

Space-saving Plug-in Signal Conditioners H-UNIT

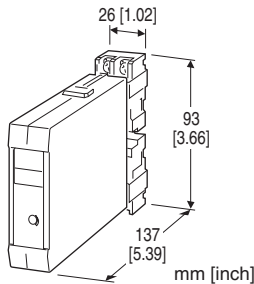
PULSE SCALER

Functions & Features

- Converting pulse rate into convenient engineering unit for display on a totalizing counter or meter
- High-density mounting

Typical Applications

- Positive displacement flowmeters and turbine flowmeters
- Magnetic tachometers



MODEL: HPR-[1][2]-R[3]

ORDERING INFORMATION

- Code number: HPR-[1][2]-R[3]
- Specify a code from below for each of [1] through [3].
(e.g. HPR-11-R/Q)
- Input frequency range (e.g. 0 - 356.7 Hz)
- Output frequency range (e.g. 0 - 1.00 Hz)
- Specify the specification for option code /Q
(e.g. /C01/S01)

[1] INPUT

- 1: Dry contact (max. 100 kHz)
- 2: Voltage pulse (max. 100 kHz)

[2] OUTPUT

- 1: Open collector (max. frequency 20 kHz)
- 2: 5 V pulse (max. frequency 20 kHz)
- 3: Relay contact (max. frequency 2 Hz)
- 4: 24 V pulse (max. frequency 20 Hz)

POWER INPUT

DC Power

R: 24 V DC

(Operational voltage range 24 V $\pm$ 10 %, ripple 10 %p-p max.)

[3] OPTIONS

blank: none

/Q: With options (specify the specification)

SPECIFICATIONS OF OPTION: Q (multiple selections)

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

/C01: Silicone coating

/C02: Polyurethane coating

/C03: Rubber coating

TERMINAL SCREW MATERIAL

/S01: Stainless steel

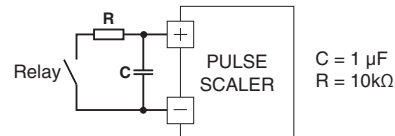
CAUTION

1) This unit'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.

2) This unit 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.

3) Use the Model M2PRU instead of this unit in conjunction with the pulse output from our power transducers.



GENERAL SPECIFICATIONS

Construction: Plug-in

Connection: M3.5 screw terminals (torque 0.8 N·m)

Screw terminal: Nickel-plated steel (standard) or stainless steel

Housing material: Flame-resistant resin (black)

Isolation: Input to output to power

Input pulse sensing: Capacitor coupled; detecting pulse rise

Sensitivity adjustment: Single-turn screwdriver adjustment (front); 25 mVp-p - 5 Vp-p

Scaling factor: $0.9999 \times 10^0 - 0.0001 \times 10^{-6}$

INPUT SPECIFICATIONS

■ **Dry Contact:** Mechanical contact or open collector

Max. frequency: 100 kHz

Pulse width time requirement: 5 μ sec. min. (20 msec. min. for frequencies $\leq$ 10 Hz)

Sensing: Approx. 7.5 V DC @ 1 mA

ON/OFF level: $\leq$ 20 k Ω for ON, $\geq$ 100 k Ω for OFF

■ **Voltage Pulse:** Square or sine waveforms*

Max. frequency: 100 kHz

Pulse width time requirement: 5 μ sec. min. (20 msec. min.)
for frequencies $\leq$ 10 Hz)

Input amplitude: 25 mVp-p – 50 Vp-p

Minimum amplitude requirement

• **With duty ratio 50 $\pm$ 10 %**

(frequency: amplitude)

0 – 2 kHz: 25 mVp-p

0 – 20 kHz: 50 mVp-p

0 – 40 kHz: 1 Vp-p

0 – 100 kHz: 5 Vp-p

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

(pulse width: amplitude)

5 μ sec.: 5 Vp-p

10 μ sec.: 3.5 Vp-p

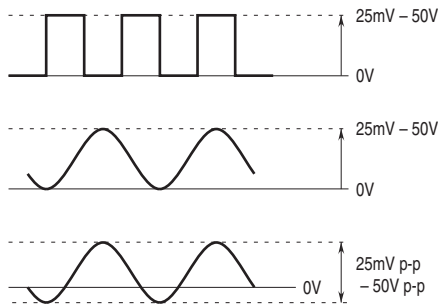
50 μ sec.: 2 Vp-p

100 μ sec.: 1 Vp-p

500 μ sec.: 0.5 Vp-p

Input impedance: 100 k Ω minimum

*Voltage pulse examples



High pulse width: Approx. 30 msec.

High level: 24 V $\pm$ 10 %

Low level: $\leq$ 0.5 V

Load resistance: 800 Ω minimum

INSTALLATION

Current consumption: Approx. 80 mA

Operating temperature: -5 to +55°C (23 to 131°F)

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

Mounting: Surface or DIN rail; Standard Rack Mounting

Frame BX-16H available

Weight: 200 g (0.44 lb)

PERFORMANCE

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

Dielectric strength: 500 V AC @ 1 minute

(input to output to power)

1500 V AC @ 1 minute (input or output or power to ground)

OUTPUT SPECIFICATIONS

■ **Open Collector:** 50 V DC @ 50 mA (resistive load)

Frequency range: 0 – 20 kHz

ON pulse width: Approx. 30 μ sec.

Saturation voltage: 0.6 V DC

■ **Relay Contact:** 120 V AC @ 200 mA ($\cos \phi = 1$)

240 V AC @ 100 mA ($\cos \phi = 1$)

24 V DC @ 200 mA (resistive load)

Maximum switching voltage: 240 V AC or 30 V DC

Maximum switching power: 24 VA or 4.8 W

Minimum load: 5 V DC @ 10 mA

Frequency range: 0 – 2 Hz

ON pulse width: Approx. 30 msec.

Relay life: $\geq 5 \times 10^7$ cycles (mechanical)

$\geq 10^5$ cycles (electrical)

■ **5 V Pulse**

Frequency range: 0 – 20 kHz

Low pulse width: Approx. 30 μ sec.

High level: 5 V $\pm$ 10 %

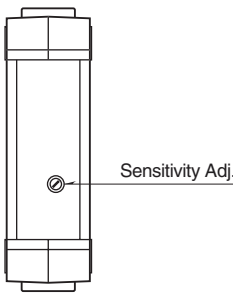
Low level: $\leq$ 0.5 V

Load resistance: 600 Ω minimum

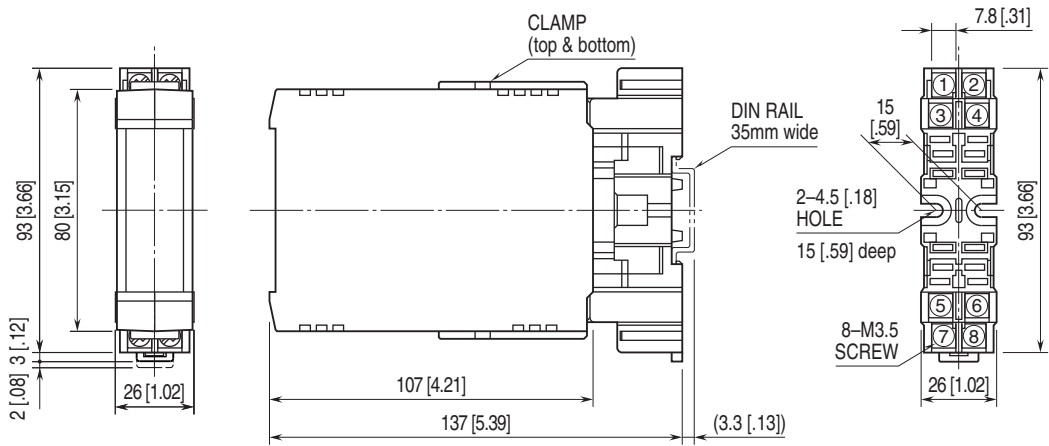
■ **24 V Pulse**

Frequency range: 0 – 20 Hz

EXTERNAL VIEW

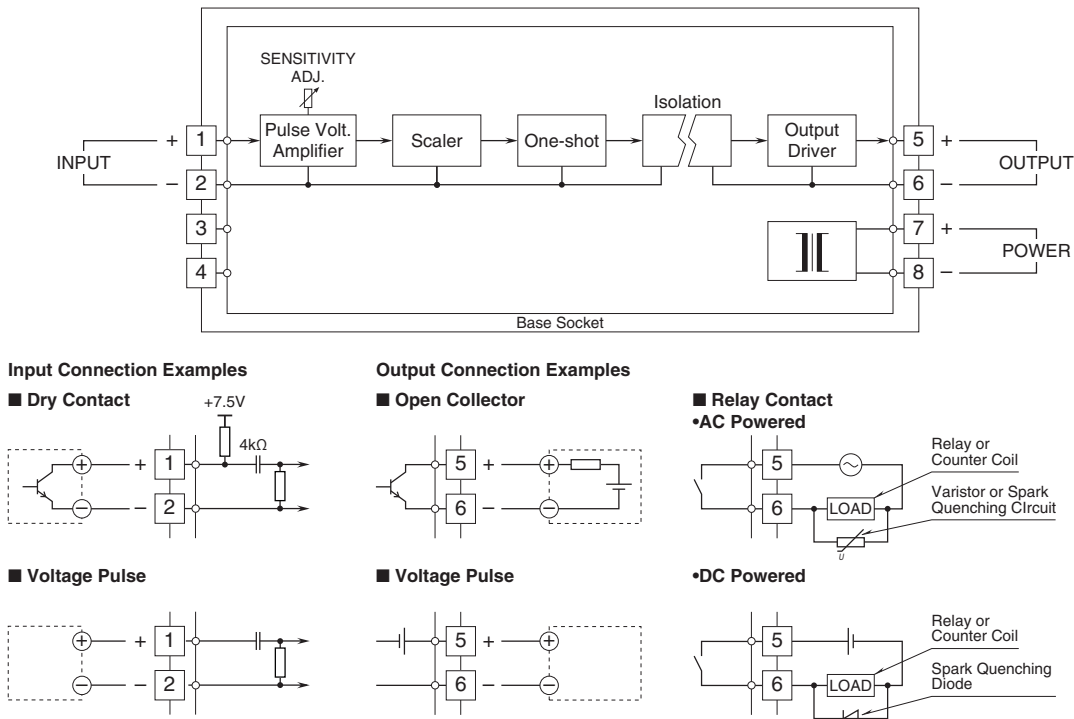


EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]



•When mounting, no extra space is needed between units.

SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM





Specifications are subject to change without notice.