# Dual-output Thermocouple Converter

This compact plug-in converter accepts Thermocouples input conforming to JIS standard and provides optically isolated two DC outputs.
This converter has a linearizer, a cold junction compensation circuit, and a burnout protection circuit as standard equipment which is required to measure temperature.

Prohibiting Use of Hazardous Substances

## Features

★ Fine Zero & span adjustment by 15 turn trimmer
★ Zero & span adjustment ±10% full scale
★ Safe design by dielectric strength of 3000Vac
★ 5 years warranty, long life
★ CE approved
★ Linearizer, Cold junction compensation circuit, and Burnout protection circuit built-in

## Ordering code

WSPF- T H W - ☐ ☐☐☐☐ - ☐☐

| Code | Input Signal |
|---|---|
| T | T (CC) thermocouple |
| E | E (CRC) thermocouple |
| J | J (IC) thermocouple |
| K | K (CA) thermocouple |
| N | N thermocouple |
| R | R (PR13) thermocouple |
| S | S thermocouple |
| B | B thermocouple |
| W | WRe 5-26 |

| Code | Power Supply |
|---|---|
| A | 100 to 240Vac ±10% 50/60Hz |
| D *2 | 24Vdc ±10%　10.8 to 30Vdc |
| 8 | 110Vdc ±10% |

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

| Measuring Temperature Range | Code | Manufacturable Range by Thermocouple | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | T | E | J | K | N | R | S | B | W |
| 0 to 100°C | 08 | ○ | ○ | ○ | ○ | | | | | |
| 0 to 150°C | 09 | ○ | ○ | ○ | ○ | | | | | |
| 0 to 200°C | 10 | ○ | ○ | ○ | ○ | | | | | |
| 0 to 250°C | 11 | ○ | ○ | ○ | ○ | | | | | |
| 0 to 300°C | 12 | ○ | ○ | ○ | ○ | | | | | |
| 0 to 400°C | 13 | | ○ | ○ | ○ | ○ | ○ | ○ | | |
| 0 to 500°C | 14 | | ○ | ○ | ○ | ○ | ○ | ○ | | |
| 0 to 600°C | 15 | | ○ | ○ | ○ | ○ | ○ | ○ | | ○ |
| 0 to 800°C | 16 | | | ○ | ○ | ○ | ○ | ○ | | ○ |
| 0 to 1000°C | 17 | | | ○ | ○ | ○ | ○ | ○ | | ○ |
| 0 to 1200°C | 18 | | | ○ | ○ | ○ | ○ | ○ | | ○ |
| 0 to 1300°C | 19 | | | | | | ○ | ○ | ○ | ○ |
| 0 to 1400°C | 20 | | | | | | ○ | ○ | ○ | ○ |
| 0 to 1600°C | 21 | | | | | | ○ | ○ | ○ | ○ |
| 0 to 1800°C | 22 | | | | | | | | ○ | ○ |
| 0 to 2000°C | 23 | | | | | | | | | ○ |
| 0 to 2300°C | 24 | | | | | | | | | ○ |
| Other than above | 99 *1 | Contact us | | | | | | | | |

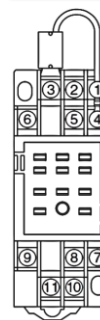| Code | Output 2 | Allowable Load Resistance |
|---|---|---|
| A | 4 to 20mAdc | 550Ω or less |
| G | 0 to 20mAdc | 550Ω or less |
| H | 1 to 5Vdc | 1kΩ or more |
| N | 0 to 5Vdc | 1kΩ or more |
| P | 0 to 10Vdc | 2kΩ or more |
| S *1 | Contact us for other than the above　Current output 20mA or less　Voltage output 10V or less | |

| Code | Output 1 | Allowable Load Resistance |
|---|---|---|
| A | 4 to 20mAdc | 750Ω or less |
| B | 1 to 5mAdc | 3kΩ or less |
| D | 0 to 1mAdc | 15kΩ or less |
| E | 0 to 10mAdc | 1.5kΩ or less |
| G | 0 to 20mAdc | 750Ω or less |
| H | 1 to 5Vdc | 1kΩ or more |
| J | 0 to 10mVdc | 10kΩ or more |
| K | 0 to 100mVdc | 100kΩ or more |
| L | 0 to 1Vdc | 1kΩ or more |
| N | 0 to 5Vdc | 1kΩ or more |
| P | 0 to 10Vdc | 2kΩ or more |
| S *1 | Contact us for other than the above　Current output 20mA or less　Voltage output 10V or less | |

＊1・・・CE approval do not adapt input range code 99 and output range code S.
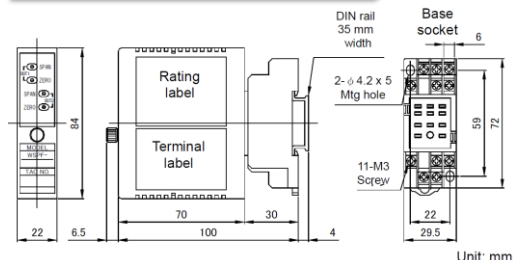＊2・・・CE approval do not adapt when power supply is 10.8Vdc to 30Vdc.

## Specifications

| | |
|---|---|
| Accuracy | ±0.2% FS (at 23±10°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 *1µA or less if the output is less than 1V |
| Zero & span adjustment | ±10% FS (15 turn trimmer) |
| Operating temperature | -5 to +55°C |
| Operating relative humidity | 90% or less (Non-condensing) |
| Temperature coefficient | ±0.015% of span per °C |
| Cold junction compensation accuracy | ±0.5°C or less at　23±10°C （±1°C　or less for R, WR and S) |
| Cold junction compensation temperature | 10 to 40°C　*R, S, WR thermocouple : ±1°C |
| Linearization | Available (30% FS or less of R and W is out of range) |
| Burnout protection | Upscale / downscale　*Please specify when you order for downscale |
| Isolation | Between input, output, and power supply |
| Insulation resistance | 100MΩ or more with 500Vdc megger<br>Between input, output, and power supply terminal |
| Dielectric strength | 3000Vac for 1 min between power supply and  input/output terminal,<br>2000Vac for 1 min between input and output terminal |
| Power consumption | Approx. 5.6VA (AC), Approx. 90mA (DC) |
| Power supply variation | ±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, EN50581<br>Installation category : II, Pollution degree : 2 |
| Rated altitude | 2000m or less |

## Terminal connections



| No | Symbol | | Description |
|---|---|---|---|
| 1 | INPUT | + | Input |
| 2 | OUTPUT-2 | + | No.2 Output |
| 3 | INPUT | - | Input |
| 4 | CJC | | Cold junction compensation |
| 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 |

## Demensions



Unit: mm

＊ Specification is subject to change without notice