

BEFORE USE

Thank you for choosing M-System. Before use, please check contents of the package you received as outlined below.

If you have any problems or questions with the product, please contact M-System's Sales Office or representatives.

■ PACKAGE INCLUDES:

Totalized pulse input module..... (1)

■ MODEL NO.

Confirm that the model number described on the product is exactly what you ordered.

■ INSTRUCTION MANUAL

This manual describes necessary points of caution when you use this product, including installation, connection and basic maintenance procedures.

POINTS OF CAUTION**■ GENERAL PRECAUTIONS**

- Before you remove the unit or mount it, turn off the power supply and input signal for safety.

■ ENVIRONMENT

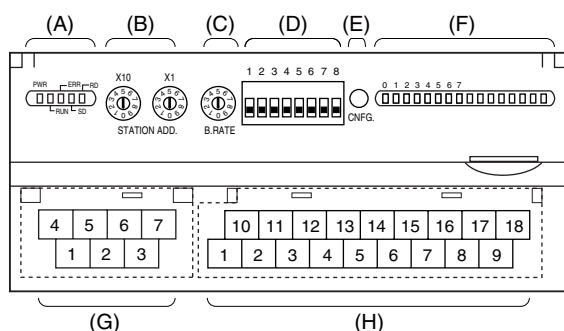
- Indoor use
- When heavy dust or metal particles are present in the air, install the unit inside proper housing with sufficient ventilation.
- Do not install the unit where it is subjected to continuous vibration. Do not subject the unit to physical impact.
- Environmental temperature must be within -10 to +55°C (14 to 131°F) with relative humidity within 30 to 90% RH in order to ensure adequate life span and operation.

■ WIRING

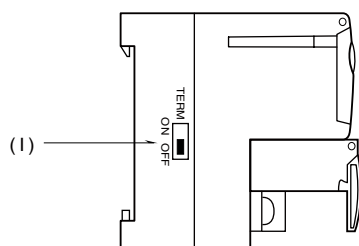
- Do not install cables (power supply, input and communication) close to noise sources (relay drive cable, high frequency line, etc.).
- Do not bind these cables together with those in which noises are present. Do not install them in the same duct.

COMPONENT IDENTIFICATION

FRONT VIEW



SIDE VIEW



- (A) Status Indicator LED *1
 (B) Station Address Setting Rotary SW
 (C) Baud Rate Setting Rotary SW
 (D) Operating Mode Setting DIP SW (SW1)
 (E) PC Configurator Jack
 (F) Input Status Indicator LED
 (G) CC-Link, Power Supply Terminals
 (H) Input Terminals
 (I) Terminating Resistor SW

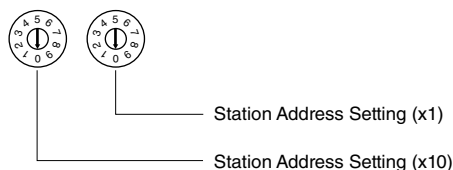
*1. Refer to 'Status Indicator LED' section for detailed information.

STATUS INDICATOR LED

ID	COLOR	FUNCTION
PWR	Red	Turns on when the internal 5V is supplied normally.
RUN	Red	Turns on when the refresh data is received normally.
ERR	Red	Turns on when the received data is abnormal.
SD	Red	Turns on when the module is transmitting.
RD	Red	Turns on when the module is receiving.

STATION ADDRESS

Station Address is selected between 1 and 64 in decimal. The left switch determines the tenths place digit, while the right switch does the ones place digit of the address.



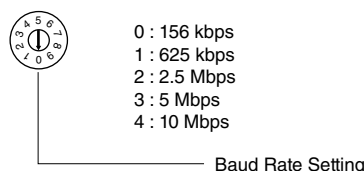
USER CONFIGURATION ITEMS

With PC configurator software (model: R7CON)

- Count range reset
- Number to reset at overflow
- Maximum count value

BAUD RATE

Baud Rate is selected with the rotary switch.



OPERATING MODE

Extension (SW1-1, 1-2)

SW1-1	SW1-2	Extension
OFF	OFF	No extension (*)
ON	OFF	Discrete input 8 or 16 points
OFF	ON	Discrete output 8 or 16 points

DATA ALLOCATION (SW1-3)

SW1-3	Data allocation
OFF	1(*)
ON	4

(*) Factory setting

Caution ! - SW1-4 through SW1-8 are unused. Be sure to turn off unused ones.

POWER SUPPLY, CC-LINK TERMINAL ASSIGNMENT

4	5	6	7
DA	DG	U(+)	V(-)
1	2	3	
DB	SLD	FG	

- (1) DB White
 (2) SLD Shield
 (3) FG FG
 (4) DA Blue
 (5) DG Yellow
 (6) U(+) Power input (+)
 (7) V(-) Power input (-)

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 -	Power (-)	10	V +	Power (+)
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

TERMINATING RESISTOR

To use the terminating resistor, turn the switch ON, and OFF to invalidate. (Factory setting OFF)

MODULE COMBINATIONS

This module can be attached with any 'extension' module.

INDICATOR LED

■ STATUS INDICATOR LED

PWR	RUN	ERR	SD	RD	STATUS
ON	ON	BL	BL	ON	Communicates normally with occasional CRC errors due to noise interface.
ON	ON	BL	BL	ON	Communicates normally but the Baud Rate and/or Station Address switches failed. ERR LED blinks approximately in 0.5 second intervals.
ON	ON	BL	BL	OFF	----
ON	ON	BL	OFF	ON	CRC error found 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	Performs the interval-timed responses but CRC error found in receiving the refresh data.
ON	OFF	BL	BL	OFF	----
ON	OFF	BL	OFF	ON	CRC error found 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 interface. (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

---- = Inconceivable in normal operations (e.g. LED failure)

■ PULSE INPUT STATUS INDICATOR LED

Totalized pulse modules have LED indicators showing input signal status.

ON : LED ON

OFF : LED OFF

DATA ACQUISITION & SETTING

Parameter reset, preset and reading of each channel is available with command setting of R7C-PA8.

The command setting method differs depending on whether the data allocation is 1 or 4. Set the commands according to the procedure explained next.

Parameter of each channel is two_word integer not signed.

When overflowing, the value to which response can be set is “0” or “1”. The maximum range available is 1 000 to 4 294 967 295.

■ DATA ALLOCATION 1

Master→ Slave (R7C-PA8)		
Bit Data	RY0_0	CH0 set
	RY0_1	CH1 set
	RY0_2	CH2 set
	RY0_3	CH3 set
	RY0_4	CH4 set
	RY0_5	CH5 set
	RY0_6	CH6 set
	RY0_7	CH7 set
	RY0_8	Command setting 0: Read data 1: Write data
	RY0_9 through RY0_A	Write data selection 00: Preset value 01: Overflow response value 10: Maximum value
	RY0_B through RY0_F	Unused
Word Data	RWw0	Extension output (0 through F)
	RWw1	Unused
	RWw2	Data to write (lower)
	RWw3	Data to write (upper)

Slave (R7C-PA8) → Master		
Bit Data	RX0_0	CH0 acknowledge
	RX0_1	CH1 acknowledge
	RX0_2	CH2 acknowledge
	RX0_3	CH3 acknowledge
	RX0_4	CH4 acknowledge
	RX0_5	CH5 acknowledge
	RX0_6	CH6 acknowledge
	RX0_7	CH7 acknowledge
	RX0_8	Command acknowledge 0: Read data 1: Write data
	RX0_9 through RX0_A	Write data acknowledge 00: Preset value 01: Overflow response value 10: Maximum value
	RX0_B	Ready
	RX0_C through RX0_D	Setting command error code 10: Normal operating 01: Setting overrange (Maximum value etc.)
	RX0_E through RX0_F	Unused
Word Data	RWr0	Extension input (0 through F)
	RWr1	Unused
	RWr2	Data to read (lower)
	RWr3	Data to read (upper)

■ DATA ALLOCATION 4

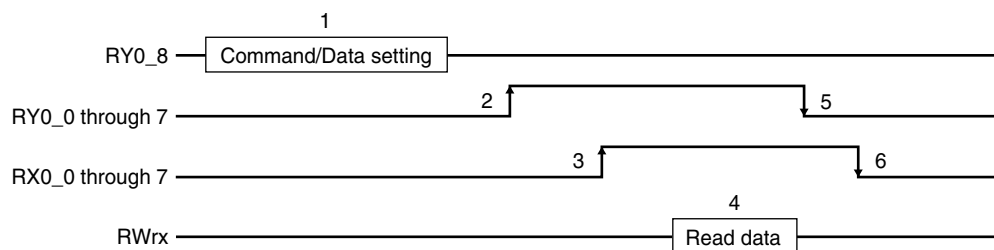
Master → Slave (R7C-PA8)		
Bit Data	RY0_0	CH0 set
	RY0_1	CH1 set
	RY0_2	CH2 set
	RY0_3	CH3 set
	RY0_4	CH4 set
	RY0_5	CH5 set
	RY0_6	CH6 set
	RY0_7	CH7 set
	RY0_8	Command setting 0: Read data 1: Write data
	RY0_9 through RY0_A	Write data selection 00: Preset value 01: Overflow response value 10: Maximum value
	RY0_B through RY0_F	Unused
Word Data	RY1_0 through RY1_F	Extension output unit data
	RWw0	CH0 data to write (lower)
	RWw1	CH0 data to write (upper)
	RWw2	CH1 data to write (lower)
	RWw3	CH1 data to write (upper)
	RWw4	CH2 data to write (lower)
	RWw5	CH2 data to write (upper)
	RWw6	CH3 data to write (lower)
	RWw7	CH3 data to write (upper)
	RWw8	CH4 data to write (lower)
	RWw9	CH4 data to write (upper)
	RWw10	CH5 data to write (lower)
	RWw11	CH5 data to write (upper)
	RWw12	CH6 data to write (lower)
	RWw13	CH6 data to write (upper)
	RWw14	CH7 data to write (lower)
	RWw15	CH7 data to write (upper)

Slave (R7C-PA8) → Master		
Bit Data	RX0_0	CH0 acknowledge
	RX0_1	CH1 acknowledge
	RX0_2	CH2 acknowledge
	RX0_3	CH3 acknowledge
	RX0_4	CH4 acknowledge
	RX0_5	CH5 acknowledge
	RX0_6	CH6 acknowledge
	RX0_7	CH7 acknowledge
	RX0_8	Command acknowledge 0: Read data 1: Write data
	RX0_9 through RX0_A	Write data acknowledge 00: Preset value 01: Overflow response value 10: Maximum value
	RX0_B	Ready
Word data	RX0_C through RX0_D	Setting command error code 10: Normal operating 01: Setting overrange (Maximum value etc.)
	RX0_E through RX0_F	Unused
	RX1_0 through RX1_F	Extension input unit data
	RWr0	CH0 data to read (lower)
	RWr1	CH0 data to read (upper)
	RWr2	CH1 data to read (lower)
	RWr3	CH1 data to read (upper)
	RWr4	CH2 data to read (lower)
	RWr5	CH2 data to read (upper)
	RWr6	CH3 data to read (lower)
	RWr7	CH3 data to read (upper)
	RWr8	CH4 data to read (lower)
	RWr9	CH4 data to read (upper)
	RWr10	CH5 data to read (lower)
	RWr11	CH5 data to read (upper)
	RWr12	CH6 data to read (lower)
	RWr13	CH6 data to read (upper)
	RWr14	CH7 data to read (lower)
	RWr15	CH7 data to read (upper)

■ DATA ACQUISITION

• Data allocation 1

In case of data allocation 1, reading data from 8 channels at once is not available. Read data channel by channel. Step 1 through 6 in the figure shown below are process to read one channel. To read data continuously, repeat the step 1 through 6.



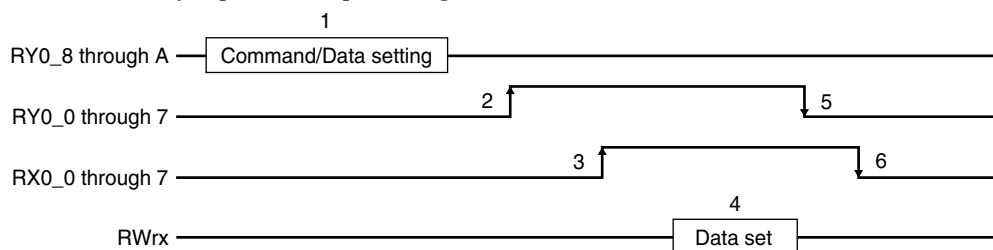
- 1) Set read command:0 in RY0_8.
- 2) Specify the read channels to RY0_7 to RY0_8. For channel 0, set "1" in RY0_0. When "1" is set, the command for specified channel is executed.
- 3) When the command is received, the bit of specified channel (RX0_0 for channel 0) turns ON and then the data of specified channel is set in RWr2 and RWr3.
- 4) Read the data. By reading RX0_C and RX0_D, confirm that read data is correctly done. In case of normal, RX0_C is "0", RX0_D is "1". In case of error, RX0_C is "1", RX0_D is "0".
- 5) After read data is completed, turn the bit of specified channel OFF. Also in case of error, turn the bit of specified channel OFF for the next acquisition.
- 6) The bit of specified channel turns OFF after confirming, then the data of RX0_8 through RX0_A and RWr2 through RWr3 turn OFF at the same time.

• Data allocation 4

For data allocation 4, allocate 8 channel data to RWr0 through RWr15.

■ DATA SETTING

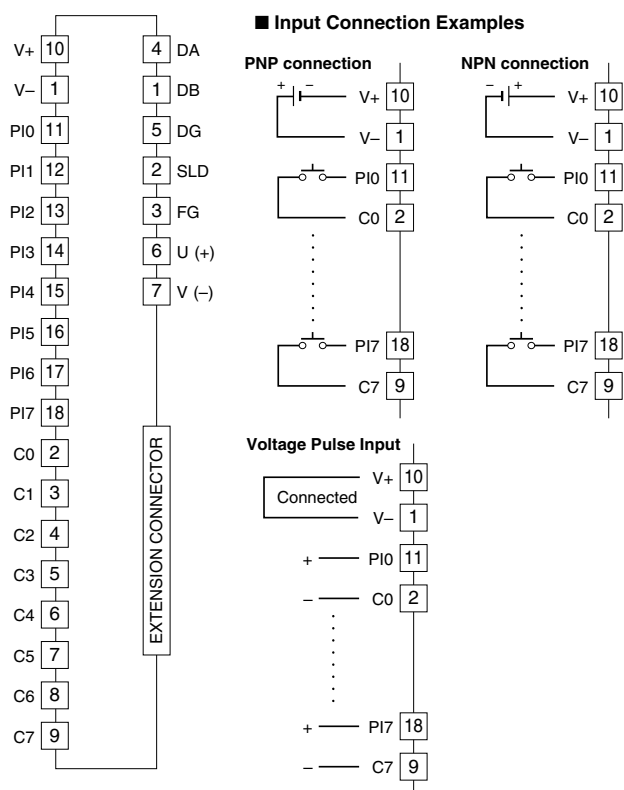
Data allocation 1 and 4 in setting data process is similar. Step 1 through 6 in the figure shown below are process to set. To set data continuously, repeat the step 1 through 6.



- 1) Write setting command:1 to RY0_8.
- Data allocation 1
 - Write the channel number to specify in RWw0. For channel 0, write "0".
 - Write the data selection in RY0_9 and RY0_A. For preset value, write "00".
 - Write the data in RWw2 and RWw3. For 1 000 000 (decimal), write "000F" in RWw3 and "4240" in RWw2
- Data allocation 4
 - Write the data selection in RY0_9 and RY0_A. For preset value, write "00".
 - Write the data in RWw0 through RWw15. Write for 8 channels at once. Write the data for all 8 channels.
 - To set 1 000 000 (decimal) to channel 0, write "000F" in RWw1 and "4240" in RWw0.
- 2) Turn RY0_0 OFF, then execute the command.
- 3) When the command is received and setting data is completed, RX0_0 is turned ON.
- 4) By reading RX0_C and RX0_D, confirm that setting is correctly done. In case of normal, RX0_C is "0", RX0_D is "1". In case of error, RX0_C is "1", RX0_D is "0".
- 5) After data setting is completed, turn RY0_0 OFF. In case of error, turn RY0_0 OFF for the next data setting.
- 6) The bit of specified channel turns OFF after confirming RY0_0, RX0_0 is OFF. At the same time, the data of RX0_1 through RX0_3, RX0_6 and RX0_7 turn OFF.

CONNECTION DIAGRAM

Connect the unit as in the diagram below.



WIRING INSTRUCTIONS

■ SCREW TERMINAL

Torque: 0.5 N·m

■ SOLDERLESS TERMINAL mm (inch)

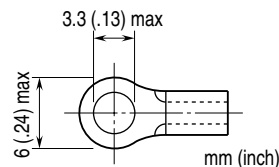
Refer to the drawing below for recommended ring tongue terminal size. Spade tongue type is also applicable. Solderless terminals with insulation sleeve do not fit.

Communication cable: Applicable wire size 0.2 to 0.5 mm² (AWG26 - 22)

Recommended manufacturer: Japan Solderless Terminal MFG.Co.Ltd

Others: 0.25 to 1.65 mm² (AWG 22 to 16)

Recommended manufacturer: Japan Solderless Terminal MFG.Co.Ltd, Nichifu Co.,ltd



EXTERNAL DIMENSIONS unit: mm (inch)

