## ■ PLUG-IN 2-OUTPUT TYPE Signal/Sensor/AC transducer

| Product | Type code | Outlines | Withstand voltage |
|---|---|---|---|
| Isolator | WTP2 -□□□□ | Converts a DC input signal into a unified signal which was isolated. | AC2000V |
| Distributor | WDTP2 -C7□□□ | Supplies electric power to a 2-wire transmitter and converts signal from the transmitter into a proportional DC signal. | AC2000V |
| Distributor with square root extraction | WSRDTP2-C7□□□ | Supplies electric power to a 2-wire transmitter and converts signal from the transmitter into a DC signal which was proportional to the square root of the signal. | AC2000V |
| Thermoelectric temperature transducer | WHTP2 -□□□□□ | Converts thermal electromotive force of a thermocouple into a DC signal which was proportional to temperature. | AC2000V |
| Resistance temperature transducer | WRHTP2-□□□□□ | Converts resistance of a 3-wire thermal resistance into a DC signal which was proportional to temperature. | AC2000V |
| Potentiometer transducer | WRTP2 -Z□□□ | Outputs a DC signal which was proportional to resistance of a potentiometer. | AC2000V |
| AC current transducer | WAETP2 -□□□□ | Outputs a DC signal which was proportional to RMS value of an AC current input. | AC2000V |
| AC voltage transducer | WVETP2 -□□□□ | Outputs a DC signal which was proportional to RMS value of an AC voltage input. | AC2000V |
| Frequency transducer | WFTP2 -□□□□□ | Outputs a DC signal which was proportional to frequency. | AC2000V |

## ■ Soft spec type

| Product | Type code | Outlines | Withstand voltage |
|---|---|---|---|
| Adding/subtracting transducer | CADTP1 -□□□ | Does adding and subtracting of three inputs, and then outputs a DC signal equivalent to the value. Parameters can be changed by CCM-1. | AC1500V |
| Multiplying/dividing transducer | CMLTP1 -□□□ | Does multiplication and division of three inputs, and then outputs a DC signal equivalent to the value. Parameters can be changed by CCM-1. | AC1500V |
| Temperature/pressure correcting transducer | CLTP1 -□□□ | Processes temperature/pressure condition and converts it into a DC signal which was proportional to flow rate. Parameters can be changed by CCM-1. | AC1500V |
| Function generating transducer | CFGTP1 -□□□ | Does broken line operation of a DC input 15 polygonal lines maximum. Parameters can be changed by CCM-1 | AC1500V |
| Analog backup transducer | CAMTP1 -□ □□ | Provides output with a backup when a computer or a PID controller was down. Follow-up movement and output backup are settable by CCM-1. | AC1500V |
| Voltage pulse transducer | CVFTP1 -□□□ | Outputs a pulse of frequency which was proportional to a DC input. Pulse frequency, pulse width and output cut against a low input are settable by CCM-1. | AC1500V |

## ■ Alarm setter

| Product | Type code | Outlines | Withstand voltage |
|---|---|---|---|
| Alarm setter (digital % scale) | SDD-□-105□-□ □ | Compares a preset value of digital % scale with a direct input signal, and outputs a contact signal. | AC1500V |
| Alarm setter (actual scale) | SD-□-105□- □ □ | Compares value of an actual scale setter with a direct input signal, and outputs a contact signal. | AC1500V |
| Alarm setter (LCD) | SDLC-105- □ □ | Compares a preset value with a direct input signal, and then outputs a contact signal. 4 digit LCD indication. Actual scale indication is settable. | AC2000V |
| Deviation alarm setter (LCD) | SDDV-105- □ □ | Compares deviation between two DC signal inputs and deviation of each input with a preset value, and then outputs a contact signal. | AC2000V |
| AC voltage alarm setter | SVD-□-105□-□□ | Inputs AC voltage and outputs a contact signal | AC2000V |

## ■Common standard specifications

### ●High quality/high reliability

Highly reliable electronic parts are adopted.
Aging tests of each part as well as burn-in aging test of the product under a high temperature are implemented.

### ●PCB treatment

In order to reinforce insulation resistance stability of PCB surfaces and prevent the surfaces from insulation deterioration, B side of the PCB was cleaned and coated with high humidity resistant varnish after parts installation.

### ●Output limiter circuit

Even if an excessive input is applied, the product confines the output to about 1.5 times of rating and protects the output side equipments.

| Item | Specification | |
|---|---|---|
| Tolerance | % against output span | |
| Influence of temperature | 23±10℃ tolerance % | |
| Influence of frequency | 45-65Hz tolerance % (Reference) IEC, rated Hz±10% tolerance % | |
| Characteristics | In conformity with JIS C 1111-1989 in tolerance | |
| Response time | Time it takes to fall within ±1% of the final steady-state when applied a stepped input.<br>Standard : ≦1.0. sec. (Insulation transducer only: ≦0.5 sec.) | |
| Output ripple | ≦1%p-p against output span | |
| External adjustment of output | ±5% adjustable | |
| Auxiliary supply | AC100V or AC200V ±10% (50, 60Hz) (DC100/110V is manufacturable only for TP2) | |
| Overvoltage | Input | 2 times (10 sec.), 1.2 times (continuity) of rated voltage |
| | Aux.supply | 1.5 times (10 sec.), 1.1 times (continuity) of rated voltage |
| Over current | AC transducer | 40 times (1 sec.), 20 times (4 sec.) 10 times (16 sec.),<br>1, 2 times (continuity) of rated current |
| | Signal transducer | 10 times (5 sec.) |
| Insulation resistance | Between input terminal, output terminal, (auxiliary supply terminal) and outer case (earth)<br>≧50MΩ at DC500V. Non-insulation type: input terminal and output terminal conducted. | |
| Material of outer case | Fire-retardant ABS resin | |
| Appearance color | Outer case | Black (N 1.5) |
| | Rating plate | Dark blue (5PB 2/6) |
| Operating temperature/ humidity range | -10-＋55℃, 30-85%RH | |
| Storage temperature range | -40-＋70℃ | |

## ■Type code designation

### 1 output type

### ●Signal transducer

(1) P (2) – (3) (4) (5)

(1) Product (kind of conversion)

| Mark | Product (kind of conversion) | Mark | Product (kind of conversion) |
|---|---|---|---|
| T | Isolator | CRT | Constant response (constant speed response) |
| HST | Ultrahigh speed isolator | AMT | Analog memory |
| DT | Distributor | T***L | Isolator with lower limiter |
| LT | Linearizer | RVT | Reverse isolator |
| SQT | Square | VFT | Analog pulse |
| SRT | Square root extraction | R | Signal switch |
| MT | Multiplying | UGT | Ultraslow pulse |
| DIT | Dividing | PRT | Pulse rate |
| ALT | Analog limiter | PPT | Pulse isolator (2-output) |
| ADT | Adding | | |

(2) Dielectric strength voltage

| Mark | Dielectric strength voltage (50/60Hz) |
|---|---|
| None | Non-insulation |
| 1 | AC1,500V between input/output, for 1 min. |
| 2 | AC2,000V between input/output, for 1 min. |

(3) / (4) / (5) Specification code

Input/output/auxiliary supply

## ●Sensor transducer

(1) TP (2) – (3) (4) (5)

(1) Product (kind of input)

| Mark | Product (kind of input) |
|---|---|
| H | Thermoelectric temperature |
| RH | Resistance temperature |
| R | Potentiometer |
| G | Revolution-speed (Frequency proportion) |
| GV | Revolution-speed (Voltage proportion) |
| S | Selsyn |
| SH | Thermoelectric alarm |
| SRH | Platinum alarm |

(2) Dielectric strength voltage

| Mark | Dielectric strength voltage (50/60Hz) |
|---|---|
| 1 | AC1,500V between input/output, for 1 min. |
| 2 | AC2,000V between input/output, for 1 min. |

(3) / (4) / (5) Specification code

| |
|---|
| Kind of thermocouple, input, output, power source |
| Kind of thermal resistance, input, output, power source |
| Input, output, power |
| Input, normal operating voltage, output, power source |

## ●AC transducer

(1) P2 – (2) (3) (4)

(1) Product (kind of input)

| Mark | Product (kind of input) |
|---|---|
| V | AC voltage (with waveform compensation, load fixation, need no power source) |
| VT | AC voltage (with waveform compensation, need no power source) |
| VET | AC voltage (RMS value) |
| A | AC current (with waveform compensation, load fixation, need no power source) |
| AT | AC current (with waveform compensation, need no power source) |
| AET | AC current (RMS value) |
| FT | Frequency |

Dielectric strength voltage

AC2,000V(50/60Hz) between input/output, for 1 min.

(2) / (3) / (4) Specification code

Input, output, power

## ●DC power transducer

DWP1 – (1) (2) (3) (4) (5)

Dielectric strength voltage

AC1,500V(50/60Hz) between input/output, for 1 min.

(1) / (2) / (3) / (4) / (5) Specification code

Electric power, input 1, input 2, output, power source

## 2-output type

### ●Signal transducer

W (1) P (2) – (3) (4) (5) (6)

(1)Product (kind of conversion)

| Mark | Product (kind of conversion) |
|---|---|
| T | Isolator |
| DT | Distributor |
| SRDT | Square root extraction distributor |

(2) Dielectric strength voltage

| Mark | Dielectric strength voltage (50/60Hz) |
|---|---|
| 2 | AC2,000V between input/output, for 1 min. |

(3) / (4) / (5) / (6) Specification code

| Input, output, power source |
|---|

### ●Sensor transducer

W (1) P (2) - (3) (4) (5) (6) (7)

(1)Product (kind of input)

| Mark | Product (kind of input) |
|---|---|
| HT | Thermoelectric temperature |
| RHT | Resistance temperature |
| RT | Potentiometer |

(3) / (4) / (5) / (6) / (7) Specification code

| Kind of thermocouple, input, output, power source |
|---|
| Kind of thermal resistance, input, output, power source |
| Input, output, power |
| Input, normal operating voltage, output, power source |

(2)Dielectric strength voltage

| Mark | Dielectric strength voltage (50/60Hz) |
|---|---|
| 2 | AC2,000V between input/output, for 1 min. |

### ●AC transducer

W (1) P (2) – (3) (4) (5) (6) (7)

(1)Product (kind of input)

| Mark | Product (kind of conversion) |
|---|---|
| VET | AC voltage (RMS value) |
| AET | AC current (RMS value) |
| FT | Frequency |

(2) Dielectric strength voltage

| Mark | Dielectric strength voltage (50/60Hz) |
|---|---|
| 2 | AC2,000V between input/output, for 1 min. |

(3) / (4) / (5) / (6) / (7) Specification code

| Input, rated voltage (current), output, power source |
|---|

## Soft spec. type

### ●Signal transducer

C (1) P (2) – (3) (4) (5)

(1)Product (kind of conversion)

| Mark | Product (kind of conversion) |
|---|---|
| ADT | Adding/subtracting |
| MLT | Multiplying/dividing |
| LT | Temperature/pressure correction |
| FGT | Function generating |
| AMT | Analog backup |
| VFT | Voltage pulse |

(2) Dielectric strength voltage

| Mark | Dielectric strength voltage (50/60Hz) |
|---|---|
| 1 | AC1,500V between input/output, for 1 min. |

(3) / (4) / (5) Specification code

| Input, output, power source |
|---|

### ●Programming unit

CCM-1

## ■Common standard specifications

### ●High quality/high reliability

Highly reliable electronic parts are adopted.
Aging tests of each part as well as burn-in aging test of the product under a high temperature are implemented.

### ●PCB treatment

In order to reinforce insulation resistance stability of PCB surfaces and prevent the surfaces from insulation deterioration, B side of the PCB was cleaned and coated with high humidity resistant varnish after parts installation.

### ●Output limiter circuit

Even if an excessive input is applied, the product confines the output to about 1.5 times of rating and protects the output side equipments.

## ■Type code designation

### ●Signal transducer

W (1) P (2) — (3) (4) (5) (6)

(1) Product (kind of conversion)

| mark | product |
|---|---|
| T | isolator |
| DT | distributor |
| SRDT | Distributor with square root extraction |

(2)Dielectric strength voltage

| mark | Dielectric strength voltage |
|---|---|
| 2 | AC2,000V between input and output |

(3)～(6)

| |
|---|
| (3) input |
| (4) 1st output |
| (5) 2nd output |
| (6) auxiliary supply |

### ●Sensor transducer

W (1) P (2) — (3) (4) (5) (6) (7)

(1) Product (kind of conversion)

| mark | product |
|---|---|
| HT | Thermoelectric temperature |
| RHT | Resistance temperature |
| RT | Potentiometer |

(2)Dielectric strength voltage

| mark | Dielectric strength voltage |
|---|---|
| 2 | AC2,000V between input and output |

(3)～(7)

| |
|---|
| (3) Kind of thermocouple/ thermal resistance |
| (4) input |
| (5) 1st output |
| (6) 2nd output |
| (7) auxiliary supply |
| Potentiometer does not need above mentioned (3). They consist of (4)-(7) |

### ●AC transducer

W (1) P (2) — (3) (4) (5) (6) (7)

(1) Product (kind of conversion)

| mark | product |
|---|---|
| AET | AC current |
| VET | AC voltage |
| FT | Frequency |

(2)Dielectric strength voltage

| mark | Dielectric strength voltage |
|---|---|
| 2 | AC2,000V between input and output |

(3)～(7)

| |
|---|
| (3) input |
| (4) rated voltage |
| (5) 1st output |
| (6) 2nd output |
| (7) auxiliary supply |
| AC current/voltage does not need above mentioned (4). They consist of (3).(5)-(7) |

## ■Standard specifications

| Item | Specification | | |
|---|---|---|---|
| Tolerance | % against output span | | |
| Influence of temperature | 23±10℃ tolerance % | | |
| Influence of frequency | 45-65Hz tolerance % (Reference) IEC, rated Hz±10% tolerance % | | |
| Characteristics | In conformity with JIS C 1111-1989 in tolerance | | |
| Response time | Standard ≦1 sec. (Signal transducer and AC transducer ≦0.5 sec.) Time it takes to fall within ±1% of the final steady-state when applied a stepped input. | | |
| Output ripple | ≦1%p-p against output span | | |
| External adjustment of output | ±5% adjustable | | |
| Auxiliary supply | Depends on individual specifications. | | |
| Overvoltage | input | 2 times (10 sec.), 1.2 times (continuity) of rated voltage | |
| | Aux.supply | 1.5 times (10 sec.), 1.2 times (continuity) of rated voltage | |
| Over current | AC transducer | 20 times (1 sec.), 1, 2 times (continuity) of rated current | |
| | Signal transducer | 10 times (5 sec.), 1, 2 times (continuity) | |
| Insulation resistance | Between input terminal, output terminal, auxiliary supply terminal and outer case (earth) ≧50MΩ at DC500V | | |
| Material of outer case | Fire-retardant ABS resin | | |
| Appearance color | Outer case | Black (N 1.5) | |
| | Rating plate | Dark blue (5PB 2/6) | |
| Operating temperature/ humidity rang | -10-＋55℃, 5-90%RH (no condensation) | | |
| Storage temperature range | -40-＋70℃ | | |

ISOLATOR

WTP2 - □□□□


**WTP2-C7H51**
(80×50×133mm/500g)

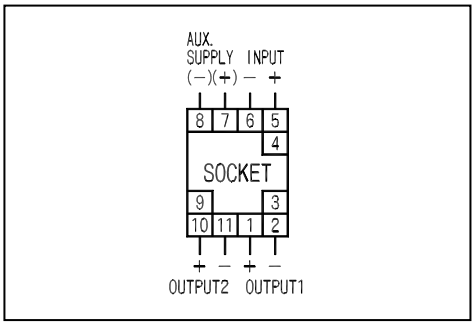
## ■ Use

Amplifies various kinds of DC signals and converts them into a unified intersystem signal. With input and output insulated, the product offers full advantages in transmitting insulated signals between measuring systems, cutoff of noise, protecting a control circuit from a sneak current, and transmitting an output directly to a distant place.

## ■ Features

1. Constant voltage/current output
2. Withstand voltage between input, output, auxiliary supply and outer case (earth) is AC2, 000V (50/60Hz), complete insulation for 1 minute.
3. Withstand voltage between 1st and 2nd output is AC1, 000V.
4. Impulse withstands voltage 5kV, 1.2/50μs (between electric circuit and outer case), and positive/negative polarity 3 times each is guaranteed.

## ■ Connection diagram




## ■ Specification

| Input (input resistance or voltage drop) | | 1st Output (load resistance) | 2nd Output (load resistance) | Auxiliary supply | Common specification |
|---|---|---|---|---|---|
| A1 : DC0-10mV (approx.1MΩ)<br>A2 : DC0-50mV (approx.1MΩ)<br>A3 : DC0-60mV (approx.1MΩ)<br>A4 : DC0-100mV (approx.1MΩ)<br>A5 : DC0-1V (approx.1MΩ)<br>A6 : DC0-5V (approx.1MΩ)<br>A7 : DC0-10V (approx.1MΩ)<br>A8 : DC1-5V (approx.1MΩ)<br>B1 : DC±10mV (approx.1MΩ)<br>B2 : DC±50mV (approx.1MΩ)<br>B3 : DC±60mV (approx.1MΩ)<br>B4 : DC±100mV (approx.1MΩ)<br>B5 : DC±1V (approx.1MΩ)<br>B6 : DC±5V (approx.1MΩ)<br>B7 : DC±10V (approx.1MΩ) | C1 : DC0-10μA (100mV) *1<br>C2 : DC0-100μA (100mV)<br>C3 : DC0-1mA (approx.100Ω)<br>C4 : DC0-5mA (approx.100Ω)<br>C5 : DC0-10mA (approx.100Ω)<br>C6 : DC0-16mA (approx.100Ω)<br>C7 : DC4-20mA (approx.100Ω)<br>D1 : DC±10μA (±100mV)*1<br>D2 : DC±100μA (±100mV)<br>D3 : DC±500μA (±100mV)<br>D4 : DC±1mA (approx.100Ω)<br>D5 : DC±5mA (approx.100Ω)<br>D6 : DC±10mA (approx.100Ω)<br>00 : other than those above<br>MAX 300V, 100mA | 1 : DC0-100mV(≧200Ω)<br>2 : DC0-1V (≧200Ω)<br>3 : DC0-5V (≧1kΩ)<br>4 : DC 0-10V (≧2kΩ)<br>5 : DC1-5V (≧1kΩ)<br>A : DC0-1mA (≦12kΩ)<br>B : DC0-5mA (≦2.4kΩ)<br>C : DC0-10mA (≦1.2kΩ)<br>D : DC0-16mA (≦750Ω)<br>E : DC1-5mA (≦2.4kΩ)<br>F : DC4-20mA (≦600Ω)<br>0 : other than those above<br>H : DC4-20mA(≦800Ω) DC1-5V(≧250kΩ) With output switching function | 1 : DC0-100mV(≧200Ω)<br>2 : DC0-1V (≧200Ω)<br>3 : DC0-5V (≧1kΩ)<br>4 : DC 0-10V (≧2kΩ)<br>5 : DC1-5V (≧1kΩ)<br>A : DC0-1mA (≦7kΩ)<br>B : DC0-5mA (≦1.4kΩ)<br>C : DC0-10mA (≦700Ω)<br>D : DC0-16mA (≦430Ω)<br>E : DC1-5mA (≦1.4kΩ)<br>F : DC4-20mA (≦350Ω)<br>0 : other than those above<br>5 : DC1-5V (≧1kΩ) | 1 : AC100V±10%, 50/60Hz<br>2 : AC110V±10%, 50/60Hz<br>3 : AC200V±10%, 50/60Hz<br>4 : AC220V±10%, 50/60Hz<br>5 : DC24V±10%<br>0 : other than those above<br>1 : AC100V+10%, -15%, 50/60Hz<br>2 : AC110V+10%, -15%, 50/60Hz<br>3 : AC200V+10%, -15%, 50/60Hz<br>4 : AC220V+10%, -15%, 50/60Hz<br>5 : DC24V+10%, -15%, | Tolerance: ±0.25% *2<br>Response time: ≦0.25sec./90%<br>Consumption VA:<br>AC power source:3VA<br>DC power source:3.5W<br>Weight:<br>AC power source:500g<br>DC power source:400g |

*1. Circuit voltage ≦15V for an input of 10μA. *2. Tolerance becomes ±0.5% when input voltage is less than 50mV; input current is less than 100μA.

● Open of current output: even if the current output terminal is used in a state of regular open, there is no problem. Also, a voltage of approx. 25V occurs on the output terminal.

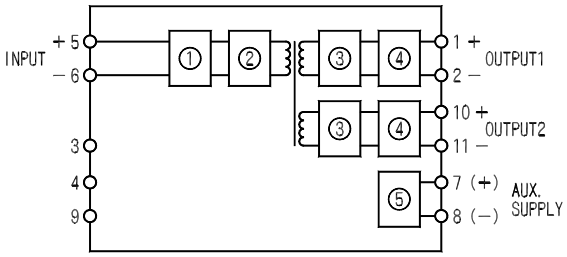
● Built-in ripple filter

Even if a ripple of single-phase AC full rectification wave (50/60Hz) degree is included in input wave, it still converts the wave into a smoothed DC signal. Please consult with us for special wave patterns such as an inverter.

● UR-1 precise resistance unit (selling separately)

Please use a UR-1 combined with an isolator of voltage input. When changing the isolator in a hot line state at the time of current input, if measures against open are necessary, connect UR-1 to socket and convert it into a voltage signal before using it. (UR-1, the resistance specified)

## ■ Block diagram




①Low-drift amplifying circuit
②Pulse width modulation circuit
③Pulse width demodulation circuit
④Output circuit
⑤Insulated power source circuit

## ■ Purchase specifications

●Item to specify

Type

WTP2 - C 7 H 5 1

Input
1st Output
2nd Output
Auxiliary supply

DISTRIBUTOR

WDTP2 – C 7 □□□


**WDTP2-C7H51**
(80×50×133mm/450g)

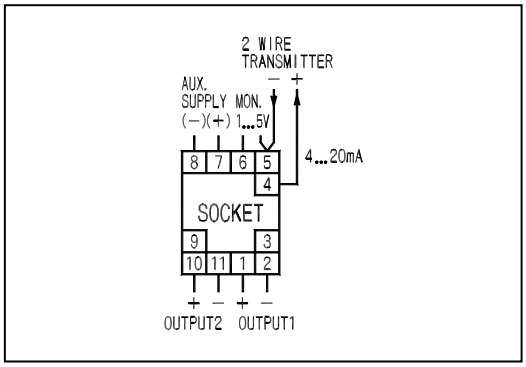
## ■ Use

Supplies electrical power to a 2-wire transmitter receives a DC4-20mA signal from the transmitter and outputs a proportional DC signal.

## ■ Features

1. Equipped with functions both of a distributor and a signal exchanger, the transducer is for a 2-wire transmitter's use.
2. Short-circuit protection function for transmitter circuit (≦30mA) .
3. Supplies a 2-wire transmitter with a stable power source.
4. Withstand voltage between 1st output and 2nd output is AC1, 000V.
5. Impulse withstands voltage 5kV, 1.2/50μs (between electric circuit and outer case) positive/ negative polarity 3 times each is guaranteed.
6. DC1-5V (±0.1%) monitoring of the DC4-20mA signal from the transmitter can be done by the terminal No. 5 and No. 6 of the device.

## ■ Connection diagram




## ■ Specification

| Input (input resistance) | 1st Output (load resistance) | 2nd Output (load resistance) | Auxiliary supply | Common specification |
|---|---|---|---|---|
| C7:DC4-20mA (250Ω±0.1%) | 1 : DC0-100mV(≧200Ω)<br>2 : DC0-1V (≧200Ω)<br>3 : DC0-5V (≧1kΩ)<br>4 : DC 0-10V (≧2kΩ)<br>5 : DC1-5V (≧1kΩ)<br>A : DC0-1mA (≦12kΩ)<br>B : DC0-5mA (≦2.4kΩ)<br>C : DC0-10mA (≦1.2kΩ)<br>D : DC0-16mA (≦750Ω)<br>E : DC1-5mA (≦2.4kΩ)<br>F : DC4-20mA (≦600Ω)<br>0 : other than those above | 1 : DC0-100mV (≧200Ω)<br>2 : DC0-1V (≧200Ω)<br>3 : DC0-5V (≧1kΩ)<br>4 : DC 0-10V (≧2kΩ)<br>5 : DC1-5V (≧1kΩ)<br>A : DC0-1mA (≦7kΩ)<br>B : DC0-5mA (≦1.4kΩ)<br>C : DC0-10mA (≦700Ω)<br>D : DC0-16mA (≦430Ω)<br>E : DC1-5mA (≦1.4kΩ)<br>F : DC4-20mA (≦350Ω)<br>0 : other than those above | 1 : AC100V±10%, 50/60Hz<br>2 : AC110V±10%, 50/60Hz<br>3 : AC200V±10%, 50/60Hz<br>4 : AC220V±10%, 50/60Hz<br>5 : DC24V±10%<br>0 : other than those above | 2-wire transmitter power source:<br>DC24-28V (when there is no load)<br>Current capacity: DC22mA MAX<br>Tolerance: ±0.25%<br>Response time: ≦0.25sec./90%<br>Consumption VA:<br>AC power source:4VA<br>DC power source:3.5W<br>Weight:<br>AC power source:450g<br>DC power source:350g |
| | H : DC4-20mA(≦800Ω)<br>DC1-5V(≧250kΩ)<br>With output switching function | 5 : DC1-5V (≧1kΩ) | 1 : AC100V+10%, -15%, 50/60Hz<br>2 : AC110V+10%, -15%, 50/60Hz<br>3 : AC200V+10%, -15%, 50/60Hz<br>4 : AC220V+10%, -15%, 50/60Hz<br>5 : DC24V+10%, -15%, | |

● Open of current output: even if the current output terminal is used in a state of regular open, there is no problem. Also, a voltage of approx. 25V occurs on the output terminal.

## ● Built-in ripple filter

Even if a ripple of single-phase AC full rectification wave (50/60Hz) degree is included in input wave, it still converts the wave into a smoothed DC signal.

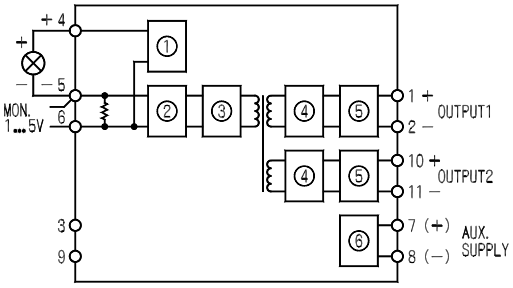
## ● Withstand voltage

Between input/output/power source : AC2, 000V for 1 min
Between electric circuit and outer case: AC2, 000V for 1 min
Between 1st and 2nd output : AC1, 000V for 1 min

● Insulation resistance

Between input/output/power source : ≧50MΩ (at DC500V)
Between electric circuit and outer case: ≧50MΩ (at DC500V)
Between 1st and 2nd output : ≧50MΩ (at DC500V)

■ Block diagram




①Power supply circuit
②Low-drift amplifying circuit
③Pulse width modulation circuit
④Pulse width demodulation circuit
⑤Output circuit
⑥Insulated power source circuit

■ Purchase specifications

●Item to specify Type

WDTP2 – C7 H 5 1

Input
1st Output
2nd Output
Auxiliary supply

DISTRIBUTOR WITH SQUARE ROOT EXTRACTION

WSRDTP2 – C 7 □□□

## ■ Use

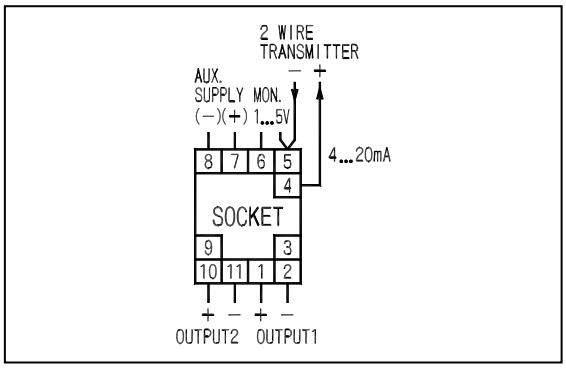
Supplies electrical power to a 2-wire transmitter receives a DC4-20mA signal from the transmitter and outputs a DC signal proportional to the square root of the signal.


**WSRDTP2-C7H51**
(80×50×133mm/450g)

## ■ Features

1. Equipped with functions both of a distributor and a signal exchanger, the transducer is for a 2-wire transmitter's use.
2. Short-circuit protection function for transmitter circuit (≦30mA) .
3. Supplies a 2-wire transmitter with a stable power source.
4. Withstand voltage between 1st output and 2nd output is AC1, 000V.
5. Impulse withstands voltage 5kV, 1.2/50μs (between electric circuit and outer case) positive/ negative polarity 3 times each is guaranteed.
6. Output under 10% shall be clamped at 0% output by a cut circuit.
7. DC1-5V (±0.1%) monitoring of the DC4-20mA signal from the transmitter can be done by the terminal No. 5 and No. 6 of the device.

## ■ Connection diagram




## ■ Specification

| Input (input resistance) | 1st Output (load resistance) | 2nd Output (load resistance) | Auxiliary supply | Common specification |
|---|---|---|---|---|
| C7:DC4-20mA (250Ω±0.1%) | 1 : DC0-100mV(≧200Ω)<br>2 : DC0-1V (≧200Ω)<br>3 : DC0-5V (≧1kΩ)<br>4 : DC 0-10V (≧2kΩ)<br>5 : DC1-5V (≧1kΩ)<br>A : DC0-1mA (≦12kΩ)<br>B : DC0-5mA (≦2.4kΩ)<br>C : DC0-10mA (≦1.2kΩ)<br>D : DC0-16mA (≦750Ω)<br>E : DC1-5mA (≦2.4kΩ)<br>F : DC4-20mA (≦600Ω)<br>0 : other than those above | 1 : DC0-100mV(≧200Ω)<br>2 : DC0-1V (≧200Ω)<br>3 : DC0-5V (≧1kΩ)<br>4 : DC 0-10V (≧2kΩ)<br>5 : DC1-5V (≧1kΩ)<br>A : DC0-1mA (≦7kΩ)<br>B : DC0-5mA (≦1.4kΩ)<br>C : DC0-10mA (≦700Ω)<br>D : DC0-16mA (≦430Ω)<br>E : DC1-5mA (≦1.4kΩ)<br>F : DC4-20mA (≦350Ω)<br>0 : other than those above | 1 : AC100V±10%, 50/60Hz<br>2 : AC110V±10%, 50/60Hz<br>3 : AC200V±10%, 50/60Hz<br>4 : AC220V±10%, 50/60Hz<br>5 : DC24V±10%<br>0 : other than those above | 2-wire transmitter power source:<br>DC24-28V (when there is no load)<br><br>Current capacity: DC22mA MAX<br>Tolerance: ±0.25%<br>Response time: ≦0.25sec./90%<br><br>Consumption VA:<br>AC power source:4VA<br>DC power source:3.5W<br><br>Weight:<br>AC power source:450g<br>DC power source:350g |
| | H : DC4-20mA(≦800Ω)<br>DC1-5V(≧250kΩ)<br>With output switching function | 5 : DC1-5V (≧1kΩ) | 1 : AC100V+10%, -15%, 50/60Hz<br>2 : AC110V+10%, -15%, 50/60Hz<br>3 : AC200V+10%, -15%, 50/60Hz<br>4 : AC220V+10%, -15%, 50/60Hz<br>5 : DC24V+10%, -15%, | |

● Open of current output: even if the current output terminal is used in a state of regular open, there is no problem. Also, a voltage of approx. 25V occurs on the output terminal.

## ● Built-in ripple filter

Even if a ripple of single-phase AC full rectification wave (50/60Hz) degree is included in input wave, it still converts the wave into a smoothed DC signal.

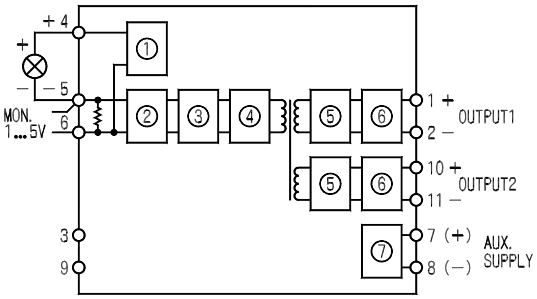
● Withstand voltage

Between input/output/power source : AC2, 000V for 1 min
Between electric circuit and outer case: AC2, 000V for 1 min
Between 1st and 2nd output : AC1, 000V for 1 min

● Insulation resistance

Between input/output/power source : ≧50MΩ (at DC500V)
Between electric circuit and outer case: ≧50MΩ (at DC500V)
Between 1st and 2nd output : ≧50MΩ (at DC500V)

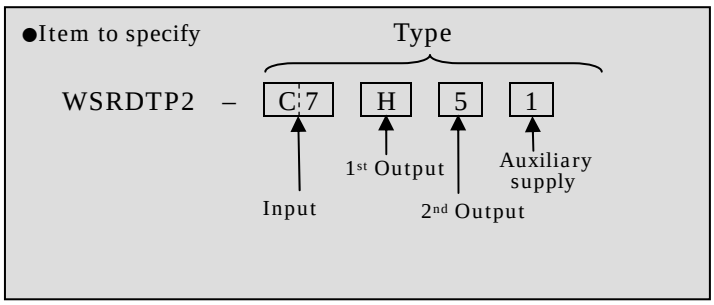
## ■ Block diagram




①Power supply circuit
②Low-drift amplifying circuit
③Square root extracting circuit
④Pulse width modulation circuit
⑤Pulse width demodulation circuit
⑥Output circuit
⑦Insulated power source circuit

## ■ Purchase specifications

●Item to specify



THERMOELECTRIC TEMPERATURE TRANSDUCER

WHTP2 – □□□□□

**WHTP2-J1H51**
(80×50×133mm/500g)

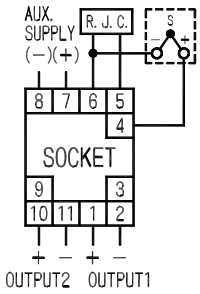
## ■ Use

By inputting thermal electromotive forces of various kinds of thermocouples based on the JIS, this device insulates and converts thermal electromotive forces into outputs proportional to temperature.

## ■ Features

1. Constant voltage/current output.
2. Withstand voltage between input, output, auxiliary supply and outer case is AC2, 000V (50/60Hz), complete insulation for 1 min..
3. Withstand voltage between 1st output and 2nd output is AC1, 000V.
4. Impulse withstands voltage 5kV, 1.2/50μs (between electric circuit and outer case) positive/ negative polarity 3 times each is guaranteed.

## ■ Connection diagram




## ■ Specification

| Kind of thermo-couple | Standard input range | Input | 1st Output (load resistance) | 2nd Output (load resistance) | Auxiliary supply | Common specification |
|---|---|---|---|---|---|---|
| B | 7 - 9 | 1 : 0-200℃<br>2 : 0-300℃<br>3 : 0-400℃<br>4 : 0-500℃<br>5 : 0-600℃<br>6 : 0-800℃<br>7 : 0-1,000℃<br>8 : 0-1,200℃<br>9 : 0-1,400℃<br>0 : other than those above | 1 : DC0-100mV(≧200Ω)<br>2 : DC0-1V (≧200Ω)<br>3 : DC0-5V (≧1kΩ)<br>4 : DC 0-10V (≧2kΩ)<br>5 : DC1-5V (≧1kΩ)<br>A : DC0-1mA (≧12kΩ)<br>B : DC0-5mA (≧2.4kΩ)<br>C : DC0-10mA (≧1.2kΩ)<br>D : DC0-16mA (≧750Ω)<br>E : DC1-5mA (≧2.4kΩ)<br>F : DC4-20mA (≧600Ω)<br>0 : other than those above | 1 : DC0-100mV (≧200Ω)<br>2 : DC0-1V (≧200Ω)<br>3 : DC0-5V (≧1kΩ)<br>4 : DC 0-10V (≧2kΩ)<br>5 : DC1-5V (≧1kΩ)<br>A : DC0-1mA (≧7kΩ)<br>B : DC0-5mA (≧1.4kΩ)<br>C : DC0-10mA (≧700Ω)<br>D : DC0-16mA (≧430Ω)<br>E : DC1-5mA (≧1.4kΩ)<br>F : DC4-20mA (≧350Ω)<br>0 : other than those above | 1 : AC100V±10%, 50/60Hz<br>2 : AC110V±10%, 50/60Hz<br>3 : AC200V±10%, 50/60Hz<br>4 : AC220V±10%, 50/60Hz<br>5 : DC24V±10%<br>0 : other than those above | Tolerance: ±0.5%<br>Response time:<br>≦0.5sec./90%<br>Consumption VA:<br>AC power source:3VA<br>DC power source:3.5W<br>Weight:<br>AC power source:500g<br>DC power source:400g |
| R | 7 - 9 | | | | | |
| S | 7 - 9 | | | | | |
| K | 2 - 8 | | | | | |
| E | 1 - 5 | | | | | |
| J | 1 - 5 | | | | | |
| T | 1 - 2 | | H : DC4-20mA(≦800Ω)<br>DC1-5V(≧200kΩ)<br>With output switching function | 5 : DC1-5V (≧1kΩ) | 1 : AC100V+10%, -15%, 50/60Hz<br>2 : AC110V+10%, -15%, 50/60Hz<br>3 : AC200V+10%, -15%, 50/60Hz<br>4 : AC220V+10%, -15%, 50/60Hz<br>5 : DC24V+10%, -15%, | |

● Open of current output: even if the current output terminal is used in a state of regular open, there is no problem. Also, a voltage of approx. 25V occurs on the output terminal.
● please consult with us for N thermocouple.

## ● Built-in linearizer

Thermal electromotive force of a thermocouple is not proportional to temperature. It is the linearizer that converts thermal electromotive force into an output proportional to temperature.

## ● Built-in burnout

The device detects disconnection of thermocouple and does scale-out of output to positive (+) side. Scale-out to negative (-) side is also manufacturable if specified.

● Built-in cold junction compensation

In principle, a thermocouple and compensating wire generate a thermal electromotive force equivalent to (T1℃) -V (T2℃) as Vin. A sensor for compensation RJC compensates for thermal electromotive force equivalent to V (T2℃) In addition, the sensor for compensation is connected to terminal part (5, 6), and compensates for the terminal temperature as the temperature of input terminal (4, 6).

● Compensating lead wire

A compensating lead wire compensates temperature difference between thermocouple terminals and transducer terminals. Because color (material) of compensating wire varies according to thermocouple type, choose a compensating lead wire in accordance with thermocouple. Match positive and negative polarities when connecting.

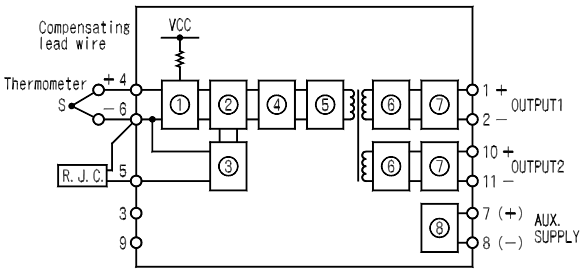
● External resistance range

An External resistance range is the resistance value of a reciprocating circuit which consists of thermocouple connected to the transducer, compensating wire, connecting wires and so on. Use the product within an external resistance range less than or equal to 500Ω reciprocally.

● Input wiring

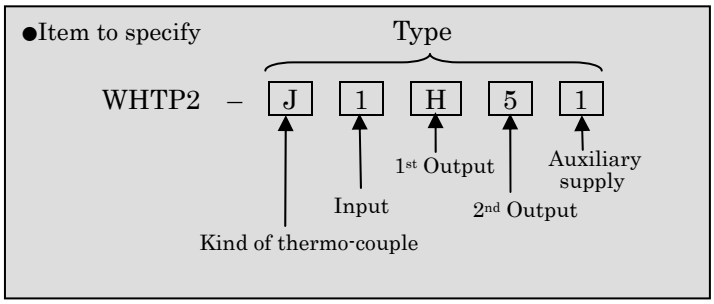
Because signal of input wiring is very weak, try to make the wirings away from noise sources such as an electrical power line, a precipitous voltage or a line with current fluctuation.

■ Block diagram




①Burnout detecting circuit
②High input resistance amplifying circuit
③Ambient temperature correction circuit
④Linearizer circuit
⑤Pulse width modulation circuit
⑥Pulse width demodulation circuit
⑦Output circuit
⑧Insulated power source circuit

■ Purchase specifications



RESISTANCE TEMPERATURE TRANSDUCER

WRHTP2 – □□□□□□

**WRHTP2-1A4H51**
(80×50×133mm/500g)

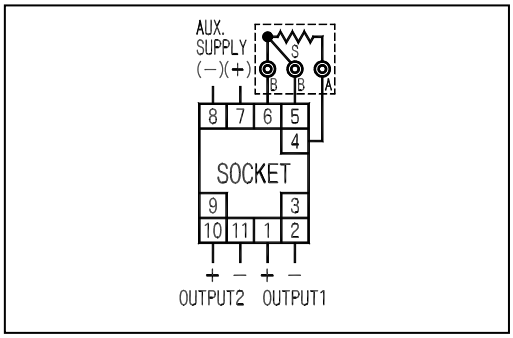
## ■ Use

By inputting resistance value of a 3-wire thermal resistance based on the JIS, this device insulates and converts the resistance value into a DC signal proportional to temperature.

## ■ Features

1. Constant voltage/current output.
2. Withstand voltage between input, output, auxiliary supply and outer case is AC2, 000V (50/60Hz), complete insulation for 1 min..
3. Withstand voltage between 1st output and 2nd output is AC1, 000V.
4. Impulse withstands voltage 5kV, 1.2/50μs (between electric circuit and outer case) positive/ negative polarity 3 times each is guaranteed.

## ■ Connection diagram




## ■ Specification

| Kind of resistance thermometer bulb | | Input* | | 1st Output (load resistance) | 2nd Output (load resistance) | Auxiliary supply | Common specification |
|---|---|---|---|---|---|---|---|
| 1:Pt, 100Ω at 0°C | Temperature span ≧50°C Specified current: 2mA | A1: 0-50°C | C5: -20-100°C | 1: DC0-100mV(≧200Ω) | 1: DC0-100mV (≧200Ω) | 1: AC100V±10%, 50/60Hz | Tolerance: ±0.5% |
| 2:Pt, 50Ω at 0°C | | A2: 0-60°C | C6: -20-120°C | 2: DC0-1V (≧200Ω) | 2: DC0-1V (≧200Ω) | 2: AC110V±10%, 50/60Hz | Response time: ≦0.5sec./90% |
| 3:Cu,100Ω at 0°C | | A3: 0-80°C | D1: -30-50°C | 3: DC0-5V (≧1kΩ) | 3: DC0-5V (≧1kΩ) | 3: AC200V±10%, 50/60Hz | Consumption VA: AC power source:3VA |
| 4:Cu,50Ω at 0°C | | A4: 0-100°C | D2: -30-60°C | 4: DC 0-10V (≧2kΩ) | 4: DC 0-10V (≧2kΩ) | 4: AC220V±10%, 50/60Hz | DC power source:3.5W |
| 0:other than those above | | A5: 0-120°C | D3: -30-80°C | 5: DC1-5V (≧1kΩ) | 5: DC1-5V (≧1kΩ) | 5: DC24V±10% | Weight: AC power source:500g |
| | | A6: 0-150°C | E1: -50-50°C | A: DC0-1mA (≦12kΩ) | A: DC0-1mA (≦7kΩ) | 0: other than those above | DC power source:400g |
| | | A7: 0-200°C | E2: -50-60°C | B: DC0-5mA (≦2.4kΩ) | B: DC0-5mA (≦1.4kΩ) | | |
| | | A8: 0-300°C | E3: -50-80°C | C: DC0-10mA(≦1.2kΩ) | C: DC0-10mA (≦700Ω) | | |
| | | B1: -10-40°C | E4: -50-100°C | D: DC0-16mA (≦750Ω) | D: DC0-16mA (≦430Ω) | | |
| | | B2: -10-50°C | E5: -50-120°C | E: DC1-5mA (≦2.4kΩ) | E: DC1-5mA (≦1.4kΩ) | | |
| | | B3: -10-60°C | E6: -50-150°C | F: DC4-20mA(≦600Ω) | F: DC4-20mA (≦350Ω) | | |
| | | C1: -20-40°C | F1: -70-30°C | 0: other than those above | 0: other than those above | | |
| | | C2: -20-50°C | F2: -70-80°C | | | | |
| | | C3: -20-60°C | G1: -100-100°C | H: DC4-20mA(≦800Ω) DC1-5V(≧250kΩ) With output switching function | 5: DC1-5V (≧1kΩ) | 1: AC100V+10%, -15%, 50/60Hz | |
| | | C4: -20-80°C | 00: other than those above | | | 2: AC110V+10%, -15%, 50/60Hz | |
| | | | | | | 3: AC200V+10%, -15%, 50/60Hz | |
| | | | | | | 4: AC220V+10%, -15%, 50/60Hz | |
| | | | | | | 5: DC24V+10%, -15%, | |

* Operating temperature range of thermal resistance: -200-＋650°C

● Open of current output: even if the current output terminal is used in a state of regular open, there is no problem. Also, a voltage of approx. 25V occurs on the output terminal.

## ● Built-in linearizer

Thermal electromotive force of a thermocouple is not proportional to temperature. It is the linearizer that converts thermal electromotive force into an output proportional to temperature.

● Built-in burnout

The device detects disconnection of thermocouple and does scale-out of output to positive (+) side. Scale-out to negative (-) side is also manufacturable if specified.

● Specified current

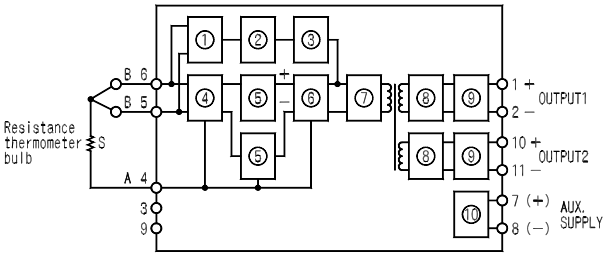
Specified current is a current flowing into a thermal resistance. Change of resistance value can be measured by voltage drop caused by the specified current. In the case of Pt, standard specified current is 2mA.

● Built-in external conducting wire resistance compensating circuit

External conducting wire resistance is the resistance value of a conducting wire excluding the resistance value of element S. As the influence of external conducting wire resistance, it does compensate when resistance values of all conducting wires are the same, but it becomes an error when resistance values of all conducting wires are different from each other. Generally, taking into consideration the variousness of conducting wires, use the product under ranges listed in the table below.

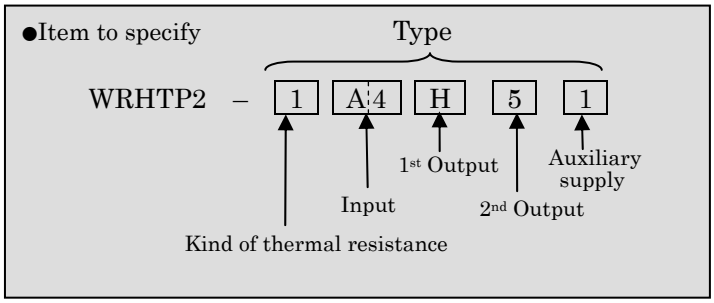
| Thermal resistance | External conducting wire resistance | |
|---|---|---|
| | Input span ≧100℃ | 50℃≦Input span < 100℃ |
| Pt 100Ω | ≦10Ω/line | ≦5Ω/line |
| Pt 50Ω | ≦5Ω/line | ≦2.5Ω/line |
| Cu 100Ω | ≦10Ω/line | ≦5Ω/line |
| Cu 50Ω | ≦5Ω/line | ≦2.5Ω/line |

■ Block diagram




①Constant current circuit (measuring current)
②Reference voltage circuit
③Linearity correction circuit
④Burnout detecting circuit
⑤High input resistance amplifying circuit
⑥Differential amplifying circuit
⑦Pulse width modulation circuit
⑧Pulse width demodulation circuit
⑨Output circuit
⑩Insulated power source circuit

■ Purchase specifications



POTENTIOMETER

WRTP2 – Z □□□

**WRTP2-ZH51**
(80×50×133mm/500g)

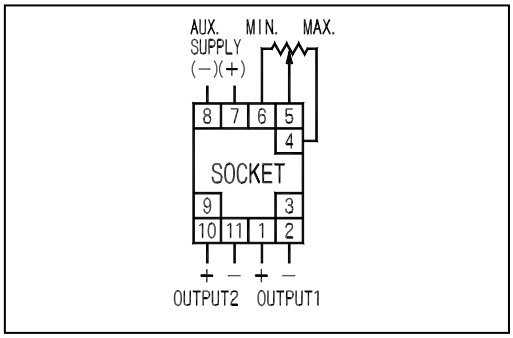
## ■ Use

This device replaces the mechanical displacement of an angle or a position by the resistance value change of the potentiometer, then insulates and converts it into a proportional DC signal.

## ■ Features

1. Can cope with resistance range 100Ω-10kΩ of the potentiometer.
2. Constant voltage/current output.
3. Withstand voltage between input, output, auxiliary supply and outer case is AC2, 000V (50/60Hz), complete insulation for 1 min..
4. Withstand voltage between 1st output and 2nd output is AC1, 000V.
5. Impulse withstands voltage 5kV, 1.2/50μs (between electric circuit and outer case) positive/ negative polarity 3 times each is guaranteed.

## ■ Connection diagram




## ■ Specification

| Nominal total resistance | External resistance | 1st Output (load resistance) | 2nd Output (load resistance) | Auxiliary supply | Common specification |
|---|---|---|---|---|---|
| 100Ω | Z: any value within 100Ω-10kΩ If a potentiometer is of the rang 100Ω-10kΩ, it can be used under the following adjustment ranges of output signal. | 1 : DC0-100mV (≧200Ω)<br>2 : DC0-1V (≧200Ω)<br>3 : DC0-5V (≧1kΩ)<br>4 : DC 0-10V (≧2kΩ)<br>5 : DC1-5V (≧1kΩ)<br>A : DC0-1mA (≦12kΩ)<br>B : DC0-5mA (≦2.4kΩ)<br>C : DC0-10mA (≦1.2kΩ)<br>D : DC0-16mA ≦(750Ω)<br>E : DC1-5mA (≦2.4kΩ)<br>F : DC4-20mA (≦600Ω)<br>0 : other than those above | 1 : DC0-100mV (≧200Ω)<br>2 : DC0-1V (≧200Ω)<br>3 : DC0-5V (≧1kΩ)<br>4 : DC 0-10V (≧2kΩ)<br>5 : DC1-5V (≧1kΩ)<br>A : DC0-1mA (≦7kΩ)<br>B : DC0-5mA (≦1.4kΩ)<br>C : DC0-10mA (≦700Ω)<br>D : DC0-16mA (≦430Ω)<br>E : DC1-5mA (≦1.4kΩ)<br>F : DC4-20mA (≦350Ω)<br>0 : other than those above | 1 : AC100V±10%, 50/60Hz<br>2 : AC110V±10%, 50/60Hz<br>3 : AC200V±10%, 50/60Hz<br>4 : AC220V±10%, 50/60Hz<br>5 : DC24V±10%<br>0 : other than those above | Tolerance: ±0.5%<br>Response time:<br>≦0.5sec./90%<br>Consumption VA:<br>AC power source:3VA<br>DC power source:3.5W<br>Weight:<br>AC power source:500g<br>DC power source:400g |
| 135Ω | | | | | |
| 200Ω | | | | | |
| 400Ω | | | | | |
| 500Ω | | | | | |
| 1kΩ | | | | | |
| 2kΩ | | | | | |
| 3kΩ | | H : DC4-20mA(≦800Ω)<br>DC1-5V(≧250kΩ)<br>With output switching function | 5 : DC1-5V (≧1kΩ) | 1 : AC100V+10%, -15%, 50/60Hz<br>2 : AC110V+10%, -15%, 50/60Hz<br>3 : AC200V+10%, -15%, 50/60Hz<br>4 : AC220V+10%, -15%, 50/60Hz<br>5 : DC24V+10%, -15%, | |
| 5kΩ | | | | | |
| 10kΩ | | | | | |

● Open of current output: even if the current output terminal is used in a state of regular open, there is no problem. Also, a voltage of approx. 25V occurs on the output terminal.

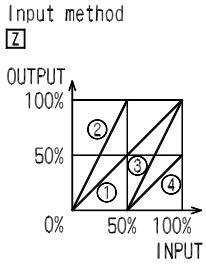
## ● Adjustment range of output signal

INPUT FORM Z

BIAS adjustment range: 0-50% of input span
(can be changed from the front of converter.)
MAX adjustment range: 50-100% of input span
(can be changed from the front of converter.)

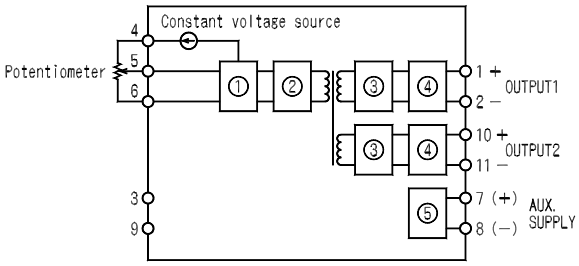
①BIAS……0%, MAX.……100% Standard
②BIAS……0%, MAX.……50%
③BIAS……50%, MAX.……50% (parallel shift of ②)
④BIAS……50%, MAX.……100% (parallel shift of ①)

*Being within 0-50% of input value is sufficient for adjusting the output value to zero.




● Because this device is potential-free, product is shipped in input of 0-10kΩ/output of above graph ① (standard) .

## ■ Block diagram




①Low-drift voltage amplifying circuit
②Pulse width modulation circuit
③Pulse width demodulation circuit
④Output circuit
⑤Insulated power source circuit

## ■ Purchase specifications

●Item to specify

Type

WRTP2 – Z H 5 1

Input
1st Output
2nd Output
Auxiliary supply

AC CURRENT TRANSDUCER

WAETP2 – □□□□

CONSTANT VOLTAGE/CURRENT OUTPUT RMS VALUE TYPE

**WAETP2-3H51**

(80×50×133mm/500g)

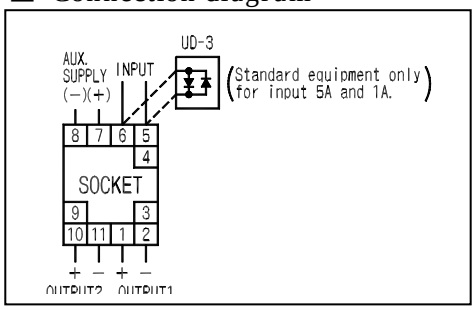
## ■ Use

This device converts an AC current in an electric power system into a DC signal in proportion to input.

## ■ Features

1. Constant voltage/current output.
2. Being a RMS type by adopting a hybrid IC, the device can be used for a distortion or a SCR waveform input.
3. Withstand voltage between input, output, auxiliary supply and outer case is AC2, 000V (50/60Hz), complete insulation for 1 min..
4. Withstand voltage between 1st output and 2nd output is AC1, 000V.
5. Impulse withstands voltage 5kV, 1.2/50μs (between electric circuit and outer case) positive/ negative polarity 3 times each is guaranteed.

## ■ Connection diagram




## ■ Specification

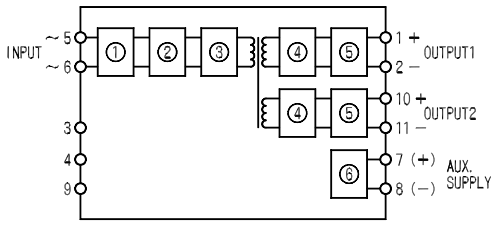
| Input | 1st Output (load resistance) | 2nd Output (load resistance) | Auxiliary supply | Common specification |
|---|---|---|---|---|
| 2: AC0-1A<br>3: AC0-5A<br>4: AC0-6A<br>0: other than those above<br>UD-3 is equipped as a standard for input 1A and 5A.<br><br>MAX 10A | 1: DC0-100mV(≧200Ω)<br>2: DC0-1V (≧200Ω)<br>3: DC0-5V (≧1kΩ)<br>4: DC 0-10V (≧2kΩ)<br>5: DC1-5V (≧1kΩ)<br>A: DC0-1mA (≦12kΩ)<br>B: DC0-5mA (≦2.4kΩ)<br>C: DC0-10mA(≦1.2kΩ)<br>D: DC0-16mA (≦750Ω)<br>E: DC1-5mA (≦2.4kΩ)<br>F: DC4-20mA(≦600Ω)<br>0: other than those above | 1: DC0-100mV (≧200Ω)<br>2: DC0-1V (≧200Ω)<br>3: DC0-5V (≧1kΩ)<br>4: DC 0-10V (≧2kΩ)<br>5: DC1-5V (≧1kΩ)<br>A: DC0-1mA (≦7kΩ)<br>B: DC0-5mA (≦1.4kΩ)<br>C: DC0-10mA (≦700Ω)<br>D: DC0-16mA (≦430Ω)<br>E: DC1-5mA (≦1.4kΩ)<br>F: DC4-20mA (≦350Ω)<br>0: other than those above | 1: AC100V±10%, 50/60Hz<br>2: AC110V±10%, 50/60Hz<br>3: AC200V±10%, 50/60Hz<br>4: AC220V±10%, 50/60Hz<br>5: DC24V±10%<br>0: other than those above | Tolerance: ±0.5%<br>Response time:<br>≦0.25sec./90%<br>Consumption VA:<br>Input: 0.1VA<br>AC power source:3VA<br>DC power source:3.5W<br>Weight:<br>AC power source:500g<br>DC power source:400g |
| | H: DC4-20mA(≦800Ω)<br>DC1-5V(≧250kΩ)<br>With output switching function | 5: DC1-5V (≧1kΩ) | 1: AC100V+10%, -15%, 50/60Hz<br>2: AC110V+10%, -15%, 50/60Hz<br>3: AC200V+10%, -15%, 50/60Hz<br>4: AC220V+10%, -15%, 50/60Hz<br>5: DC24V+10%, -15% | |

● Open of current output: even if the current output terminal is used in a state of regular open, there is no problem. Also, a voltage of approx. 25V occurs on the output terminal.

## ● UD-3 Diode unit (Standard equipment only for rating 5A and 1A)

A diode unit for protecting primary CT when changing a current transducer in a hot line state. Because exchange time is diode protecting method, please try to make the exchange time as short as possible.

## ■ Block diagram




①Insulated current transformer
②RMS converter circuit
③Pulse width modulation circuit
④Pulse width demodulation circuit
⑤Output circuit
⑥Insulated power source circuit

## ■ Purchase specifications

●Item to specify Type

WAETP2 – 3 H 5 1

Input / 1st Output / 2nd Output / Auxiliary supply

AC VOLTAGE TRANSDUCER

WVETP2 – □□□□

CONSTANT VOLTAGE/CURRENT OUTPUT RMS VALUE TYPE

**WVETP2-3H51**

(80×50×133mm/500g)

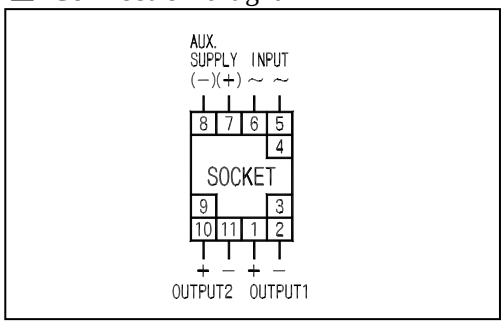
## ■ Use

This device converts an AC current in an electric power system into a DC signal in proportion to input.

## ■ Features

1. Constant voltage/current output.
2. Being a RMS type by adopting a hybrid IC, the device can be used for a distortion or a SCR waveform input.
3. Withstand voltage between input, output, auxiliary supply and outer case is AC2, 000V (50/60Hz), complete insulation for 1 min..
4. Withstand voltage between 1st output and 2nd output is AC1, 000V.
5. Impulse withstands voltage 5kV, 1.2/50μs (between electric circuit and outer case) positive/ negative polarity 3 times each is guaranteed.

## ■ Connection diagram

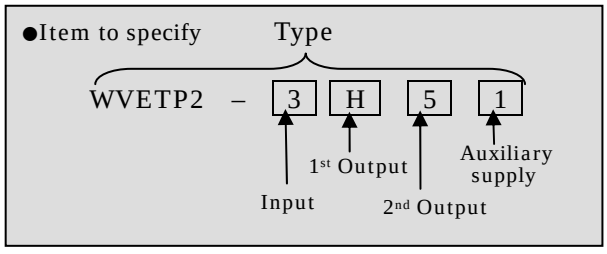



## ■ Specification

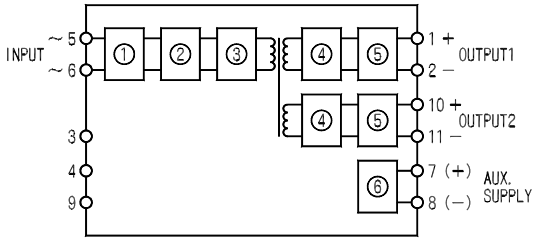
| Input | 1st Output (load resistance) | 2nd Output (load resistance) | Auxiliary supply | Common specification |
|---|---|---|---|---|
| 1: AC0-63.5V<br>2: AC0-86.6V<br>3: AC0-110V<br>4: AC0-127V<br>5: AC0-150V<br>6: AC0-173.2V<br>7: AC0-220V<br>8: AC0-300V<br>0: other than those above<br>UD-3 is equipped as a standard for input 1A and 5A.<br><br>MAX 300V | 1: DC0-100mV(≧200Ω)<br>2: DC0-1V (≧200Ω)<br>3: DC0-5V (≧1kΩ)<br>4: DC 0-10V (≧2kΩ)<br>5: DC1-5V (≧1kΩ)<br>A: DC0-1mA (≦12kΩ)<br>B: DC0-5mA (≦2.4kΩ)<br>C: DC0-10mA(≦1.2kΩ)<br>D: DC0-16mA (≦750Ω)<br>E: DC1-5mA (≦2.4kΩ)<br>F: DC4-20mA(≦600Ω)<br>0: other than those above | 1: DC0-100mV (≧200Ω)<br>2: DC0-1V (≧200Ω)<br>3: DC0-5V (≧1kΩ)<br>4: DC 0-10V (≧2kΩ)<br>5: DC1-5V (≧1kΩ)<br>A: DC0-1mA (≦7kΩ)<br>B: DC0-5mA (≦1.4kΩ)<br>C: DC0-10mA (≦700Ω)<br>D: DC0-16mA (≦430Ω)<br>E: DC1-5mA (≦1.4kΩ)<br>F: DC4-20mA (≦350Ω)<br>0: other than those above | 1: AC100V±10%, 50/60Hz<br>2: AC110V±10%, 50/60Hz<br>3: AC200V±10%, 50/60Hz<br>4: AC220V±10%, 50/60Hz<br>5: DC24V±10%<br>0: other than those above | Tolerance: ±0.5%<br>Response time:<br>≦0.25sec./90%<br>Consumption VA:<br>Input: 0.5VA<br>AC power source:3VA<br>DC power source:3.5W<br>Weight:<br>AC power source:500g<br>DC power source:400g |
| | H: DC4-20mA(≦800Ω)<br>DC1-5V(≧250kΩ)<br>With output switching function | 5: DC1-5V (≧1kΩ) | 1: AC100V+10%, -15%, 50/60Hz<br>2: AC110V+10%, -15%, 50/60Hz<br>3: AC200V+10%, -15%, 50/60Hz<br>4: AC220V+10%, -15%, 50/60Hz<br>5: DC24V+10%, -15% | |

● Open of current output: even if the current output terminal is used in a state of regular open, there is no problem. Also, a voltage of approx. 25V occurs on the output terminal.

## ■ Purchase specifications




## ■ Block diagram




①Insulated current transformer
②RMS converter circuit
③Pulse width modulation circuit
④Pulse width demodulation circuit
⑤Output circuit
⑥Insulated power source circuit

FREQUENCY TRANSDUCER

WFTP2 – □□□□□

CONSTANT VOLTAGE/CURRENT OUTPUT TYPE

**WFTP2-31H51**

(80×50×133mm/50

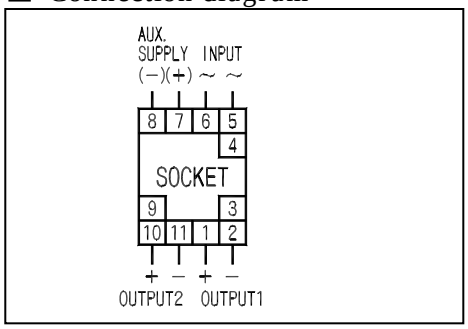
## ■ Use

This device converts frequency in an electric power system into a DC signal in proportion to input.

## ■ Features

1. Constant voltage/current output.
2. Withstand voltage between input, output, auxiliary supply and outer case is AC2, 000V (50/60Hz), complete insulation for 1 min..
3. Withstand voltage between 1st output and 2nd output is AC1, 000V.
4. Impulse withstands voltage 5kV, 1.2/50μs (between electric circuit and outer case) positive/ negative polarity 3 times each is guaranteed.

## ■ Connection diagram

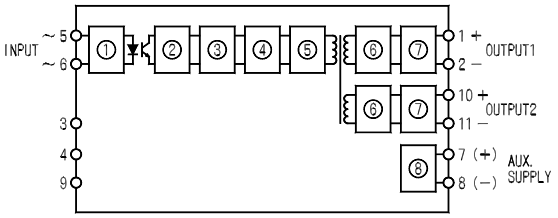



## ■ Specification

| Input | Rating voltage | 1st Output (load resistance) | 2nd Output (load resistance) | Auxiliary supply | Common specification |
|---|---|---|---|---|---|
| 1:45-55Hz<br>2:55-65Hz<br>3:45-65Hz<br>0:other than those above | 1:AC110V ±10%<br>2:AC220V ±10%<br>0:other than those above | 1: DC0-100mV(≧200Ω)<br>2: DC0-1V (≧200Ω)<br>3: DC0-5V (≧1kΩ)<br>4: DC 0-10V (≧2kΩ)<br>5: DC1-5V (≧1kΩ)<br>A: DC0-1mA (≦12kΩ)<br>B: DC0-5mA (≦2.4kΩ)<br>C: DC0-10mA(≦1.2kΩ)<br>D: DC0-16mA (≦750Ω)<br>E: DC1-5mA (≦2.4kΩ)<br>F: DC4-20mA(≦600Ω)<br>0: other than those above | 1: DC0-100mV (≧200Ω)<br>2: DC0-1V (≧200Ω)<br>3: DC0-5V (≧1kΩ)<br>4: DC 0-10V (≧2kΩ)<br>5: DC1-5V (≧1kΩ)<br>A: DC0-1mA (≦7kΩ)<br>B: DC0-5mA (≦1.4kΩ)<br>C: DC0-10mA (≦700Ω)<br>D: DC0-16mA (≦430Ω)<br>E: DC1-5mA (≦1.4kΩ)<br>F: DC4-20mA (≦350Ω)<br>0: other than those above | 1: AC100V±10%, 50/60Hz<br>2: AC110V±10%, 50/60Hz<br>3: AC200V±10%, 50/60Hz<br>4: AC220V±10%, 50/60Hz<br>5: DC24V±10%<br>0: other than those above | Tolerance: ±0.5%<br>Response time: ≦0.5sec./90%<br>Consumption VA: Input<br>0.7VA (110V)<br>1.4V (220V)<br>AC power source:3VA<br>DC power source:3.5W<br>Weight:<br>AC power source:500g<br>DC power source:400g |
| | | H: DC4-20mA(≦800Ω)<br>DC1-5V (≧250kΩ)<br>With output switching function | 5: DC1-5V (≧1kΩ) | 1: AC100V+10%, -15%, 50/60Hz<br>2: AC110V+10%, -15%, 50/60Hz<br>3: AC200V+10%, -15%, 50/60Hz<br>4: AC220V+10%, -15%, 50/60Hz<br>5: DC24V+10%, -15% | |

● Open of current output: even if the current output terminal is used in a state of regular open, there is no problem. Also, a voltage of approx. 25V occurs on the output terminal.

## ■ Block diagram




①Input circuit
②Monostable detecting circuit
③Pulse conversion DC circuit
④Smoothing circuit
⑤Pulse width modulation circuit
⑥Pulse width demodulation circuit
⑦Output circuit
⑧Insulated power source circuit

## ■ Purchase specifications

●Item to specify Type

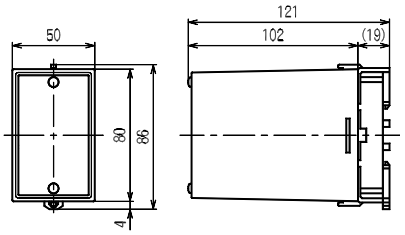
WFTP2 – 3 1 H 5 1

- 3: Input
- 1: Rating voltage
- H: 1st Output
- 5: 2nd Output
- 1: Auxiliary supply

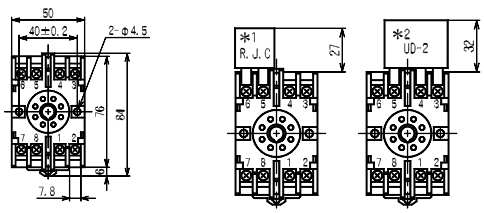
## ■ Dimensions (mm)

Fig.1

●Main body 8-pin type




●Socket (Type code: 8PFA by OMRON)

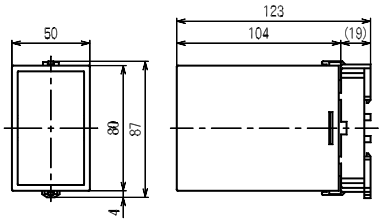



Also compatible with the following socket:
Type code: 8PFA-W by Omron

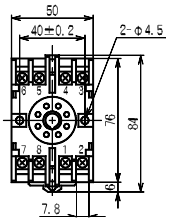
*1: accessory for thermoelectric temperature transducer
*2: diode unit for current transducer

Fig.2

●Main body 8-pin type



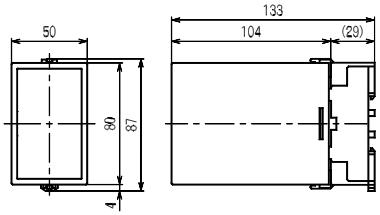

●Socket (Type code: 8PFA by OMRON)



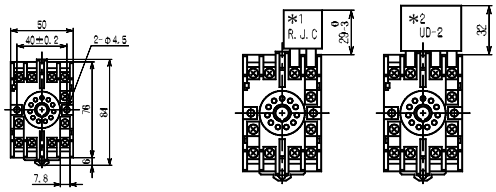

Also compatible with the following socket:
Type code: 8PFA-W by Omron

Fig.3

●Main body 11-pin type




●Socket (Type code: 11PFA by OMRON)



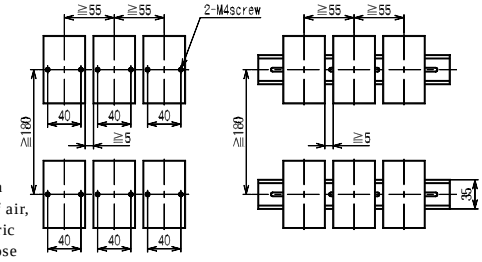

Also compatible with the following socket:
Type code: 11PFA-W by Omron

*1: accessory for thermoelectric temperature transducer
*2: diode unit for current transducer

## ■Multiple unit installation (mm)

●Panel mounting

●Rail mounting




In consideration of radiation of heat by a natural convection of air, please establish metric spaces more than those mentioned above.

Use a DIN standard 35mm rail.

●Multiplier (DM-1)