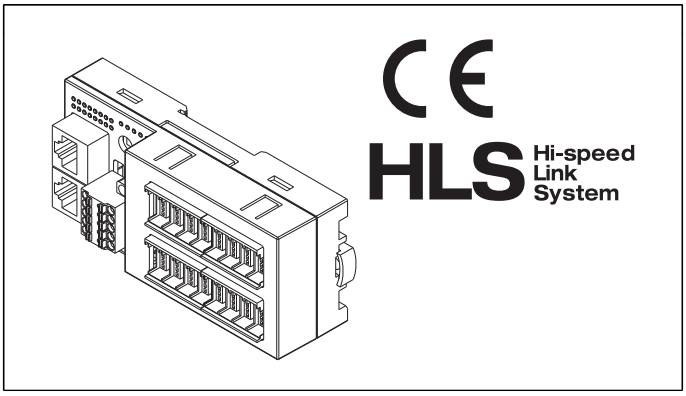
Remote I/O R7F4D Series

HI-SPEED LINK SYSTEM I/O MODULE



MODEL: R7F4DH-[1]-[2]-R[3]

ORDERING INFORMATION

• Code number: R7F4DH-[1]-[2]-R[3]
Specify a code from below for each [1] through [3].
(e.g. R7F4DH-1-DA16A-R/H/Q)
• Specify the specification for option code /Q
(e.g. /C01)

[1] TERMINAL BLOCK

1: Tension clamp terminal block for power supply
RJ-45 Modular jack for communication
e-CON connector for I/O
2: Tension clamp terminal block for power supply
RJ-45 Modular jack for communication
MIL connector 1 for I/O
3: Tension clamp terminal block for power supply
RJ-45 Modular jack for communication
MIL connector 2 for I/O
4: Tension clamp terminal block for power supply
RJ-45 Modular jack for communication
Tension clamp terminal block for I/O

[2] I/O TYPE

DA16A: NPN discrete input, 16 points
DA16B: PNP discrete input, 16 points
DC16A: NPN transistor output, 16 points
DC16B: PNP transistor output, 16 points
DAC16A: PNP discrete input &
NPN transistor output, 8 points each
DAC16B: NPN discrete input &
PNP transistor output, 8 points each
DAC16C: NPN discrete input &
NPN transistor output, 8 points each
DAC16D: PNP discrete input &
PNP transistor output, 8 points each
DAC32A: PNP discrete input &
NPN transistor output, 16 points each
(Only terminal block codes 2, 3 selectable)
DAC32B: NPN discrete input &
16 points PNP transistor output, 16 points each
(Only terminal block codes 2, 3 selectable)
DAC32C: NPN discrete input &
16 points NPN transistor output, 16 points each
(Only terminal block codes 2, 3 selectable)
DAC32D: PNP discrete input &
PNP transistor output, 16 points each
(Only terminal block codes 2, 3 selectable)

POWER INPUT

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

[3] 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

FUNCTIONS & FEATURES

The R7F4DH interfaces discrete I/O signals with a PLC via HLS.
(HLS is the abbreviation for “Hi-speed Link System” of Step Technica Co., Ltd.)

GENERAL SPECIFICATIONS

• Common Specifications
Power input: 24 V DC ±10 %; ripple 10 %p-p max.; rated current 8 A
Sensor excitation: 24 V DC ±10 %; ripple 5 %p-p max., ≤ 2 A (including discrete I/O load charge); rated current 8 A
Insulation resistance: ≥ 100 MΩ with 500 V DC
Dielectric strength: 1500 V AC @1 minute (between isolated circuits)
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: DIN rail or wall
Housing material: Flame-resistant resin (gray)
Status indicator: Power LED on with power supplied
Discrete I/O status indicator: Red LED on at contact on. (For R7F4DH-x-DAC32x, input or output display is selected with slide SW; factory setting: input display)
Communication Failure Detection: At communication error, the output status until normal data is received (Hold or OFF) can be set with the DIP SW. (only for output devices; factory setting: Hold)

■ **Current Consumption & Weight**

R7F4DH-x-DA16A: Approx. 25 mA/100 g (0.22 lb)
R7F4DH-x-DA16B: Approx. 25 mA/100 g (0.22 lb)
R7F4DH-x-DC16A: Approx. 50 mA/100 g (0.22 lb)
R7F4DH-x-DC16B: Approx. 50 mA/100 g (0.22 lb)
R7F4DH-x-DAC16A: Approx. 35 mA/100 g (0.22 lb)
R7F4DH-x-DAC16B: Approx. 35 mA/100 g (0.22 lb)
R7F4DH-x-DAC16C: Approx. 35 mA/100 g (0.22 lb)
R7F4DH-x-DAC16D: Approx. 35 mA/100 g (0.22 lb)
R7F4DH-x-DAC32A: Approx. 40 mA/120 g (0.27 lb)
R7F4DH-x-DAC32B: Approx. 40 mA/120 g (0.27 lb)
R7F4DH-x-DAC32C: Approx. 40 mA/120 g (0.27 lb)
R7F4DH-x-DAC32D: Approx. 40 mA/120 g (0.27 lb)
(Discrete I/O load charge is not included in the above-mentioned current consumption.)

HLS COMMUNICATION

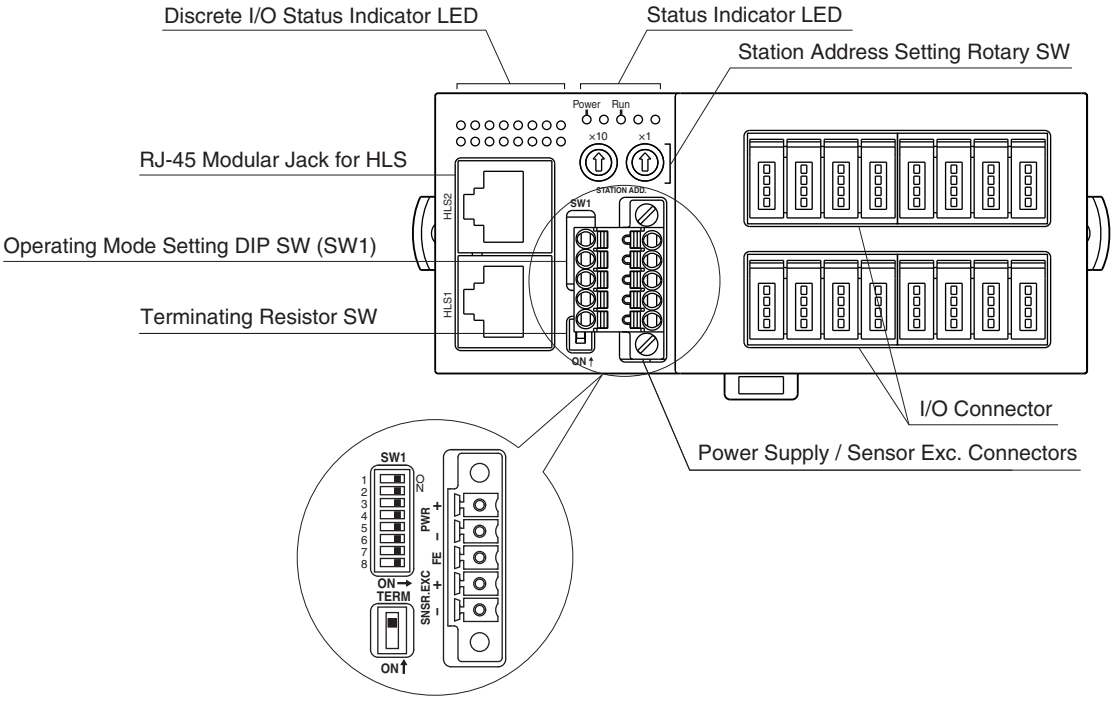
Communication mode: Full-duplex or half-duplex
Network cable
Full-duplex communication:
ZHY262PS and ZHT262PS (Shinko Seisen Industry Co., Ltd.)
Half-duplex communication:
ZHY221PS (Shinko Seisen Industry Co., Ltd.)
Dual-shield cable:
ZHY262PBA (Shinko Seisen Industry Co., Ltd.)
Transmission distance:
12 Mbps: 100 meters (328 ft)
6 Mbps: 200 meters (656 ft)
3 Mbps: 300 meters (984 ft)
(Baud rate 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

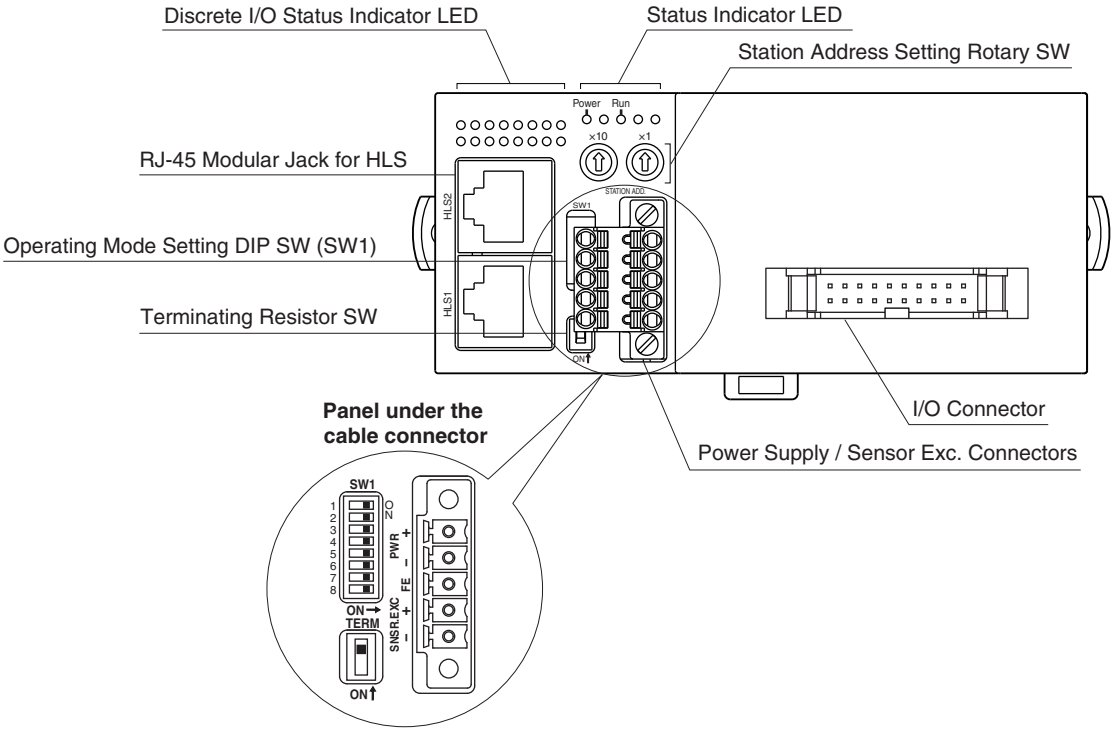
Refer to the manuals to comply with the standards.
EU conformity:
EMC Directive
EMI EN 61000-6-4
EMS EN 61000-6-2
RoHS Directive
EN 50581

EXTERNAL VIEW

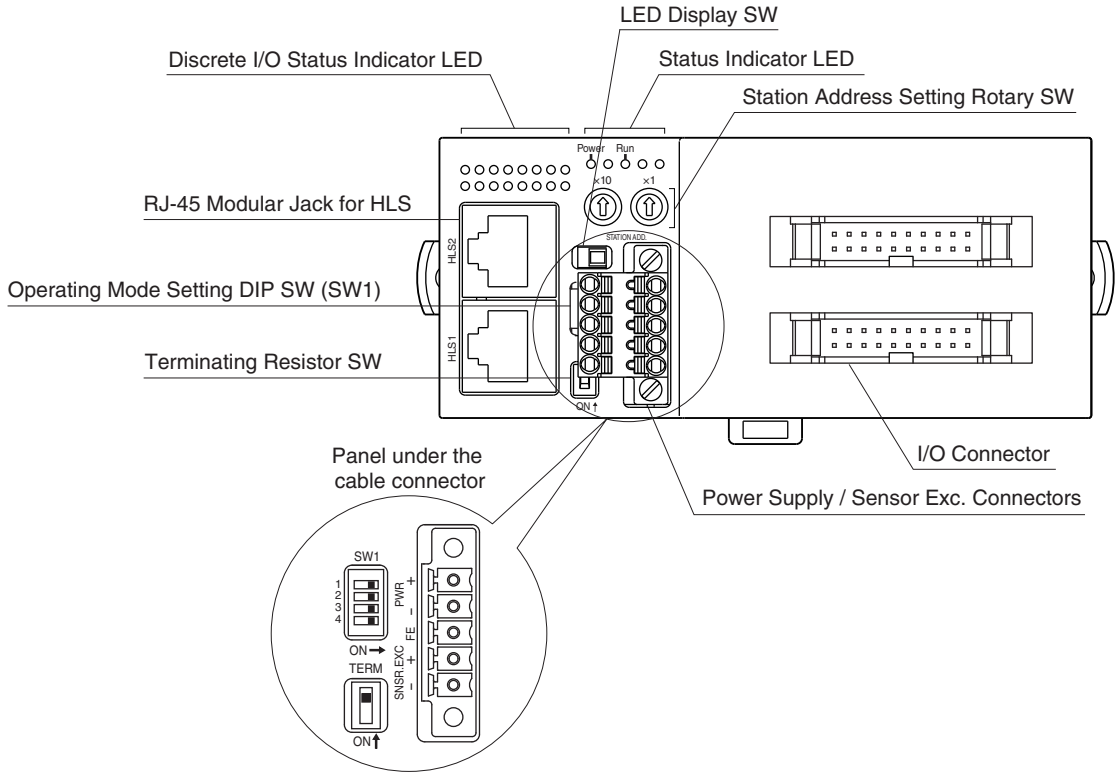
■ TERMINAL BLOCK CODE 1 (e-CON)



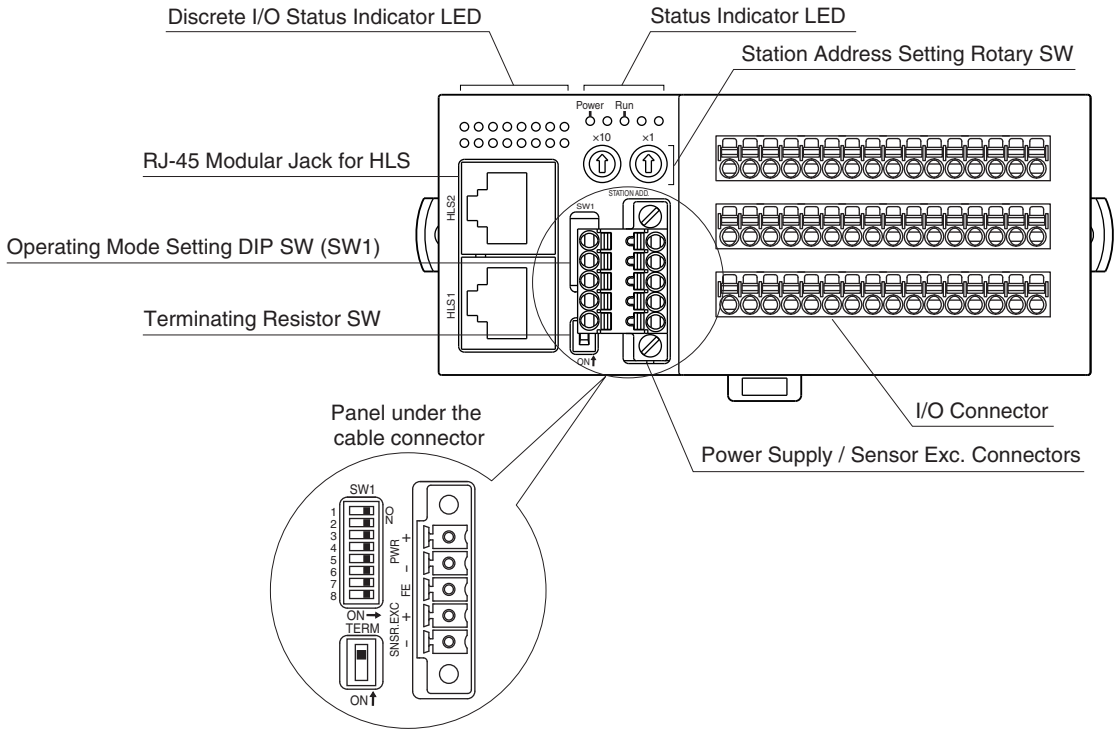
■ TERMINAL BLOCK CODE 2, 3 (MIL)



■ **TERMINAL BLOCK CODE 2,3 (MIL, 32 pin)**



■ **TERMINAL BLOCK CODE 4 (Tension Clamp)**



CONNECTION DIAGRAMS

■ I/O connection (Refer to each model 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.)

• MIL connector

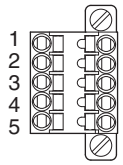
Recommended cable connector: XG4M-2030 (Omron)
(The cable connector is not included in the package.)

• Tension clamp terminal block

Cable connector: FMC1,5/16-ST-3,5 (Phoenix Contact)
(The cable connector is included in the package.)
Applicable wire size: 0.2 − 1.5 mm^2; stripped length 10 mm
Recommended solderless terminal
- AI0,25−10YE 0.25 mm^2 (Phoenix Contact)
- AI0,34−10TQ 0.34 mm^2 (Phoenix Contact)
- AI0,5−10WH 0.5 mm^2 (Phoenix Contact)
- AI0,75−10GY 0.75 mm^2 (Phoenix Contact)
- A1−10 1.0 mm^2 (Phoenix Contact)
- A1,5−10 1.5 mm^2 (Phoenix Contact)

■ **POWER SUPPLY**

Cable connector: TFMC1,5 / 5–STF–3,5
(Phoenix Contact) (included in the package)
Applicable wire size: 0.2 – 1.5 mm^2; stripped length 10 mm
Recommended solderless terminal
• AI0,25–10YE 0.25 mm^2 (Phoenix Contact)
• AI0,34–10TQ 0.34 mm^2 (Phoenix Contact)
• AI0,5–10WH 0.5 mm^2 (Phoenix Contact)
• AI0,75–10GY 0.75 mm^2 (Phoenix Contact)
• A1–10 1.0 mm^2 (Phoenix Contact)
• A1,5–10 1.5 mm^2 (Phoenix Contact)



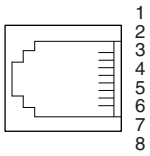
1. PWR+ Power Supply
2. PWR– Power Supply
3. FE Functional earth
4. SNSR.EXC+ Sensor excitation
5. SNSR.EXC– Sensor excitation

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.

■ **NETWORK**

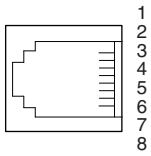
Recommended cable connector: TM21P–88P (Hirose Electric)
(not included in the package)

• 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

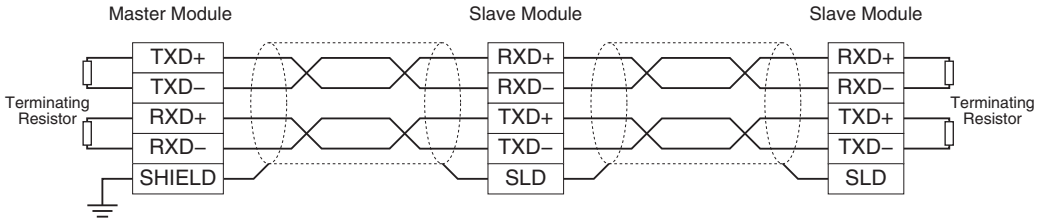
• Half-duplex communication



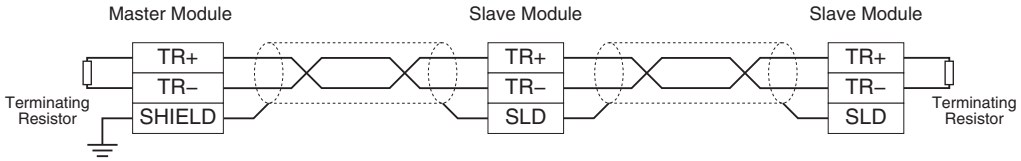
1.	NC	Unused
2.	NC	Unused
3.	TR+	Network (+)
4.	TR–	Network (–)
5.	NC	Unused
6.	NC	Unused
7.	NC	Unused
8.	SLD	Shield

■ **MASTER CONNECTION**

• Full-duplex communication



• Half-duplex communication

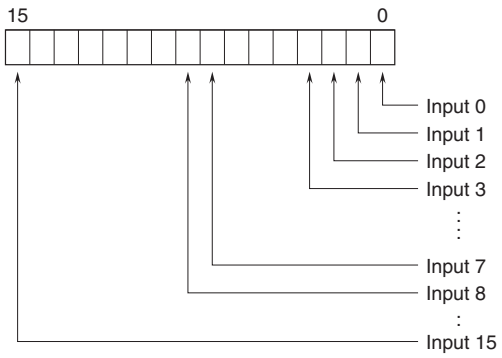


Note: Be sure to turn ON the switch of the terminating resistor located at both ends of the modules.

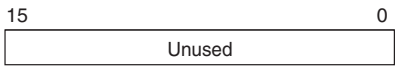
I/O DATA DESCRIPTIONS

■ **DISCRETE INPUT**

• **Di**

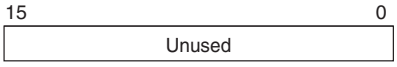


• **Do**

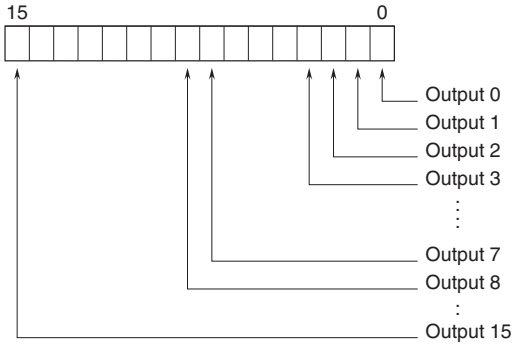


■ **DISCRETE OUTPUT**

• **Di**

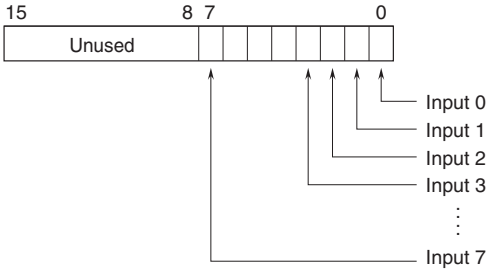


• **Do**

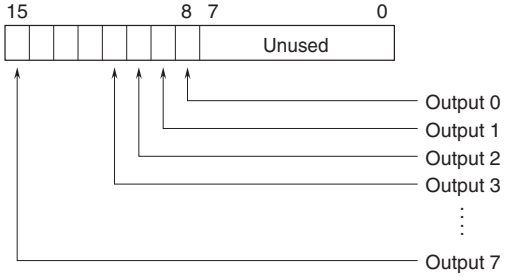


■ **DISCRETE I/O (16 points)**

• **Di**

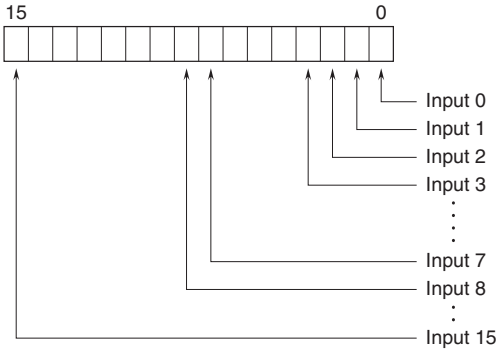


• **Do**

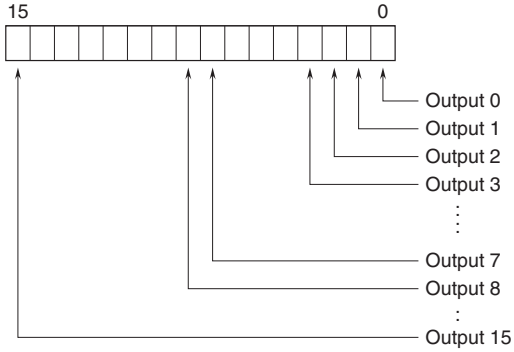


■ **DISCRETE I/O (32 points)**

• **Di**



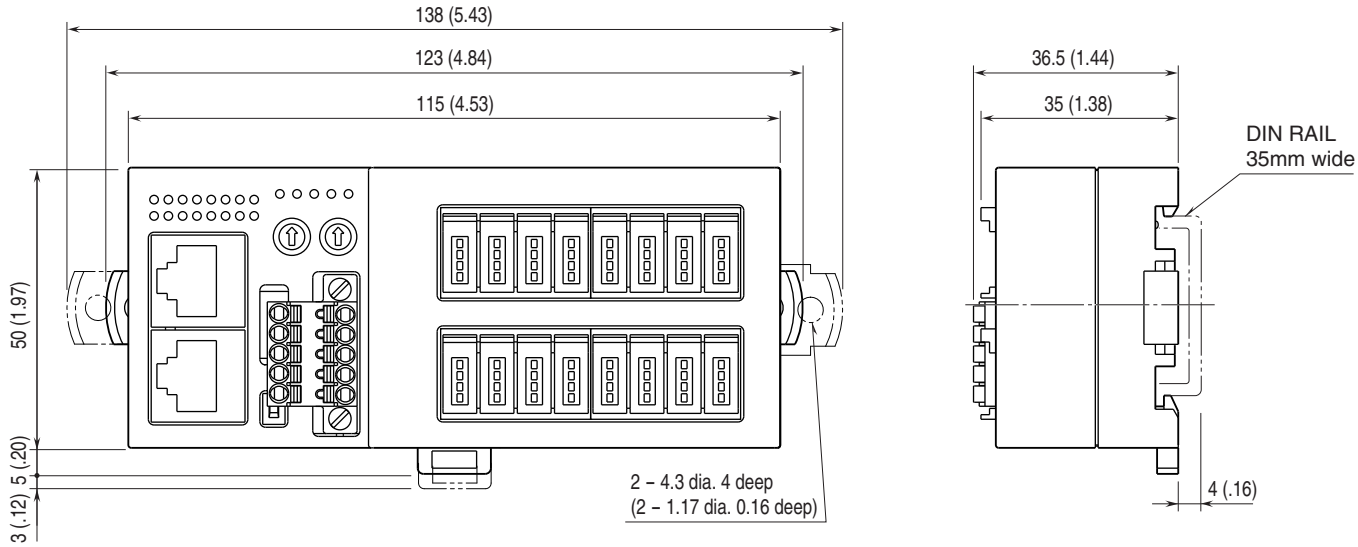
• **Do**



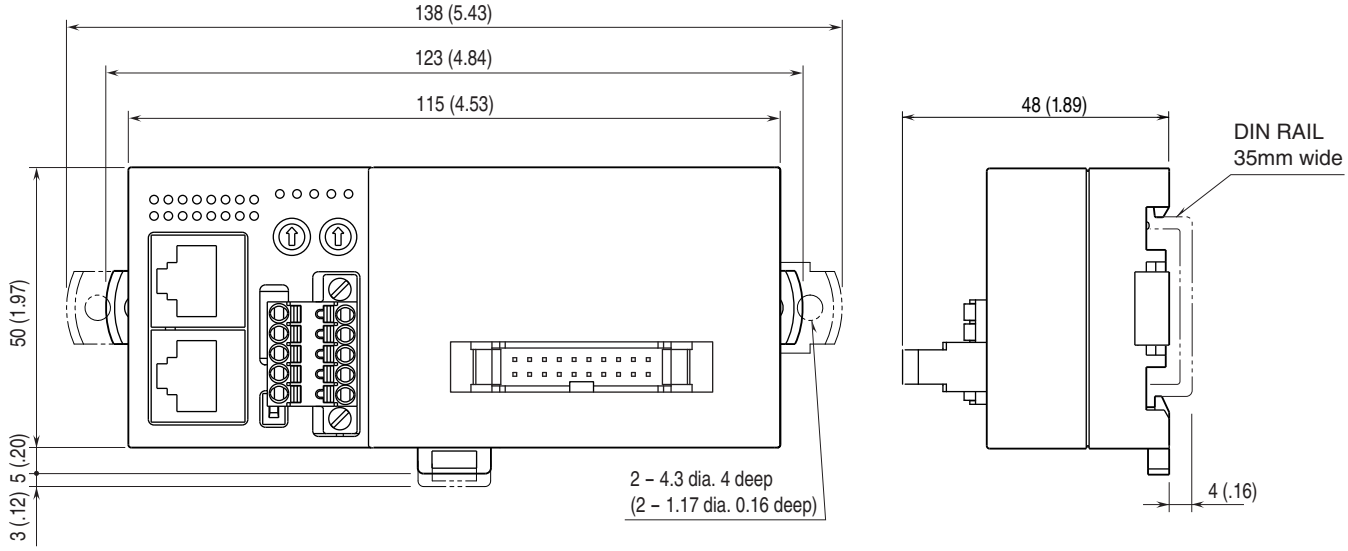
0: OFF
1: ON

EXTERNAL DIMENSIONS unit: mm (inch)

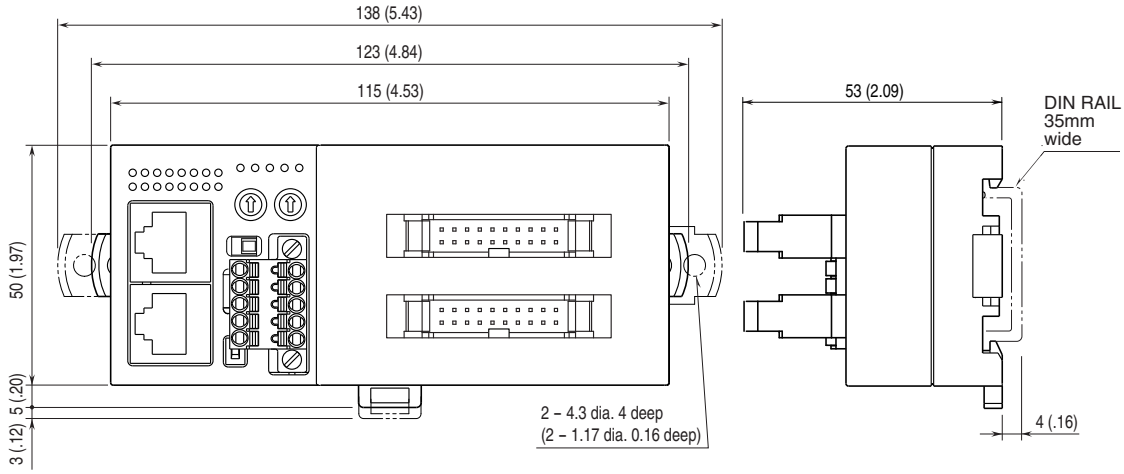
■ TERMINAL BLOCK CODE 1 (e-CON)



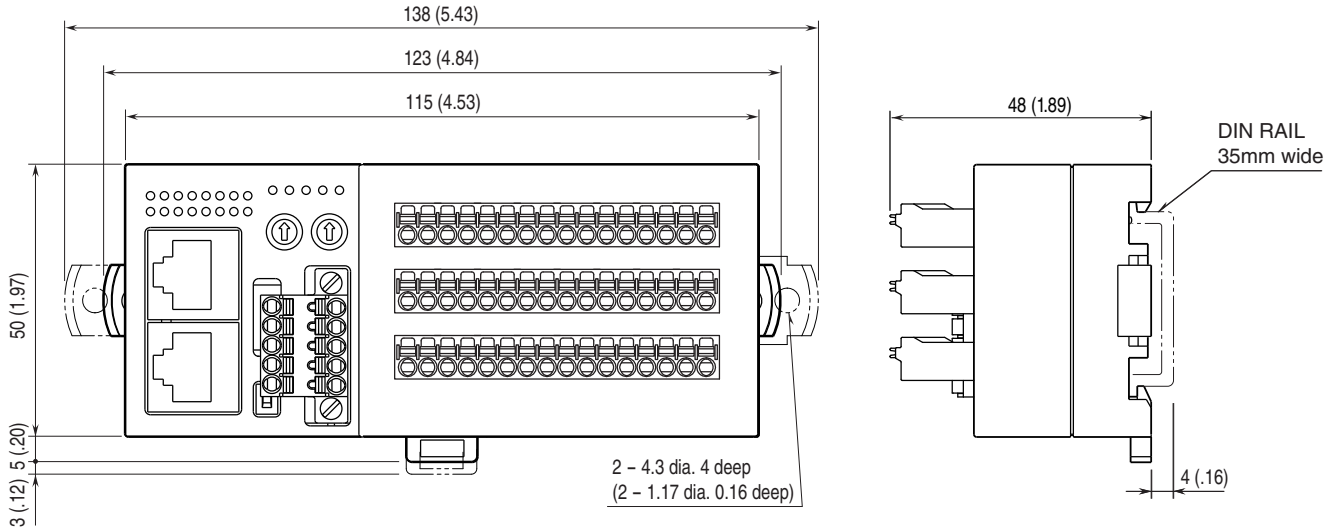
■ TERMINAL BLOCK CODE 2, 3 (MIL)



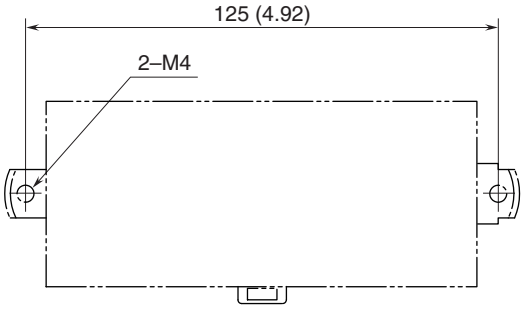
■ TERMINAL BLOCK CODE 2, 3 (MIL, 32 pin)



■ **TERMINAL BLOCK CODE 4 (Tension Clamp)**



MOUNTING REQUIREMENTS unit: mm (inch)



NPN DISCRETE INPUT MODULE, 16 points

(e-CON connector)

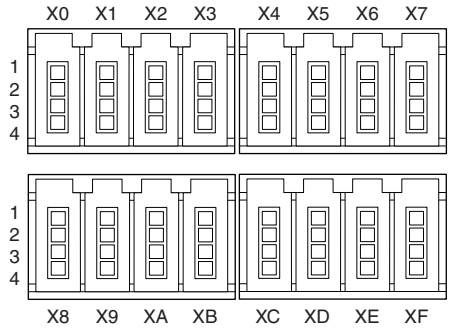
MODEL: R7F4DH-1-DA16A

SPECIFICATIONS

Common: Positive common (NPN) per 16 points
Number of I/O: Input, 16 points
Maximum inputs applicable at once: No limit (at 24 V DC)
Input status indicator: LED turns ON with contact ON
Isolation: Input or sensor excitation to HLS to power input to FE
Data allocation: 1
Rated input voltage: 24 V DC ±10 %; ripple 5 %p-p max.
ON voltage / current: ≥ 15 V DC (X0 through XF to +24 V) / ≥ 3.5 mA
OFF voltage / current: ≤ 5 V DC (X0 through XF to +24 V) / ≤ 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.

TERMINAL ASSIGNMENTS

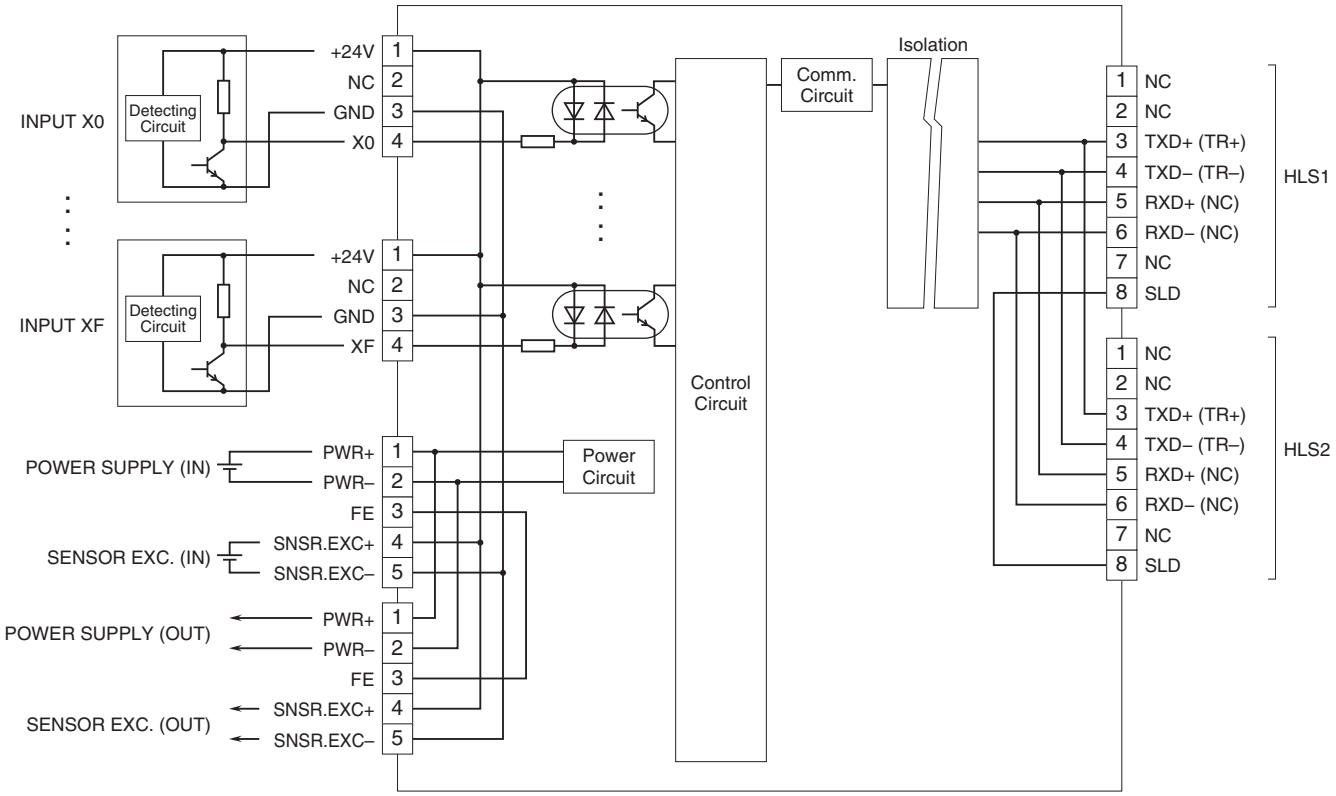
■ Input Terminal



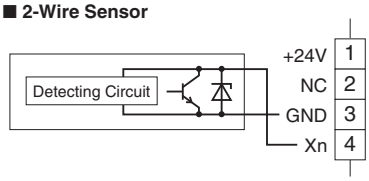
PIN No.		ID	FUNCTION	PIN No.		ID	FUNCTION
X0	1	+24V	24V DC	X8	1	+24V	24V DC
	2	NC	Unused		2	NC	Unused
	3	GND	0V		3	GND	0V
	4	X0	Input 0		4	X8	Input 8
X1	1	+24V	24V DC	X9	1	+24V	24V DC
	2	NC	Unused		2	NC	Unused
	3	GND	0V		3	GND	0V
	4	X1	Input 1		4	X9	Input 9
X2	1	+24V	24V DC	XA	1	+24V	24V DC
	2	NC	Unused		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

SCHEMATIC CIRCUITRY

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**



PNP DISCRETE INPUT MODULE, 16 points

(e-CON connector)

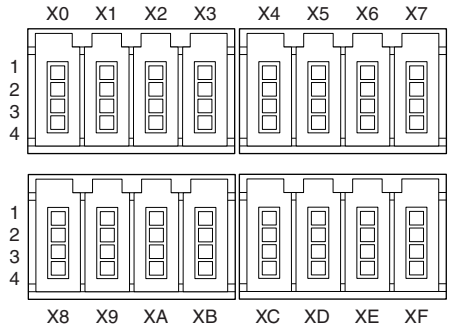
MODEL: R7F4DH-1-DA16B

SPECIFICATIONS

Common: Negative common (PNP) per 16 points
Number of I/O: Input, 16 points
Maximum inputs applicable at once: No limit (at 24 V DC)
Input status indicator: LED turns ON with contact ON
Isolation: Input or sensor excitation to HLS to power input to FE
Data allocation: 1
Rated input voltage: 24 V DC ±10 %; ripple 5 %p-p max.
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 kΩ
ON delay: ≤ 0.5 msec.
OFF delay: ≤ 0.5 msec.

TERMINAL ASSIGNMENTS

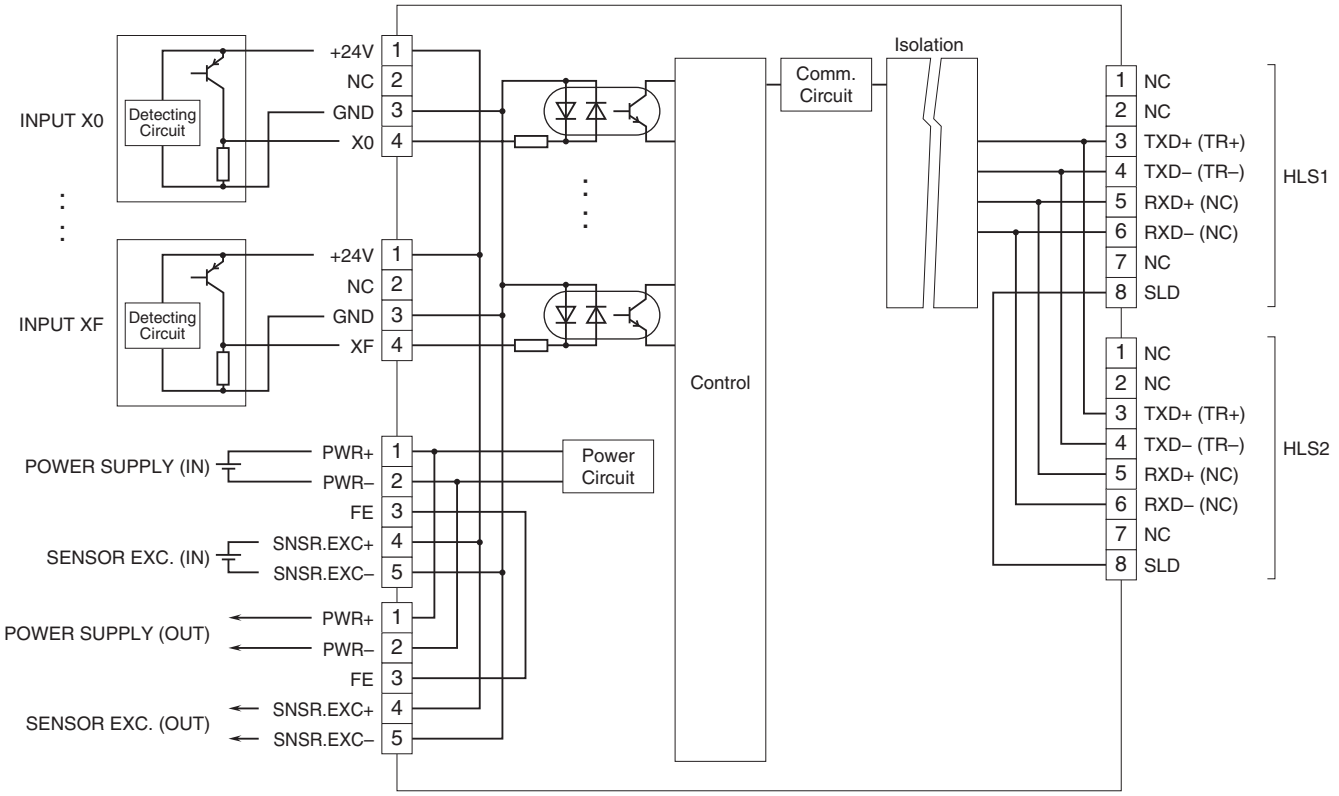
■ Input Terminal



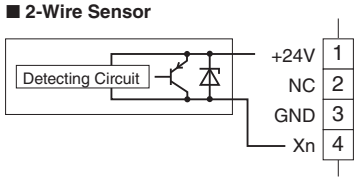
PIN No.		ID	FUNCTION	PIN No.		ID	FUNCTION
X0	1	+24V	24V DC	X8	1	+24V	24V DC
	2	NC	Unused		2	NC	Unused
	3	GND	0V		3	GND	0V
	4	X0	Input 0		4	X8	Input 8
X1	1	+24V	24V DC	X9	1	+24V	24V DC
	2	NC	Unused		2	NC	Unused
	3	GND	0V		3	GND	0V
	4	X1	Input 1		4	X9	Input 9
X2	1	+24V	24V DC	XA	1	+24V	24V DC
	2	NC	Unused		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

SCHEMATIC CIRCUITRY

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**



NPN TRANSISTOR OUTPUT MODULE, 16 points
(e-CON connector)

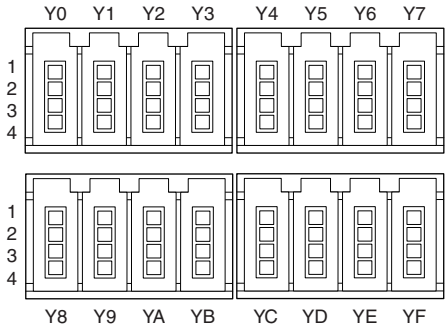
MODEL: R7F4DH-1-DC16A

SPECIFICATIONS

Common: Negative common (NPN) per 16 points
Number of I/O: Output, 16 points
Maximum outputs applicable at once: No limit (at 24 V DC)
Output status indicator: LED turns ON with contact ON
Isolation: Output or sensor excitation to HLS to power input to FE
Data allocation: 1
Rated load voltage: 24 V DC ±10 % (ripple 5 %p-p max.)
Rated output current: 0.1 A per point, 1.6 A per common
Residual voltage: ≤ 1.2 V
Leakage current: ≤ 0.1 mA
ON delay: ≤ 0.2 msec.
OFF delay: ≤ 0.5 msec.
Overload current protection function: Limits the current value when overcurrent is detected
Overheat Protection Function:
Turns OFF the output when overheat is detected
(When driving an inductive load, connect a diode in parallel with the load.)

TERMINAL ASSIGNMENTS

■ Output Terminal

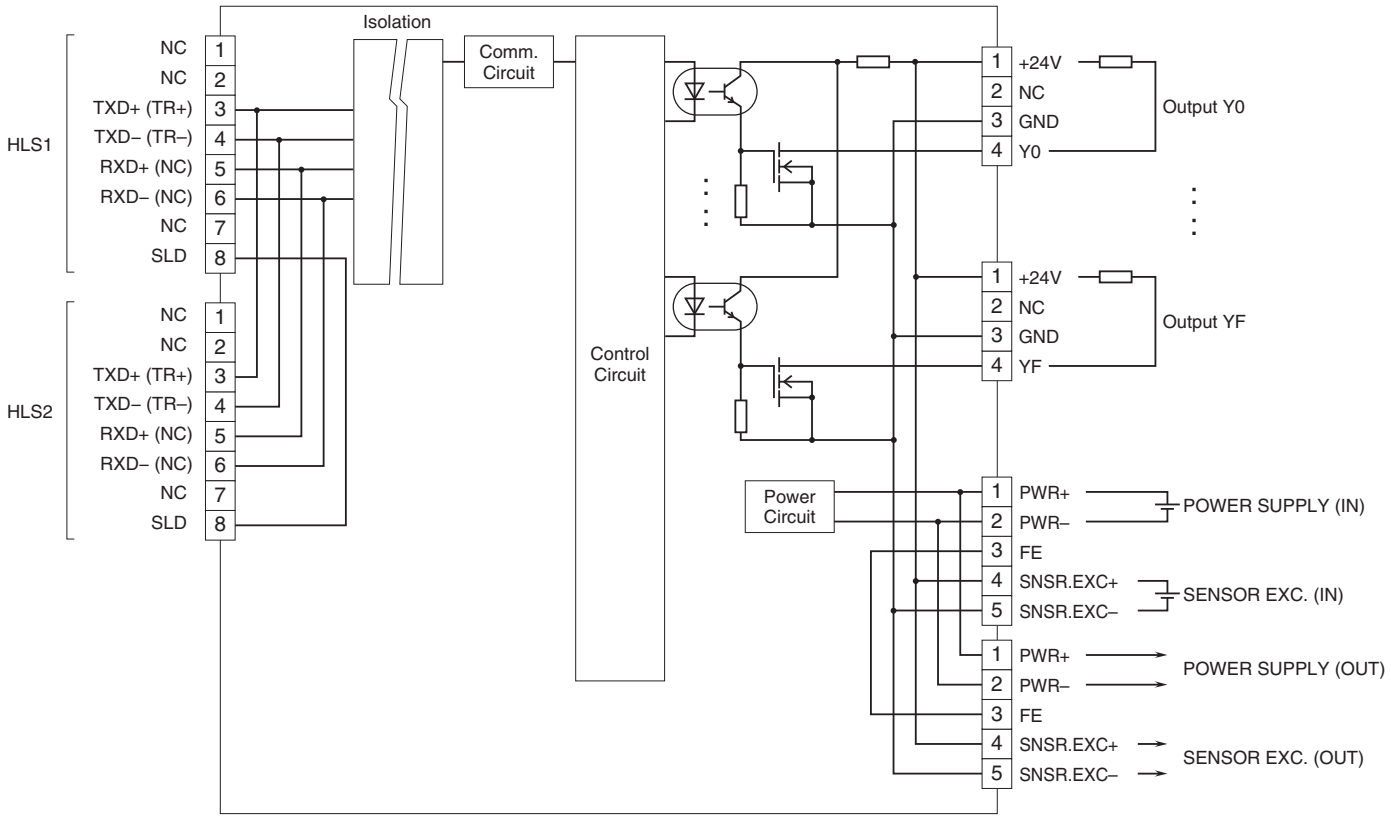


PIN No.		ID	FUNCTION	PIN No.		ID	FUNCTION
Y0	1	+24V	24V DC	Y8	1	+24V	24V DC
	2	NC	Unused		2	NC	Unused
	3	GND	0V		3	GND	0V
	4	Y0	Output 0		4	Y8	Output 8
Y1	1	+24V	24V DC	Y9	1	+24V	24V DC
	2	NC	Unused		2	NC	Unused
	3	GND	0V		3	GND	0V
	4	Y1	Output 1		4	Y9	Output 9
Y2	1	+24V	24V DC	YA	1	+24V	24V DC
	2	NC	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

SCHEMATIC CIRCUITRY

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

Caution: FE terminal is NOT a protective conductor terminal.



PNP TRANSISTOR OUTPUT MODULE, 16 points
(e-CON connector)

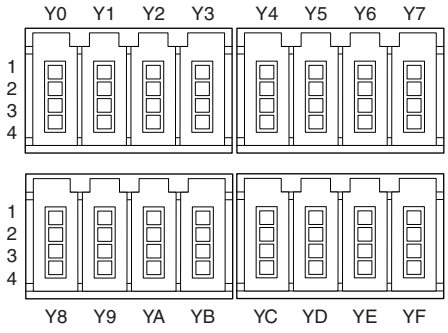
MODEL: R7F4DH-1-DC16B

SPECIFICATIONS

Common: Positive common (PNP) per 16 points
Number of I/O: Output, 16 points
Maximum outputs applicable at once: No limit (at 24 V DC)
Output status indicator: LED turns ON with contact ON
Isolation: Output or sensor excitation to HLS to power input to FE
Data allocation: 1
Rated load voltage: 24 V DC ±10 % (ripple 5 %p-p max.)
Rated output current: 0.1 A per point, 1.6 A per common
Residual voltage: ≤ 1.2 V
Leakage current: ≤ 0.1 mA
ON delay: ≤ 0.2 msec.
OFF delay: ≤ 0.5 msec.
Overload current protection function: Limits the current value when overcurrent is detected
Overheat Protection Function:
Turns OFF the output when overheat is detected
(When driving an inductive load, connect a diode in parallel with the load.)

TERMINAL ASSIGNMENTS

■ Output Terminal

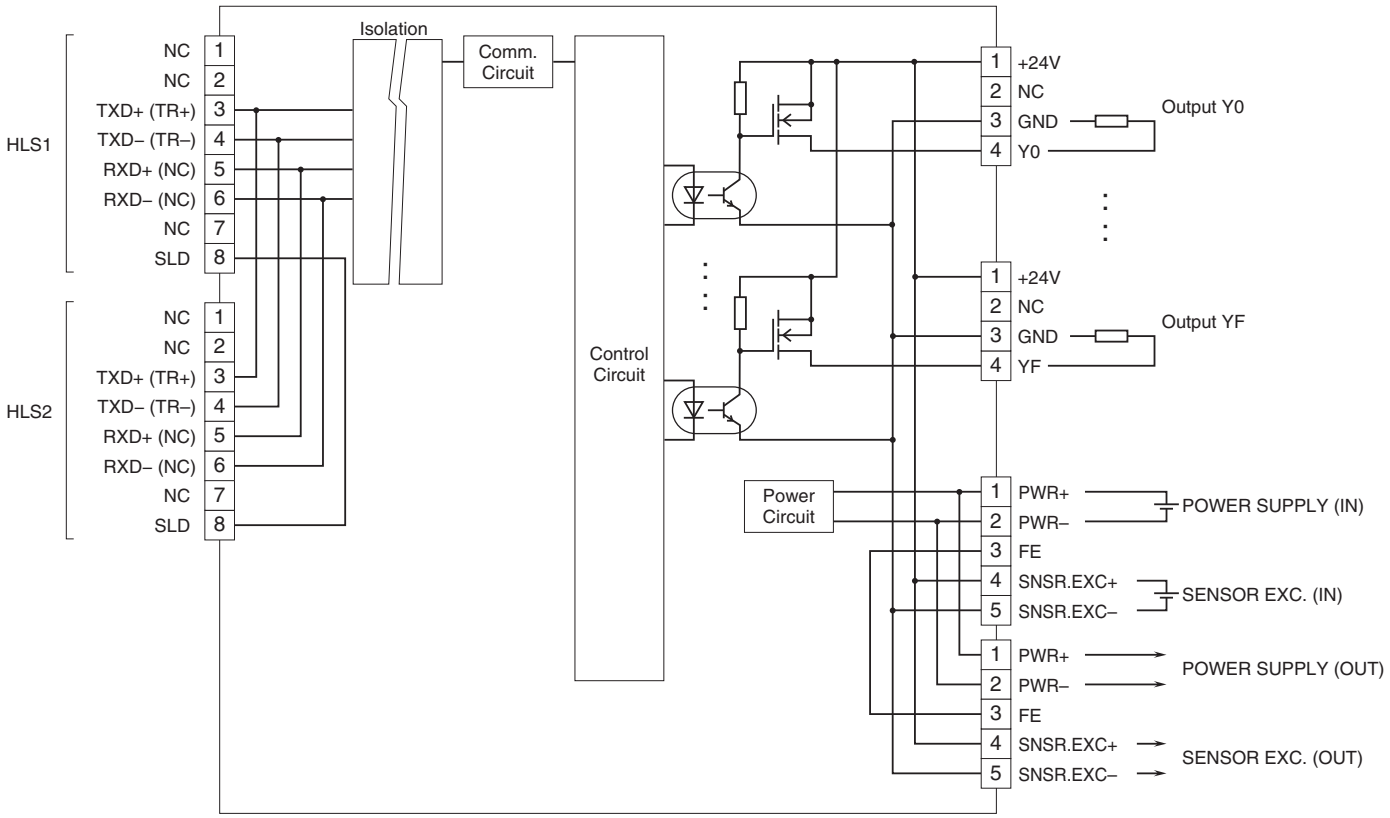


PIN No.		ID	FUNCTION	PIN No.		ID	FUNCTION
Y0	1	+24V	24V DC	Y8	1	+24V	24V DC
	2	NC	Unused		2	NC	Unused
	3	GND	0V		3	GND	0V
	4	Y0	Output 0		4	Y8	Output 8
Y1	1	+24V	24V DC	Y9	1	+24V	24V DC
	2	NC	Unused		2	NC	Unused
	3	GND	0V		3	GND	0V
	4	Y1	Output 1		4	Y9	Output 9
Y2	1	+24V	24V DC	YA	1	+24V	24V DC
	2	NC	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

SCHEMATIC CIRCUITRY

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

Caution: FE terminal is NOT a protective conductor terminal.



PNP DISCRETE INPUT &

NPN TRANSISTOR OUTPUT MODULE, 8 points each
(e-CON connector)

MODEL: R7F4DH-1-DAC16A

SPECIFICATIONS

■ COMMON SPECIFICATIONS

Common: Negative common per 16 points
Input rating/load voltage: 24 V DC ±10 %, ripple 5 %p-p max.
Number of I/O: Input, 8 points; Output, 8 points
Maximum I/O applicable at once: No limit (at 24 V DC)
I/O status indicator: LED turns ON with contact ON
Isolation: I/O or sensor excitation to HLS to power input to FE
Data allocation: 1

■ INPUT

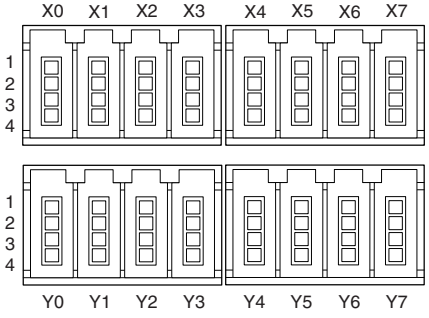
ON voltage / current: ≥ 15 V DC (I/O's X0 through X7 to GND) / ≥ 3.5 mA
OFF voltage / current: ≤ 5 V DC (I/O's X0 through X7 to GND) / ≤ 1 mA
Input current: ≤ 5.5 mA per point at 24 V DC
Input resistance: Approx. 4.4 kΩ
ON delay: ≤ 0.5 msec.
OFF delay: ≤ 0.5 msec.

■ OUTPUT

Rated output current: 0.1 A per point, 0.8 A per common
Residual voltage: ≤ 1.2 V
Leakage current: ≤ 0.1 mA
ON delay: ≤ 0.2 msec.
OFF delay: ≤ 0.5 msec.
Overload current protection function: Limits the current value when overcurrent is detected
Overheat Protection Function:
Turns OFF the output when overheat is detected
(When driving an inductive load, connect a diode in parallel with the load.)

TERMINAL ASSIGNMENTS

■ I/O Terminal

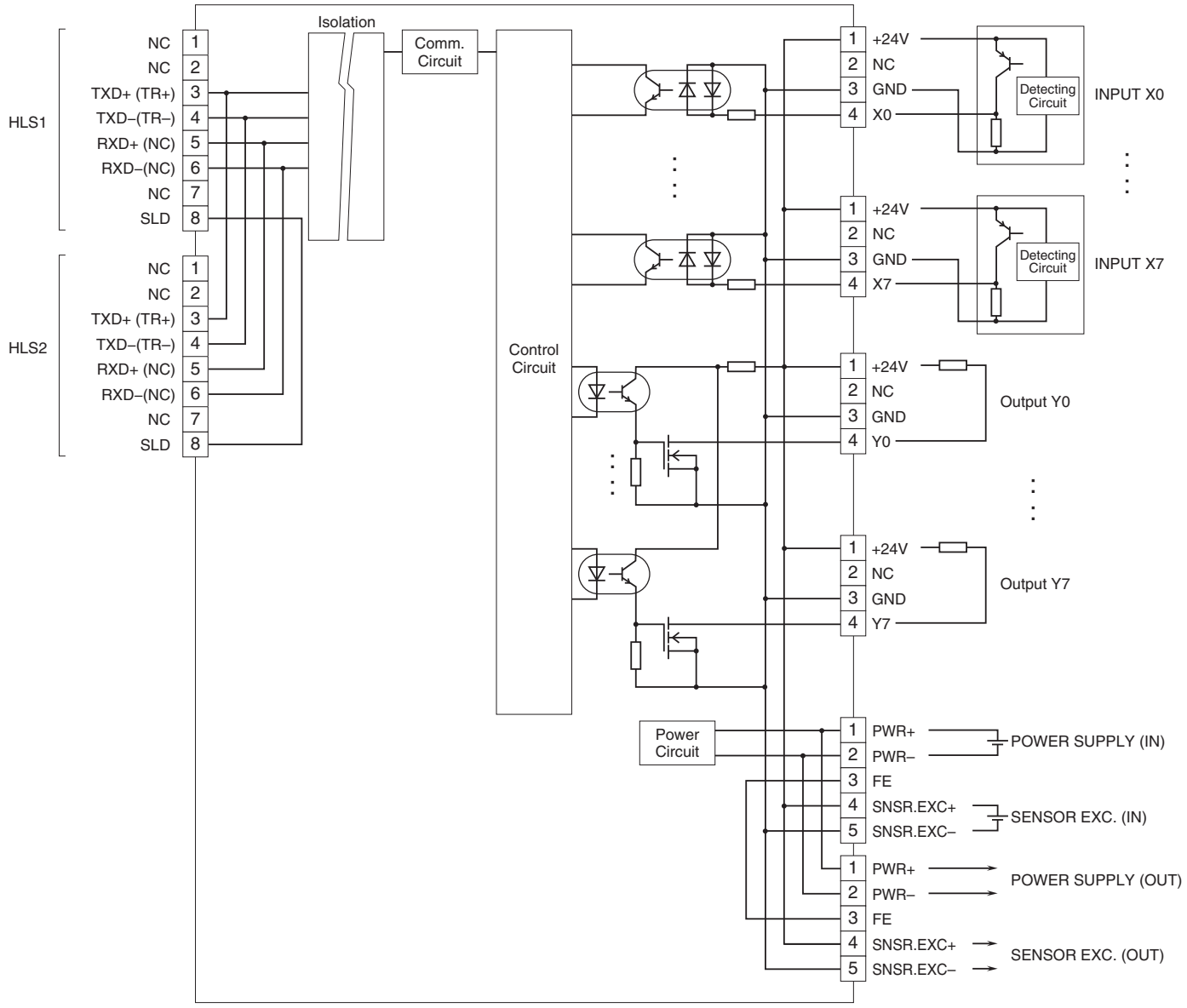


PIN No.		ID	FUNCTION	PIN No.		ID	FUNCTION
X0	1	+24V	24V DC	Y0	1	+24V	24V DC
	2	NC	Unused		2	NC	Unused
	3	GND	0V		3	GND	0V
	4	X0	Input 0		4	Y0	Output 0
X1	1	+24V	24V DC	Y1	1	+24V	24V DC
	2	NC	Unused		2	NC	Unused
	3	GND	0V		3	GND	0V
	4	X1	Input 1		4	Y1	Output 1
X2	1	+24V	24V DC	Y2	1	+24V	24V DC
	2	NC	Unused		2	NC	Unused
	3	GND	0V		3	GND	0V
	4	X2	Input 2		4	Y2	Output 2
X3	1	+24V	24V DC	Y3	1	+24V	24V DC
	2	NC	Unused		2	NC	Unused
	3	GND	0V		3	GND	0V
	4	X3	Input 3		4	Y3	Output 3
X4	1	+24V	24V DC	Y4	1	+24V	24V DC
	2	NC	Unused		2	NC	Unused
	3	GND	0V		3	GND	0V
	4	X4	Input 4		4	Y4	Output 4
X5	1	+24V	24V DC	Y5	1	+24V	24V DC
	2	NC	Unused		2	NC	Unused
	3	GND	0V		3	GND	0V
	4	X5	Input 5		4	Y5	Output 5
X6	1	+24V	24V DC	Y6	1	+24V	24V DC
	2	NC	Unused		2	NC	Unused
	3	GND	0V		3	GND	0V
	4	X6	Input 6		4	Y6	Output 6
X7	1	+24V	24V DC	Y7	1	+24V	24V DC
	2	NC	Unused		2	NC	Unused
	3	GND	0V		3	GND	0V
	4	X7	Input 7		4	Y7	Output 7

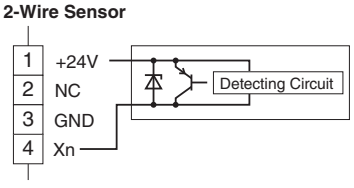
SCHEMATIC CIRCUITRY

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**



NPN DISCRETE INPUT &
PNP TRANSISTOR OUTPUT MODULE, 8 points each
(e-CON connector)

MODEL: R7F4DH-1-DAC16B

SPECIFICATIONS

■ COMMON SPECIFICATIONS

Common: Positive common per 16 points
Input rating/load voltage: 24 V DC ±10 %, ripple 5 %p-p max.
Number of I/O: Input, 8 points; Output, 8 points
Maximum I/O applicable at once: No limit (at 24 V DC)
I/O status indicator: LED turns ON with contact ON
Isolation: I/O or sensor excitation to HLS to power input to FE
Data allocation: 1

■ INPUT

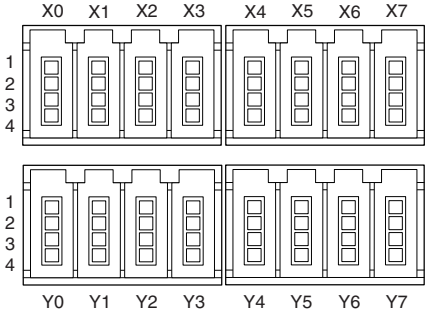
ON voltage / current: ≥ 15 V DC (I/O's X0 through X7 to +24 V) / ≥ 3.5 mA
OFF voltage / current: ≤ 5 V DC (I/O's X0 through X7 to +24 V) / ≤ 1 mA
Input current: ≤ 5.5 mA per point at 24 V DC
Input resistance: Approx. 4.4 kΩ
ON delay: ≤ 0.5 msec.
OFF delay: ≤ 0.5 msec.

■ OUTPUT

Rated output current: 0.1 A per point, 0.8 A per common
Residual voltage: ≤ 1.2 V
Leakage current: ≤ 0.1 mA
ON delay: ≤ 0.2 msec.
OFF delay: ≤ 0.5 msec.
Overload current protection function: Limits the current value when overcurrent is detected
Overheat Protection Function:
Turns OFF the output when overheat is detected
(When driving an inductive load, connect a diode in parallel with the load.)

TERMINAL ASSIGNMENTS

■ I/O Terminal

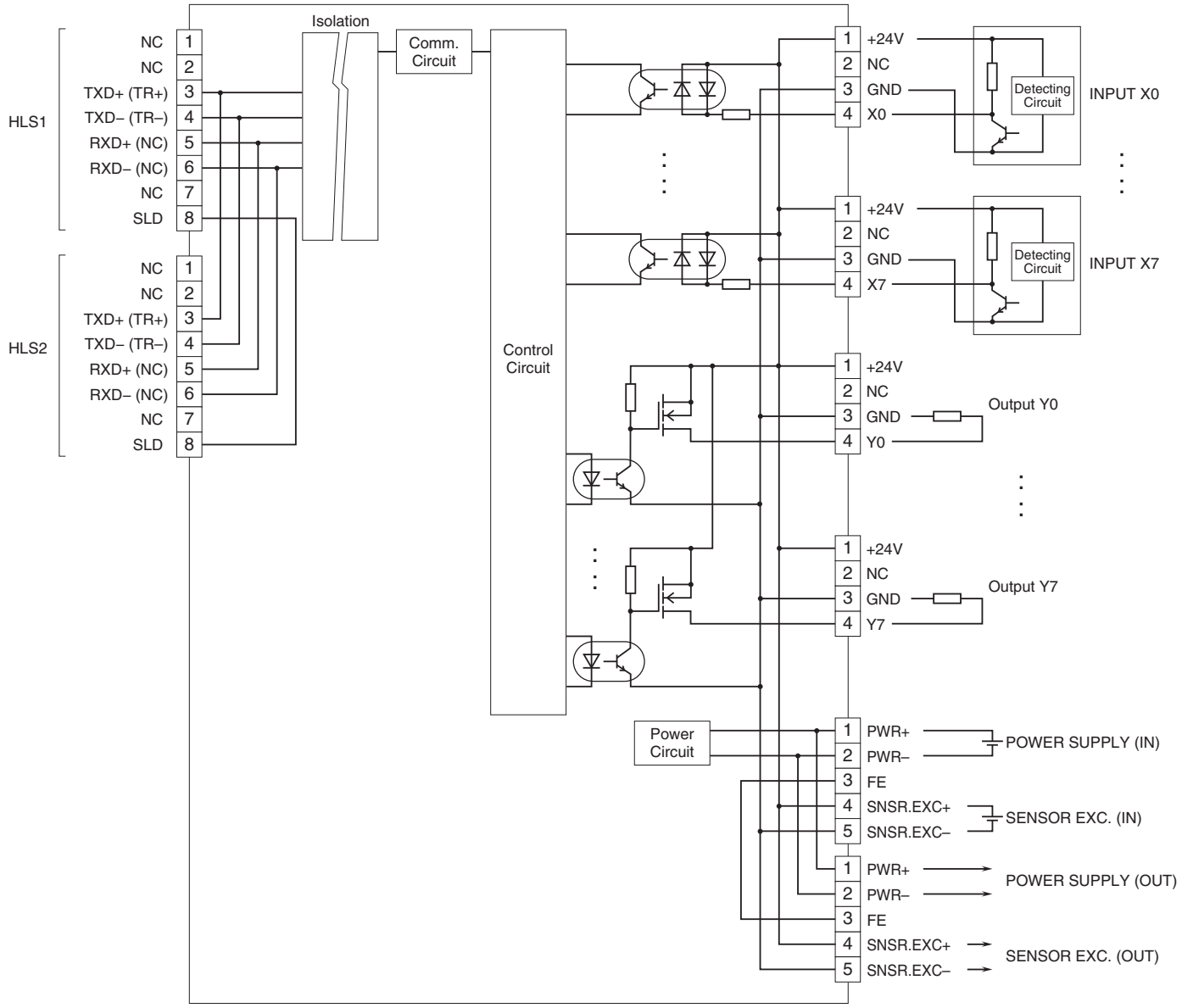


PIN No.		ID	FUNCTION	PIN No.		ID	FUNCTION
X0	1	+24V	24V DC	Y0	1	+24V	24V DC
	2	NC	Unused		2	NC	Unused
	3	GND	0V		3	GND	0V
	4	X0	Input 0		4	Y0	Output 0
X1	1	+24V	24V DC	Y1	1	+24V	24V DC
	2	NC	Unused		2	NC	Unused
	3	GND	0V		3	GND	0V
	4	X1	Input 1		4	Y1	Output 1
X2	1	+24V	24V DC	Y2	1	+24V	24V DC
	2	NC	Unused		2	NC	Unused
	3	GND	0V		3	GND	0V
	4	X2	Input 2		4	Y2	Output 2
X3	1	+24V	24V DC	Y3	1	+24V	24V DC
	2	NC	Unused		2	NC	Unused
	3	GND	0V		3	GND	0V
	4	X3	Input 3		4	Y3	Output 3
X4	1	+24V	24V DC	Y4	1	+24V	24V DC
	2	NC	Unused		2	NC	Unused
	3	GND	0V		3	GND	0V
	4	X4	Input 4		4	Y4	Output 4
X5	1	+24V	24V DC	Y5	1	+24V	24V DC
	2	NC	Unused		2	NC	Unused
	3	GND	0V		3	GND	0V
	4	X5	Input 5		4	Y5	Output 5
X6	1	+24V	24V DC	Y6	1	+24V	24V DC
	2	NC	Unused		2	NC	Unused
	3	GND	0V		3	GND	0V
	4	X6	Input 6		4	Y6	Output 6
X7	1	+24V	24V DC	Y7	1	+24V	24V DC
	2	NC	Unused		2	NC	Unused
	3	GND	0V		3	GND	0V
	4	X7	Input 7		4	Y7	Output 7

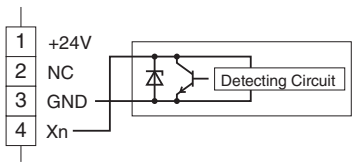
SCHEMATIC CIRCUITRY

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**



NPN DISCRETE INPUT &

NPN TRANSISTOR OUTPUT MODULE, 8 points each
(e-CON connector)

MODEL: R7F4DH-1-DAC16C

SPECIFICATIONS

■ COMMON SPECIFICATIONS

Input common: Positive common per 8 points
Output common: Negative common per 8 points
Input rating/load voltage: 24 V DC ±10 %, ripple 5 %p-p max.
Number of I/O: Input, 8 points; Output, 8 points
Maximum I/O applicable at once: No limit (at 24 V DC)
I/O status indicator: LED turns ON with contact ON
Isolation: I/O or sensor excitation to HLS to power input to FE
Data allocation: 1

■ INPUT

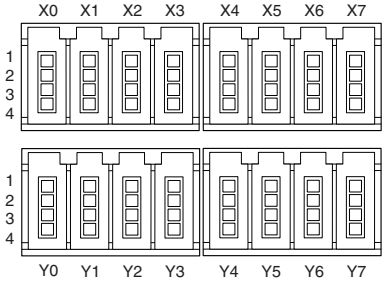
ON voltage / current: ≥ 15 V DC (I/O's X0 through X7 to +24 V) / ≥ 3.5 mA
OFF voltage / current: ≤ 5 V DC (I/O's X0 through X7 to +24 V) / ≤ 1 mA
Input current: ≤ 5.5 mA per point at 24 V DC
Input resistance: Approx. 4.4 kΩ
ON delay: ≤ 0.5 msec.
OFF delay: ≤ 0.5 msec.

■ OUTPUT

Rated output current: 0.1 A per point, 0.8 A per common
Residual voltage: ≤ 1.2 V
Leakage current: ≤ 0.1 mA
ON delay: ≤ 0.2 msec.
OFF delay: ≤ 0.5 msec.
Overload current protection function: Limits the current value when overcurrent is detected
Overheat Protection Function:
Turns OFF the output when overheat is detected
(When driving an inductive load, connect a diode in parallel with the load.)

TERMINAL ASSIGNMENTS

■ I/O Terminal

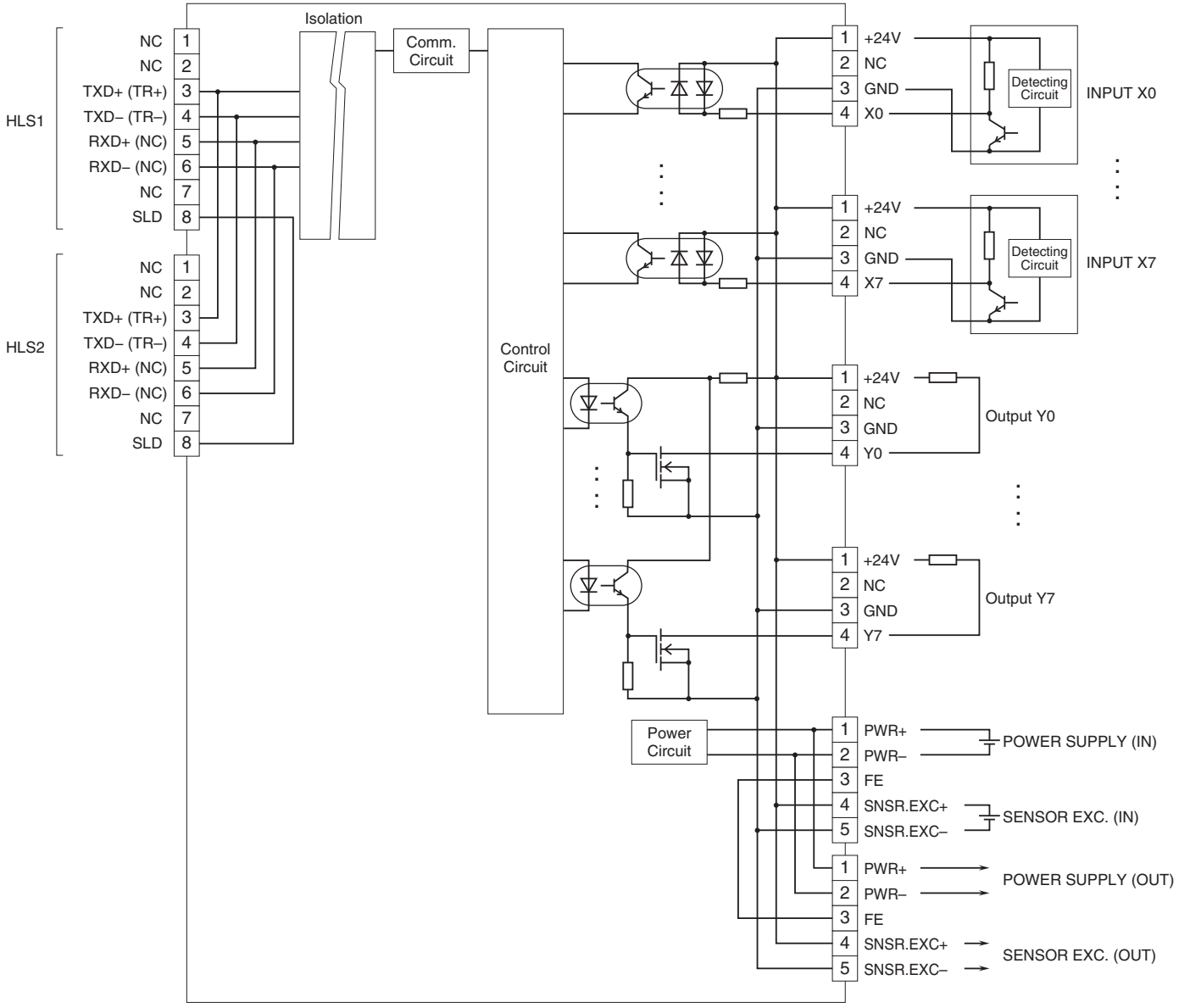


PIN No.		ID	FUNCTION	PIN No.		ID	FUNCTION
X0	1	+24V	24V DC	Y0	1	+24V	24V DC
	2	NC	Unused		2	NC	Unused
	3	GND	0V		3	GND	0V
	4	X0	Input 0		4	Y0	Output 0
X1	1	+24V	24V DC	Y1	1	+24V	24V DC
	2	NC	Unused		2	NC	Unused
	3	GND	0V		3	GND	0V
	4	X1	Input 1		4	Y1	Output 1
X2	1	+24V	24V DC	Y2	1	+24V	24V DC
	2	NC	Unused		2	NC	Unused
	3	GND	0V		3	GND	0V
	4	X2	Input 2		4	Y2	Output 2
X3	1	+24V	24V DC	Y3	1	+24V	24V DC
	2	NC	Unused		2	NC	Unused
	3	GND	0V		3	GND	0V
	4	X3	Input 3		4	Y3	Output 3
X4	1	+24V	24V DC	Y4	1	+24V	24V DC
	2	NC	Unused		2	NC	Unused
	3	GND	0V		3	GND	0V
	4	X4	Input 4		4	Y4	Output 4
X5	1	+24V	24V DC	Y5	1	+24V	24V DC
	2	NC	Unused		2	NC	Unused
	3	GND	0V		3	GND	0V
	4	X5	Input 5		4	Y5	Output 5
X6	1	+24V	24V DC	Y6	1	+24V	24V DC
	2	NC	Unused		2	NC	Unused
	3	GND	0V		3	GND	0V
	4	X6	Input 6		4	Y6	Output 6
X7	1	+24V	24V DC	Y7	1	+24V	24V DC
	2	NC	Unused		2	NC	Unused
	3	GND	0V		3	GND	0V
	4	X7	Input 7		4	Y7	Output 7

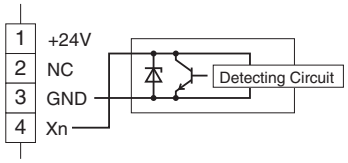
SCHEMATIC CIRCUITRY

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**



PNP DISCRETE INPUT &

PNP TRANSISTOR OUTPUT MODULE, 8 points each
(e-CON connector)

MODEL: R7F4DH-1-DAC16D

SPECIFICATIONS

■ COMMON SPECIFICATIONS

Input common: Negative common per 8 points
Output common: Positive common per 8 points
Input rating/load voltage: 24 V DC ±10 %, ripple 5 %p-p max.
Number of I/O: Input, 8 points; Output, 8 points
Maximum I/O applicable at once: No limit (at 24 V DC)
I/O status indicator: LED turns ON with contact ON
Isolation: I/O or sensor excitation to HLS to power input to FE
Data allocation: 1

■ INPUT

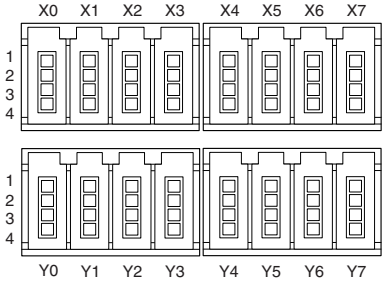
ON voltage / current: ≥ 15 V DC (I/O's X0 through X7 to GND) / ≥ 3.5 mA
OFF voltage / current: ≤ 5 V DC (I/O's X0 through X7 to GND) / ≤ 1 mA
Input current: ≤ 5.5 mA per point at 24 V DC
Input resistance: Approx. 4.4 kΩ
ON delay: ≤ 0.5 msec.
OFF delay: ≤ 0.5 msec.

■ OUTPUT

Rated output current: 0.1 A per point, 0.8 A per common
Residual voltage: ≤ 1.2 V
Leakage current: ≤ 0.1 mA
ON delay: ≤ 0.2 msec.
OFF delay: ≤ 0.5 msec.
Overload current protection function: Limits the current value when overcurrent is detected
Overheat Protection Function:
Turns OFF the output when overheat is detected
(When driving an inductive load, connect a diode in parallel with the load.)

TERMINAL ASSIGNMENTS

■ I/O Terminal

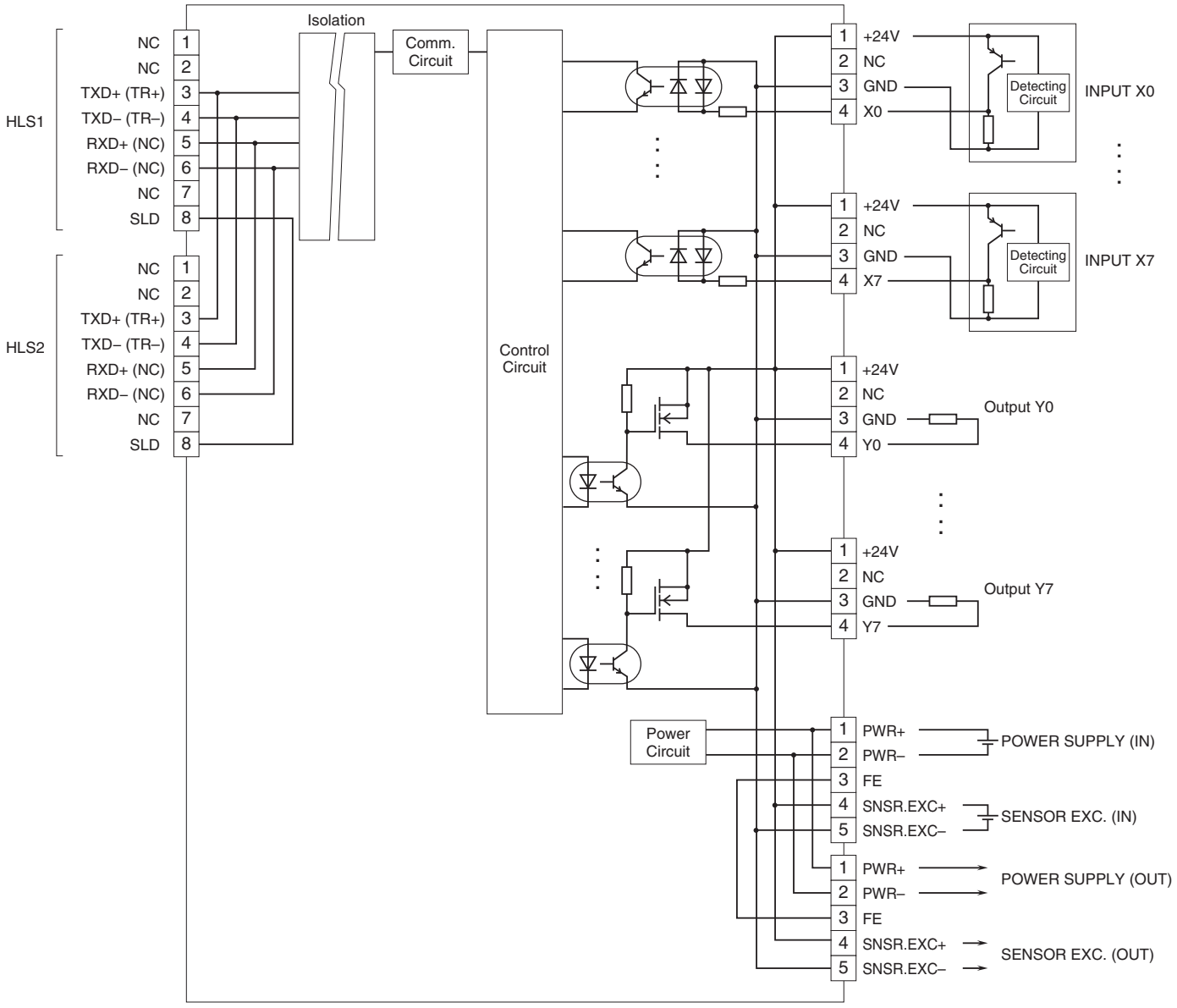


PIN No.		ID	FUNCTION	PIN No.		ID	FUNCTION
X0	1	+24V	24V DC	Y0	1	+24V	24V DC
	2	NC	Unused		2	NC	Unused
	3	GND	0V		3	GND	0V
	4	X0	Input 0		4	Y0	Output 0
X1	1	+24V	24V DC	Y1	1	+24V	24V DC
	2	NC	Unused		2	NC	Unused
	3	GND	0V		3	GND	0V
	4	X1	Input 1		4	Y1	Output 1
X2	1	+24V	24V DC	Y2	1	+24V	24V DC
	2	NC	Unused		2	NC	Unused
	3	GND	0V		3	GND	0V
	4	X2	Input 2		4	Y2	Output 2
X3	1	+24V	24V DC	Y3	1	+24V	24V DC
	2	NC	Unused		2	NC	Unused
	3	GND	0V		3	GND	0V
	4	X3	Input 3		4	Y3	Output 3
X4	1	+24V	24V DC	Y4	1	+24V	24V DC
	2	NC	Unused		2	NC	Unused
	3	GND	0V		3	GND	0V
	4	X4	Input 4		4	Y4	Output 4
X5	1	+24V	24V DC	Y5	1	+24V	24V DC
	2	NC	Unused		2	NC	Unused
	3	GND	0V		3	GND	0V
	4	X5	Input 5		4	Y5	Output 5
X6	1	+24V	24V DC	Y6	1	+24V	24V DC
	2	NC	Unused		2	NC	Unused
	3	GND	0V		3	GND	0V
	4	X6	Input 6		4	Y6	Output 6
X7	1	+24V	24V DC	Y7	1	+24V	24V DC
	2	NC	Unused		2	NC	Unused
	3	GND	0V		3	GND	0V
	4	X7	Input 7		4	Y7	Output 7

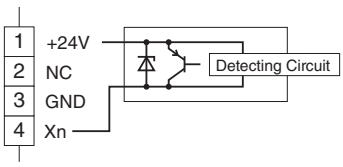
SCHEMATIC CIRCUITRY

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**



NPN DISCRETE INPUT MODULE, 16 points

(MIL connector)

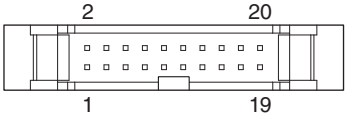
MODEL:
R7F4DH-2-DA16A
R7F4DH-3-DA16A

SPECIFICATIONS

Common: Positive common (NPN) per 16 points
Number of I/O: Input, 16 points
Maximum inputs applicable at once: No limit (at 24 V DC)
Input status indicator: LED turns ON with contact ON
Isolation: Input or sensor excitation to HLS to power input to FE
Data allocation: 1
Rated input voltage: 24 V DC ±10 %; ripple 5 %p-p max.
ON voltage / current: ≥ 15 V DC (X0 through XF to +24 V) / ≥ 3.5 mA
OFF voltage / current: ≤ 5 V DC (X0 through XF to +24 V) / ≤ 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.

TERMINAL ASSIGNMENTS

■ Input Terminal



1. TERMINAL BLOCK CODE 2

PIN No.	ID	FUNCTION	PIN No.	ID	FUNCTION
1	X0	Input 0	11	XA	Input 10
2	X1	Input 1	12	XB	Input 11
3	X2	Input 2	13	XC	Input 12
4	X3	Input 3	14	XD	Input 13
5	X4	Input 4	15	XE	Input 14
6	X5	Input 5	16	XF	Input 15
7	X6	Input 6	17	GND	0V
8	X7	Input 7	18	GND	0V
9	X8	Input 8	19	+24V	24VDC
10	X9	Input 9	20	+24V	24VDC

2. TERMINAL BLOCK CODE 3

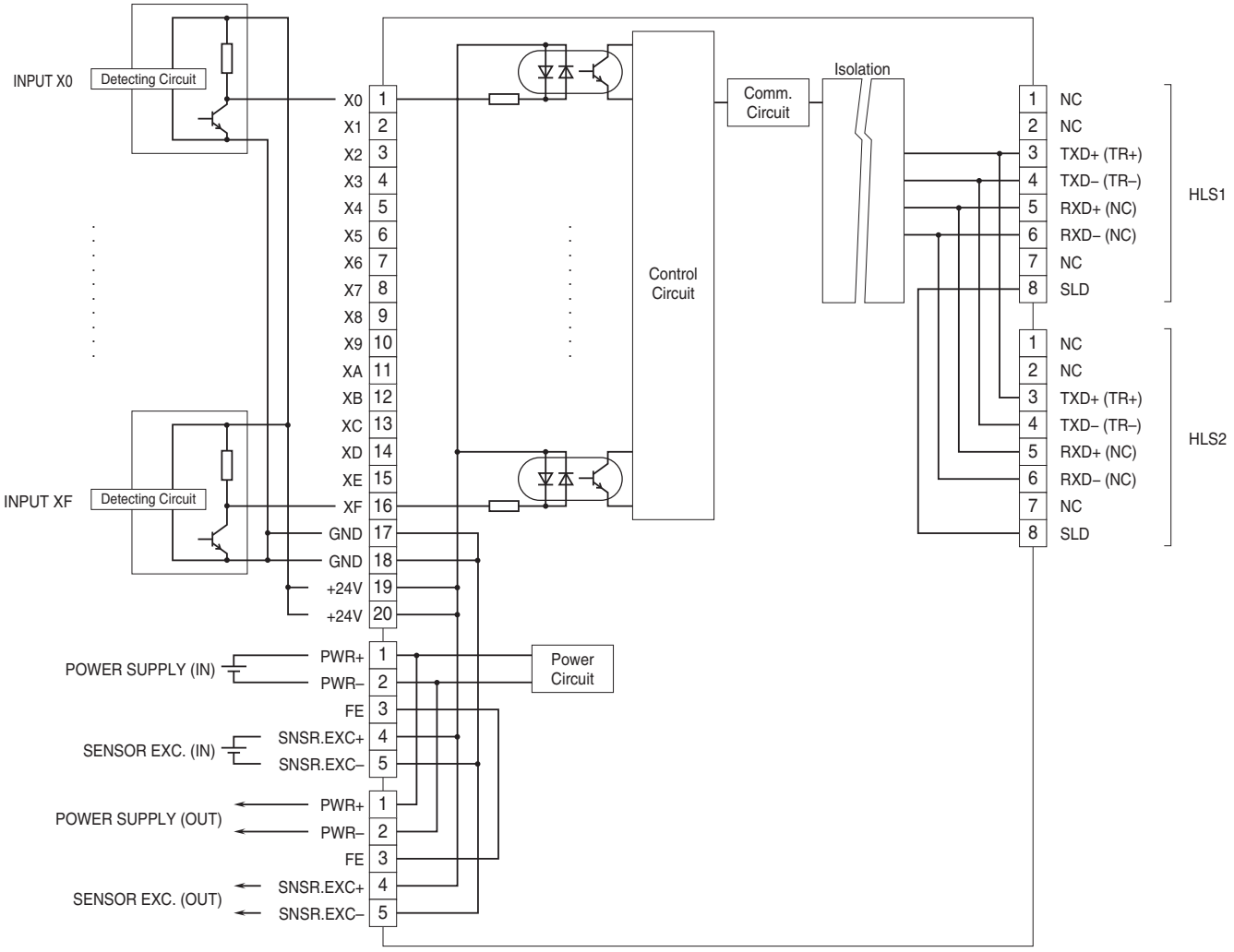
PIN No.	ID	FUNCTION	PIN No.	ID	FUNCTION
1	+24V	24VDC	11	XC	Input 12
2	+24V	24VDC	12	X4	Input 4
3	GND	0V	13	XB	Input 11
4	GND	0V	14	X3	Input 3
5	XF	Input 15	15	XA	Input 10
6	X7	Input 7	16	X2	Input 2
7	XE	Input 14	17	X9	Input 9
8	X6	Input 6	18	X1	Input 1
9	XD	Input 13	19	X8	Input 8
10	X5	Input 5	20	X0	Input 0

SCHEMATIC CIRCUITRY

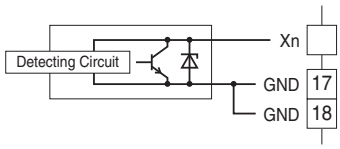
Note: In order to improve EMC performance, bond the FE terminal to ground.

Caution: FE terminal is NOT a protective conductor terminal.

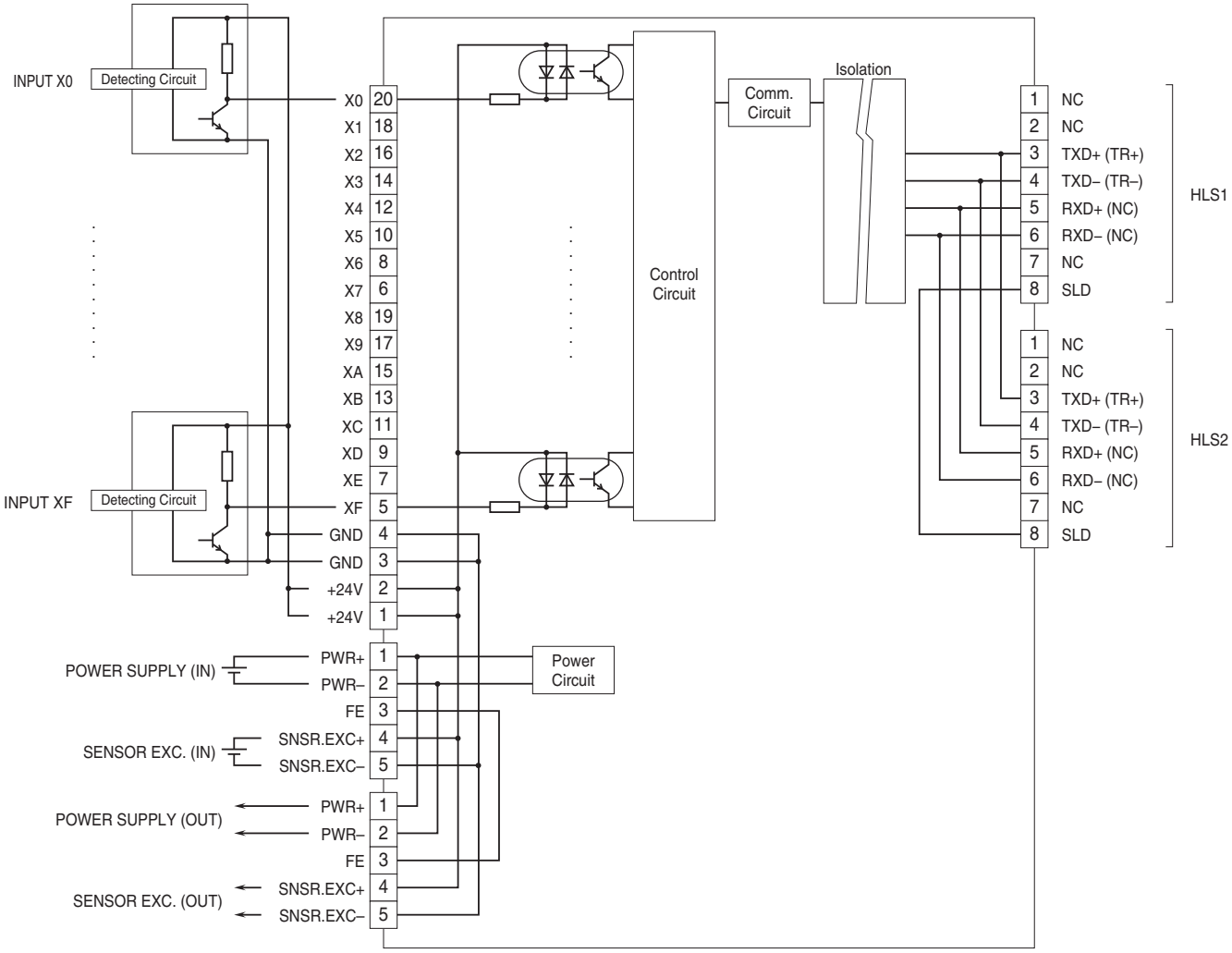
■ TERMINAL BLOCK CODE 2



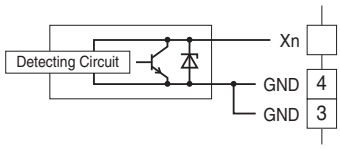
■ 2-Wire Sensor



■ TERMINAL BLOCK CODE 3



■ 2-Wire Sensor



PNP DISCRETE INPUT MODULE, 16 points

(MIL connector)

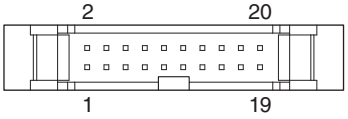
MODEL:
R7F4DH-2-DA16B
R7F4DH-3-DA16B

SPECIFICATIONS

Common: Negative common (PNP) per 16 points
Number of I/O: Input, 16 points
Maximum inputs applicable at once: No limit (at 24 V DC)
Input status indicator: LED turns ON with contact ON
Isolation: Input or sensor excitation to HLS to power input to FE
Data allocation: 1
Rated input voltage: 24 V DC ±10 %; ripple 5 %p-p max.
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 kΩ
ON delay: ≤ 0.5 msec.
OFF delay: ≤ 0.5 msec.

TERMINAL ASSIGNMENTS

■ Input Terminal



1. TERMINAL BLOCK CODE 2

PIN No.	ID	FUNCTION	PIN No.	ID	FUNCTION
1	X0	Input 0	11	XA	Input 10
2	X1	Input 1	12	XB	Input 11
3	X2	Input 2	13	XC	Input 12
4	X3	Input 3	14	XD	Input 13
5	X4	Input 4	15	XE	Input 14
6	X5	Input 5	16	XF	Input 15
7	X6	Input 6	17	GND	0V
8	X7	Input 7	18	GND	0V
9	X8	Input 8	19	+24V	24VDC
10	X9	Input 9	20	+24V	24VDC

2. TERMINAL BLOCK CODE 3

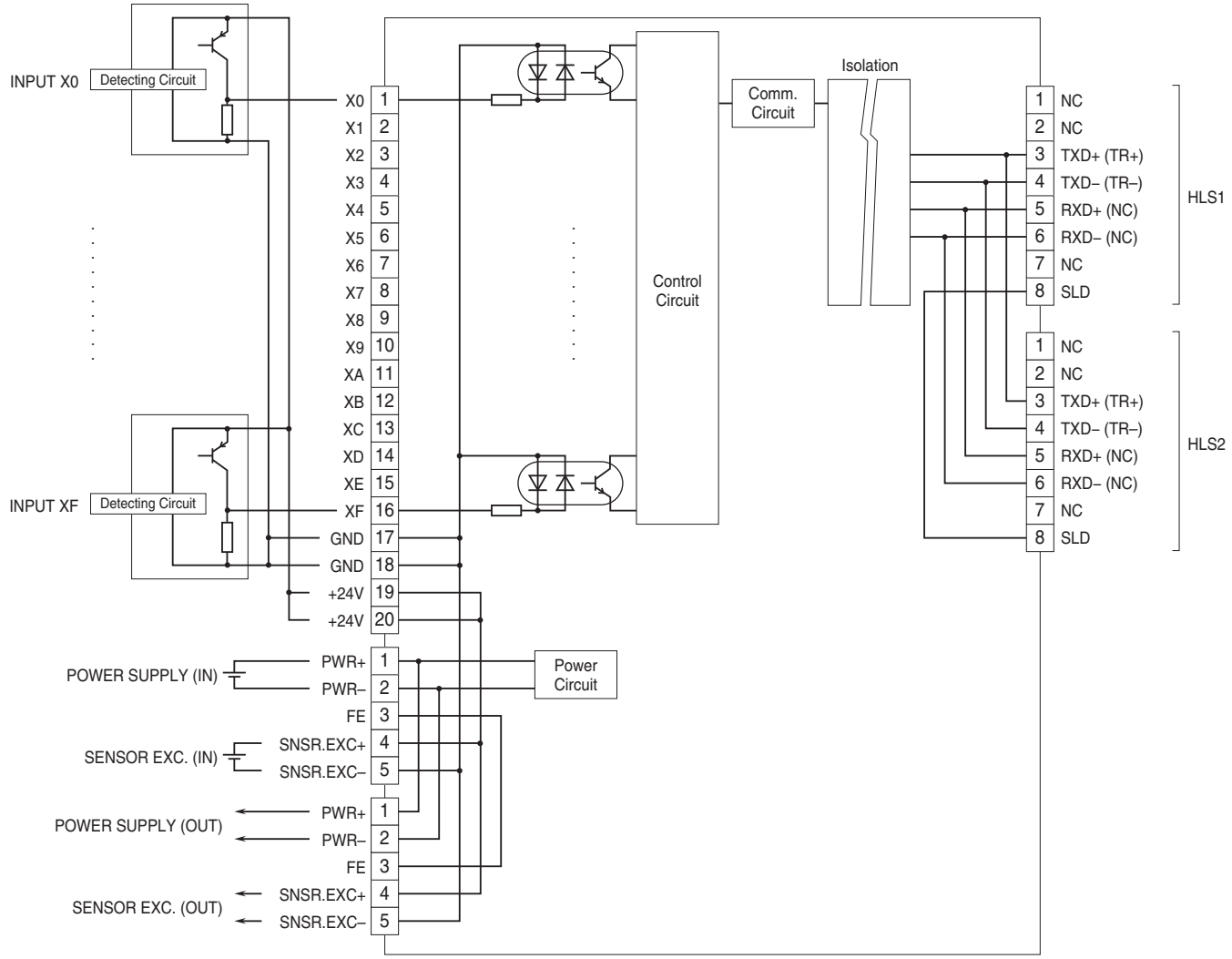
PIN No.	ID	FUNCTION	PIN No.	ID	FUNCTION
1	+24V	24VDC	11	XC	Input 12
2	+24V	24VDC	12	X4	Input 4
3	GND	0V	13	XB	Input 11
4	GND	0V	14	X3	Input 3
5	XF	Input 15	15	XA	Input 10
6	X7	Input 7	16	X2	Input 2
7	XE	Input 14	17	X9	Input 9
8	X6	Input 6	18	X1	Input 1
9	XD	Input 13	19	X8	Input 8
10	X5	Input 5	20	X0	Input 0

SCHEMATIC CIRCUITRY

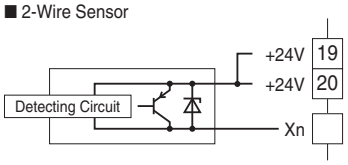
Note: In order to improve EMC performance, bond the FE terminal to ground.

Caution: FE terminal is NOT a protective conductor terminal.

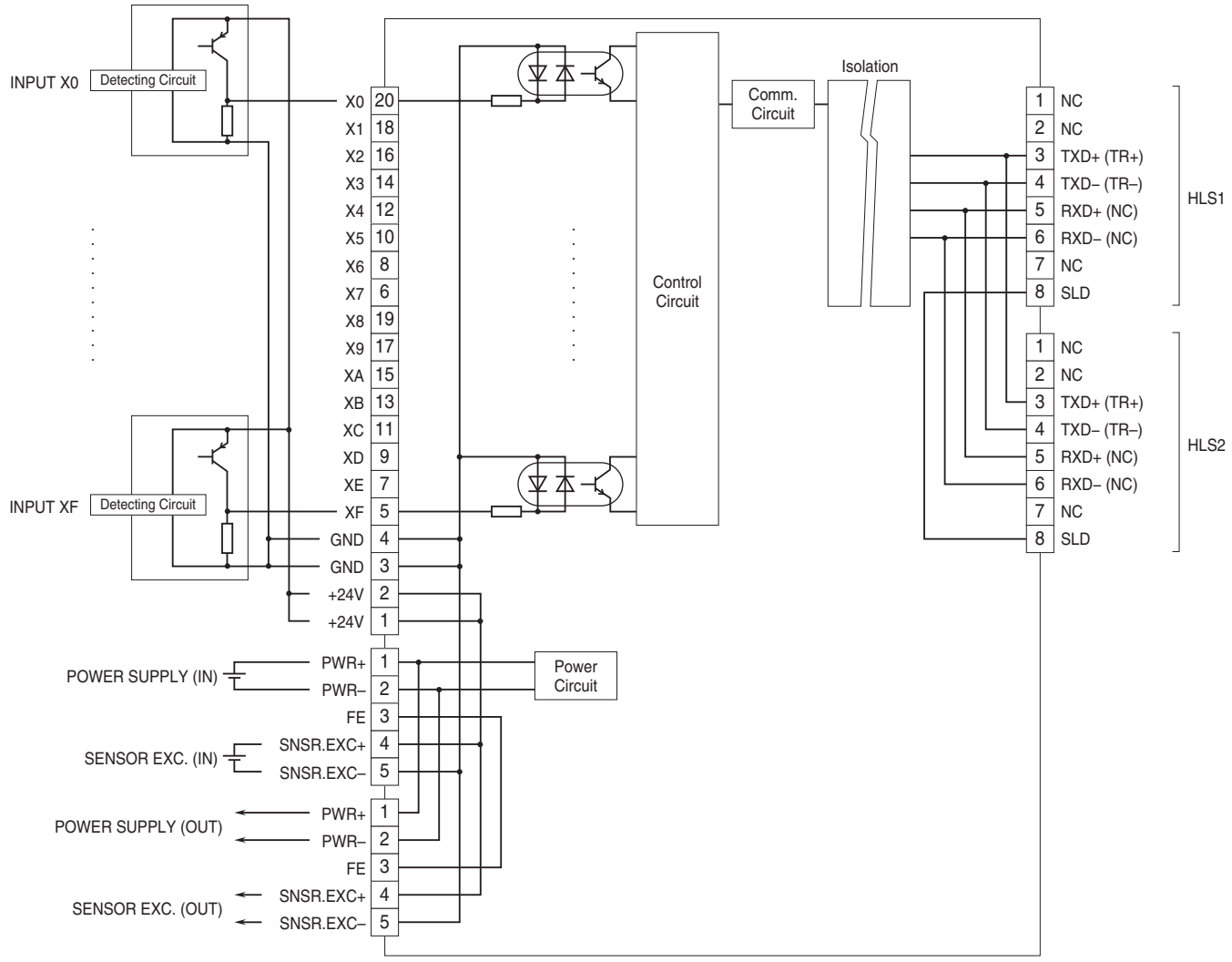
■ TERMINAL BLOCK CODE 2



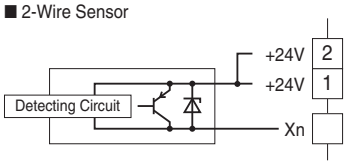
■ 2-Wire Sensor



■ TERMINAL BLOCK CODE 3



■ 2-Wire Sensor



NPN TRANSISTOR OUTPUT MODULE, 16 points
(MIL connector)

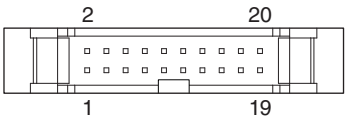
MODEL:
R7F4DH-2-DC16A
R7F4DH-3-DC16A

SPECIFICATIONS

Common: Negative common (NPN) per 16 points
Number of I/O: Output, 16 points
Maximum outputs applicable at once: No limit (at 24 V DC)
Output status indicator: LED turns ON with contact ON
Isolation: Output or sensor excitation to HLS to power input to FE
Data allocation: 1
Rated load voltage: 24 V DC ±10 % (ripple 5 %p-p max.)
Rated output current: 0.1 A per point, 1.6 A per common
Residual voltage: ≤ 1.2 V
Leakage current: ≤ 0.1 mA
ON delay: ≤ 0.2 msec.
OFF delay: ≤ 0.5 msec.
Overload current protection function: Limits the current value when overcurrent is detected
Overheat Protection Function:
Turns OFF the output when overheat is detected
(When driving an inductive load, connect a diode in parallel with the load.)

TERMINAL ASSIGNMENTS

■ Output Terminal



1. TERMINAL BLOCK CODE 2

PIN No.	ID	FUNCTION	PIN No.	ID	FUNCTION
1	Y0	Output 0	11	YA	Output 10
2	Y1	Output 1	12	YB	Output 11
3	Y2	Output 2	13	YC	Output 12
4	Y3	Output 3	14	YD	Output 13
5	Y4	Output 4	15	YE	Output 14
6	Y5	Output 5	16	YF	Output 15
7	Y6	Output 6	17	GND	0V
8	Y7	Output 7	18	GND	0V
9	Y8	Output 8	19	+24V	24VDC
10	Y9	Output 9	20	+24V	24VDC

2. TERMINAL BLOCK CODE 3

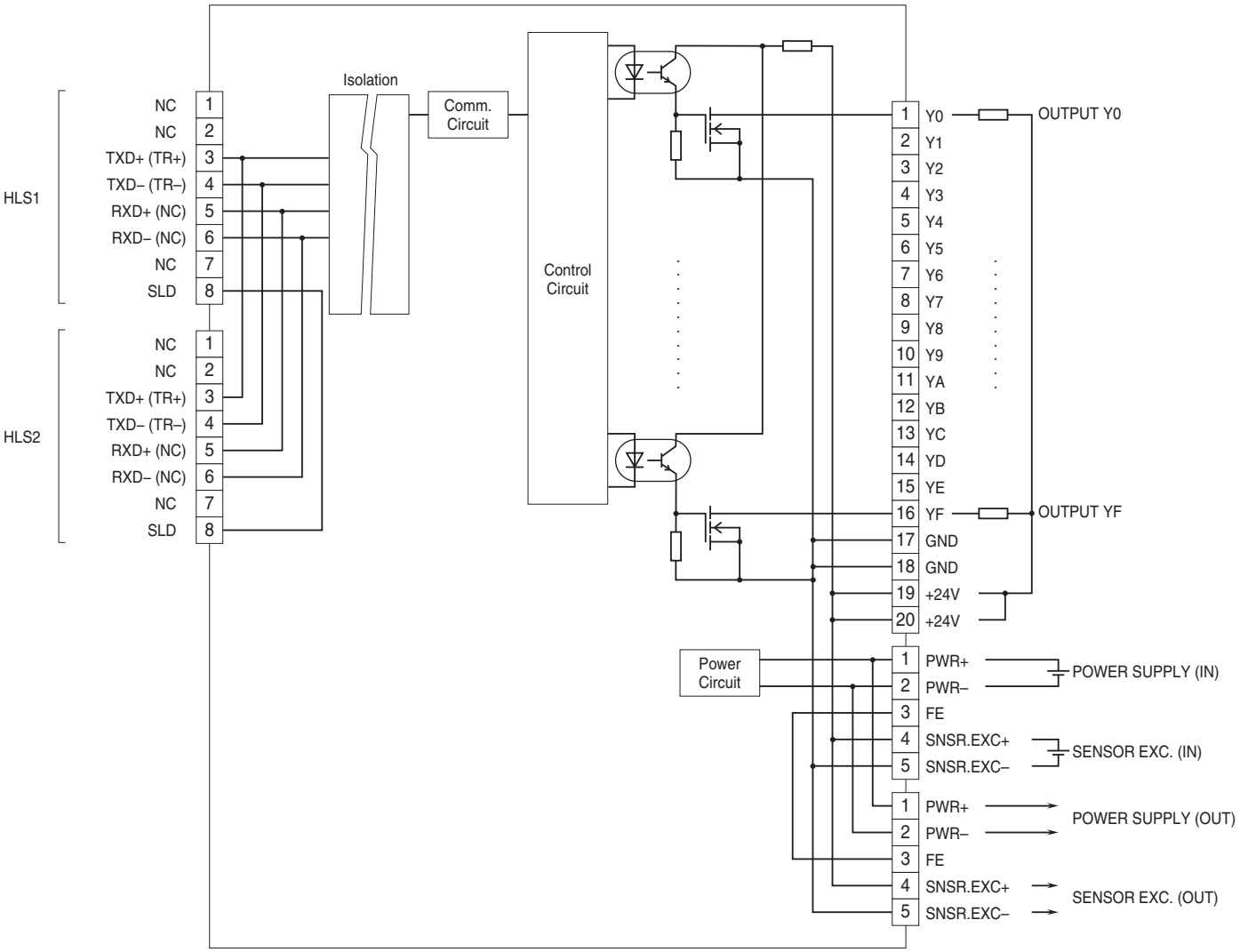
PIN No.	ID	FUNCTION	PIN No.	ID	FUNCTION
1	+24V	24VDC	11	YC	Output 12
2	+24V	24VDC	12	Y4	Output 4
3	GND	0V	13	YB	Output 11
4	GND	0V	14	Y3	Output 3
5	YF	Output 15	15	YA	Output 10
6	Y7	Output 7	16	Y2	Output 2
7	YE	Output 14	17	Y9	Output 9
8	Y6	Output 6	18	Y1	Output 1
9	YD	Output 13	19	Y8	Output 8
10	Y5	Output 5	20	Y0	Output 0

SCHEMATIC CIRCUITRY

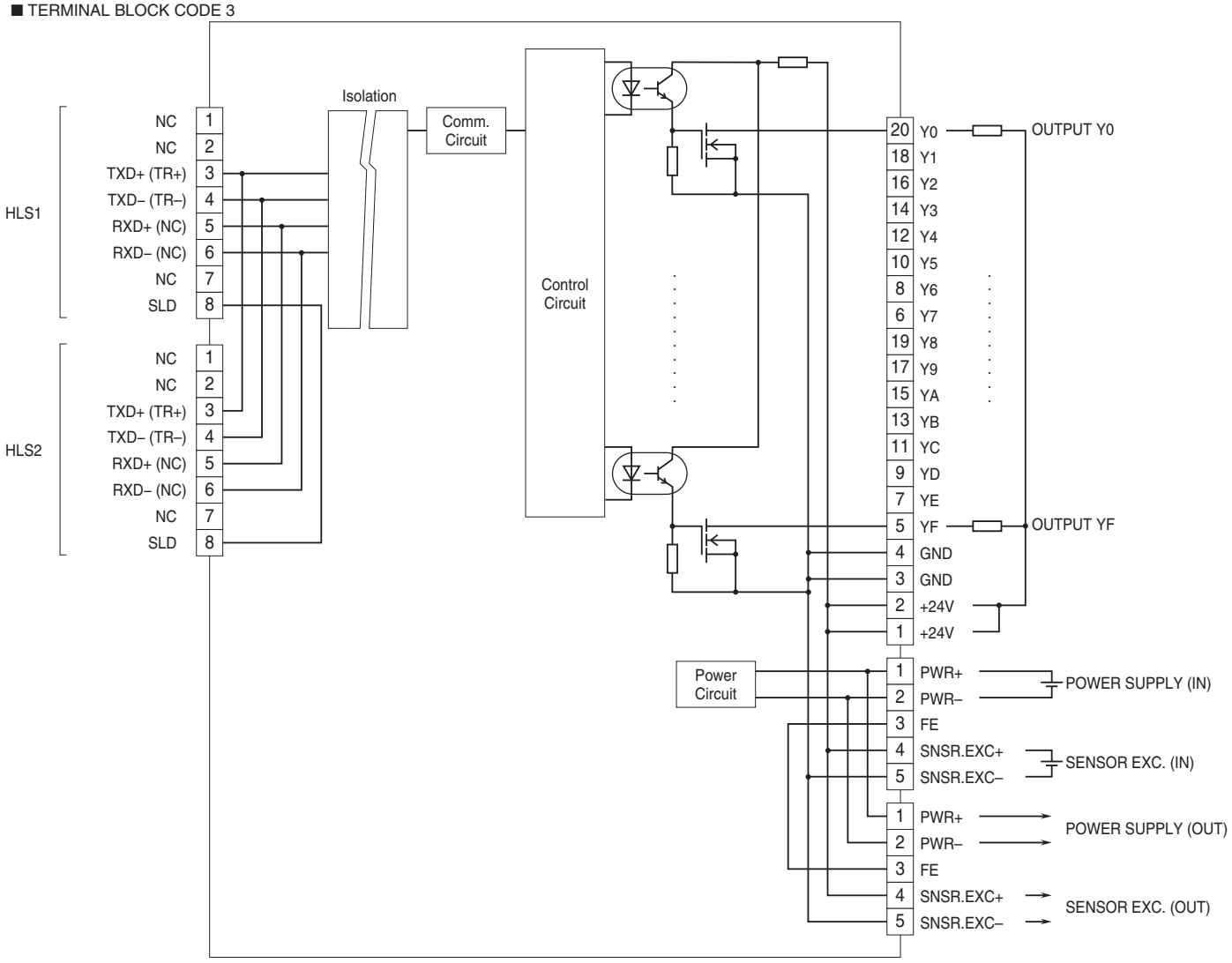
Note: In order to improve EMC performance, bond the FE terminal to ground.

Caution: FE terminal is NOT a protective conductor terminal.

■ TERMINAL BLOCK CODE 2



■ TERMINAL BLOCK CODE 3



PNP TRANSISTOR OUTPUT MODULE, 16 points
(MIL connector)

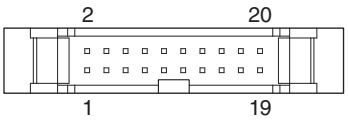
MODEL:
R7F4DH-2-DC16B
R7F4DH-3-DC16B

SPECIFICATIONS

Common: Positive common (PNP) per 16 points
Number of I/O: Output, 16 points
Maximum outputs applicable at once: No limit (at 24 V DC)
Output status indicator: LED turns ON with contact ON
Isolation: Output or sensor excitation to HLS to power input to FE
Data allocation: 1
Rated load voltage: 24 V DC ±10 % (ripple 5 %p-p max.)
Rated output current: 0.1 A per point, 1.6 A per common
Residual voltage: ≤ 1.2 V
Leakage current: ≤ 0.1 mA
ON delay: ≤ 0.2 msec.
OFF delay: ≤ 0.5 msec.
Overload current protection function: Limits the current value when overcurrent is detected
Overheat Protection Function:
Turns OFF the output when overheat is detected
(When driving an inductive load, connect a diode in parallel with the load.)

TERMINAL ASSIGNMENTS

■ Output Terminal



1. TERMINAL BLOCK CODE 2

PIN No.	ID	FUNCTION	PIN No.	ID	FUNCTION
1	Y0	Output 0	11	YA	Output 10
2	Y1	Output 1	12	YB	Output 11
3	Y2	Output 2	13	YC	Output 12
4	Y3	Output 3	14	YD	Output 13
5	Y4	Output 4	15	YE	Output 14
6	Y5	Output 5	16	YF	Output 15
7	Y6	Output 6	17	GND	0V
8	Y7	Output 7	18	GND	0V
9	Y8	Output 8	19	+24V	24VDC
10	Y9	Output 9	20	+24V	24VDC

2. TERMINAL BLOCK CODE 3

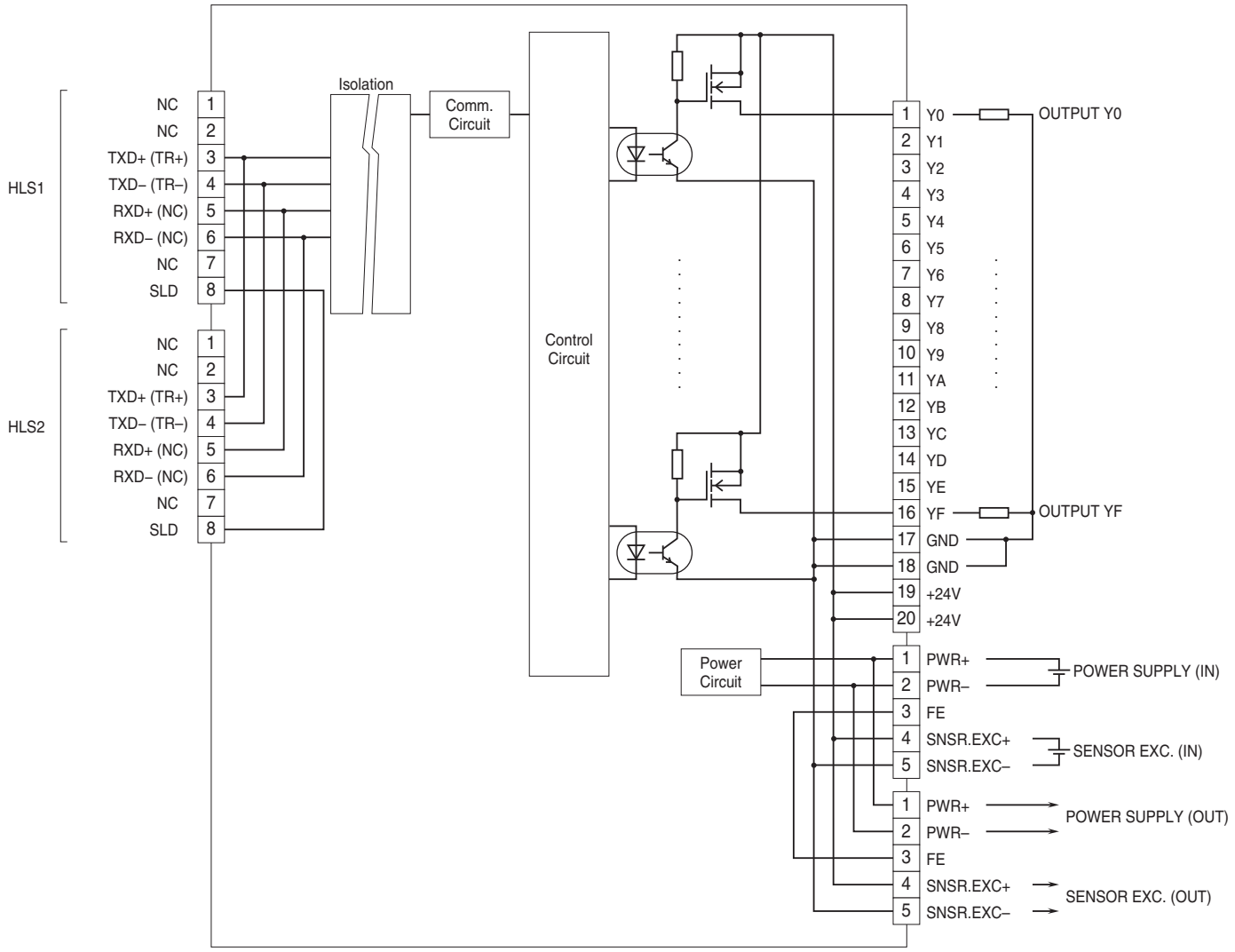
PIN No.	ID	FUNCTION	PIN No.	ID	FUNCTION
1	+24V	24VDC	11	YC	Output 12
2	+24V	24VDC	12	Y4	Output 4
3	GND	0V	13	YB	Output 11
4	GND	0V	14	Y3	Output 3
5	YF	Output 15	15	YA	Output 10
6	Y7	Output 7	16	Y2	Output 2
7	YE	Output 14	17	Y9	Output 9
8	Y6	Output 6	18	Y1	Output 1
9	YD	Output 13	19	Y8	Output 8
10	Y5	Output 5	20	Y0	Output 0

SCHEMATIC CIRCUITRY

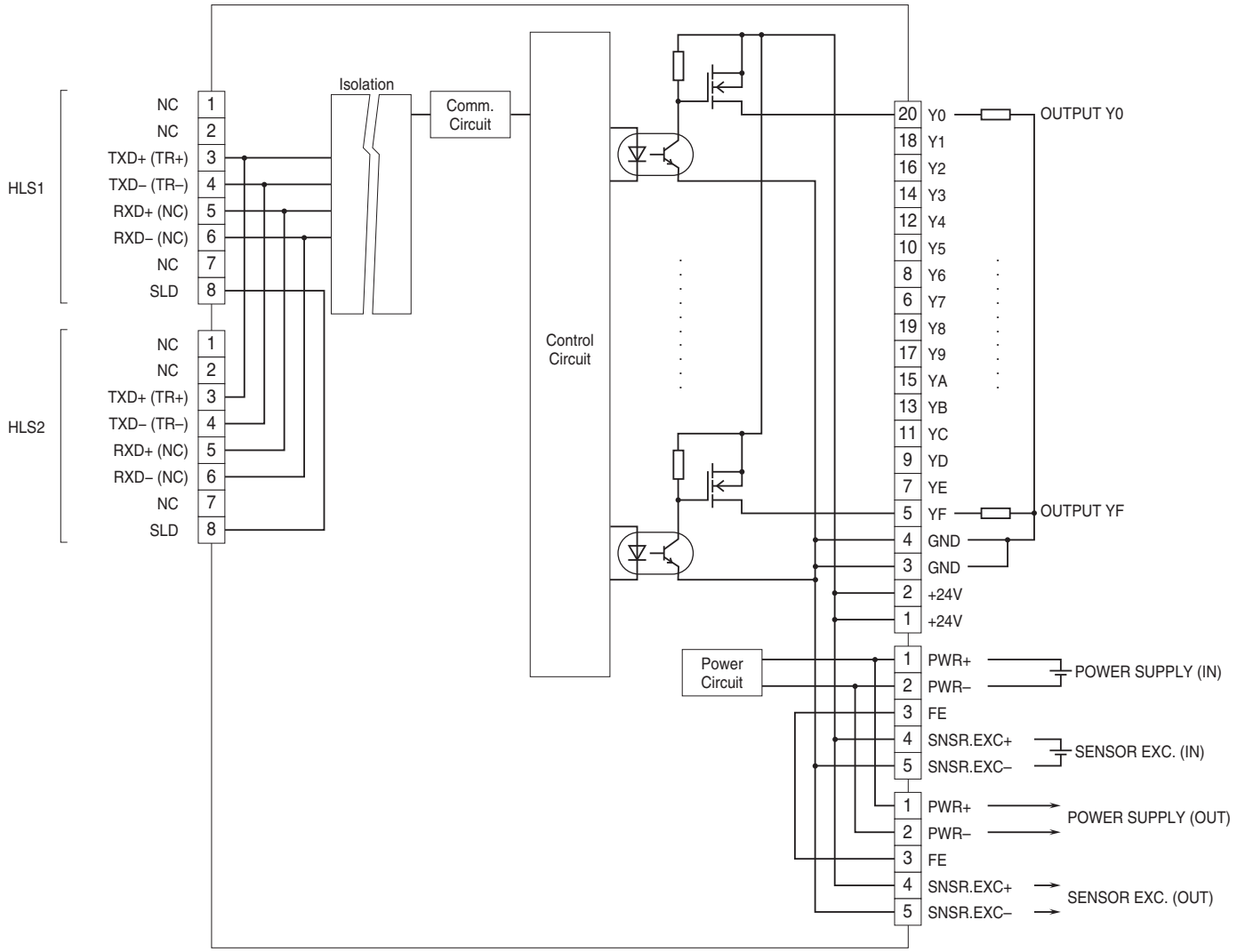
Note: In order to improve EMC performance, bond the FE terminal to ground.

Caution: FE terminal is NOT a protective conductor terminal.

■ TERMINAL BLOCK CODE 2



■ TERMINAL BLOCK CODE 3



PNP DISCRETE INPUT &

NPN TRANSISTOR OUTPUT MODULE, 8 points each
(MIL connector)

MODEL:
R7F4DH-2-DAC16A
R7F4DH-3-DAC16A

SPECIFICATIONS

■ COMMON SPECIFICATIONS

Common: Negative common per 16 points
Input rating/load voltage: 24 V DC ±10 %, ripple 5 %p-p max.
Number of I/O: Input, 8 points; Output, 8 points
Maximum I/O applicable at once: No limit (at 24 V DC)
I/O status indicator: LED turns ON with contact ON
Isolation: I/O or sensor excitation to HLS to power input to FE
Data allocation: 1

■ INPUT

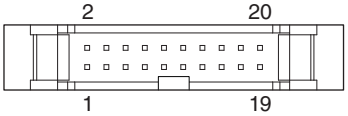
ON voltage / current: ≥ 15 V DC (I/O's X0 through X7 to GND) / ≥ 3.5 mA
OFF voltage / current: ≤ 5 V DC (I/O's X0 through X7 to GND) / ≤ 1 mA
Input current: ≤ 5.5 mA per point at 24 V DC
Input resistance: Approx. 4.4 kΩ
ON delay: ≤ 0.5 msec.
OFF delay: ≤ 0.5 msec.

■ OUTPUT

Rated output current: 0.1 A per point, 0.8 A per common
Residual voltage: ≤ 1.2 V
Leakage current: ≤ 0.1 mA
ON delay: ≤ 0.2 msec.
OFF delay: ≤ 0.5 msec.
Overload current protection function: Limits the current value when overcurrent is detected
Overheat Protection Function:
Turns OFF the output when overheat is detected
(When driving an inductive load, connect a diode in parallel with the load.)

TERMINAL ASSIGNMENTS

■ I/O Terminal



1. TERMINAL BLOCK CODE 2

PIN No.	ID	FUNCTION	PIN No.	ID	FUNCTION
1	X0	Input 0	11	Y2	Output 2
2	X1	Input 1	12	Y3	Output 3
3	X2	Input 2	13	Y4	Output 4
4	X3	Input 3	14	Y5	Output 5
5	X4	Input 4	15	Y6	Output 6
6	X5	Input 5	16	Y7	Output 7
7	X6	Input 6	17	GND	0V
8	X7	Input 7	18	GND	0V
9	Y0	Output 0	19	+24V	24VDC
10	Y1	Output 1	20	+24V	24VDC

2. TERMINAL BLOCK CODE 3

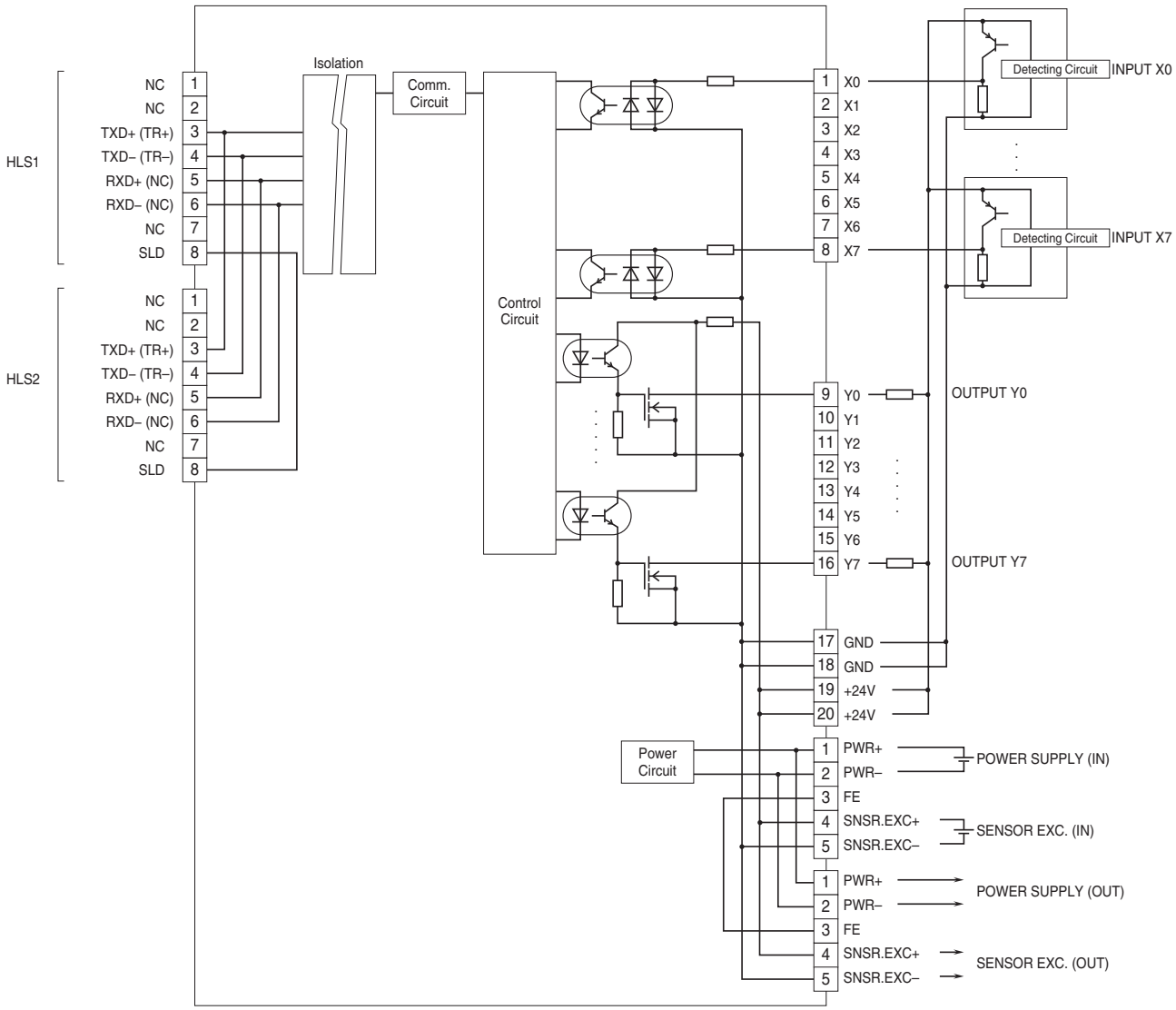
PIN No.	ID	FUNCTION	PIN No.	ID	FUNCTION
1	+24V	24VDC	11	Y4	Output 4
2	+24V	24VDC	12	X4	Input 4
3	GND	0V	13	Y3	Output 3
4	GND	0V	14	X3	Input 3
5	Y7	Output 7	15	Y2	Output 2
6	X7	Input 7	16	X2	Input 2
7	Y6	Output 6	17	Y1	Output 1
8	X6	Input 6	18	X1	Input 1
9	Y5	Output 5	19	Y0	Output 0
10	X5	Input 5	20	X0	Input 0

SCHEMATIC CIRCUITRY

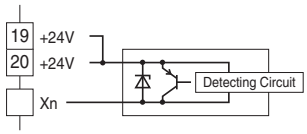
Note: In order to improve EMC performance, bond the FE terminal to ground.

Caution: FE terminal is NOT a protective conductor terminal.

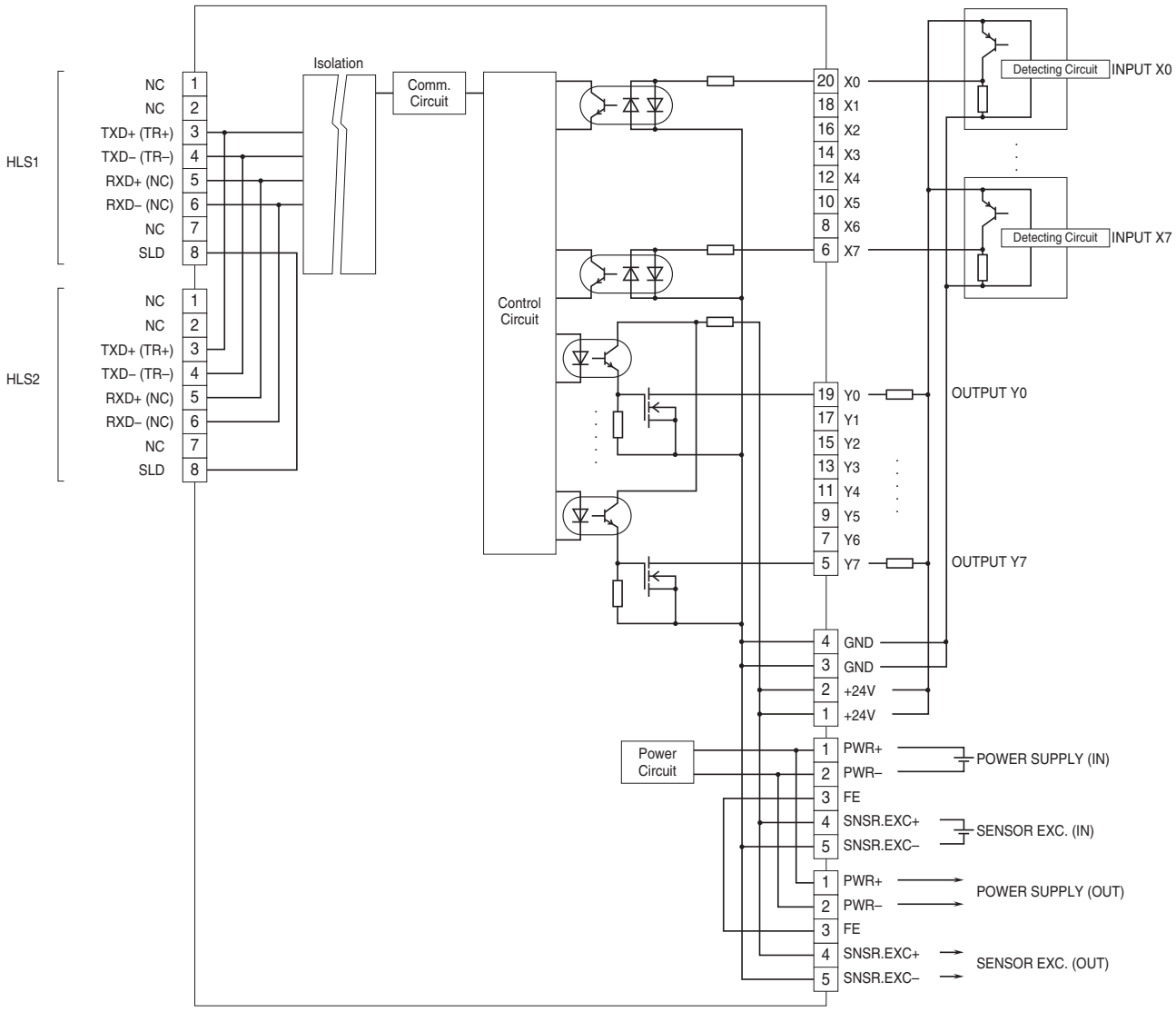
■ TERMINAL BLOCK CODE 2



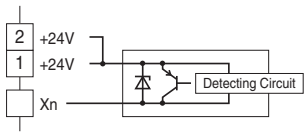
■ 2-Wire Sensor



■ TERMINAL BLOCK CODE 3



■ 2-Wire Sensor



NPN DISCRETE INPUT &
PNP TRANSISTOR OUTPUT MODULE, 8 points each
(MIL connector)

MODEL:
R7F4DH-2-DAC16B
R7F4DH-3-DAC16B

SPECIFICATIONS

■ COMMON SPECIFICATIONS

Common: Positive common per 16 points
Input rating/load voltage: 24 V DC ±10 %, ripple 5 %p-p max.
Number of I/O: Input, 8 points; Output, 8 points
Maximum I/O applicable at once: No limit (at 24 V DC)
I/O status indicator: LED turns ON with contact ON
Isolation: I/O or sensor excitation to HLS to power input to FE
Data allocation: 1

■ INPUT

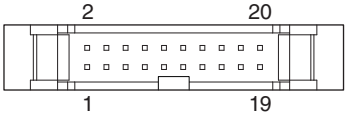
ON voltage / current: ≥ 15 V DC (I/O's X0 through X7 to +24 V) / ≥ 3.5 mA
OFF voltage / current: ≤ 5 V DC (I/O's X0 through X7 to +24 V) / ≤ 1 mA
Input current: ≤ 5.5 mA per point at 24 V DC
Input resistance: Approx. 4.4 kΩ
ON delay: ≤ 0.5 msec.
OFF delay: ≤ 0.5 msec.

■ OUTPUT

Rated output current: 0.1 A per point, 0.8 A per common
Residual voltage: ≤ 1.2 V
Leakage current: ≤ 0.1 mA
ON delay: ≤ 0.2 msec.
OFF delay: ≤ 0.5 msec.
Overload current protection function: Limits the current value when overcurrent is detected
Overheat Protection Function:
Turns OFF the output when overheat is detected
(When driving an inductive load, connect a diode in parallel with the load.)

TERMINAL ASSIGNMENTS

■ I/O Terminal



1. TERMINAL BLOCK CODE 2

PIN No.	ID	FUNCTION	PIN No.	ID	FUNCTION
1	X0	Input 0	11	Y2	Output 2
2	X1	Input 1	12	Y3	Output 3
3	X2	Input 2	13	Y4	Output 4
4	X3	Input 3	14	Y5	Output 5
5	X4	Input 4	15	Y6	Output 6
6	X5	Input 5	16	Y7	Output 7
7	X6	Input 6	17	GND	0V
8	X7	Input 7	18	GND	0V
9	Y0	Output 0	19	+24V	24VDC
10	Y1	Output 1	20	+24V	24VDC

2. TERMINAL BLOCK CODE 3

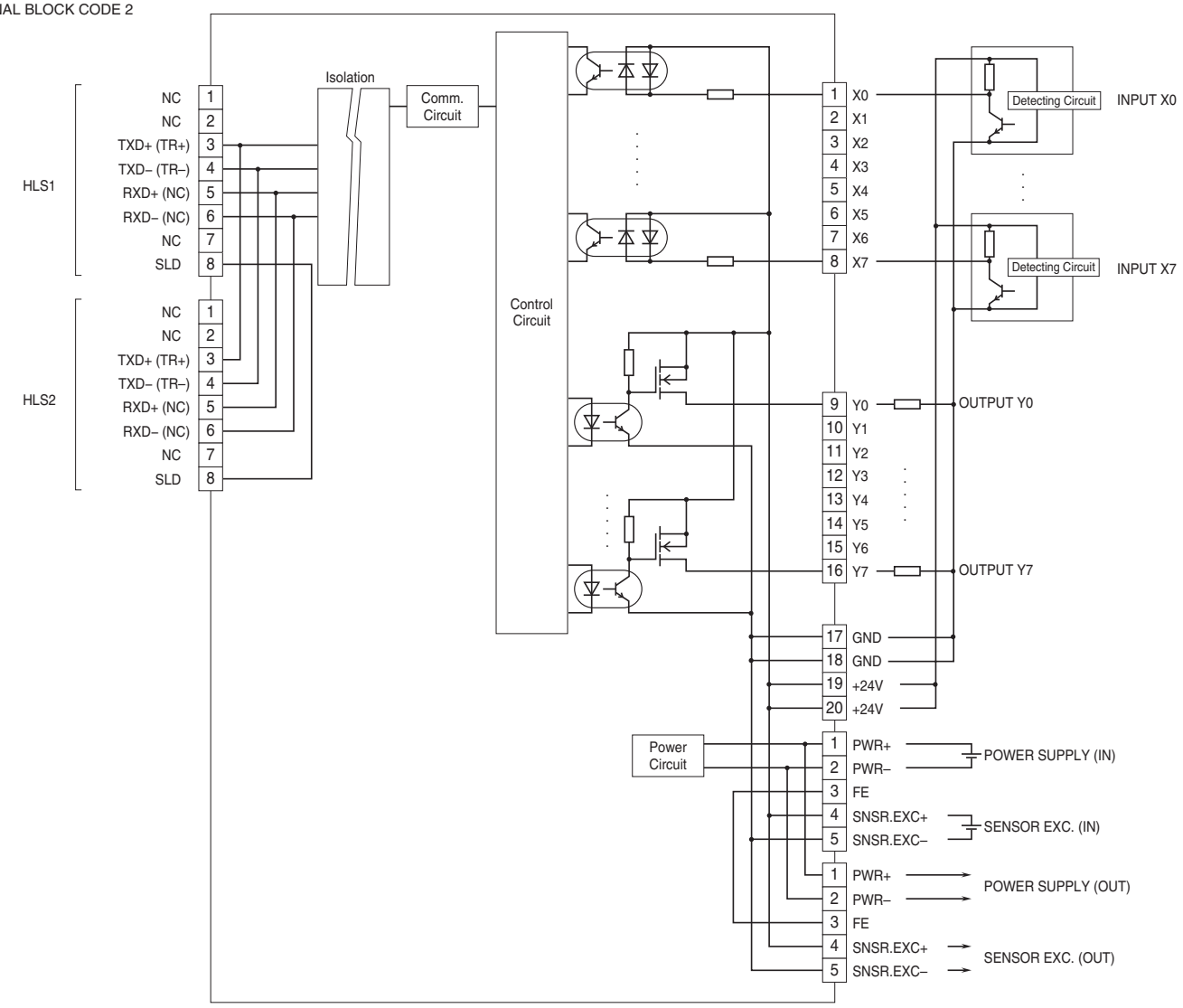
PIN No.	ID	FUNCTION	PIN No.	ID	FUNCTION
1	+24V	24VDC	11	Y4	Output 4
2	+24V	24VDC	12	X4	Input 4
3	GND	0V	13	Y3	Output 3
4	GND	0V	14	X3	Input 3
5	Y7	Output 7	15	Y2	Output 2
6	X7	Input 7	16	X2	Input 2
7	Y6	Output 6	17	Y1	Output 1
8	X6	Input 6	18	X1	Input 1
9	Y5	Output 5	19	Y0	Output 0
10	X5	Input 5	20	X0	Input 0

SCHEMATIC CIRCUITRY

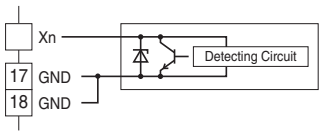
Note: In order to improve EMC performance, bond the FE terminal to ground.

Caution: FE terminal is NOT a protective conductor terminal.

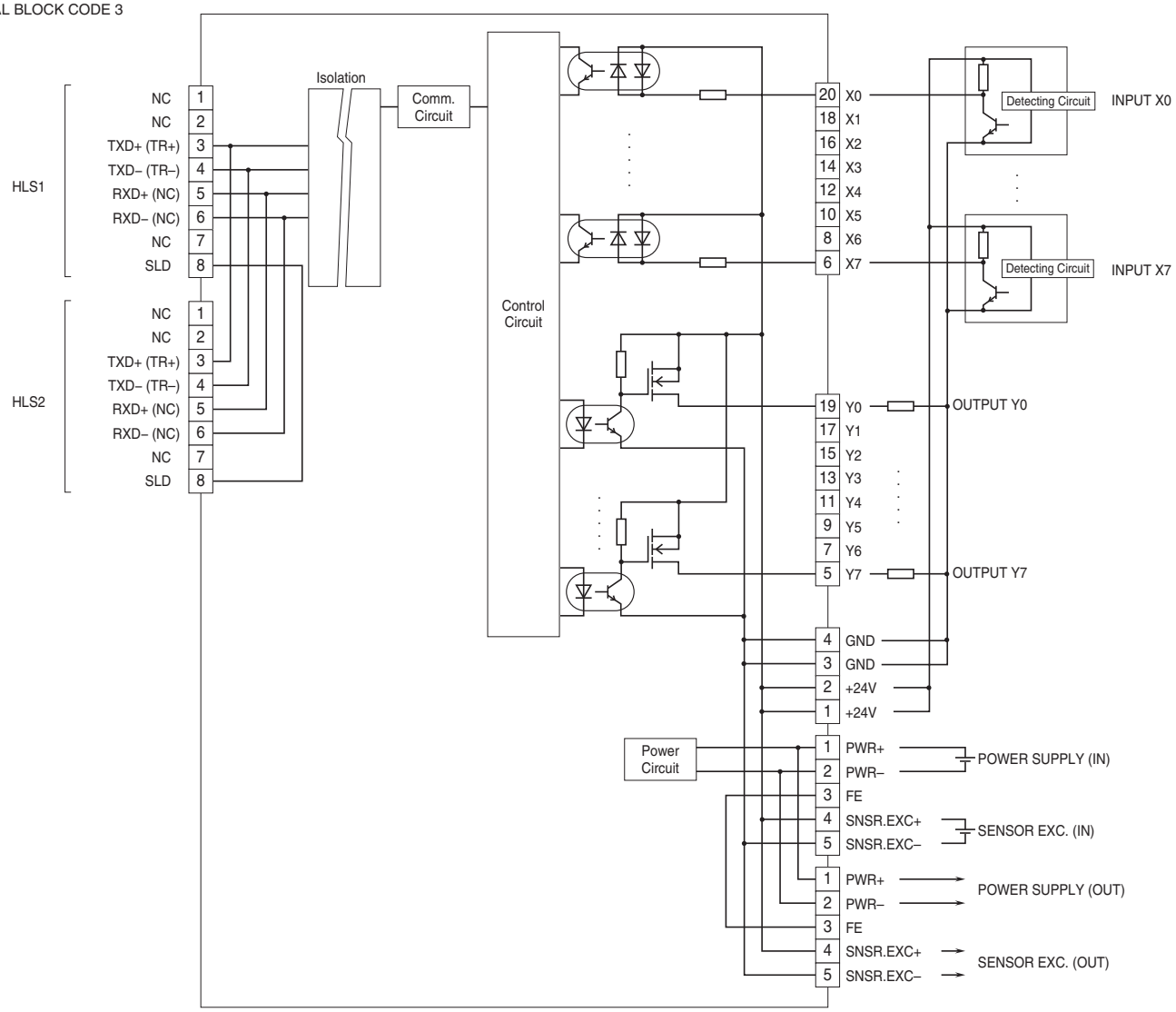
■ TERMINAL BLOCK CODE 2



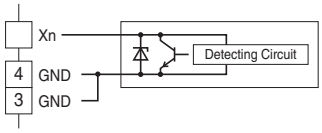
■ 2-Wire Sensor



■ TERMINAL BLOCK CODE 3



■ 2-Wire Sensor



NPN DISCRETE INPUT &

NPN TRANSISTOR OUTPUT MODULE, 8 points each
(MIL connector)

MODEL:
R7F4DH-2-DAC16C
R7F4DH-3-DAC16C

SPECIFICATIONS

■ COMMON SPECIFICATIONS

Input common: Positive common per 8 points
Output common: Negative common per 8 points
Input rating/load voltage: 24 V DC ±10 %, ripple 5 %p-p max.
Number of I/O: Input, 8 points; Output, 8 points
Maximum I/O applicable at once: No limit (at 24 V DC)
I/O status indicator: LED turns ON with contact ON
Isolation: I/O or sensor excitation to HLS to power input to FE
Data allocation: 1

■ INPUT

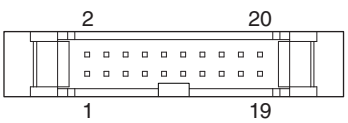
ON voltage / current: ≥ 15 V DC (I/O's X0 through X7 to +24 V) / ≥ 3.5 mA
OFF voltage / current: ≤ 5 V DC (I/O's X0 through X7 to +24 V) / ≤ 1 mA
Input current: ≤ 5.5 mA per point at 24 V DC
Input resistance: Approx. 4.4 kΩ
ON delay: ≤ 0.5 msec.
OFF delay: ≤ 0.5 msec.

■ OUTPUT

Rated output current: 0.1 A per point, 0.8 A per common
Residual voltage: ≤ 1.2 V
Leakage current: ≤ 0.1 mA
ON delay: ≤ 0.2 msec.
OFF delay: ≤ 0.5 msec.
Overload current protection function: Limits the current value when overcurrent is detected
Overheat Protection Function:
Turns OFF the output when overheat is detected
(When driving an inductive load, connect a diode in parallel with the load.)

TERMINAL ASSIGNMENTS

■ I/O Terminal



1. TERMINAL BLOCK CODE 2

PIN No.	ID	FUNCTION	PIN No.	ID	FUNCTION
1	X0	Input 0	11	Y2	Output 2
2	X1	Input 1	12	Y3	Output 3
3	X2	Input 2	13	Y4	Output 4
4	X3	Input 3	14	Y5	Output 5
5	X4	Input 4	15	Y6	Output 6
6	X5	Input 5	16	Y7	Output 7
7	X6	Input 6	17	GND	0V
8	X7	Input 7	18	GND	0V
9	Y0	Output 0	19	+24V	24VDC
10	Y1	Output 1	20	+24V	24VDC

2. TERMINAL BLOCK CODE 3

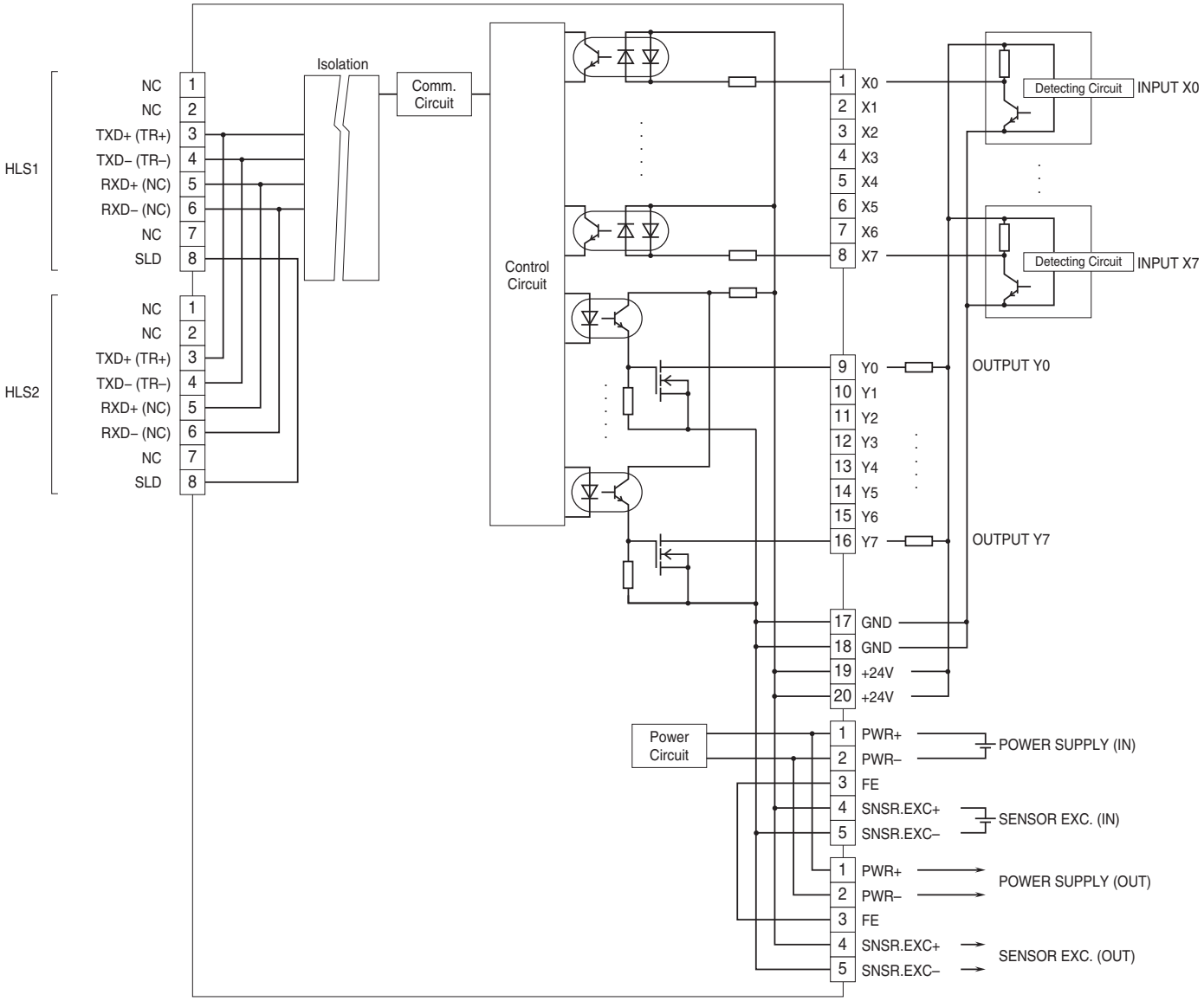
PIN No.	ID	FUNCTION	PIN No.	ID	FUNCTION
1	+24V	24VDC	11	Y4	Output 4
2	+24V	24VDC	12	X4	Input 4
3	GND	0V	13	Y3	Output 3
4	GND	0V	14	X3	Input 3
5	Y7	Output 7	15	Y2	Output 2
6	X7	Input 7	16	X2	Input 2
7	Y6	Output 6	17	Y1	Output 1
8	X6	Input 6	18	X1	Input 1
9	Y5	Output 5	19	Y0	Output 0
10	X5	Input 5	20	X0	Input 0

SCHEMATIC CIRCUITRY

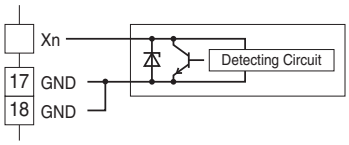
Note: In order to improve EMC performance, bond the FE terminal to ground.

Caution: FE terminal is NOT a protective conductor terminal.

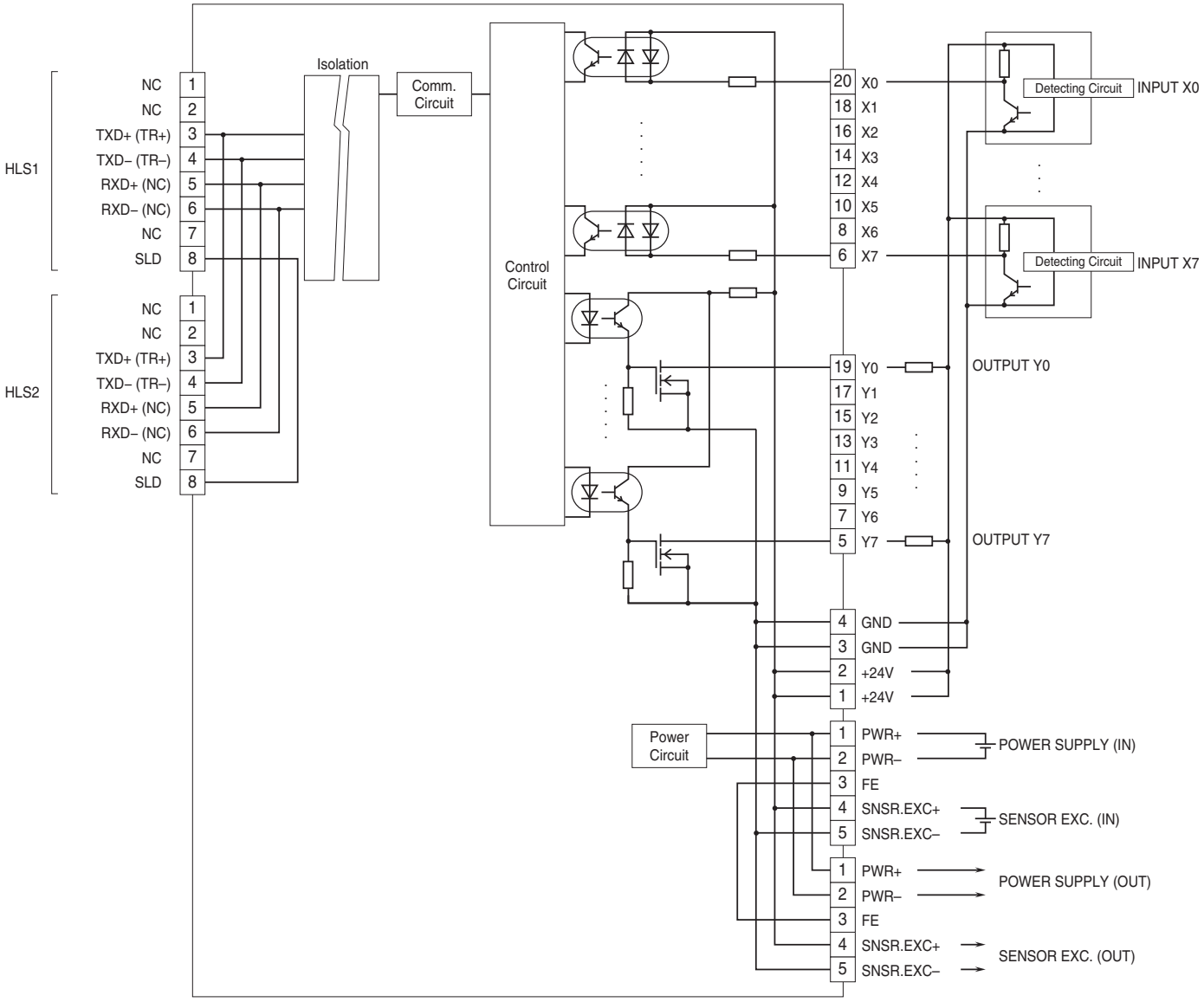
■ TERMINAL BLOCK CODE 2



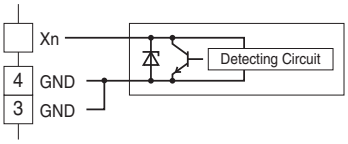
■ 2-Wire Sensor



■ TERMINAL BLOCK CODE 3



■ 2-Wire Sensor



PNP DISCRETE INPUT &

PNP TRANSISTOR OUTPUT MODULE, 8 points each
(MIL connector)

MODEL:
R7F4DH-2-DAC16D
R7F4DH-3-DAC16D

SPECIFICATIONS

■ COMMON SPECIFICATIONS

Input common: Negative common per 8 points
Output common: Positive common per 8 points
Input rating/load voltage: 24 V DC ±10 %, ripple 5 %p-p max.
Number of I/O: Input, 8 points; Output, 8 points
Maximum I/O applicable at once: No limit (at 24 V DC)
I/O status indicator: LED turns ON with contact ON
Isolation: I/O or sensor excitation to HLS to power input to FE
Data allocation: 1

■ INPUT

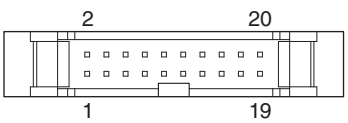
ON voltage / current: ≥ 15 V DC (I/O's X0 through X7 to GND) / ≥ 3.5 mA
OFF voltage / current: ≤ 5 V DC (I/O's X0 through X7 to GND) / ≤ 1 mA
Input current: ≤ 5.5 mA per point at 24 V DC
Input resistance: Approx. 4.4 kΩ
ON delay: ≤ 0.5 msec.
OFF delay: ≤ 0.5 msec.

■ OUTPUT

Rated output current: 0.1 A per point, 0.8 A per common
Residual voltage: ≤ 1.2 V
Leakage current: ≤ 0.1 mA
ON delay: ≤ 0.2 msec.
OFF delay: ≤ 0.5 msec.
Overload current protection function: Limits the current value when overcurrent is detected
Overheat Protection Function:
Turns OFF the output when overheat is detected
(When driving an inductive load, connect a diode in parallel with the load.)

TERMINAL ASSIGNMENTS

■ I/O Terminal



1. TERMINAL BLOCK CODE 2

PIN No.	ID	FUNCTION	PIN No.	ID	FUNCTION
1	X0	Input 0	11	Y2	Output 2
2	X1	Input 1	12	Y3	Output 3
3	X2	Input 2	13	Y4	Output 4
4	X3	Input 3	14	Y5	Output 5
5	X4	Input 4	15	Y6	Output 6
6	X5	Input 5	16	Y7	Output 7
7	X6	Input 6	17	GND	0V
8	X7	Input 7	18	GND	0V
9	Y0	Output 0	19	+24V	24VDC
10	Y1	Output 1	20	+24V	24VDC

2. TERMINAL BLOCK CODE 3

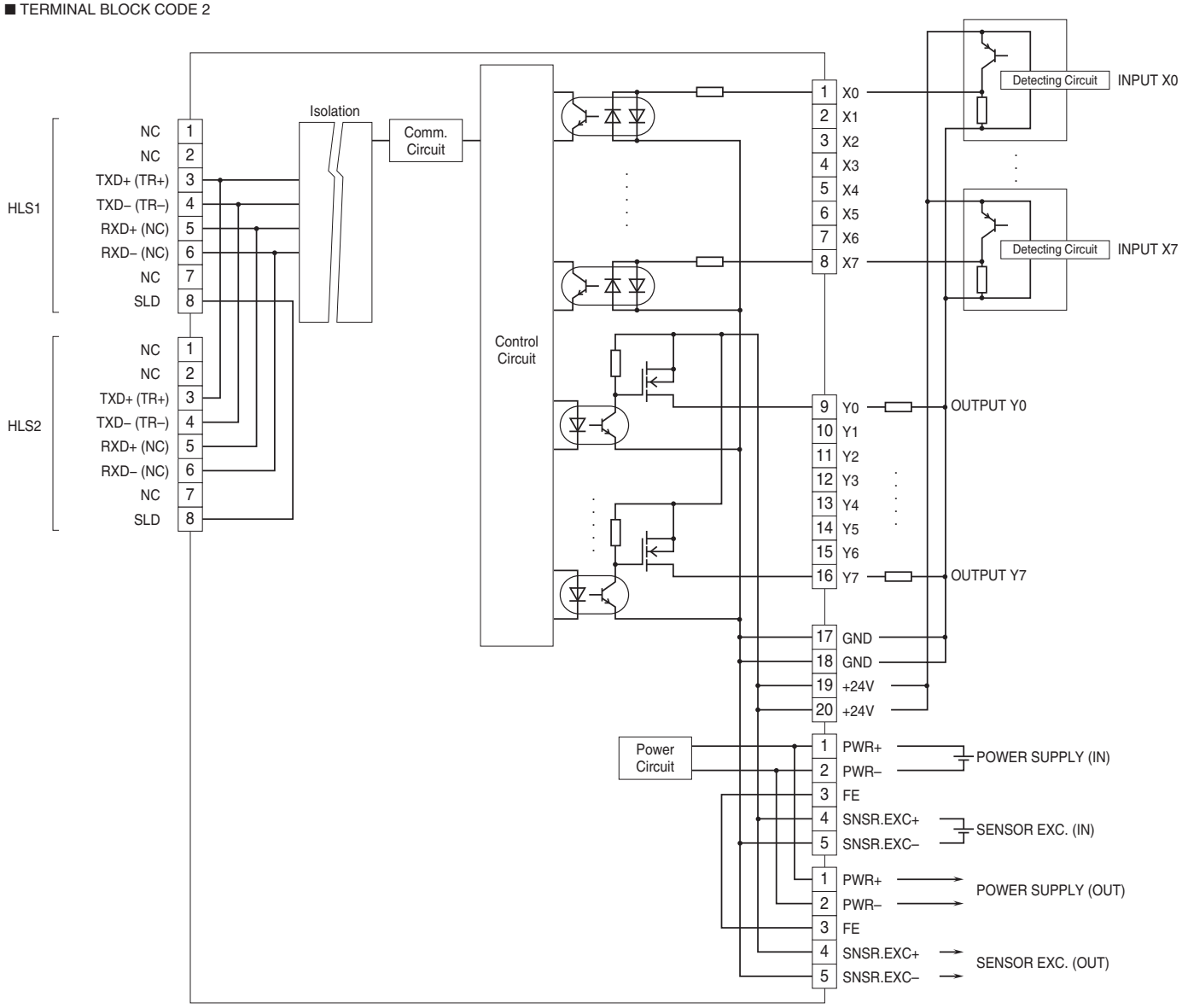
PIN No.	ID	FUNCTION	PIN No.	ID	FUNCTION
1	+24V	24VDC	11	Y4	Output 4
2	+24V	24VDC	12	X4	Input 4
3	GND	0V	13	Y3	Output 3
4	GND	0V	14	X3	Input 3
5	Y7	Output 7	15	Y2	Output 2
6	X7	Input 7	16	X2	Input 2
7	Y6	Output 6	17	Y1	Output 1
8	X6	Input 6	18	X1	Input 1
9	Y5	Output 5	19	Y0	Output 0
10	X5	Input 5	20	X0	Input 0

SCHEMATIC CIRCUITRY

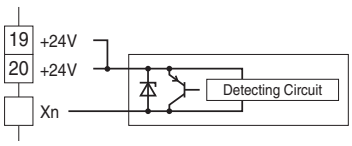
Note: In order to improve EMC performance, bond the FE terminal to ground.

Caution: FE terminal is NOT a protective conductor terminal.

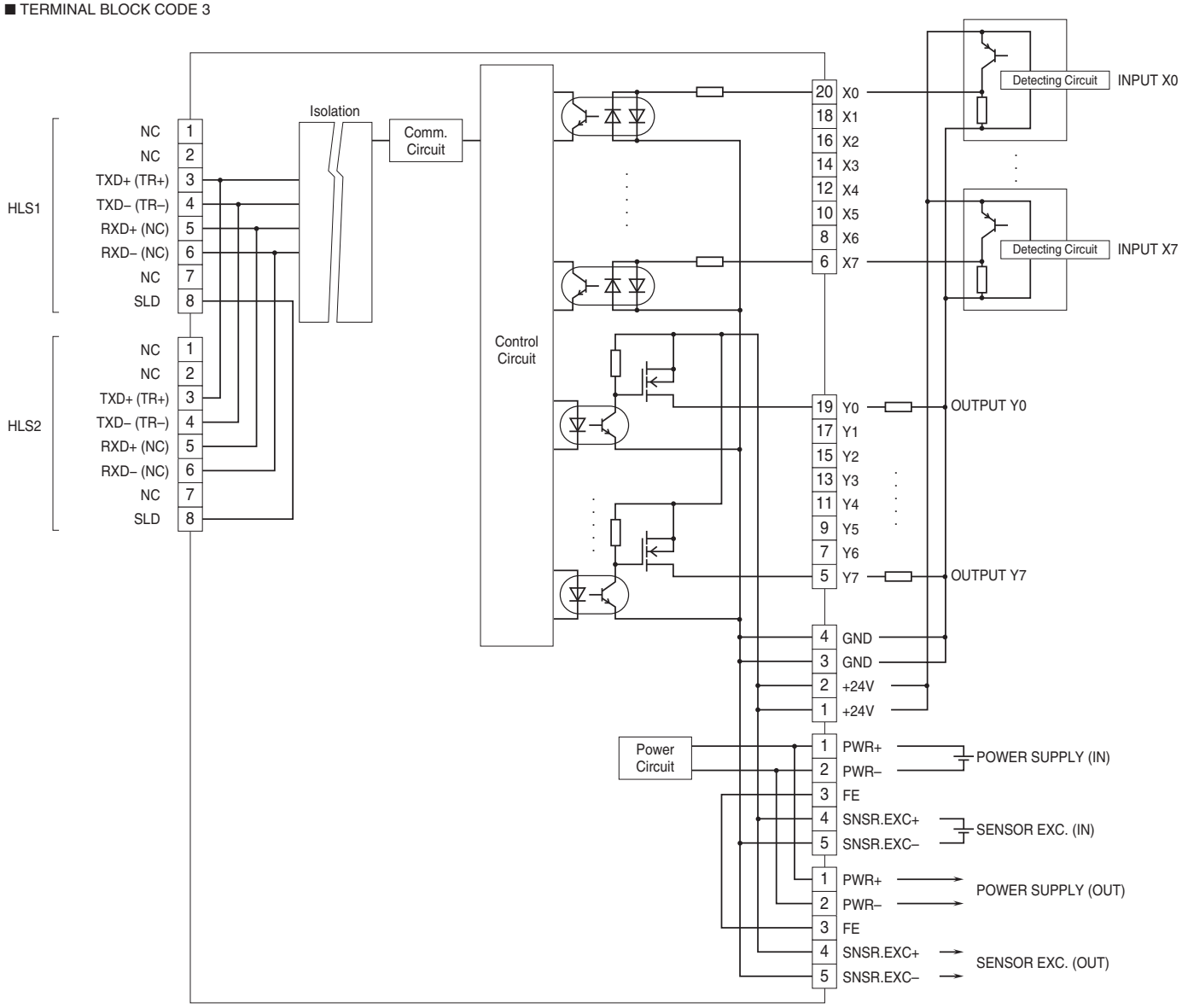
■ TERMINAL BLOCK CODE 2



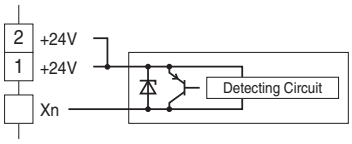
■ 2-Wire Sensor



■ TERMINAL BLOCK CODE 3



■ 2-Wire Sensor



PNP DISCRETE INPUT &

NPN TRANSISTOR OUTPUT MODULE, 16 points each
(MIL connector)

MODEL:
R7F4DH-2-DAC32A
R7F4DH-3-DAC32A

SPECIFICATIONS

■ COMMON SPECIFICATIONS

Common: Negative common per 32 points
Input rating/load voltage: 24 V DC ±10 %, ripple 5 %p-p max.
Number of I/O: Input, 16 points; Output, 16 points
Maximum I/O applicable at once: No limit (at 24 V DC)
I/O status indicator: LED turns ON with contact ON
Isolation: I/O or sensor excitation to HLS to power input to FE
Data allocation: 1

■ INPUT

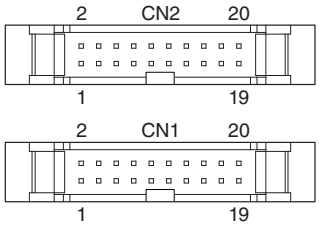
ON voltage / current: ≥ 15 V DC (I/O's X0 through XF to GND) / ≥ 3.5 mA
OFF voltage / current: ≤ 5 V DC (I/O's X0 through XF to GND) / ≤ 1 mA
Input current: ≤ 5.5 mA per point at 24 V DC
Input resistance: Approx. 4.4 kΩ
ON delay: ≤ 0.5 msec.
OFF delay: ≤ 0.5 msec.

■ OUTPUT

Rated output current: 0.1 A per point, 1.6 A per common
Residual voltage: ≤ 1.2 V
Leakage current: ≤ 0.1 mA
ON delay: ≤ 0.2 msec.
OFF delay: ≤ 0.5 msec.
Overload current protection function: Limits the current value when overcurrent is detected
Overheat Protection Function:
Turns OFF the output when overheat is detected
(When driving an inductive load, connect a diode in parallel with the load.)

TERMINAL ASSIGNMENTS

■ I/O Terminal



■ **TERMINAL BLOCK CODE 2**

• **CN1**

PIN No.	ID	FUNCTION	PIN No.	ID	FUNCTION
1	X0	INPUT 0	11	XA	INPUT 10
2	X1	INPUT 1	12	XB	INPUT 11
3	X2	INPUT 2	13	XC	INPUT 12
4	X3	INPUT 3	14	XD	INPUT 13
5	X4	INPUT 4	15	XE	INPUT 14
6	X5	INPUT 5	16	XF	INPUT 15
7	X6	INPUT 6	17	GND	0V
8	X7	INPUT 7	18	GND	0V
9	X8	INPUT 8	19	+24V	24V DC
10	X9	INPUT 9	20	+24V	24V DC

• **CN2**

PIN No.	ID	FUNCTION	PIN No.	ID	FUNCTION
1	Y0	OUTPUT 0	11	YA	OUTPUT 10
2	Y1	OUTPUT 1	12	YB	OUTPUT 11
3	Y2	OUTPUT 2	13	YC	OUTPUT 12
4	Y3	OUTPUT 3	14	YD	OUTPUT 13
5	Y4	OUTPUT 4	15	YE	OUTPUT 14
6	Y5	OUTPUT 5	16	YF	OUTPUT 15
7	Y6	OUTPUT 6	17	GND	0V
8	Y7	OUTPUT 7	18	GND	0V
9	Y8	OUTPUT 8	19	+24V	24V DC
10	Y9	OUTPUT 9	20	+24V	24V DC

■ **TERMINAL BLOCK CODE 3**

• **CN1**

PIN No.	ID	FUNCTION	PIN No.	ID	FUNCTION
1	+24V	24V DC	11	XC	INPUT 12
2	+24V	24V DC	12	X4	INPUT 4
3	GND	0V	13	XB	INPUT 11
4	GND	0V	14	X3	INPUT 3
5	XF	INPUT 15	15	XA	INPUT 10
6	X7	INPUT 7	16	X2	INPUT 2
7	XE	INPUT 14	17	X9	INPUT 9
8	X6	INPUT 6	18	X1	INPUT 1
9	XD	INPUT 13	19	X8	INPUT 8
10	X5	INPUT 5	20	X0	INPUT 0

• **CN2**

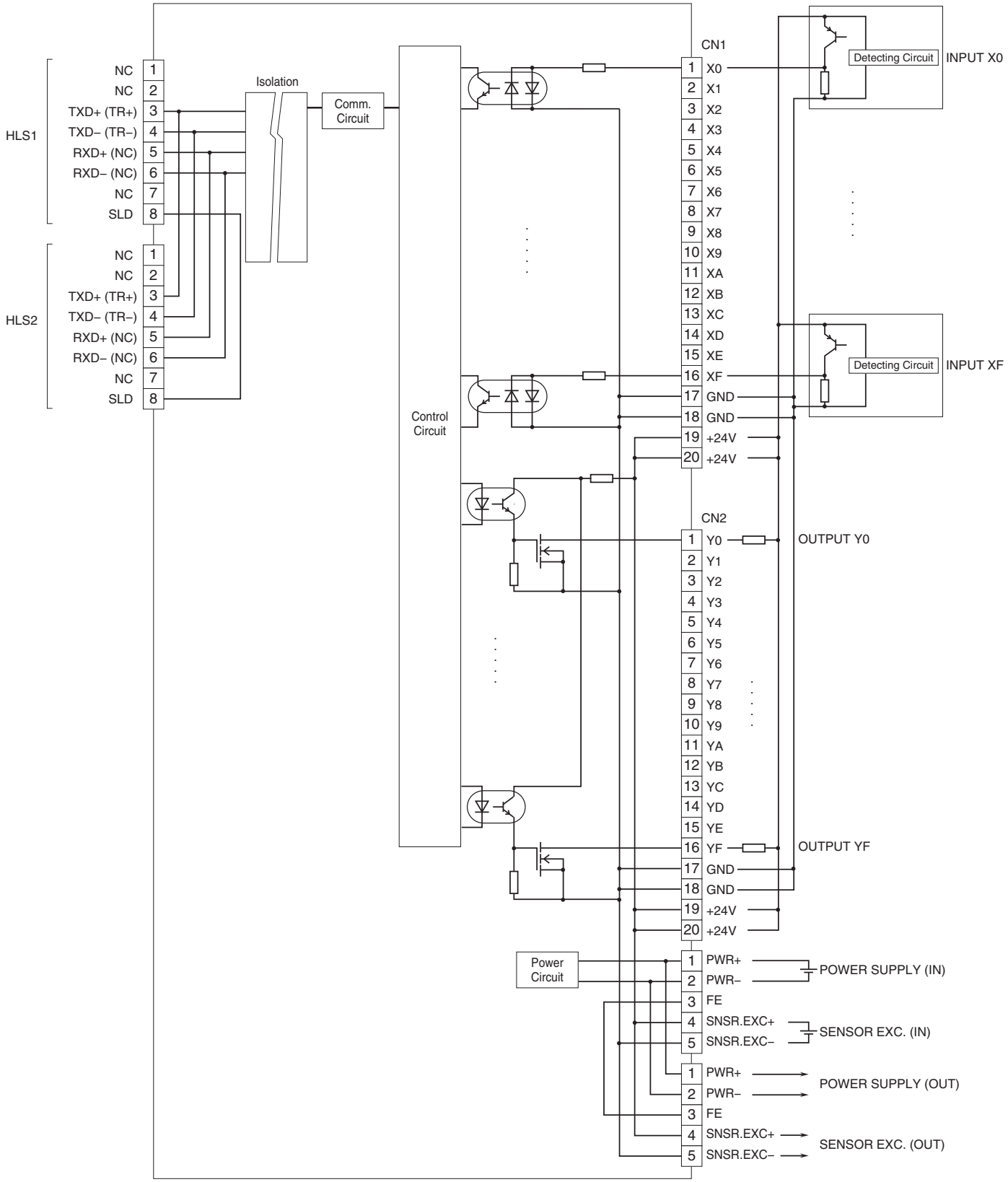
PIN No.	ID	FUNCTION	PIN No.	ID	FUNCTION
1	+24V	24V DC	11	YC	OUTPUT 12
2	+24V	24V DC	12	Y4	OUTPUT 4
3	GND	0V	13	YB	OUTPUT 11
4	GND	0V	14	Y3	OUTPUT 3
5	YF	OUTPUT 15	15	YA	OUTPUT 10
6	Y7	OUTPUT 7	16	Y2	OUTPUT 2
7	YE	OUTPUT 14	17	Y9	OUTPUT 9
8	Y6	OUTPUT 6	18	Y1	OUTPUT 1
9	YD	OUTPUT 13	19	Y8	OUTPUT 8
10	Y5	OUTPUT 5	20	Y0	OUTPUT 0

SCHEMATIC CIRCUITRY

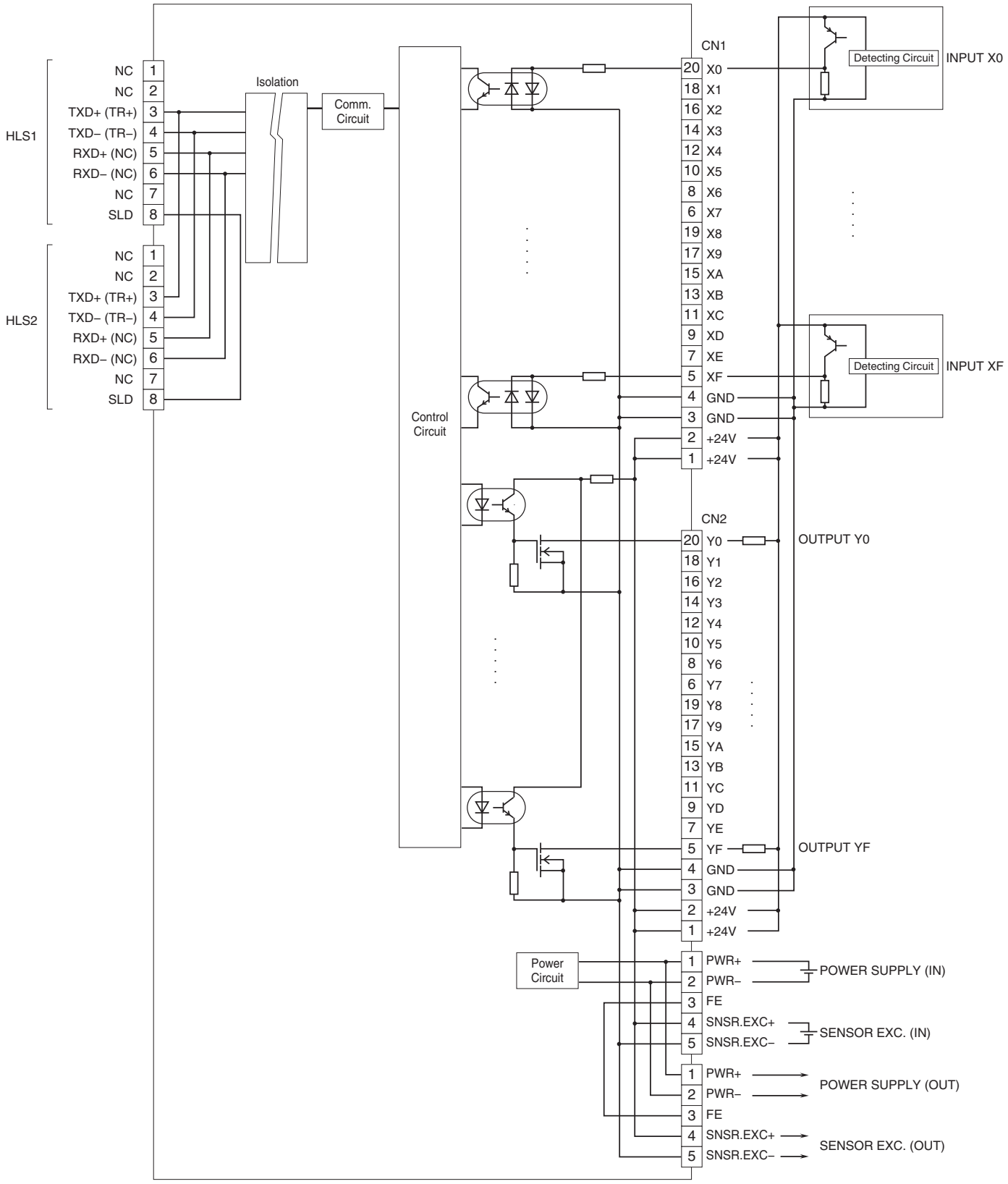
Note: In order to improve EMC performance, bond the FE terminal to ground.

Caution: FE terminal is NOT a protective conductor terminal.

■ **TERMINAL BLOCK CODE 2**



■ **TERMINAL BLOCK CODE 3**



NPN DISCRETE INPUT &

PNP TRANSISTOR OUTPUT MODULE, 16 points each
(MIL connector)

MODEL:
R7F4DH-2-DAC32B
R7F4DH-3-DAC32B

SPECIFICATIONS

■ COMMON SPECIFICATIONS

Common: Positive common per 32 points
Input rating/load voltage: 24 V DC ±10 %, ripple 5 %p-p max.
Number of I/O: Input, 16 points; Output, 16 points
Maximum I/O applicable at once: No limit (at 24 V DC)
I/O status indicator: LED turns ON with contact ON
Isolation: I/O or sensor excitation to HLS to power input to FE
Data allocation: 1

■ INPUT

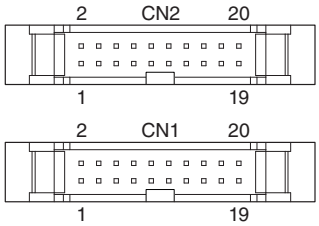
ON voltage / current: ≥ 15 V DC (I/O's X0 through XF to +24 V) / ≥ 3.5 mA
OFF voltage / current: ≤ 5 V DC (I/O's X0 through XF to +24 V) / ≤ 1 mA
Input current: ≤ 5.5 mA per point at 24 V DC
Input resistance: Approx. 4.4 kΩ
ON delay: ≤ 0.5 msec.
OFF delay: ≤ 0.5 msec.

■ OUTPUT

Rated output current: 0.1 A per point, 1.6 A per common
Residual voltage: ≤ 1.2 V
Leakage current: ≤ 0.1 mA
ON delay: ≤ 0.2 msec.
OFF delay: ≤ 0.5 msec.
Overload current protection function: Limits the current value when overcurrent is detected
Overheat Protection Function:
Turns OFF the output when overheat is detected
(When driving an inductive load, connect a diode in parallel with the load.)

TERMINAL ASSIGNMENTS

■ I/O Terminal



■ **TERMINAL BLOCK CODE 2**

• **CN1**

PIN No.	ID	FUNCTION	PIN No.	ID	FUNCTION
1	X0	INPUT 0	11	XA	INPUT 10
2	X1	INPUT 1	12	XB	INPUT 11
3	X2	INPUT 2	13	XC	INPUT 12
4	X3	INPUT 3	14	XD	INPUT 13
5	X4	INPUT 4	15	XE	INPUT 14
6	X5	INPUT 5	16	XF	INPUT 15
7	X6	INPUT 6	17	GND	0V
8	X7	INPUT 7	18	GND	0V
9	X8	INPUT 8	19	+24V	24V DC
10	X9	INPUT 9	20	+24V	24V DC

• **CN2**

PIN No.	ID	FUNCTION	PIN No.	ID	FUNCTION
1	Y0	OUTPUT 0	11	YA	OUTPUT 10
2	Y1	OUTPUT 1	12	YB	OUTPUT 11
3	Y2	OUTPUT 2	13	YC	OUTPUT 12
4	Y3	OUTPUT 3	14	YD	OUTPUT 13
5	Y4	OUTPUT 4	15	YE	OUTPUT 14
6	Y5	OUTPUT 5	16	YF	OUTPUT 15
7	Y6	OUTPUT 6	17	GND	0V
8	Y7	OUTPUT 7	18	GND	0V
9	Y8	OUTPUT 8	19	+24V	24V DC
10	Y9	OUTPUT 9	20	+24V	24V DC

■ **TERMINAL BLOCK CODE 3**

• **CN1**

PIN No.	ID	FUNCTION	PIN No.	ID	FUNCTION
1	+24V	24V DC	11	XC	INPUT 12
2	+24V	24V DC	12	X4	INPUT 4
3	GND	0V	13	XB	INPUT 11
4	GND	0V	14	X3	INPUT 3
5	XF	INPUT 15	15	XA	INPUT 10
6	X7	INPUT 7	16	X2	INPUT 2
7	XE	INPUT 14	17	X9	INPUT 9
8	X6	INPUT 6	18	X1	INPUT 1
9	XD	INPUT 13	19	X8	INPUT 8
10	X5	INPUT 5	20	X0	INPUT 0

• **CN2**

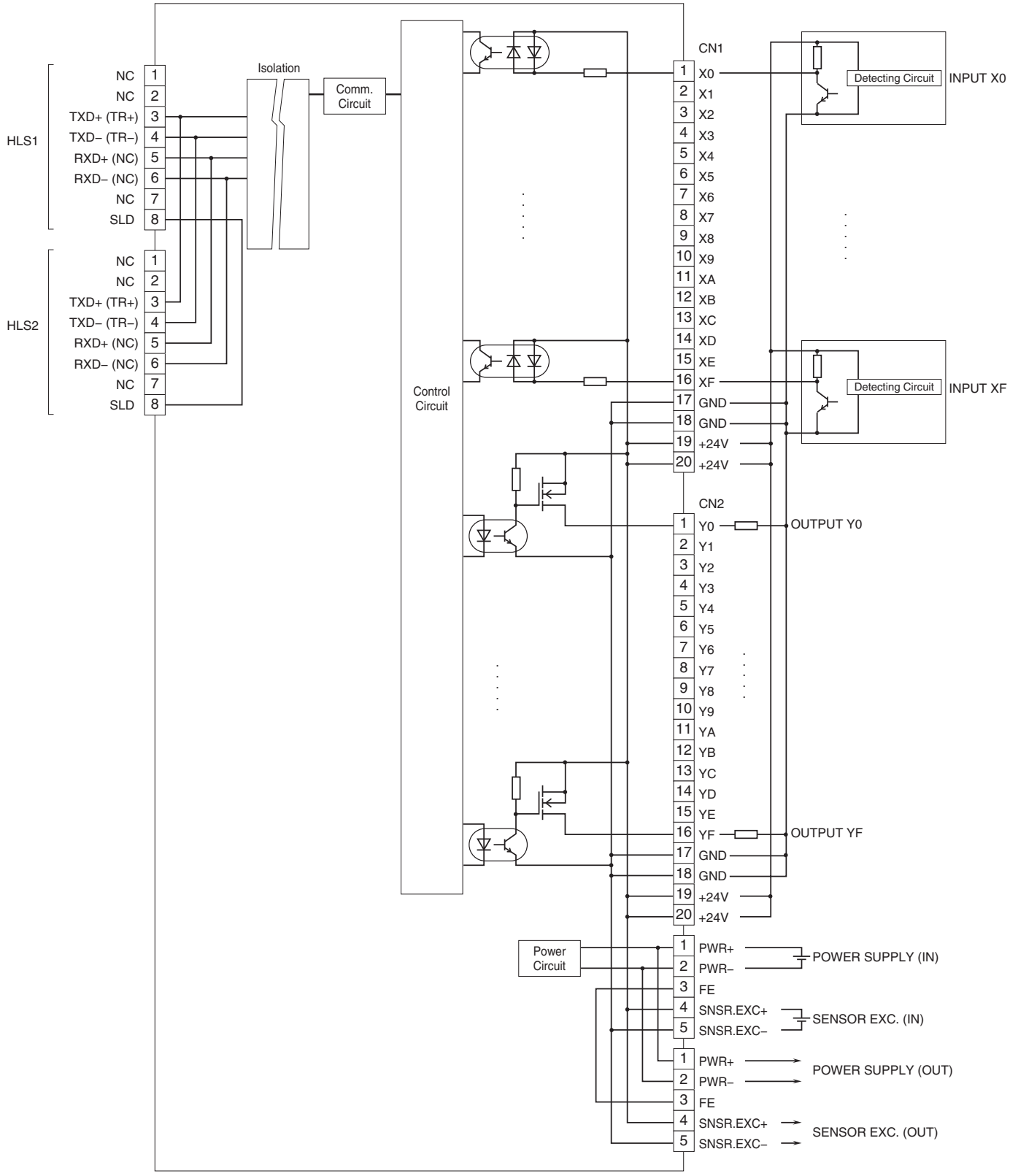
PIN No.	ID	FUNCTION	PIN No.	ID	FUNCTION
1	+24V	24V DC	11	YC	OUTPUT 12
2	+24V	24V DC	12	Y4	OUTPUT 4
3	GND	0V	13	YB	OUTPUT 11
4	GND	0V	14	Y3	OUTPUT 3
5	YF	OUTPUT 15	15	YA	OUTPUT 10
6	Y7	OUTPUT 7	16	Y2	OUTPUT 2
7	YE	OUTPUT 14	17	Y9	OUTPUT 9
8	Y6	OUTPUT 6	18	Y1	OUTPUT 1
9	YD	OUTPUT 13	19	Y8	OUTPUT 8
10	Y5	OUTPUT 5	20	Y0	OUTPUT 0

SCHEMATIC CIRCUITRY

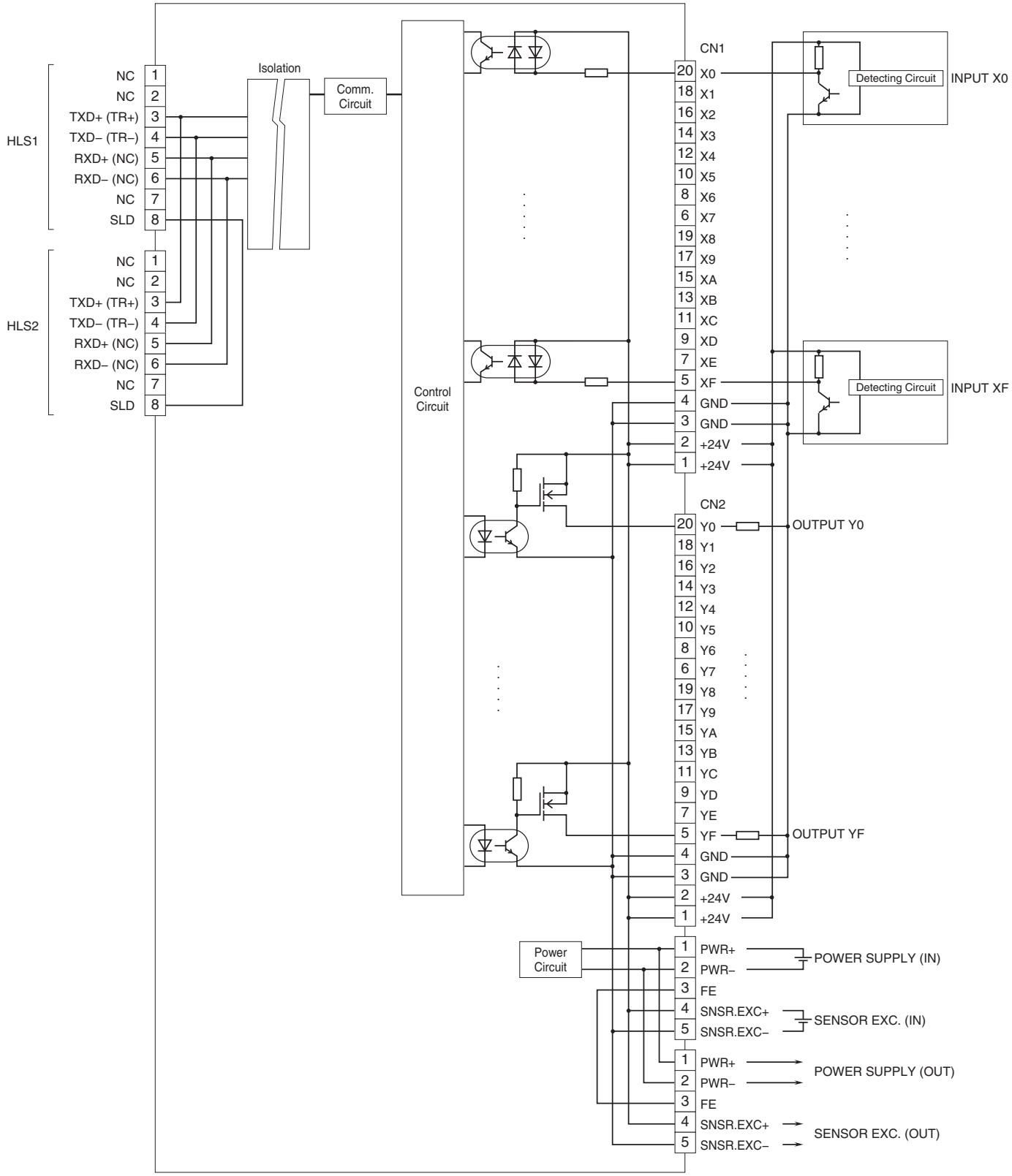
Note: In order to improve EMC performance, bond the FE terminal to ground.

Caution: FE terminal is NOT a protective conductor terminal.

■ **TERMINAL BLOCK CODE 2**



■ **TERMINAL BLOCK CODE 3**



NPN DISCRETE INPUT &

NPN TRANSISTOR OUTPUT MODULE, 16 points each
(MIL connector)

MODEL:
R7F4DH-2-DAC32C
R7F4DH-3-DAC32C

SPECIFICATIONS

■ COMMON SPECIFICATIONS

Input common: Positive common per 16 points
Output common: Negative common per 16 points
Input rating/load voltage: 24 V DC ±10 %, ripple 5 %p-p max.
Number of I/O: Input, 16 points; Output, 16 points
Maximum I/O applicable at once: No limit (at 24 V DC)
I/O status indicator: LED turns ON with contact ON
Isolation: I/O or sensor excitation to HLS to power input to FE
Data allocation: 1

■ INPUT

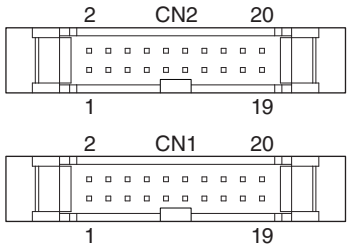
ON voltage / current: ≥ 15 V DC (I/O's X0 through XF to +24 V) / ≥ 3.5 mA
OFF voltage / current: ≤ 5 V DC (I/O's X0 through XF to +24 V) / ≤ 1 mA
Input current: ≤ 5.5 mA per point at 24 V DC
Input resistance: Approx. 4.4 kΩ
ON delay: ≤ 0.5 msec.
OFF delay: ≤ 0.5 msec.

■ OUTPUT

Rated output current: 0.1 A per point, 1.6 A per common
Residual voltage: ≤ 1.2 V
Leakage current: ≤ 0.1 mA
ON delay: ≤ 0.2 msec.
OFF delay: ≤ 0.5 msec.
Overload current protection function: Limits the current value when overcurrent is detected
Overheat Protection Function:
Turns OFF the output when overheat is detected
(When driving an inductive load, connect a diode in parallel with the load.)

TERMINAL ASSIGNMENTS

■ I/O Terminal



■ TERMINAL BLOCK CODE 2

• CN1

PIN No.	ID	FUNCTION	PIN No.	ID	FUNCTION
1	X0	INPUT 0	11	XA	INPUT 10
2	X1	INPUT 1	12	XB	INPUT 11
3	X2	INPUT 2	13	XC	INPUT 12
4	X3	INPUT 3	14	XD	INPUT 13
5	X4	INPUT 4	15	XE	INPUT 14
6	X5	INPUT 5	16	XF	INPUT 15
7	X6	INPUT 6	17	GND	0V
8	X7	INPUT 7	18	GND	0V
9	X8	INPUT 8	19	+24V	24V DC
10	X9	INPUT 9	20	+24V	24V DC

• CN2

PIN No.	ID	FUNCTION	PIN No.	ID	FUNCTION
1	Y0	OUTPUT 0	11	YA	OUTPUT 10
2	Y1	OUTPUT 1	12	YB	OUTPUT 11
3	Y2	OUTPUT 2	13	YC	OUTPUT 12
4	Y3	OUTPUT 3	14	YD	OUTPUT 13
5	Y4	OUTPUT 4	15	YE	OUTPUT 14
6	Y5	OUTPUT 5	16	YF	OUTPUT 15
7	Y6	OUTPUT 6	17	GND	0V
8	Y7	OUTPUT 7	18	GND	0V
9	Y8	OUTPUT 8	19	+24V	24V DC
10	Y9	OUTPUT 9	20	+24V	24V DC

■ TERMINAL BLOCK CODE 3

• CN1

PIN No.	ID	FUNCTION	PIN No.	ID	FUNCTION
1	+24V	24V DC	11	XC	INPUT 12
2	+24V	24V DC	12	X4	INPUT 4
3	GND	0V	13	XB	INPUT 11
4	GND	0V	14	X3	INPUT 3
5	XF	INPUT 15	15	XA	INPUT 10
6	X7	INPUT 7	16	X2	INPUT 2
7	XE	INPUT 14	17	X9	INPUT 9
8	X6	INPUT 6	18	X1	INPUT 1
9	XD	INPUT 13	19	X8	INPUT 8
10	X5	INPUT 5	20	X0	INPUT 0

• CN2

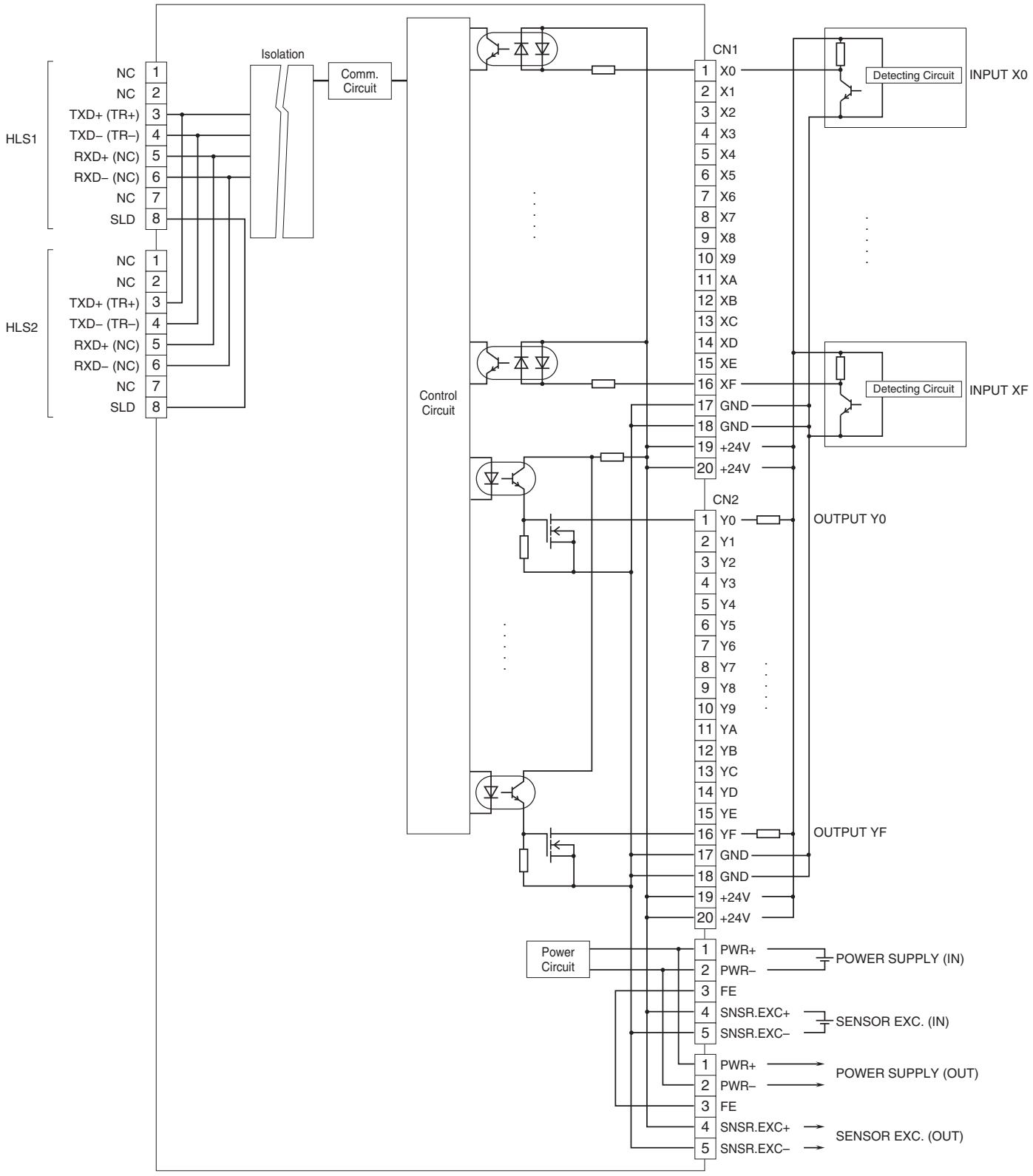
PIN No.	ID	FUNCTION	PIN No.	ID	FUNCTION
1	+24V	24V DC	11	YC	OUTPUT 12
2	+24V	24V DC	12	Y4	OUTPUT 4
3	GND	0V	13	YB	OUTPUT 11
4	GND	0V	14	Y3	OUTPUT 3
5	YF	OUTPUT 15	15	YA	OUTPUT 10
6	Y7	OUTPUT 7	16	Y2	OUTPUT 2
7	YE	OUTPUT 14	17	Y9	OUTPUT 9
8	Y6	OUTPUT 6	18	Y1	OUTPUT 1
9	YD	OUTPUT 13	19	Y8	OUTPUT 8
10	Y5	OUTPUT 5	20	Y0	OUTPUT 0

SCHEMATIC CIRCUITRY

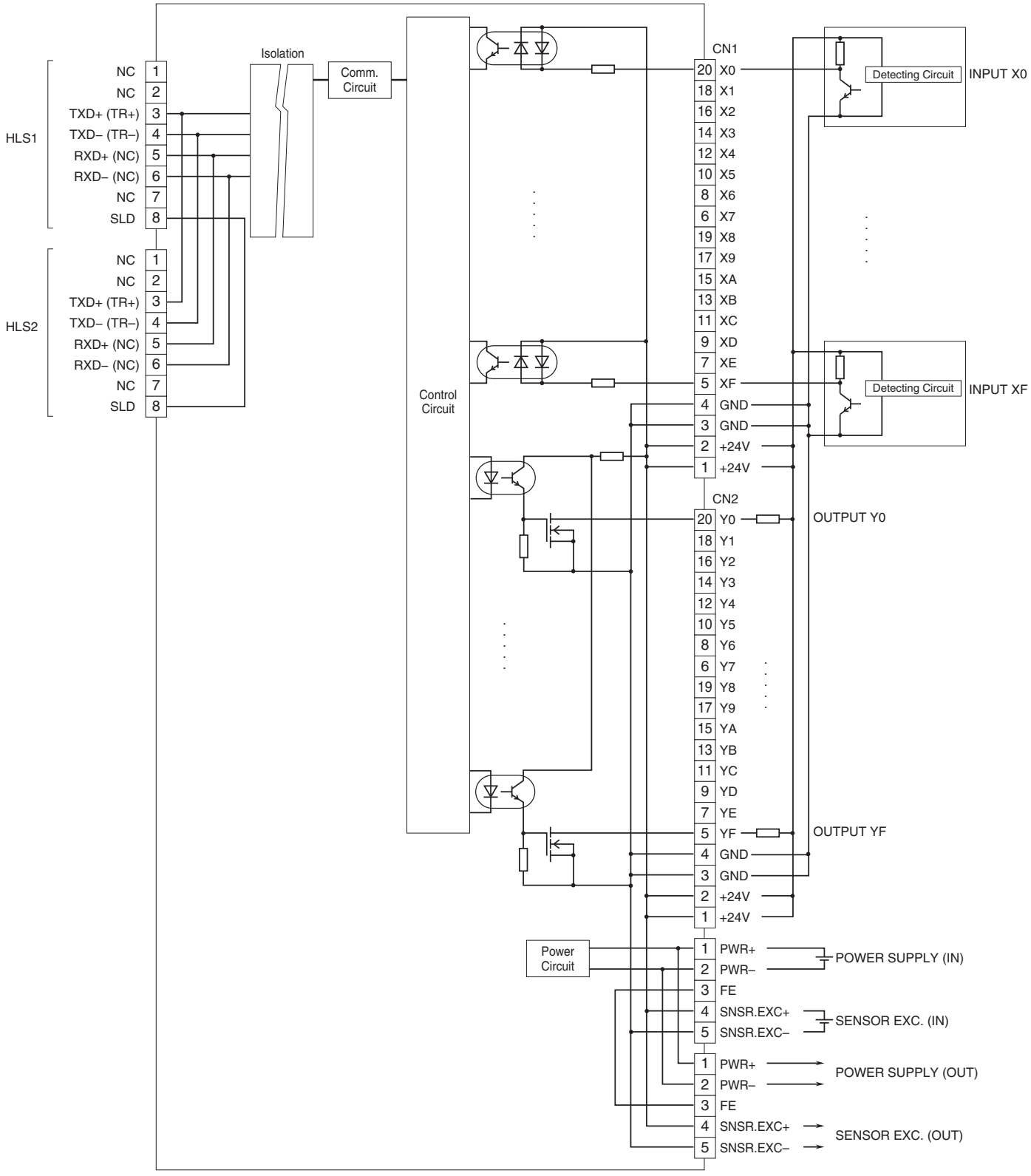
Note: In order to improve EMC performance, bond the FE terminal to ground.

Caution: FE terminal is NOT a protective conductor terminal.

■ **TERMINAL BLOCK CODE 2**



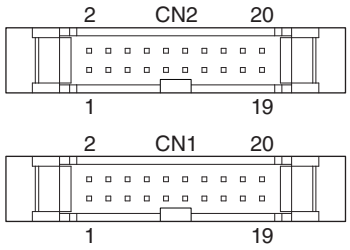
■ **TERMINAL BLOCK CODE 3**



PNP DISCRETE INPUT &

PNP TRANSISTOR OUTPUT MODULE, 16 points each
(MIL connector)

MODEL:
R7F4DH-2-DAC32D
R7F4DH-3-DAC32D



SPECIFICATIONS

■ COMMON SPECIFICATIONS

Input common: Negative common per 16 points
Output common: Positive common per 16 points
Input rating/load voltage: 24 V DC ±10 %, ripple 5 %p-p max.
Number of I/O: Input, 16 points; Output, 16 points
Maximum I/O applicable at once: No limit (at 24 V DC)
I/O status indicator: LED turns ON with contact ON
Isolation: I/O or sensor excitation to HLS to power input to FE
Data allocation: 1

■ INPUT

ON voltage / current: ≥ 15 V DC (I/O's X0 through XF to GND) / ≥ 3.5 mA
OFF voltage / current: ≤ 5 V DC (I/O's X0 through XF to GND) / ≤ 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.

■ OUTPUT

Rated output current: 0.1 A per point, 1.6 A per common
Residual voltage: ≤ 1.2 V
Leakage current: ≤ 0.1 mA
ON delay: ≤ 0.2 msec.
OFF delay: ≤ 0.5 msec.
Overload current protection function: Limits the current value when overcurrent is detected
Overheat Protection Function:
Turns OFF the output when overheat is detected
(When driving an inductive load, connect a diode in parallel with the load.)

TERMINAL ASSIGNMENTS

■ I/O Terminal

■ **TERMINAL BLOCK CODE 2**

• **CN1**

PIN No.	ID	FUNCTION	PIN No.	ID	FUNCTION
1	X0	INPUT 0	11	XA	INPUT 10
2	X1	INPUT 1	12	XB	INPUT 11
3	X2	INPUT 2	13	XC	INPUT 12
4	X3	INPUT 3	14	XD	INPUT 13
5	X4	INPUT 4	15	XE	INPUT 14
6	X5	INPUT 5	16	XF	INPUT 15
7	X6	INPUT 6	17	GND	0V
8	X7	INPUT 7	18	GND	0V
9	X8	INPUT 8	19	+24V	24V DC
10	X9	INPUT 9	20	+24V	24V DC

• **CN2**

PIN No.	ID	FUNCTION	PIN No.	ID	FUNCTION
1	Y0	OUTPUT 0	11	YA	OUTPUT 10
2	Y1	OUTPUT 1	12	YB	OUTPUT 11
3	Y2	OUTPUT 2	13	YC	OUTPUT 12
4	Y3	OUTPUT 3	14	YD	OUTPUT 13
5	Y4	OUTPUT 4	15	YE	OUTPUT 14
6	Y5	OUTPUT 5	16	YF	OUTPUT 15
7	Y6	OUTPUT 6	17	GND	0V
8	Y7	OUTPUT 7	18	GND	0V
9	Y8	OUTPUT 8	19	+24V	24V DC
10	Y9	OUTPUT 9	20	+24V	24V DC

■ **TERMINAL BLOCK CODE 3**

• **CN1**

PIN No.	ID	FUNCTION	PIN No.	ID	FUNCTION
1	+24V	24V DC	11	XC	INPUT 12
2	+24V	24V DC	12	X4	INPUT 4
3	GND	0V	13	XB	INPUT 11
4	GND	0V	14	X3	INPUT 3
5	XF	INPUT 15	15	XA	INPUT 10
6	X7	INPUT 7	16	X2	INPUT 2
7	XE	INPUT 14	17	X9	INPUT 9
8	X6	INPUT 6	18	X1	INPUT 1
9	XD	INPUT 13	19	X8	INPUT 8
10	X5	INPUT 5	20	X0	INPUT 0

• **CN2**

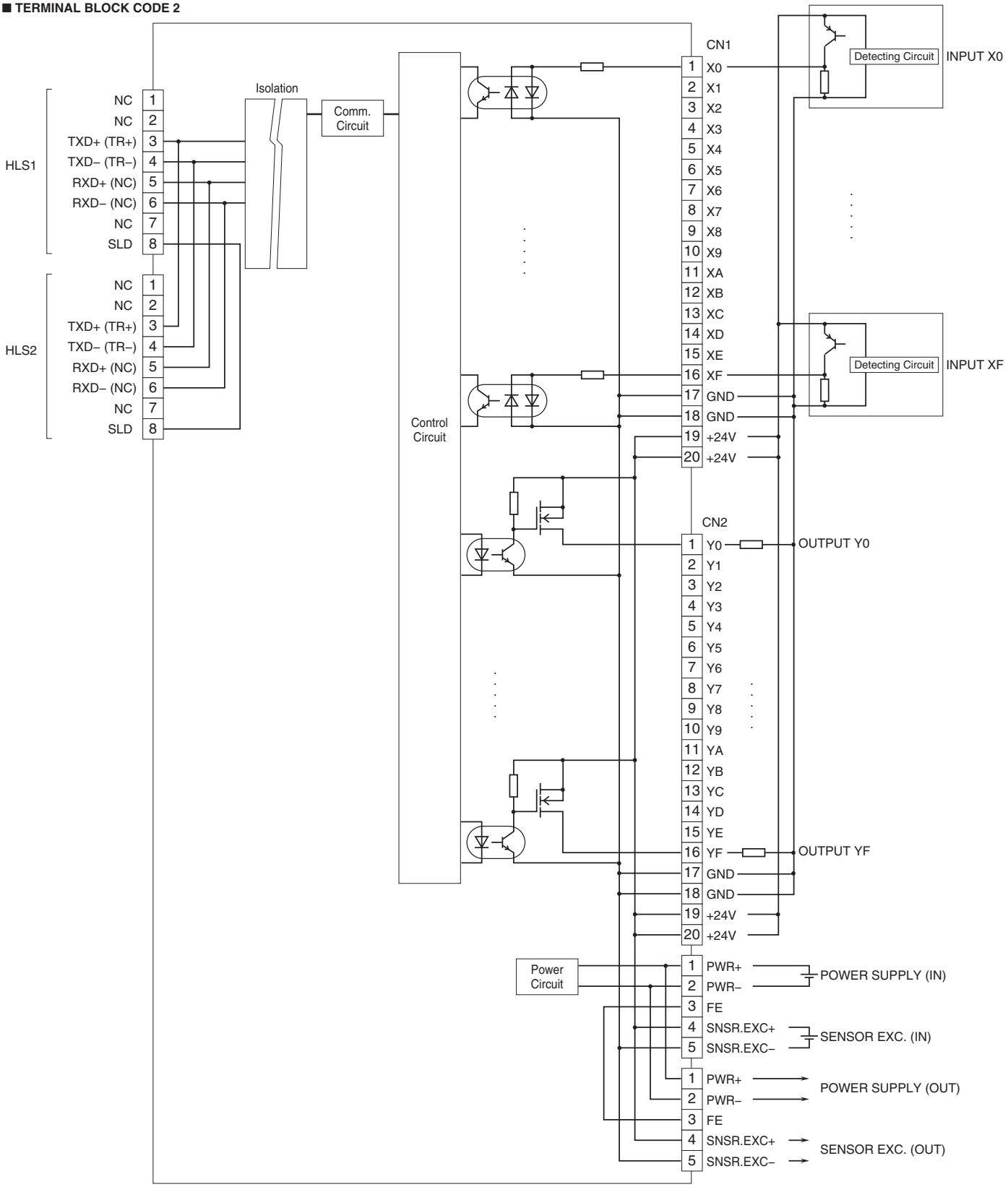
PIN No.	ID	FUNCTION	PIN No.	ID	FUNCTION
1	+24V	24V DC	11	YC	OUTPUT 12
2	+24V	24V DC	12	Y4	OUTPUT 4
3	GND	0V	13	YB	OUTPUT 11
4	GND	0V	14	Y3	OUTPUT 3
5	YF	OUTPUT 15	15	YA	OUTPUT 10
6	Y7	OUTPUT 7	16	Y2	OUTPUT 2
7	YE	OUTPUT 14	17	Y9	OUTPUT 9
8	Y6	OUTPUT 6	18	Y1	OUTPUT 1
9	YD	OUTPUT 13	19	Y8	OUTPUT 8
10	Y5	OUTPUT 5	20	Y0	OUTPUT 0

SCHEMATIC CIRCUITRY

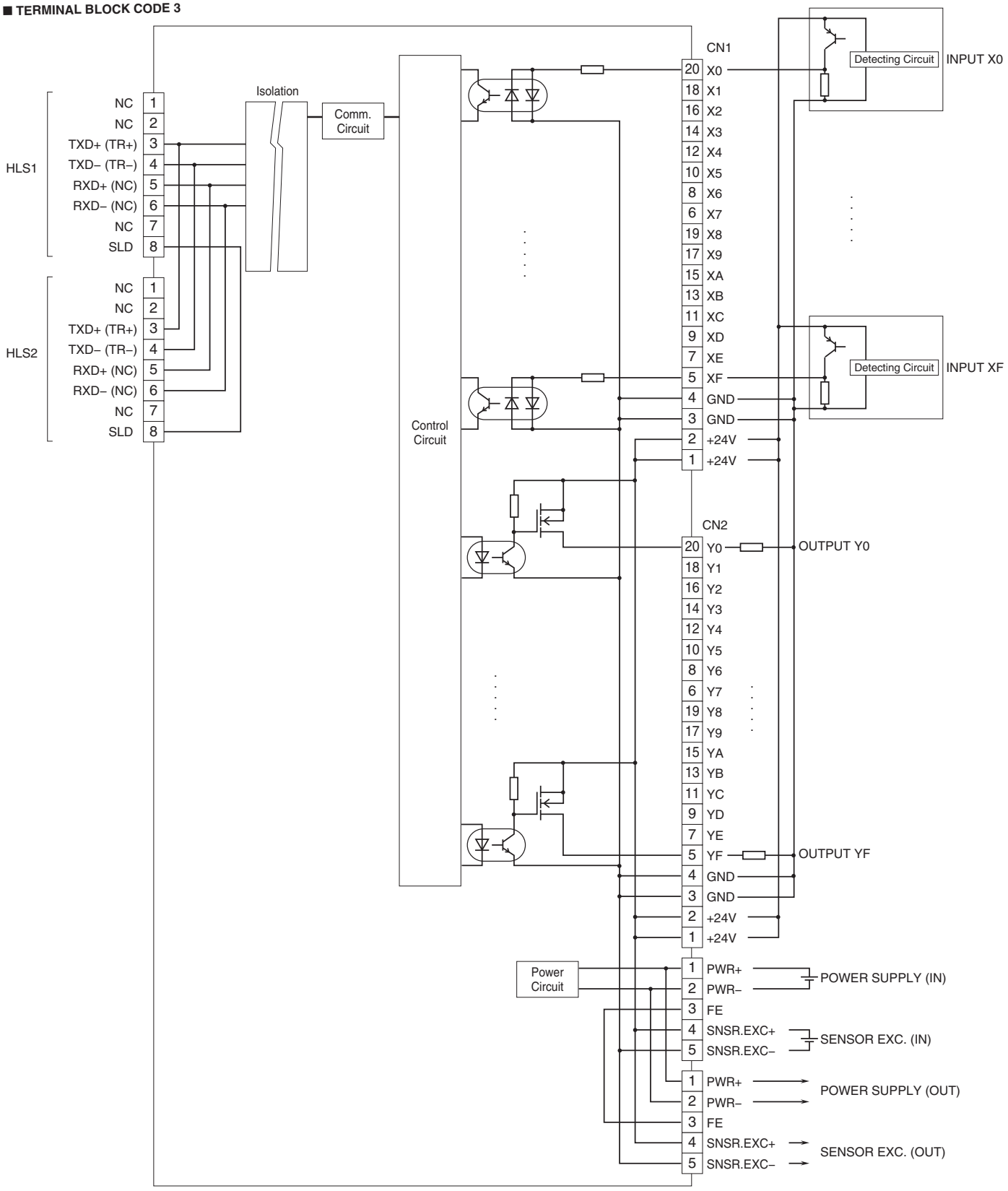
Note: In order to improve EMC performance, bond the FE terminal to ground.

Caution: FE terminal is NOT a protective conductor terminal.

■ **TERMINAL BLOCK CODE 2**



■ **TERMINAL BLOCK CODE 3**



NPN DISCRETE INPUT MODULE, 16 points

(Tension clamp terminal block)

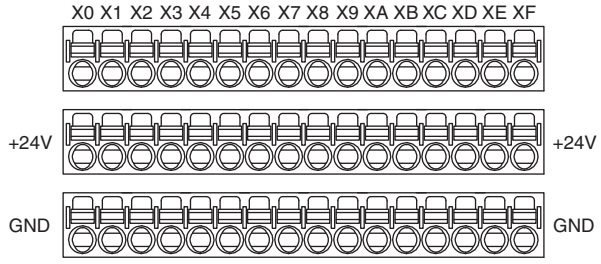
MODEL: R7F4DH-4-DA16A

SPECIFICATIONS

Common: Positive common (NPN) per 16 points
Number of I/O: Input, 16 points
Maximum inputs applicable at once: No limit (at 24 V DC)
Input status indicator: LED turns ON with contact ON
Isolation: Input or sensor excitation to HLS to power input to FE
Data allocation: 1
Rated input voltage: 24 V DC ±10 %; ripple 5 %p-p max.
ON voltage / current: ≥ 15 V DC (X0 through XF to +24 V) / ≥ 3.5 mA
OFF voltage / current: ≤ 5 V DC (X0 through XF to +24 V) / ≤ 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.

TERMINAL ASSIGNMENTS

■ Input Terminal

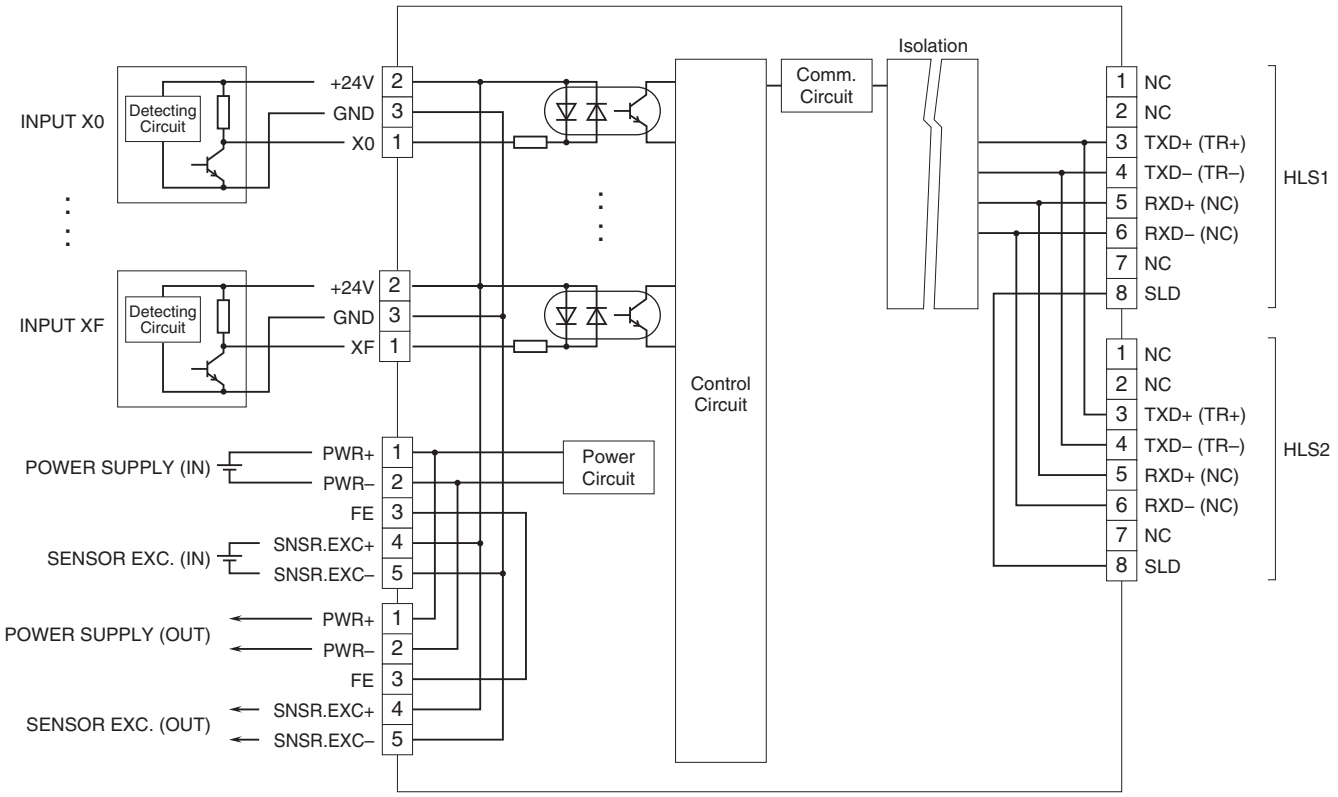


PIN No.		ID	FUNCTION	PIN No.		ID	FUNCTION
X0	1	X0	Input 0	X8	1	X8	Input 8
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V
X1	1	X1	Input 1	X9	1	X9	Input 9
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V
X2	1	X2	Input 2	XA	1	XA	Input 10
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V
X3	1	X3	Input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

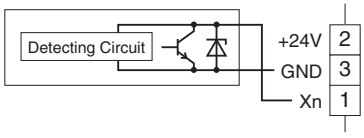
SCHEMATIC CIRCUITRY

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**



PNP DISCRETE INPUT MODULE, 16 points

(Tension clamp terminal block)

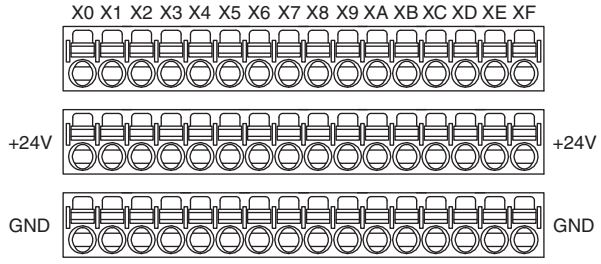
MODEL: R7F4DH-4-DA16B

SPECIFICATIONS

Common: Negative common (PNP) per 16 points
Number of I/O: Input, 16 points
Maximum inputs applicable at once: No limit (at 24 V DC)
Input status indicator: LED turns ON with contact ON
Isolation: Input or sensor excitation to HLS to power input to FE
Data allocation: 1
Rated input voltage: 24 V DC ±10 %; ripple 5 %p-p max.
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 kΩ
ON delay: ≤ 0.5 msec.
OFF delay: ≤ 0.5 msec.

TERMINAL ASSIGNMENTS

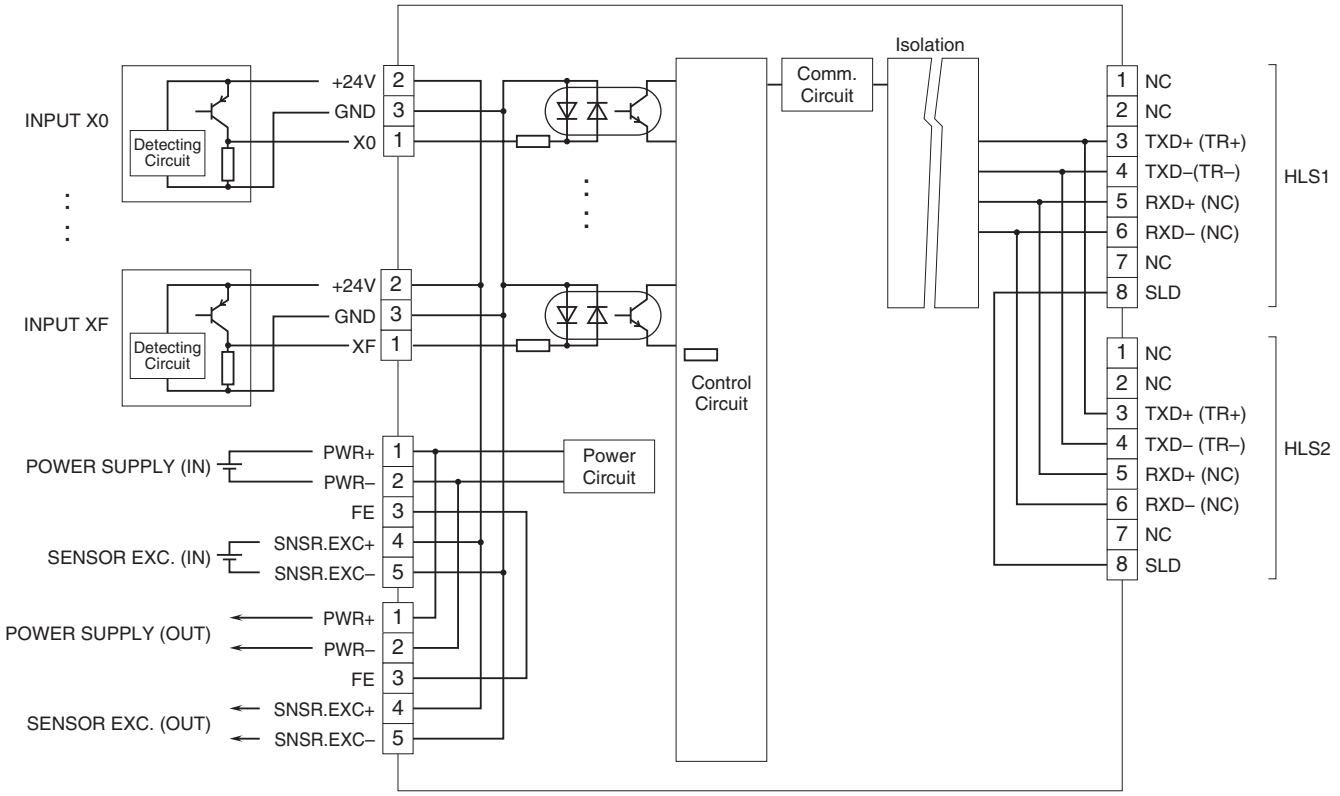
■ Input Terminal



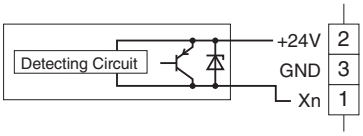
PIN No.		ID	FUNCTION	PIN No.		ID	FUNCTION
X0	1	X0	Input 0	X8	1	X8	Input 8
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V
X1	1	X1	Input 1	X9	1	X9	Input 9
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V
X2	1	X2	Input 2	XA	1	XA	Input 10
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V
X3	1	X3	Input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

SCHEMATIC CIRCUITRY

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**



NPN TRANSISTOR OUTPUT MODULE, 16 points
(Tension clamp terminal block)

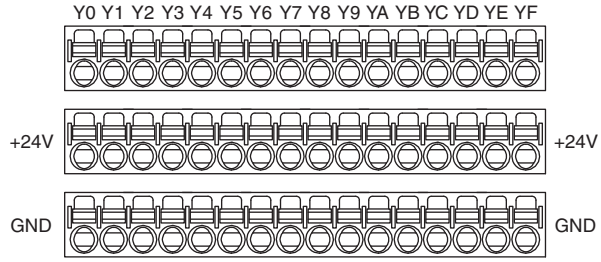
MODEL: R7F4DH-4-DC16A

SPECIFICATIONS

Common: Negative common (NPN) per 16 points
Number of I/O: Output, 16 points
Maximum outputs applicable at once: No limit (at 24 V DC)
Output status indicator: LED turns ON with contact ON
Isolation: Output or sensor excitation to HLS to power input to FE
Data allocation: 1
Rated load voltage: 24 V DC ±10 % (ripple 5 %p-p max.)
Rated output current: 0.1 A per point, 1.6 A per common
Residual voltage: ≤ 1.2 V
Leakage current: ≤ 0.1 mA
ON delay: ≤ 0.2 msec.
OFF delay: ≤ 0.5 msec.
Overload current protection function: Limits the current value when overcurrent is detected
Overheat Protection Function:
Turns OFF the output when overheat is detected
(When driving an inductive load, connect a diode in parallel with the load.)

TERMINAL ASSIGNMENTS

■ Output Terminal

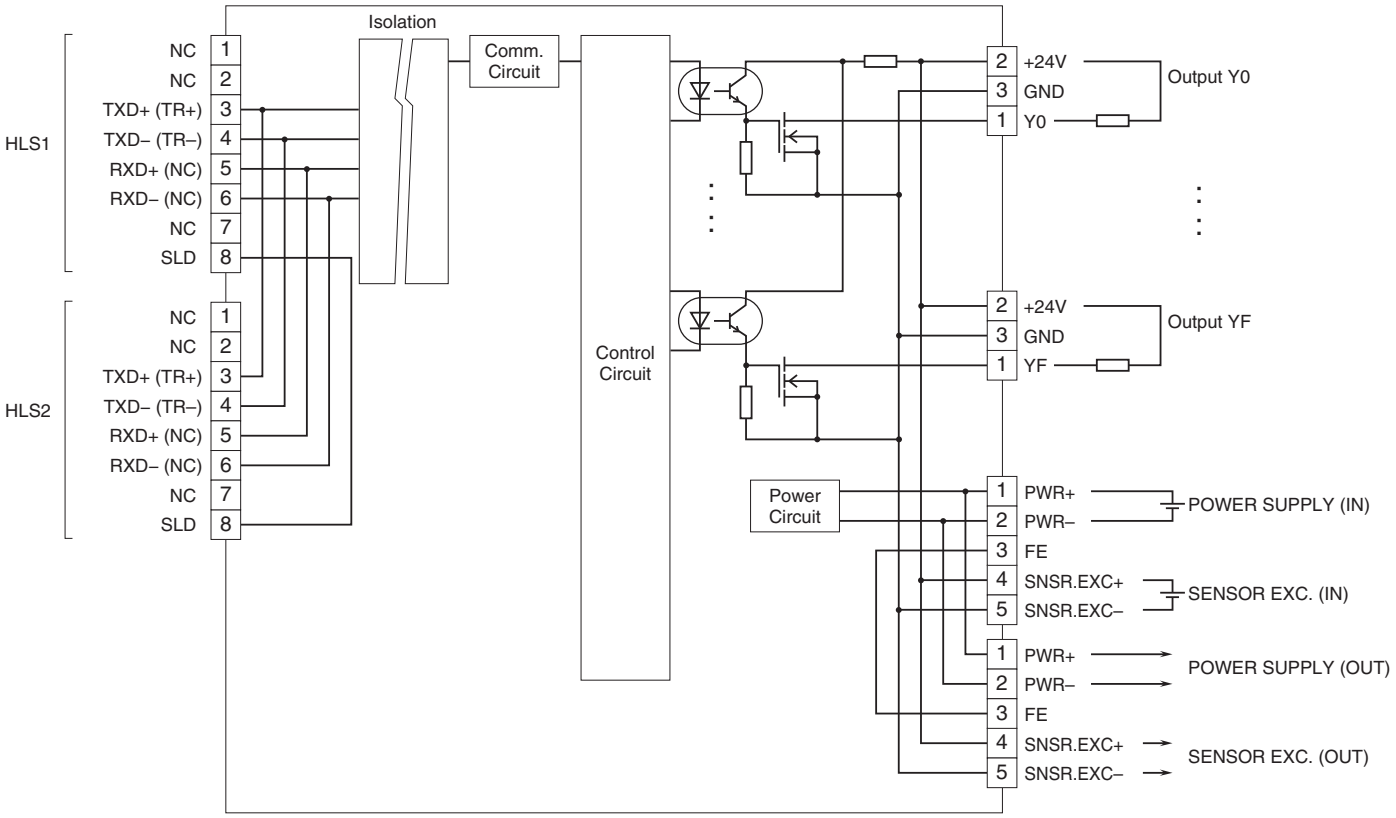


PIN No.		ID	FUNCTION	PIN No.		ID	FUNCTION
Y0	1	Y0	Output 0	Y8	1	Y8	Output 8
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V
Y1	1	Y1	Output 1	Y9	1	Y9	Output 9
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V
Y2	1	Y2	Output 2	YA	1	YA	Output 10
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V
Y3	1	Y3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

SCHEMATIC CIRCUITRY

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

Caution: FE terminal is NOT a protective conductor terminal.



PNP TRANSISTOR OUTPUT MODULE, 16 points
(Tension clamp terminal block)

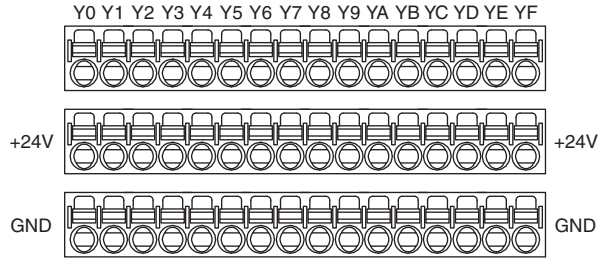
MODEL: R7F4DH-4-DC16B

SPECIFICATIONS

Common: Positive common (PNP) per 16 points
Number of I/O: Output, 16 points
Maximum outputs applicable at once: No limit (at 24 V DC)
Output status indicator: LED turns ON with contact ON
Isolation: Output or sensor excitation to HLS to power input to FE
Data allocation: 1
Rated load voltage: 24 V DC ±10 % (ripple 5 %p-p max.)
Rated output current: 0.1 A per point, 1.6 A per common
Residual voltage: ≤ 1.2 V
Leakage current: ≤ 0.1 mA
ON delay: ≤ 0.2 msec.
OFF delay: ≤ 0.5 msec.
Overload current protection function: Limits the current value when overcurrent is detected
Overheat Protection Function:
Turns OFF the output when overheat is detected
(When driving an inductive load, connect a diode in parallel with the load.)

TERMINAL ASSIGNMENTS

■ Output Terminal

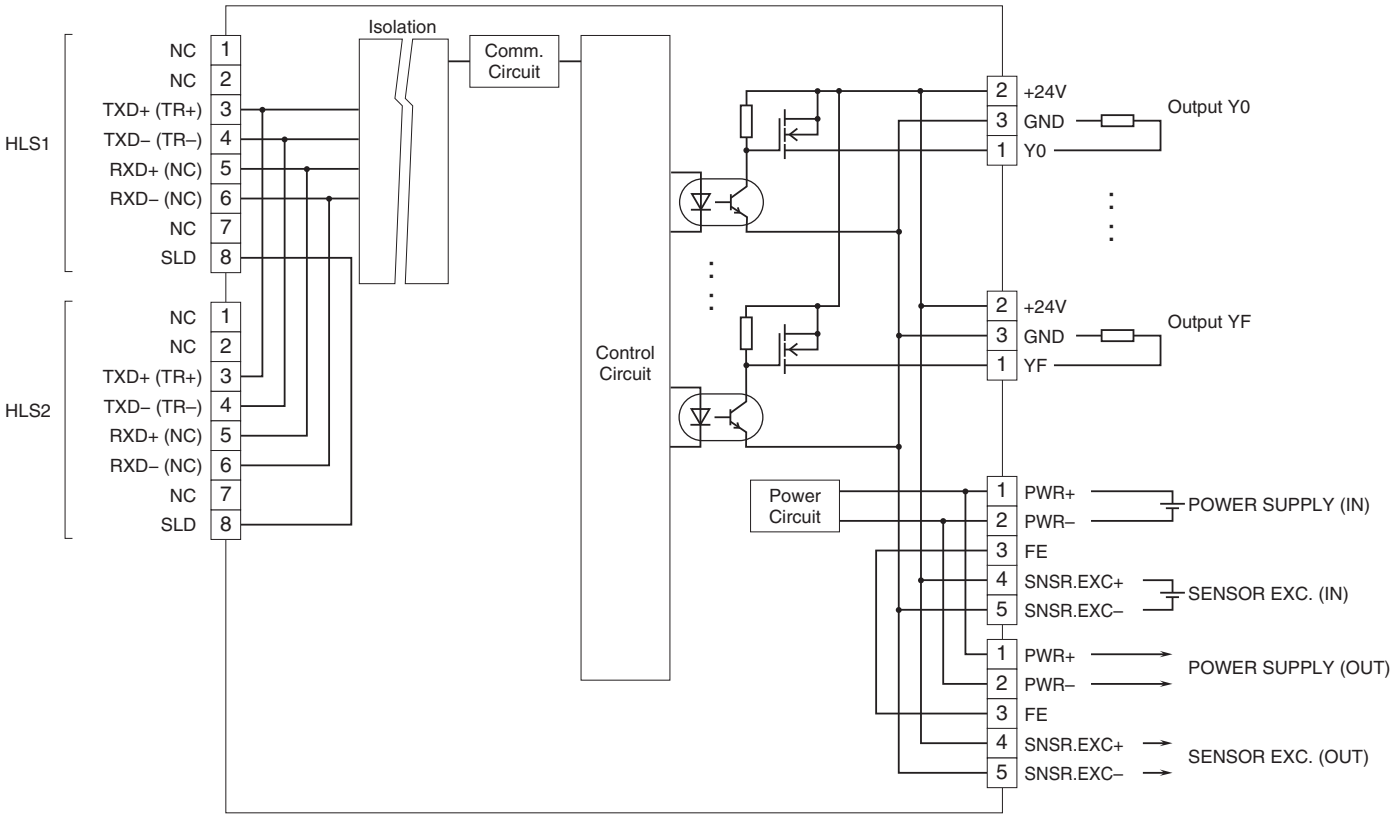


PIN No.		ID	FUNCTION	PIN No.		ID	FUNCTION
Y0	1	Y0	Output 0	Y8	1	Y8	Output 8
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V
Y1	1	Y1	Output 1	Y9	1	Y9	Output 9
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V
Y2	1	Y2	Output 2	YA	1	YA	Output 10
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V
Y3	1	Y3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

SCHEMATIC CIRCUITRY

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

Caution: FE terminal is NOT a protective conductor terminal.



PNP DISCRETE INPUT &

NPN TRANSISTOR OUTPUT MODULE, 8 points each

(Tension clamp terminal block)

MODEL: R7F4DH-4-DAC16A

SPECIFICATIONS

■ COMMON SPECIFICATIONS

Common: Negative common per 16 points

Input rating/load voltage: 24 V DC ±10 %, ripple 5 %p-p max.

Number of I/O: Input, 8 points; Output, 8 points

Maximum I/O applicable at once: No limit (at 24 V DC)

I/O status indicator: LED turns ON with contact ON

Isolation: I/O or sensor excitation to HLS to power input to FE

Data allocation: 1

■ INPUT

ON voltage / current: ≥ 15 V DC (I/O's X0 through X7 to GND) / ≥ 3.5 mA

OFF voltage / current: ≤ 5 V DC (I/O's X0 through X7 to GND) / ≤ 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.

■ OUTPUT

Rated output current: 0.1 A per point, 0.8 A per common

Residual voltage: ≤ 1.2 V

Leakage current: ≤ 0.1 mA

ON delay: ≤ 0.2 msec.

OFF delay: ≤ 0.5 msec.

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

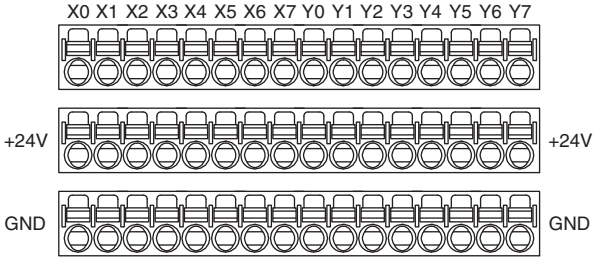
Overheat Protection Function:

Turns OFF the output when overheat is detected

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

TERMINAL ASSIGNMENTS

■ I/O Terminal

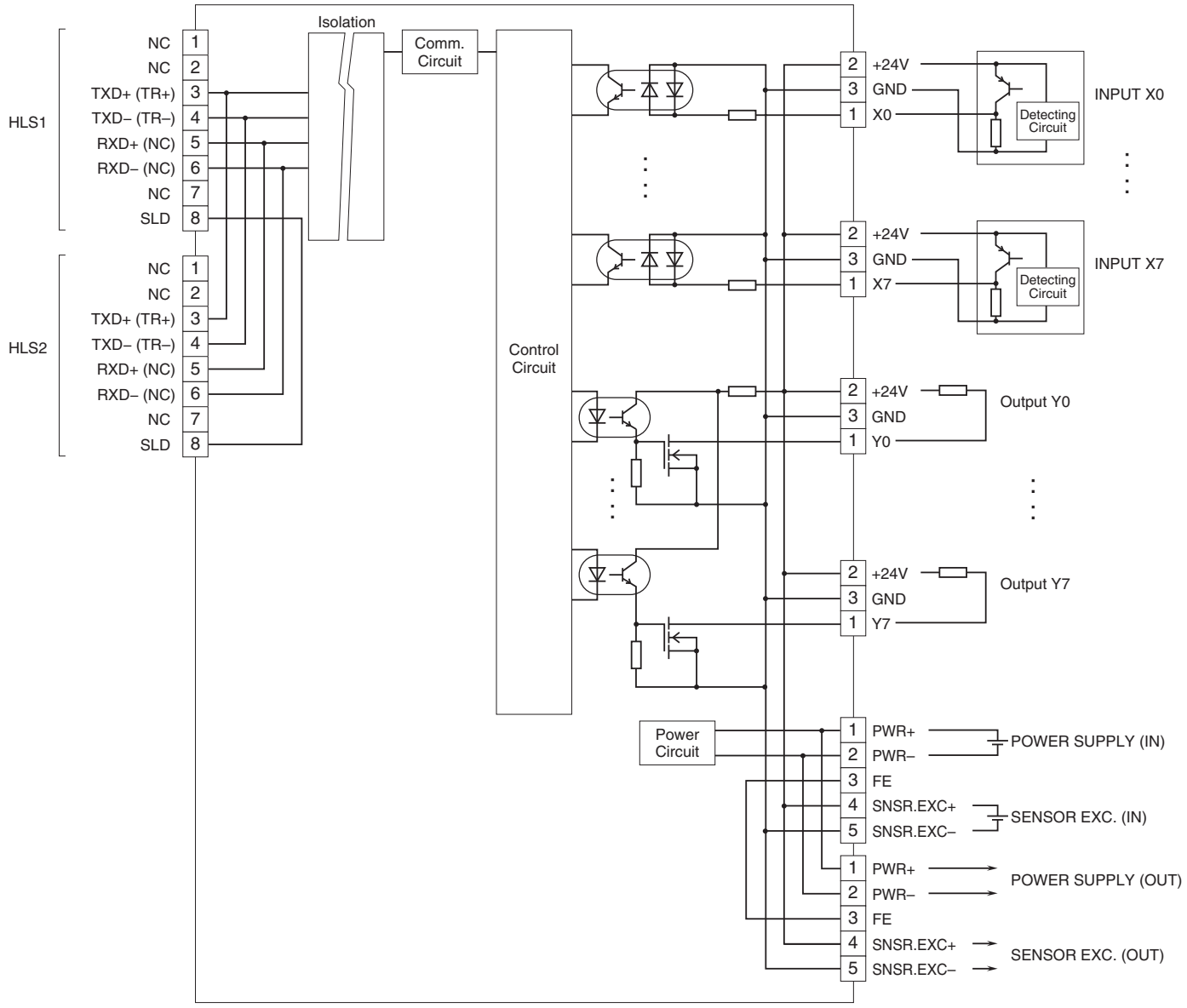


PIN No.		ID	FUNCTION	PIN No.		ID	FUNCTION
X0	1	X0	Input 0	Y0	1	Y0	Output 0
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V
X1	1	X1	Input 1	Y1	1	Y1	Output 1
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V
X2	1	X2	Input 2	Y2	1	Y2	Output 2
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V
X3	1	X3	Input 3	Y3	1	Y3	Output 3
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V
X4	1	X4	Input 4	Y4	1	Y4	Output 4
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V
X5	1	X5	Input 5	Y5	1	Y5	Output 5
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V
X6	1	X6	Input 6	Y6	1	Y6	Output 6
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V
X7	1	X7	Input 7	Y7	1	Y7	Output 7
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V

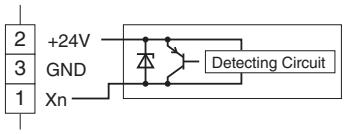
SCHEMATIC CIRCUITRY

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**



NPN DISCRETE INPUT &
PNP TRANSISTOR OUTPUT MODULE, 8 points each
(Tension clamp terminal block)

MODEL: R7F4DH-4-DAC16B

SPECIFICATIONS

■ COMMON SPECIFICATIONS

Common: Positive common per 16 points
Input rating/load voltage: 24 V DC ±10 %, ripple 5 %p-p max.
Number of I/O: Input, 8 points; Output, 8 points
Maximum I/O applicable at once: No limit (at 24 V DC)
I/O status indicator: LED turns ON with contact ON
Isolation: I/O or sensor excitation to HLS to power input to FE
Data allocation: 1

■ INPUT

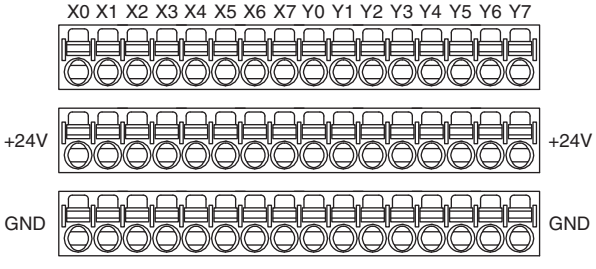
ON voltage / current: ≥ 15 V DC (I/O's X0 through X7 to +24 V) / ≥ 3.5 mA
OFF voltage / current: ≤ 5 V DC (I/O's X0 through X7 to +24 V) / ≤ 1 mA
Input current: ≤ 5.5 mA per point at 24 V DC
Input resistance: Approx. 4.4 kΩ
ON delay: ≤ 0.5 msec.
OFF delay: ≤ 0.5 msec.

■ OUTPUT

Rated output current: 0.1 A per point, 0.8 A per common
Residual voltage: ≤ 1.2 V
Leakage current: ≤ 0.1 mA
ON delay: ≤ 0.2 msec.
OFF delay: ≤ 0.5 msec.
Overload current protection function: Limits the current value when overcurrent is detected
Overheat Protection Function:
Turns OFF the output when overheat is detected
(When driving an inductive load, connect a diode in parallel with the load.)

TERMINAL ASSIGNMENTS

■ I/O Terminal

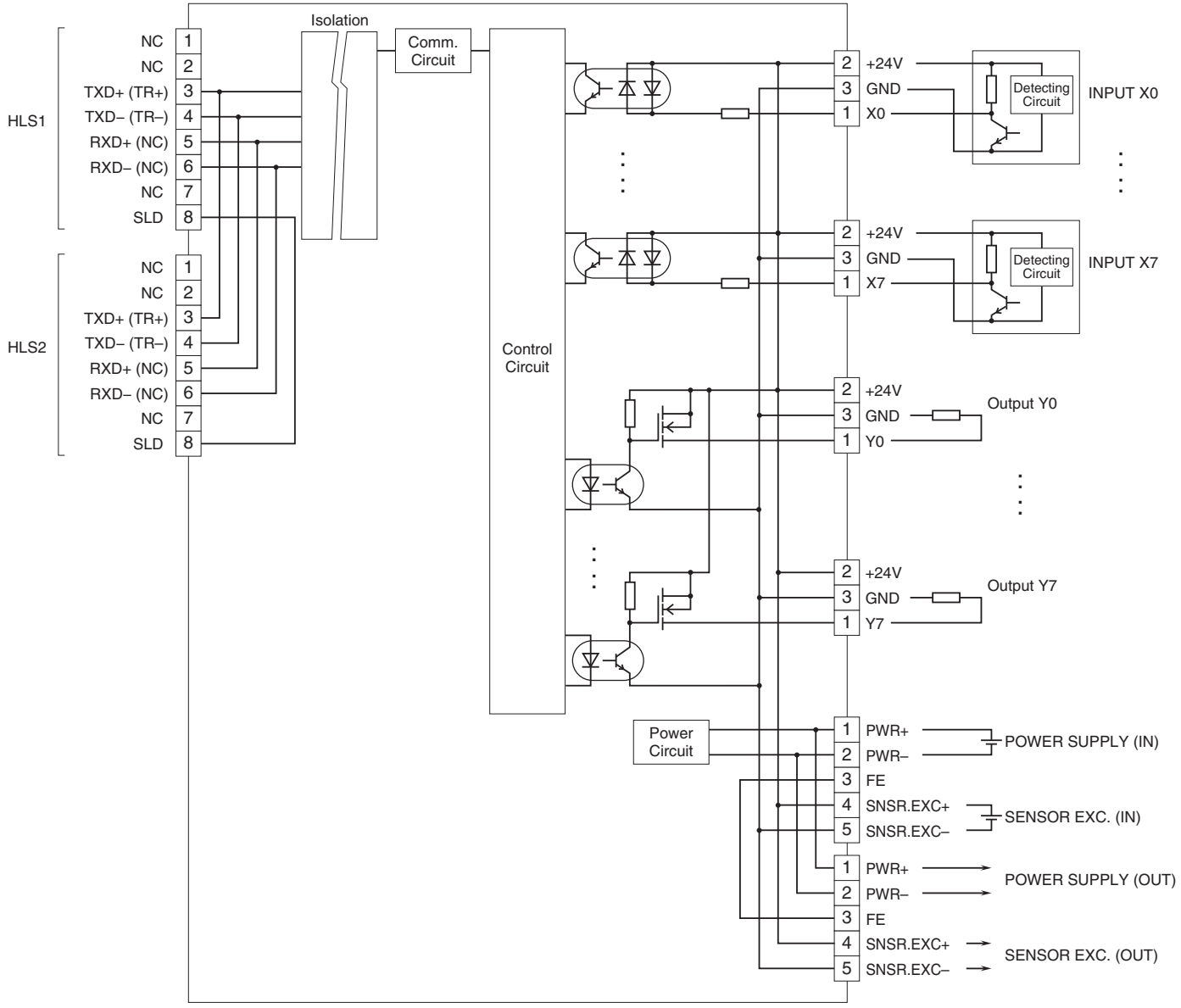


PIN No.		ID	FUNCTION	PIN No.		ID	FUNCTION
X0	1	X0	Input 0	Y0	1	Y0	Output 0
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V
X1	1	X1	Input 1	Y1	1	Y1	Output 1
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V
X2	1	X2	Input 2	Y2	1	Y2	Output 2
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V
X3	1	X3	Input 3	Y3	1	Y3	Output 3
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V
X4	1	X4	Input 4	Y4	1	Y4	Output 4
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V
X5	1	X5	Input 5	Y5	1	Y5	Output 5
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V
X6	1	X6	Input 6	Y6	1	Y6	Output 6
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V
X7	1	X7	Input 7	Y7	1	Y7	Output 7
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V

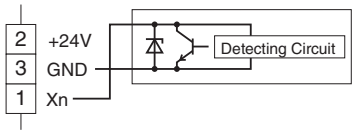
SCHEMATIC CIRCUITRY

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**



NPN DISCRETE INPUT &

NPN TRANSISTOR OUTPUT MODULE, 8 points each

(Tension clamp terminal block)

MODEL: R7F4DH-4-DAC16C

SPECIFICATIONS

■ COMMON SPECIFICATIONS

Input common: Positive common per 8 points

Output common: Negative common per 8 points

Input rating/load voltage: 24 V DC ±10 %, ripple 5 %p-p max.

Number of I/O: Input, 8 points; Output, 8 points

Maximum I/O applicable at once: No limit (at 24 V DC)

I/O status indicator: LED turns ON with contact ON

Isolation: I/O or sensor excitation to HLS to power input to FE

Data allocation: 1

■ INPUT

ON voltage / current: ≥ 15 V DC (I/O's X0 through X7 to +24 V) / ≥ 3.5 mA

OFF voltage / current: ≤ 5 V DC (I/O's X0 through X7 to +24 V) / ≤ 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.

■ OUTPUT

Rated output current: 0.1 A per point, 0.8 A per common

Residual voltage: ≤ 1.2 V

Leakage current: ≤ 0.1 mA

ON delay: ≤ 0.2 msec.

OFF delay: ≤ 0.5 msec.

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

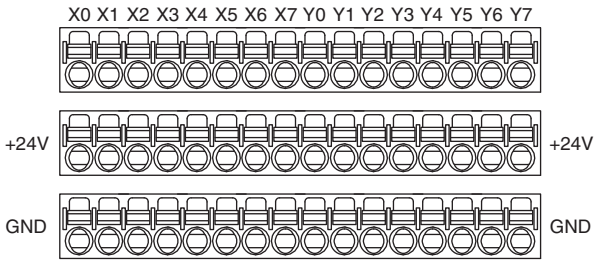
Overheat Protection Function:

Turns OFF the output when overheat is detected

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

TERMINAL ASSIGNMENTS

■ I/O Terminal

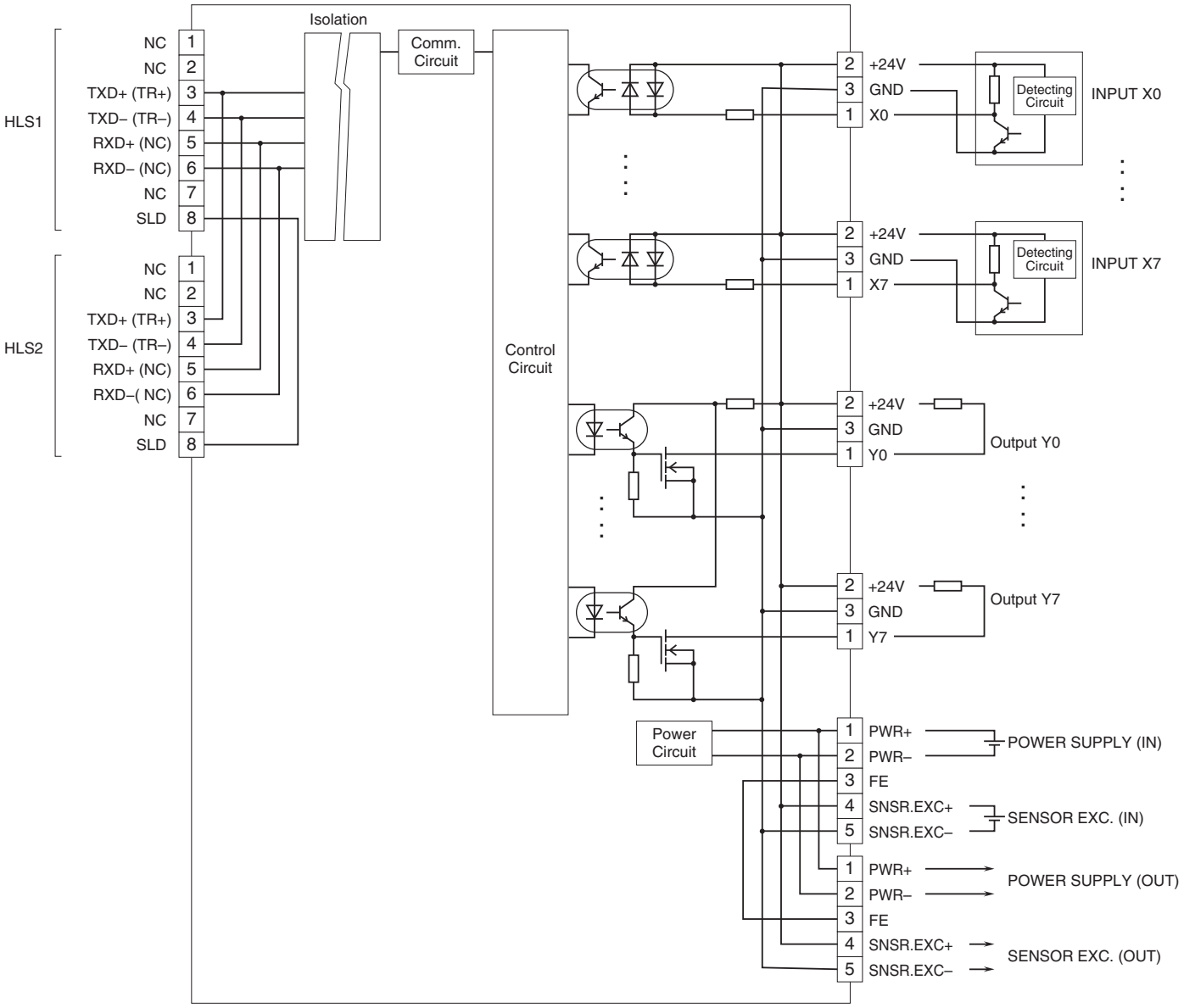


PIN No.		ID	FUNCTION	PIN No.		ID	FUNCTION
X0	1	X0	Input 0	Y0	1	Y0	Output 0
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V
X1	1	X1	Input 1	Y1	1	Y1	Output 1
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V
X2	1	X2	Input 2	Y2	1	Y2	Output 2
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V
X3	1	X3	Input 3	Y3	1	Y3	Output 3
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V
X4	1	X4	Input 4	Y4	1	Y4	Output 4
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V
X5	1	X5	Input 5	Y5	1	Y5	Output 5
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V
X6	1	X6	Input 6	Y6	1	Y6	Output 6
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V
X7	1	X7	Input 7	Y7	1	Y7	Output 7
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V

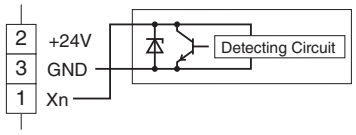
SCHEMATIC CIRCUITRY

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**



PNP DISCRETE INPUT &

PNP TRANSISTOR OUTPUT MODULE, 8 points each

(Tension clamp terminal block)

MODEL: R7F4DH-4-DAC16D

SPECIFICATIONS

■ COMMON SPECIFICATIONS

Input common: Negative common per 8 points

Output common: Positive common per 8 points

Input rating/load voltage: 24 V DC ±10 %, ripple 5 %p-p max.

Number of I/O: Input, 8 points; Output, 8 points

Maximum I/O applicable at once: No limit (at 24 V DC)

I/O status indicator: LED turns ON with contact ON

Isolation: I/O or sensor excitation to HLS to power input to FE

Data allocation: 1

■ INPUT

ON voltage / current: ≥ 15 V DC (I/O's X0 through X7 to GND) / ≥ 3.5 mA

OFF voltage / current: ≤ 5 V DC (I/O's X0 through X7 to GND) / ≤ 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.

■ OUTPUT

Rated output current: 0.1 A per point, 0.8 A per common

Residual voltage: ≤ 1.2 V

Leakage current: ≤ 0.1 mA

ON delay: ≤ 0.2 msec.

OFF delay: ≤ 0.5 msec.

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

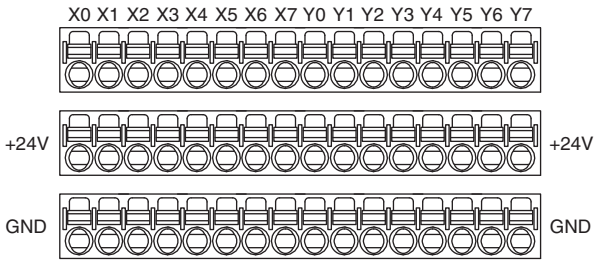
Overheat Protection Function:

Turns OFF the output when overheat is detected

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

TERMINAL ASSIGNMENTS

■ I/O Terminal

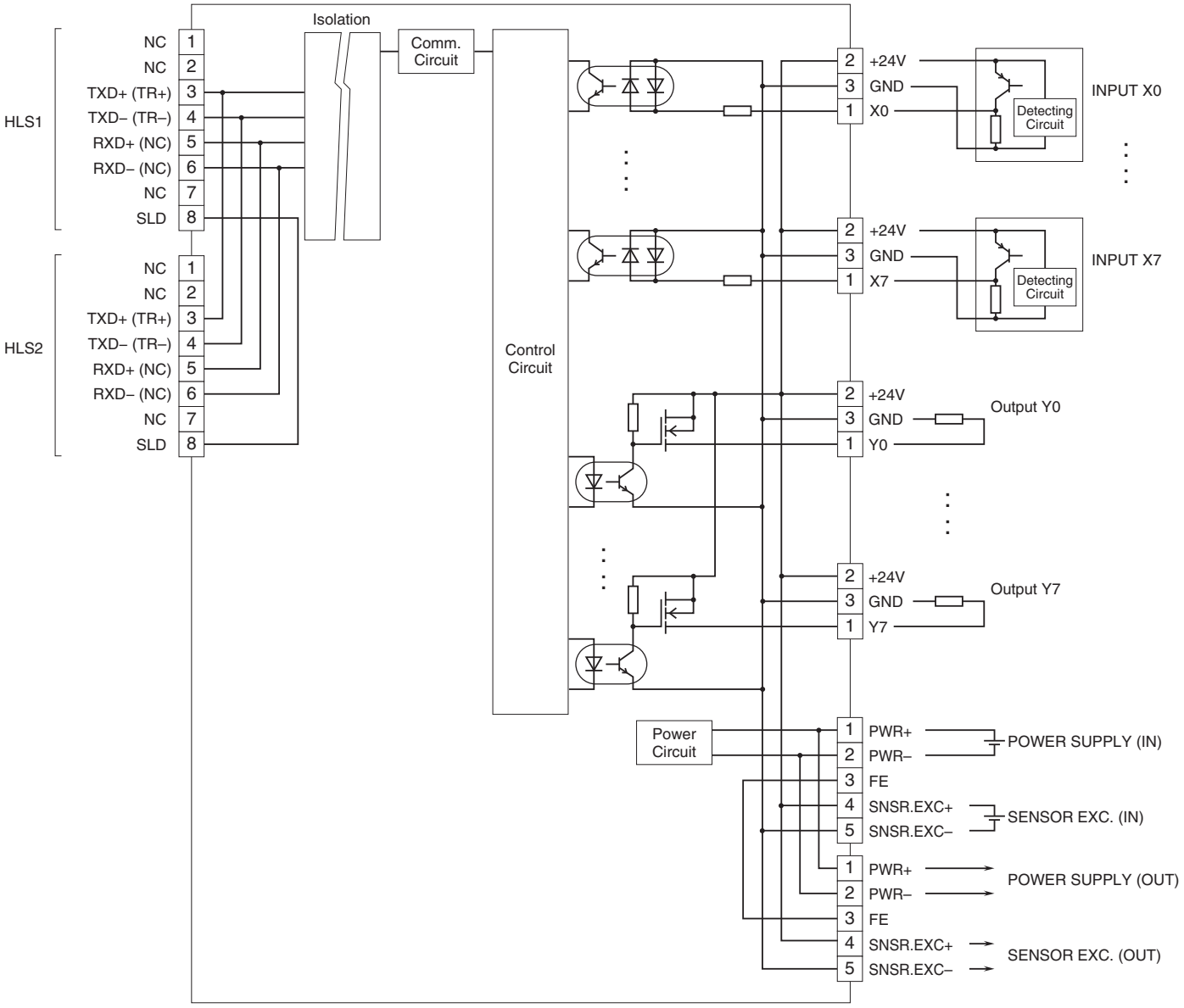


PIN No.		ID	FUNCTION	PIN No.		ID	FUNCTION
X0	1	X0	Input 0	Y0	1	Y0	Output 0
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V
X1	1	X1	Input 1	Y1	1	Y1	Output 1
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V
X2	1	X2	Input 2	Y2	1	Y2	Output 2
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V
X3	1	X3	Input 3	Y3	1	Y3	Output 3
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V
X4	1	X4	Input 4	Y4	1	Y4	Output 4
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V
X5	1	X5	Input 5	Y5	1	Y5	Output 5
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V
X6	1	X6	Input 6	Y6	1	Y6	Output 6
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V
X7	1	X7	Input 7	Y7	1	Y7	Output 7
	2	+24V	24V DC		2	+24V	24V DC
	3	GND	0V		3	GND	0V

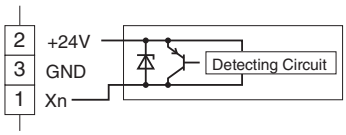
SCHEMATIC CIRCUITRY

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.