

# Dual-output Potentiometer Converter

**WSP-MSW**



This compact plug-in signal converter connects with 3-wire type potentiometer, and provides DC voltage or current. This converter has Isolator built-in and a burnout protection circuit as standard equipment

## Features

- ★ Zero & span adjustment  $\pm 10\%$  full scale (Fine adjustment by 25 turn trimmer)
- ★ Safe design by dielectric strength of 3000Vac
- ★ 5 years warranty, long life
- ★ CE approved
- ★ Burnout protection circuit as standard equipment

## Ordering code

WSP- **MSW** - [ ] [ ] [ ] - [ ] [ ]

| Code  | Input (Total Resistance)            | Span Ad. Range                     | Zero Ad. Range                     |
|-------|-------------------------------------|------------------------------------|------------------------------------|
| 30    | 50 to 500 $\Omega$ FS               | 50 to 100% FS                      | 50 to 50% FS                       |
| 31    | 501 to 10k $\Omega$ FS              |                                    |                                    |
| 19    | 0 to 343 $\Omega$ (1k $\Omega$ FS)  | $\pm 20\%$ FS (FS = 343 $\Omega$ ) | $\pm 20\%$ FS (FS = 343 $\Omega$ ) |
| 99 *1 | Contact us for other than the above |                                    |                                    |

| Code | Test Report      |
|------|------------------|
| X    | None             |
| T    | With Test report |

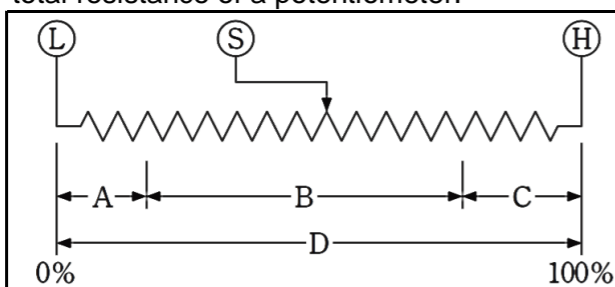
| Code | Output 1   | Allowable Load Resistance |
|------|--|---------------------------|
| A    | 4 to 20mA <sub>dc</sub>  | 750 $\Omega$ or less      |
| B    | 1 to 5mA <sub>dc</sub>   | 3k $\Omega$ or less       |
| D    | 0 to 1mA <sub>dc</sub>   | 15k $\Omega$ or less      |
| E    | 0 to 10mA <sub>dc</sub>  | 1.5k $\Omega$ or less     |
| G    | 0 to 20mA <sub>dc</sub>  | 750 $\Omega$ or less      |
| H    | 1 to 5V <sub>dc</sub>  | 1k $\Omega$ or more       |
| J    | 0 to 10mV <sub>dc</sub>  | 10k $\Omega$ or more      |
| K    | 0 to 100mV <sub>dc</sub>   | 100k $\Omega$ or more     |
| L    | 0 to 1V <sub>dc</sub>  | 200 $\Omega$ or more      |
| N    | 0 to 5V <sub>dc</sub>  | 1k $\Omega$ or more       |
| P    | 0 to 10V <sub>dc</sub>   | 2k $\Omega$ or more       |
| R    | $\pm 10$ V <sub>dc</sub>   | 2k $\Omega$ or more       |
| S *1 | Contact us for other than the above<br>Current output 20mA or less<br>Voltage output 10V or less |                           |

| Code | Power Supply                     |
|------|----------------------------------|
| A    | 100 to 240Vac $\pm 10\%$ 50/60Hz |
| D    | 24V <sub>dc</sub> $\pm 10\%$     |
| *2   | 10.8 to 30V <sub>dc</sub>        |
| 8    | 110V <sub>dc</sub> $\pm 10\%$    |

| Code | Output 2   | Allowable Load Resistance |
|------|--|---------------------------|
| A    | 4 to 20mA <sub>dc</sub>  | 350 $\Omega$ or less      |
| D    | 0 to 1mA <sub>dc</sub>   | 7k $\Omega$ or less       |
| G    | 0 to 20mA <sub>dc</sub>  | 350 $\Omega$ or less      |
| H    | 1 to 5V <sub>dc</sub>  | 1k $\Omega$ or more       |
| L    | 0 to 1V <sub>dc</sub>  | 200 $\Omega$ or more      |
| N    | 0 to 5V <sub>dc</sub>  | 1k $\Omega$ or more       |
| P    | 0 to 10V <sub>dc</sub>   | 2k $\Omega$ or more       |
| R    | $\pm 10$ V <sub>dc</sub>   | 2k $\Omega$ or more       |
| S *1 | Contact us for other than the above<br>Current output 20mA or less<br>Voltage output 10V or less |                           |

### ★ Note: Zero & Span Adjustment

The measuring range must be 50% or more of total resistance of a potentiometer.



- A: Out of Range, lower side resistance
- B: Measuring range
- C: Out of Range, upper side resistance
- D: Total resistance of a Potentiometer

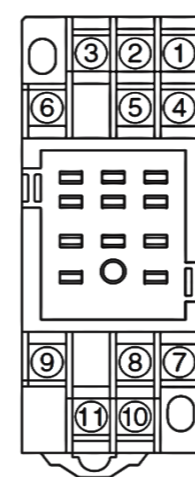
A procedure for adjustment, adjust Zero first, and then adjust the Span.

- \* 1...CE approval do not adapt input range code 99 and output range code S.
- \* 2...CE approval do not adapt when power supply is 10.8V<sub>dc</sub> to 30V<sub>dc</sub>.

## Specifications

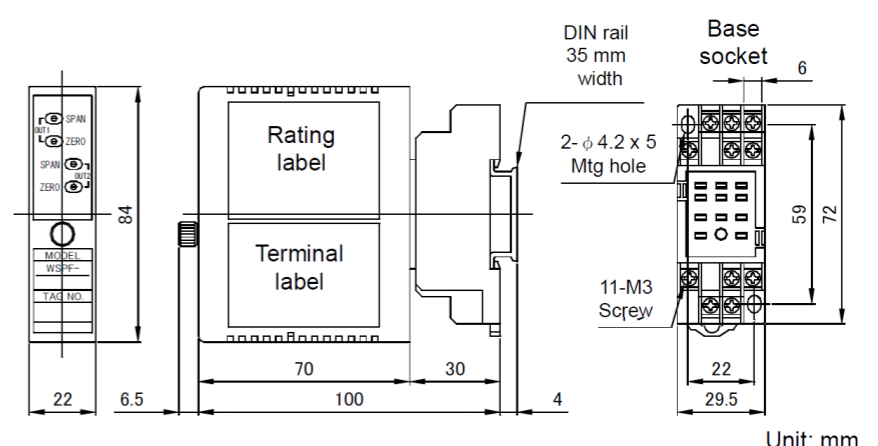
|                             |  |
|-----------------------------|--|
| Input signal                | 3-wire type potentiometer  |
| Accuracy                    | $\pm 0.1\%$ FS (at 23°C)   |
| Response time               | Approx. 25ms (0 to 90%)  |
| Allowable load              | Current output<br>First output : 15V or less of voltage drop between output<br>Second output : 11V or less of voltage drop between output<br>Voltage output<br>Load current 5mA or less<br>*1 $\mu$ A or less if the output is less than 1V FS |
| Span adjustment             | 50 to 100% of rated input (25 turn trimmer)<br>( $\pm 20\%$ for input 19)  |
| Zero adjustment             | 0 to 50% of span ( $\pm 20\%$ for input 19)  |
| Operating temperature       | -5 to +55°C  |
| Operating relative humidity | 90% or less (Non-condensing)   |
| Temperature coefficient     | $\pm 0.015\%$ FS of span per °C  |
| Burnout protection          | Upscale / downscale *Please specify when you order for downscale   |
| Isolation                   | Between input, output, and power supply  |
| Insulation resistance       | 100M $\Omega$ or more with 500V <sub>dc</sub> megger<br>Between input, output, and power supply terminal   |
| Dielectric strength         | 2000Vac for 1 minute   |
| Power consumption           | Approx. 5.6VA (AC), Approx. 88mA (DC)  |
| Power supply variation      | $\pm 0.1\%$ FS (within the range of rated voltage)   |
| Dimensions                  | 84(H) X 29.5(W) X 106.5(D)mm   |
| Weight                      | Approx. 150g   |
| Structure                   | Plug-in (Body part and socket part)  |
| Connection                  | M3 SEMS screw part of the base socket (Tightening torque 0.6N·m)   |
| Mounting                    | DIN rail or wall surface   |
| Case color and material     | Ivory, ABS resin, flame retardant grade UL94V-0  |
| EMC directive               | EN61326-1, EN61010-1, EN IEC 63000<br>Installation category : II, Pollution degree : 2   |
| Rated altitude              | 2000m or less  |

## Terminal connections



| No. | Symbol          | Description   |
|-----|-----------------|---------------|
| 1   | INPUT HIGH      | Input         |
| 2   | OUTPUT-2 +      | No.2 Output   |
| 3   | INPUT SLIDE LOW | Input         |
| 4   | INPUT           | Input         |
| 5   | OUTPUT-2 -      | No.2 Output   |
| 6   | NC              | No connection |
| 7   | OUTPUT-1 +      | No.1 Output   |
| 8   | NC              | No connection |
| 9   | OUTPUT-1 -      | No.1 Output   |
| 10  | POWER U(+)      | Power Supply  |
| 11  | POWER V(-)      | Power Supply  |

## Dimensions



Unit: mm

\* Specification is subject to change without notice

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<http://www.watanabe-electric.co.jp/en/>