Terminal Type Thermocouple Transducer

MODEL TZ-5CA

INSTRUCTION MANUAL

Warning

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

Precautions

(1) If voltage or current exceeding the input allowable voltage or current is applied to the input terminals, the transducer may be damaged.
(2) Apply power within the applicable range of the transducer. Otherwise fire, electric shock or transducer damage may result.
(3) The contents of this instruction manual are subject to change without prior notice.
(4) This instruction manual is carefully prepared. However, if any mistake or omission is found, contact your nearest Watanabe sales agent or Watanabe directly.
(5) Make this manual available easily anytime.

■Outline

This is a transducer which inputs various DC signals and then outputs their corresponding standardized signals.
Even if its small size, it can accept any DC voltage as its power supply.
It employs a case of terminal board construction used with 3.5 mm screw terminals and can be mounted on DIN rails in one touch.
In addition, as its three ports of input, output and power are mutually isolated, an improvement in noise rejection will be further made, and miniaturization of equipment will also be realized.

■Model No. Configuration

Each code and the standard specifications of this transducer are as follows. First check whether or not your desired specifications are correct by comparing them to the following specifications.
(Example) TZ-5CA-K3A

TZ-5CA-□□ □

Output code
- 0 : 0 to 5VDC 1 : 1 to 5VDC
- 2 : 0 to 10VDC 3 : -10 to 10VDC
- 4 : -2 to 2VDC
- 5 : -2.5 to 2.5VDC
- 6 : -5 to 5VDC 7 : 0 to 4VDC
- A : 4 to 20mADC
- B : 0 to 20mADC
- Y : Special

Input code
- J0:0 to 1000℃ JY: Special
- K2:-50 to 200℃ K3: 0 to 200℃
- K4:-50 to 1200℃ K5: 0 to 1200℃
- KY: Special
- R0:0 to 1700℃ RY: Special
- S0:0 to 1700℃ SY: Special
- T0:-50 to 350℃ T1: 0 to 350℃
- TY: Special

■ Input Specification

Code No.	Thermo couple	Input Signal	For code No. Y	Input resistance	Input allowable range
J0	J	0 to 1000℃	-50 to 1000℃ span 200 to 1050℃	More than 1MΩ	-50 to +150%F.S
JY		Other than the above			
K2	K	-50 to 200℃	-50 to 1200℃ span 200 to 1250℃		
K3		0 to 200℃			
K4		-50 to 1200℃			
K5		0 to 1200℃			
KY		Other than the above			
R0	R	0 to 1700℃	0 to 1700℃ span 400 to 1700℃		
RY		Other than the above			
S0	S	0 to 1700℃	0 to 1700℃ span 500 to 1700℃		
SY		Other than the above			
T0	T	-50 to 350℃	-50 to 350℃ span 200 to 400℃		
T1		0 to 350℃			
TY		Other than the above			

■ Output Specification

Code No.	Output Signal	Allowable Load resistance
0	0 to 5VDC	More than 2kΩ
1	1 to 5VDC	
2	0 to 10VDC	More than 4kΩ Negative output more than 10kΩ
3	-10 to 10VDC	
4	-2 to 2VDC	More than 2kΩ Negative output : more than 10kΩ
5	-2.5 to 2.5VDC	
6	-5 to 5VDC	
7	0 to 4VDC	More than 2kΩ
A	4 to 20mADC	Less than 550Ω
B	0 to 20mADC	
Y	Other than the above	

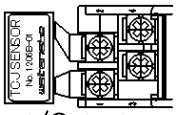
For code No. Y
Limit of specifications
Voltage output : Less than +15 VDC and more than -12 VDC
Minimum span : Less than +27 VDC and more than 0.06 VDC
(Load resistance : 10kΩ at the output exceeding 10V, and a negative output)
(Base accuracy : ±0.15 %F.S and temperature characteristic : ±0.03 %F.S/°C for a span of less than 1V)
Current output : Less than +20 mADC and more than 0 mADC
Minimum span : Less than +20 mADC and more than 1 mADC
Outputs can be reversed for both voltage and current outputs.

■General specifications

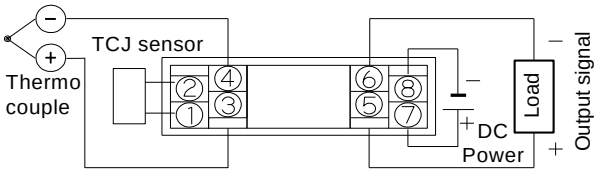
Base Accuracy : ±0.2 %F.S (25±2°C)
Power supply variation : ±0.06 %F.S
Load resistance variation : ±0.06 %F.S
Temperature characteristic : ±0.02 %F.S/°C
Accuracy of cold junction compensation : ±1°C (10 to 30°C)
Disconnection detection : Upside (135±15%F.S)
Response time : 300msec (0→90%)
Front adjustments : ±5% for zero and span
Insulation resistance : Between input and output/power supply ; More than 100MΩ at 500 VDC
Dielectric strength : Between input and output/power supply ; For 1 min. at 1500VAC
Power supply voltage : 24VDC ±10 %
Consuming current : Less than 35 mA (At current output 24VDC) Less than 30 mA (At voltage output 24VDC)
Vibration resistance : Frequency : 10 to 55Hz ; ampliutde (half) : 0.15mm to 10 sweeps of 5min each in X,Y and Z directions
Operating ambient temperature : -5 to 50°C
Operating ambient humidity : Less than 90 %RH (No-condensing)
Storage temperature : -10 to 70°C
Storage humidity : Less than 60%RH (No-condensing)
Case material : ABS resin (Black) 94V-2
Weight : Approx. 80g

■Accessories

TCJ sensor(Connect the TCJ sensor to terminal No.1 and 2.)
note:TCJ sensor is use to pair of the product only.

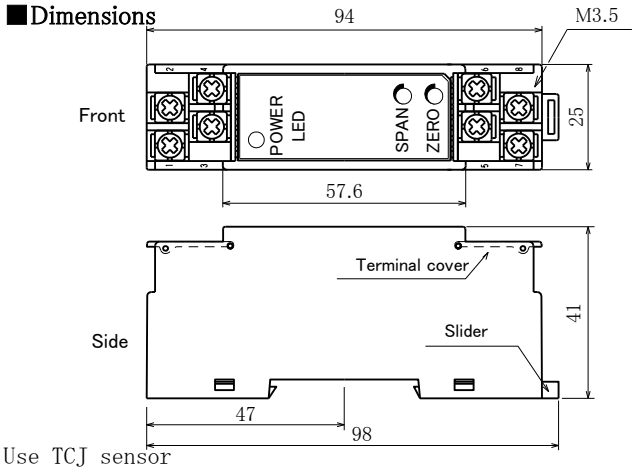


■Input/Output connection diagram

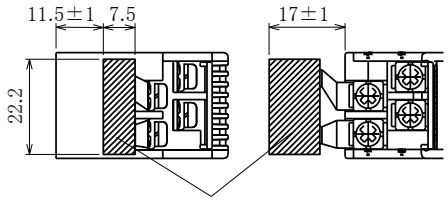


⚠ Note : Pay attention to the connection polarity.

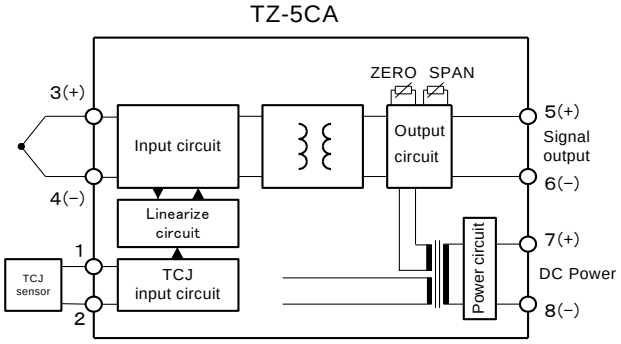
■Dimensions



Use TCJ sensor



■Block diagram



■Adjustment

This transducer is designed so that its zero point and span can be externally adjusted. However, its zero and span are not necessary to be adjusted as they have already been adjusted at the factory prior to shipment.
However, when it is periodically calibrated in order to maintain the accuracy for a long period of time, conduct its calibration using an accurate measuring instrument after more than 30 minutes following power-ON. In this case, use a standard measuring instrument having accuracy 10 times higher than that of this transducer.

Zero Adjustment
Apply the minimum input signal to the input terminals, and then turn the ZERO trimmer until output signal reaches the minimum value described in the output specification.
Span Adjustment
Apply the maximum input signal to the input terminals, and then turn the SPAN trimmer until output signal reaches the maximum value described in the output specification.
Repeat the above procedures a few times so that the minimum and maximum output signals are within the values described in the output specification when switched from the minimum to the maximum and vice versa.

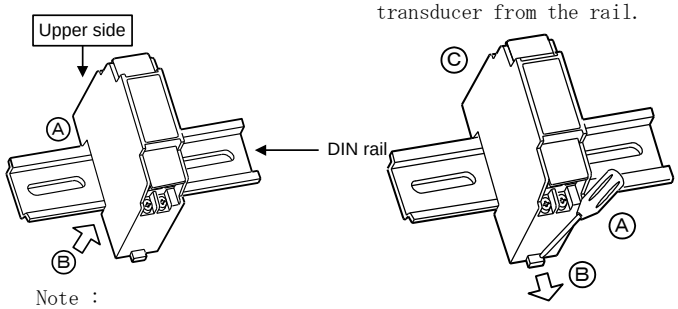
■Mounting/dismounting

Mounting

A) Engage the upper side of the transducer with the rail.
B) Push the lower side of the transducer into the rail.

Dismounting

A) Push down the slider using a Screwdriver.
B) Pull the transducer toward you, then disengage the lower side of the transducer from the rail.
C) Disengage the upper side of the transducer from the rail.



Note :
If the transducer is dislocated after its mounting, it is recommended that a clamp be used.

■Caution

a) Store the transducer at a storage temperature of -10 to +70°C and a humidity of less than 60 % RH.
b) Use the transducer at a location where there are no chemicals or gases harmful to electrical parts or there is no dust.
c) Do not apply any vibration or impact to the transducer.
d) In order to lessen the effect of noise, etc., do not bundle the input/output/communication wires with the power supply wires, nor put these wires in the same duct.
e) The unit is designed to function as soon as power is supplied, however, a warm up for 30 minutes is required for satisfying complete performance described in the data sheet.

■Warranty

This transducer 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's faults will be remedied free of charge. This warranty does not apply to the transducer showing abuse or damage which has been altered or repaired by others except as authorized by WATANABE ELECTRIC INDUSTRY Co., Ltd.

■After-sale service

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

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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/