OFF (*)	ON	OFF	ON
KS1	OFF (*)	OFF	ON	ON

• Data setting: KS2

SW	DATA	
	DIGITAL	ANALOG
KS2	OFF (*)	ON

• I/O Module Status setting: KS3

SW	I/O MODULE STATUS	
	WITHOUT	WITH
KS3	OFF (*)	ON

• I/O Type setting: KS4, KS5

SW	I/O TYPE			
	I/O	OUTPUT	INPUT	I/O MODULE SPECIFIED
KS4	OFF (*)	ON	OFF	ON
KS5	OFF (*)	OFF	ON	ON

• Analog Data Type setting: KS6, KS7

SW	ANALOG DATA TYPE			
	16 BITS BINARY	16 BITS BCD	32 BITS BCD	UNUSED
KS6	OFF (*)	ON	OFF	ON
KS7	OFF (*)	OFF	ON	ON

■ SIDE DIP SW

(*)Factory Setting

• Data Allocation setting: SW1, SW2

Data Allocation Type* must be assigned to each I/O module slot position to specify how many data areas (four types) are to be occupied by each.

Two bits from SW1 and SW2 are assigned to each position, and data areas can be specified from the slot No. 1 through 8. Setting for No. 9 and later slots is identical to No. 8.

SW ASSIGNMENT		SLOT
SW1-1	SW1-2	1
SW1-3	SW1-4	2
SW1-5	SW1-6	3
SW1-7	SW1-8	4
SW2-1	SW2-2	5
SW2-3	SW2-4	6
SW2-5	SW2-6	7
SW2-7	SW2-8	8

SW SETTING		DATA ALLOCATION	
		DIGITAL	ANALOG
OFF	OFF	1	1
ON	OFF	2	4
OFF	ON	4	8
ON	ON	Unused	16

* Refer to the specifications of the related series for the Data Allocation Type of I/O modules.

• Dual Communication setting: SW3-1

When two network modules are mounted, one must be 'Main' (OFF) network and the other must be 'Sub' (ON) network. For single communication, the network module must always be set to 'Main' (OFF).

SW	DUAL COMMUNICATION	
	MAIN	SUB
SW3-1	OFF (*)	ON

• Input Error Data setting: SW3-2

Hold: When the communication from an input module is lost due to the input module error, the network module holds the signal and stands by until the communication recovers.

Set to '0': When the communication from an input module is lost due to the input module error, the network module outputs '0.'

SW	INPUT ERROR DATA	
	HOLD	SET '0'
SW3-2	OFF (*)	ON

• LED Function setting: SW3-4

Functions assigned to the front RUN and ERR LEDs can be selected.

SW3-4	LED FUNCTION	
	RUN	ERR
OFF (*)	Green when normal	Green ON or blinking when abnormal
ON	Red when receiving	Red when transmitting

Note: Be sure to set unused SW3-3 to OFF.

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.

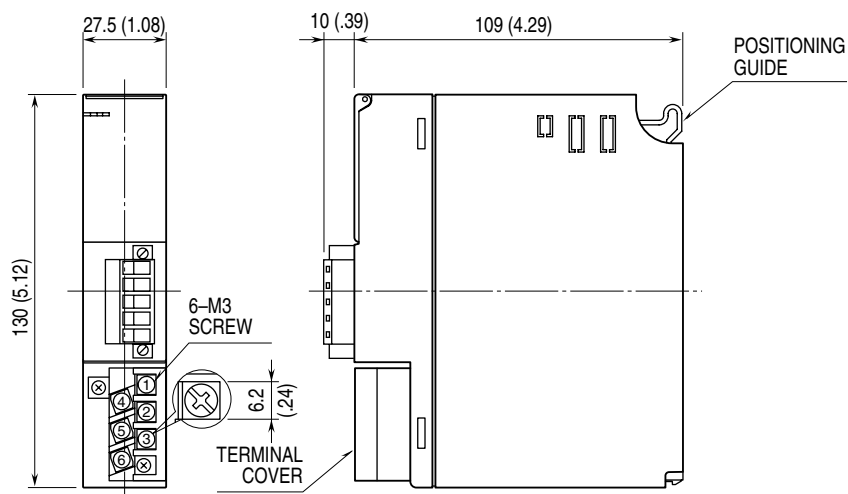
■ NETWORK MODULE SETTING

PARAMETER	SETTING RANGE	DEFAULT SETTING
Time (no communication time)	0.2 – 3200.0 (sec.)	3.0 (sec.)

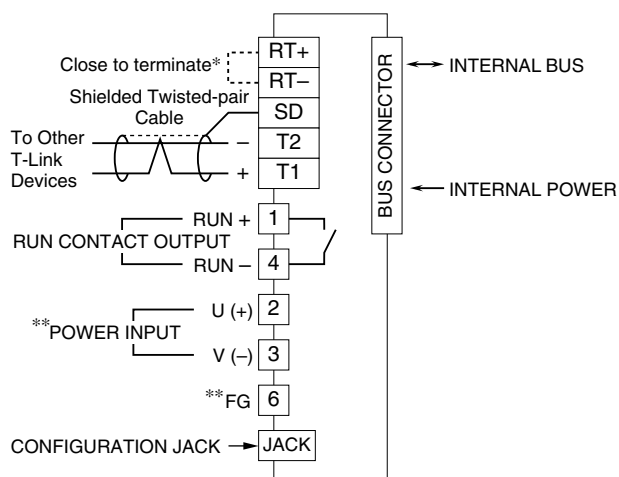
TERMINAL CONNECTIONS

Connect the unit as in the diagram below.

EXTERNAL DIMENSIONS unit: mm (inch)



CONNECTION DIAGRAM



- * When the module is at an end of the transmission line via twisted-pair cable (= when there is no cross wiring), close across the RT+ and RT- terminals with the jumper included in the product package. Remove the jumper for all other locations.
 **Not provided with 'No Power Supply' type module.
 Caution: FG terminal is NOT a protective conductor terminal.

WIRING INSTRUCTIONS

M3 SCREW TERMINAL (power input, RUN contact output)

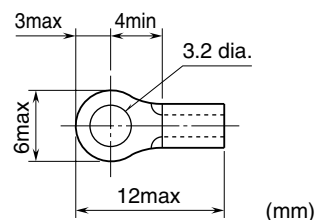
Torque: 0.5 N·m

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: Japan Solderless Terminal MFG.Co.Ltd, Nichifu Co.,ltd

Applicable wire size: 0.75 to 1.25 mm²



EURO TYPE CONNECTOR TERMINAL (T-Link)

Applicable wire size: 0.2 to 2.5 mm² (AWG24 to 12)

Stripped length: 7 mm

TRANSMISSION DATA DESCRIPTIONS

The DIP SW in the front of the module specifies I/O points, I/O type and with or without of I/O module status data setting. I/O DATA is assigned data allocation setting from module 1 orderly.

The data of I/O module out of the setting area is invalid.

When there is I/O module status data, use the data area of the last 2 words of the input data area as the status data. When the status data and I/O data overlap, the status data takes precedence.

For example, when the number of I/O points is "16" and SW1 and SW2 are set as shown below.

Slot 1	4
Slot 2	4
Slot 3	4
Slot 4	1
Slot 5	1
Slot 6	1
Slot 7	1

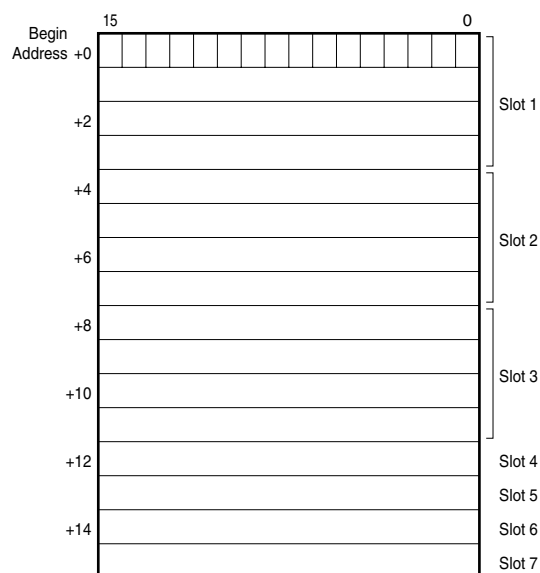
Then the I/O data are assigned as in the figures below:

■ IN THE CASE OF NO I/O MODULE STATUS (KS3: OFF)

• I/O TYPE: INPUT ONLY or OUTPUT ONLY

The side DIP SW (SW1, 2) determine data allocation of module (number of data) per module.

The number of data set by SW1 and SW2 is assigned to transmission data in order from slot 1.

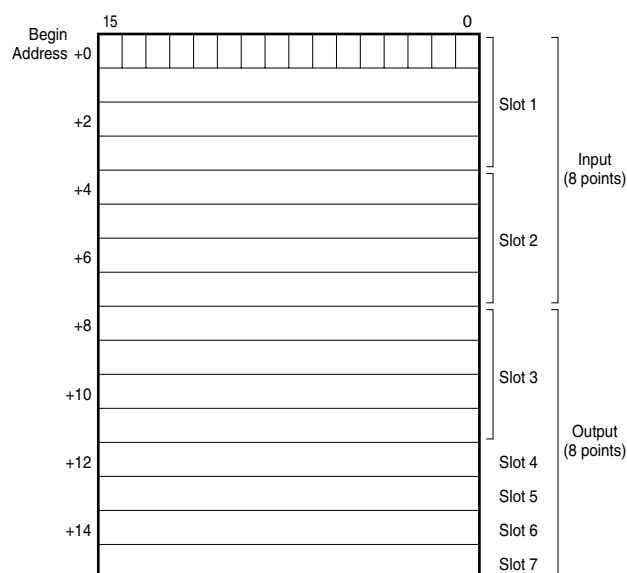


• I/O TYPE: INPUT / OUTPUT MIXED

The number of input points and the number of output points are assigned half numbers of KS0 to 1 respectively.

The first half of the data area is the input area and the second half is the output area.

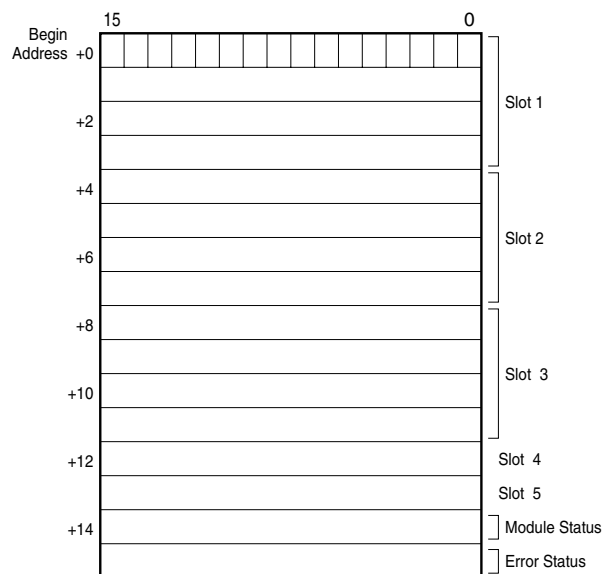
Please set the input module in slot 1 and 2, and output module after slot 3.



■ WITH INPUT / OUTPUT MODULE STATUS (KS3: ON)

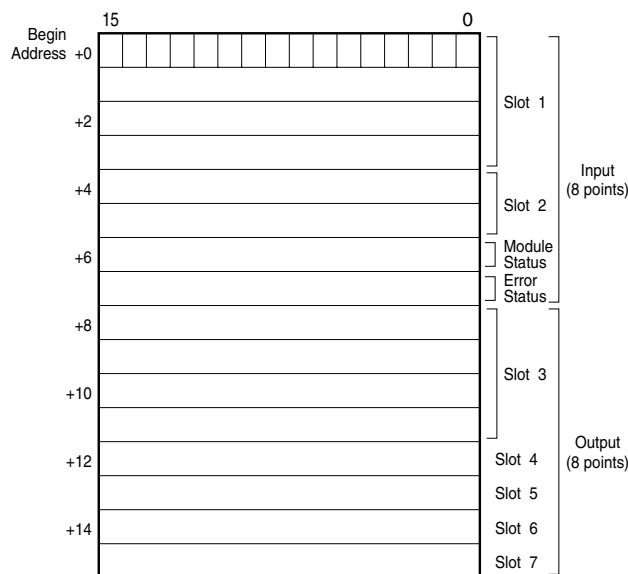
• I/O TYPE: INPUT ONLY

Status data is assigned to the last 2 words of the area. Slot 6 and 7 are invalid.



• I/O TYPE: INPUT / OUTPUT MIXED

Status data is assigned to the last 2 words of the area. Data in the 3rd and 4th words of slot 2 are invalid.



• I/O TYPE: OUTPUT

Status data cannot be assigned because there is no input data. For output only, operate without status area.

- Module Status indicates whether individual I/O modules are mounted or not. The bit corresponding to the mounted slot turns to “1,” and the unmounted slot to “0.”
- Error Status indicates error status for each module as described below. The bit corresponding to such module turns to “1.”
 R3-TSx, R3-RSx, R3-US4 (T/C, 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
 Every module which input is less than -15% or more than +115%
 R3-US4 (voltage input): out of -10 to +110% input.

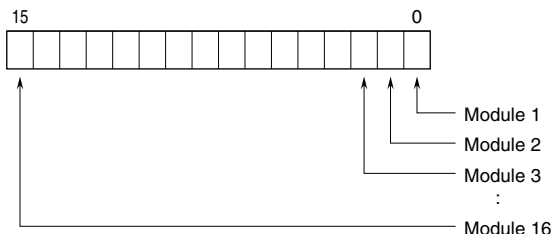
SYSTEM DEFINITIONS

• Registration of R3-NF3

Specify as follows: Module type: Slave; Outline: T-Link capsule; T-link address: Node address (rotary SW.)

MODULE STATUS, 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 and 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.



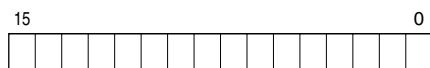
■ TEMPERATURE DATA (16-bit data, models: R3-RS4, TS4 and US4, etc.)

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.

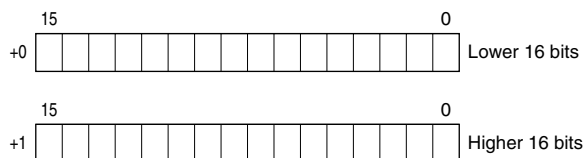
In case of CLSE-R5, integer obtained by multiplying unit value (A) by 1000.



■ 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.



■ ANALOG 16 BITS BCD DATA

The display range is -7999 to +7999. Change data within display range with configurator software (model: R3CON).

■ ANALOG 32 BITS BCD DATA

The display range is -1500 to +11500. Data allocation of module is doubled as usual. Pay attention I/O type.

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

