

§Small-sized plug-in transducer§

2-output type

Thermoelectric temperature transducer

FWHT

Application

By inputting thermal electromotive forces of various kinds of thermocouples based on the JIS, the device insulates input and output, and then converts thermal electromotive forces into an output proportional to temperature. Because this transducer can extract two insulated outputs, control and monitor can be done by a single unit. Up to 16 units can be housed in an installation base.

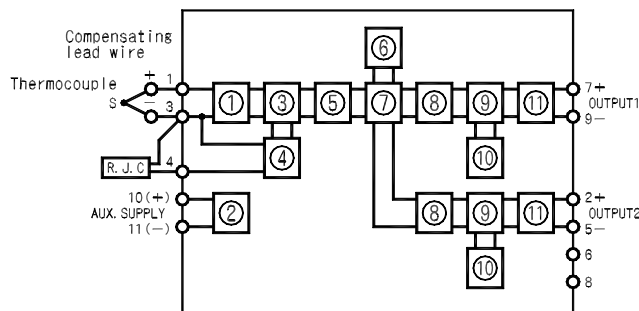
Feature

1. Compact and high withstand voltage.
2. Withstand voltage between input/output/auxiliary supply/outer case is AC2, 000V (50/60Hz) for 1 min..
3. Withstand voltage between outputs is AC500V (50/60Hz) for 1 min..
4. Constant voltage/current output type. No need to adjust the product if it operates within load resistance range.
5. A LED can confirm status of electric power applied.
6. Zero/span of 1st and 2nd output can be adjusted individually. ($\pm 2\%$ adjustable)
7. Plus (+) or minus (-) burnout can be specified.



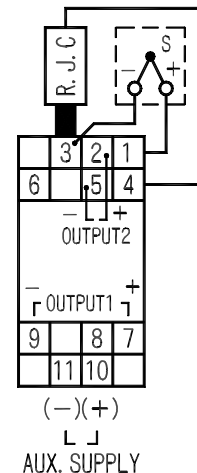
29.5 × 76 × 125mm/180g

Block Diagram



Burnout detecting circuit
Insulated power source circuit
Input amplifying circuit
Ambient temperature correction circuit
Linearized circuit
Oscillating circuit
Pulse width modulation circuit
Photo coupler insulation
Pulse width demodulation circuit
Reference voltage
Output circuit

Connection diagram (socket)



Compensating wire

A compensating wire compensates for the temperature difference between thermocouple terminals and transducer terminals. Different thermocouple needs different compensating wire.

Built-in cold junction compensation

Thermal electromotive force as an input varies along with temperature change of input terminal. Terminal temperature is measured by a RJC (compensating sensor) and the changed portion of thermal electromotive force caused by this temperature change is compensated.

§Small-sized plug-in transducer§

2-output type

Thermoelectric temperature transducer

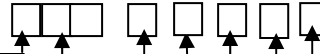
Specification

How to specify

Type name

FWHT

Specification code



Kind of thermocouple	Input	1 st Output (load resistant)	2 nd Output (load resistant)	Auxiliary supply	Power fuse	Burn-out	Common specification
[B]: *1 Range 600-1700 Span 1000	[01]: 0-150 [02]: 0-200 [03]: 0-250 [04]: 0-300 [05]: 0-350 [06]: 0-400 [07]: 0-450 [08]: 0-500	[1]: DC0-100mV (200) [2]: DC0-1V (200) [3]: DC0-5V (600) [4]: DC0-10V (2k) [5]: DC1-5V (600)	[1]: DC0-100mV (200) [2]: DC0-1V (200) [3]: DC0-5V (1k) [5]: DC1-5V (1k)	[F]: AC/DC80-264V Rated Voltage AC100/110V 50/60Hz AC200/220V 50/60Hz DC100/110V	[1]: without fuse [2]: with fuse	[1]: plus [2]: minus	Conversion accuracy: K,E,J,T,N: ± 0.4% B,R,S: ± 0.5% Temperature characteristics: 0.25%/10 Response time: 0.5s/90% Accuracy of cold junction compensation: At 20 ± 10 K, E, J, T, N thermocouple: 0.5 S.R thermocouple: 1.0 Burnout time: 10s Input external resistance: 500 Consumption VA: At AC110V: 4.0VA At AC220V: 5.0VA At DC110V: 2.5W At DC24V: 2.5W CE marking item: At DC24V: 3.3W Weight: Without socket: approx.130g With socket: approx.180g
[R]: Range 0-1600 Span 1000	[09]: 0-600 [10]: 0-700 [11]: 0-800 [12]: 0-900 [13]: 0-1000	[A]: DC0-1mA (10k) [B]: DC0-5mA (2k) [C]: DC0-10mA (1k) [D]: DC0-16mA (600) [E]: DC1-5mA (3k) [F]: DC4-20mA (750)	[A]: DC0-1mA (7k) [B]: DC0-5mA (1.4k) [C]: DC0-10mA (700) [D]: DC0-16mA (4300) [E]: DC1-5mA (1.4k) [F]: DC4-20mA (350)	[5]: DC24V (DC19-30V)			
[S]: Range 0-1600 Span 1000	[14]: 0-1100 [15]: 0-1200 [16]: 0-1300 [17]: 0-1400 [18]: 0-1500	[A]: DC0-1mA (10k) [B]: DC0-5mA (2k) [C]: DC0-10mA (1k) [D]: DC0-16mA (600) [E]: DC1-5mA (3k) [F]: DC4-20mA (750)	[A]: DC0-1mA (7k) [B]: DC0-5mA (1.4k) [C]: DC0-10mA (700) [D]: DC0-16mA (4300) [E]: DC1-5mA (1.4k) [F]: DC4-20mA (350)	[5]: DC24V (DC19-30V)			
[K]: Range 0-1200 Span 250	[19]: 0-1100 [20]: 0-1200 [21]: 0-1300 [22]: 0-1400 [23]: 0-1500	[A]: DC0-1mA (10k) [B]: DC0-5mA (2k) [C]: DC0-10mA (1k) [D]: DC0-16mA (600) [E]: DC1-5mA (3k) [F]: DC4-20mA (750)	[A]: DC0-1mA (7k) [B]: DC0-5mA (1.4k) [C]: DC0-10mA (700) [D]: DC0-16mA (4300) [E]: DC1-5mA (1.4k) [F]: DC4-20mA (350)	[5]: DC24V (DC19-30V)			
[E]: Range 0-800 Span 150	[24]: 0-1100 [25]: 0-1200 [26]: 0-1300 [27]: 0-1400 [28]: 0-1500	[A]: DC0-1mA (10k) [B]: DC0-5mA (2k) [C]: DC0-10mA (1k) [D]: DC0-16mA (600) [E]: DC1-5mA (3k) [F]: DC4-20mA (750)	[A]: DC0-1mA (7k) [B]: DC0-5mA (1.4k) [C]: DC0-10mA (700) [D]: DC0-16mA (4300) [E]: DC1-5mA (1.4k) [F]: DC4-20mA (350)	[5]: DC24V (DC19-30V)			
[J]: Range 0-750 Span 200	[29]: 0-1100 [30]: 0-1200 [31]: 0-1300 [32]: 0-1400 [33]: 0-1500	[A]: DC0-1mA (10k) [B]: DC0-5mA (2k) [C]: DC0-10mA (1k) [D]: DC0-16mA (600) [E]: DC1-5mA (3k) [F]: DC4-20mA (750)	[A]: DC0-1mA (7k) [B]: DC0-5mA (1.4k) [C]: DC0-10mA (700) [D]: DC0-16mA (4300) [E]: DC1-5mA (1.4k) [F]: DC4-20mA (350)	[5]: DC24V (DC19-30V)			
[T]: Range 0-350 Span 200	[34]: 0-1100 [35]: 0-1200 [36]: 0-1300 [37]: 0-1400 [38]: 0-1500	[A]: DC0-1mA (10k) [B]: DC0-5mA (2k) [C]: DC0-10mA (1k) [D]: DC0-16mA (600) [E]: DC1-5mA (3k) [F]: DC4-20mA (750)	[A]: DC0-1mA (7k) [B]: DC0-5mA (1.4k) [C]: DC0-10mA (700) [D]: DC0-16mA (4300) [E]: DC1-5mA (1.4k) [F]: DC4-20mA (350)	[5]: DC24V (DC19-30V)			
[N]: Range 0-1250 Span 300	[39]: 0-1100 [40]: 0-1200 [41]: 0-1300 [42]: 0-1400 [43]: 0-1500	[A]: DC0-1mA (10k) [B]: DC0-5mA (2k) [C]: DC0-10mA (1k) [D]: DC0-16mA (600) [E]: DC1-5mA (3k) [F]: DC4-20mA (750)	[A]: DC0-1mA (7k) [B]: DC0-5mA (1.4k) [C]: DC0-10mA (700) [D]: DC0-16mA (4300) [E]: DC1-5mA (1.4k) [F]: DC4-20mA (350)	[5]: DC24V (DC19-30V)			
	[44]: 0-1100 [45]: 0-1200 [46]: 0-1300 [47]: 0-1400 [48]: 0-1500	[A]: DC0-1mA (10k) [B]: DC0-5mA (2k) [C]: DC0-10mA (1k) [D]: DC0-16mA (600) [E]: DC1-5mA (3k) [F]: DC4-20mA (750)	[A]: DC0-1mA (7k) [B]: DC0-5mA (1.4k) [C]: DC0-10mA (700) [D]: DC0-16mA (4300) [E]: DC1-5mA (1.4k) [F]: DC4-20mA (350)	[5]: DC24V (DC19-30V)			
	[49]: 0-1100 [50]: 0-1200 [51]: 0-1300 [52]: 0-1400 [53]: 0-1500	[A]: DC0-1mA (10k) [B]: DC0-5mA (2k) [C]: DC0-10mA (1k) [D]: DC0-16mA (600) [E]: DC1-5mA (3k) [F]: DC4-20mA (750)	[A]: DC0-1mA (7k) [B]: DC0-5mA (1.4k) [C]: DC0-10mA (700) [D]: DC0-16mA (4300) [E]: DC1-5mA (1.4k) [F]: DC4-20mA (350)	[5]: DC24V (DC19-30V)			
	[54]: 0-1100 [55]: 0-1200 [56]: 0-1300 [57]: 0-1400 [58]: 0-1500	[A]: DC0-1mA (10k) [B]: DC0-5mA (2k) [C]: DC0-10mA (1k) [D]: DC0-16mA (600) [E]: DC1-5mA (3k) [F]: DC4-20mA (750)	[A]: DC0-1mA (7k) [B]: DC0-5mA (1.4k) [C]: DC0-10mA (700) [D]: DC0-16mA (4300) [E]: DC1-5mA (1.4k) [F]: DC4-20mA (350)	[5]: DC24V (DC19-30V)			
	[59]: 0-1100 [60]: 0-1200 [61]: 0-1300 [62]: 0-1400 [63]: 0-1500	[A]: DC0-1mA (10k) [B]: DC0-5mA (2k) [C]: DC0-10mA (1k) [D]: DC0-16mA (600) [E]: DC1-5mA (3k) [F]: DC4-20mA (750)	[A]: DC0-1mA (7k) [B]: DC0-5mA (1.4k) [C]: DC0-10mA (700) [D]: DC0-16mA (4300) [E]: DC1-5mA (1.4k) [F]: DC4-20mA (350)	[5]: DC24V (DC19-30V)			
	[64]: 0-1100 [65]: 0-1200 [66]: 0-1300 [67]: 0-1400 [68]: 0-1500	[A]: DC0-1mA (10k) [B]: DC0-5mA (2k) [C]: DC0-10mA (1k) [D]: DC0-16mA (600) [E]: DC1-5mA (3k) [F]: DC4-20mA (750)	[A]: DC0-1mA (7k) [B]: DC0-5mA (1.4k) [C]: DC0-10mA (700) [D]: DC0-16mA (4300) [E]: DC1-5mA (1.4k) [F]: DC4-20mA (350)	[5]: DC24V (DC19-30V)			
	[69]: 0-1100 [70]: 0-1200 [71]: 0-1300 [72]: 0-1400 [73]: 0-1500	[A]: DC0-1mA (10k) [B]: DC0-5mA (2k) [C]: DC0-10mA (1k) [D]: DC0-16mA (600) [E]: DC1-5mA (3k) [F]: DC4-20mA (750)	[A]: DC0-1mA (7k) [B]: DC0-5mA (1.4k) [C]: DC0-10mA (700) [D]: DC0-16mA (4300) [E]: DC1-5mA (1.4k) [F]: DC4-20mA (350)	[5]: DC24V (DC19-30V)			

*1 Only input code 31 or 32 is available for B thermocouple. *2 Consult with us for specification other than those indicated in the table above.

Product Range (including special handling)

Input (production measurement range)	1 st Output	2 nd Output
B: 0-1820 R: -50-1760 S: -50-1760 K: -270-1370 E: -270-1000 J: -210-1200	T: -270-400 *4 N: -270-1300 ZZ: because it varies by thermocouple specification, consult with us.	Current output: 1mA-20mA Voltage output: 10mV-10V*6

*4 T: 0-100 , 0-150 are specially manufacturable.
*5 2nd output: output more than 5.1V but less than 10V is subject to special handling. (Load current 2mA)
*6 Plus/minus output is not manufacturable.

*3 CE marking compliant specifications

EMC compliant specifications

EMI (emission) EN61000-6-4
EMS (immunity) EN61000-6-2

Safety standard

EN61010-1
CAT , pollution degree: 2

External conducting wire resistance range

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