

## Tension-Clamp Ultra-Slim Signal Conditioners M6S Series

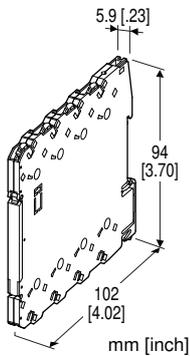
### PULSE ISOLATOR

#### 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[4]

### ORDERING INFORMATION

- Code number: M6SPP-[1][2][3]-R[4]
- Specify a code from below for each of [1] through [4].  
(e.g. M6SPP-CMN-R/Q)
- Specify the specification for option code /Q  
(e.g. /C01)

#### [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.)

#### [4] OPTIONS

- blank:** none
- /Q:** With options (specify the specification)

### SPECIFICATIONS OF OPTION: Q

- COATING** (For the detail, refer to our web site.)
- /C01:** Silicone coating
- /C02:** Polyurethane coating

### 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 mm<sup>2</sup>, 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 indicator LED:** Green LED 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  $\mu$ 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:**  $\geq 5 \mu\text{sec.}$  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:  $\leq 4 \text{ V}$   
■ **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

**EU conformity:**  
EMC Directive  
EMI EN 61000-6-4  
EMS EN 61000-6-2  
RoHS Directive

## 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  $\geq 75 \text{ msec.}$  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

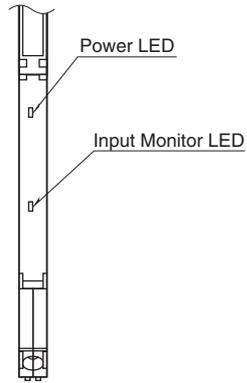
**Power consumption:** Approx. 1 W  
**Operating temperature:** -20 to +55°C (-4 to +131°F)  
**Operating humidity:** 30 to 90 %RH (non-condensing)  
**Mounting:** Installation Base (model: M6SBS) or DIN rail  
**Weight:** 60 g (2.1 oz)

## 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**

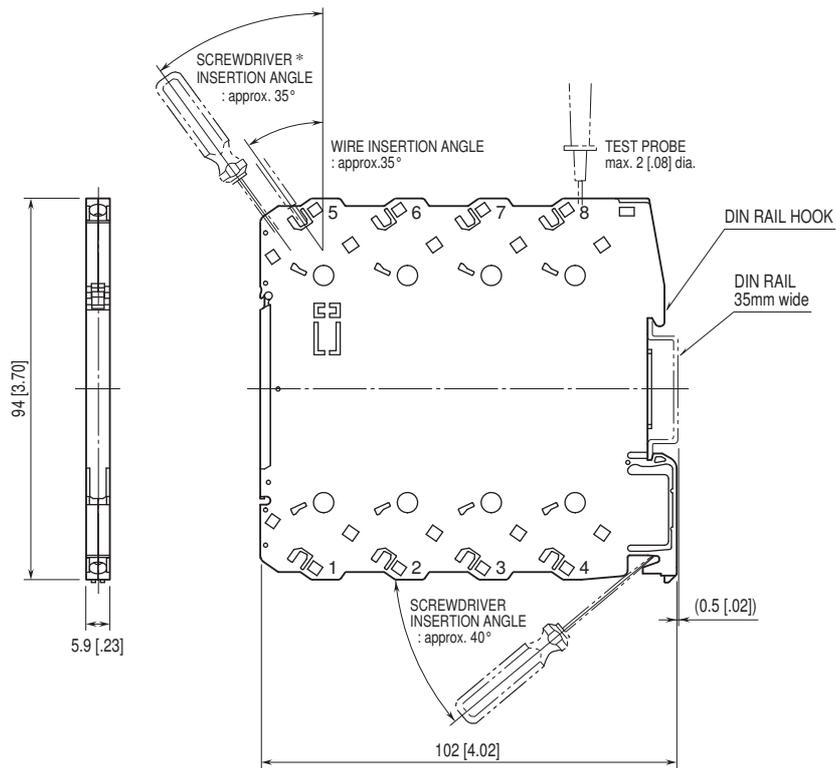
(With the cover open)



**OUTPUT LOGIC**

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

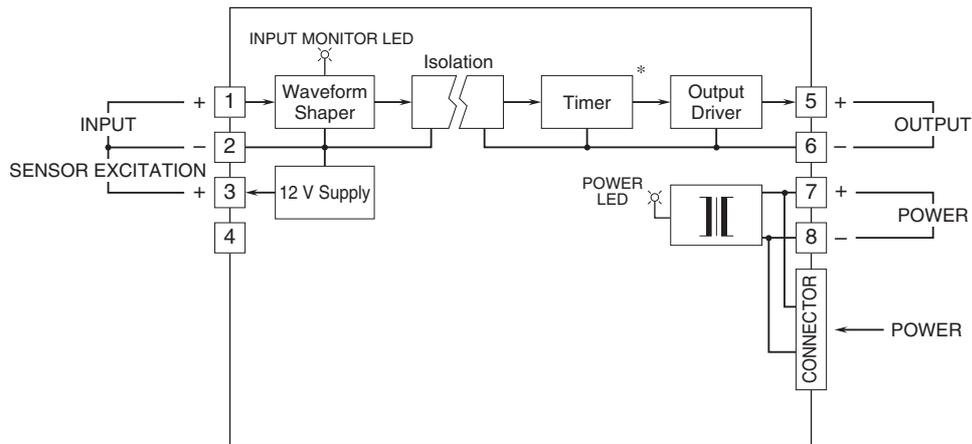
## EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]



• 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

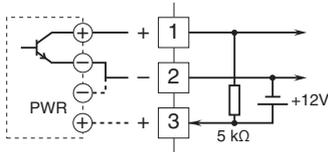
## SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



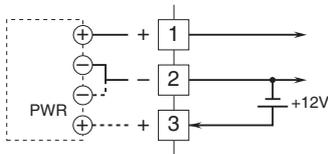
\* Low freq. open collector output only.

### Input Connection Examples

#### ■ Mechanical Contact or Open Collector

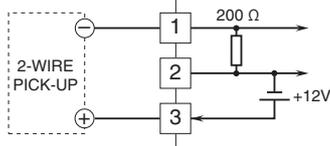


#### ■ Voltage Pulse

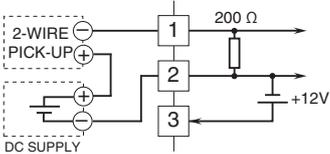


#### ■ 2-Wire Current Pulse

##### • Built-in Excitation

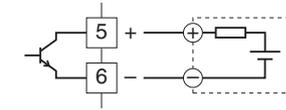


##### • External DC Supply

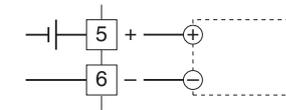


### Output Connection Examples

#### ■ Open Collector



#### ■ Voltage Pulse



Specifications are subject to change without notice.