Remote I/O R7 Series

HI-SPEED LINK SYSTEM I/O MODULE

(RTD input, 4 points, isolated)

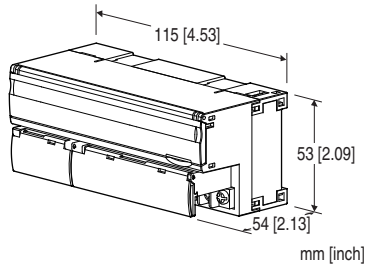
Functions & Features

• 4 points RTD input module for HLS

• Input sensor type can be selected with the front DIP switches for all channels.

• Individual channels, zero adjustment, span adjustment, scaling, and temperature unit can be set with the configurator software (model: R7CON)

HLS is the abbreviation for “Hi-speed Link System” of Step Technica Co., Ltd.



CE

HLS Hi-speed Link System

MODEL:R7HL–RS4-R[1]

ORDERING INFORMATION

• Code number: R7HL-RS4-R[1]

Specify a code from below for [1].
(e.g. R7HL-RS4-R/H/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 (multiple selections)

Communication Mode

blank: Full-duplex

/H: Half-duplex

Other Options

blank: none

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

SPECIFICATIONS OF OPTION: Q (multiple selections)

COATING (For the detail, refer to our web site.)

/C01: Silicone coating

/C02: Polyurethane coating

/C03: Rubber coating

EX-FACTORY SETTING

/SET: Preset according to the Ordering Information Sheet (No. ESU-7812-C)

RELATED PRODUCTS

• PC Configurator cable (model: MCN-CON or COP-US)

• PC configurator software (model: R7CON)

Downloadable at our web site.

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: J.S.T. Mfg. Co., Ltd.
Applicable wire size: 0.2 to 0.5 mm^2 (AWG 26 to 22)

• **Others**
Recommended manufacture: J.S.T. 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 power to HLS 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

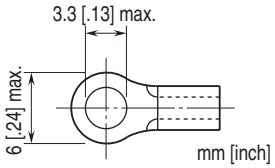
Linearization: Standard

RTD Setting: Configurable via the front DIP switch or R7CON

Status indicator LEDs: PWR, RUN
(Refer to the instruction manual)

Configurator connection: 2.5 dia. miniature jack

■Recommended solderless terminal



HLS COMMUNICATION

Communication mode:
Communication mode option code blank: Full-duplex

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Communication mode option code /H: half-duplex

Network cable

• Shield cable
Full-duplex communication:
ZHY262PS and ZHT262PS
(Shinko Seisen Industry Co., Ltd.)
Half-duplex communication:
ZHY221PS (Shinko Seisen Industry Co., Ltd.)
• Dual-shield cable:
ZHY262PBA (Shinko Seisen Industry Co., Ltd.)

Transmission distance / Transfer rate:
100 meters (328 ft)/12 Mbps (default),
200 meters (656 ft)/6 Mbps
(Selectable with DIP switch)

Station address: Rotary switch
(Refer to the instruction manual)

Data allocation: 4

Terminating resistor: Built-in (Selected with the DIP SW; factory setting: disabled)

INPUT SPECIFICATIONS

Input resistance: ≥ 1 MΩ

Maximum leadwire resistance: 100 Ω per wire

Sensing current: ≤ 1 mA

RTD	BURNOUT INDICATION (°C)		CONFORMANCE RANGE (°C)
	Downscale	Upscale	
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 RANGE (°F)
	Downscale	Upscale	
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 (±1.8°F)
(±3°C [±5.4°F] for Cu 10 @ 25°C)

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)

Temperature coefficient: ±0.015 %/°C (±0.008 %/°F) of max. span except ±0.150 %/°C (±0.08 %/°F) for Cu 10 @ 25°C

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 input 2 to input 3 to power input to HLS to FG)

STANDARDS & APPROVALS

Refer to the manuals to comply with the standards.

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

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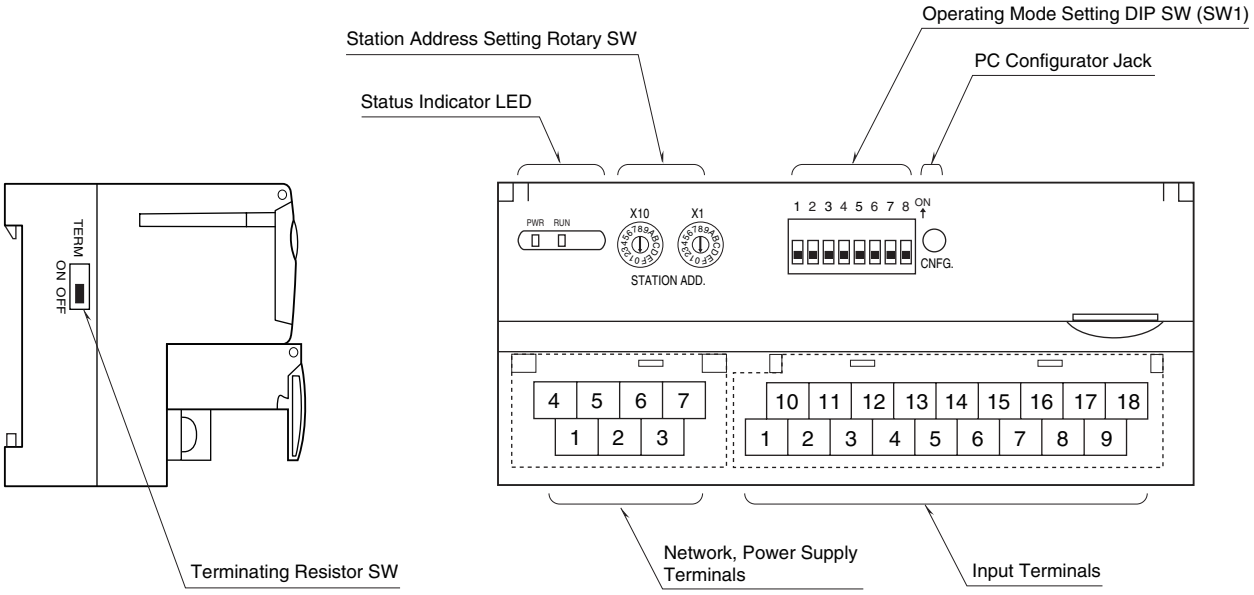
EXTERNAL VIEW

■ **SIDE VIEW**

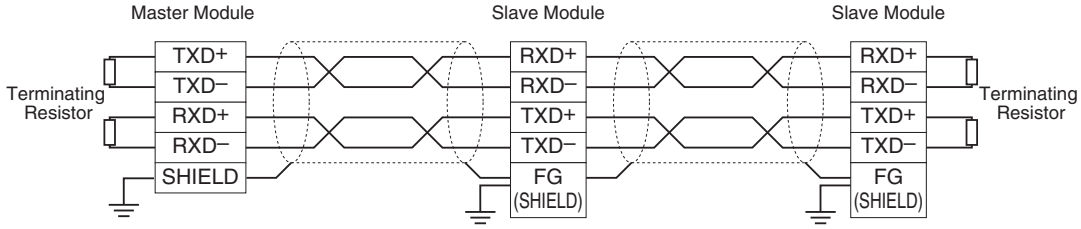
■ **FRONT VIEW**



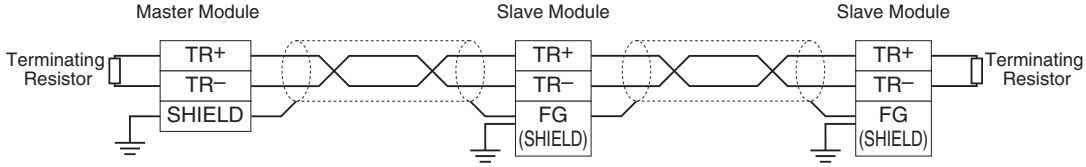
COMMUNICATION CABLE CONNECTIONS

■ **MASTER CONNECTION**

• **Full-duplex communication**



• **Half-duplex communication**



Note: Be sure to turn ON the switch of the terminating resistor located at both ends of the modules.

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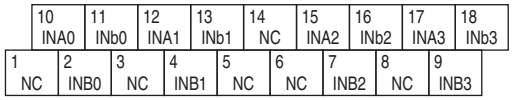
TERMINAL ASSIGNMENTS

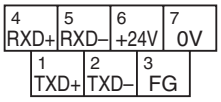
■ INPUT TERMINAL ASSIGNMENT



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

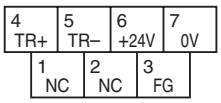
■ NETWORK, POWER SUPPLY TERMINAL ASSIGNMENT

• Full-duplex communication



NO.	ID	FUNCTION, NOTES
1	TXD+	Network (slave, transmission +)
2	TXD–	Network (slave, transmission –)
3	FG	FG
4	RXD+	Network (master, transmission +)
5	RXD–	Network (master, transmission –)
6	+24V	Power input (24V DC)
7	0V	Power input (0V)

• Half-duplex communication



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

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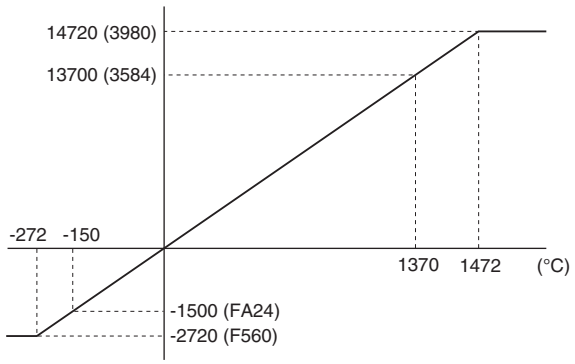
DATA CONVERSION

■ 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

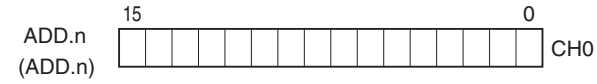


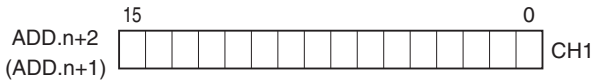
I/O DATA DESCRIPTIONS

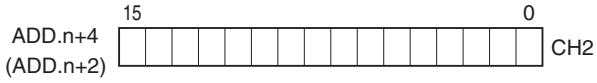
Scaling of analog input is configurable with the configurator software (model: R7CON). Refer to the software manual for details.

■ ANALOG INPUT

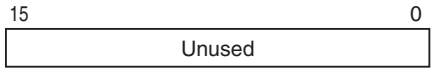
• Di area

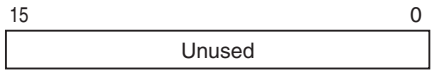


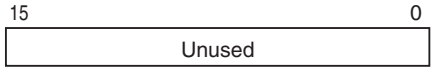


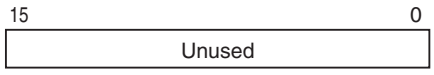


• Do area









The data is 16-bit binary.
Negative value is represented in 2's complements.
Address in parentheses are for half-duplex mode.

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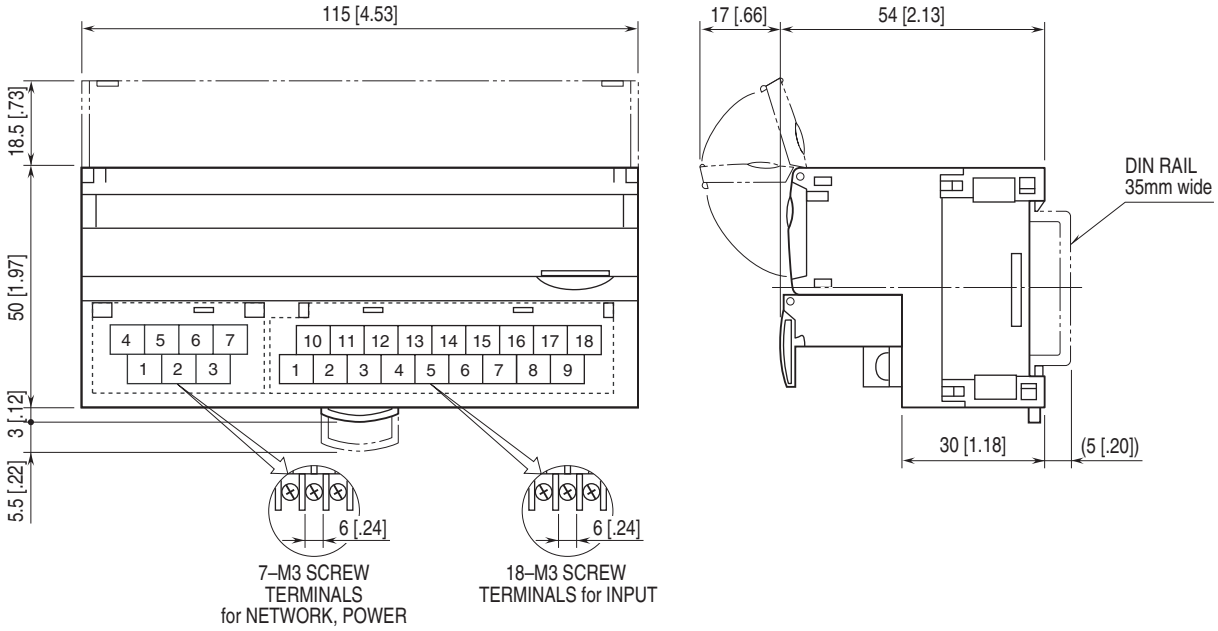
EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]



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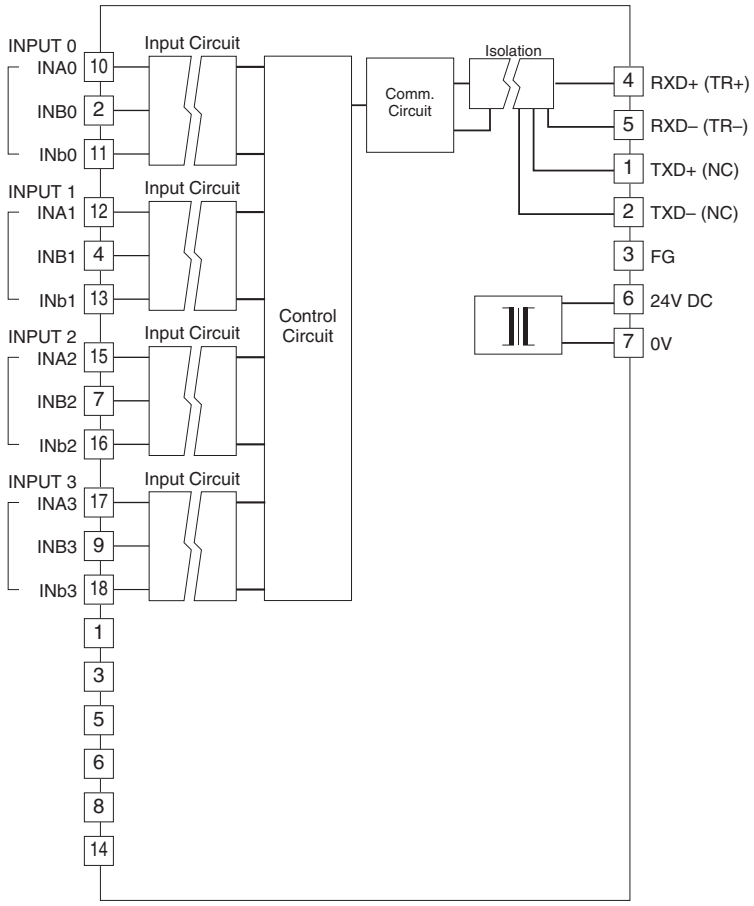
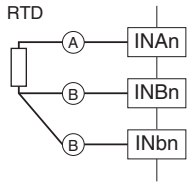
SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

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



Note: Terminal numbers in parentheses are for half-duplex communication model.

■ **Input Connection Example**



⚠ Specifications are subject to change without notice.

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