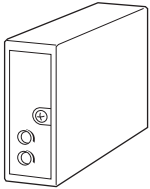


## Dual Output Super-mini Signal Conditioners Pico-M Series

### FREQUENCY CONVERTER

#### Functions & Features

- Converting the output from a pulse-type transducer into a standard process signal
- Space-saving, easy-to-maintain, multi-channel installation base



### MODEL: M8PA-[1][2]-R[3]

#### ORDERING INFORMATION

- Code number: M8PA-[1][2]-R[3]

Specify a code from below for each of [1] through [3].

(e.g. M8PA-A6A-R/Q)

- Frequency range (e.g. 0 - 1 kHz)

Use Ordering Information Sheet (No. ESU-5484) for Input

Codes B: DC voltage pulse or E: AC voltage pulse.

- Specify the specification for option code /Q (e.g. /C01/V01)

#### [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)

#### [2] OUTPUT 1 / OUTPUT 2

**6A:** 1 - 5 V DC (Load resistance 2500 Ω min.)  
/ 4 - 20 mA DC (Load resistance 300 Ω max.)

**44:** 0 - 10 V DC (Load Resistance 5000 Ω min.)  
/ 0 - 10 V DC (Load Resistance 5000 Ω min.)

**55:** 0 - 5 V DC (Load resistance 2500 Ω min.)  
/ 0 - 5 V DC (Load resistance 2500 Ω min.)

**66:** 1 - 5 V DC (Load resistance 2500 Ω min.)  
/ 1 - 5 V DC (Load resistance 2500 Ω min.)

#### POWER INPUT

DC Power

R: 24 V DC

(Operational voltage range 24 V ±10 %, ripple 10 %p-p max.)

#### [3] OPTIONS

blank: none

/Q: With options (specify the specification)

#### SPECIFICATIONS OF OPTION: Q (multiple selections)

COATING (For the detail, refer to our web site.)

/C01: Silicone coating

/C02: Polyurethane coating

/C03: Rubber coating

ADJUSTMENT

/V01: Multi-turn fine adjustment

#### RELATED PRODUCTS

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

This unit must be mounted on dedicated base or socket.

#### 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

Zero adjustment: -2 to +2 % (front)

Span adjustment: 98 to 102 % (front)

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

#### INPUT SPECIFICATIONS

Frequency range: 0 - 20 Hz through 20 kHz

Pulse width (time) requirement: Duty ratio 20 - 80 % at 100 % input

##### ■ Dry Contact

Sensing: Approx. 12 V DC @3 mA

ON/OFF level: ≤ 200 Ω/0.5 V for ON, ≥ 100 kΩ/9 V for OFF

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

Waveform: Square or sine

Input impedance: 10 kΩ 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

Waveform: Square or sine

Input impedance: 10 kΩ min.

Detecting H level

5 V pulse: ≥ 3 V

12 V, 24 V pulse: ≥ 6 V

Detecting L level

5 V pulse:  $\leq 1$  V

12 V, 24 V pulse:  $\leq 4$  V

■ **AC Voltage Pulse:** Specify amplitude and frequency.

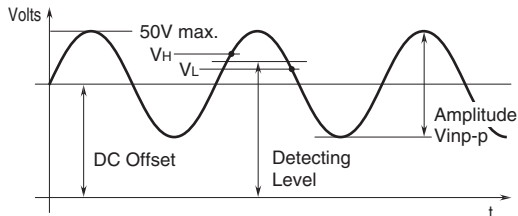
**Waveform:** Sine

**Input impedance:** 10 k $\Omega$  min.

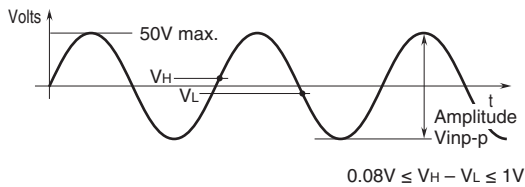
**Input amplitude:** 0.1 - 100 V p-p

**Max. voltage between input terminals:** 50 V

■ **DC VOLTAGE PULSE**



■ **AC VOLTAGE PULSE**



## INSTALLATION

**Current consumption:** Approx. 50 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 in percentage of span

**Accuracy:**  $\pm 0.1$  % (output 10 - 100 %)

**Temp. coefficient:**  $\pm 0.02$  %/°C ( $\pm 0.01$  %/°F)

**Response time:** (0 - 90 %)

approx. 4 seconds for 0 - 50 Hz

approx. 3 seconds for 0 - 100 Hz

approx. 1 second for 0 - 200 Hz

approx. 0.4 seconds for 0 - 1.99 kHz

approx. 0.1 seconds for 0 - 2 kHz or more

**Ripple:** 0.2 %p-p max. with input  $\geq 10$  %

**Line voltage effect:**  $\pm 0.1$  % over voltage range

**Insulation resistance:**  $\geq 100$  M $\Omega$  with 500 V DC

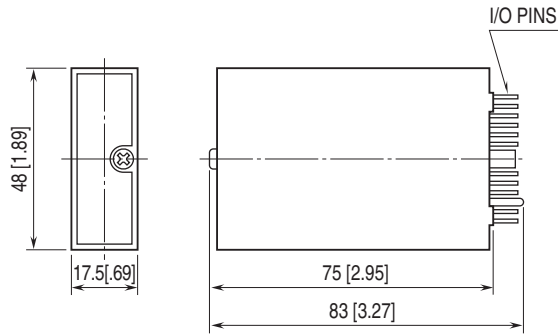
**Dielectric strength:**

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

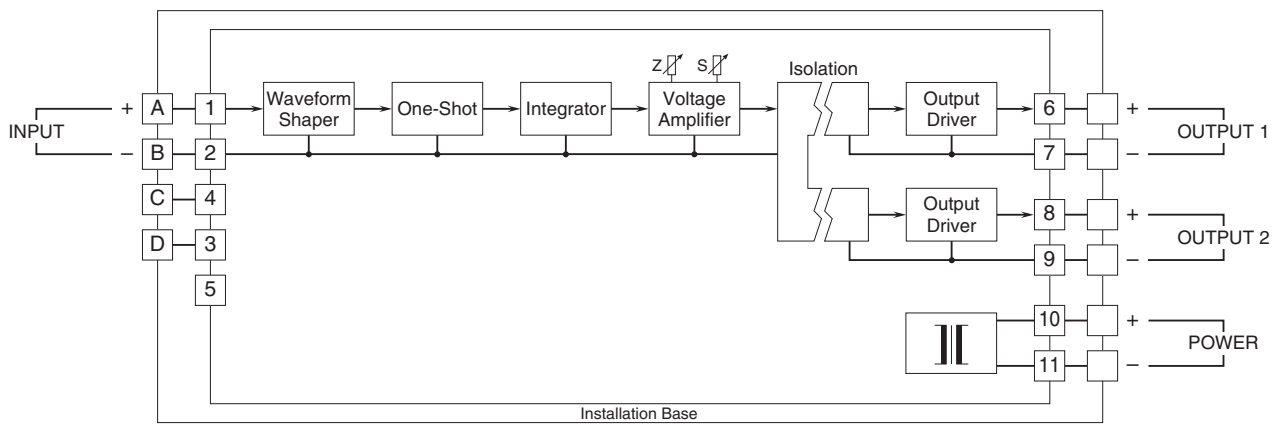
500 V AC @1 minute (output 1 to output 2 to power)

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

## EXTERNAL DIMENSIONS unit: mm [inch]

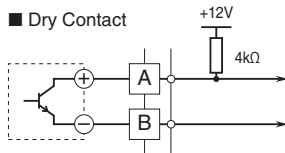


## SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

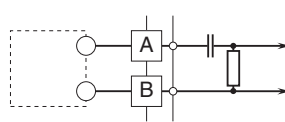


### Input Connection Examples

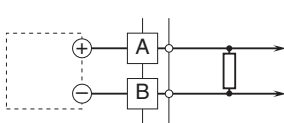
#### ■ Dry Contact



#### ■ AC Voltage Pulse



#### ■ DC Voltage Pulse



Specifications are subject to change without notice.