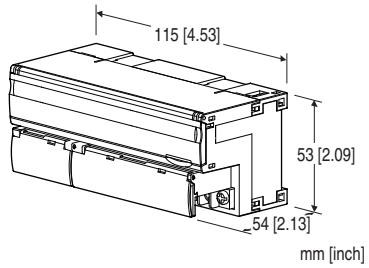
Remote I/O R7 Series

CC-Link I/O MODULE

(CC-Link V.1.10; potentiometer input, 4 points, isolated)

Functions & Features

- 4 points potentiometer input module for CC-Link
- Extension module can be connected
- Individual channels, zero adjustment, span adjustment, and scaling can be set with the configurator software (model: R7CON)



MODEL:R7C–MS4-R[1]

ORDERING INFORMATION

- Code number: R7C-MS4-R[1]

Specify a code from below for [1].
(e.g. R7C-MS4-R/Q)

- Specify the specification for option code /Q

(e.g. /C01)

If you need factory setting, use Ordering Information Sheet (No. ESU-7801-Q).

I/O TYPE

MS4: Potentiometer input, 4 points

POWER INPUT

DC Power

R: 24 V DC

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

[1] OPTIONS

blank: none

/Q: With options (specify the specification)

SPECIFICATIONS OF OPTION: Q

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

/C01: Silicone coating

/C02: Polyurethane coating

/C03: Rubber coating

RELATED PRODUCTS

- PC Configurator cable (model: MCN-CON or COP-US)
- PC configurator software (model: R7CON)
- CSP+ file

The configurator software and CSP+ file are downloadable at our web site.

CSP+ file is also downloadable at CC-Link Partner Association's web site.

- Discrete input extension module (model: R7C-EAx)
- Discrete output extension module (model: R7C-ECx)

PACKAGE INCLUDES...

- Terminating resistor (110 Ω, 0.5 W)

GENERAL SPECIFICATIONS

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

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

Recommended manufacturer: Japan Solderless Terminal 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 0 to input 1 to input 2 to input 3 to power to CC-Link or FG

Zero adjustments: Configurable via R7CON

Span adjustments: Configurable via R7CON

Extension: No extension (*), Discrete input 8 or 16 points, Discrete output 8 or 16 points

Selectable with the front DIP SW

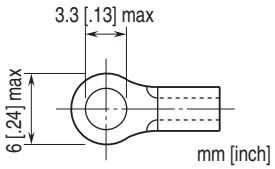
(*) Factory default setting

Conversion rate: Selectable with the front DIP SW

Status indicator LED: PWR

Configurator connection: 2.5 dia. miniature jack

■Recommended solderless terminal



CC-Link COMMUNICATION

CC-Link: Ver.1.10

Connector: M3 screw terminal

Network cable: CC-Link cable designated by Mitsubishi Electric

Station number: 1 - 64 (rotary switch, default:00)

Station Type: Remote device

Data allocation: 1

Baud rate setting: 156 kbps (default), 625 kbps, 2.5 Mbps,

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5 Mbps, 10 Mbps (rotary switch)
Status indicator LEDs: RUN, ERR, SD, RD

INPUT SPECIFICATIONS

Potentiometer: Total resistance 100 Ω – 20 kΩ
Minimum span: 50 % of total resistance
Excitation: Approx. 0.2 V DC

INSTALLATION

Current consumption
•**DC**: Approx. 110 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 rate / conversion accuracy:
10 msec./±0.8 %, 20 msec./±0.4 %, 40 msec./±0.2 %, 80 msec./±0.1 % (*)
(*) Factory setting
Data range: 0 – 10000 of the input range
(Scaling of converted data is configurable with the configurator software (model: R7CON))
Temp. coefficient: ±0.015 %/°C (±0.008 %/°F)
Response time: Conversion rate × 2 + 50 msec. (0 – 90 %)
Insulation resistance: ≥ 100 MΩ with 500 V DC
Dielectric strength: 1500 V AC @ 1 minute (input 0 to input 1 to input 2 to input 3 to power to CC-Link or FG)

STANDARDS & APPROVALS

EU conformity:
EMC Directive
EMI EN 61000-6-4
EMS EN 61000-6-2
RoHS Directive

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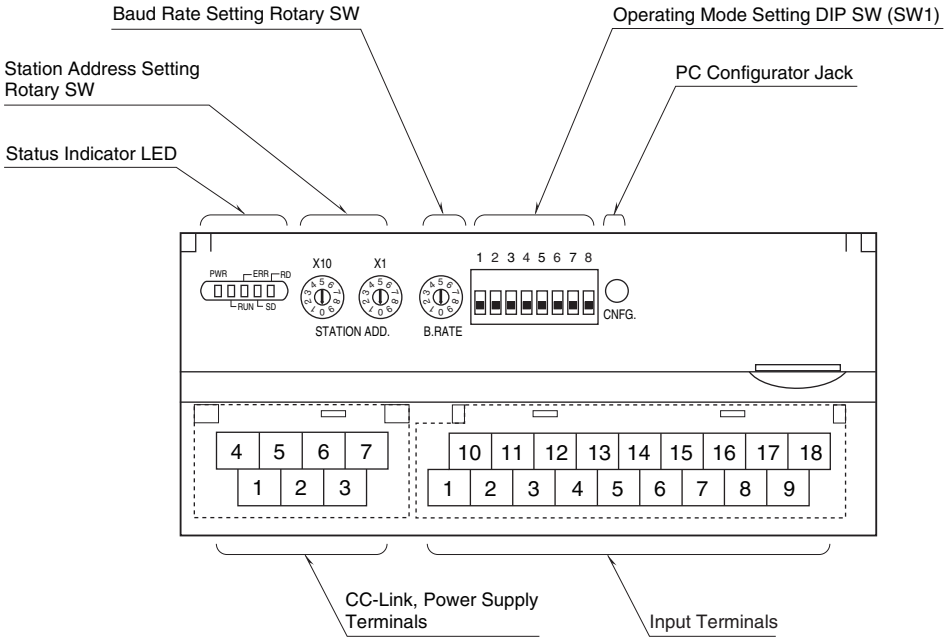
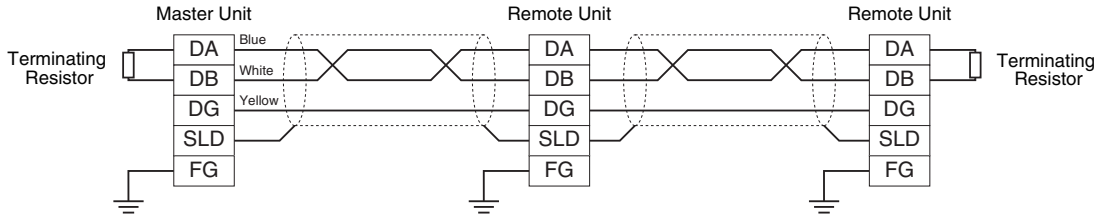
EXTERNAL VIEW



COMMUNICATION CABLE CONNECTIONS

■ MASTER CONNECTION



Note: Be sure to connect the terminating resistor included in the product package to the unit at both ends of communication line.
The terminator must be connected across DA and DB.
The Master Unit can be located at not only both ends but also any node of the of communication line.

TERMINAL ASSIGNMENTS

■ INPUT TERMINAL ASSIGNMENT

10	11	12	13	14	15	16	17	18
H0	S0	H1	S1	NC	H2	S2	H3	S3

1	2	3	4	5	6	7	8	9
NC	L0	NC	L1	NC	NC	L2	NC	L3

NO.	ID	FUNCTION	NO.	ID	FUNCTION
1	NC	No connection	10	H0	Pot H0
2	L0	Pot L0	11	S0	Pot S0
3	NC	No connection	12	H1	Pot H1
4	L1	Pot L1	13	S1	Pot S1
5	NC	No connection	14	NC	No connection
6	NC	No connection	15	H2	Pot H2
7	L2	Pot L2	16	S2	Pot S2
8	NC	No connection	17	H3	Pot H3
9	L3	Pot L3	18	S3	Pot S3

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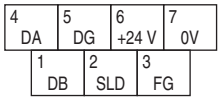
■ **POWER SUPPLY, CC-LINK TERMINAL ASSIGNMENT**



NO.	ID	FUNCTION, NOTES
1	DB	White
2	SLD	Shield
3	FG	FG
4	DA	Blue
5	DG	Yellow
6	+24 V	Power input (24 V DC)
7	0 V	Power input (0 V DC)

INDICATOR LED

■ **STATUS INDICATOR LED**

PWR	RUN	ERR	SD*1	RD	STATUS*2
ON	ON	BL	BL	ON	Communicates normally with occasional CRC errors due to noise interference.
ON	ON	BL	BL	ON	Communicates normally but the Baud Rate and/or Station Address switches failed. ERR LED blinks approximately in 0.5 seconds intervals.
ON	ON	BL	BL	OFF	----
ON	ON	BL	OFF	ON	CRC error detected in the received data. Unable to respond.
ON	ON	BL	OFF	OFF	----
ON	ON	OFF	BL	ON	Normal communication
ON	ON	OFF	BL	OFF	----
ON	ON	OFF	OFF	ON	Unable to receive data addressed to the station.
ON	ON	OFF	OFF	OFF	----
ON	OFF	BL	BL	ON	Polling response is made but CRC error is detected in received refresh data.
ON	OFF	BL	BL	OFF	----
ON	OFF	BL	OFF	ON	CRC error detected in the data addressed to the station.
ON	OFF	BL	OFF	OFF	----
ON	OFF	OFF	BL	ON	Link is not started.
ON	OFF	OFF	BL	OFF	----
ON	OFF	OFF	OFF	ON	No data addressed to the station. Or unable to receive data addressed to the station due to noise interference. (Missing parts of the data sent from the master)
ON	OFF	OFF	OFF	OFF	Unable to receive data due to wire breakdown
ON	OFF	ON	OFF	ON/OFF	Faulty Baud Rate and/or Station Address setting
OFF	OFF	OFF	OFF	OFF	Power input removed or power supply failure.

OFF = OFF, ON = ON, BL = Blinking

*1. SD LED which is blinking may appear to be ON with high baud rate especially when fewer modules are connected.

*2. LED combinations indicated with "----" do not occur in normal operation unless LED failure or the like occurs.

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DATA ALLOCATION

■ ANALOG INPUT

	Interval-timed Response (X)		Refresh Data (Y)
RWr n+0	Analog input 0	RWw n+0	Unused
+1	Analog input 1	+1	Unused
+2	Analog input 2	+2	Unused
+3	Analog input 3	+3	Unused

• Without Extension Module

	Interval-timed Response (X)		Refresh Data (Y)
RX(n+0)	Status	RY(n+0)	Unused
RX(n+1)	Reserved	RY(n+1)	

• With Extension Module R7C-EA16

	Interval-timed Response (X)		Refresh Data (Y)
RX(n+0)	R7C-EA16	RY(n+0)	Unused
RX(n+1)	Reserved	RY(n+1)	

• With Extension Module R7C-EC16x

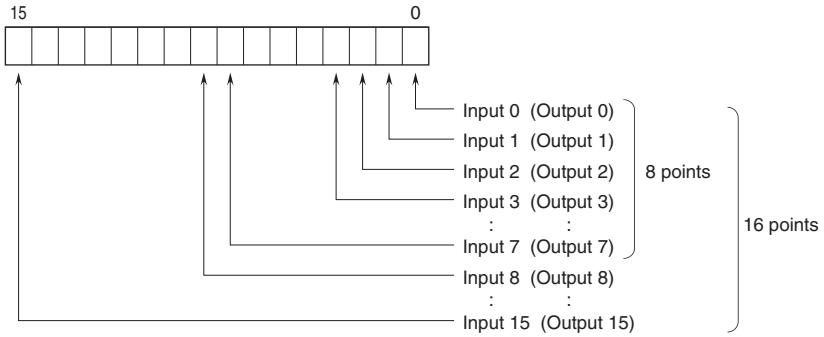
	Interval-timed Response (X)		Refresh Data (Y)
RX(n+0)	Status	RY(n+0)	R7C-EC16x
RX(n+1)	Reserved	RY(n+1)	Unused

I/O DATA DESCRIPTIONS

■ ANALOG INPUT

16-bit binary data
Negative values represented in 2's complements

■ DISCRETE I/O



0 : OFF
1 : ON

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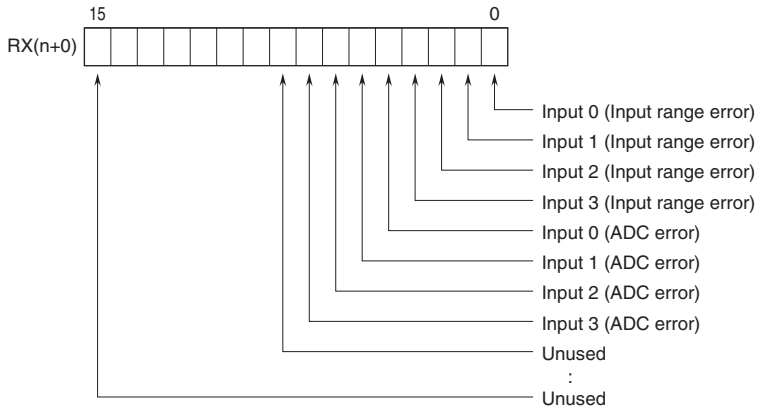
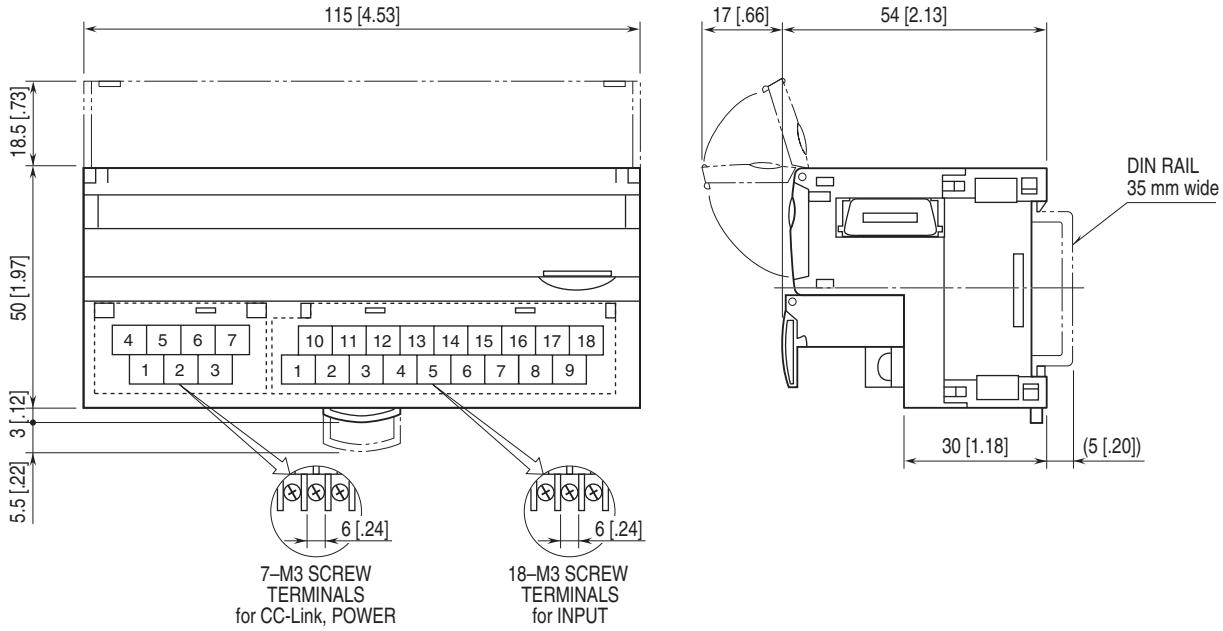
■ **STATUS**

Analog input module without extension module can show input status of each channel.



Input range error (≤ -15%, ≥ +115%)
0 : Normal 1 : Error
ADC error (no response from ADC)
0 : Normal 1 : Error

EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]



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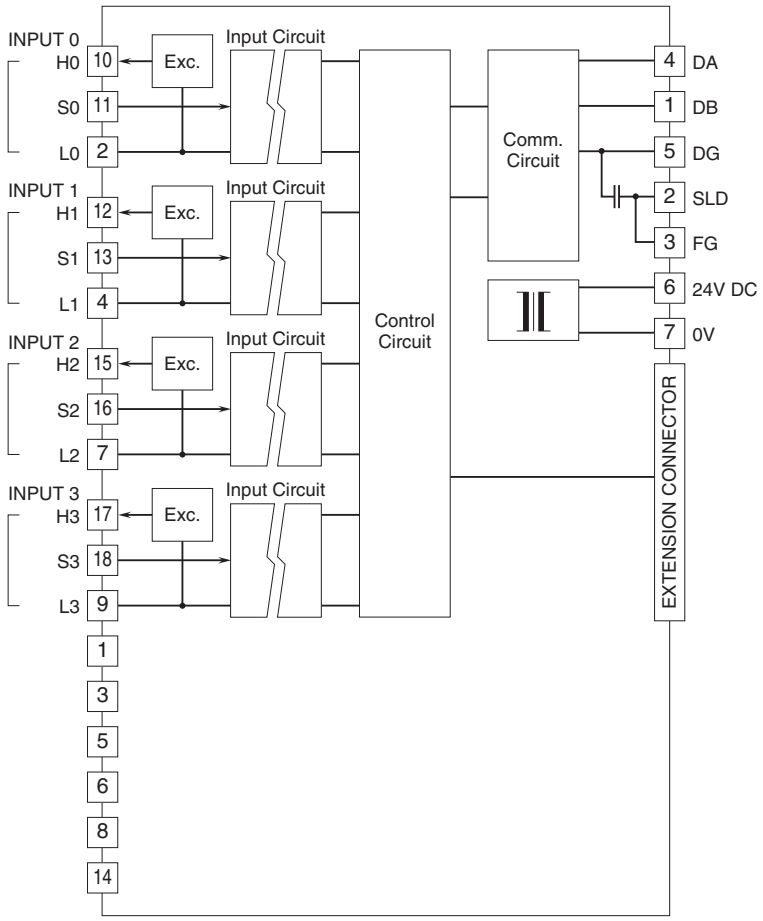
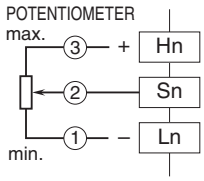
SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

Note: In order to improve EMC performance, bond the FG terminal to ground.
Caution: FG terminal is NOT a protective conductor terminal.



■ **Input Connection Example**



⚠ Specifications are subject to change without notice.

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