

Dual Output Super-mini Signal Conditioners Pico-M Series

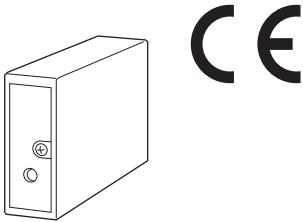
Max. 50 kHz for AC voltage pulse input

PULSE ISOLATOR

(built-in excitation, CE)

Functions & Features

- Amplifying, waveshaping a pulse rate input and providing two galvanically isolated pulse signals
- Space-saving, easy-to-maintain, multi-channel installation base



MODEL: M8PP1-[1][2][3][4]-R[5]

ORDERING INFORMATION

- Code number: M8PP1-[1][2][3][4]-R[5]

Specify a code from below for each of [1] through [5].

- (e.g. M8PP1-B7A1A12-R/Q)
- Input frequency (e.g. 0 - 1000 Hz)
- Output pulse width (e.g. 75 msec.)

Use Ordering Information Sheet (No. ESU-5484) for Input Codes B:DC voltage pulse or E: AC voltage pulse, or for non-standard output pulse width.

- Specify the specification for option code /Q (e.g. /C01)

[1] INPUT

- A: Dry contact
- B: DC voltage pulse (Specify sensitivity)
- C: 5 V pulse (sensitivity 2 V)
- D: 12 V/24 V pulse (sensitivity 5 V)
- E: AC voltage pulse (Specify sensitivity)
- H: Two-wire current pulse

[2] EXCITATION

- 0: None
- 4: 12 V DC / 30 mA
- 7: 24 V DC / 30 mA

[3] OUTPUT 1 / OUTPUT 2

- A1A1: Open collector / open collector (max. 100 kHz)
- A2A2: Open collector / open collector (max. 10 Hz)
- M1M1: 5 V pulse / 5 V pulse (max. 100 kHz)
- M2M2: 5 V pulse / 5 V pulse (max. 10 Hz)

[4] OUTPUT PULSE WIDTH

- 1: Equal to the input
 - 2: One-shot output (std. pulse width 50 msec.)
- Specify when optional pulse width is required.

POWER INPUT

DC Power

R: 24 V DC

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

[5] OPTIONS

blank: none

/Q: With options (specify the specification)

SPECIFICATIONS OF OPTION: Q

COATING (For the detail, refer to M-System's web site.)

- /C01: Silicone coating
- /C02: Polyurethane coating
- /C03: Rubber coating

RELATED PRODUCTS

- Installation Base or Single Mount Base Socket (model: M8BSx)

This unit must be mounted on dedicated base or socket except Model M8BS2 base.

GENERAL SPECIFICATIONS

Construction: Plug-in

Mounting screw: M3 screw (torque 0.3 N·m)

Housing material: Flame-resistant resin (black)

Power supply: Via the Installation Base terminals (model: M8BSx)

Isolation: Input to output 1 to output 2 to power

Polarity switch: Inverting output pulse logic (factory setting: non-inverted)

Input pulse sensing: DC coupled (AC coupled for AC voltage pulse)

INPUT SPECIFICATIONS

Excitation: 12 V DC $\pm$ 2 V @30 mA

24 V DC $\pm$ 4 V @30 mA

shortcircuit protection; approx. $\leq$ 5 mA at shortcircuit

Caution: With a current exceeding 30 mA, the pulse isolator stops feeding the sensor excitation, until the sensor is removed and connected again.

Pulse width time requirement

No pulse width adj. for output: 2 μ sec. min.

(10 msec. min. for 0 – 10 Hz)

One-shot: 1 msec. min.

■ Dry Contact

Max. frequency: 100 kHz

Sensing: Approx. 12 V DC @3 mA

ON/OFF level: $\geq 4 \text{ k}\Omega/6 \text{ V}$ at OFF

$\leq 1.3 \text{ k}\Omega/4 \text{ V}$ at ON

■ DC Voltage Pulse: Specify detecting level, amplitude and DC offset.

Max. frequency: 100 kHz

Waveform: Square or sine

Input impedance: 30 k Ω min.

Input amplitude: 2 – 50 V p-p

Detecting level: 2 – 10 V; $0.6 \text{ V} \leq V_H - V_L \leq 1.3 \text{ V}$

Max. voltage between input terminals: 50 V

• 5 V, 12 V, 24 V Pulse

Max. frequency: 100 kHz

Waveform: Square or sine

Input impedance: 30 k Ω min.

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: $\leq 4 \text{ V}$

■ AC Voltage Pulse: Specify amplitude and frequency.

Max. frequency: 50 kHz

Min. frequency: 1 Hz

Waveform: Sine

Input impedance: 10 k Ω min.

Input amplitude: 0.1 – 100 V p-p

Max. voltage between input terminals: 50 V

■ Two-wire Current Pulse

Max. frequency: 100 kHz

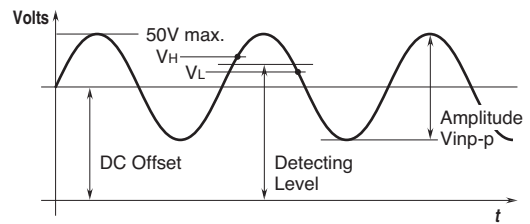
Input resistance: Receiving resistor 250 Ω

Input range: 0 – 25 mA

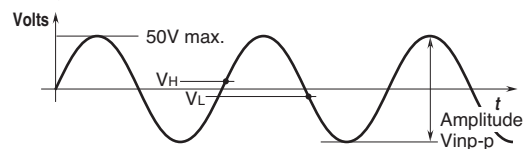
Detecting level: $\leq 4 \text{ mA}$ for Lo, $\geq 12 \text{ mA}$ for Hi

■ Pulse

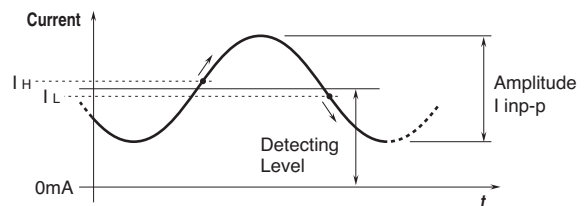
• DC Voltage Pulse



• AC Voltage Pulse



• Two-wire Current Pulse



OUTPUT SPECIFICATIONS

Max. frequency: 100 kHz

■ Open Collector: 50 V DC @50 mA

Saturation voltage: 0.5 V DC

■ 5 V Pulse

Hi level: $5 \text{ V} \pm 10 \%$

Lo level: $\leq 0.5 \text{ V}$

Load resistance: 1000 Ω min.

OUTPUT PULSE WIDTH

• One-shot Output: Constant pulse width

Output Frequency (Hz) = $500 \div \text{Output Pulse Width (msec.)}$

Pulse width: 1 – 500 msec. (standard 50 msec. $\pm 20 \%$)

INSTALLATION

Current consumption: Approx. 90 mA

Operating temperature: 0 to 55°C (32 to 131°F)

Operating humidity: 30 to 95 %RH (non-condensing)

Mounting: Installation Base (model: M8BSx)

Weight: 70 g (2.5 oz)

PERFORMANCE

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

Dielectric strength:

1500 V AC @1 minute (input to output 1 or output 2 or power to ground)

500 V AC @1 minute (output 1 to output 2 to power)

SWC test: ANSI/IEEE-C37.90.1-1989

STANDARDS & APPROVALS

EU conformity:

EMC Directive

EMI EN 61000-6-4

EMS EN 61000-6-2

RoHS Directive

EN 50581

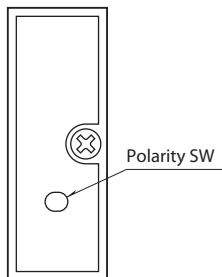
FRONT VIEW

• Polarity SW

Used to select output pulse logic.

Push in the switch to invert the output logic.

Push back for non-inverted output.

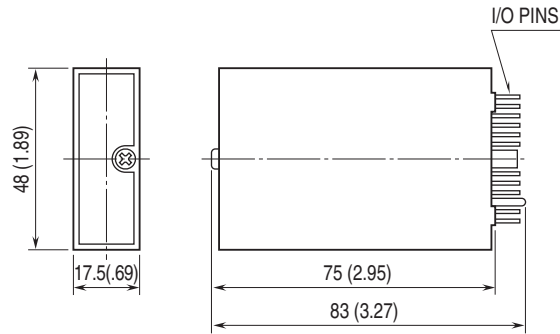


OUTPUT LOGIC

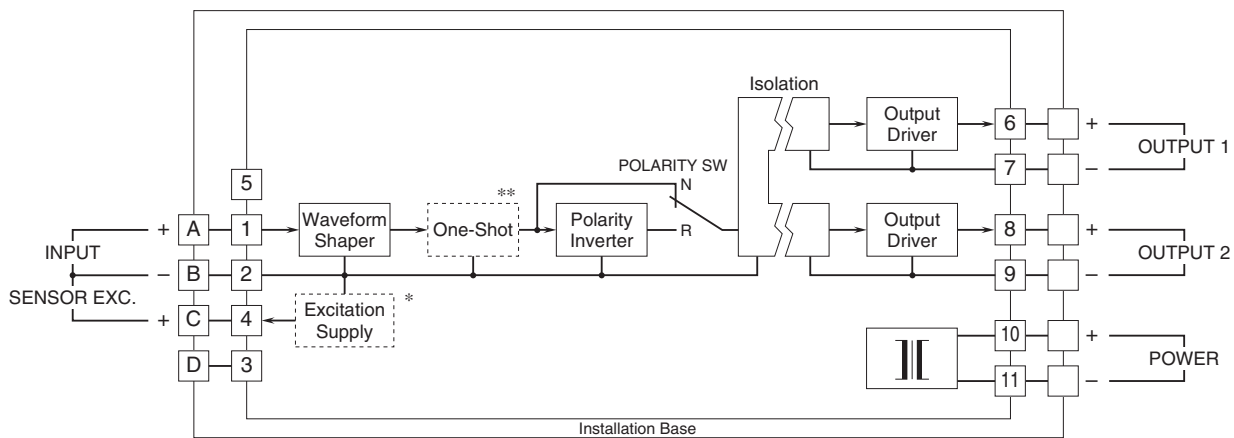
INPUT TYPE	PULSE LOGIC	INPUT	VOLTAGE PULSE OUTPUT	OPEN COLLECTOR
DC Voltage Pulse Input 2-wire Current Pulse Input [ON current (H)] [OFF current (L)]	Non Inverted	H	H	OFF ON
	Inverted	H	H	OFF ON
Dry Contact Input	Non Inverted	OFF ON	H L	OFF ON
	Inverted	OFF ON	H L	OFF ON
AC Voltage Pulse	Non Inverted		H L	OFF ON
	Inverted		H L	OFF ON

The pulse width in one-shot means the bold lined section of a pulse waveform.

EXTERNAL DIMENSIONS unit: mm (inch)



SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

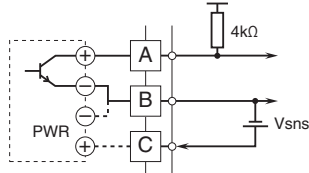


* Provided only when the sensor excitation option is selected.

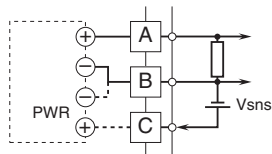
** Provided only when the one-shot output option is selected.

Input Connection Examples

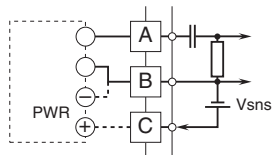
■ Dry Contact



■ DC Voltage Pulse

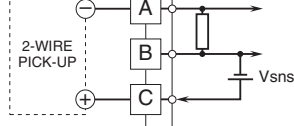


■ AC Voltage Pulse

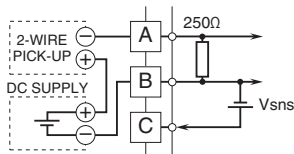


■ 2-Wire Current Pulse

• Built-in Excitation

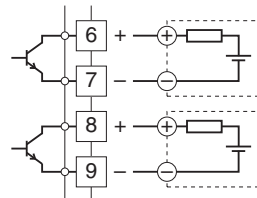


• External DC Supply

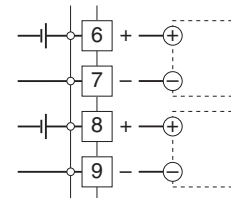


Output Connection Examples

■ Open Collector



■ Voltage Pulse





Specifications are subject to change without notice.