Space-saving Dual Output Signal Conditioners

Mini-MW Series

LOW FREQUENCY TRANSMITTER

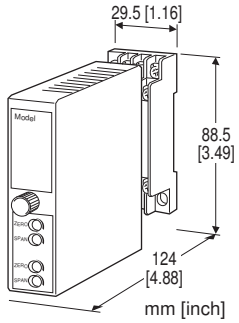
(50 Hz minimum)

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 of [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: When the user requires a current and a voltage output, specify the current to be the Output 1 which allows 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)

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[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)

SPECIFICATIONS OF OPTION: Q (multiple selections)

COATING (For the detail, refer to our web site.)
/C01: Silicone coating
/C02: Polyurethane coating
/C03: Rubber coating (UL not available)
TERMINAL SCREW MATERIAL
/S01: Stainless steel (UL not available)

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)
Adjustable individually for each output 1 and output 2.
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
≥ 5 msec. with input range < 100 Hz
Sensing: Approx. 12 V DC @3 mA
ON/OFF level: ≤ 200 Ω / 0.6 V for ON, ≥ 100 kΩ / 2.5 V for OFF
■ Voltage Pulse: Square or sine waveforms
Pulse width time requirement: 20 µsec. min. for high and low levels
≥ 5 msec. with input range < 100 Hz
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)

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STANDARDS & APPROVALS

EU conformity:

EMC Directive

EMI EN 61000-6-4

EMS EN 61000-6-2

Low Voltage Directive

EN 61010-1

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)

RoHS Directive

Approval:

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

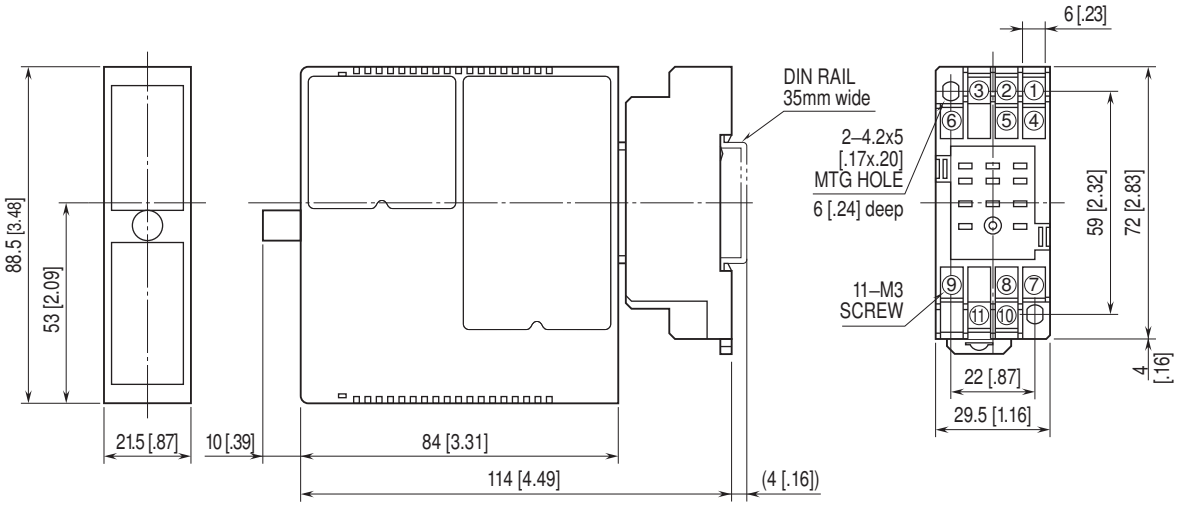
Groups A, B, C, and D

(UL 121201, CAN/CSA-C22.2 No.213-17)

UL/C-UL general safety requirements

(UL 61010-1, CAN/CSA-C22.2 No.61010-1-12)

EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]



• When mounting, no extra space is needed between units.

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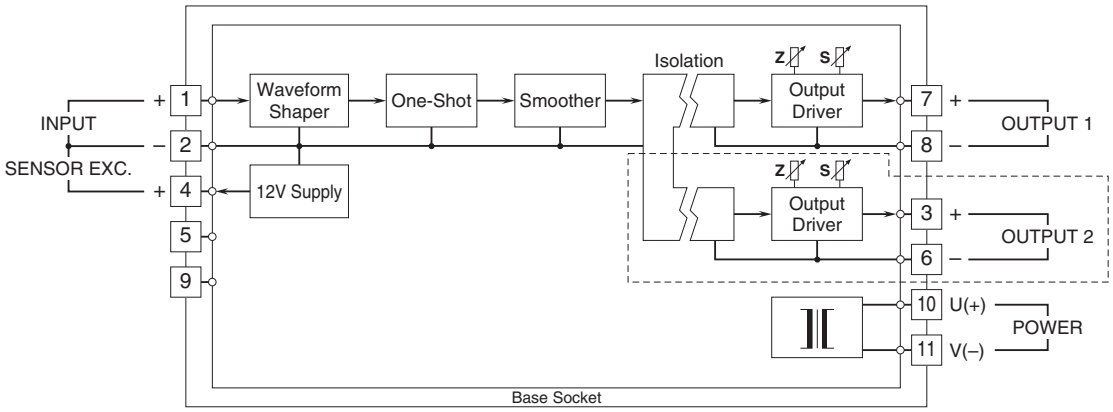
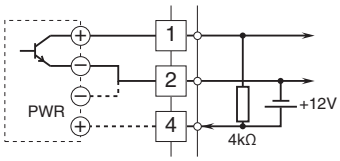
SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



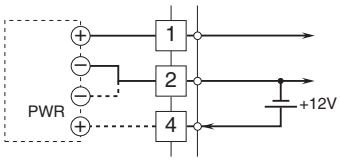
Note: The section enclosed by broken line is only with 2nd output option.

Input Connection Examples

■ Dry Contact



■ Voltage Pulse



⚠ Specifications are subject to change without notice.

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