

## Screw Terminal Ultra-Slim Signal Conditioners M6N Series

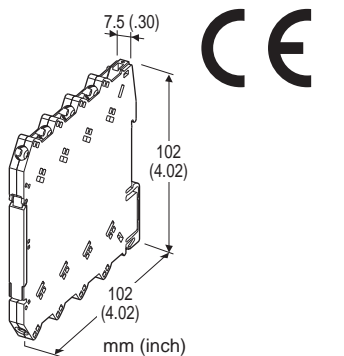
### PULSE ISOLATOR

#### Functions & Features

- 7.5-mm wide ultra-slim design
- Low profile allows the M6N module mounted in a 120-mm deep panel
- Galvanically isolates pulse rate signals
- High-density mounting
- Power indicator and input monitor LED

#### Typical Applications

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



### MODEL: M6NPP-[1][2][3]-R

#### ORDERING INFORMATION

- Code number: M6NPP-[1][2][3]-R
- Specify a code from below for each [1] through [3]. (e.g. M6NPP-CMN-R)

#### [1] INPUT

- A1: Open collector
- A2: Mechanical contact
- C: 5 V pulse (sensitivity 2 V)
- D: 12 V/24 V pulse (sensitivity 5 V)
- H: Two-wire current pulse

#### [2] OUTPUT

- A1: High frequency open collector (max. 100 kHz)
- A2: Low frequency open collector (max. 30 Hz)
- M: 5 V pulse
- N: 12 V pulse
- P: 24 V pulse

#### [3] OUTPUT LOGIC

- N: The same as the input
- R: Inverted

#### POWER INPUT

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

#### GENERAL SPECIFICATIONS

##### Connection

- Input and output: M3 screw terminal (torque 0.5 N·m)
- Power input: Via the Installation Base (model: M6NBS) or M3 screw terminal (torque 0.5 N·m)
- Recommended solderless terminal: Max. 5.8 mm (0.23") wide; Ones with insulation sleeve do not fit.
- Applicable wire size 0.2 - 2.5 mm<sup>2</sup>
- Housing material: Flame-resistant resin (black)
- Isolation: Input to output to power
- Chattering protection: Filter provided for mechanical contact input
- Power LED: Green light turns on when the power is supplied.

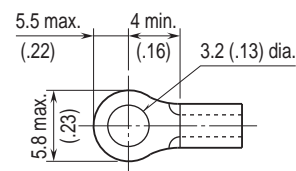
##### Input monitor LED

- Open collector, Mechanical contact: Orange LED turns on when the input is ON.

- Voltage pulse, 2-wire current pulse: Orange LED turns on when the input is high.

- Input pulse sensing: DC coupled

##### Recommended solderless terminal



#### INPUT SPECIFICATIONS

- Excitation: 12 V DC @20 mA, shortcircuit protection

##### Open Collector

- Maximum frequency: 100 kHz
- Pulse width time requirement:  $\geq$  5  $\mu$ sec. for ON and OFF
- Sensing: Approx. 11 V DC @2.4 mA
- Detecting levels:  $\leq$  1.8 k $\Omega$ /3 V for ON,  $\geq$  4 k $\Omega$ /5 V for OFF

##### Mechanical Contact

- Maximum frequency: 30 Hz
- Pulse width time requirement:  $\geq$  10 msec. for ON and OFF
- Sensing: Approx. 11 V DC @2.4 mA
- Detecting levels:  $\leq$  1.8 k $\Omega$ /3 V for ON,  $\geq$  4 k $\Omega$ /5 V for OFF

##### Voltage Pulse

- Maximum frequency: 100 kHz
- Pulse width time requirement:  $\geq$  5  $\mu$ sec. for high and low

levels

**Waveform:** Square or sine

**Input impedance:**  $\geq 10 \text{ k}\Omega$

**Max. voltage between input terminals:** 50 V

**Detecting H level**

5 V pulse:  $\geq 3 \text{ V}$

12 V, 24 V pulse:  $\geq 6 \text{ V}$

**Detecting L level**

5 V pulse:  $\leq 1 \text{ V}$

12 V, 24 V pulse:  $\leq 4 \text{ V}$

• **Two-Wire Current Pulse**

**Max. frequency:** 100 kHz

**Input resistance:** Receiving resistor 200  $\Omega$

**Input range:** 0 - 25 mA

**Detecting levels:**  $\leq 5 \text{ mA}$  for Lo,  $\geq 15 \text{ mA}$  for Hi

## STANDARDS & APPROVALS

**CE conformity:**

EMC Directive (2004/108/EC)

EN 61000-6-4 (EMI)

EN 61000-6-2 (EMS)

## OUTPUT SPECIFICATIONS

• **High Frequency Open Collector:**

50 V DC @100 mA (resistive load)

**Maximum frequency:** 100 kHz

**Saturation voltage:** 0.5 V DC

• **Low Frequency Open Collector:**

50 V DC @100 mA (resistive load)

**Maximum frequency:** 30 Hz

**Timer:** Limits within  $75 \pm 25 \text{ msec.}$

ON time for output logic non-inverted

OFF time for output logic inverted

**Saturation voltage:** 0.5 V DC

• **Voltage Pulse**

**Maximum frequency:** 100 kHz

**High level:** Rating (5, 12 or 24 V)  $\pm 10 \%$

**Low level:**  $\leq 0.5 \text{ V}$

**Load resistance:**

$\geq 1.0 \text{ k}\Omega$  for 5 V

$\geq 2.4 \text{ k}\Omega$  for 12 V

$\geq 4.8 \text{ k}\Omega$  for 24 V

## INSTALLATION

**Power consumption:** Approx. 1 W

**Operating temperature:** -20 to +55°C (-4 to +131°F)

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

**Mounting:** Installation Base (model: M6NBS) or DIN rail

**Weight:** 60 g (2.1 oz)

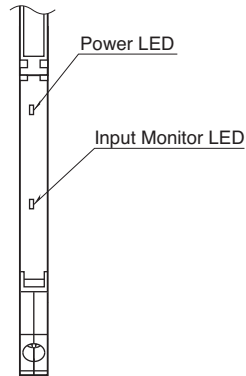
## PERFORMANCE

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

**Dielectric strength:** 2000 V AC @1 minute (input to output to power to ground)

## EXTERNAL VIEW

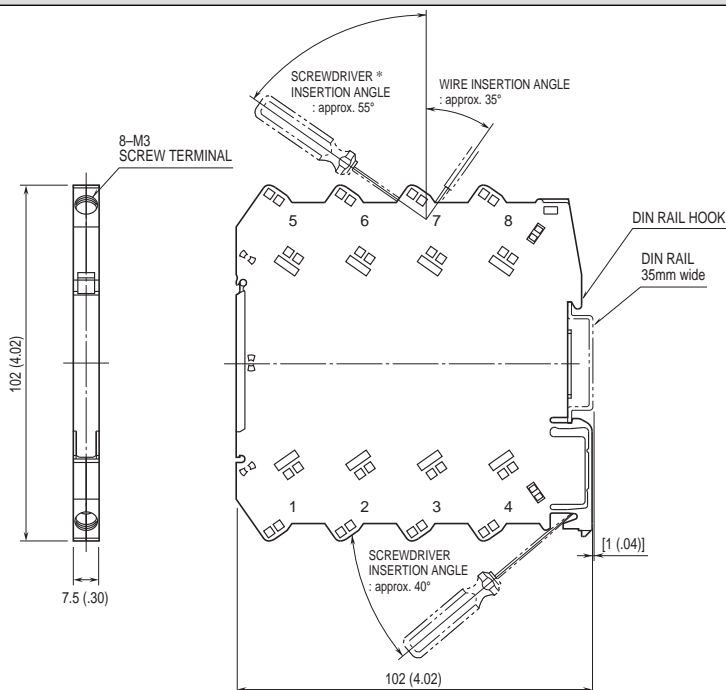
(With the cover open)



## OUTPUT LOGIC

| INPUT TYPE                                  | PULSE LOGIC  | INPUT     | VOLTAGE PULSE OUTPUT | OPEN COLLECTOR |
|---|--------------|-----------|----------------------|----------------|
| Voltage Pulse Input<br>2-wire Current Pulse | Non Inverted | H<br>L    | H<br>L               | OFF<br>ON      |
|   | Inverted     | H<br>L    | H<br>L               | OFF<br>ON      |
| Mechanical Contact<br>Open Collector        | Non Inverted | OFF<br>ON | H<br>L               | OFF<br>ON      |
|   | Inverted     | OFF<br>ON | H<br>L               | OFF<br>ON      |

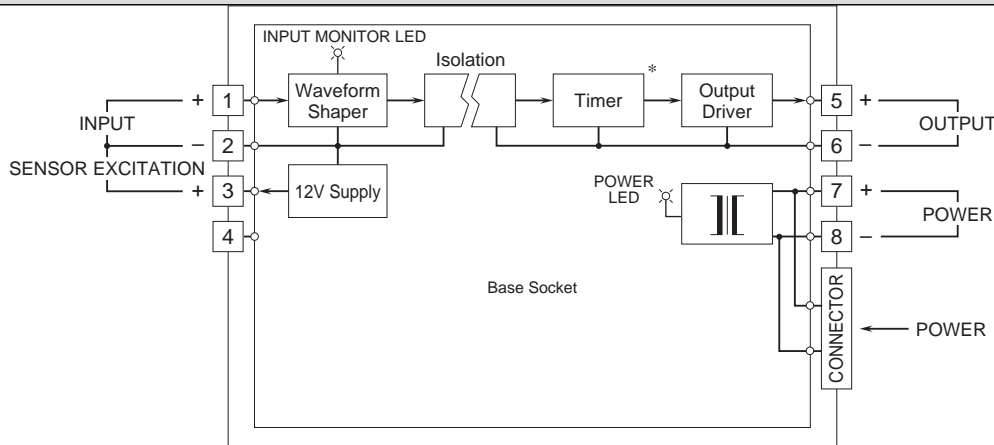
## DIMENSIONS unit: mm (inch)



\*Screwdriver stem diameter: 6 mm (.24") or less

\*When mounting, no extra space is needed between units.

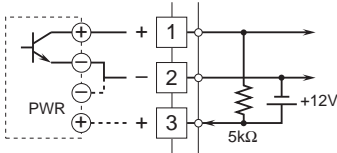
## SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



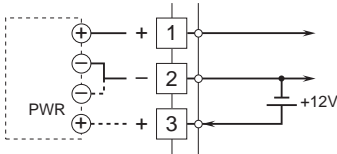
\*Low freq. open collector output only.

### Input Connection Examples

#### ■ Mechanical Contact or Open Collector

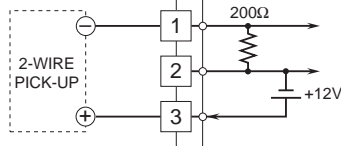


#### ■ Voltage Pulse

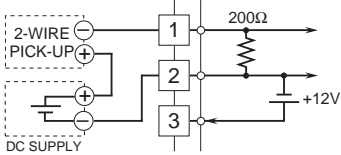


### ■ 2-Wire Current Pulse

#### • Built-in Excitation

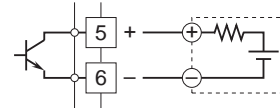


#### • External DC Supply

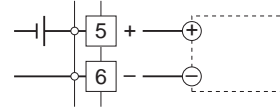


### Output Connection Examples

#### ■ Open Collector



#### ■ Voltage Pulse



Specifications are subject to change without notice.