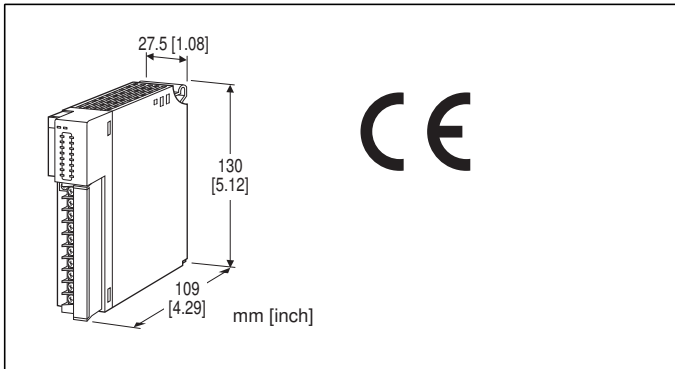


## Remote I/O R3 Series

### TOTALIZED PULSE INPUT MODULE

(Pi 16 points)



### MODEL: R3-PA16[1][2]

#### ORDERING INFORMATION

- Code number: R3-PA16[1][2]

Specify a code from below for each of [1] and [2].

(e.g. R3-PA16W/A/CE/PRS/Q)

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

#### NO. OF CHANNELS

16: 16

#### [1] COMMUNICATION MODE

S: Single

W: Dual

#### [2] OPTIONS (multiple selections)

##### Excitation

**Blank:** Internal (negative common)

**/A:** External (24 V DC, negative common)

##### Standards & Approvals

**blank:** Without CE

**/CE:** CE marking

##### EX-FACTORY SETTING

**blank:** Enable count reset by host PC/PLC

**/PRS:** Enable count preset by host PC/PLC

##### 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 M-System's web site.)

**/C01:** Silicone coating

**/C02:** Polyurethane coating

**/C03:** Rubber coating

##### EX-FACTORY SETTING

**/SET:** Preset according to the Ordering Information Sheet (No. ESU-8389)

#### RELATED PRODUCTS

- Interface module (model: R3-NC1, R3-NC3, R3-NE1, R3-NM1, R3-NDx, R3-NFL1, R3-NP1, R3-NFx, R3-NML3, R3-NF2: Firmware version V0.05 or later)

##### Note:

- Count reset by host PC/PLC:

Available with this unit and the above mentioned interface modules of firmware version V2.00 or later, except R3-NFx. Notice that Count reset by host PC/PLC via R3-NFx or interface module of previous versions of firmware is unable.

- Count preset by host PC/PLC:

It is only available in combination with this unit displayed 'SW3-4 RESET/PRESET' on the right side panel and the interface module R3-NM1 or R3-NE1 of firmware version V2.00 or later. Count preset is not available for other combination.

Notice that this function is not available in the same time as count preset by host PC/PLC.

#### GENERAL SPECIFICATIONS

##### Connection

**Internal bus:** Via the Installation Base (model: R3-BSx)

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

**Internal power:** Via the Installation Base (model: R3-BSx)

**Screw terminal:** Nickel-plated steel

**Isolation:** Input to internal bus or internal power

**RUN indicator:** Bi-color (red/green) LED;

Red when the bus A operates normally;

Green when the bus B operates normally;

Amber when both buses operate normally.

**ERR indicator:** Bi-color (red/green) LED;

Red with excitation abnormality;

Green in normal operating conditions.

**Input status indicator:** Red LED; turns on with the input ON.

**Count reset:** Via DIP switch on the side or one pulse to reset input

**Count setting from host PC/PLC:** Count reset/count preset is changeable via DIP switch on the side.

**INPUT SPECIFICATIONS**

**Number of input:** 16 points

**Input resistance:** 6 k $\Omega$

**Common:** Negative commons, all points

**Maximum frequency:** 100 Hz (ON/OFF time  $\geq$  5 msec.)

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.

**Totalized pulse range:** 1 - 10000 ('0' at reset)

Max. pulse range selectable from 1 to 65535 using the R3CON PC Configurator Software. Refer to the R3CON Users Manual for detailed information.

**Count at overflow:** Reset and restart at '1.'

■ **R3-PA16x (internal excitation)**

**Sensing voltage:** 13 V DC (max. 24 V with no load)

**ON current:**  $\geq$  1.5 mA ( $\leq$  1.5 k $\Omega$ )

**OFF current:**  $\leq$  0.75 mA ( $\geq$  18 k $\Omega$ )

■ **R3-PA16x/A (external excitation)**

**Sensing voltage:** 24 V DC

**ON current:**  $\geq$  1.5 mA ( $\leq$  12 k $\Omega$ )

**OFF current:**  $\leq$  0.75 mA ( $\geq$  36 k $\Omega$ )

**INSTALLATION**

**Operating temperature:** -10 to +55°C (14 to 131°F)

**Operating humidity:** 30 to 90 %RH (non-condensing)

**Atmosphere:** No corrosive gas or heavy dust

**Mounting:** Installation Base (model: R3-BSx)

**Weight:** 200 g (0.44 lb)

**PERFORMANCE**

**Data allocation:** 16

**Current consumption:**

R3-PA16x: 100 mA

R3-PA16x/A: 80 mA

**Insulation resistance:**  $\geq$  100 M $\Omega$  with 500 V DC

**Dielectric strength:** 2000 V AC @ 1 minute

(input to internal bus or internal power)

2000 V AC @ 1 minute (power input to FG; isolated on the power supply module)

**STANDARDS & APPROVALS**

**EU conformity:**

EMC Directive

EMI EN 61000-6-4

EMS EN 61000-6-2

RoHS Directive

**FUNCTIONS**

■ **MANUAL COUNT RESET**

- 1) Remove Network Module or its cables and interrupt communication with other devices.
- 2) Turn ON the Count Reset SW.
- 3) Return the module to the base and turn the power supply on.
- 4) ERR LED turns on and the module starts resetting its counter. When the resetting is complete, the LED turns to green. DO NOT remove the power while the red LED is on. The RUN LED starts blinking at the same time.
- 5) After the green LED is confirmed, turn the power supply off.
- 6) Turn OFF the Count Reset SW.
- 7) Return the Network module onto the base and turn the power supply on.

Note: Count Reset SW must be turned OFF after this procedure because the module does not start counting with ON state.

■ **REMOTE COUNT RESET INPUT**

With the Count Reset Input SW (SW3-3) turned ON, the Pi 16 pulse input can be used to remotely reset the count values.

SW3-3 = OFF: Pi 16 is used as a pulse input.

SW3-3 = ON: Pi 16 is used to reset the count values for the Pi 1 through Pi 15. One pulse supplied at the Pi 16 will be recognized as a reset signal.

■ **REMOTE COUNT RESET OPERATION**

- 1) ERR LED turns on (red color) when the reset signal is received.
- 2) In 1 second, the module starts resetting its counter. When the resetting is complete, the LED turns to green.
- 3) After 1 second, ERR LED turns back to the state before the reset signal has been received.

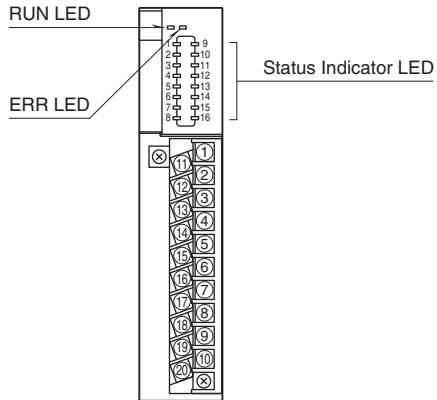
Note: Reset signals received while the module is processing (1) through (3) are ignored.

■ **COUNT RESET FROM HOST PC/PLC**

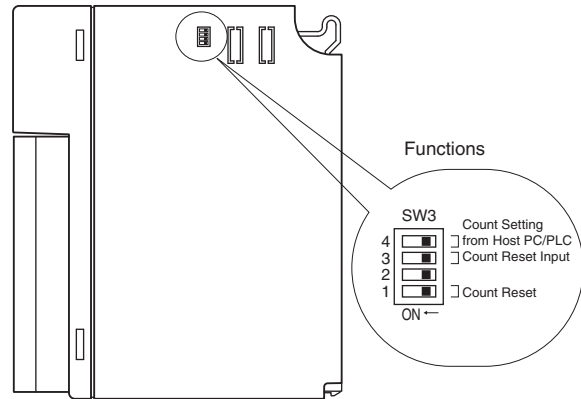
Refer to "COUNTER SETTING FROM HOST PC/PLC" section hereafter.

## EXTERNAL VIEW

### FRONT VIEW



### SIDE VIEW



Set the Count Reset SW to OFF to start counting.

## COUNTER SETTING FROM HOST PC/PLC

### ■ COUNTER RESET

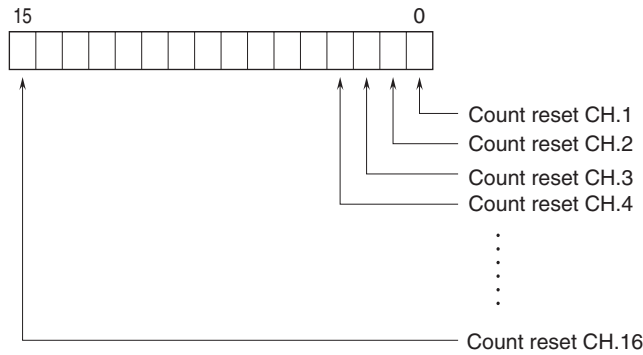
(Available for R3-NC1, R3-NC3, R3-NE1, R3-NM1, R3-NDx, R3-NFL1, R3-NP1, R3-NML3 (Firmware version 2.00 or later))

Setting SW3-4 OFF and turning power on enable the function.

The bits indicating the channels to reset counter are allocated in the first word from host PC/PLC.

When these bits are changed from 0 to 1, the counter is reset. When it is confirmed that the counter is reset, return to 0.

Notice that if the bit remains at 1, the next reset will not work.



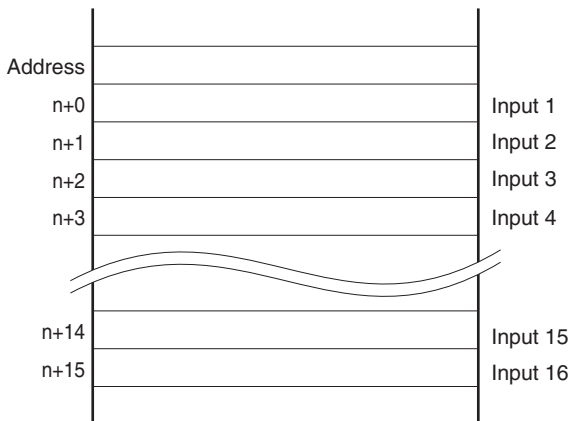
### ■ COUNTER PRESET

(Available in combination with R3-NE1, R3-NM1 (Firmware version 2.00 or later), and R3-PA16 displayed 'SW3-4 RESET/PRESET' on the right side)

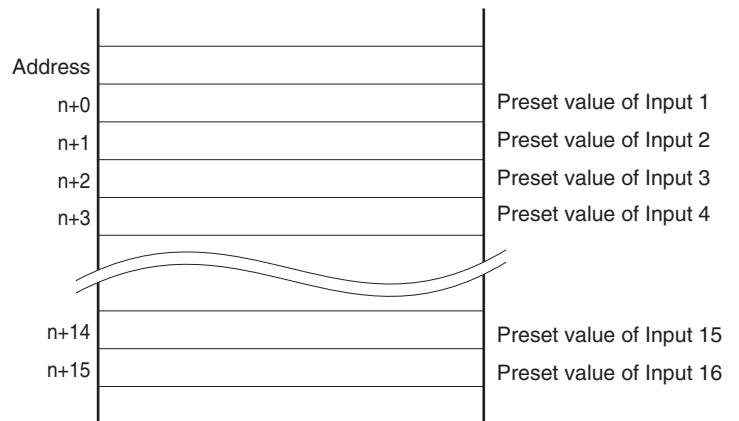
Setting SW3-4 ON and turning power on enable the function.

Write the preset value to the Holding Registers, which has same address as the Input Registers.

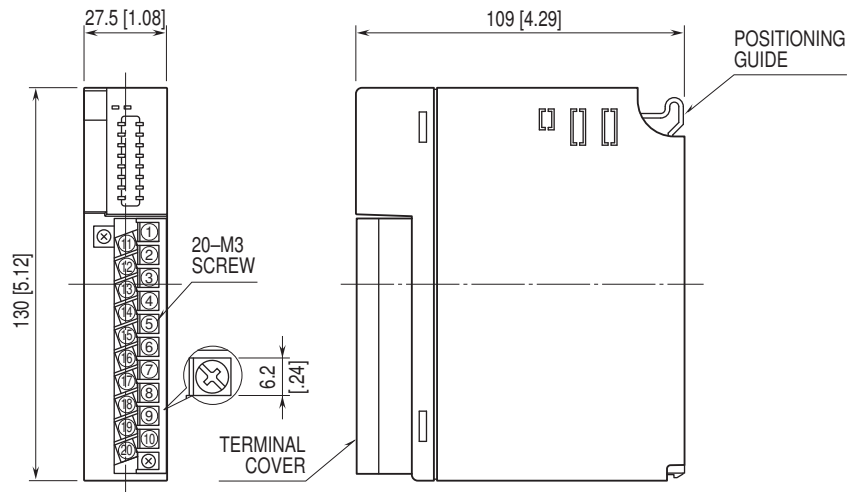
#### • Input Registers



#### • Holding Registers



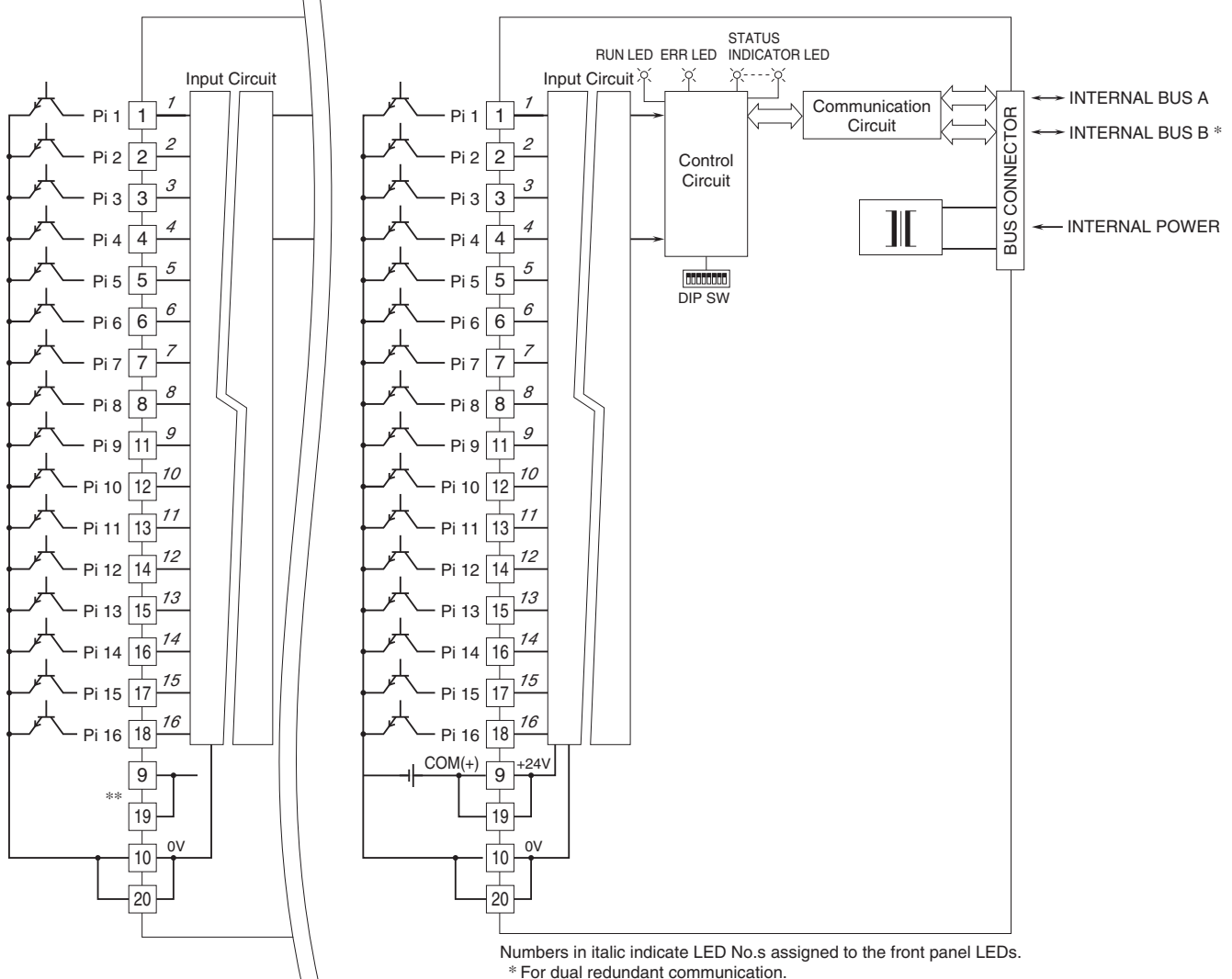
## EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]



## SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

■ OPTION: Blank

■ OPTION: /A



Numbers in italic indicate LED No.s assigned to the front panel LEDs.

\* For dual redundant communication.

\*\* DO NOT use the terminals No. 9 and 19.



Specifications are subject to change without notice.