Remote I/O R7F4D Series

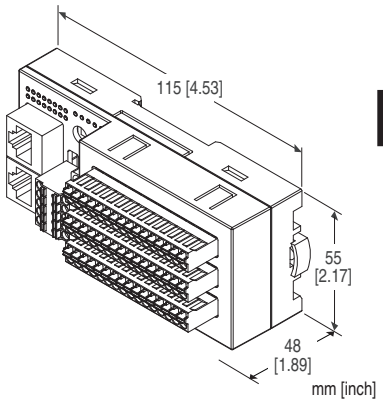
HI-SPEED LINK SYSTEM I/O MODULE

(NPN discrete input, 16 points, tension clamp terminal block)

Functions & Features

• 16 points NPN discrete input module for HLS

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



CE

HLS Hi-speed Link System

MODEL: R7F4DH-4-DA16A-R[1]

ORDERING INFORMATION

• Code number: R7F4DH-4-DA16A-R[1]

Specify a code from below for [1].
(e.g. R7F4DH-4-DA16A-R/H/Q)

• Specify the specification for option code /Q
(e.g. /C01)

TERMINAL BLOCK

4: Tension clamp terminal block for power supply
RJ-45 Modular jack for communication
Tension clamp terminal block for I/O

I/O TYPE

DA16A: NPN discrete input, 16 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

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

/C01: Silicone coating

/C02: Polyurethane coating

/C03: Rubber coating

GENERAL SPECIFICATIONS

Connection

HLS: RJ-45 Modular Jack

Power & Sensor excitation: Separable screwless spring terminal

Input: Separable screwless spring terminal

Housing material: Flame-resistant resin (gray)

Isolation: Input or sensor excitation to HLS to power input to FE

Status indicator LED: Power (green) turns on while the power is supplied

Discrete input status indicator LED: Red LED turns on with input ON

HLS COMMUNICATION

Communication mode: Full-duplex or half-duplex

Network cable

Shielded cable:

Full-duplex communication:
ZHY262PS and ZHT262PS (Shinko Seisen Industry Co., Ltd.)
Half-duplex communication:
ZHY221PS (Shinko Seisen Industry Co., Ltd.)

Dual shielded cable:

ZHY262PBA (Shinko Seisen Industry Co., Ltd.)

Transmission distance:

12 Mbps: 100 meters (328 ft)
6 Mbps: 200 meters (656 ft)
3 Mbps: 300 meters (984 ft)
(Configurable with DIP SW; factory setting: 12 Mbps)

Data allocation: 1

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

Status indicator LED: Run LED on in normal communication

Station address: Set with rotary switch
(Refer to the instruction manual for details)

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INPUT SPECIFICATIONS

Common: Positive common (NPN) per 16 points
Numbers of input: 16 points
Maximum inputs applicable at once: No limit (at 24V DC)
Sensor excitation: 24 V DC ±10 %; ripple 5 %p-p max., ≤ 2 A (including discrete input load charge); rated current 8 A
ON voltage / current: ≥ 15 V DC (X0 through XF to +24V) / ≥ 3.5 mA
OFF voltage / current: ≤ 5 V DC (X0 through XF to +24V) / ≤ 1 mA
Input current: ≤ 5.5 mA per point at 24 V DC
Input resistance: Approx. 4.4 kΩ
ON delay: ≤ 0.5 msec.
OFF delay: ≤ 0.5 msec.

INSTALLATION

Current consumption
•**DC**: Approx. 25 mA (rated current 8 A)
(contact I/O load charge is not included)
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: Surface or DIN rail (35 mm rail)
Weight: 100 g (0.22 lb)

PERFORMANCE

Insulation resistance: ≥ 100 MΩ with 500 V DC
Dielectric strength: 1500 V AC @ 1 minute (input or sensor excitation to HLS to power to FE)

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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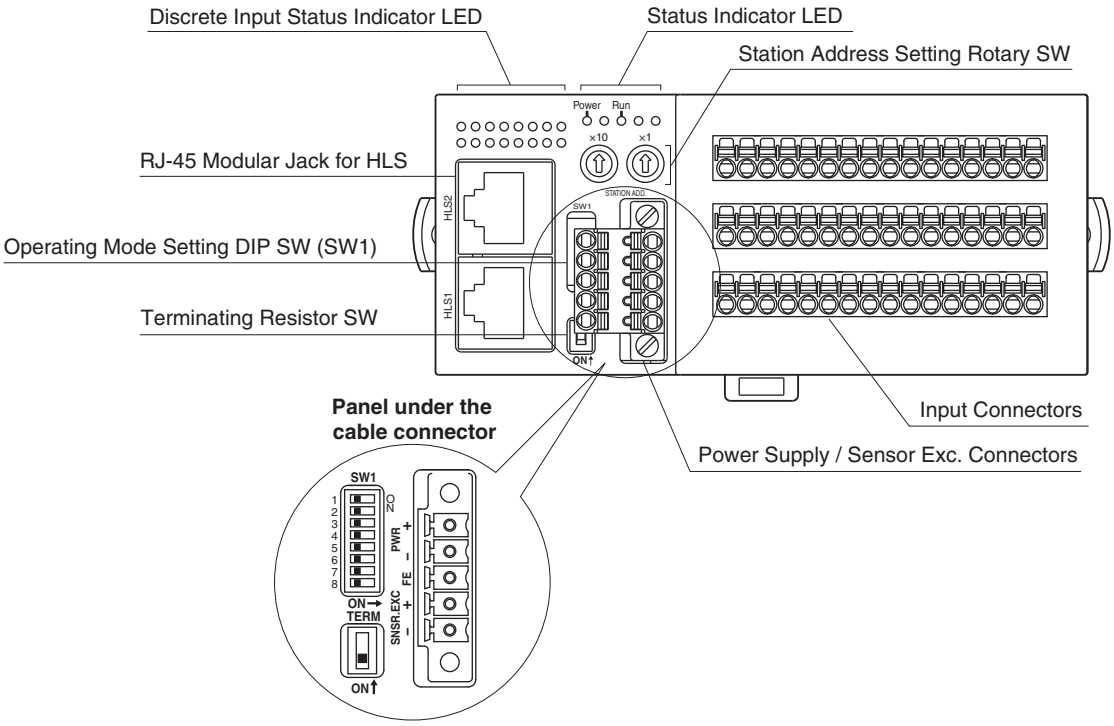
EXTERNAL VIEW



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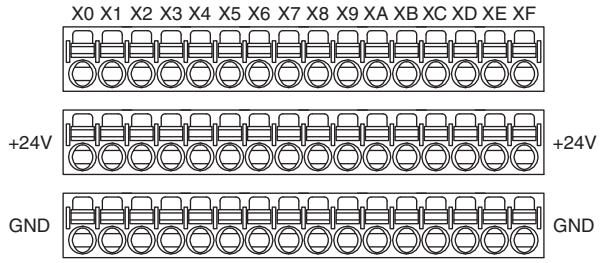
TERMINAL ASSIGNMENTS

■ INPUT TERMINAL ASSIGNMENT



PIN No.		ID	FUNCTION	PIN No.		ID	FUNCTION
X0	1	X0	Input 0	X8	1	X8	Input 8
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V
X1	1	X1	Input 1	X9	1	X9	Input 9
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V
X2	1	X2	Input 2	XA	1	XA	Input 10
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V
X3	1	X3	Input 3	XB	1	XB	Input 11
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V
X4	1	X4	Input 4	XC	1	XC	Input 12
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V
X5	1	X5	Input 5	XD	1	XD	Input 13
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V
X6	1	X6	Input 6	XE	1	XE	Input 14
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V
X7	1	X7	Input 7	XF	1	XF	Input 15
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V

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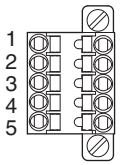
■ **POWER SUPPLY, SENSOR EXCITATION**

Cable connector: TFMC1,5 / 5–STF–3,5
(Phoenix Contact) (included in the package)

Applicable wire size: 0.2 – 1.5 mm²; stripped length 10 mm

Recommended solderless terminal

- AI0,25–10YE 0.25 mm² (Phoenix Contact)
- AI0,34–10TQ 0.34 mm² (Phoenix Contact)
- AI0,5–10WH 0.5 mm² (Phoenix Contact)
- AI0,75–10GY 0.75 mm² (Phoenix Contact)
- A1–10 1.0 mm² (Phoenix Contact)
- A1,5–10 1.5 mm² (Phoenix Contact)



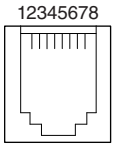
1.	PWR+	Power Supply
2.	PWR–	Power Supply
3.	FE	Functional earth
4.	SNSR.EXC+	Sensor excitation
5.	SNSR.EXC–	Sensor excitation

Note: The numbers marked on the connector have no relationship to the pin number of the unit.
Wire according to the instruction manual of the unit.

■ **HLS**

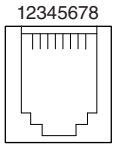
Recommended cable connector: TM21P–88P (Hirose Electric)
(not included in the package)

• Full-duplex communication



1.	NC	Unused
2.	NC	Unused
3.	TXD+	Network (slave, transmission +)
4.	TXD–	Network (slave, transmission –)
5.	RXD+	Network (master, transmission +)
6.	RXD–	Network (master, transmission –)
7.	NC	Unused
8.	SLD	Shield

• Half-duplex communication



1.	NC	Unused
2.	NC	Unused
3.	TR+	Network (+)
4.	TR–	Network (–)
5.	NC	Unused
6.	NC	Unused
7.	NC	Unused
8.	SLD	Shield

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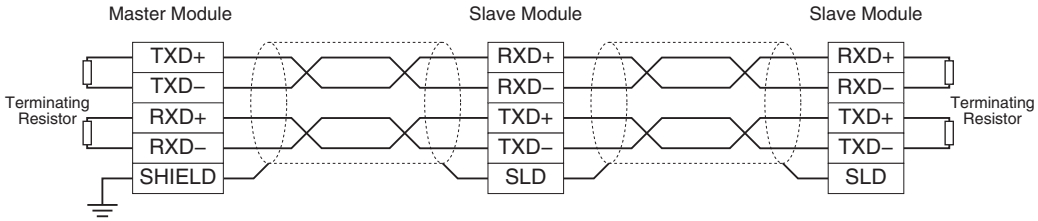
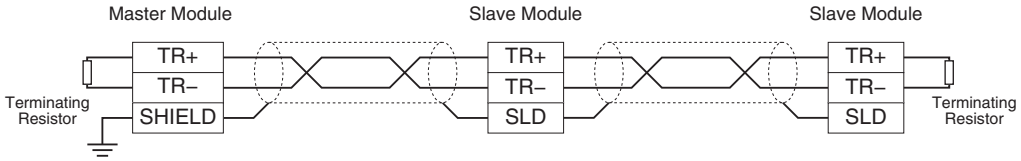
■ **MASTER CONNECTION**

• Full-duplex communication



• Half-duplex communication

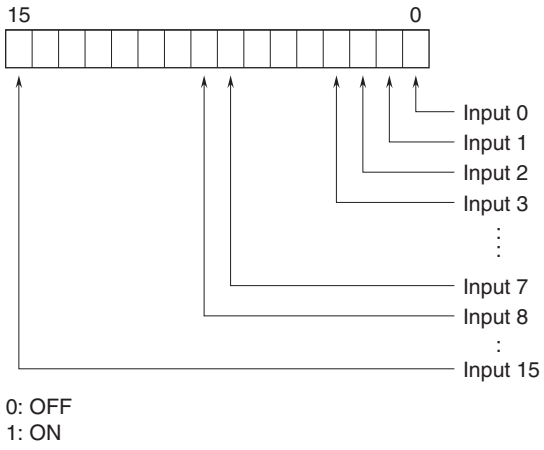


Note: Be sure to turn ON the switch of the terminating resistor located at both ends of the modules.

I/O DATA DESCRIPTIONS

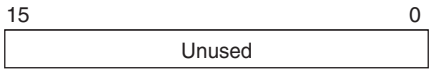
■ **DISCRETE INPUT**

• Di



0: OFF
1: ON

• Do



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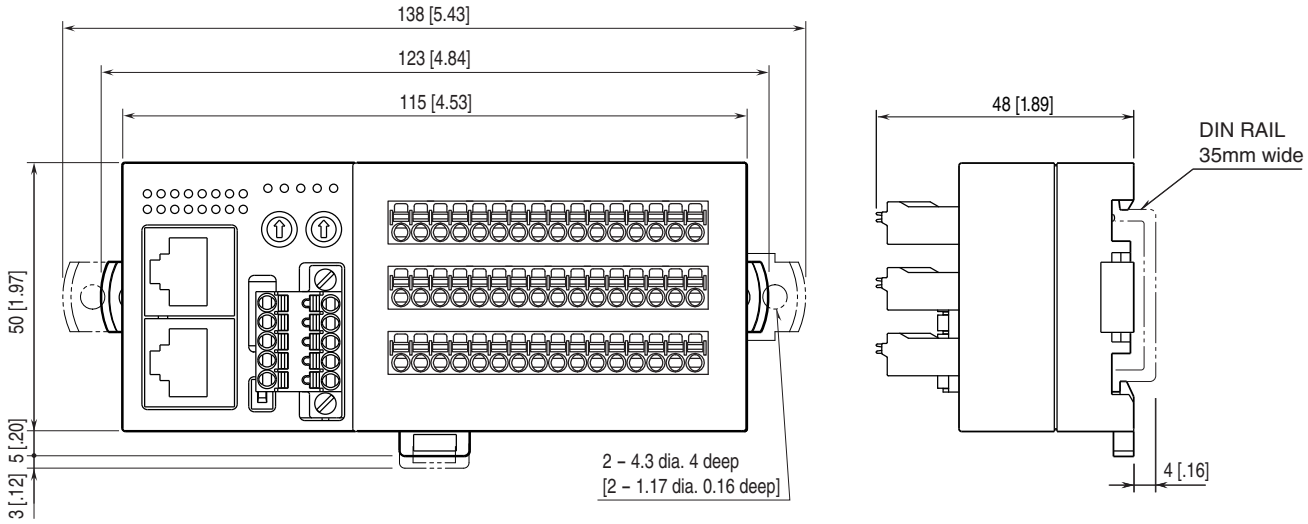
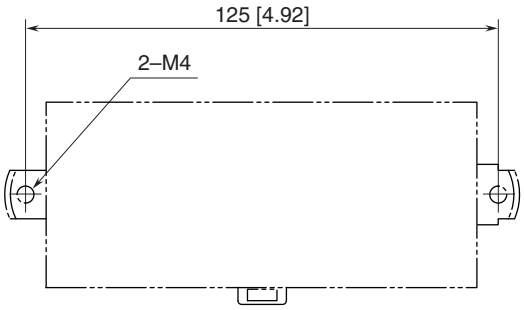
EXTERNAL DIMENSIONS unit: mm [inch]



MOUNTING REQUIREMENTS unit: mm [inch]



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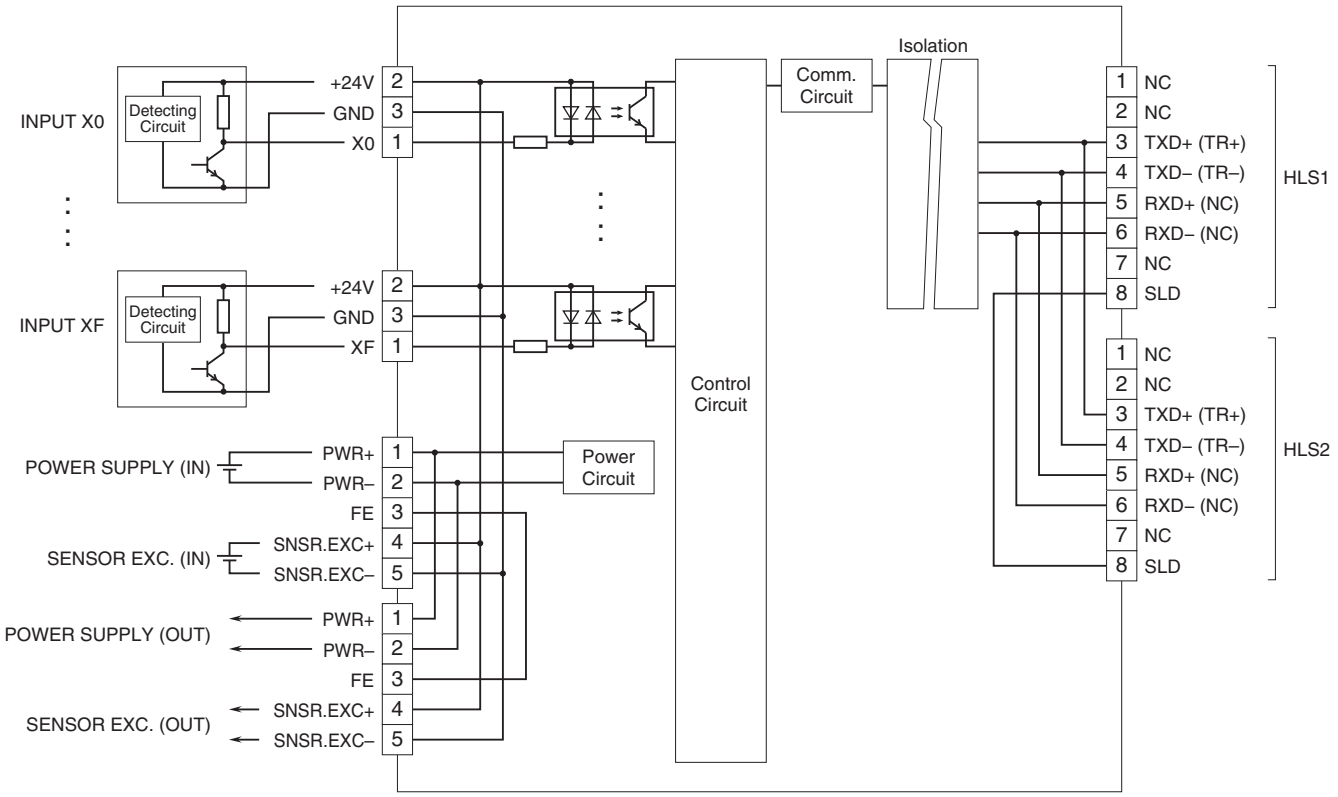
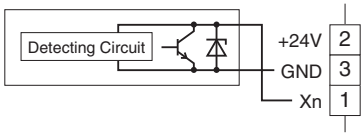
SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

Note: In order to improve EMC performance, bond the FE terminal to ground.

Caution: FE terminal is NOT a protective conductor terminal.



■ **2-Wire Sensor**



⚠ Specifications are subject to change without notice.

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