

## Dual Output Plug-in Signal Conditioners W-UNIT

### LOW FREQUENCY TRANSMITTER

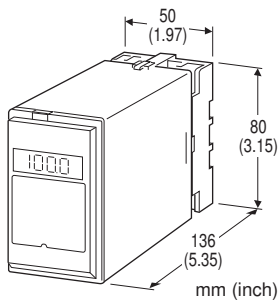
(50 Hz minimum)

#### Functions & Features

- Converting the output from a pulse-type transducer into standard process signal
- Isolation up to 2000 V AC
- High-density mounting

#### Typical Applications

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



### MODEL: WSP-[1][2][3]-[4][5]

#### ORDERING INFORMATION

- Code number: WSP-[1][2][3]-[4][5]
- Specify a code from below for each [1] through [5].  
(e.g. WSP-2A6-B/E/Q)

- Frequency range (e.g. 0 - 10 kHz)
- Special output range (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 600  $\Omega$  max.)
- B: 2 - 10 mA DC (Load resistance 1200  $\Omega$  max.)
- C: 1 - 5 mA DC (Load resistance 2400  $\Omega$  max.)
- D: 0 - 20 mA DC (Load resistance 600  $\Omega$  max.)

- E: 0 - 16 mA DC (Load resistance 750  $\Omega$  max.)
- F: 0 - 10 mA DC (Load resistance 1200  $\Omega$  max.)
- G: 0 - 1 mA DC (Load resistance 12 k $\Omega$  max.)
- Z: Specify current (See OUTPUT SPECIFICATIONS)

##### Voltage

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

#### [3] OUTPUT 2

##### Current

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

##### Voltage

Same range availability as Output 1

#### [4] POWER INPUT

##### AC Power

- B: 100 V AC
- C: 110 V AC
- D: 115 V AC
- F: 120 V AC
- G: 200 V AC
- H: 220 V AC
- J: 240 V AC

##### DC Power

- S: 12 V DC
- R: 24 V DC
- V: 48 V DC
- P: 110 V DC

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

##### Input Signal Indicator

- blank: Without
- /E: With (0.0 - 100.0 % display)

##### 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 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:** M3.5 screw terminals

**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:** Approx. 0 to 120 % at 1 - 5V

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

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

**LCD meter:** indicating instantaneous values after low-end cutout; 0.1 % increments

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

## INPUT SPECIFICATIONS

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

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

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

**Sensing:** Approx. 7.5 V DC @1 mA

**ON/OFF level:**  $\leq 200 \Omega / 0.6 \text{ V}$  for ON,  $\geq 100 \text{ k}\Omega / 2 \text{ V}$  for OFF

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

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

**Input amplitude:** 2 - 50 Vp-p

**Input impedance:** 100 k $\Omega$  min.

## OUTPUT SPECIFICATIONS

■ **DC Current:** 0 - 20 mA DC

**Minimum span:** 1 mA

**Offset:** Max. 1.5 times span

**Load resistance:** Output drive 12 V max. for Output 1;

7 V max. for Output 2

■ **DC Voltage:** -10 - +12 V DC

**Minimum span:** 5 mV

**Offset:** Max. 1.5 times span

**Load resistance:** Output drive 1 mA max. at  $\geq 0.5 \text{ V}$

## INSTALLATION

**Power input**

• **AC:** Operational voltage range: rating  $\pm 10 \%$ , 50/60  $\pm 2$  Hz, approx. 3 VA

• **DC:** Operational voltage range: rating  $\pm 10 \%$ , or 85 - 150 V

for 110 V rating (ripple 10 % p-p max.)

approx. 2.5 W (100 mA at 24 V)

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

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

**Mounting:** Surface or DIN rail

**Weight:** 400 g (0.88 lb)

## PERFORMANCE in percentage of span

**Accuracy:**  $\pm 0.3 \%$  (output 10 - 100 %)

**Display accuracy:**  $\pm(0.3 \%$  of FS + 1 digit)  
(Output 10 - 100 %)

**Temp. coefficient:**  $\pm 0.015 \%$ /°C ( $\pm 0.008 \%$ /°F)

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

Approx. 2 sec. for 0 - 50 Hz

Approx. 1 sec. for 0 - 100 Hz

Approx. 0.5 sec. for 0 - 500 Hz

Approx. 0.5 sec. 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:**  $\geq 100 \text{ M}\Omega$  with 500 V DC

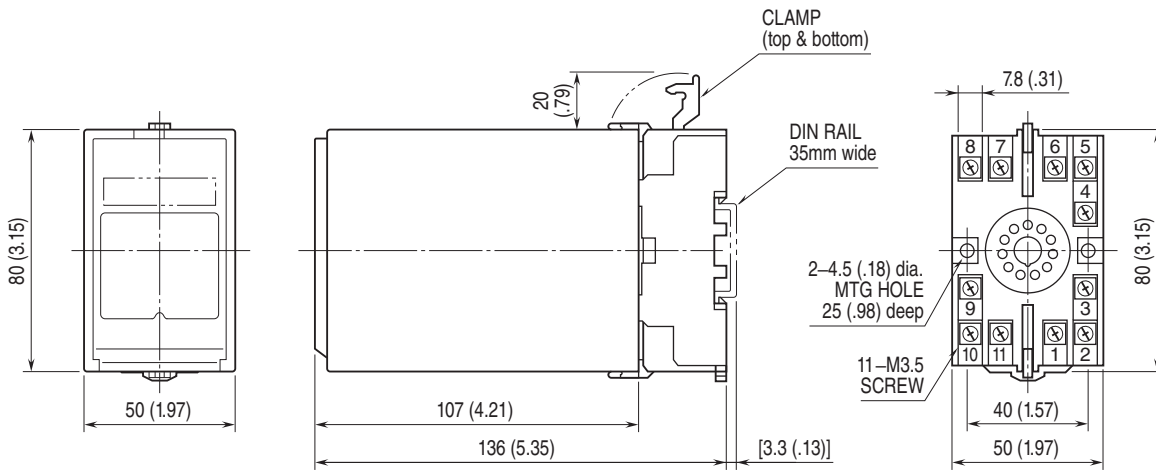
**Dielectric strength:** 2000 V AC @1 minute

(input to output to power to ground)

1000 V AC @ 1 minute (output 1 to output 2)

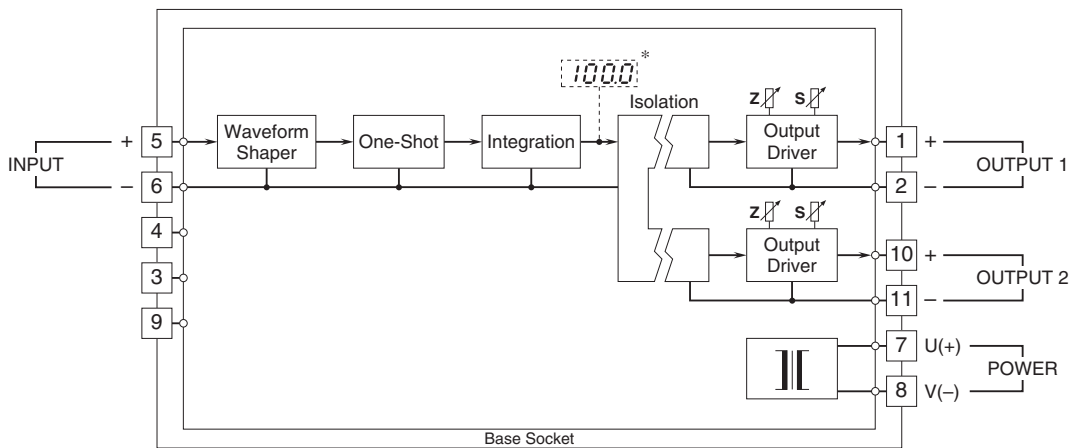


**EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm (inch)**



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

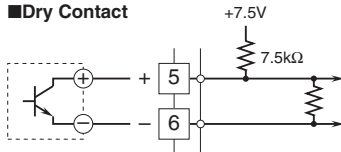
**SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM**



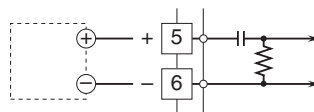
\*Option /E

**Input Connection Examples**

■ Dry Contact



■ Voltage Pulse



Specifications are subject to change without notice.