

Remote I/O R7 Series

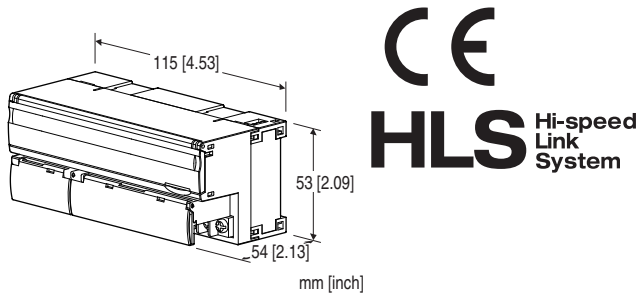
HI-SPEED LINK SYSTEM I/O MODULE

(NPN transistor output, 16 points)

Functions & Features

- 16 points NPN transistor output module for HLS

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



MODEL: R7HL-DC16A-R[1]

ORDERING INFORMATION

- Code number: R7HL-DC16A-R[1]
Specify a code from below for [1].
(e.g. R7HL-DC16A-R/H/Q)
- Specify the specification for option code /Q
(e.g. /C01/SET)

I/O TYPE

DC16A: NPN transistor output, 16 points

POWER INPUT

DC Power

R: 24 V DC

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

[1] OPTIONS (multiple selections)

Communication Mode

blank: Full-duplex

/H: Half-duplex

Other Options

blank: none

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

SPECIFICATIONS OF OPTION: Q (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-G)

GENERAL SPECIFICATIONS

Connection: M3 separable screw terminal (torque 0.5 N·m)

Solderless terminal: Refer to the drawing at the end of the section.

• Communication cable

Recommended manufacture: J.S.T. Mfg. Co., Ltd.

Applicable wire size: 0.2 to 0.5 mm² (AWG 26 to 22)

• Others

Recommended manufacture: J.S.T. Mfg. Co., Ltd.,
NICHIFU Co., Ltd.

Applicable wire size: 0.25 to 1.65 mm² (AWG 22 to 16)

Screw terminal: Nickel-plated steel

Housing material: Flame-resistant resin (gray)

Isolation: Output to HLS to power input to FG

Output at the loss of communication:

Hold the output (*), Reset the output

Selectable with the front DIP SW

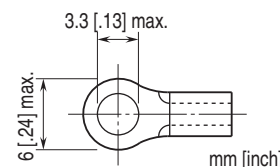
(*) Factory default setting

Status indicator LEDs: PWR, RUN

(Refer to the instruction manual)

Discrete output status indicator LED: LED turns on with output ON

■ Recommended solderless terminal



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)

OUTPUT SPECIFICATIONS

Common: Negative common (NPN) per 16 points
Maximum outputs applicable at once: No limit (at 24 V DC)
Rated load voltage: 10.8 – 26.4 V DC
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. 45 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 (output to HLS to
power to FG)

STANDARDS & APPROVALS

Refer to the manuals to comply with the standards.

EU conformity:

EMC Directive

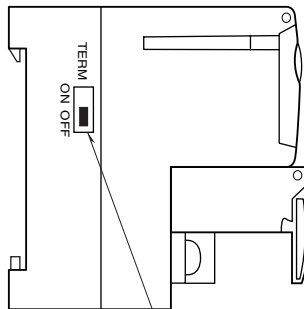
EMI EN 61000-6-4

EMS EN 61000-6-2

RoHS Directive

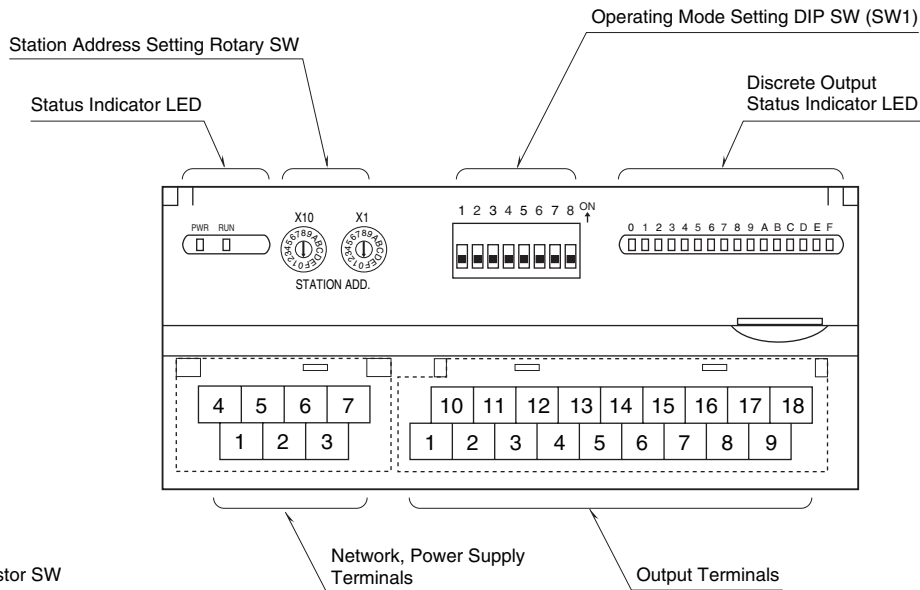
EXTERNAL VIEW

■ SIDE VIEW



Terminating Resistor SW

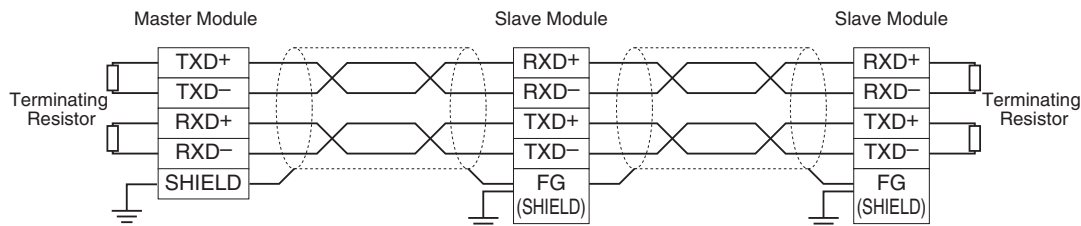
■ FRONT VIEW



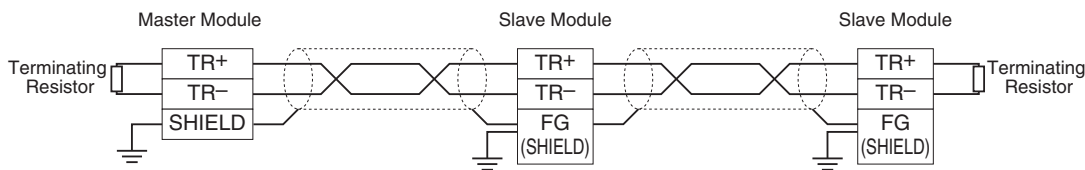
COMMUNICATION CABLE CONNECTIONS

■ 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**■ OUTPUT TERMINAL ASSIGNMENT**

10	11	12	13	14	15	16	17	18
+24V	Y1	Y3	Y5	Y7	Y9	YB	YD	YF
1	2	3	4	5	6	7	8	9
0V	Y0	Y2	Y4	Y6	Y8	YA	YC	YE

NO.	ID	FUNCTION	NO.	ID	FUNCTION
1	0V	0V (common)	10	+24V	24V DC
2	Y0	Output 0	11	Y1	Output 1
3	Y2	Output 2	12	Y3	Output 3
4	Y4	Output 4	13	Y5	Output 5
5	Y6	Output 6	14	Y7	Output 7
6	Y8	Output 8	15	Y9	Output 9
7	YA	Output 10	16	YB	Output 11
8	YC	Output 12	17	YD	Output 13
9	YE	Output 14	18	YF	Output 15

■ NETWORK, POWER SUPPLY TERMINAL ASSIGNMENT**• Full-duplex communication**

4	5	6	7
RXD+	RXD-	+24V	0V
1	2	3	
TXD+	TXD-	FG	

NO.	ID	FUNCTION, NOTES
1	TXD+	Network (slave, transmission +)
2	TXD-	Network (slave, transmission -)
3	FG	FG
4	RXD+	Network (master, transmission +)
5	RXD-	Network (master, transmission -)
6	+24V	Power input (24V DC)
7	0V	Power input (0V)

• Half-duplex communication

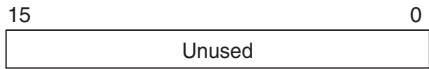
4	5	6	7
TR+	TR-	+24V	0V
1	2	3	
NC	NC	FG	

NO.	ID	FUNCTION, NOTES
1	NC	No connection
2	NC	No connection
3	FG	FG
4	TR+	Network
5	TR-	Network
6	+24V	Power input (24V DC)
7	0V	Power input (0V)

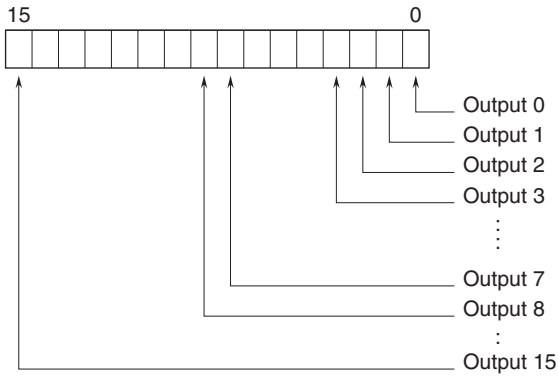
I/O DATA DESCRIPTIONS

■ DISCRETE OUTPUT

• Di area

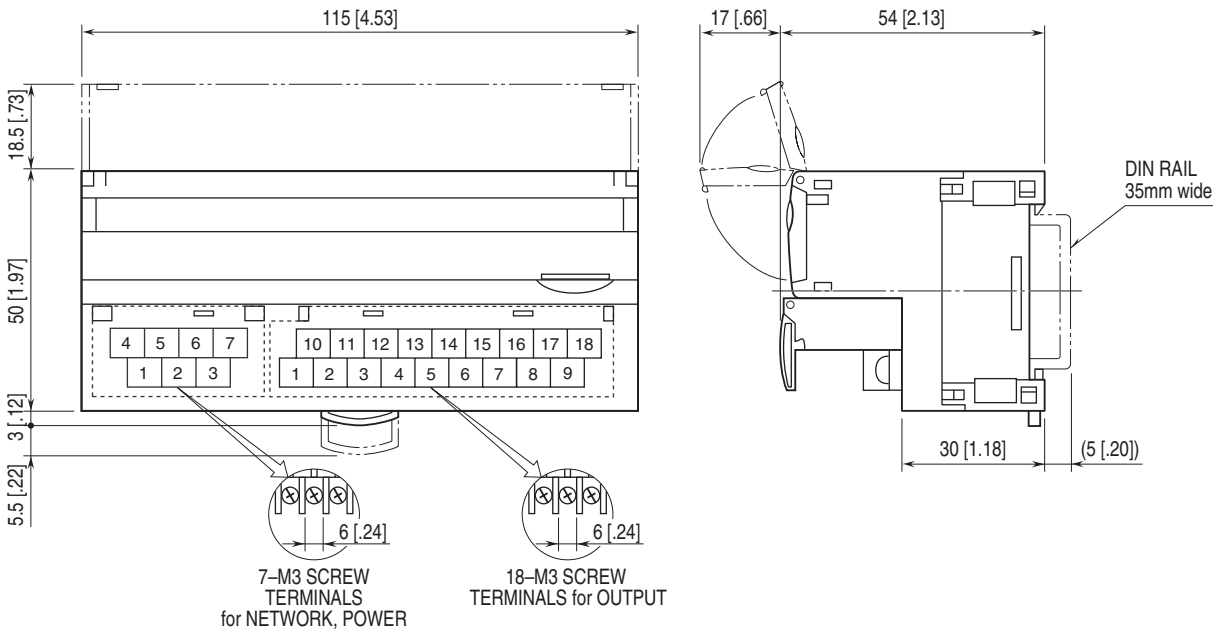


• Do area



0: OFF
1: ON

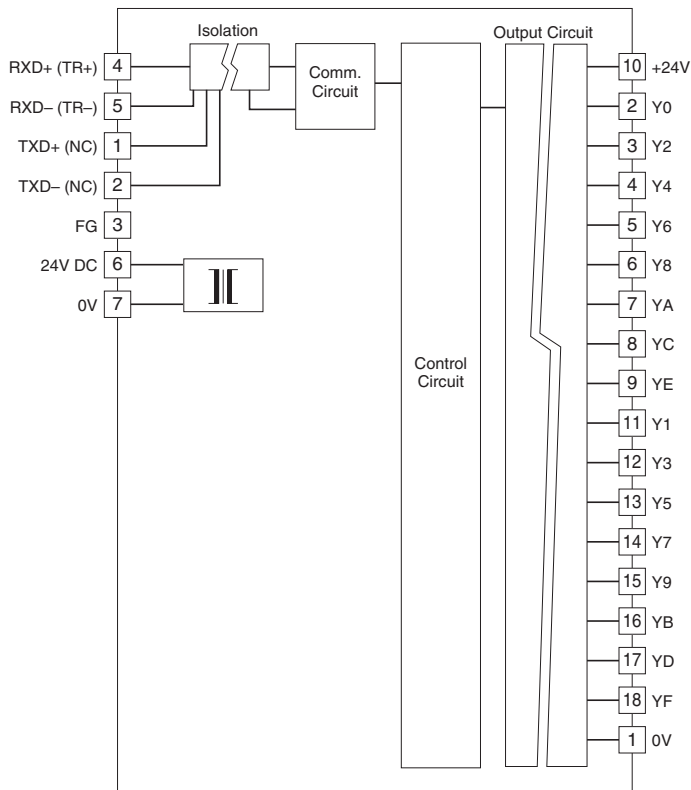
EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]



SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

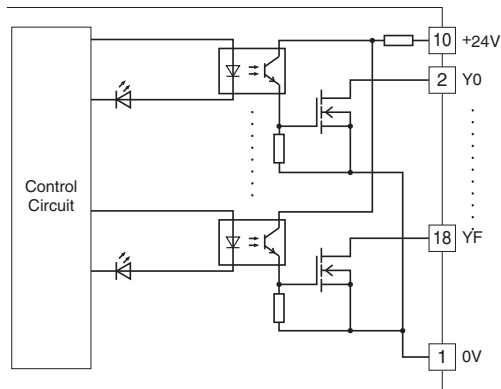
Note: In order to improve EMC performance, bond the FG terminal to ground.

Caution: FG terminal is NOT a protective conductor terminal.

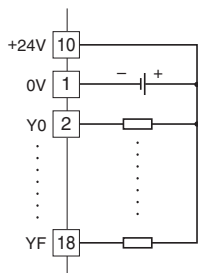


Note: Terminal numbers in parentheses are for half-duplex communication model.

■ Output Circuit



■ Output Connection Example





Specifications are subject to change without notice.