## Remote I/O R7 Series

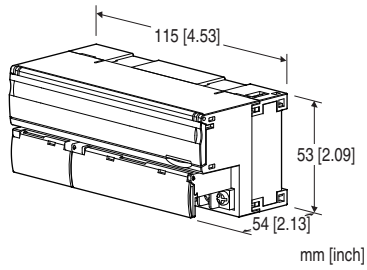
## HI-SPEED LINK SYSTEM I/O MODULE

(discrete input, 8 points & NPN transistor output, 7 points, independent I/O common)

Functions & Features

• 8 points discrete input and 7 points NPN transistor output module for HLS

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




HLS Hi-speed Link System

## MODEL:R7HL–DAC15E-R[1]

## ORDERING INFORMATION

• Code number: R7HL-DAC15E-R[1]

Specify a code from below for [1].
(e.g. R7HL-DAC15E-R/H/Q)

• Specify the specification for option code /Q
(e.g. /C01/SET)

## I/O TYPE

DAC15E: Discrete input, 8 points
NPN transistor output, 7 points (independent I/O common)

## 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-V)

## GENERAL SPECIFICATIONS

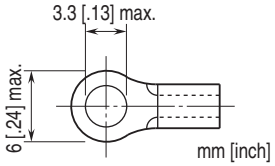
Connection: M3 separable screw terminal (torque 0.5 N·m)
Solderless terminal: Refer to the drawing at the end of the section.

• 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: 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

■**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:



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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 ±10 %; ripple 5 %p-p max.
**ON voltage / current**: ≥ 15 V DC (X0 through X7 to COM) / ≥ 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 kΩ
**ON delay**: ≤ 0.5 msec.
**OFF delay**: ≤ 0.5 msec.

## OUTPUT SPECIFICATIONS

**Common**: Negative common (NPN) per 7 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, 1.75 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 MΩ 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



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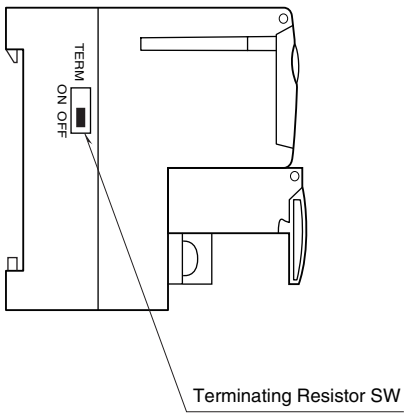
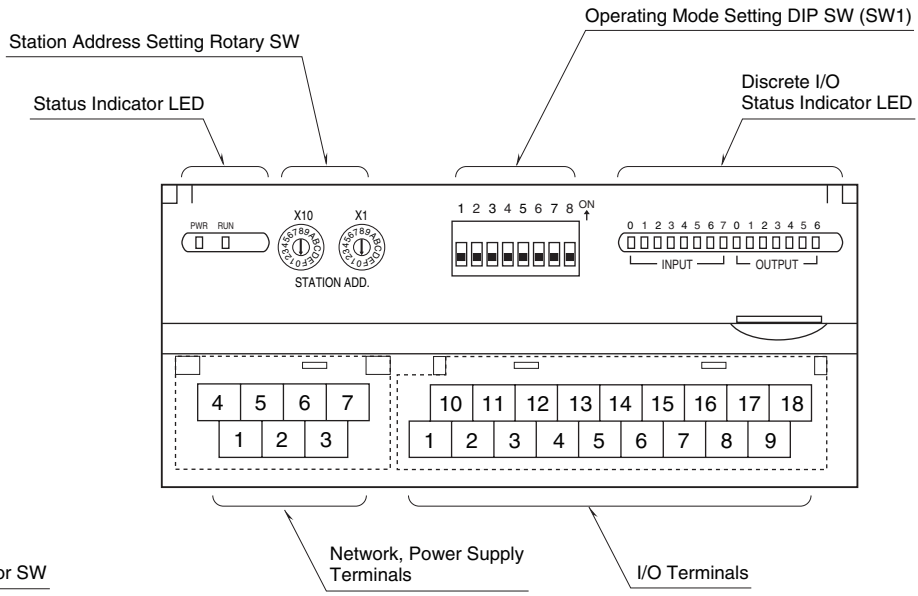
## EXTERNAL VIEW

■ SIDE VIEW



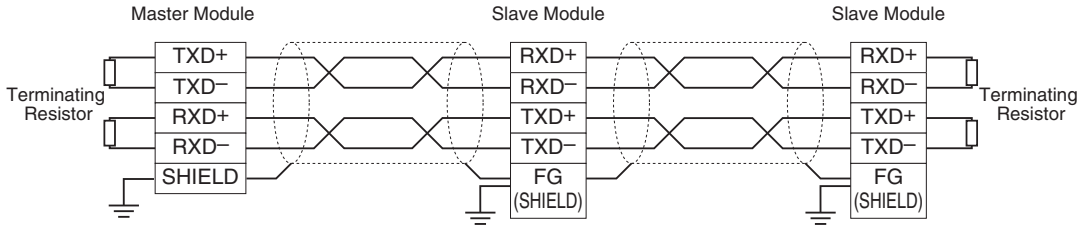

■ FRONT VIEW



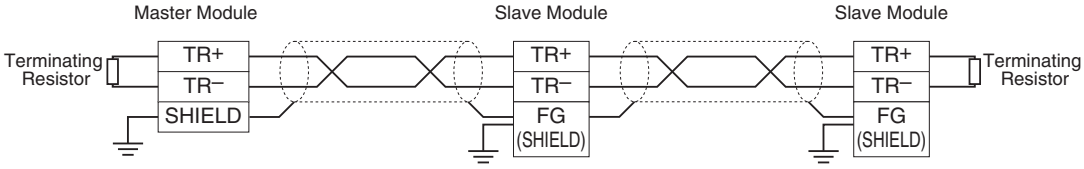

## COMMUNICATION CABLE CONNECTIONS

■ 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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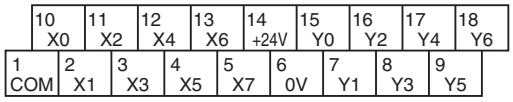
## TERMINAL ASSIGNMENTS

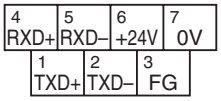
### ■ I/O TERMINAL ASSIGNMENT




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

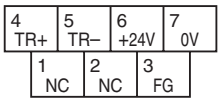
### ■ NETWORK, POWER SUPPLY TERMINAL ASSIGNMENT

**• 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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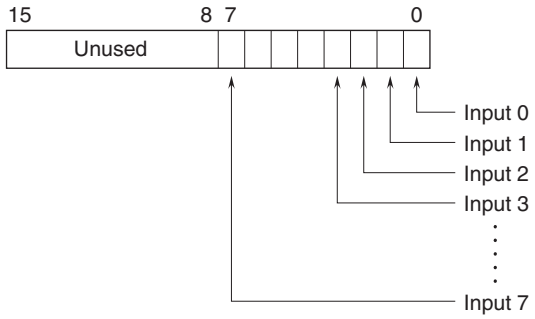
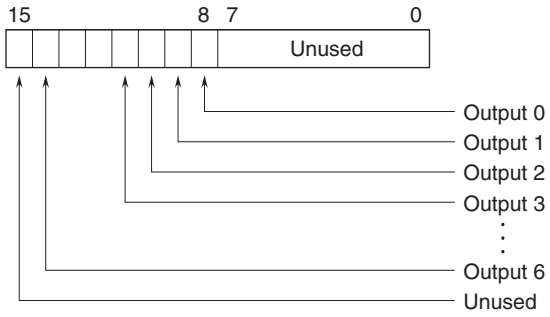
## I/O DATA DESCRIPTIONS

■ **DISCRETE I/O**

**• Di area**

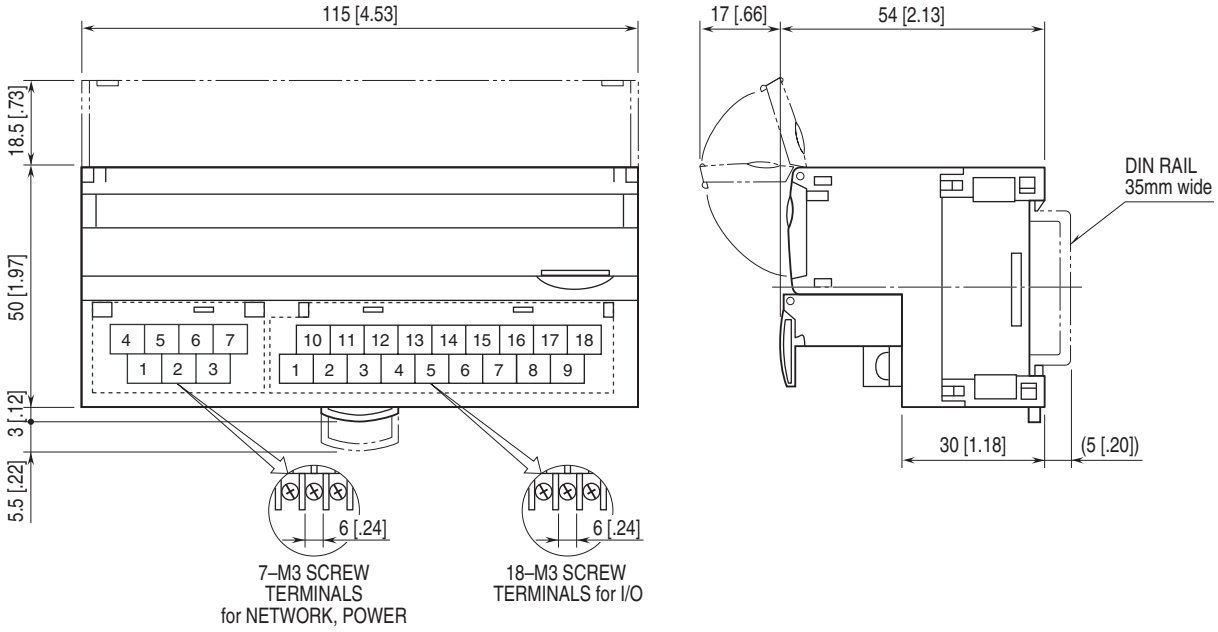



**• Do area**




0: OFF
1: ON

## EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]



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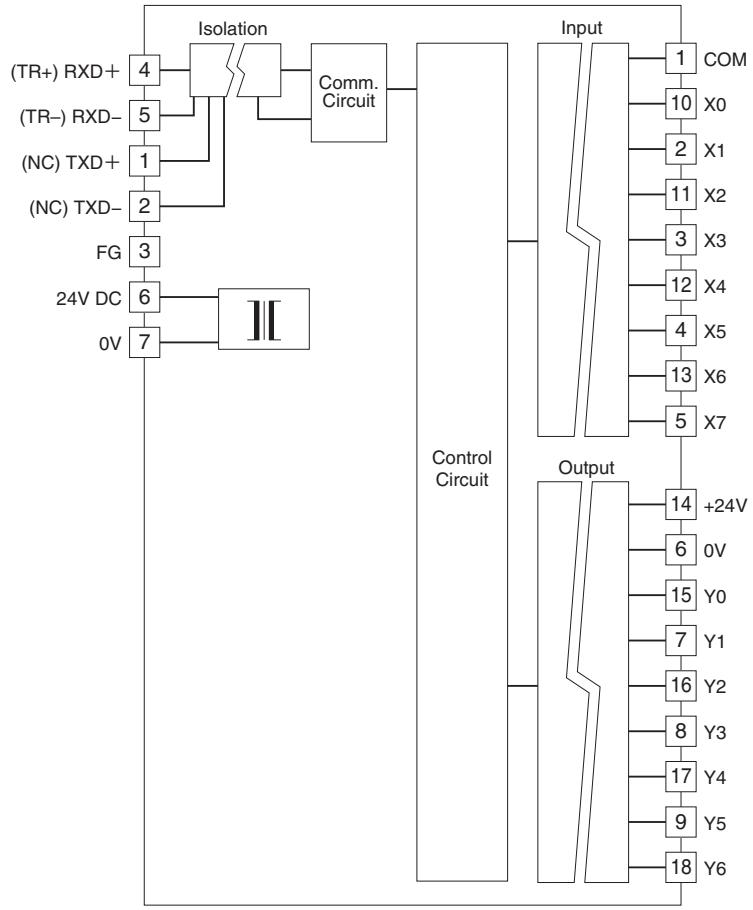
## SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

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.



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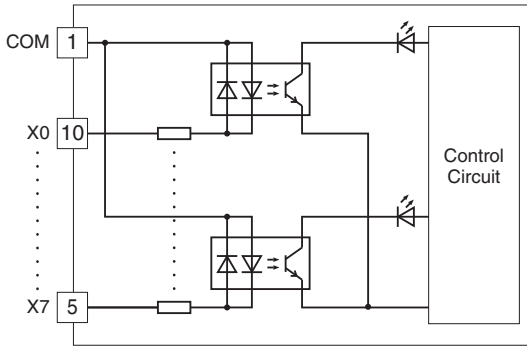
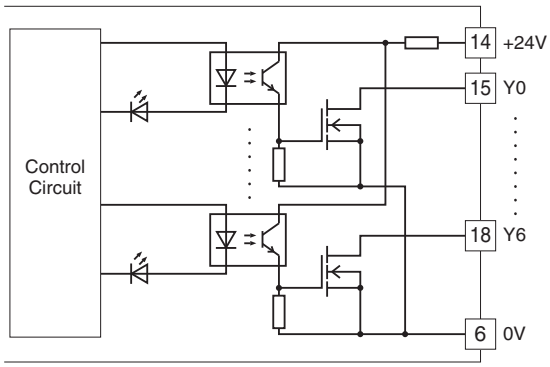
■ **Input Circuit**

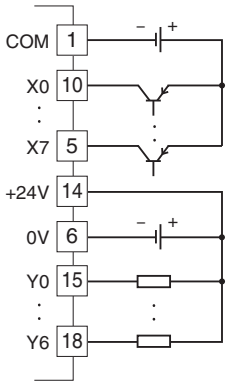



■ **Output Circuit**

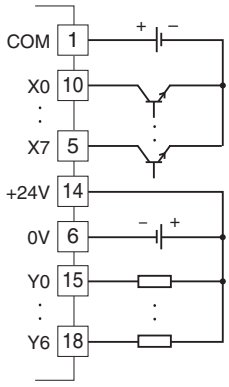



■ **I/O Connection Example**

PNP Input




NPN Input




⚠ Specifications are subject to change without notice.



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