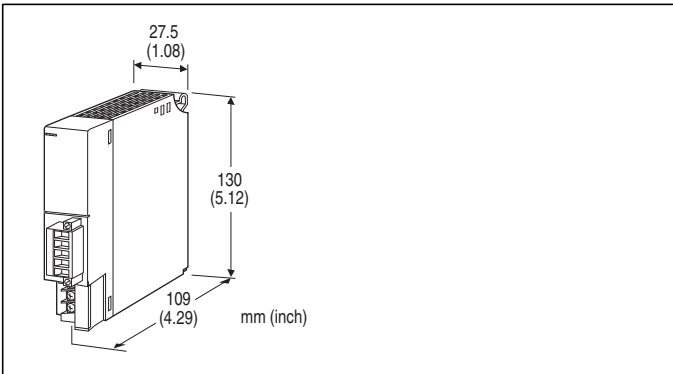


## Remote I/O R3 Series

### T-Link INTERFACE MODULE

(Fuji Electric T-Link capsule equivalent)



### MODEL: R3-NF3-[1][2]

#### ORDERING INFORMATION

- Code number: R3-NF3-[1][2]

Specify a code from below for each of [1] and [2].

- (e.g. R3-NF3-M2/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)\*

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

**blank:** none

**/Q:** With options (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

#### GENERAL SPECIFICATIONS

**Connection**

**T-Link:** Euro type connector terminal (applicable wire size:

0.2 to 2.5 mm<sup>2</sup>, stripped length 7 mm)

**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

**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

**I/O Points setting:** Set with the front DIP switch

**Data setting:** Set with the front DIP switch

**I/O Module Status setting:** Set with the front DIP switch

**I/O Type setting:** Set with the front DIP switch

**Analog Data Type setting:** Set with the front DIP switch

**RUN indicator:** Bi-color (green/red) LED; Green ON in normal communication; Red blinks when receiving data (Function selected with DIP SW)

**ERR indicator:** Bi-color (green/red) LED; Green ON in communication errors or minor failure, blinks at errors in the internal circuits; Red blinks when transmitting data (Function selected with DIP SW)

#### ■ RUN CONTACT OUTPUT

**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<sup>7</sup> 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:  $\leq$  22 VA

•DC:  $\leq$  9 W

**Current consumption (no power supply):** 120 mA

**Output current (power supply):** 230 mA continuous at 20 V DC; 380 mA for 10 minutes

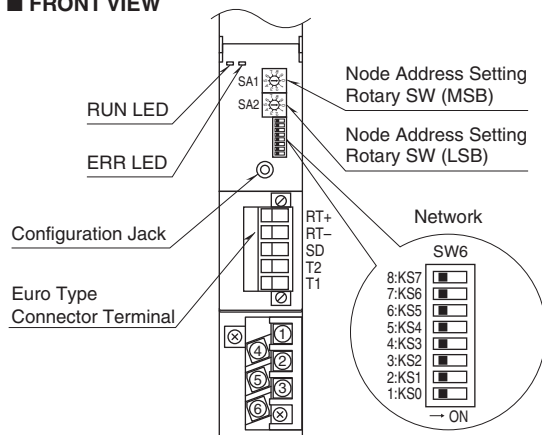
**Operating temperature:** -10 to +55°C (14 to 131°F)  
**Operating humidity:** 30 to 90 %RH (non-condensing)  
**Atmosphere:** No corrosive gas or heavy dust  
**Mounting:** Installation Base (model: R3-BSx)  
**Weight:** 200 g (0.44 lb)

## PERFORMANCE

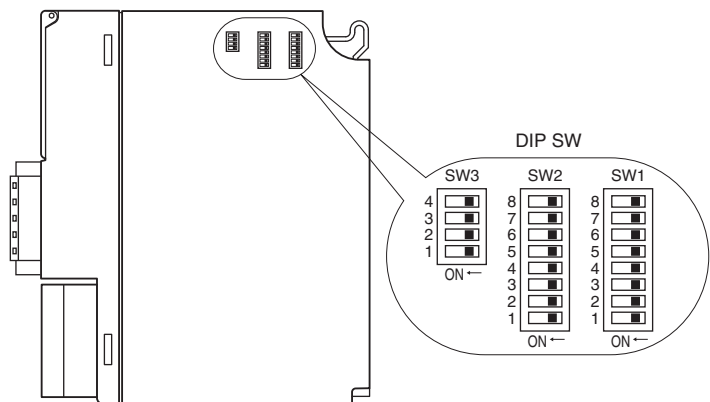
**Insulation resistance:**  $\geq 100 \text{ M}\Omega$  with 500 V DC  
**Dielectric strength:** 1500 V AC @ 1 minute (T-Link to internal bus or internal power to power input to RUN contact output to FG)

## EXTERNAL VIEW

### FRONT VIEW



### SIDE VIEW



## TRANSMISSION DATA DESCRIPTIONS

The DIP 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

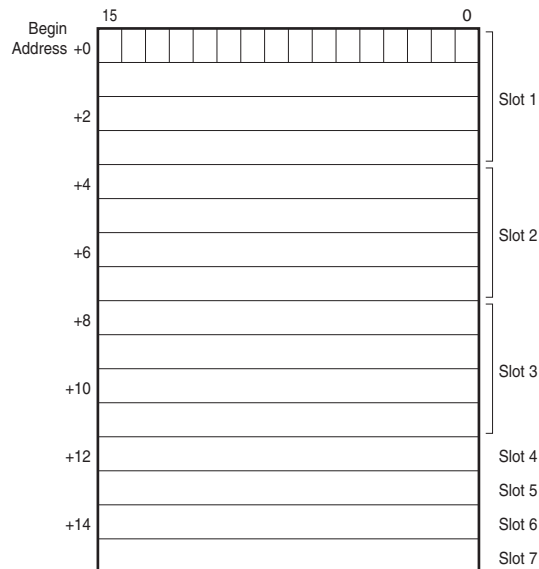
Then the I/O data are assigned as in the figures below:

### ■ 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.

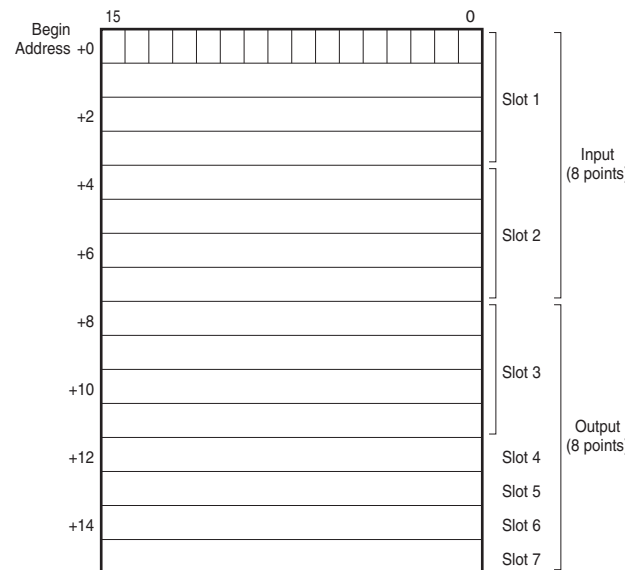


#### • I/O TYPE: INPUT / OUTPUT MIXED

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.

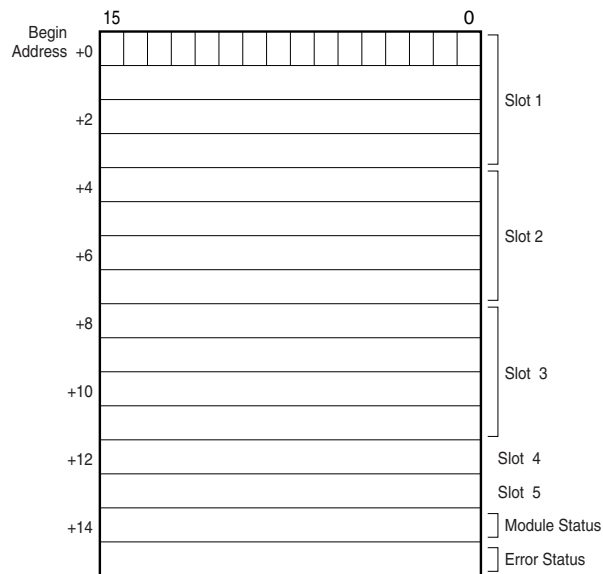
Please set the input module in slot 1 and 2, and output module after slot 3.



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

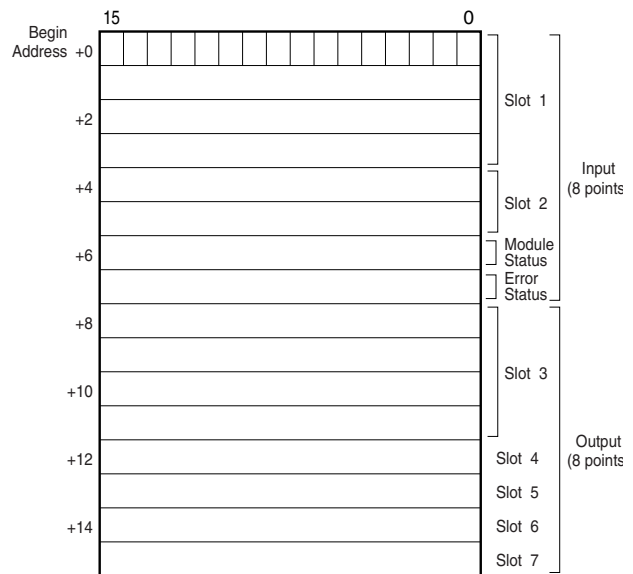
### • I/O TYPE: INPUT ONLY

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.



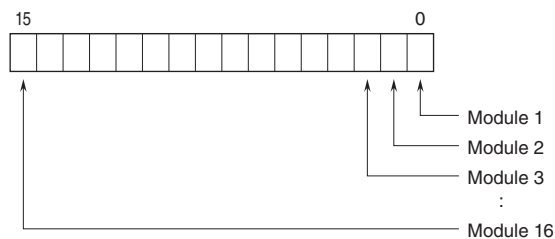
### • I/O TYPE: OUTPUT

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.

## 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, 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.



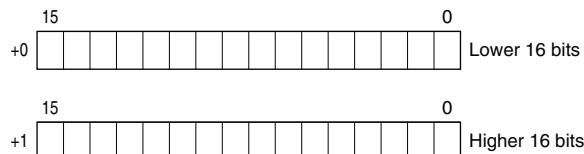
### ■ ANALOG DATA (16-bit data, models: R3-CT4A, CT4B, etc.)

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.)

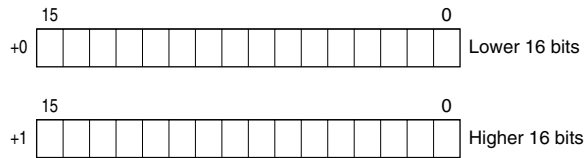
32-bit binary data is used for accumulated counts and encoder positions.  
Lower 16 bits are allocated from the lowest address to higher ones, higher 16 bits in turn.



### ■ 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.



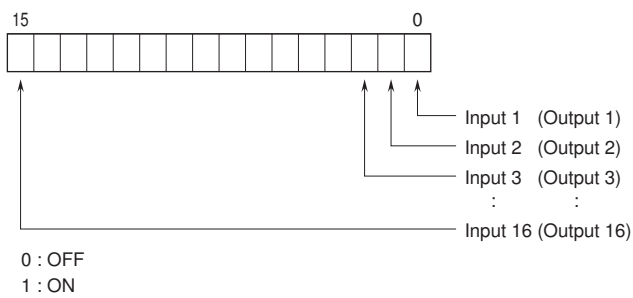
## ■ ANALOG 16 BITS BCD DATA

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

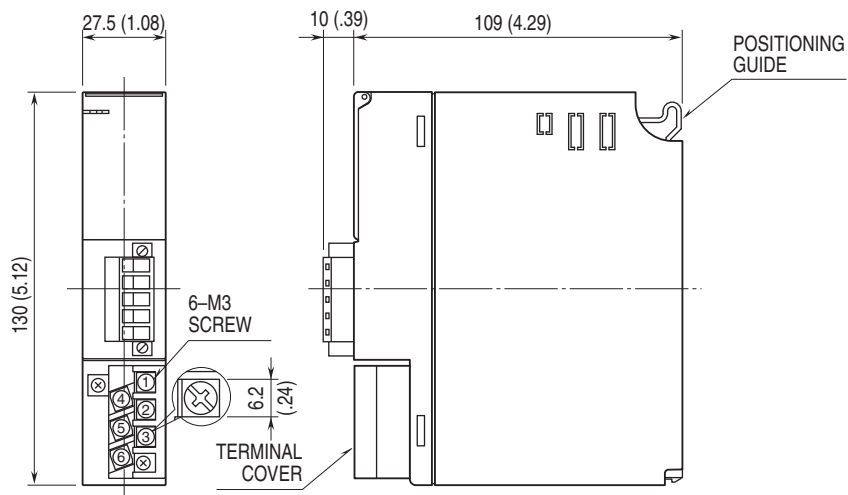
## ■ ANALOG 32 BITS BCD DATA

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

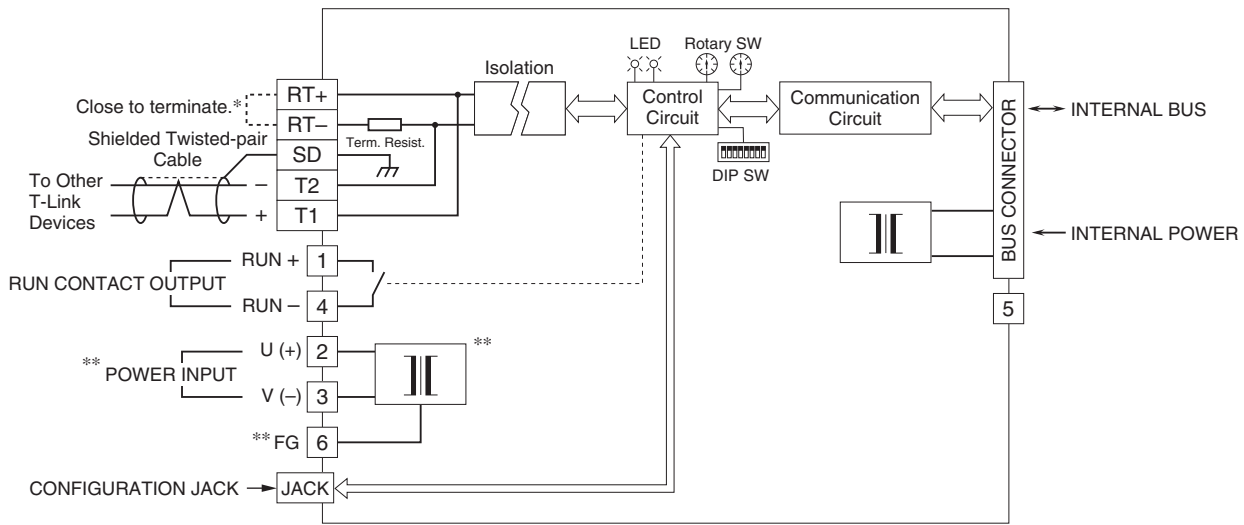
## ■ 16-POINT DISCRETE DATA (models: R3-DA16, DC16, etc.)



## 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.  
 Caution: FG terminal is NOT a protective conductor terminal.



Specifications are subject to change without notice.