

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

**LOW FREQUENCY TRANSMITTER**  
(50 Hz minimum)

MODEL **W2SP**

**MODEL & SUFFIX CODE SELECTION**

MODEL \_\_\_\_\_ W2SP-□□□□□□

INPUT \_\_\_\_\_

1 : Dry contact  
2 : Voltage pulse

OUTPUT 1 \_\_\_\_\_

<b>Current</b>	<b>Voltage</b>
A : 4 – 20mA DC	1 : 0 – 10mV DC
B : 2 – 10mA DC	2 : 0 – 100mV DC
C : 1 – 5mA DC	3 : 0 – 1V DC
D : 0 – 20mA DC	4 : 0 – 10V DC
E : 0 – 16mA DC	5 : 0 – 5V DC
F : 0 – 10mA DC	6 : 1 – 5V DC
G : 0 – 1mA DC	4W : -10 – +10V DC
Z : Specify current	5W : -5 – +5V DC
	0 : Specify voltage

OUTPUT 2 \_\_\_\_\_

Same range availability as Output 1

Y : None

POWER INPUT \_\_\_\_\_

<b>AC Power</b>	<b>DC Power</b>
M2: 100 – 240V AC	R : 24V DC
	R2: 11 – 27V DC *1
	P : 110V DC

\*1: Select 'N' for 'Standards & Approvals' code.

**STANDARDS & APPROVALS**

- /N : Without CE or UL
- /CE: CE marking
- /UL: UL approval (CE marking)

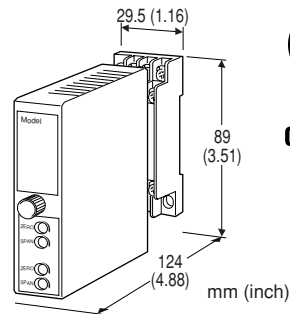
**ORDERING INFORMATION**

Specify code number and variables. When the user requires a current and a voltage output, specify the current to be the Output 1 which allows a greater load.

- Code number (e.g. W2SP-1AA-M2/CE)
- Frequency range (e.g. 0 – 10 kHz)
- Special output ranges (For codes Z & 0)

**GENERAL SPECIFICATIONS**

- Construction:** plug-in
- Connection:** M3 screw terminals (torque 0.8 N·m)
- Housing material:** flame-resistant resin (black)
- Isolation:** input to output 1 to output 2 to power
- Input pulse sensing:** DC coupled; detecting pulse rise
- Input filter:** provided with input range <100 Hz (time constant approx. 1 msec.)
- Overrange output:** 0 – 120% at 1 – 5V
- Front adjustments:** zero and span; ±5%
- Low-end cutout:** 2 – 5%



**Functions & Features**

- Converting the output from a pulse-type transducer
- Two independent output ranges
- Universal power input
- High-density mounting
- CE marking
- UL approval

**Typical Applications**

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

**INPUT & OUTPUT**

■INPUT

**Frequency range:** 0 – 50 Hz through 10 kHz  
**Excitation:** 12V DC @30mA; shortcircuit protection

- Dry Contact:** mechanical contact or open collector
- Pulse width time requirement:** 20 μsec. min. for ON and OFF

**Sensing:** approx. 12V DC @3mA  
**ON/OFF level:** ≤200Ω for ON, ≥100kΩ for OFF

- Voltage Pulse:** square or sine waveforms
- Pulse width time requirement:** 20 μsec. min. for high and low levels

**Hi level:** 2 – 50V p-p  
**Lo level:** ≤1V  
**Input impedance:** 10kΩ minimum

■OUTPUTS (two)

•**DC Current:** 0 – 20mA DC  
**Minimum span:** 1mA  
**Zero suppression/elevation:** max. 1.5 times span  
**Load resistance:** output drive 15V max. for Output 1; 7V max. for Output 2

Output	Ch.1 L.R.	Ch.2 L.R.
4 – 20mA	: 750	350 (Ω max.)
2 – 10mA	: 1500	700
1 – 5mA	: 3000	1400
0 – 20mA	: 750	350
0 – 16mA	: 900	430
0 – 10mA	: 1500	700
0 – 1mA	: 15k	7000

- DC Voltage: -10 – +12V DC (up to +10V for Out. 2)
- Minimum span: 5mV
- Zero suppression/elevation: max. 1.5 times span
- Load resistance: output drive 1mA maximum at  $\geq 0.5V$

Output	Load Resistance
0 – 10mV	: 10k ( $\Omega$ minimum)
0 – 100mV	: 100k
0 – 1V	: 1000
0 – 10V	: 10k
0 – 5V	: 5000
1 – 5V	: 5000
-10 – +10V	: 10k
-5 – +5V	: 5000

### INSTALLATION

#### Power input

**AC:** operational voltage range 85 – 264V (90 – 264V for UL);  
47 – 66 Hz; approx. 5VA at 100V  
approx. 6VA at 200V  
approx. 7VA at 264V

**DC:** operational voltage range for R: 24V  $\pm 10\%$ , R2: 11 – 27V, or P: 85 – 150V (110V  $\pm 10\%$  for UL);  
ripple 10% p-p max.; approx. 3W

- Operating temperature: -5 to +55°C (23 to 131°F)
- Operating humidity: 30 to 90% RH (non-condensing)
- Mounting: surface or DIN rail
- Dimensions: W29.5xH89xD124 mm (1.16"x3.51"x4.88")  
See General Spec. Sheet Figure A-1.
- Weight: 200 g (0.44 lbs)
- Terminal assignment: See General Spec. Sheet Figure B-1.

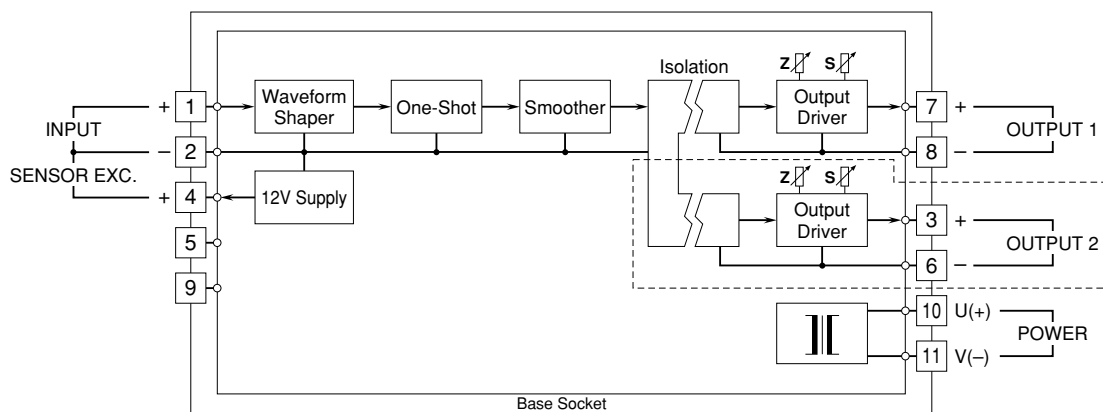
### PERFORMANCE in percentage of span

- Accuracy:**  $\pm 0.1\%$  (output 10 – 100%)
- Temp. coefficient:**  $\pm 0.015\%/^{\circ}C$  ( $\pm 0.008\%/^{\circ}F$ )
- Response time:** (0 – 90%)  
approx. 1.8 seconds for 0 – 50 Hz  
approx. 0.7 seconds for 0 – 100 Hz  
approx. 0.5 seconds for 0 – 500 Hz  
approx. 0.5 seconds for 0 – 10 kHz
- Ripple:** 0.2% p-p max. with input  $\geq 10\%$
- Line voltage effect:**  $\pm 0.1\%$  over voltage range
- Insulation resistance:**  $\geq 100M\Omega$  with 500V DC
- Dielectric strength:** 2000V AC @1 minute (input to output 1 to output 2 to power to ground)

### STANDARDS & APPROVALS

- CE conformity:** EMC Directive (89/336/EEC)  
EMI EN61000-6-4  
EMS EN61000-6-2  
Low Voltage Directive (73/23/EEC)  
EN61010-1  
Installation category II  
Pollution degree 2  
Max. operating voltage 300V  
Input or output 1 or output 2 to power – Reinforced insulation  
Input to output 1 to output 2 – Basic insulation
- Approval:** UL/C-UL nonincendive  
Class I, Division 2, Groups A, B, C, and D (UL 1604, CAN/CSA-C22.2 No.213)  
UL/C-UL general safety requirements (UL 3111-1, CAN/CSA-C22.2 No.1010-1)

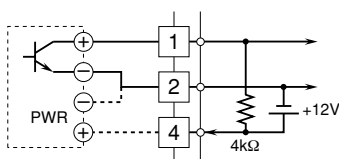
### SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



Remark: The section enclosed by broken line is only with 2nd output option.

#### Input Connection Examples

##### ■ Dry Contact



##### ■ Voltage Pulse

