Remote I/O R7 Series

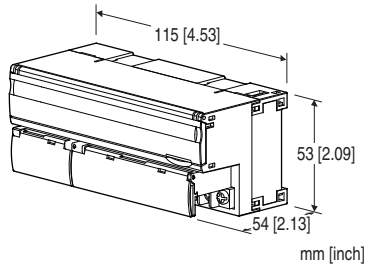
HI-SPEED LINK SYSTEM I/O MODULE

(DC voltage output, 2 points, isolated)

Functions & Features

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

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



CE

HLS Hi-speed Link System

MODEL: R7HL–YV2-R[1]

ORDERING INFORMATION

• Code number: R7HL-YV2-R[1]
Specify a code from below for [1].
(e.g. R7HL-YV2-R/H/Q)
• Specify the specification for option code /Q
(e.g. /C01/SET)

I/O TYPE

YV2: DC voltage output, 2 points

POWER INPUT

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

[1] OPTIONS (multiple selections)

Communication Mode
blank: Full-duplex
/H: Half-duplex
Other Options
blank: none
/Q: Option other than the above (specify the specification)

SPECIFICATIONS OF OPTION: Q (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-D)

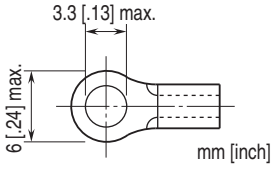
RELATED PRODUCTS

• 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 mm^2 (AWG 26 to 22)
• Others
Recommended manufacture: J.S.T. Mfg. Co., Ltd., NICHIFU Co., Ltd.
Applicable wire size: 0.25 to 1.65 mm^2 (AWG 22 to 16)
Screw terminal: Nickel-plated steel
Housing material: Flame-resistant resin (gray)
Isolation: Output 0 to output 1 to power to HLS 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



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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: 2
Terminating resistor: Built-in (Selected with the DIP SW; factory setting: disabled)

OUTPUT SPECIFICATIONS

■ **Narrow Span voltage**
Output range: -1 – +1 V DC, 0 – 1 V DC, -0.5 – +0.5 V DC
Load resistance: ≥ 100 kΩ
■ **Wide Span voltage**
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: ≥ 100 kΩ
■ **Operational range**
Except -10 to +10 V DC: -15 to +115 % of output range
-10 to +10 V DC: Approx. -11.5 to +11.5 V DC

INSTALLATION

Current consumption
•**DC**: Approx. 100 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

Conversion accuracy: ±0.1 %
Data range: 0 – 10000 of the output range
(Scaling of converted data is configurable with the configurator software (model: R7CON))
Temp. coefficient: ±0.015 %/°C (±0.008 %/°F)
Response time: 250 msec. (0 – 90 %)
Insulation resistance: ≥ 100 MΩ with 500 V DC
Dielectric strength: 1500 V AC @ 1 minute (output 0 to output 1 to power input to HLS 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

FUNCTIONS

Output hold function:
Output at the loss of communication is selectable from output clear (fix the output at -15 % or approx. -11.5 V) and output hold (last normally received data) with DIP switch.
At the startup, it outputs -15 % or approx. -11.5 V until the communication is established and normal data is received.

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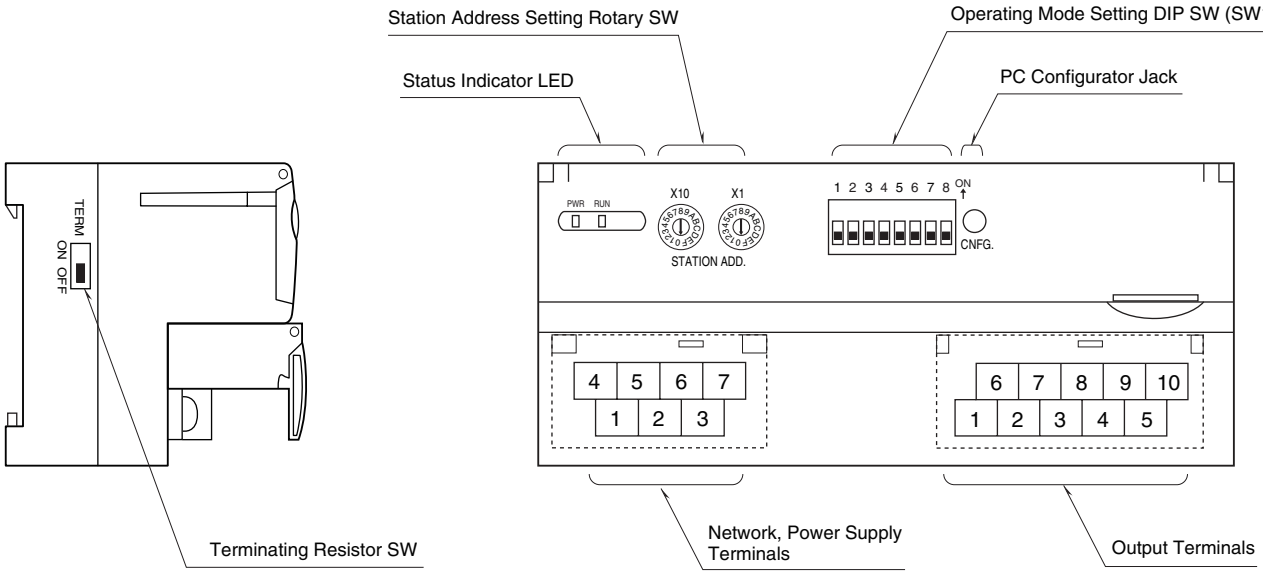
EXTERNAL VIEW

■ **SIDE VIEW**

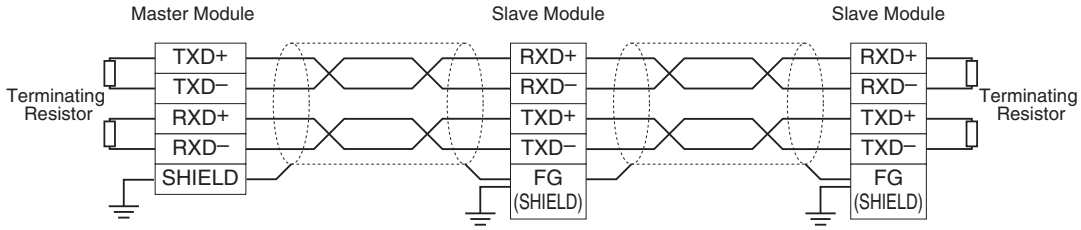
■ **FRONT VIEW**



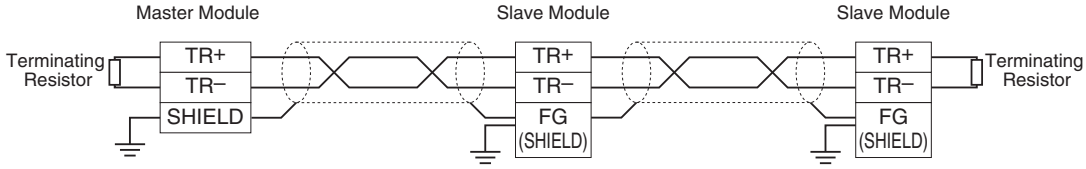
COMMUNICATION CABLE CONNECTIONS

■ **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.

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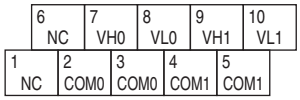
TERMINAL ASSIGNMENTS

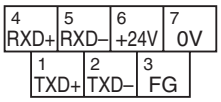
■ OUTPUT TERMINAL ASSIGNMENT



NO.	ID	FUNCTION	NO.	ID	FUNCTION
1	NC	No connection	6	NC	No connection
2	COM0	Common 0	7	VH0	Wide span volt. 0
3	COM0	Common 0	8	VL0	Narrow span volt. 0
4	COM1	Common 1	9	VH1	Wide span volt. 1
5	COM1	Common 1	10	VL1	Narrow span volt. 1

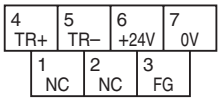
■ NETWORK, POWER SUPPLY TERMINAL ASSIGNMENT

• Full-duplex communication



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



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)

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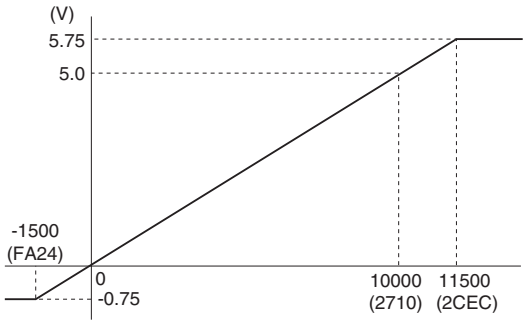
DATA CONVERSION

■ OUTPUT RANGE AND DATA CONVERSION (FACTORY DEFAULT SETTING)

Digital output data is converted into analog representations of 0 – 100% proportional to each scaled range.
Overrange output is possible from -15 to +115% of the nominal range.
When the signal exceeds the limit, the data is fixed at -15% or +115%.
(approx. -11.5 V or +11.5 V when the output range is -10 - +10 V)

• Output Range 0 – 5V DC

Digital Value, Decimal	Degital Value, HEX	Output Value, Engineering Unit	Output Value, %
-1500	FA24	≤ -0.75V	-15%
0	0	0V	0%
10000	2710	5V	100%
11500	2CEC	≥ 5.75V	115%

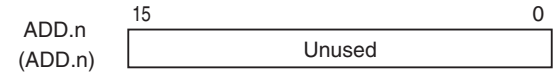


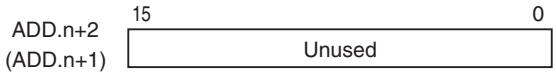
I/O DATA DESCRIPTIONS

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

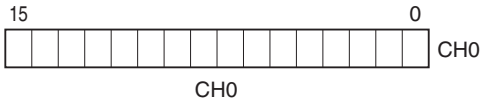
■ ANALOG OUTPUT

• Di area





• Do area



The data is 16-bit binary.
Negative value is represented in 2's complements.
Address in parentheses are for half-duplex mode.

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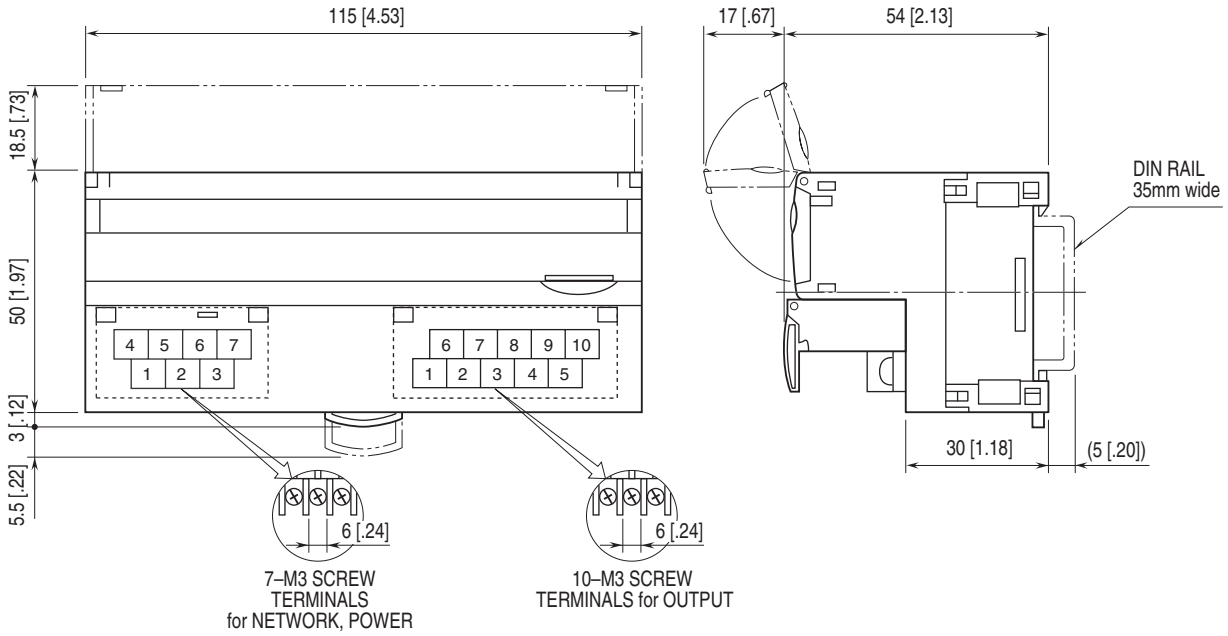
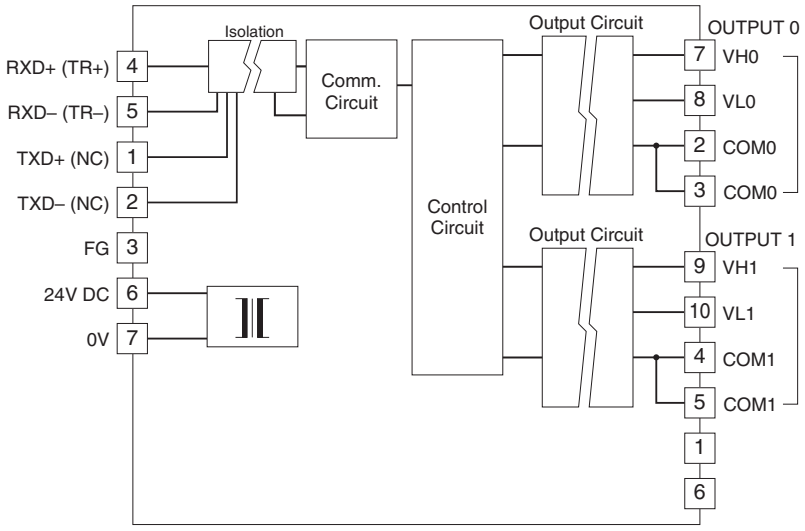
EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]



SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

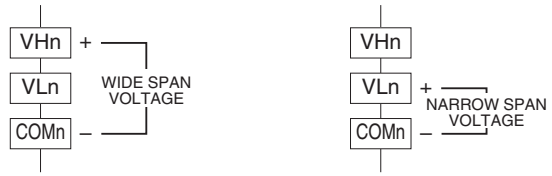
Note: In order to improve EMC performance, bond the FG terminal to ground.

Caution: FG terminal is NOT a protective conductor terminal.



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

■ **Output Connection Examples**



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⚠ Specifications are subject to change without notice.

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