

Remote I/O R7 Series

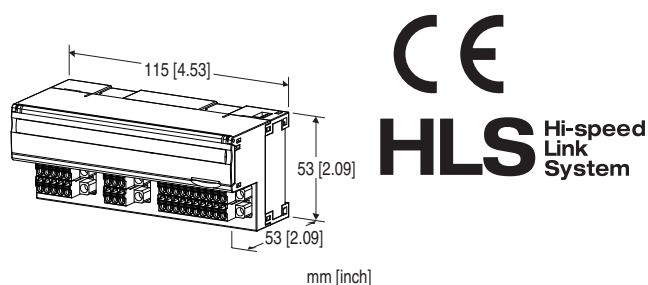
HI-SPEED LINK SYSTEM I/O MODULE

(discrete input & NPN transistor output, 8 points each, independent I/O common, tension clamp terminal block)

Functions & Features

- 8 points discrete input and 8 points NPN transistor output module for HLS

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



MODEL: R7HL-DAC16ES-R[1]

ORDERING INFORMATION

- Code number: R7HL-DAC16ES-R[1]
Specify a code from below for [1].
(e.g. R7HL-DAC16ES-R/H/Q)
- Specify the specification for option code /Q
(e.g. /C01/SET)

I/O TYPE

DAC16ES: Discrete input, 8 points

NPN transistor output, 8 points (independent I/O common)

POWER INPUT

DC Power

R: 24 V DC

(Operational voltage range 24 V $\pm$ 10 %, ripple 10 %p-p max.)

[1] OPTIONS (multiple selections)

Communication Mode

blank: Full-duplex

/H: Half-duplex

Other Options

blank: none

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

SPECIFICATIONS OF OPTION: Q (multiple selections)

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

/C01: Silicone coating

/C02: Polyurethane coating

/C03: Rubber coating

EX-FACTORY SETTING

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

GENERAL SPECIFICATIONS

Connection: Tension clamp terminal block

Housing material: Flame-resistant resin (gray)

Isolation: Input to output to HLS to power to FG

Output at the loss of communication:

Hold the output (*), Reset the output

Selectable with the front DIP SW

(*) Factory default setting

Status indicator LEDs: PWR, RUN

(Refer to the instruction manual)

Discrete I/O status indicator LED: LED turns on with I/O ON

HLS COMMUNICATION

Communication mode:

Communication mode option code blank: Full-duplex

Communication mode option code /H: half-duplex

Network cable

- Shield cable

Full-duplex communication:

ZHY262PS and ZHT262PS

(Shinko Seisen Industry Co., Ltd.)

Half-duplex communication:

ZHY221PS (Shinko Seisen Industry Co., Ltd.)

- Dual-shield cable:

ZHY262PBA (Shinko Seisen Industry Co., Ltd.)

Transmission distance / Transfer rate:

100 meters (328 ft)/12 Mbps (default),

200 meters (656 ft)/6 Mbps

(Selectable with DIP switch)

Station address: Rotary switch

(Refer to the instruction manual)

Data allocation: 1

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

INPUT SPECIFICATIONS

Common: Positive or negative common (NPN/PNP) per 8 points

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

Rated input voltage: 24 V DC $\pm$ 10 %; ripple 5 %p-p max.

ON voltage / current: $\geq$ 15 V DC (X0 through X7 to COM) / $\geq$ 3.5 mA

OFF voltage / current: ≤ 5 V DC (X0 through X7 to COM) / ≤ 1 mA
Input current: ≤ 5.5 mA per point at 24 V DC
Input resistance: Approx. 4.4 k Ω
ON delay: ≤ 0.5 msec.
OFF delay: ≤ 0.5 msec.

OUTPUT SPECIFICATIONS

Common: Negative common (NPN) per 8 points
Maximum outputs applicable at once: No limit (at 24 V DC)
Rated load voltage: 24 V DC ± 10 %
Rated output current: 0.25 A per point, 2.0 A per common
Residual voltage: ≤ 1.2 V
Leakage current: ≤ 0.1 mA
ON delay: ≤ 0.2 msec.
OFF delay: ≤ 0.5 msec.
(When driving an inductive load, connect a diode in parallel with the load.)

INSTALLATION

Current consumption
• DC: Approx. 40 mA
Operating temperature: -10 to +55°C (14 to 131°F)
Storage temperature: -20 to +65°C (-4 to +149°F)
Operating humidity: 30 to 90 %RH (non-condensing)
Atmosphere: No corrosive gas or heavy dust
Mounting: DIN rail (35 mm rail)
Weight: 200 g (0.44 lb)

PERFORMANCE

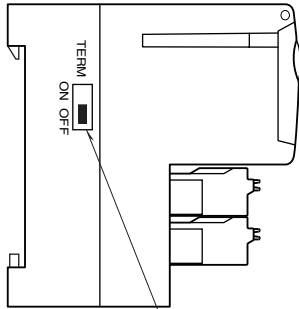
Insulation resistance: ≥ 100 M Ω with 500 V DC
Dielectric strength: 1500 V AC @ 1 minute (input to output to HLS to power input to FG)

STANDARDS & APPROVALS

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

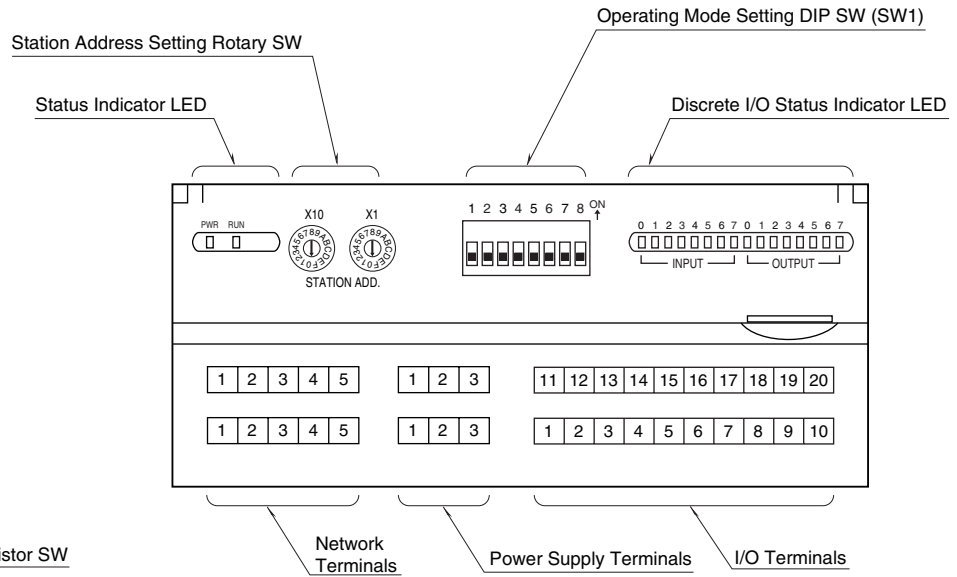
EXTERNAL VIEW

■ SIDE VIEW



Terminating Resistor SW

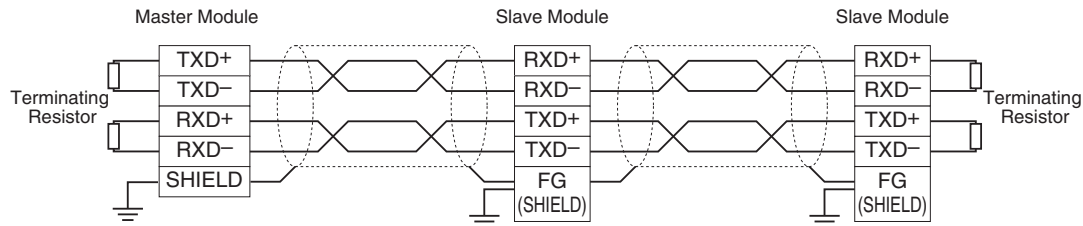
■ FRONT VIEW



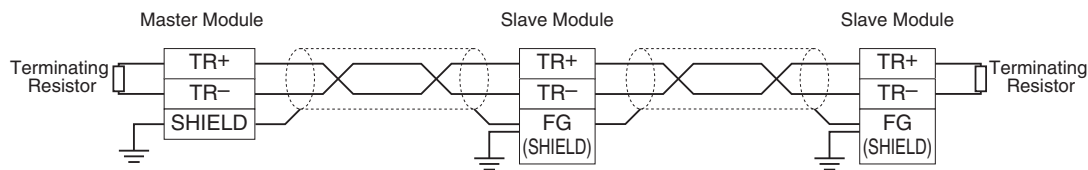
COMMUNICATION CABLE CONNECTIONS

■ MASTER CONNECTION

• Full-duplex communication



• Half-duplex communication



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

TERMINAL ASSIGNMENTS

■ I/O TERMINAL ASSIGNMENT

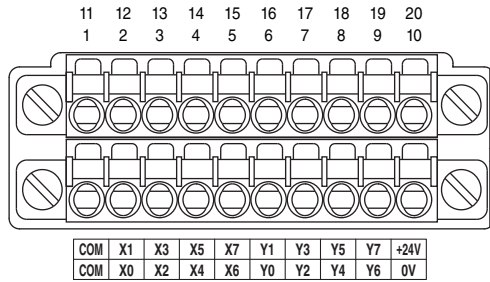
Cable connector: FMC1,5/10-STF-3,5 (Phoenix Contact)

(The cable connector is included in the package)

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

Recommended solderless terminal

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



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

■ POWER SUPPLY TERMINAL ASSIGNMENT

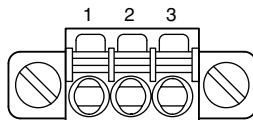
Cable connector: FMC1,5/3-STF-3,5 (Phoenix Contact)

(The cable connector is included in the package)

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

Recommended solderless terminal

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

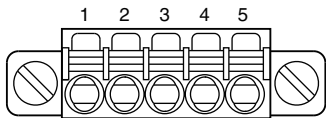


NO.	ID	FUNCTION, NOTES
1	+24V	Power input (24V DC)
2	0V	Power input (0V)
3	FG	FG

■ NETWORK TERMINAL ASSIGNMENT

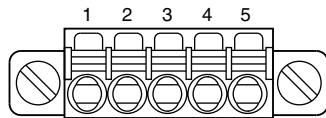
Cable connector: FMC1,5/5-STF-3,5 (Phoenix Contact)
(The cable connector is included in the package.)
Applicable wire size: 0.2 – 1.5 mm²; stripped length 10 mm
Recommended solderless terminal
For ZHY262PS ZHT262PS and ZHY262PBA: TUB-0.5 (J.S.T. Mfg. Co., Ltd.)
For ZHY221PS AI0,5-10WH (Phoenix Contact)

• Full-duplex communication



NO.	ID	FUNCTION, NOTES
1	RXD-	Network (master , transmission -)
2	RXD+	Network (master , transmission +)
3	TXD-	Network (slave , transmission -)
4	TXD+	Network (slave , transmission +)
5	SLD	Shield

• Half-duplex communication

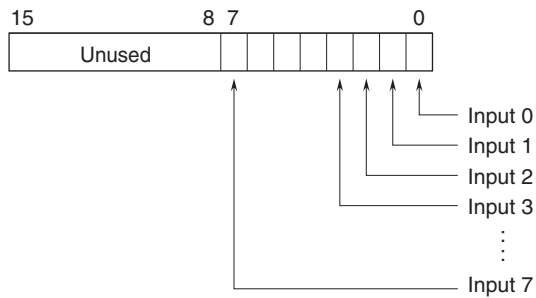


NO.	ID	FUNCTION, NOTES
1	NC	Unused
2	NC	Unused
3	TR-	Network
4	TR+	Network
5	SLD	Shield

I/O DATA DESCRIPTIONS

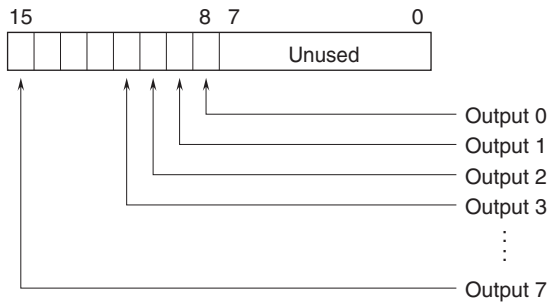
■ DISCRETE I/O

• Di area

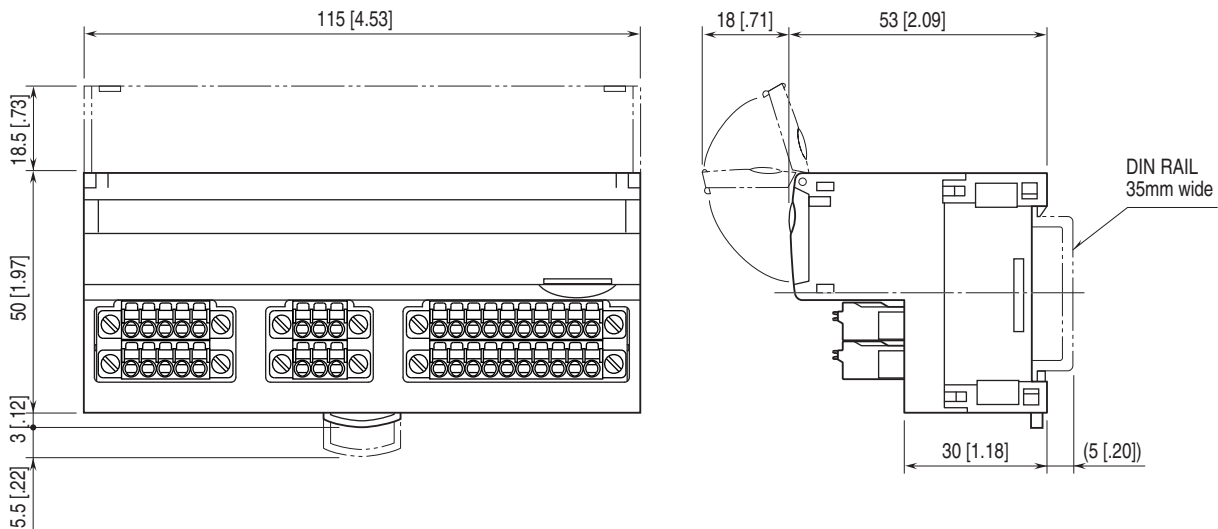


0: OFF
1: ON

• Do area



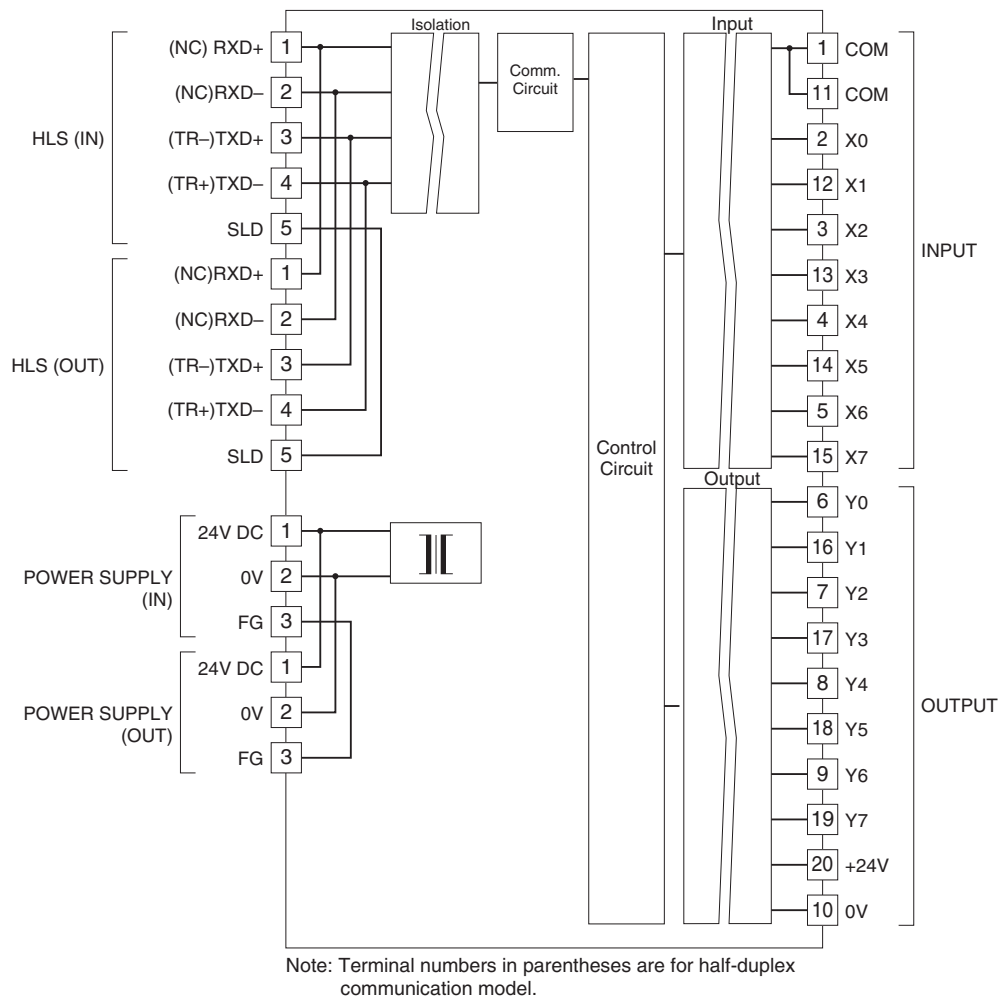
EXTERNAL DIMENSIONS unit: mm [inch]



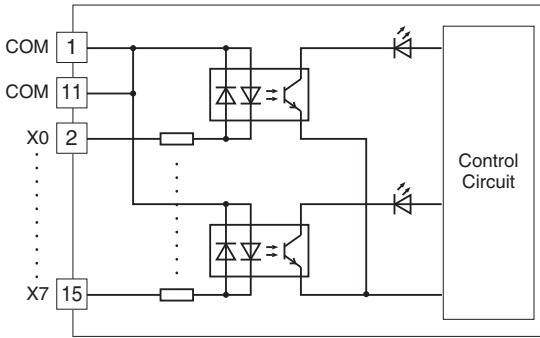
SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

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

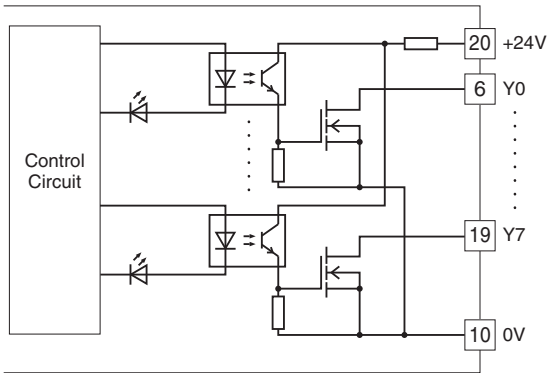
Caution: FG terminal is NOT a protective conductor terminal.



■ Input Circuit

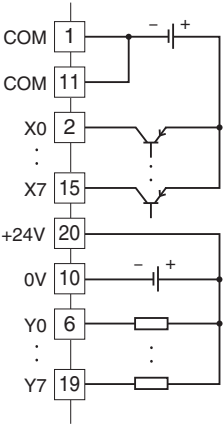


■ Output Circuit

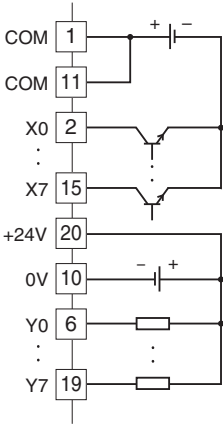


■ I/O Connection Example

PNP Input



NPN Input



Specifications are subject to change without notice.