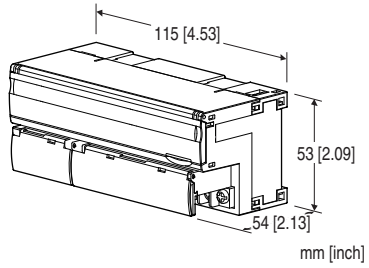
Remote I/O R7 Series

CC-Link I/O MODULE

(CC-Link V.1.10; totalized pulse input, 8 points)

Functions & Features

- 8 points totalized pulse input module for CC-Link
- Extension module can be connected



MODEL:R7C–PA8–[1][2]

ORDERING INFORMATION

- Code number: R7C-PA8-[1][2]

Specify a code from below for each of [1] and [2].
(e.g. R7C-PA8-AR/Q)

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

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

I/O TYPE

PA8: Totalized pulse input, 8 points

[1] POWER INPUT

DC Power

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

Universal

AR: 24 V AC/24 V DC (universal)
(Operational voltage range 24 V AC±10 %, 50 - 60 Hz / 24 V DC±10 %, ripple 10 %p-p max.)

[2] 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

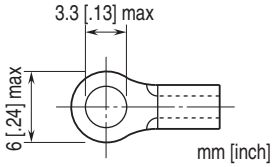
The configurator software and CSP+ file are downloadable at our web site.
CSP+ file is also downloadable at CC-Link Partner Association's web site.

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

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 to power to CC-Link or FG
Extension: No extension (*), Discrete input 8 or 16 points, Discrete output 8 or 16 points
Selectable with the front DIP SW
(*) Factory default setting
Status indicator LED: PWR
Totalized pulse input status indicator LED: LED turns ON with contact ON
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 or 4
Baud rate setting: 156 kbps (default), 625 kbps, 2.5 Mbps, 5 Mbps, 10 Mbps (rotary switch)
Terminating resistor: Built-in (side DIP SW, default: disable)
Status indicator LEDs: RUN, ERR, SD, RD

MG CO., LTD.
www.mgco.jp

INPUT SPECIFICATIONS

Common: Positive or negative common (NPN/PNP) per 8 points

• **Excitation (PNP, NPN input)**

Sensing voltage: 24 V DC ±10 %; ripple 5 %p-p max

• **NPN input**

ON voltage / ON current: ≥ 16 V DC (V+ - PIx) / ≥ 3.7 mA

OFF voltage / OFF current: ≤ 5 V DC (V+ - PIx) / ≤ 1 mA

• **PNP input**

ON voltage / ON current: ≥ 16 V DC (V+ - Cx) / ≥ 3.7 mA

OFF voltage / OFF current: ≤ 5 V DC (V+ - Cx) / ≤ 1 mA

• **Voltage pulse input**

ON voltage / ON current: ≥ 16 V DC (PIx - Cx) / ≥ 3.7 mA

OFF voltage / OFF current: ≤ 5 V DC (PIx - Cx) / ≤ 1 mA

Input current: ≤ 5.5 mA per point at 24 V DC

Input resistance: Approx. 4.4 kΩ

ON delay: ≤ 2.0 msec.

OFF delay: ≤ 2.0 msec.

Max. Frequency: 100 Hz (This unit is designed to be able to accept a frequency up to 100 Hz, however,'chattering' contact must be avoided for accurate measuring of such high frequency. Use relays that do not cause any chattering)

Minimum ON/OFF pulse requirements: 5 msec.

Totalized pulse count: 0 - 4 294 967 295

Max. totalized pulse count: 1 000 - 4 294 967 295 (Factory default: 4 294 967 295)

Overflow reset value: 0 or 1 (Factory default: 0)

INSTALLATION

Current consumption

•**AC**: Approx. 130 mA

•**DC**: Approx. 70 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

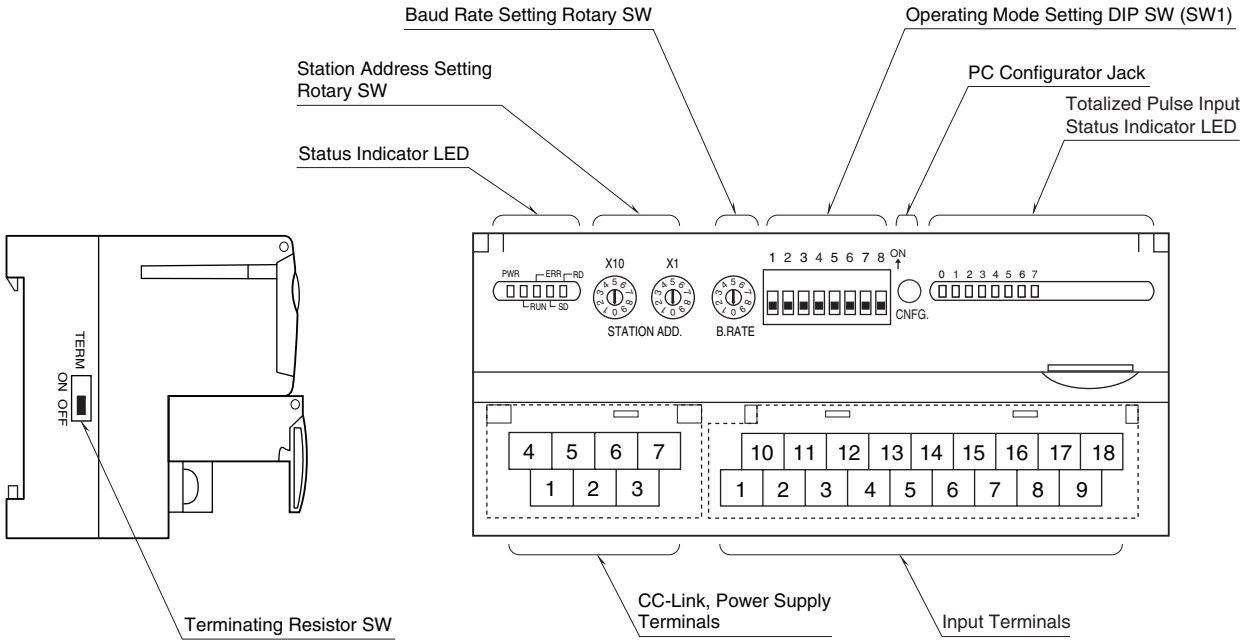
Dielectric strength: 1500 V AC @ 1 minute (input to power to CC-Link or FG)

MG CO., LTD.
www.mgco.jp

EXTERNAL VIEW

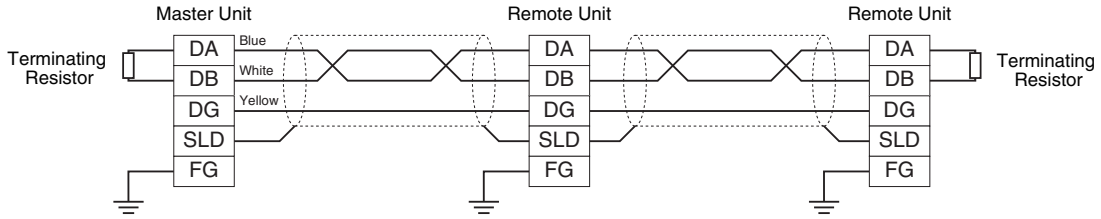
■ SIDE VIEW

■ FRONT VIEW



COMMUNICATION CABLE CONNECTIONS

■ MASTER CONNECTION



Note: Be sure to connect the terminating resistor across DA and DB at both ends of communication line.
When this unit is located at an end, turn the terminating resistor SW ON.
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

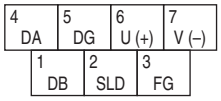
10	11	12	13	14	15	16	17	18
V+	PI0	PI1	PI2	PI3	PI4	PI5	PI6	PI7

1	2	3	4	5	6	7	8	9
V−	C0	C1	C2	C3	C4	C5	C6	C7

NO.	ID	FUNCTION	NO.	ID	FUNCTION
1	V–	Excitation (–)	10	V+	Excitation (+)
2	C0	Common	11	PI0	Input 0
3	C1	Common	12	PI1	Input 1
4	C2	Common	13	PI2	Input 2
5	C3	Common	14	PI3	Input 3
6	C4	Common	15	PI4	Input 4
7	C5	Common	16	PI5	Input 5
8	C6	Common	17	PI6	Input 6
9	C7	Common	18	PI7	Input 7

MG CO., LTD.
www.mgco.jp

■ **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	U (+)	Power input (+)
7	V (–)	Power input (–)

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.

■ TOTALIZED PULSE INPUT STATUS INDICATOR LED

LED red indicators show the signal status.

ON: LED ON

OFF: LED OFF

MG CO., LTD.
www.mgco.jp

DATA CONVERSION

■ COUNT VALUE

The count value is 32-bit data. It is divided in 2 words of 16 bits represented with 2 addresses.The lower address is allocated in the lower word (LSB) and the upper address in the upper word (MSB). The count value is 0 - 4 294 967 295. The maximum count value available is 1 000 - 4 294 967 295. In case of overflow, the vaule is reset to 0 or 1 (configurable) from which the count will restart. The preset of the count value is also available. Use the R7CON or commands for the configuration.

DATA ALLOCATION

■ R7C-PA8

• Data allocation 1

	Interval timed Response (X)		Refresh Data (Y)
RX (n+0)	RX (n+0) D – RX (n+0) 0: Command	RY (n+0)	RY (n+0) A – RY (n+0) 0: Command
RX (n+1)	Unused	RY (n+1)	Unused

	Interval-timed Response (X)		Refresh Data (Y)
RWr (n+0)	Input extension	RWw (n+0)	Output extension
RWr (n+1)	Unused	RWw (n+1)	Unused
RWr (n+2)	Count data (LSB)	RWw (n+2)	Preset data (LSB)
RWr (n+3)	Count data (MSB)	RWw (n+3)	Preset data (MSB)

• Data allocation 4

	Interval-timed Response (X)		Refresh Data (Y)
RX (n+0)	RX (n+0) D – RX (n+0) 0: Command	RY (n+0)	RY (n+0)A – RY (n+0) 0: Command
RX (n+1)	Input extension	RY (n+1)	Output extension

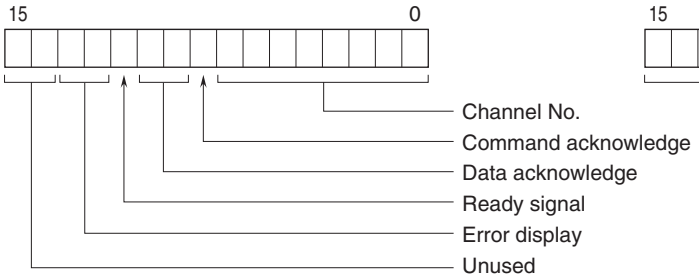
	Interval-timed Response (X)		Refresh Data (Y)
RWr (n+0)	ch0 Count data (LSB)	RWw (n+0)	ch0 Preset data (LSB)
RWr (n+1)	ch0 Count data (MSB)	RWw (n+1)	ch0 Preset data (MSB)
RWr (n+2)	ch1 Count data (LSB)	RWw (n+2)	ch1 Preset data (LSB)
RWr (n+3)	ch1 Count data (MSB)	RWw (n+3)	ch1 Preset data (MSB)
RWr (n+4)	ch2 Count data (LSB)	RWw (n+4)	ch2 Preset data (LSB)
RWr (n+5)	ch2 Count data (MSB)	RWw (n+5)	ch2 Preset data (MSB)
RWr (n+6)	ch3 Count data (LSB)	RWw (n+6)	ch3 Preset data (LSB)
RWr (n+7)	ch3 Count data (MSB)	RWw (n+7)	ch3 Preset data (MSB)
RWr (n+8)	ch4 Count data (LSB)	RWw (n+8)	ch4 Preset data (LSB)
RWr (n+9)	ch4 Count data (MSB)	RWw (n+9)	ch4 Preset data (MSB)
RWr (n+10)	ch5 Count data (LSB)	RWw (n+10)	ch5 Preset data (LSB)
RWr (n+11)	ch5 Count data (MSB)	RWw (n+11)	ch5 Preset data (MSB)
RWr (n+12)	ch6 Count data (LSB)	RWw (n+12)	ch6 Preset data (LSB)
RWr (n+13)	ch6 Count data (MSB)	RWw (n+13)	ch6 Preset data (MSB)
RWr (n+14)	ch7 Count data (LSB)	RWw (n+14)	ch7 Preset data (LSB)
RWr (n+15)	ch7 Count data (MSB)	RWw (n+15)	ch7 Preset data (MSB)

MG CO., LTD.
www.mgco.jp

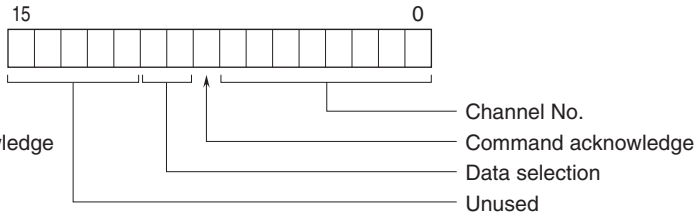
I/O DATA DESCRIPTIONS

■ **R7C–PA8**

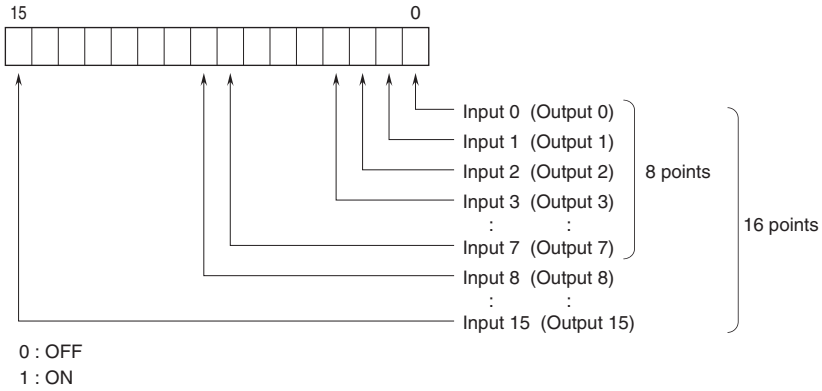
• RX (n+0)



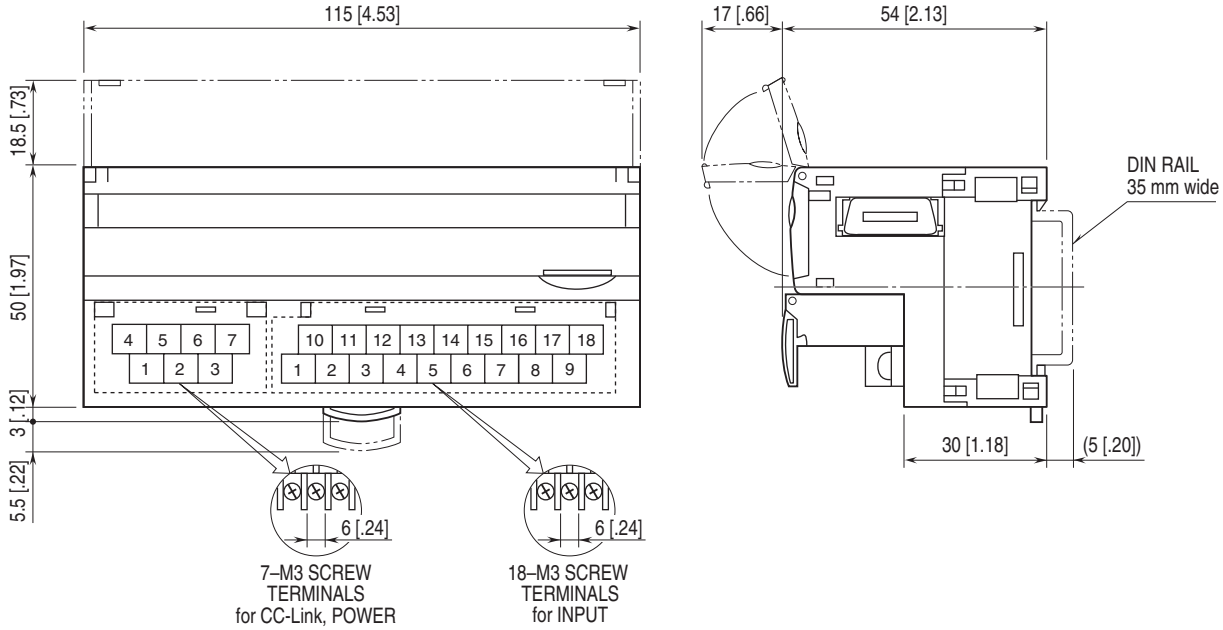
• RY (n+0)



■ **DISCRETE I/O**



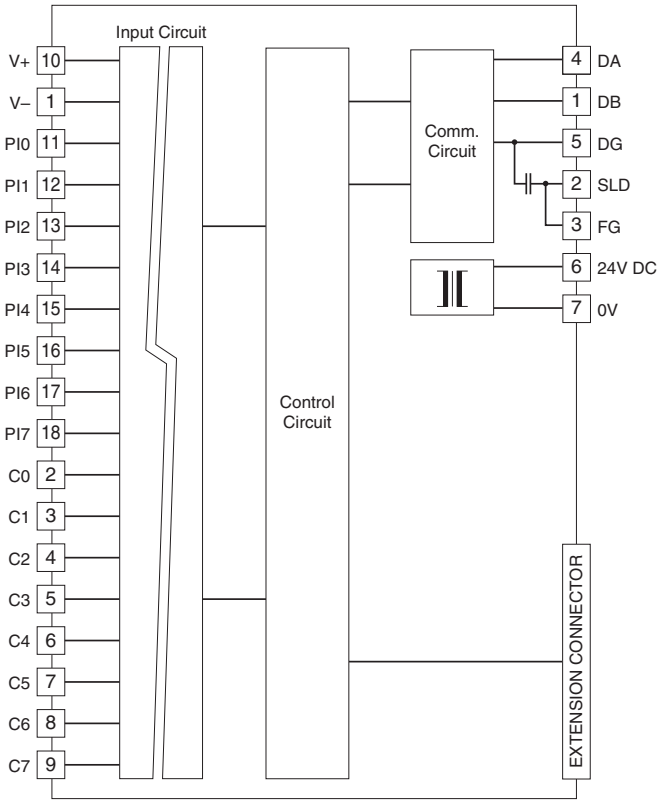
EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]



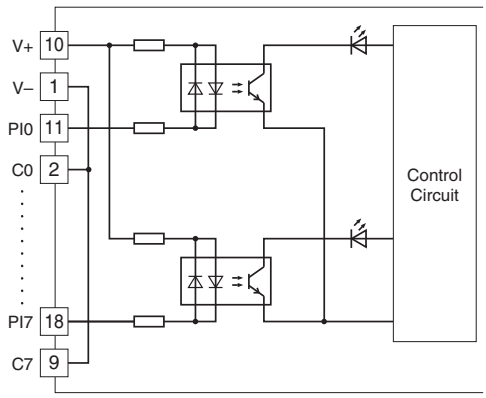
MG CO., LTD.
www.mgco.jp

SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

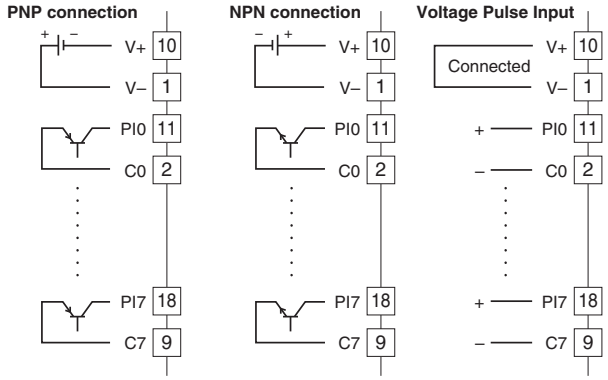
Caution: FG terminal is NOT a protective conductor terminal.



■ **Input Circuit**



■ **Input Connection Examples**



MG CO., LTD.
www.mgco.jp

⚠ Specifications are subject to change without notice.

MG CO., LTD.
www.mgco.jp