

Tension-Clamp Ultra-Slim Signal Conditioners M6S Series

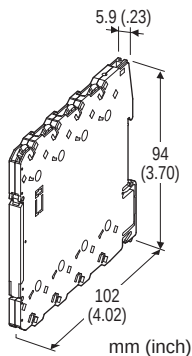
PULSE ISOLATOR

Functions & Features

- Maintenance-free tension clamp connection
- 5.9-mm wide ultra-slim design
- Low profile allows the M6S 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: M6SPP-[1][2][3]-R

ORDERING INFORMATION

- Code number: M6SPP-[1][2][3]-R
- Specify a code from below for each [1] through [3].
(e.g. M6SPP-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: Tension clamp

Power input: Via the Installation Base (model: M6SBS) or Tension clamp

Applicable wire size: 0.2 to 2.5 mm², stripped length 8 mm

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

INPUT SPECIFICATIONS

Excitation: 12 V DC @20 mA, shortcircuit protection

- Open Collector

Maximum frequency: 100 kHz

Pulse width time requirement: $\geq 5 \mu\text{sec.}$ for ON and OFF

Sensing: Approx. 11 V DC @2.4 mA

Detecting levels: $\leq 1.8 \text{ k}\Omega/3 \text{ V}$ for ON, $\geq 4 \text{ k}\Omega/5 \text{ V}$ for OFF

- Mechanical Contact

Maximum frequency: 30 Hz

Pulse width time requirement: $\geq 10 \text{ msec.}$ for ON and OFF

Sensing: Approx. 11 V DC @2.4 mA

Detecting levels: $\leq 1.8 \text{ k}\Omega/3 \text{ V}$ for ON, $\geq 4 \text{ k}\Omega/5 \text{ V}$ for OFF

- Voltage Pulse

Maximum frequency: 100 kHz

Pulse width time requirement: $\geq 5 \mu\text{sec.}$ 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: ≤ 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 $\pm$ 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) $\pm$ 10 %

Low level: ≤ 0.5 V

Load resistance:

≥ 1.0 k Ω for 5 V

≥ 2.4 k Ω for 12 V

≥ 4.8 k Ω 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: M6SBS) or DIN rail

Weight: 60 g (2.1 oz)

PERFORMANCE

Insulation resistance: ≥ 100 M Ω 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)

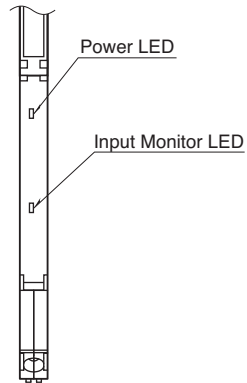
EN 61000-6-4 (EMI)

EN 61000-6-2 (EMS)



EXTERNAL VIEW

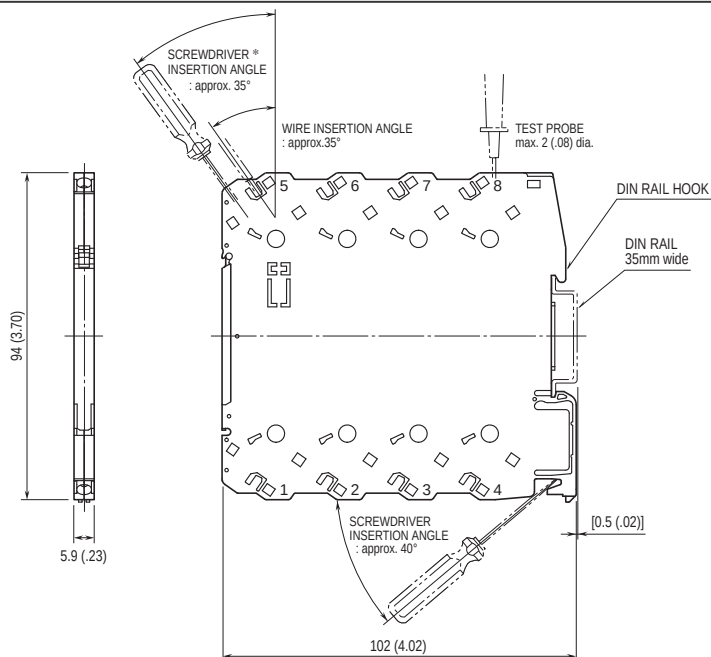
(With the cover open)



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)



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

*Use a minus screwdriver: tip width 3.8 mm max., tip thickness 0.5 to 0.6 mm

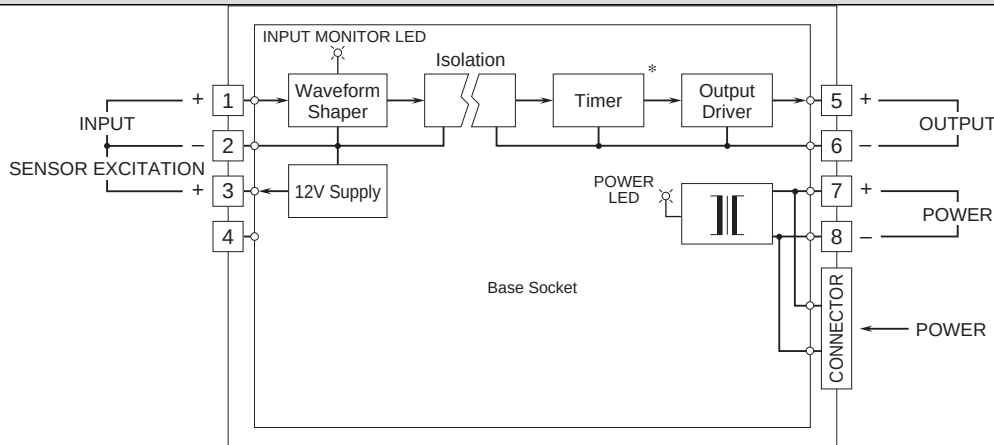


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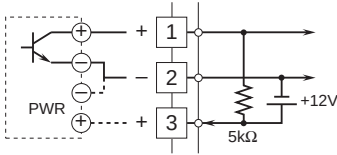
SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



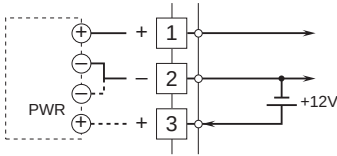
*Low freq. open collector output only.

Input Connection Examples

■ Mechanical Contact or Open Collector

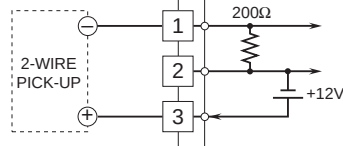


■ Voltage Pulse

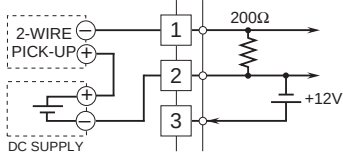


■ 2-Wire Current Pulse

• Built-in Excitation

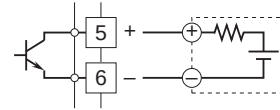


• External DC Supply

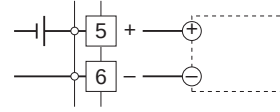


Output Connection Examples

■ Open Collector



■ Voltage Pulse



Specifications are subject to change without notice.