Screw Terminal Ultra-Slim Signal Conditioners M6N Series

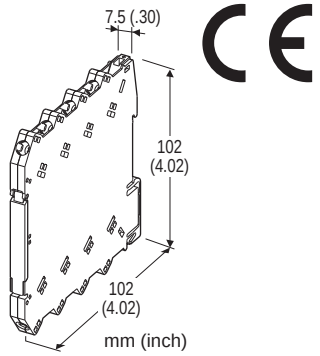
PULSE ISOLATOR

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

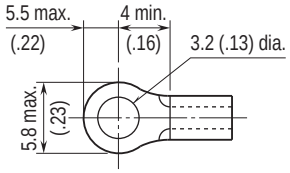
POWER INPUT

DC Power
R: 24 V DC
(Operational voltage range 24 V ±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^2
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: ≥ 5 µsec. for ON and OFF
Sensing: Approx. 11 V DC @2.4 mA
Detecting levels: ≤ 1.8 kΩ/3 V for ON, ≥ 4 kΩ/5 V for OFF
• Mechanical Contact
Maximum frequency: 30 Hz
Pulse width time requirement: ≥ 10 msec. for ON and OFF
Sensing: Approx. 11 V DC @2.4 mA
Detecting levels: ≤ 1.8 kΩ/3 V for ON, ≥ 4 kΩ/5 V for OFF
• Voltage Pulse
Maximum frequency: 100 kHz
Pulse width time requirement: ≥ 5 µsec. for high and low

levels
Waveform: Square or sine
Input impedance: ≥ 10 kΩ
Max. voltage between input terminals: 50 V
Detecting H level
5 V pulse: ≥ 3 V
12 V, 24 V pulse: ≥ 6 V
Detecting L level
5 V pulse: ≤ 1 V
12 V, 24 V pulse: ≤ 4 V
• **Two-Wire Current Pulse**
Max. frequency: 100 kHz
Input resistance: Receiving resistor 200 Ω
Input range: 0 – 25 mA
Detecting levels: ≤ 5 mA for Lo, ≥ 15 mA for Hi

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 ±25 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) ±10 %
Low level: ≤ 0.5 V
Load resistance:
≥ 1.0 kΩ for 5 V
≥ 2.4 kΩ for 12 V
≥ 4.8 kΩ 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: ≥ 100 MΩ with 500 V DC
Dielectric strength: 2000 V AC @1 minute (input to output to power to ground)

STANDARDS & APPROVALS

CE conformity:
EMC Directive (2004/108/EC)
EN 61000-6-4 (EMI)
EN 61000-6-2 (EMS)

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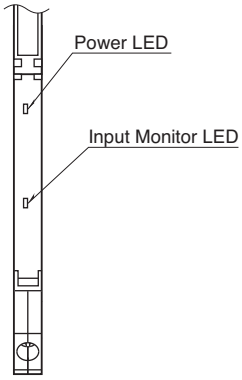
EXTERNAL VIEW

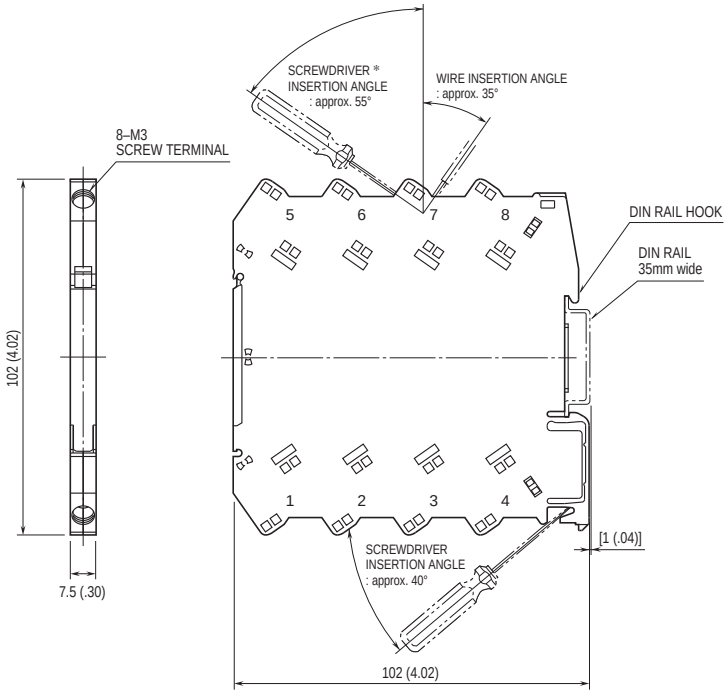
(With the cover open)



OUTPUT LOGIC

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

DIMENSIONS unit: mm (inch)



*Screwdriver stem diameter: 6 mm (.24") or less • When mounting, no extra space is needed between units.

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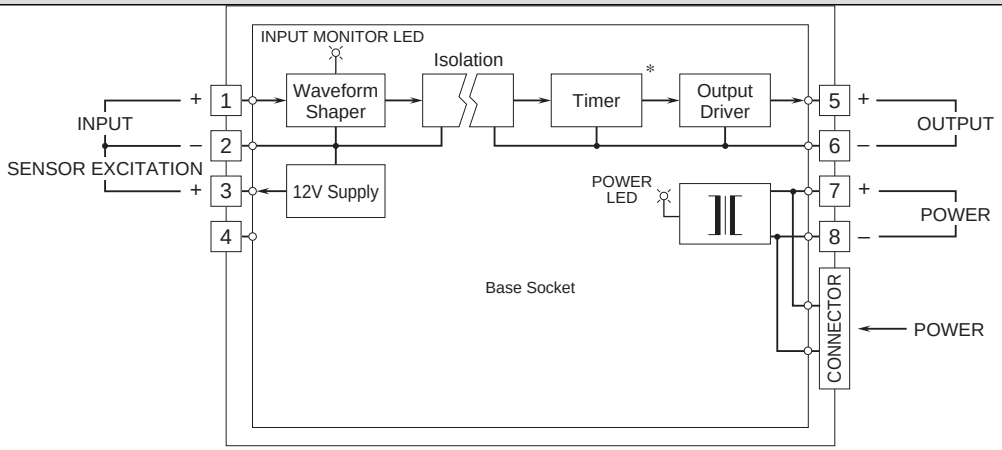
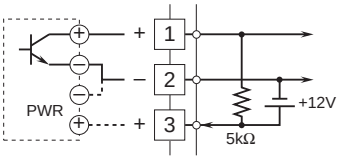
SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



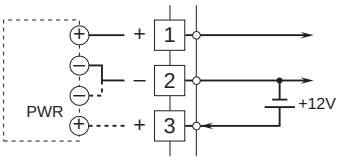
*Low freq. open collector output only.

Input Connection Examples

■ **Mechanical Contact or Open Collector**

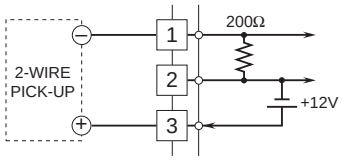


■ **Voltage Pulse**

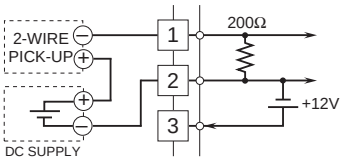


■ **2-Wire Current Pulse**

• **Built-in Excitation**

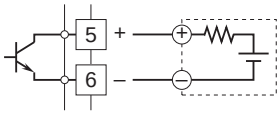


• **External DC Supply**

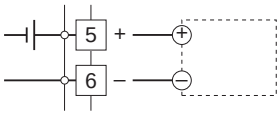


Output Connection Examples

■ **Open Collector**



■ **Voltage Pulse**



⚠ Specifications are subject to change without notice.

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