## Plug-in Signal Conditioners M-UNIT

PULSE ISOLATOR
(built-in excitation)

Functions & Features
• Galvanically isolating pulse rate signals
• Input frequency = output frequency
• Various outputs (open collector, voltage pulses and photo MOSFET relay pulse)
• High-density mounting

Typical Applications
• Isolating field pulse signals in order to reduce noises
• Changing e.g. dry contact signal to e.g. 5 V signals

50 [1.97]
80 [3.15]
127 [5]
mm [inch]
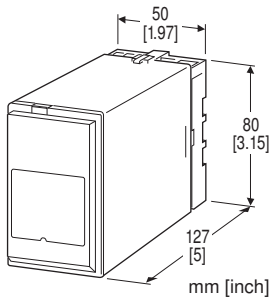
MODEL: PP–[1][2]–[3][4]

ORDERING INFORMATION
• Code number: PP-[1][2]-[3][4]
Specify a code from below for each of [1] through [4].
  (e.g. PP-33-K/Q)
• Specify the specification for option code /Q
  (e.g. /C01/S01)

[1] INPUT
1: Mechanical contact (max. 30 Hz)
2: Open collector (max. 10 kHz)
3: Voltage pulse (max. 10 kHz)

[2] OUTPUT
1: Low frequency open collector (max. 30 Hz)
2: High frequency open collector (max. 10 kHz)
3: 5 V pulse (max. 10 kHz)
4: 12 V pulse (max. 10 kHz)
5: 24 V pulse (max. 10 kHz)
8: Photo MOSFET relay pulse (max. 30 Hz)

[3] POWER INPUT
AC Power
K: 85 – 132 V AC
(Operational voltage range 85 – 132 V, 47 – 66 Hz)
DC Power
S: 12 V DC
(Operational voltage range 12 V ±10 %, ripple 10 %p-p max.)
R: 24 V DC
(Operational voltage range 24 V ±10 %, ripple 10 %p-p max.)

[4] 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

GENERAL SPECIFICATIONS
Construction: Plug-in
Connection: M3.5 screw terminals
Screw terminal: Chromated steel (standard) or stainless steel
Housing material: Flame-resistant resin (black)
Isolation: Input to output to power
Frequency range: Input and output are the same.
Chattering protection: Filter provided for mechanical contact input

INPUT SPECIFICATIONS
Excitation: 12V DC ±2 V @ 30 mA; shortcircuit protection
■ Open Collector
Maximum frequency: 10 kHz
Pulse width time requirement: 10 μsec. min. for ON and OFF
Sensing: Approx. 12 V DC @3 mA
ON/OFF level: ≤ 200 Ω / 0.6 V for ON, ≥ 100 kΩ / 6 V for OFF
■ Mechanical Contact
Maximum frequency: 30 Hz
Pulse width time requirement: 10 msec. min. for ON and OFF
Sensing: Approx. 12 V DC @3 mA
ON/OFF level: ON: ≤ 200 Ω / 0.6 V
  OFF: ≥ 100 kΩ / 6 V
■ Voltage Pulse
Maximum frequency: 10 kHz
Pulse width time requirement: 10 μsec. min. for high and

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low levels

Waveforms: Square or sine

Hi/Lo level: 2 – 50 V DC for high level; ≤1 V DC for low level

Input impedance: 10 kΩ min.

OUTPUT SPECIFICATIONS

■ **Low Frequency Open Collector**

50 V DC @ 100 mA (resistive load)

Maximum frequency: 30 Hz

Timer: Limits ON time within 75 ±25 msec. for wider than 75 msec. pulses

Saturation voltage: 0.5 V DC

■ **High Frequency Open Collector**

50 V DC @ 100 mA (resistive load)

Maximum frequency: 10 kHz

Saturation voltage: 0.5 V DC

■ **Voltage Pulse**

Maximum frequency: 10 kHz

High level: Rating (5, 12 or 24 V) ±10 %

Low level: ≤ 0.5V

Load resistance:

≥ 250 Ω for 5 V

≥ 600 Ω for 12 V

≥ 1200 Ω for 24 V

■ **Photo MOSFET Relay Pulse**

Maximum frequency: 30 Hz

Timer: Limits ON time within 75 ±25 msec. for wider than 75 msec. pulses

Rating: 132 V AC @ 200 mA (cos ø = 1)

30 V DC @ 200 mA (resistive load)

ON resistance: ≤ 2 Ω

INSTALLATION

Power Consumption

•**AC**: Approx. 2 VA

•**DC**: Approx. 2 W (80 mA at 24 V)

Operating temperature: -5 to +60°C (23 to 140°F)

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

Mounting: Surface or DIN rail

Weight: 320 g (0.71 lb)

PERFORMANCE

Insulation resistance: ≥ 100 MΩ with 500 V DC

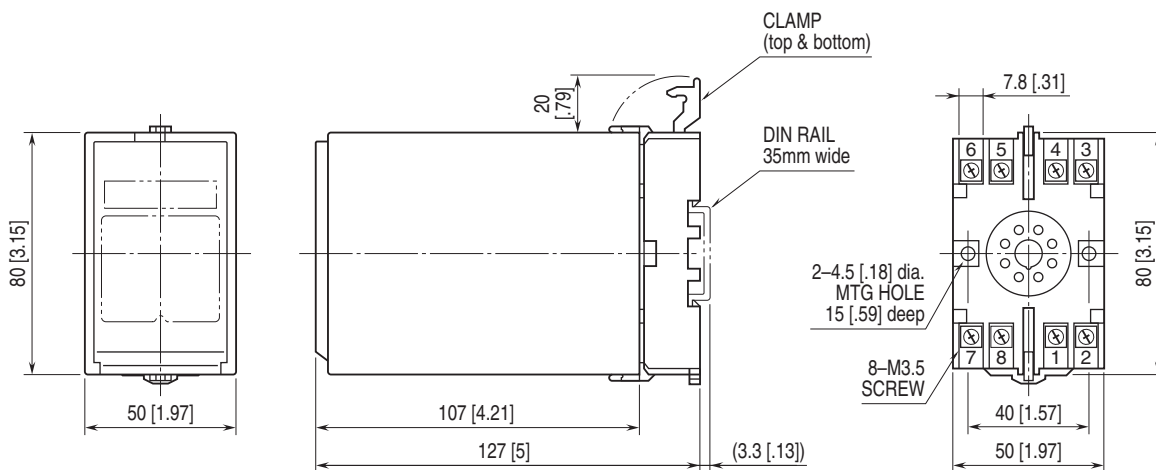**Dielectric strength**: 500 V AC @ 1 minute

(input to output to power)

2000 V AC @ 1 minute

(input or output or power to ground)

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OUTPUT LOGIC

INPUT TYPE	INPUT	VOLTAGE PULSE OUTPUT	OPEN COLLECTOR or PHOTO MOSFET RELAY PULSE OUTPUT
Voltage Pulse	H L ⊓	H L ⊓	OFF ON ⊓
Mechanical Contact Open Collector	OFF ON ⊔	H L ⊔	OFF ON ⊔

EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS   unit: mm [inch]

CLAMP (top & bottom)
20 [.79]
DIN RAIL 35mm wide
7.8 [.31]
80 [3.15]
50 [1.97]
107 [4.21]
127 [5]
(3.3 [.13])
2–4.5 [.18] dia. MTG HOLE 15 [.59] deep
8–M3.5 SCREW
40 [1.57]
50 [1.97]
80 [3.15]

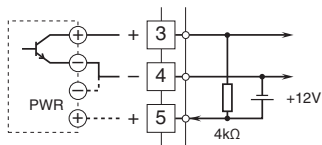• When mounting, no extra space is needed between units.
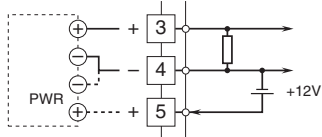
SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM
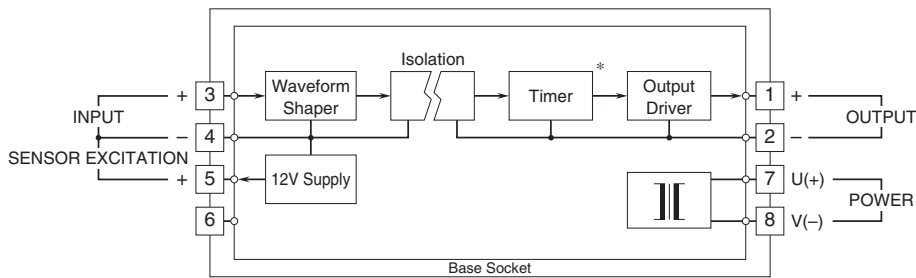
* Timer is provided for low frequency open collector or photo MOSFET relay pulse output.

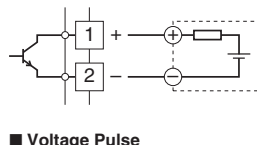**Input Connection Examples**
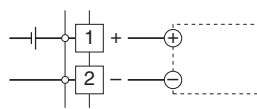■ Mechanical Contact or Open Collector
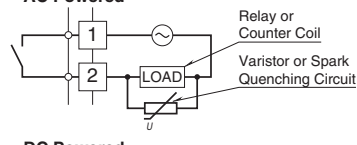■ Voltage Pulse

Output Connection Examples
■ Open Collector
■ Voltage Pulse

■ Photo MOSFET Relay Pulse
• AC Powered
Relay or Counter Coil
Varistor or Spark Quenching Circuit
• DC Powered
Relay or Counter Coil
Spark Quenching Diode
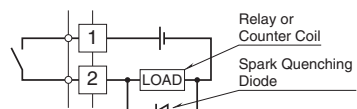
⚠ Specifications are subject to change without notice.

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