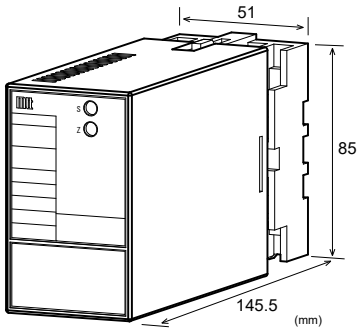
Product Specification Sheet Model: MS5302

Plug-In RTD Temperature Transmitter with Isolated Dual Output

DESCRIPTION

The MS5302 is a plug-in RTD temperature transmitter that converts input signals from an RTD into commonly used DC signals and provides an isolated dual output.



ORDERING CODE

MS5302 - □ - □ □ □

Model

Power Supply

A: 100 to 240V AC (50 to 60Hz)
D: 24V DC **P**: 100 to 240V DC

Input

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

Output 1

A: 4 to 20mA DC
D: 0 to 20mA DC
Z: Other DC current signals
1: 0 to 10mV DC
2: 0 to 100mV DC
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

Output 2

The codes are the same as for Output 1.

Note 1: When a voltage output is selected for Output 1, a current output cannot be selected for Output 2.
Note 2: When the code A (4 to 20mA) is selected for both of the two outputs, the output load will be 550Ω maximum for Output 1 and 350Ω maximum for Output 2.
Note 3: Upscale burnout protection is standard.

Options

No code: None
/K: Fast response (0 to 90% response time: 10ms max.)
/H: Polyurethane conformal coating
/X: Others (Special order)
* For non-standard options, ask MTT for availability.

ORDERING INFORMATION

To place an order, please use the ordering code format as shown on the left. Also specify a measuring temperature range*.
(e.g.) MS5302-A-P1A6 (0 to 150°C)

* 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": MS5302-A-YAA (Input: Cu 10Ω at 0°C, 0 to 100°C)
For an output code of "0": MS5302-A-P106 (0 to 150°C / Output: 2 to 5V)
For an option code of "X": MS5302-A-P1AA/X (0 to 150°C / Response frequency 50Hz)
Note: If you wish to include multiple options in your order, specify the option codes in series (e.g. /KX).

SPECIFICATIONS

●POWER SECTION

Power Requirements	100 to 240V AC: 85 to 264V AC (47 to 63Hz) 24V DC: 24V DC±10% 100 to 240V DC: 85 to 264V DC
Power Sensitivity	Better than ±0.1% of span for each power supply range.
Power Line Fuse	160mA fuse

Maximum Power Consumption

Power	100-240V AC	24V DC	100-240V DC
	Approx. 6.5VA	Approx. 1.8W	Approx. 6.0W

●INPUT SECTION

Excitation Current	Approx. 1mA with Pt for 0 to 100°C
Lead Wire Resistance	200Ω max. per wire

Ranges Available
The latest edition of the relevant JIS standard is used, unless otherwise specified.
<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)	1V span and up	2mA max.
	10mV	10kΩ min.
	100mV	100kΩ min.
Current Output (DC)	4-20mA single output	750Ω max.
	4-20mA dual output	Output 1: 550Ω max. Output 2: 350Ω max.
Zero Adjustment	Approx. ±5% of span. (Adjustable by the front-accessible trimmer.)	
Span Adjustment	Approx. ±5% of span. (Adjustable by the front-accessible trimmer.)	
Burnout Protection	Upscale (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 ±0.15% of span (at 25°C±5°C).
Temperature Effect	Better than ±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	4-way isolation between input, output 1, output 2, and power.
Insulation Resistance	100MΩ min. (@ 500V DC) between input, output 1, output 2, power, and ground.
Dielectric Strength	Input / [Output 1, Output 2] / [Power, Ground]: 2000V AC for 1 minute (Cutoff current: 0.5mA) Power / Ground: 2000V AC for 1 minute (Cutoff current: 5mA) Output 1 / Output 2: 500V AC for 1 minute (Cutoff current: 0.5mA)
Surge Withstand Capability	Tested as per ANSI/IEEE C37.90.1-1989.
Operating Environment	Ambient temperature: -5 to 55°C Humidity: 5 to 90% RH (non-condensing)
Storage Temperature	-10 to 60°C

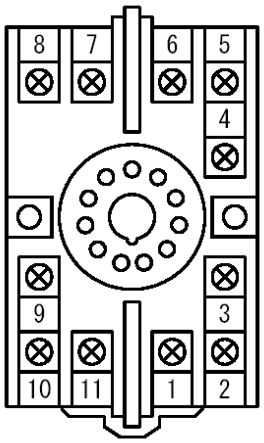
●PHYSICAL

Installation	Wall/DIN rail mounting
Mounting Direction	Vertical
Screwing Torque	0.78 to 1.18 [Nm] * Recommended
Wiring	M3.5 screw terminal connection
External Dimensions	W51 × H85 × D145.5 mm (including the socket)
Weight	Main unit: 200g max. Socket: 80g max.

●MATERIAL

Housing	ABS resin (UL 94V-0)
Socket	ABS resin (UL 94V-0)
Screw Terminal	Galvanized steel with trivalent chromate finish
Printed Circuit Board	Glass fabric, epoxy resin (FR-4: UL 94V-0)

TERMINAL ASSIGNMENTS



①	+ OUTPUT 1	
②	− OUTPUT 1	
③	N.C.	
④	RTD A	
⑤	RTD B	
⑥	RTD B'	
⑦	P (+)	POWER
⑧	N (−)	
⑨	GND	
⑩	+ OUTPUT 2	
⑪	− OUTPUT 2	

BLOCK DIAGRAM