

Remote I/O R7 Series

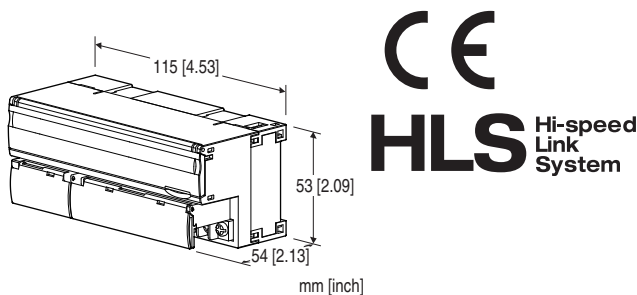
HI-SPEED LINK SYSTEM I/O MODULE

(DC voltage output, 4 points, isolated, 12 bits data)

Functions & Features

- 4 points DC voltage output module for HLS
- Output range can be selected with the front DIP switches for all channels
- Individual channels, zero adjustment, and span adjustment can be set with the configurator software (model: R7CON)

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



MODEL: R7HL-YV4L-R[1]

ORDERING INFORMATION

- Code number: R7HL-YV4L-R[1]
Specify a code from below for [1].
(e.g. R7HL-YV4L-R/H/3/Q)
- Specify the specification for option code /Q
(e.g. /C01/SET)

I/O TYPE

YV4L: DC voltage output, 4 points
(isolated, 12 bits data)

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

Transfer rate

blank: 12 Mbps/6 Mbps

/3: 3 Mbps

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-AV)

RELATED PRODUCTS

- PC Configurator cable (model: MCN-CON or COP-US)
- PC configurator software (model: R7CON)
Downloadable at our web site.

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 0 to output 1 to output 2 to output 3 to
HLS to power to FG

Zero adjustments: Configurable via R7CON

Span adjustments: Configurable via R7CON

Output range: Selectable with the front DIP SW or
configurable via R7CON

Output at the loss of communication:

Hold the output (*), Reset the output

Selectable with the front DIP SW

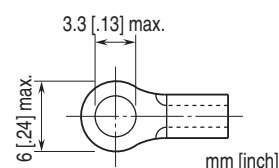
(*) Factory default setting

Status indicator LEDs: PWR, RUN

(Refer to the instruction manual)

Configurator connection: 2.5 dia. miniature jack

■ 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.)

Transfer rate code:

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

200 meters (656 ft)/6 Mbps

/3: 300 meters (984 ft)/3 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)

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

OUTPUT SPECIFICATIONS

Output range: -10 – +10 V DC (*), -5 – +5 V DC, 0 – 10 V DC,
0 – 5 V DC, 1 – 5 V DC

(*) factory default setting

Load resistance: $\geq 100 \text{ k}\Omega$

Operational range: 0 – 100 % of the output range

INSTALLATION

Current consumption

- DC: Approx. 75 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: 180 g (0.40 lb)

PERFORMANCE

Conversion accuracy: $\pm 0.1 \%$

Data range: 0 – 4095 of the output range

Temp. coefficient: $\pm 0.015 \text{ } \%/^{\circ}\text{C}$ ($\pm 0.008 \text{ } \%/^{\circ}\text{F}$)

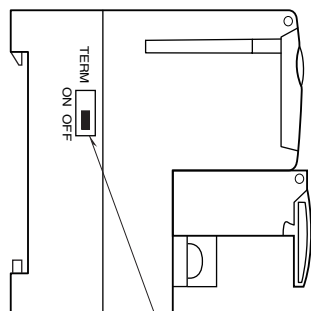
Response time: 250 msec. (0 – 90 %)

Insulation resistance: $\geq 100 \text{ M}\Omega$ with 500 V DC

Dielectric strength: 1500 V AC @ 1 minute (output 0 to
output 1 to output 2 to output 3 to HLS to power input to
FG)

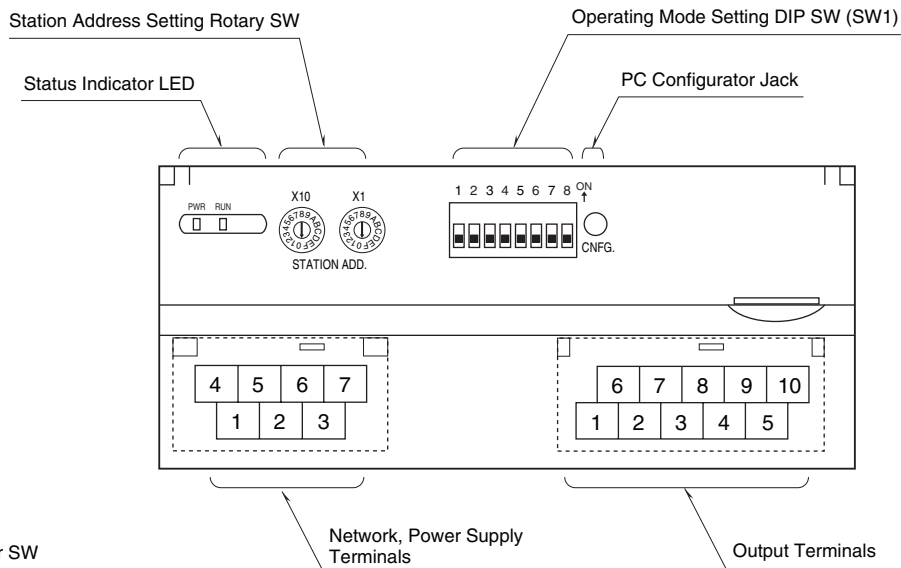
EXTERNAL VIEW

■ SIDE VIEW



Terminating Resistor SW

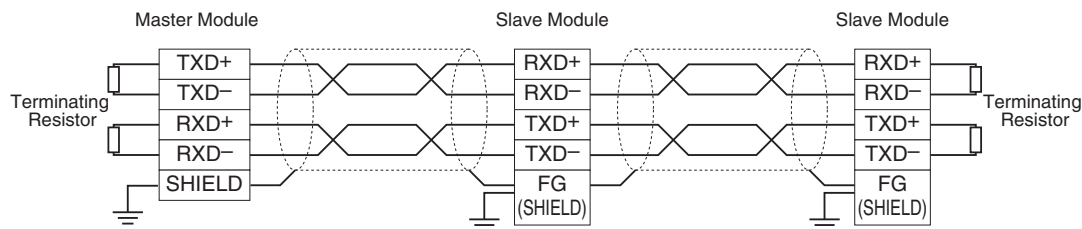
■ FRONT VIEW



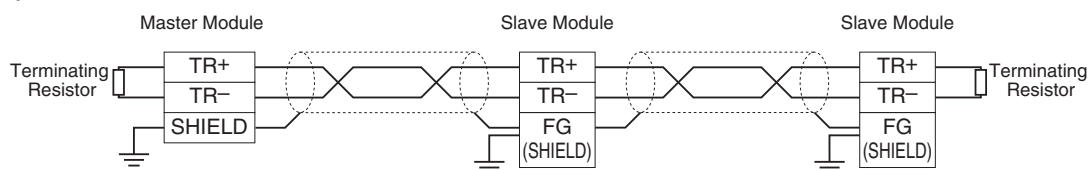
COMMUNICATION CABLE CONNECTIONS

■ 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

6	7	8	9	10
NC	V0	V1	V2	V3
1	2	3	4	5
NC	COM0	COM1	COM2	COM3

NO.	ID	FUNCTION	NO.	ID	FUNCTION
1	NC	No connection	6	NC	No connection
2	COM0	Common 0	7	V0	Voltage output 0
3	COM1	Common 1	8	V1	Voltage output 1
4	COM2	Common 2	9	V2	Voltage output 2
5	COM3	Common 3	10	V3	Voltage output 3

■ 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)

DATA CONVERSION

■ 12 BITS DATA CONVERSION

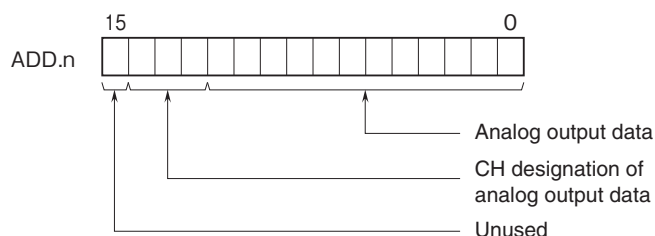
The 12 bits digital data of 0 to 4095 (0 to 100 %) is converted to analog value (0 to 100 %) by each output range. Output range refers range of the output, when output exceeds this range it is fixed to 0 or 100 %.

I/O DATA DESCRIPTIONS

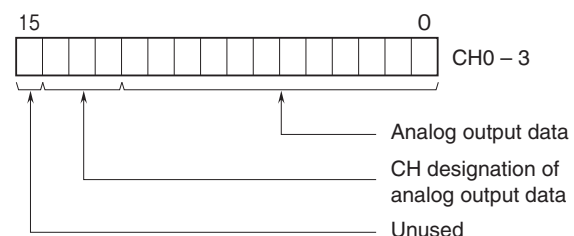
Scaling of analog output is configurable with the configurator software (model: R7CON). Refer to the software manual for details.

■ ANALOG OUTPUT

• Di area



• Do area

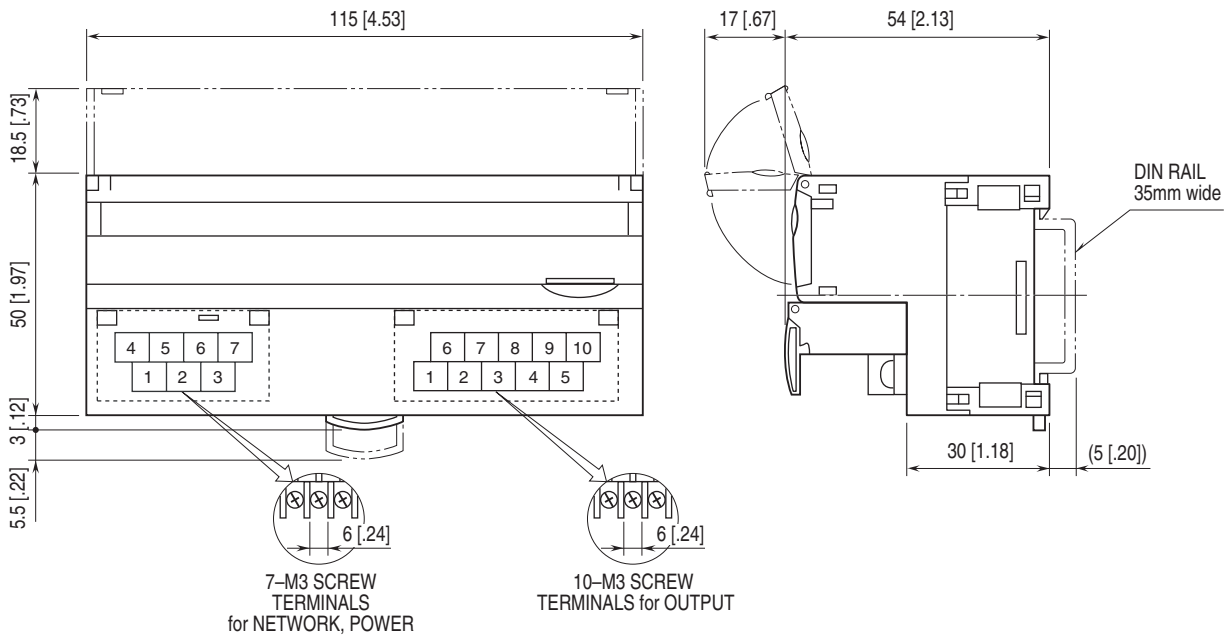


The data is 12-bit binary.

Divided by 4 times scan, 4 points output data is transferred by using CH designation bit.

For Di, the data written to Do is echoed back.

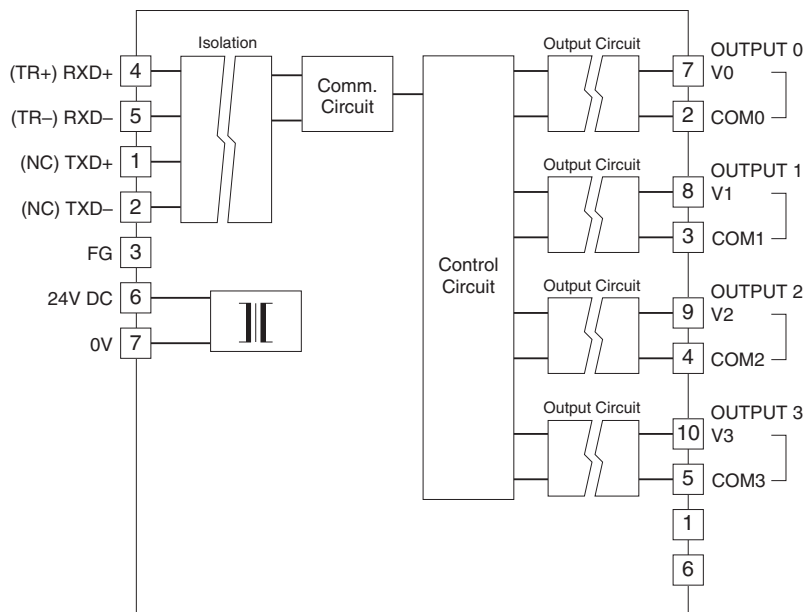
EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]



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.



Specifications are subject to change without notice.