ONE-INPUT/TWO-OUTPUT TEMPERATURE CONVERTER WITH BUILT-IN MICROCOMPUTER MODEL TW-2C INSTRUCTION MANUAL

WARNING This marking indicates that the erroneous operation of this converter may result in death or serious injury.

Caution

(1) The application of voltage or current exceeding its maximum allowable value to the input terminals may result in instrument damage.
(2) The supply of power out of its allowable range may cause fire, electric shock or instrument failure.
(3) The content of this manual may subject to change without prior notice for product improvement.
(4) This manual is carefully prepared. However, if any question arises, or any mistake, omission or suggestion is found in the content of this manual, contact your nearest our sales agent.
(5) After read this manual, please keep it as anytime can see.

■ Outline

Model TW-2C is a highly accurate temperature converter.
It inputs thermocouple (Type R/K/E/J/T/S/B) or RTD (Pt 100 Ω) signal and then outputs voltage or current signal isolated from the input.
It is provided with burnout detection and cold junction compensation circuits.
In addition, its input, 1st output, 2nd output and power supply (4 ports) are mutually isolated and its case can be mounted on DIN rails in one touch.
For its input and output, detachable connectors are used.

■ Model No. configuration

Each code of this converter and the corresponding standard specifications are as described in the following.

When the converter is delivered, first compare your specifications when ordered to our manufactured specifications.

(Ex.) TW-2C-[K][A][0]-[1] 0 to 1000°C

TW - 2C - □□□ - □

- Power spec. □: 1 = 100 to 240 VAC (50/60 Hz); 4 = 24 VDC
- 2nd output spec. □: 0 = 0 to 5 VDC; 1 = 1 to 5 V DC; 2 = 0 to 10 VDC; A = 4 to 20 mADC
- 1st output spec. □: A = 4 to 20 mADC; Y = Other than the above
- Input spec. □:
  - R. Type R thermocouple (0 to 1700°C)
  - K. Type K thermocouple (0 to 1200°C)
  - E. Type E thermocouple (0 to 900°C)
  - J. Type J thermocouple (0 to 1000°C)
  - T. Type T thermocouple (0 to 350°C)
  - S. Type S thermocouple (0 to 1700°C)
  - B. Type B thermocouple (200 to 1700°C)
  - P. Pt 100Ω (0 to 800°C)
- Series name
- Basic Model

As input specifications, specify the ZERO and SPAN temperatures (in steps of 1°C) separately.

It not specified, the above temperatures will apply.

*Also note that the input specifications cannot be modified on your side.

■ Input specifications

Sensor	Code	Input temp. range (°C)	Min. span (°C)
R	R	0 to 1700	400
K	K	-50 to 1200	100
E	E	-50 to 900	100
J	J	-50 to 1000	100
T	T	-50 to 350	100
S	S	0 to 1700	500
B	B	200 to 1700	1000
Pt100Ω	P	-150 to 800	100

[Thermocouple input specifications]
Cold junction compensation accuracy: ±1℃(at 10 to 30℃)
Burnout detection current: 300nA(TYP)
[RTD input specifications]
Allowable lead wire resistance: Less than 10Ω
Current flowing through resistor: 1 mA

■ 1st output specifications

Code	Output signal	Load resistance	Output at burnout
A	4 to 20 mADC	Less than 550 Ω	Approx. 120% F.S.
Y	Other than the above		

Manufacturable Y specifications

Code	Output signal	Load resistance	Output at burnout
Y	0 to 5 VDC	More than 2 kΩ	Approx. 120% F.S.
	1 to 5 VDC		
	0 to 10 VDC	More than 4 kΩ	

■ 2nd output specifications

Code	Output signal	Load resistance	Output at burnout
0	0 to 5 VDC	More than 2 kΩ	Approx. 120% F.S.
1	1 to 5 VDC		
2	0 to 10 VDC	More than 4 kΩ	
A	4 to 20 mADC	Less than 550 Ω	

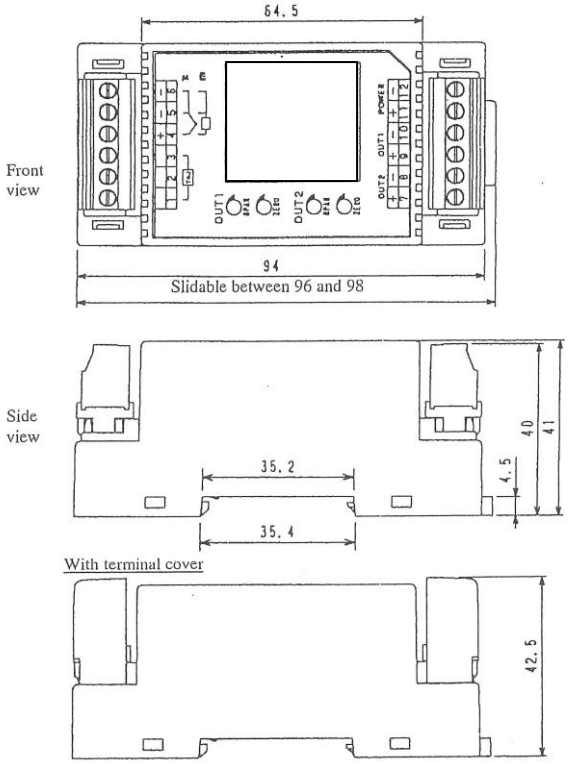
■ Power supply specifications

Code	Power supply
1	100 to 240 VAC ±10% (50/60 Hz)
4	24 VDC ±10%

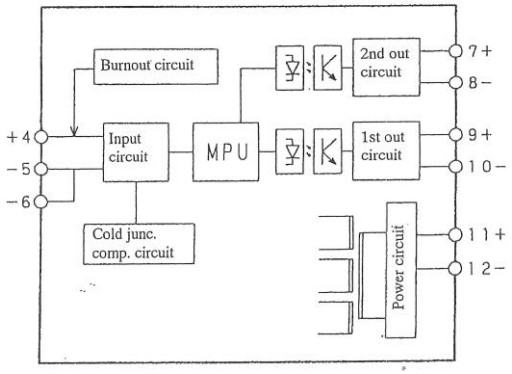
■ General specifications

1. Accuracy:
   ±0.25% F.S (At 25 ± 2°C)
2. Temperature characteristic:
   ±0.02% F.S/°C
3. Response time:
   Less than 2 sec (Time until output reaches 90% of rated output)
4. Insulation resistance:
   Between input and each output/power supply; More than 100 MΩ (At 500 VDC)
5. Dielectric strength:
   Between input and each output/power supply; For 1 min. at 1500 VAC
6. Consuming current:
   For DC spec.; Less than 110 mA
   For AC spec.; Less than 50 mA
7. Operating ambient temperature:
   -5 to 50°C
8. Operating humidity:
   Less than 90% RH (Non-condensing)
9. Storage temperature:
   -10 to +70°C
10. Storage humidity:
    Less than 60% RH (Non-condensing)
11. Case material:
    Black PBT 94 - V0
12. Weight: Approx. 160 g

Dimensions

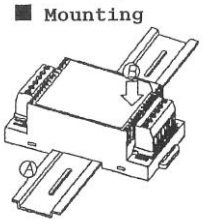


Block diagram



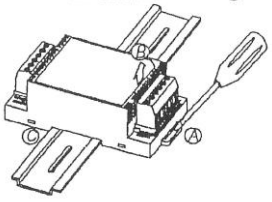
Mounting or dismounting

Mounting



Ⓐ Engage the left side of the converter with the upper rail.
Ⓑ Push the right side of the converter in the lower rail.

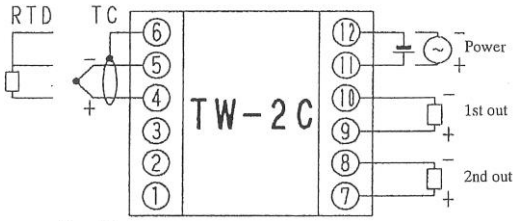
Dismounting



Ⓐ Push down the slider with a screwdriver.
Ⓑ Lift up the right side of the converter.
Ⓒ Disengage the left side of the converter from the upper rail.

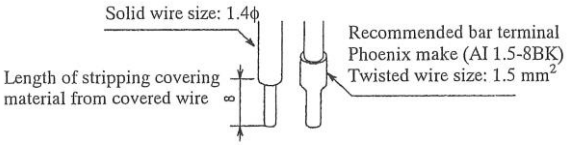
* If the converter is dislocated after being mounted on the rails, it is recommended that a clamp be used.
If two or more converters are mounted side by side, always make some space between each converter.

Input/output connection diagram

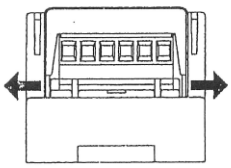


Note:
Do not mistake the connection polarity.

Recommended treatment of wires connected to connector type terminal board



Procedure for removing terminal cover



Expand the lower sides of the terminal cover to the arrow directions and then lift up the terminal cover.

Caution

- Store the converter at locations where storage temperature is between -10 and +70°C and storage humidity is less than 60%.
- Use the converter at locations where chemicals or gases harmful to its electrical parts do not exist, or there is no dust.
- Do not apply vibration or impact to the converter.
- In order to lessen the effect of noise, do not bundle input/output wires together with power supply wires or do not put these wires in the same duct.
- Note that the signal exceeding the burnout signal may be output for 2 to 3 sec after the power is turned on.

Warranty

This meter is warranted for a period of one year from date of delivery. Any defect which occurs in this period and is undoubtedly caused by Watanabe Electric Industry faults will be remedied free of charge.
This warranty dose not apply to the meter showing abuse or damage which has been altered or repaired by others except as authorized by Watanabe Electric Industry.

After-sale service

This meter is delivered after being manufactured, tested inspected under strict quality control.
However, if any problem does occur, contact your nearest Watanabe Electric Industry sales agent or Watanabe Electric Industry directly giving as much information on problem as possible.

Accessories

Terminal cover × 2

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WATANABE ELECTRIC INDUSTRY CO., LTD.
6-16-19, Jingumae, Shibuya-ku, Tokyo 150-0001, Japan
Phone: (81)3-3400-6141
Homepage http://www.watanabe-electric.co.jp/en/