Dual Output Super-mini Signal Conditioners Pico-M Series

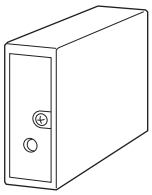
PULSE ISOLATOR

(built-in excitation)

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: M8PP-[1][2][3][4]-R[5]

ORDERING INFORMATION

• Code number: M8PP-[1][2][3][4]-R[5]

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

(e.g. M8PP-B7A1A12-R/Q)

• Input frequency (e.g. 0 – 1000 Hz)

• Output pulse width (e.g. 75 msec.)

Use Ordering In-formation 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)
Max. 50 kHz for AC voltage pulse input

[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 ±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

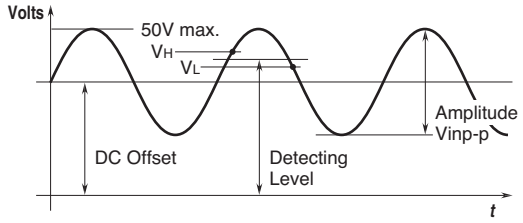
Construction: Plug-in
Mounting screw: M3 screw (torque 0.3 N·m)
Housing material: Flame-resistant resin (black)
Power supply: Via the Installation Base terminals (model: M8BSx)
Isolation: Input to output 1 to output 2 to power
Polarity switch: Inverting output pulse logic (factory setting: non-inverted)
Input pulse sensing: DC coupled (AC coupled for AC voltage pulse)

INPUT SPECIFICATIONS

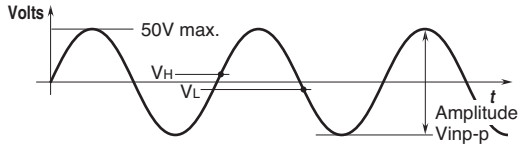
Excitation: 12 V DC ±2 V @30 mA
24 V DC ±4 V @30 mA
shortcircuit protection; approx. ≤ 5 mA at shortcircuit
Caution: With a current exceeding 30 mA, the pulse isolator stops feeding the sensor excitation, until the sensor is removed and connected again.
Pulse width time requirement
No pulse width adj. for output: 2 µsec. 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: ≥ 4 kΩ/6 V at OFF
≤ 1.3 kΩ/4 V at ON
■ **DC Voltage Pulse**: Specify detecting level, amplitude and DC offset.
Max. frequency: 100 kHz
Waveform: Square or sine
Input impedance: 30 kΩ min.
Input amplitude: 2 – 50 V p-p
Detecting level: 2 – 10 V; 0.6 V ≤ V_H – V_L ≤ 1.3 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 kΩ min.
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
■ **AC Voltage Pulse**: Specify amplitude and frequency.
Max. frequency: 50 kHz
Min. frequency: 1 Hz
Waveform: Sine
Input impedance: 10 kΩ 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: ≤ 4 mA for Lo, ≥ 12 mA for Hi

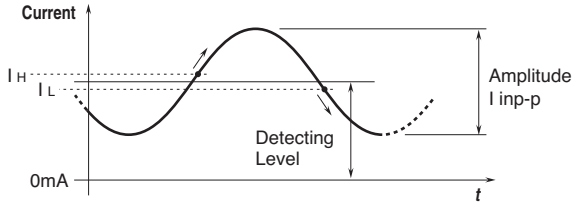
■ **Pulse**
• **DC Voltage Pulse**



• **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 V ±10 %
Lo level: ≤ 0.5 V
Load resistance: 1000 Ω min.

OUTPUT PULSE WIDTH

• **One-shot Output**: Constant pulse width
Output Frequency (Hz) = 500 ÷ Output Pulse Width (msec.)
Pulse width: 1 – 500 msec. (standard 50 msec. ±20 %)

INSTALLATION

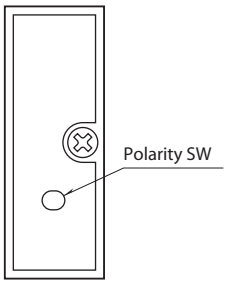
Current consumption: Approx. 90 mA
Operating temperature: 0 to 55°C (32 to 131°F)
Operating humidity: 30 to 95 %RH (non-condensing)
Mounting: Installation Base (model: M8BSx)
Weight: 70 g (2.5 oz)

PERFORMANCE

Insulation resistance: ≥ 100 MΩ 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

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.

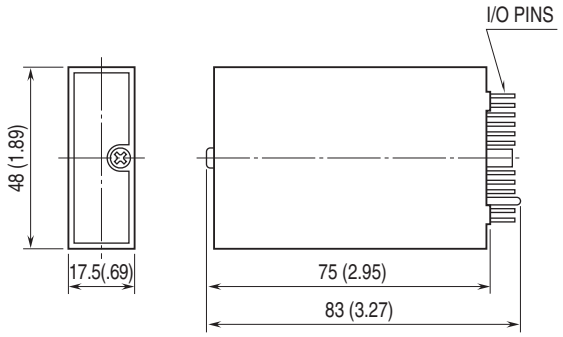


OUTPUT LOGIC

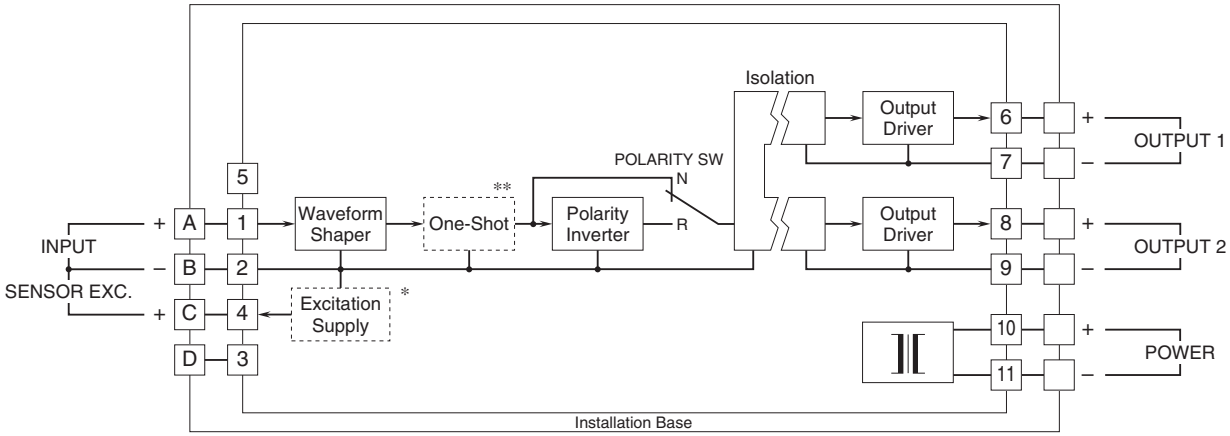
INPUT TYPE	PULSE LOGIC	INPUT	VOLTAGE PULSE OUTPUT	OPEN COLLECTOR
DC Voltage Pulse Input 2-wire Current Pulse Input [ON current (H) OFF current (L)]	Non Inverted	H L	H L	OFF ON
	Inverted	H L	H L	OFF ON
Dry Contact Input	Non Inverted	OFF ON	H L	OFF ON
	Inverted	OFF ON	H L	OFF ON
AC Voltage Pulse	Non Inverted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



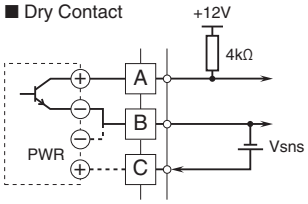
SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



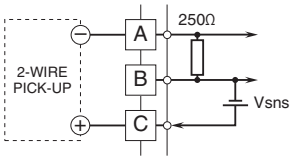
* Provided only when the sensor excitation option is selected.
**Provided only when the one-shot output option is selected.

Input Connection Examples

■ Dry Contact

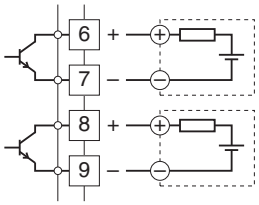


■ 2-Wire Current Pulse
• Built-in Excitation

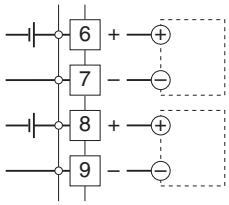


Output Connection Examples

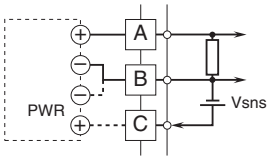
■ Open Collector



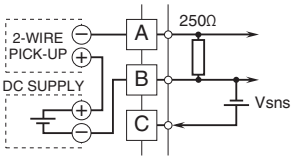
■ Voltage Pulse



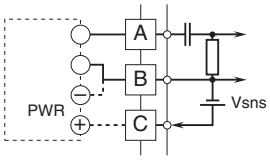
■ DC Voltage Pulse



• External DC Supply



■ AC Voltage Pulse



⚠ Specifications are subject to change without notice.