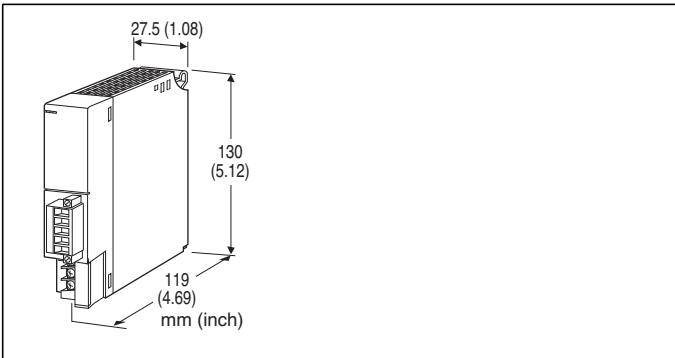


## Remote I/O R3 Series

### T-Link INTERFACE MODULE

(Fuji Electric T-Link use)



### MODEL: R3-NF1-[1][2]

#### ORDERING INFORMATION

- Code number: R3-NF1-[1][2]  
Specify a code from below for each [1] and [2].  
(e.g. R3-NF1-R/Q)
- Specify the specification for option code /Q  
(e.g. /C01)

#### [1] POWER INPUT

**N:** No power supply

##### AC Power

**K3:** 100 - 120 V AC

(Operational voltage range 85 - 132 V, 47 - 66 Hz) \*

**L3:** 200 - 240 V AC

(Operational voltage range 170 - 264 V, 47 - 66 Hz) \*

##### DC Power

**R:** 24 V DC

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

\* Not selectable for use with independent power modules.

Not selectable for dual network.

#### [2] OPTIONS

**blank:** none

**/Q:** With options (specify the specification)

#### SPECIFICATIONS OF OPTION: Q

**COATING (For the detail, refer to M-System's web site.)**

**/C01:** Silicone coating

**/C02:** Polyurethane coating

**/C03:** Rubber coating

#### GENERAL SPECIFICATIONS

##### Connection

**Network:** Euro type connector terminal

**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:** T-Link to internal bus or internal power to power input to RUN contact output to FG

**Main/Sub setting:** Set with the side DIP switch

**Slot assignment:** Set with the side DIP switch

**I/O points:** 4, 8, 16, 64 (front DIP SW)

**I/O type:** Input only, output only, input/output mixed (front DIP SW)

**RUN indicator:** Bi-color (green/red) LED; green in normal communications; red when receiving (Function selected with DIP SW3)

**ERR indicator:** Bi-color (green/red) LED; the green ON/blinking in communication errors (Blinking with setting errors.); red when transmitting (Function selected with DIP SW3)

**Input Error Data:** HOLD, SET'0'(side sw)

**Status Data:** WITHOUT / WITH (side sw)

(Not available with firmware version earlier than 1.02)

**LED Function:** RUN / ERR (side sw)

##### ■ RUN CONTACT OUTPUT

**RUN contact:** Turns ON while the green RUN LED is ON (T-Link in normal communication).

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

30 V DC @ 0.5 A (resistive load)

**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:**  $2 \times 10^7$  cycles (rate 300 cycles/min.) When driving an inductive load, external contact protection and noise quenching recommended.

#### T-LINK SPECIFICATIONS

**Node address:** Rotary switch; 00 - 99 **Configuration:** Multi-drop

**Communication:** Half-duplex

**Baud rate:** 500 kbps

**Transmission media/distance:**

KPEV-SB, 0.75 mm<sup>2</sup>  $\times$  1 pair, 700 m

T-KPEV-SB, 1.25 mm<sup>2</sup>  $\times$  1 pair, 1000 m

#### INSTALLATION

**Power consumption**

- AC: Approx. 25 VA



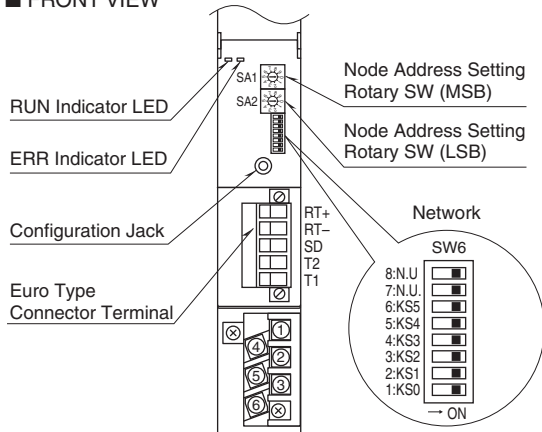
- DC: Approx. 14 W
- Current consumption (no power supply):** Approx. 130 mA
- Output current (power supply):** 250 mA continuous at 20 V DC; 400 mA for 10 minutes
- Operating temperature:** -10 to +55°C (14 to 131°F)
- Operating humidity:** 30 to 90 %RH (non-condensing)
- Atmosphere:** No corrosive gas or heavy dust
- Mounting:** Installation Base (model: R3-BSx)
- Weight:** 200 g (0.44 lb)

## PERFORMANCE

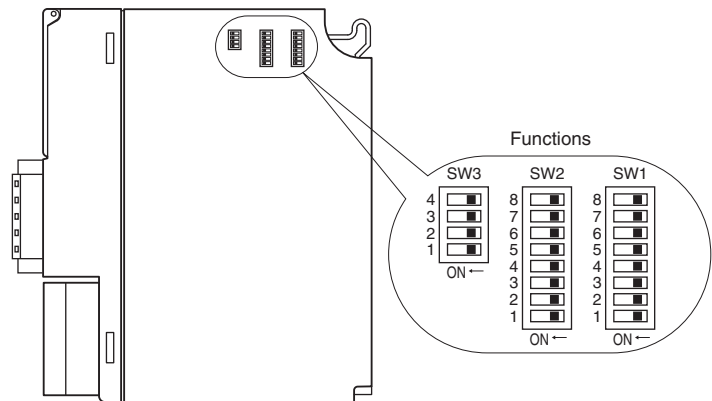
- Insulation resistance:**  $\geq 100 \text{ M}\Omega$  with 500 V DC
- Dielectric strength:** 1500 V AC @ 1 minute (T-Link to internal bus or internal power to power input to RUN contact output to FG)

## EXTERNAL VIEW

### ■ FRONT VIEW



### ■ SIDE VIEW



## TRANSMISSION DATA DESCRIPTIONS

The DIP switches on the front of the module specify each I/O module's I/O points and I/O type. The DIP switches on the side of the module specify status data. The allocation area, which is set in order from the slot No. 1, is assigned to the I/O data. I/O module's data exceeding the configured area is unable. With input status data ON, the last 2 words of the input data area are used as status data. The status data setting is available for firmware version 1.02 or later. For other versions SW3-3 setting is ignored and the device works as if SW3-3 is off. When I/O data and the status area are duplicated, status data takes priority.

For example, when the total number of I/O points is of 16, 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

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

### ■ WITHOUT STATUS DATA (SW3-3: OFF)

#### • INPUT-ONLY or OUTPUT-ONLY DATA

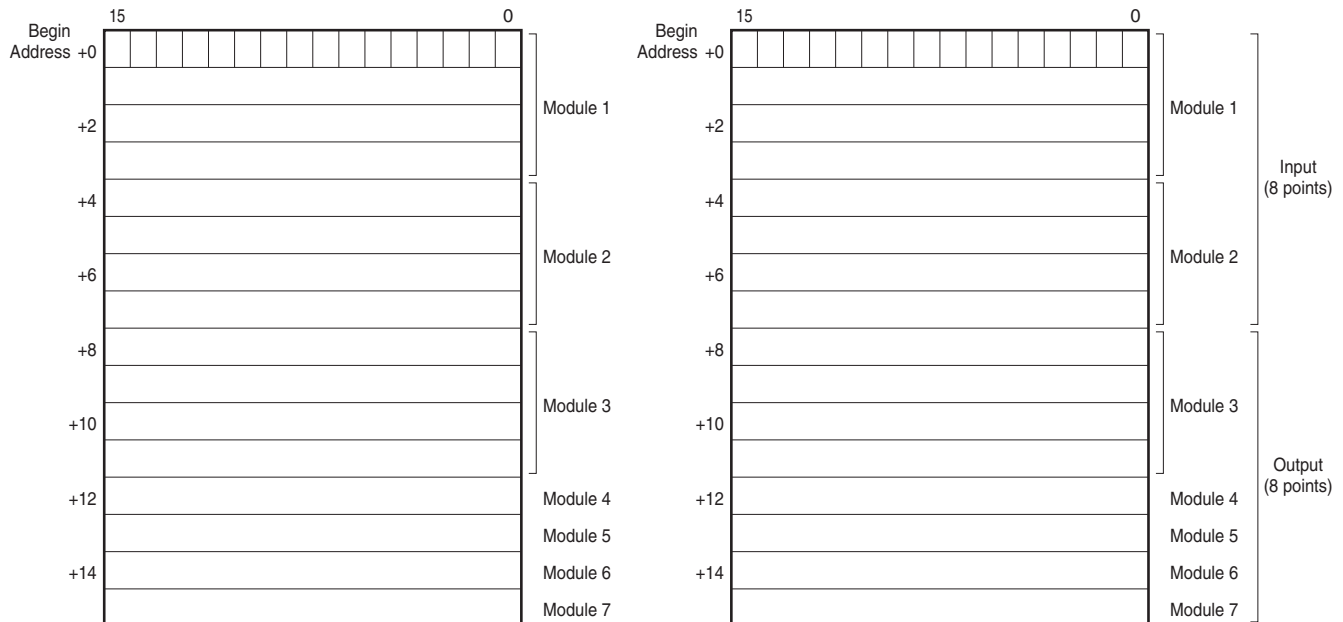
Data areas specified with the side DIP switches are assigned to each module from Module 1 through Module 7 in turn.

If the total number of I/O points is of 4 or 8, non-existing data are not sent/received.

#### • I/O MIXED DATA

Half of the words specified with the KS0 through KS3 are assigned to the inputs, the other half to the outputs.

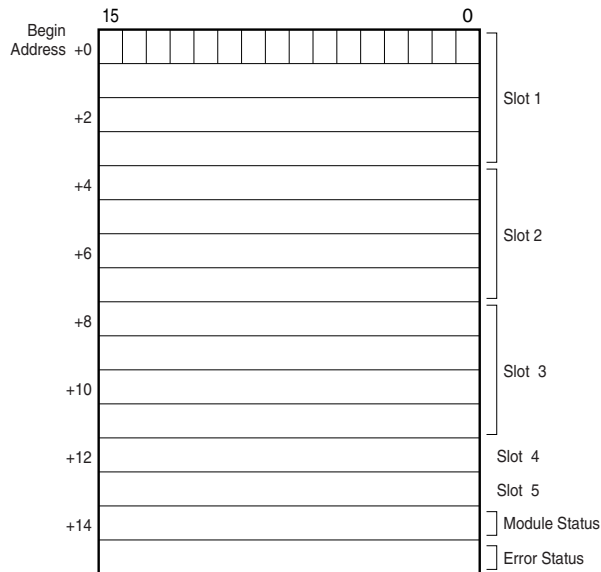
Module 1 is always assigned to the input. Insert the input modules to the slots 1 and 2, and the output modules to the slots 3 through 7.



■ **WITH STATUS DATA (SW3-3: ON)**

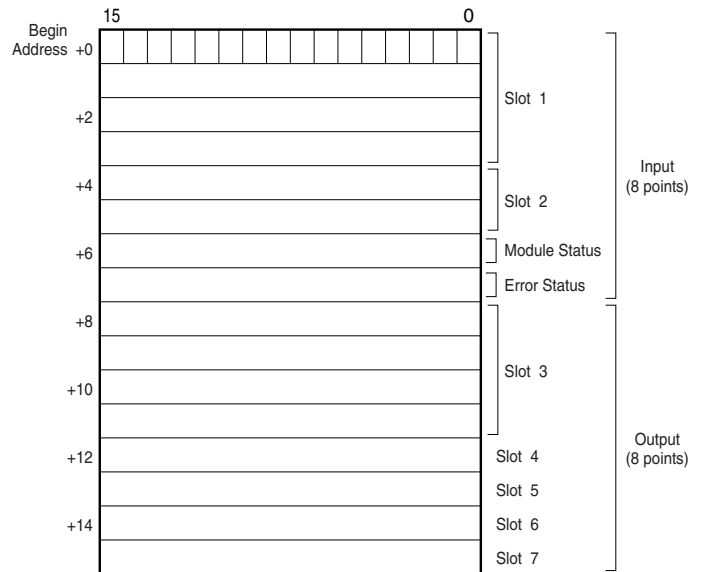
• **I/O type: Input**

Status data is assigned to the last 2 words.  
Data of the slots 6 and 7 is unable.



• **I/O type: Input/Output Mixed**

Status data is assigned to the last 2 words of the input area.  
Data on the words 3 and 4 of the slot 2 is unable.



• **I/O type: Output**

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

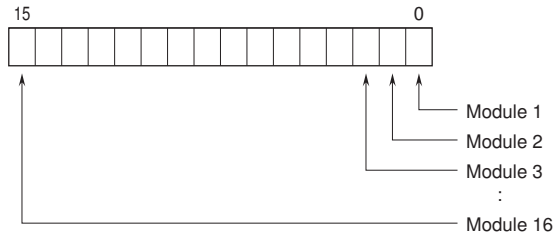
- Module Status indicates whether individual I/O module are mounted or not. The bit corresponding to the mounted slots turns to "1," and the unmounted slots to "0."
- Error Status indicates error status for each module as described below. The bit corresponding to such modules turns to "1."
  - TSx, -RSx,-US4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



## I/O DATA DESCRIPTIONS

### ■ MODULE STATUS, ERROR STATUS

Shows each module's availability and error status.



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

#### D3-NC3

16-bit binary data.

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

-15 to 0% (for US4, -10 to 0%) is represented in 2's complements (-10 - 0%).



### ■ TEMPERATURE 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.

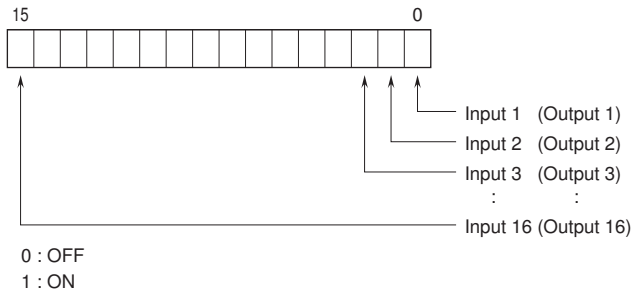
With °F temperature unit, the integer section of raw data is directly converted into the data.

For example, 135.4°F is converted into 135.

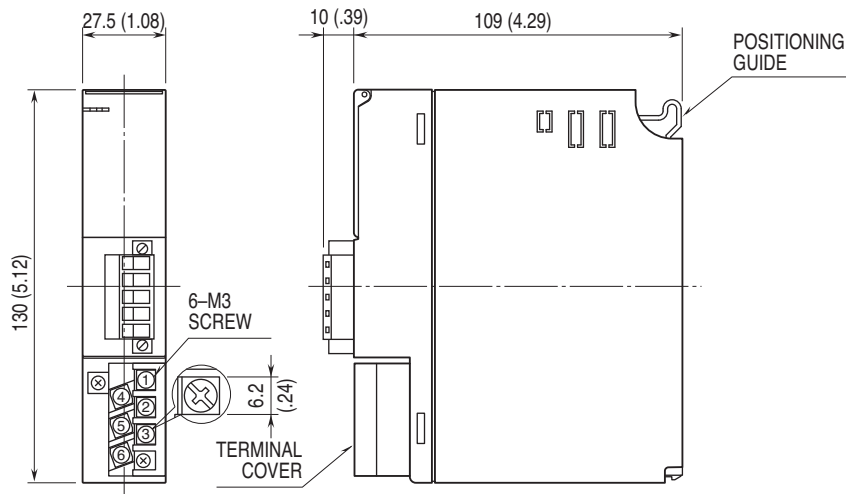
Minus temperature is converted into negative values, represented in 2's complements.



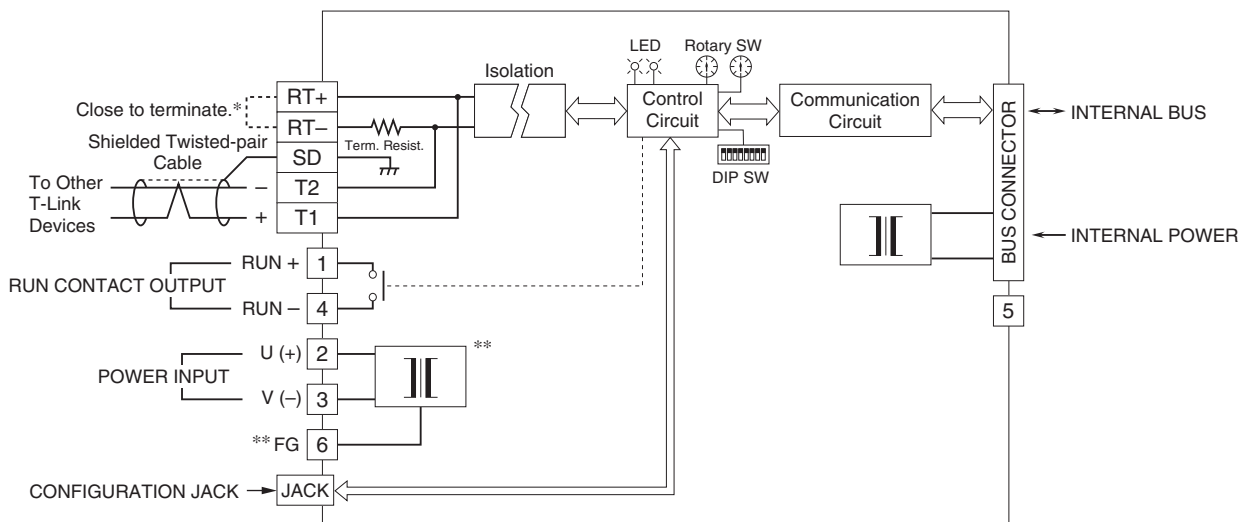
### ■ 16-POINT DISCRETE DATA (models: R3-DA16, DC16, etc.)



## EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm (inch)



## SCHEMATIC CIRCUITRY & 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.



Specifications are subject to change without notice.