

## Remote I/O R7K4D Series

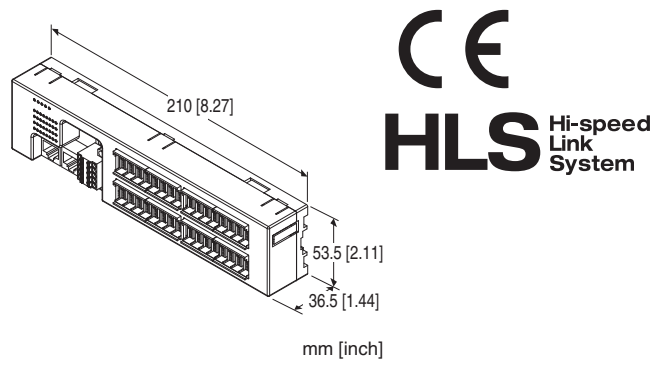
### HI-SPEED LINK SYSTEM I/O MODULE

(NPN discrete input & NPN transistor output, 16 points each, e-CON connector, HLS use)

#### Functions & Features

- 16 points NPN discrete input & 16 points NPN transistor output module for HLS

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



## MODEL: R7K4DH-1-DAC32C-R[1]

### ORDERING INFORMATION

- Code number: R7K4DH-1-DAC32C-R[1]  
Specify a code from below for [1].  
(e.g. R7K4DH-1-DAC32C-R/H/Q)
- Specify the specification for option code /Q  
(e.g. /C01)

### TERMINAL BLOCK

- 1: Tension clamp terminal block for power supply  
 RJ-45 Modular jack for communication  
 e-CON connector for I/O

### I/O TYPE

**DAC32C:** NPN discrete input & NPN transistor output, 16 points each

### 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 M-System's 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

**I/O:** e-CON connector

**Housing material:** Flame-resistant resin (gray)

**Isolation:** Input or output or sensor excitation to HLS or power to FE

#### Output at the loss of communication:

Output hold (\*), Output clear

Selectable with the front DIP SW

(\* factory default setting)

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

**Discrete I/O status indicator LED:** Red LED turns on with I/O 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)

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

**Status indicator:** Run LED on in normal communication

**Station address:** Set with rotary switch

(Refer to the instruction manual for details.)

## STANDARDS & APPROVALS

### EU conformity:

EMC Directive

EMI EN 61000-6-4

EMS EN 61000-6-2

RoHS Directive

## INPUT SPECIFICATIONS

**Common:** Positive common (NPN) per 16 points

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

**Sensor excitation:** 24 V DC  $\pm 10\%$ ; ripple 5 %p-p max.,  
 $\leq 2$  A (including discrete input load charge); rated current 8 A

**ON voltage / current:**  $\geq 15$  V DC (X0 through XF to +24V) /  
 $\geq 3.5$  mA

**OFF voltage / current:**  $\leq 5$  V DC (X0 through XF to +24V) /  $\leq$   
1 mA

**Input current:**  $\leq 5.5$  mA per point at 24 V DC

**Input resistance:** Approx. 4.4 k $\Omega$

**ON delay:**  $\leq 0.5$  msec.

**OFF delay:**  $\leq 0.5$  msec.

## OUTPUT SPECIFICATIONS

**Common:** Negative common (NPN) per 16 points

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

**Sensor Excitation:** 24 V DC  $\pm 10\%$ , ripple 5 %p-p max.,  
 $\leq 2$  A (including discrete output load charge); rated current  
8 A

**Rated output current:** 0.1 A per point, 1.6 A per common

**Residual voltage:**  $\leq 1.2$  V

**Leakage current:**  $\leq 0.1$  mA

**ON delay:**  $\leq 0.2$  msec.

**OFF delay:**  $\leq 0.5$  msec.

**Overload current protection function:** Limits the current  
value when overcurrent is detected

**Overheat protection function:** Turns OFF the outputs when  
overheat is detected

(When driving an inductive load, connect a diode in parallel  
with the load.)

## INSTALLATION

### Current consumption

•DC: Approx. 95 mA (rated current 8 A)

**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:** Surface or DIN rail (35 mm rail)

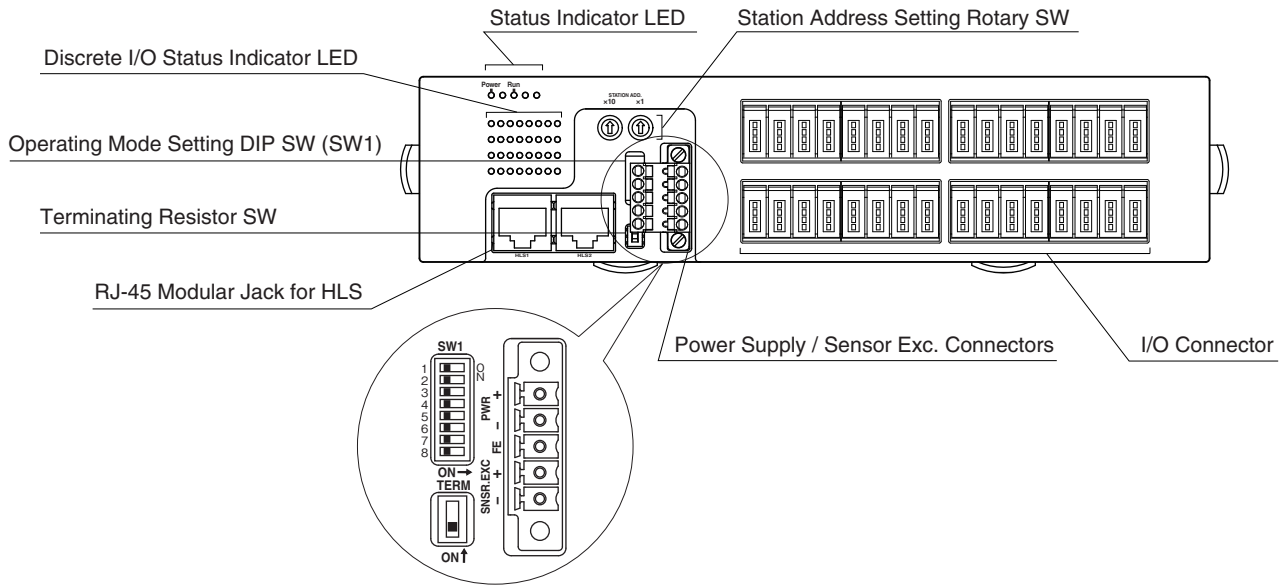
**Weight:** Approx. 185 g (0.41 lb)

## PERFORMANCE

**Insulation resistance:**  $\geq 100$  M $\Omega$  with 500 V DC

**Dielectric strength:** 1500 V AC @ 1 minute (input or output  
or sensor excitation to HLS to power to FE)

## EXTERNAL VIEW



## TERMINAL ASSIGNMENTS

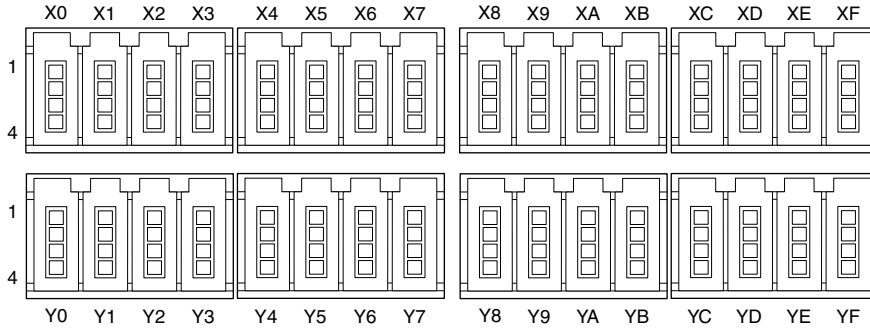
### I/O TERMINAL ASSIGNMENT

- e-CON connector

Recommended cable connector: 37104-( )-000FL (3M Company)

(The cable connector is not included in the package.)

Specify wire size instead of ( ); refer to the specifications of the product.)



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

PIN No.	ID	FUNCTION	PIN No.	ID	FUNCTION
Y0	1	+24V 24V DC	Y8	1	+24V 24V DC
	2	NC Unused		2	NC Unused
	3	GND 0V		3	GND 0V
	4	Y0 Output 0		4	Y8 Output 8
Y1	1	+24V 24V DC	Y9	1	+24V 24V DC
	2	NC Unused		2	NC Unused
	3	GND 0V		3	GND 0V
	4	Y1 Output 1		4	Y9 Output 9
Y2	1	+24V 24V DC	YA	1	+24V 24V DC
	2	NC Unused		2	NC Unused
	3	GND 0V		3	GND 0V
	4	Y2 Output 2		4	YA Output 10
Y3	1	+24V 24V DC	YB	1	+24V 24V DC
	2	NC Unused		2	NC Unused
	3	GND 0V		3	GND 0V
	4	Y3 Output 3		4	YB Output 11
Y4	1	+24V 24V DC	YC	1	+24V 24V DC
	2	NC Unused		2	NC Unused
	3	GND 0V		3	GND 0V
	4	Y4 Output 4		4	YC Output 12
Y5	1	+24V 24V DC	YD	1	+24V 24V DC
	2	NC Unused		2	NC Unused
	3	GND 0V		3	GND 0V
	4	Y5 Output 5		4	YD Output 13
Y6	1	+24V 24V DC	YE	1	+24V 24V DC
	2	NC Unused		2	NC Unused
	3	GND 0V		3	GND 0V
	4	Y6 Output 6		4	YE Output 14
Y7	1	+24V 24V DC	YF	1	+24V 24V DC
	2	NC Unused		2	NC Unused
	3	GND 0V		3	GND 0V
	4	Y7 Output 7		4	YF Output 15

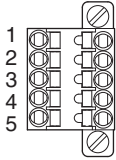
## ■ POWER SUPPLY, SENSOR EXCITATION

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

**Applicable wire size:** 0.2 – 1.5 mm<sup>2</sup>; stripped length 10 mm

### Recommended solderless terminal

- AI0,25–10YE 0.25 mm<sup>2</sup> (Phoenix Contact)
- AI0,34–10TQ 0.34 mm<sup>2</sup> (Phoenix Contact)
- AI0,5–10WH 0.5 mm<sup>2</sup> (Phoenix Contact)
- AI0,75–10GY 0.75 mm<sup>2</sup> (Phoenix Contact)
- A1–10 1.0 mm<sup>2</sup> (Phoenix Contact)
- A1,5–10 1.5 mm<sup>2</sup> (Phoenix Contact)



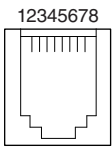
- |              |                   |
|--------------|-------------------|
| 1. PWR+      | Power Supply      |
| 2. PWR-      | Power Supply      |
| 3. FE        | Functional earth  |
| 4. SNSR.EXC+ | Sensor excitation |
| 5. SNSR.EXC- | Sensor excitation |

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

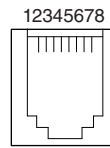
**Recommended cable connector:** TM21P-88P (Hirose Electric)  
(not included in the package)

### • 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

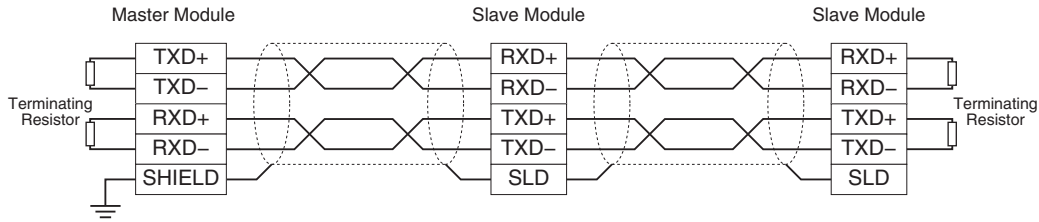


- |        |             |
|--------|-------------|
| 1. NC  | Unused      |
| 2. NC  | Unused      |
| 3. TR+ | Network (+) |
| 4. TR- | Network (-) |
| 5. NC  | Unused      |
| 6. NC  | Unused      |
| 7. NC  | Unused      |
| 8. SLD | Shield      |

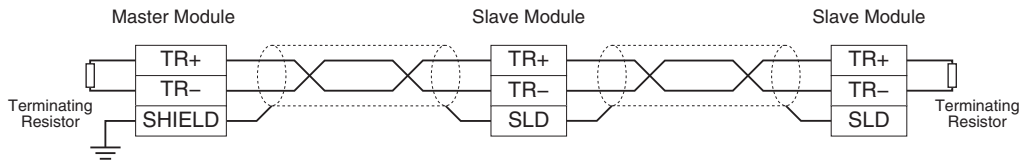
# MODEL: R7K4DH-1-DAC32C

## ■ MASTER CONNECTION

### • Full-duplex communication



### • Half-duplex communication

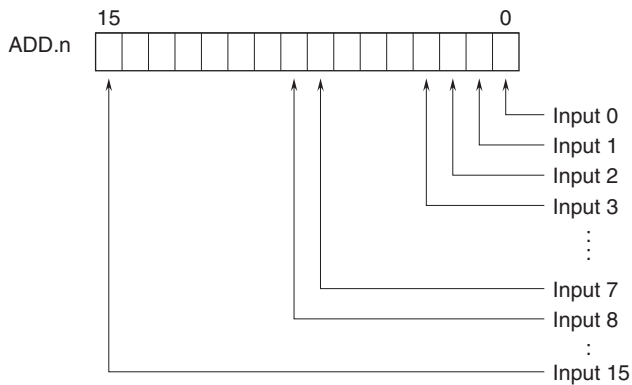


Note: Be sure to turn ON the switch of the terminating resistor located at both ends of the modules.

## I/O DATA DESCRIPTIONS

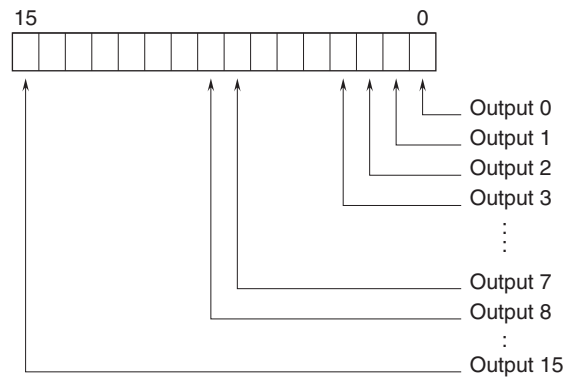
### ■ DISCRETE I/O MODULE

#### • Di

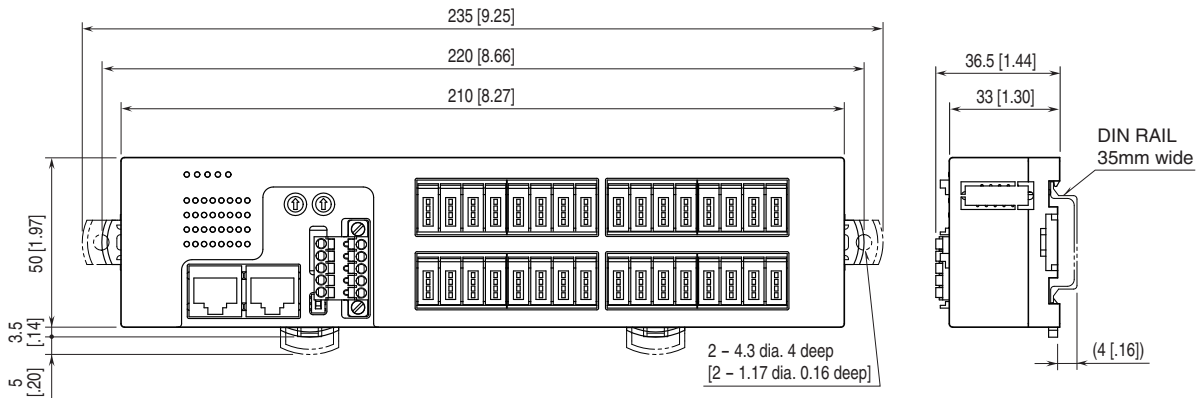


0: OFF  
1: ON

#### • Do

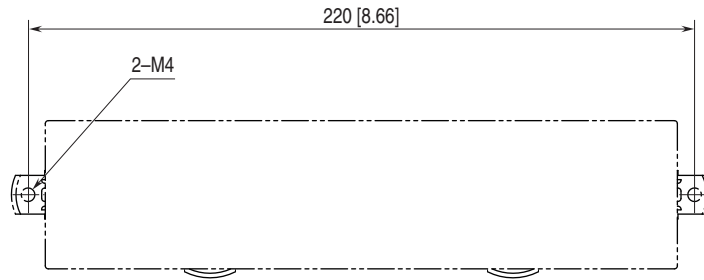


## EXTERNAL DIMENSIONS unit: mm [inch]



# MODEL: R7K4DH-1-DAC32C

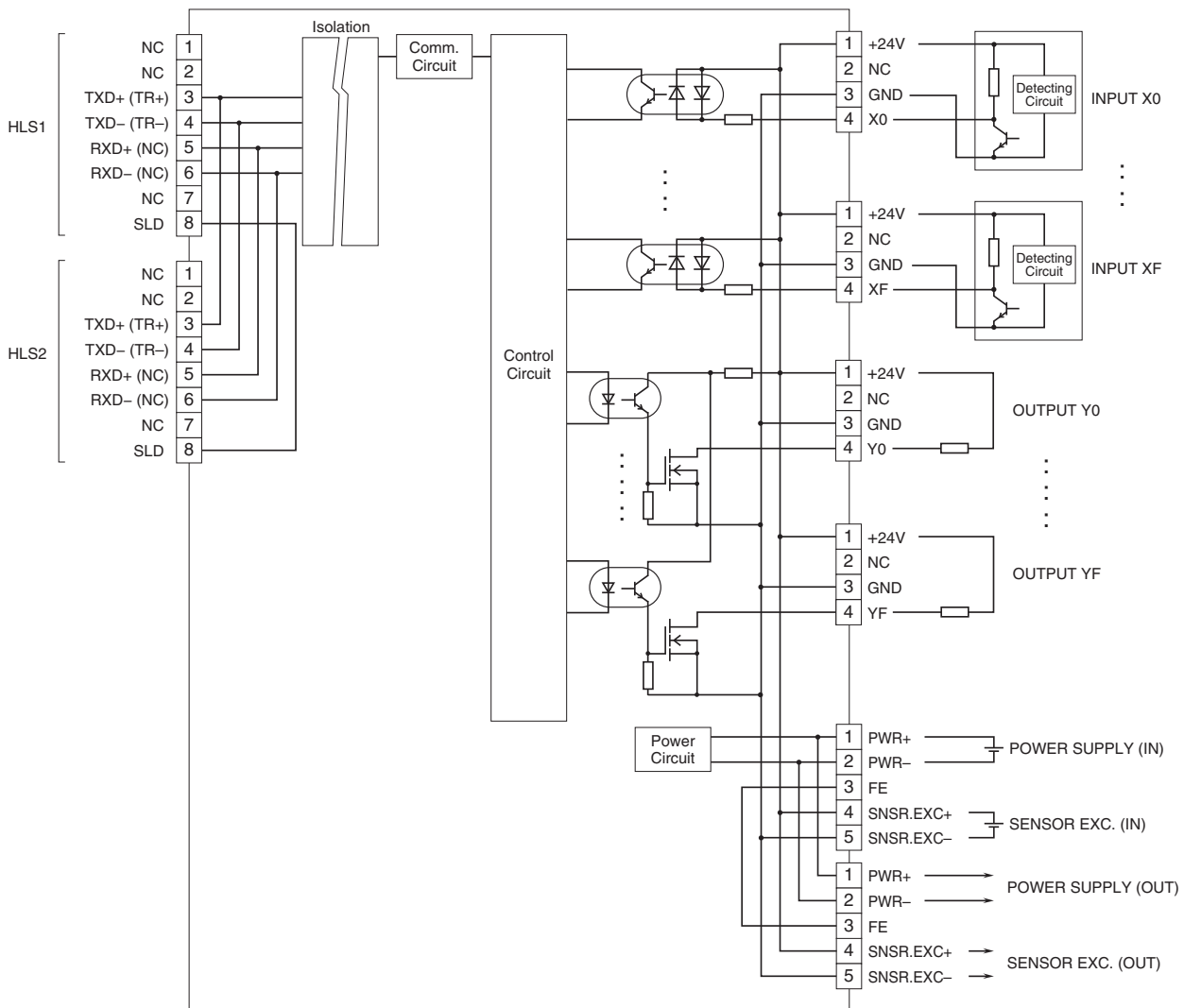
## MOUNTING REQUIREMENTS unit: mm [inch]



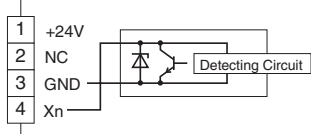
## SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

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.