

DESCRIPTION

The MS5002 is an ultra-slim RTD temperature transmitter that converts input signals from an RTD into commonly used DC signals and provides an isolated single output.

ORDERING CODE

Model MS5002 - /

Input _____

Output _____

Connection Type _____

Options _____

Input

P1: Pt 100Ω **J:** JPt 100Ω
P5: Pt 50Ω **N:** Ni 508.4Ω
Y: Other than those above.

Output

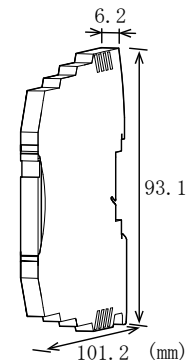
A: 4 to 20mA DC **1:** 0 to 10mV DC
D: 0 to 20mA DC **2:** 0 to 100mV DC
Z: Other DC current signals **3:** 0 to 1V DC
 4: 0 to 10V DC
 5: 0 to 5V DC
 6: 1 to 5V DC
 3W: ±1V DC
 4W: ±10V DC
 5W: ±5V DC
 0: Other DC voltage signals

Connection Type

No code: Screw connection
S: Spring-cage connection

Options

No code: None
D: Downscale burnout protection
H: Polyurethane conformal coating
X: Others (Special order)
* For non-standard options, ask MTT for availability.


SPECIFICATIONS
POWER SECTION

Power Requirement	24V DC±10%
Power Sensitivity	Better than ±0.1% of span.
Power Line Fuse	125mA fuse is installed (standard).
Current Consumption	
Voltage Output	13.8mA max.
Current Output	31.0mA max.

INPUT SECTION

Excitation Current	Approx. 1mA
Lead Wire Resistance	200Ω max. per wire
Ranges Available	
<Standard specifications> (Temp at 0% input = 0°C)	
Pt 100Ω	Specify between 0-50°C and 0-500°C in steps of 50°C (e.g. Pt 100Ω, 0 to 150°C).
JPt 100Ω	Specify between 0-50°C and 0-500°C in steps of 50°C (e.g. JPt 100Ω, 0 to 250°C).
Pt 50Ω	0 to 100°C

<Quasi-standard specifications>			
RTD	Temperature Range (°C)	Input Span	Input Bias
Pt 100Ω	-200 to +850	50°C min.	Up to 4x the input span.
JPt 100Ω	-200 to +500	50°C min.	
Pt 50Ω	-200 to +600	100°C min.	
Ni 508.4Ω	-50 to +250	30°C min.	

Input Spec Ex.: For Pt 100Ω (150 to 200°C), the input span is 50°C and the bias 150°C (3x the span).
Note: Any specification out of the temperature range or bias requirement listed above is handled as a special order.

OUTPUT SECTION

Allowable Output Load		
Voltage Output (DC)	10V	5kΩ min.
	5V	2.5kΩ min.
	1V	500Ω min.
	10mV	10kΩ min.
	100mV	100kΩ min.
Current Output (DC)	4 to 20mA output	550Ω max.
Zero Adjustment	Approx. ±5% of span. (Adjustable by the front-accessible trimmer.)	

ORDERING INFORMATION

To place an order, please use the ordering code format as shown above. Also specify a desired temperature range.

- (e.g.) MS5002-P1A (0 to 150°C)
- MS5002-P1A/S (0 to 150°C)
- MS5002-P1A/D (0 to 150°C)
- MS5002-P1A/SDX (0 to 150°C / Frequency characteristics: 1Hz-3dB)

* Note that the temperature range should be specified in steps of at least 10 degrees Celsius.

Other Ordering Examples:
For an input code of "Y": MS5002-YA (Cu 10Ω at 0°C / 0 to 100°C)
For an output code of "0": MS5002-P10 (0 to 150°C / Output: 2 to 5V)

Span Adjustment	Approx. $\pm 5\%$ of span. (Adjustable by the front-accessible trimmer.)	
Burnout Protection	Standard: Upscale Option code D: Downscale (even if any of the three wires, A, B, and B' is opened)	
Ranges Available	Current Signal	Voltage Signal
Output Range (DC)	0 to 20mA	-10 to 10V
Output Span (DC)	4 to 20mA	10mV to 20V
Output Bias	0 to 100%	-100 to 100%
* For current output signals, the accuracy of any current output smaller than 0.1mA is not guaranteed.		
Output Spec Ex. 1: For 4 to 20mA output, the output span is 16mA and the bias +25%.		
Output Spec Ex. 2: For -1 to 4V output, the output span is 5V and the bias -20%.		

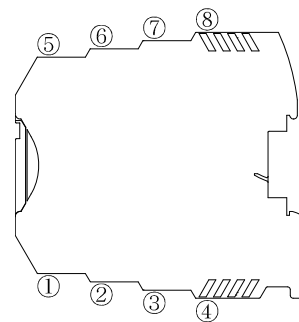
● PERFORMANCE

Accuracy Rating	Better than $\pm 0.15\%$ of span (at $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$).
Temperature Effect	Better than $\pm 0.2\%$ of span per 10°C change in ambient.
Response Time	170ms max. (0 to 90%) with a step input at 100%.
CMRR	100dB min. (500V AC, 50/60Hz)
Isolation	3-way isolation between input, output, and power.
Insulation Resistance	100M Ω min. (@ 500V DC) between input, output, and power.
Dielectric Strength	1500V AC for 1 minute between input, output, and power. (Cutoff current: 0.5mA)
Operating Environment	Ambient temperature: -20 to 65°C Humidity: 5 to 90% RH (non-condensing)
Storage Temperature	-25 to 70°C

● PHYSICAL

Installation	DIN rail mounting
Wiring	Screw connection or spring-cage connection Recommended tightening torque for screw connection: 0.5 to 0.6 Nm
Wire Size	0.2 to 2.5 mm ²
External Dimensions	W93.1 × H101.2 × D6.2 mm
Weight	60g max.
● MATERIAL	
Housing	PBT resin (UL 94V-0)
Screw Terminal	Tin-plated copper alloy
Printed Circuit Board	Glass fabric, epoxy resin (FR-4: UL 94V-0)

TERMINAL ASSIGNMENTS



①	RTD A
②	RTD B
③	RTD B'
④	N.C.
⑤	OUTPUT +
⑥	OUTPUT -
⑦	POWER +
⑧	POWER -

BLOCK DIAGRAM

