

PULSE SCALER	MODEL 18PR
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BEFORE USE

Thank you for choosing us. 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 our sales office or representatives.

PACKAGE INCLUDES:

Signal conditioner(1)

MODEL NO.

Confirm Model No. marking on the product to be 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

POWER INPUT RATING & OPERATIONAL RANGE

- Locate the power input rating marked on the product and confirm its operational range as indicated below:
24V DC rating: 24V ±10%, approx. 80mA

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 -5 to +55°C (23 to 131°F) with relative humidity within 30 to 90% RH in order to ensure adequate life span and operation.

WIRING

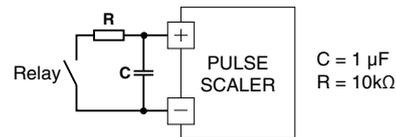
- Do not install cables close to noise sources (relay drive cable, high frequency line, etc.).
- Do not bind these cables together with those in which noises are present. Do not install them in the same duct.

AND

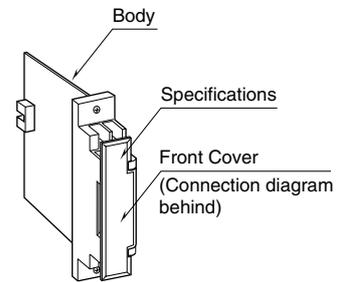
- The unit is designed to function as soon as power is supplied, however, a warm up for 10 minutes is required for satisfying complete performance described in the data sheet.
- The 18PR's output waveform is not uniform due to its scaling method. The user must be aware that it may be inconvenient for certain types of application.

FILTER

- The 18PR is designed to accept at the maximum of 100 kHz, which may cause errors due to chattering in the input pulses.
Use input relays which do not cause chattering. Other relays could be used only with a CR filter, for 10 Hz at maximum.



COMPONENT IDENTIFICATION



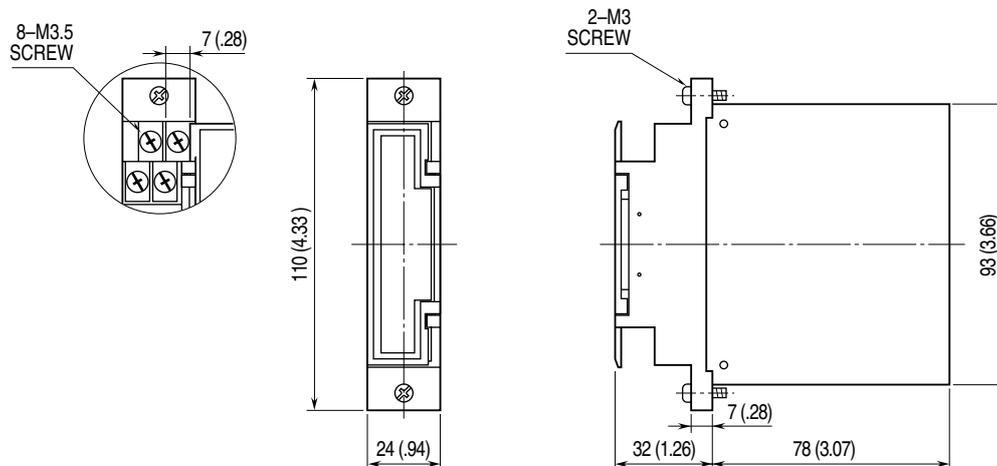
INSTALLATION

Use Standard Rack (model: 18BXx or 18KBXx).

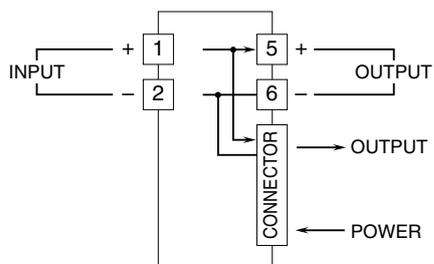
TERMINAL CONNECTIONS

Connect the unit as in the diagram below or refer to the connection diagram behind the front cover.

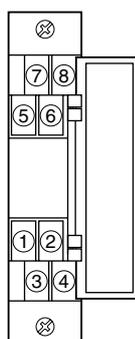
EXTERNAL DIMENSIONS unit: mm (inch)



CONNECTION DIAGRAM



TERMINAL ASSIGNMENTS



WIRING INSTRUCTIONS

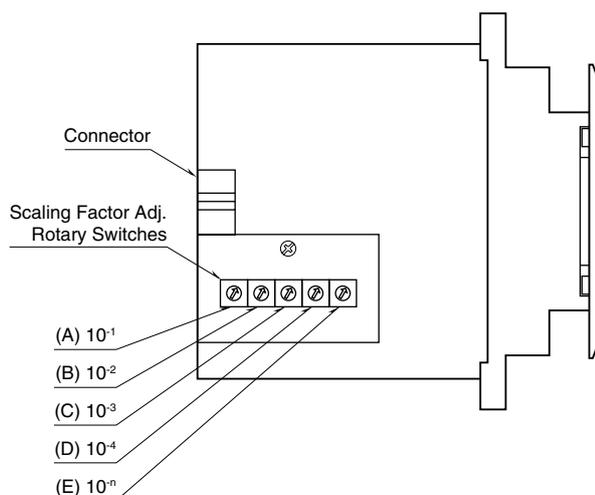
SCREW TERMINAL

Torque: 0.8 N·m

ADJUSTMENT PROCEDURE

■ SCALING FACTOR

SIDE VIEW



Positions for the rotary switches 10^{-1} through 10^{-n} apply respectively to each digit of the decimals and exponential as shown below.

$$\text{Output Rate} = \text{Input Rate} \times 0.(A)(B)(C)(D) \times 10^{-(E)}$$

where the scaling factor is adjustable from 0.9999×10^0 thr. 0.0001×10^{-6}

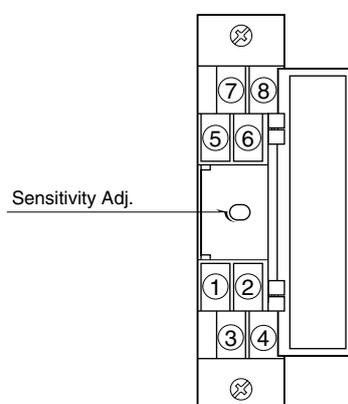
[Examples]

Scaling factor 0.1440:

$$(A) = 1, (B) = 4, (C) = 4, (D) = 0, (E) = 0$$

■ SENSITIVITY ADJ.

FRONT VIEW (with cover open)



Sensitivity is adjusted with the potentiometer behind the front cover.

Apply maximum frequency with minimum input voltage. First turn Sensitivity Adj. fully counterclockwise, then gradually turn it clockwise until output is detected.

If the output is still detected when turning Sensitivity Adj. to the fully counterclockwise position, or if the input is dry contact, leave it at fully counterclockwise position.

The sensitivity can be set to requisite minimum for preventing noise interference.

Single-turn screwdriver adjustment; 25mV p-p to 5V p-p

For the input pulse width and required level, refer to CHECKING.

CHECKING

- 1) Terminal wiring: Check that all cables are correctly connected according to the connection diagram.
- 2) Power input voltage: Check voltage supplied to the rack (model: 18BXx or 18KBXx). For the DC power source, be sure that the ripple level is within 10% p-p.
- 3) Input: Measure the signal between input terminals 1 (+) and 2 (-) with an oscilloscope, and check that waveform shows the values as in the following table.

• With duty ratio $50 \pm 10\%$

FREQUENCY	MINIMUM AMPLITUDE REQUIREMENTS
0 to 2 kHz	25mV p-p
0 to 20 kHz	50mV p-p
0 to 40 kHz	1V p-p
0 to 100 kHz	5V p-p

• With duty ratio other than $50 \pm 10\%$

PULSE WIDTH	MINIMUM AMPLITUDE REQUIREMENTS
5 μ sec.	5V p-p
10 μ sec.	3.5V p-p
50 μ sec.	2V p-p
100 μ sec.	1V p-p
500 μ sec.	0.5V p-p

- 4) Output: Check that the load resistance meets the described specifications as shown below.

OUTPUT	OUTPUT LOAD
Open Collector	50V DC @ 50mA max.
5V Pulse	600 Ω min.
Relay Contact	24V DC / @ 1mA max. (resistive load) 120V AC / @ 1mA max. ($\cos \phi=1$)
24V Pulse	800 Ω min.

LIGHTNING SURGE PROTECTION

We offer a series of lightning surge protector for protection against induced lightning surges. Please contact us to choose appropriate models.