Remote I/O R7 Series

FLEX NETWORK I/O MODULE

(RTD input, 4 points, isolated)

Functions & Features

- 4 points RTD input module for FLEX NETWORK
- Input sensor type can be selected with the front DIP switches for all channels.
- Easy parameter setting of individual channels with M-System's configurator software

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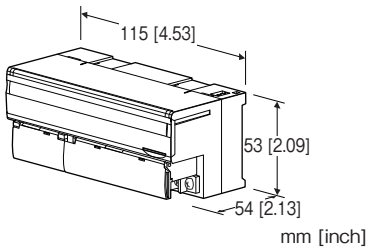


MODEL: R7FN–RS4-R[1]

ORDERING INFORMATION

- Code number: R7FN-RS4-R[1]

Specify a code from below for [1].
(e.g. R7FN-RS4-R/Q)

- Specify the specification for option code /Q

(e.g. /C01/SET)

I/O TYPE

RS4: RTD input, 4 points

POWER INPUT

DC Power

R: 24 V DC

(Operational voltage range 24 V ±10 %, ripple 10 %p-p max.)

[1] OPTIONS

blank: none

/Q: Options other than the above (specify the specification)

SPECIFICATIONS OF OPTION: Q (multiple selections)

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

/C01: Silicone coating

/C02: Polyurethane coating

/C03: Rubber coating

EX-FACTORY SETTING

/SET: Preset according to the Ordering Information Sheet (No. ESU-7808-RS4)

RELATED PRODUCTS

- PC configurator software (model: R7CON)

The configurator software is downloadable at M-System's web site.

A dedicated cable is required to connect the module to the PC. Please refer to the users manual for the PC configurator for applicable cable types.

- Screen editor software (model: GP-Pro EX)

Screen editor software GP-Pro EX (Ver.2.70 or higher) is available.

For versions between 2.60 and 2.70, the driver must be installed. The driver is downloadable at Digital Electronics Corporation's web site. http://www.proface.co.jp/

GENERAL SPECIFICATIONS

Connection: M3 separable screw terminal (torque 0.5 N·m)

Solderless terminal: Refer to the drawing at the end of the section.

- **Communication cable**

Recommended manufacture: Japan Solderless Terminal MFG.Co.Ltd

Applicable wire size: 0.2 to 0.5 mm^2 (AWG 26 to 22)

- **Others**

Recommended manufacture: Japan solderless terminal MFG.Co.Ltd, Nichifu Co.,ltd

Applicable wire size: 0.25 to 1.65 mm^2 (AWG 22 to 16)

Screw terminal: Nickel-plated steel

Housing material: Flame-resistant resin (gray)

Isolation: Input 0 to input 1 to input 2 to input 3 to FLEX NETWORK to power to FG

Zero adjustments: Configurable via R7CON

Span adjustments: Configurable via R7CON

Conversion rate: Configurable via R7CON

Burnout setting: Selectable between upscale (*) and downscale with the front DIP switch

(*) Factory default setting

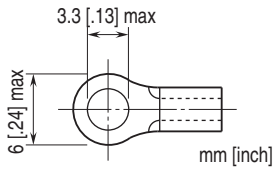
Linearization: Standard

RTD Setting: Selectable with front DIP SW or PC programming.

Status indicator LED: PWR, RUN

(Refer to the instruction manual)

■Recommended solderless terminal



FLEX NETWORK COMMUNICATION

Communication configuration: 1: N
Connection method: Multi-drop Connection
Communication method: Cyclic Time Division, half-duplex
Communication I/F: Differential, pulse transfer isolation
Error Check: Format, bit, CRC-12 verification
Max. Number of Nodes: 63 (1008 I/O points)
Required node: 4
Network cable: Pro-face's following cable
FN-CABLE2010-31-MS (10 m)
FN-CABLE2050-31-MS (50 m)
FN-CABLE2200-31-MS (200 m)
Transmission distance: 12 Mbps: 100 meters (328 ft)(*)
6 Mbps: 200 meters (656 ft)
(*) Factory default setting
Station address: Rotary switch
(Refer to the instruction manual)
Terminating resistor: Built-in

INPUT SPECIFICATIONS

Input resistance: ≥ 1 MΩ
Maximum leadwire resistance: 100 Ω per wire
Sensing current: ≤ 1 mA

RTD	BURNOUT INDICATION (°C)		CONFORMANCE
	Downscale	Upscale	RANGE (°C)
Pt 100 (JIS '97, IEC)	-240	+900	-200 to +850
Pt 100 (JIS '89)	-240	+900	-200 to +660
JPt 100 (JIS '89)	-236	+560	-200 to +510
Pt 50 Ω (JIS '81)	-236	+700	-200 to +649
Ni 100	-100	+252	-80 to +250
Cu 10 @ 25°C	-212	+312	-50 to +250
Cu 50	-100	+200	-50 to +150

RTD	BURNOUT INDICATION (°F)		CONFORMANCE
	Downscale	Upscale	RANGE (°F)
Pt 100 (JIS '97, IEC)	-400	+1652	-328 to +1562
Pt 100 (JIS '89)	-400	+1652	-328 to +1220
JPt 100 (JIS '89)	-393	+1040	-328 to +950
Pt 50 Ω (JIS '81)	-393	+1292	-328 to +1200
Ni 100	-148	+486	-112 to +482
Cu 10 @ 25°C	-350	+594	-58 to +482
Cu 50	-148	+392	-58 to +302

INSTALLATION

Current consumption
•**DC**: Approx. 90 mA
Operating temperature: -10 to +55°C (14 to 131°F)
Storage temperature: -20 to +65°C (-4 to +149°F)
Operating humidity: 30 to 90 %RH (non-condensing)
Atmosphere: No corrosive gas or heavy dust
Mounting: DIN rail (35 mm rail)
Weight: 200 g (0.44 lb)

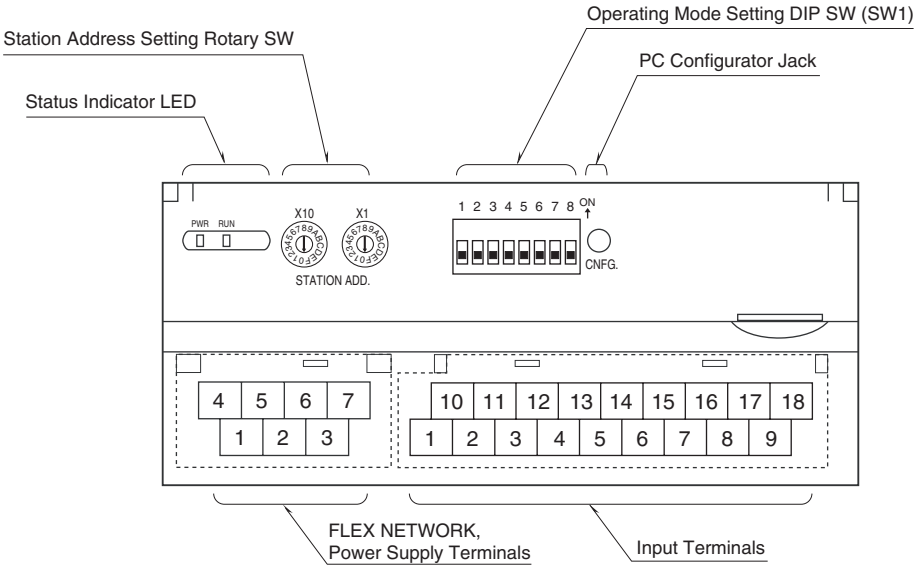
PERFORMANCE

Conversion accuracy: ±1°C (±1°F)
(±3°C [±5.4°F] for Cu 10)
Conversion rate: 250 msec. (*) or 500 msec. selectable
(*) Factory default setting
Converted data range:
• Engineering unit value (°C, K) × 10 (integer)
• Engineering unit value (°F)
Temp. coefficient: ±0.015 %/°C (±0.008 %/°F) of max. span
Response time: Conversion rate × 2 + 50 msec. (0 – 90 %)
Insulation resistance: ≥ 100 MΩ with 500 V DC
Dielectric strength: 1500 V AC @ 1 minute (input 0 to input 1 to inpu 2 to input 3 to FLEX NETWORK to power to FG)

STANDARDS & APPROVALS

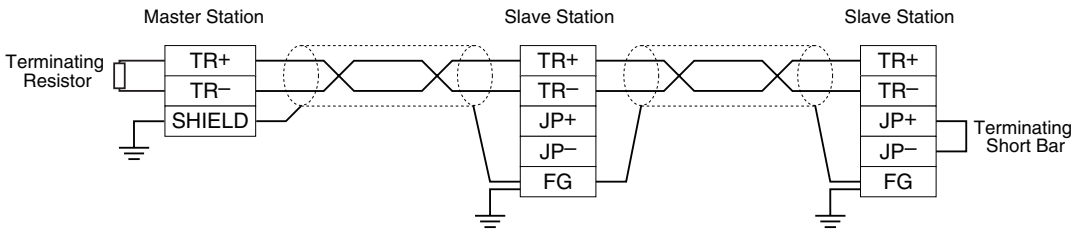
EU conformity:
EMC Directive
EMI EN 61000-6-4
EMS EN 61000-6-2
RoHS Directive

EXTERNAL VIEW



CONNECTION DIAGRAMS

■ MASTER CONNECTION



Note: Be sure to use the terminator(s) located at both ends of the modules.

TERMINAL ASSIGNMENTS

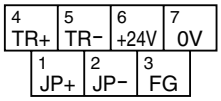
■ INPUT TERMINAL ASSIGNMENT

10	11	12	13	14	15	16	17	18
INA0	INb0	INA1	INb1	NC	INA2	INb2	INA3	INb3

1	2	3	4	5	6	7	8	9
NC	INB0	NC	INB1	NC	NC	INB2	NC	INB3

NO.	ID	FUNCTION	NO.	ID	FUNCTION
1	NC	No connection	10	INA0	RTD 0-A
2	INB0	RTD 0-B	11	INb0	RTD 0-b
3	NC	No connection	12	INA1	RTD 1-A
4	INB1	RTD 1-B	13	INb1	RTD 1-b
5	NC	No connection	14	NC	No connection
6	NC	No connection	15	INA2	RTD 2-A
7	INB2	RTD 2-B	16	INb2	RTD 2-b
8	NC	No connection	17	INA3	RTD 3-A
9	INB3	RTD 3-B	18	INb3	RTD 3-b

■ NETWORK, POWER SUPPLY TERMINAL ASSIGNMENT



NO.	ID	FUNCTION, NOTES
1	JP+	Terminating resistor
2	JP–	Terminating resistor
3	FG	FG
4	TR+	Network
5	TR–	Network
6	+24V	Power input (24V DC)
7	0V	Power input (0V)

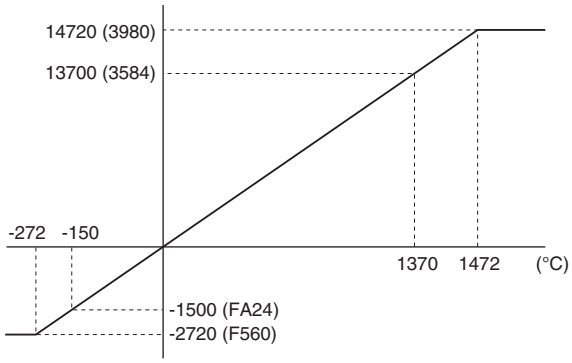
DATA CONVERSION

■ INPUT RANGE AND DATA CONVERSION (FACTORY DEFAULT SETTING)

Engineering unit value °C or K is multiplied by 10 and expressed in 16 bits. °F data is represented in engineering unit value, without multiplication. Negative value is represented in 2's complements.

• Input TYPE K Thermocouple

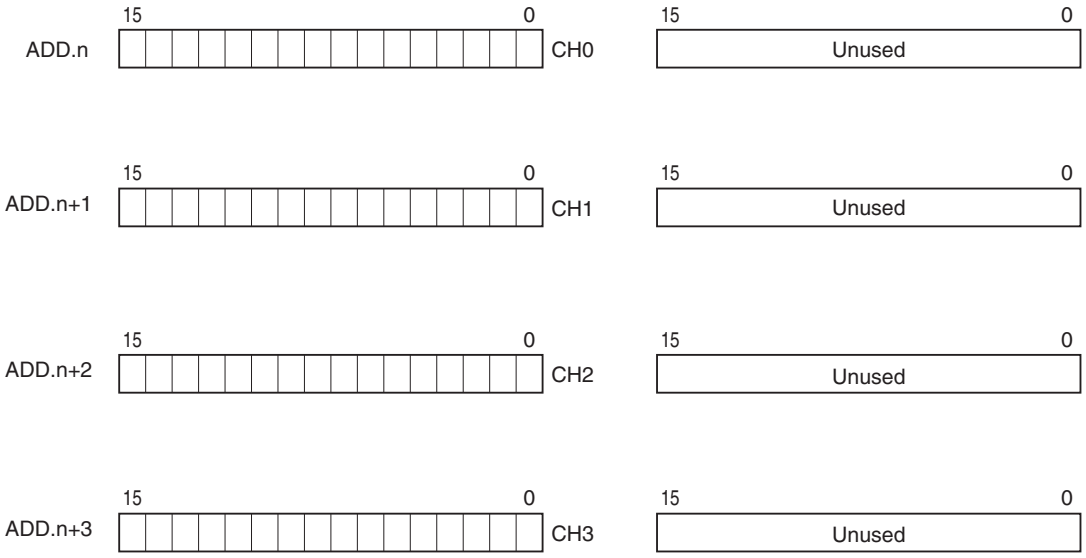
Input Value	Converted Data, Decimal	Converted Data, Hex
≤ -272°C	-2720	F560
-150°C	-1500	FA24
1370°C	13700	3584
≥ 1472°C	14720	3980



I/O DATA DESCRIPTIONS

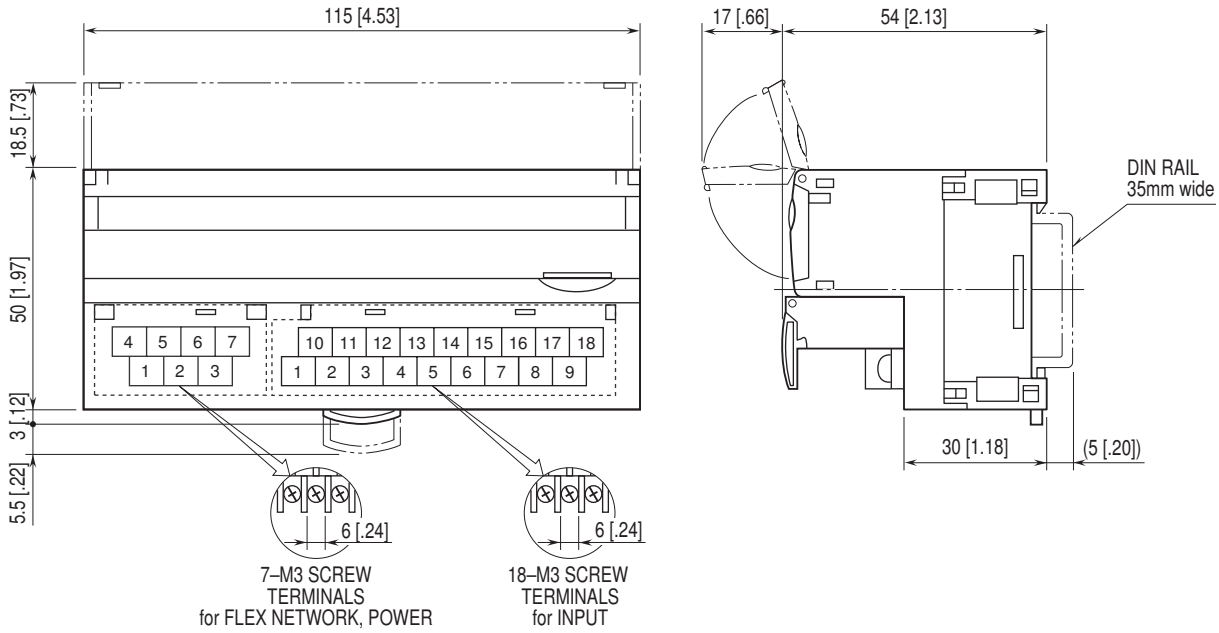
■ **ANALOG INPUT**

• Di **• Do**



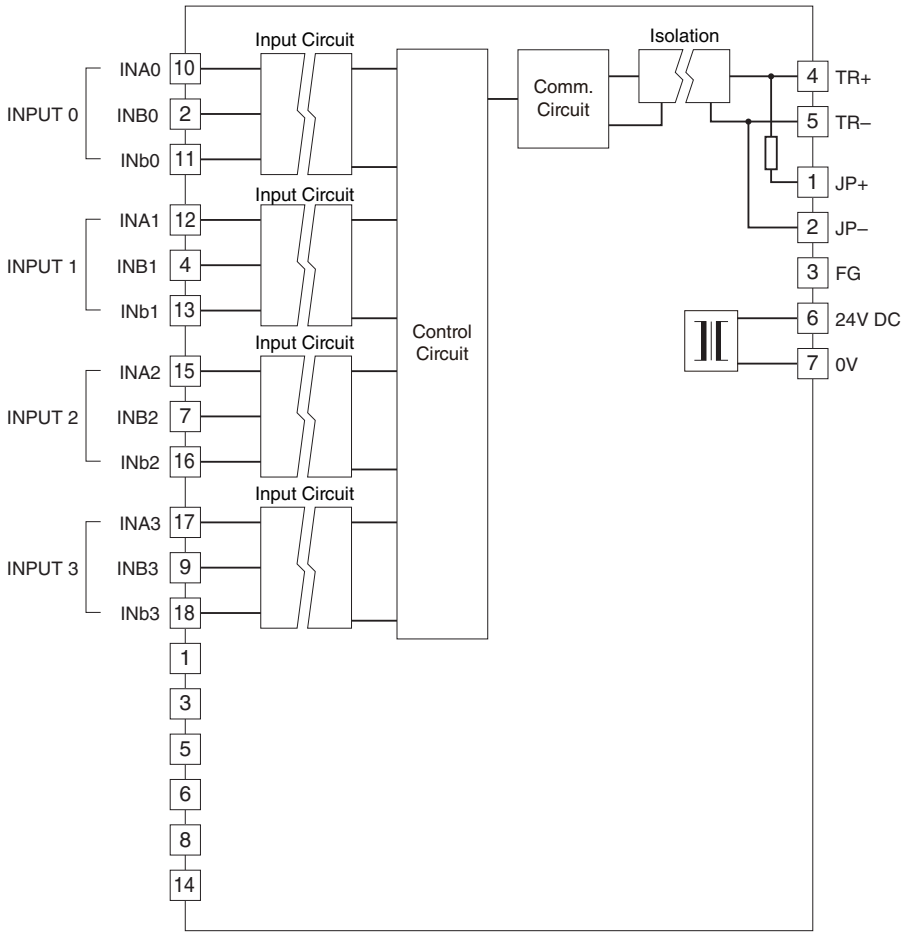
The data is 16-bit binary.
Negative value is represented in 2's complements.

EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]

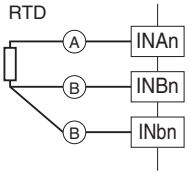


SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

Note: In order to improve EMC performance, bond the FG terminal to ground.
Caution: FG terminal is NOT a protective conductor terminal.



■ **Input Connection Example**



⚠ Specifications are subject to change without notice.