

Remote I/O R7F4D Series

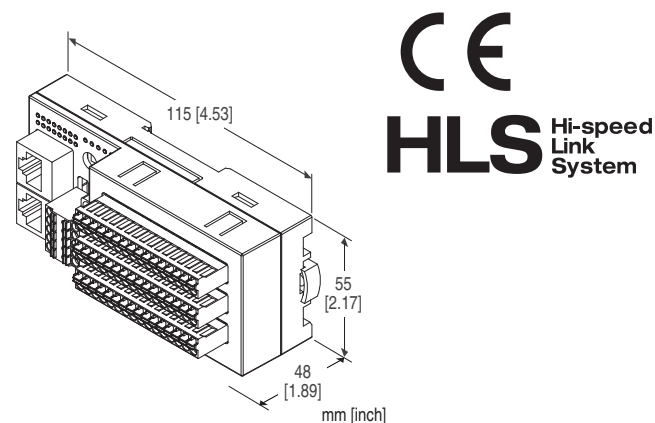
HI-SPEED LINK SYSTEM I/O MODULE

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

Functions & Features

- 16 points PNP discrete input module for HLS

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



MODEL: R7F4DH-4-DA16B-R[1]

ORDERING INFORMATION

- Code number: R7F4DH-4-DA16B-R[1]
- Specify a code from below for [1].
(e.g. R7F4DH-4-DA16B-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

DA16B: PNP discrete input, 16 points

POWER INPUT

DC Power

R: 24 V DC

(Operational voltage range 24 V $\pm$ 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)

INPUT SPECIFICATIONS

Common: Negative common (PNP) per 16 points

Numbers of input: 16 points

Maximum inputs applicable at once: No limit (at 24V DC)

Sensor excitation: 24 V DC $\pm 10\%$; 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 GND) / ≥ 3.5 mA

OFF voltage / current: ≤ 5 V DC (X0 through XF to GND) / ≤ 1 mA

Input current: ≤ 5.5 mA per point at 24 V DC

Input resistance: Approx. 4.4 k Ω

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 M Ω 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:

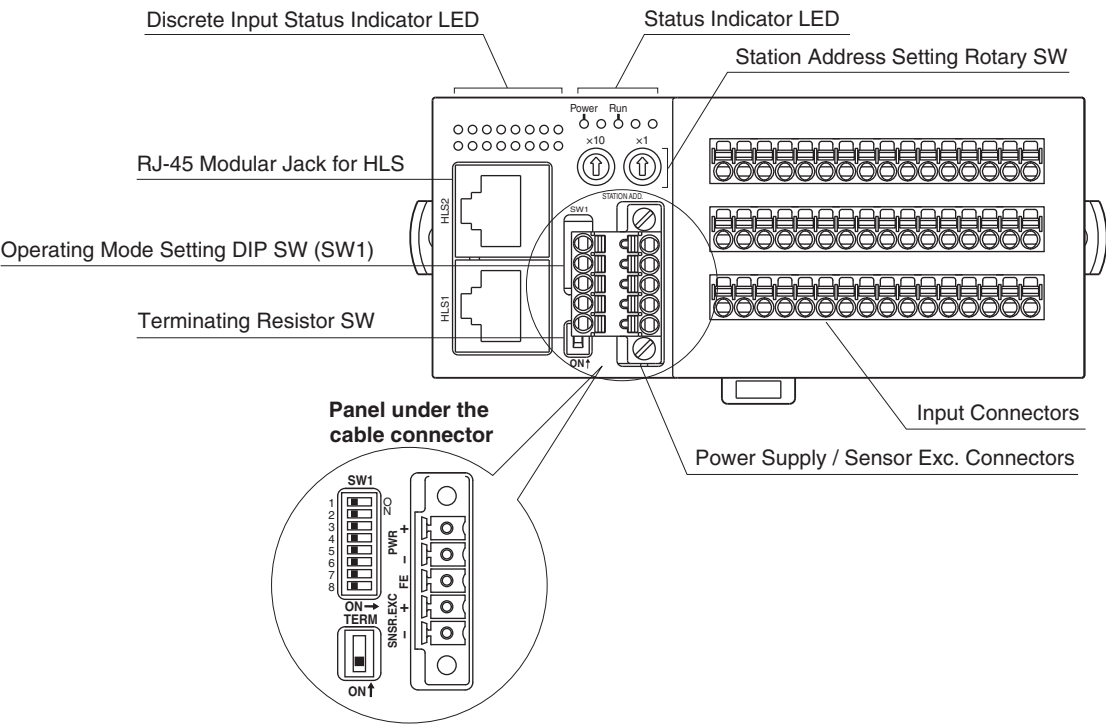
EMC Directive

EMI EN 61000-6-4

EMS EN 61000-6-2

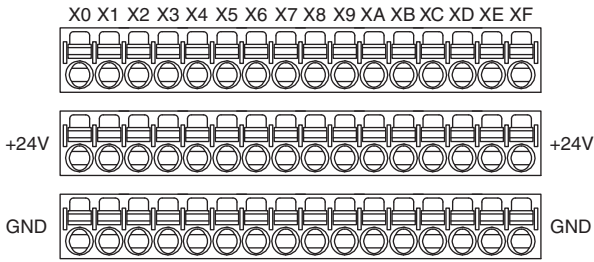
RoHS Directive

EXTERNAL VIEW



TERMINAL ASSIGNMENTS

■ INPUT TERMINAL ASSIGNMENT



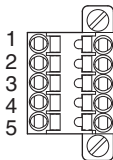
PIN No.		ID	FUNCTION	PIN No.		ID	FUNCTION
X0	1	X0	Input 0	X8	1	X8	Input 8
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V
X1	1	X1	Input 1	X9	1	X9	Input 9
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V
X2	1	X2	Input 2	XA	1	XA	Input 10
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V
X3	1	X3	Input 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

■ 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)



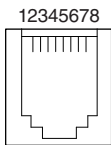
- | | |
|--------------|-------------------|
| 1. PWR+ | Power Supply |
| 2. PWR– | Power Supply |
| 3. FE | Functional earth |
| 4. SNSR.EXC+ | Sensor excitation |
| 5. SNSR.EXC– | Sensor excitation |

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

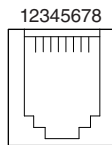
Recommended cable connector: TM21P–88P (Hirose Electric)
(not included in the package)

• 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 |

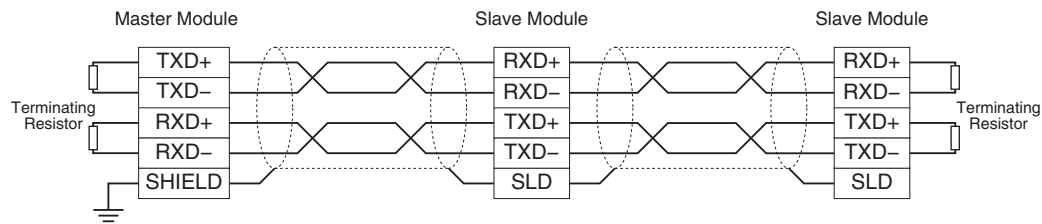
• Half-duplex communication



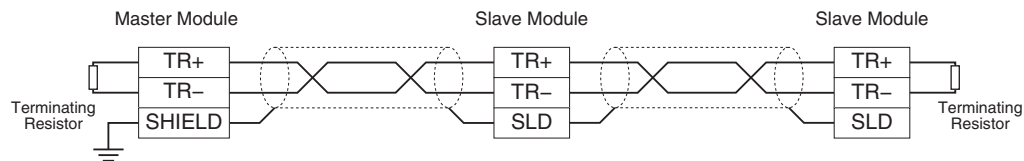
- | | |
|--------|-------------|
| 1. NC | Unused |
| 2. NC | Unused |
| 3. TR+ | Network (+) |
| 4. TR– | Network (–) |
| 5. NC | Unused |
| 6. NC | Unused |
| 7. NC | Unused |
| 8. SLD | Shield |

MASTER CONNECTION

Full-duplex communication



Half-duplex communication

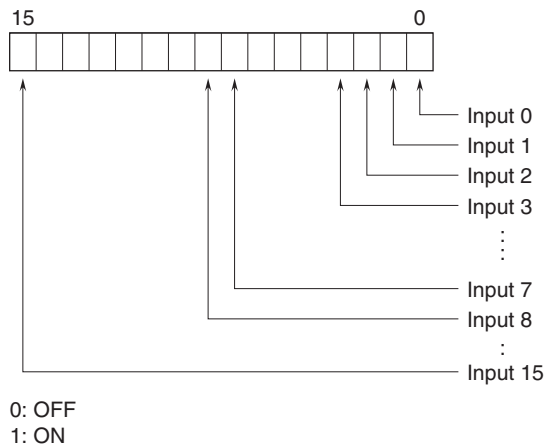


Note: Be sure to turn ON the switch of the terminating resistor located at both ends of the modules.

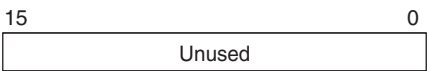
I/O DATA DESCRIPTIONS

DISCRETE INPUT

Di

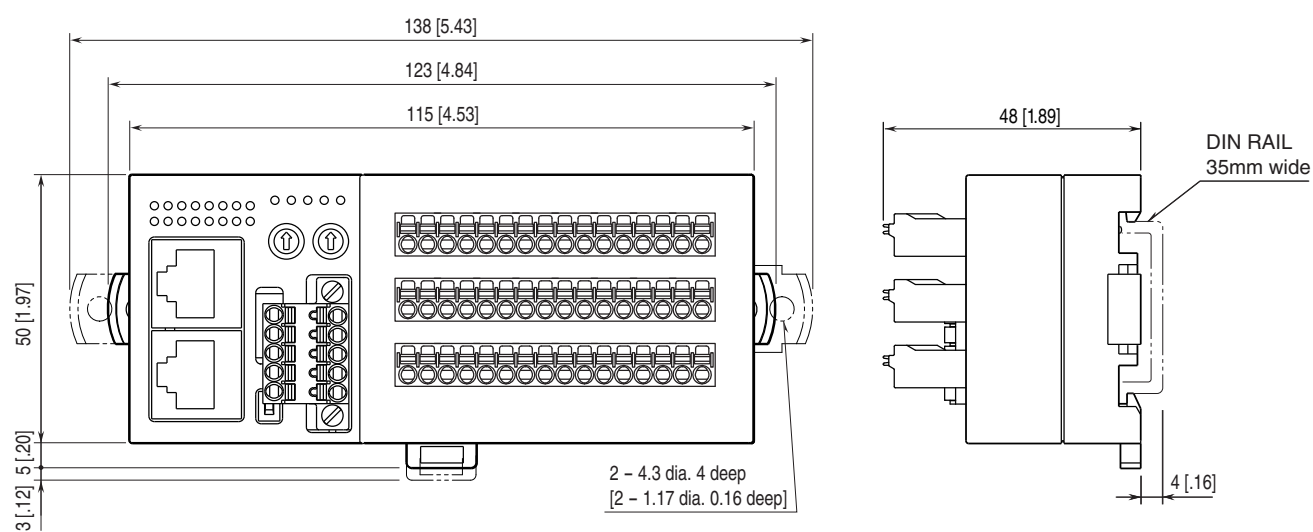


Do

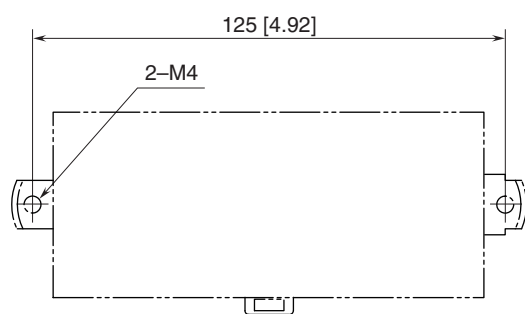


MODEL: R7F4DH-4-DA16B

EXTERNAL DIMENSIONS unit: mm [inch]



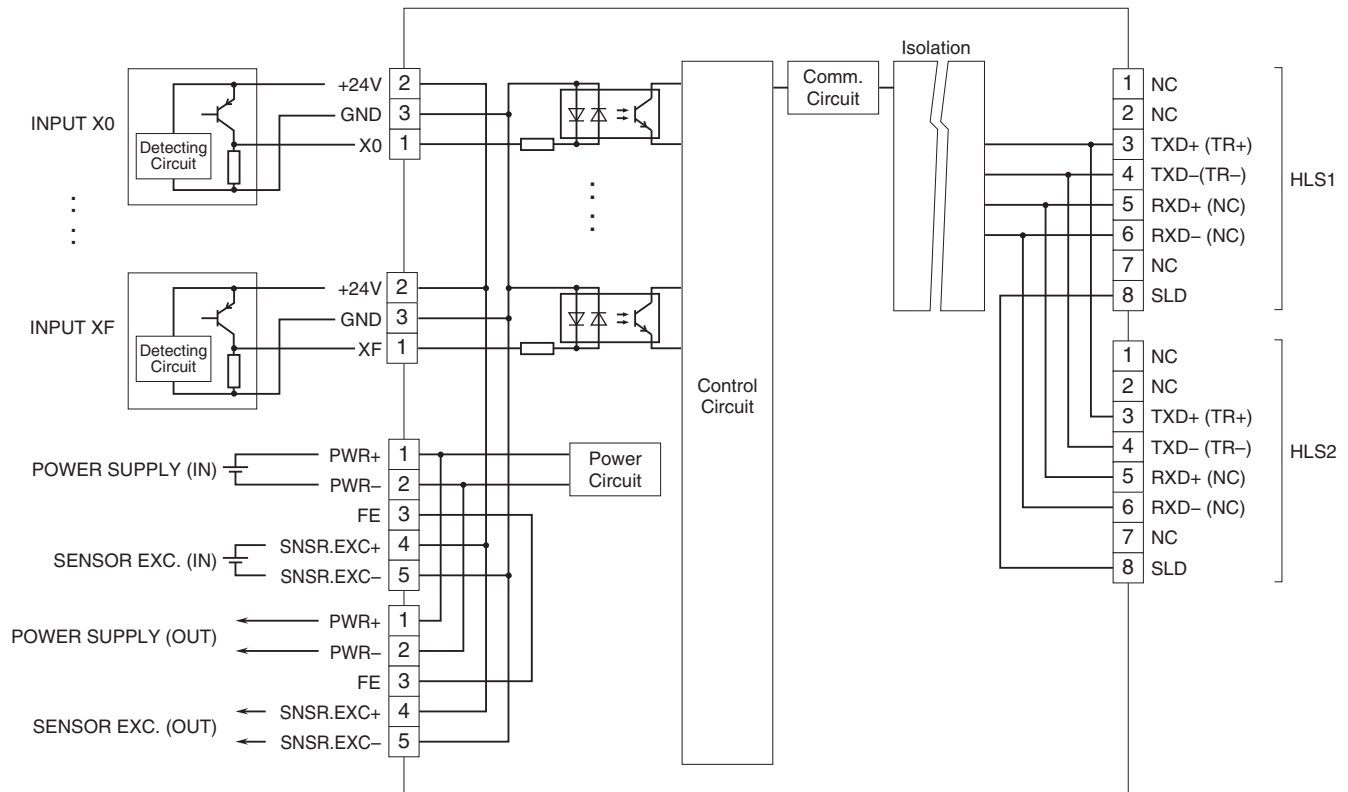
MOUNTING REQUIREMENTS unit: mm [inch]



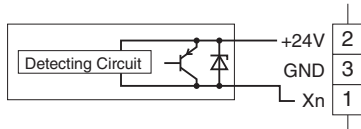
SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

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.