

**Space-saving Dual Output Signal Conditioners  
Mini-MW Series**

**LOW FREQUENCY TRANSMITTER**

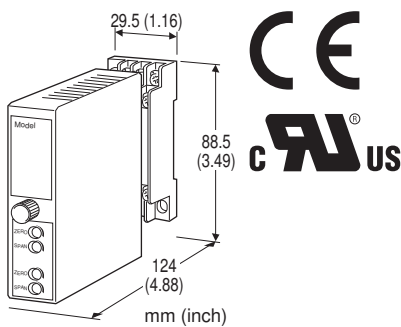
(50 Hz minimum)

**Functions & Features**

- Converts the output from a pulse-type transducer into a standard process signal

**Typical Applications**

- Positive displacement flowmeters, turbine flowmeters and vortex flowmeters
- Proximity switches



**MODEL: W2SP-[1][2][3]-[4][5]**

**ORDERING INFORMATION**

- Code number: W2SP-[1][2][3]-[4][5]
- Specify a code from below for each [1] through [5]. (e.g. W2SP-1AA-M2/CE/Q)
- Frequency range (e.g. 0 - 10 kHz)
- Special output ranges (For codes Z & 0)
- Specify the specification for option code 'Q.'
- (e.g. /C01/S01)

Note: If one of the outputs should be a current range, specify it for the Output 1 to allow a greater load.

**[1] INPUT**

- 1: Dry contact
- 2: Voltage pulse

**[2] OUTPUT 1**

**Current**

- A: 4 - 20 mA DC (Load resistance 750 Ω max.)
- B: 2 - 10 mA DC (Load resistance 1500 Ω max.)
- C: 1 - 5 mA DC (Load resistance 3000 Ω max.)
- D: 0 - 20 mA DC (Load resistance 750 Ω max.)
- E: 0 - 16 mA DC (Load resistance 900 Ω max.)
- F: 0 - 10 mA DC (Load resistance 1500 Ω max.)

- G: 0 - 1 mA DC (Load resistance 15 kΩ max.)
- Z: Specify current (See OUTPUT SPECIFICATIONS)

**Voltage**

- 1: 0 - 10 mV DC (Load resistance 10 kΩ min.)
- 2: 0 - 100 mV DC (Load resistance 100 kΩ min.)
- 3: 0 - 1 V DC (Load resistance 1000 Ω min.)
- 4: 0 - 10 V DC (Load resistance 10 kΩ min.)
- 5: 0 - 5 V DC (Load resistance 5000 Ω min.)
- 6: 1 - 5 V DC (Load resistance 5000 Ω min.)
- 4W: -10 - +10 V DC (Load resistance 10 kΩ min.)
- 5W: -5 - +5 V DC (Load resistance 5000 Ω min.)
- 0: Specify voltage (See OUTPUT SPECIFICATIONS)

**[3] OUTPUT 2**

Y: None

**Current**

- A: 4 - 20 mA DC (Load resistance 350 Ω max.)
- B: 2 - 10 mA DC (Load resistance 700 Ω max.)
- C: 1 - 5 mA DC (Load resistance 1400 Ω max.)
- D: 0 - 20 mA DC (Load resistance 350 Ω max.)
- E: 0 - 16 mA DC (Load resistance 430 Ω max.)
- F: 0 - 10 mA DC (Load resistance 700 Ω max.)
- G: 0 - 1 mA DC (Load resistance 7000 Ω max.)
- Z: Specify current (See OUTPUT SPECIFICATIONS)

**Voltage**

Same range availability as Output 1

**[4] POWER INPUT**

**AC Power**

- M2: 100 - 240 V AC (Operational voltage range 85 - 264 V, 47 - 66 Hz)
- (90 - 264 V for UL)

**DC Power**

- R: 24 V DC (Operational voltage range 24 V ±10 %, ripple 10 %p-p max.)
- R2: 11 - 27 V DC (Operational voltage range 11 - 27 V, ripple 10 %p-p max.) (Select '/N' for 'Standards & Approvals' code.)
- P: 110 V DC (Operational voltage range 85 - 150 V, ripple 10 %p-p max.) (110 V ±10 % for UL)

**[5] OPTIONS (multiple selections)**

**Standards & Approvals (must be specified)**

- /N: Without CE or UL
- /CE: CE marking
- /UL: UL approval, CE marking

**Other Options**

- blank: none
- /Q: Option other than the above (specify the specification) (UL not available)



## SPECIFICATIONS OF OPTION: Q (multiple selections)

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

/C01: Silicone coating

/C02: Polyurethane coating

/C03: Rubber coating

### TERMINAL SCREW MATERIAL

/S01: Stainless steel

## GENERAL SPECIFICATIONS

**Construction:** Plug-in

**Connection:** M3 screw terminals (torque 0.8 N·m)

**Screw terminal:** Chromated steel (standard) or stainless steel

**Housing material:** Flame-resistant resin (black)

**Isolation:** Input to output 1 to output 2 to power

**Overrange output:** 0 to 120 % at 1 - 5 V

**Zero adjustment:** -5 to +5 % (front)

**Span adjustment:** 95 to 105 % (front)

**Input pulse sensing:** DC coupled; detecting pulse rise

**Input filter:** Provided with input range <100 Hz (time constant approx. 1 msec.)

**Low-end cutout:** 2 to 5 %

## INPUT SPECIFICATIONS

**Excitation:** 12 V DC @30 mA; shortcircuit protection

**Frequency range:** 0 - 50 Hz through 10 kHz

■ **Dry Contact:** Mechanical contact or open collector

**Pulse width time requirement:** 20 μsec. min. for ON and OFF

**Sensing:** Approx. 12 V DC @3 mA

**ON/OFF level:** ≤ 200 Ω / 0.6 V for ON, ≥ 100 kΩ / 6 V for OFF

■ **Voltage Pulse:** Square or sine waveforms

**Pulse width time requirement:** 20 μsec. min. for high and low levels

**Hi level:** 2 - 50 V

**Lo level:** ≤ 1 V

**Input impedance:** 10 kΩ min.

## OUTPUT SPECIFICATIONS

■ **DC Current:** 0 - 20 mA DC

**Minimum span:** 1 mA

**Offset:** Max. 1.5 times span

**Load resistance:** Output drive 15 V max. for Output 1; 7 V max. for Output 2

■ **DC Voltage:** -10 - +12 V DC (up to 10 V for Output 2)

**Minimum span:** 5 mV

**Offset:** Max. 1.5 times span

**Load resistance:** Output drive 1 mA max.; at ≥ 0.5 V

## INSTALLATION

### Power Consumption

• **AC:**

Approx. 5 VA at 100 V

Approx. 6 VA at 200 V

Approx. 7 VA at 240 V

• **DC:** Approx. 3 W

**Operating temperature:** -5 to +55°C (23 to 131°F)

**Operating humidity:** 30 to 90 %RH (non-condensing)

**Mounting:** Surface or DIN rail

**Weight:** 200 g (0.44 lb)

## PERFORMANCE in percentage of span

**Accuracy:** ±0.1 % (output 10 - 100 %)

**Temp. coefficient:** ±0.015 %/°C (±0.008 %/°F)

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

Approx. 1.8 sec. with 0 - 50 Hz

Approx. 0.7 sec. with 0 - 100 Hz

Approx. 0.5 sec. with 0 - 500 Hz

Approx. 0.5 sec. with 0 - 10 kHz

**Ripple:** 0.2 %p-p max. with input ≥ 10 %

**Line voltage effect:** ±0.1 % over voltage range

**Insulation resistance:** ≥ 100 MΩ with 500 V DC

**Dielectric strength:** 2000 V AC @1 minute (input to output 1 to output 2 to power to ground)

## STANDARDS & APPROVALS

### CE conformity:

EMC Directive (2004/108/EC)

EMI EN 61000-6-4: 2007

EMS EN 61000-6-2: 2005

Low Voltage Directive (2006/95/EC)

EN 61010-1: 2001

Installation Category II

Pollution Degree 2

Input or output 1 or output 2 to power input:

Reinforced insulation (300 V)

Input to output 1 to output 2: Basic insulation (300 V)

### Approval:

UL/C-UL nonincendive Class I, Division 2,

Groups A, B, C, and D

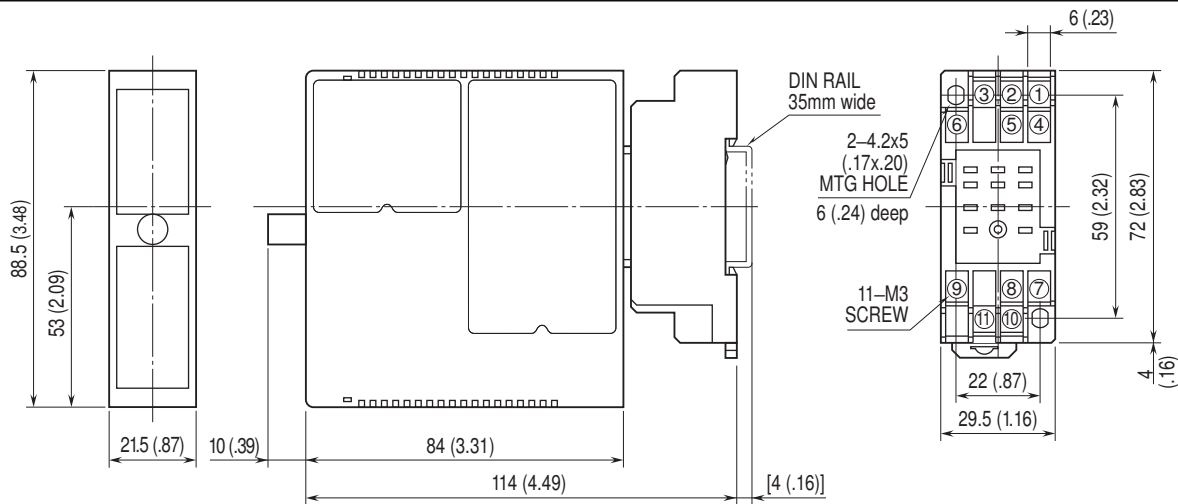
(ANSI/ISA-12.12.01:2011, CAN/CSA-C22.2 No.213:1987)

UL/C-UL general safety requirements

(UL 61010B-1:2003, CAN/CSA-C22.2 No.61010-1:1992)

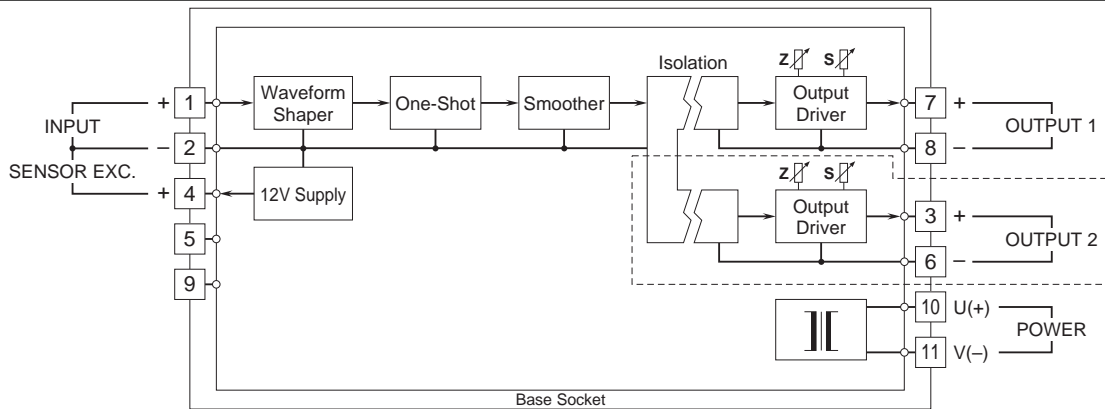


## DIMENSIONS unit: mm (inch)



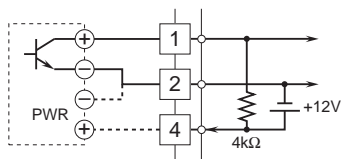
When mounting, no extra space is needed between units.

## SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

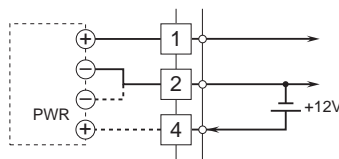


### Input Connection Examples

#### ■ Dry Contact



#### ■ Voltage Pulse



Specifications are subject to change without notice.