



DESCRIPTION

The MS3102 is a terminal block type RTD temperature transmitter that converts input signals from an RTD into commonly used DC signals and provides an isolated dual output.

ORDERING CODE

**MS3102** -  -

**Model** \_\_\_\_\_

**Power Supply** \_\_\_\_\_  
**A:** 100 to 240V AC (50 to 60Hz)  
**D:** 24V DC                   **P:** 110V DC

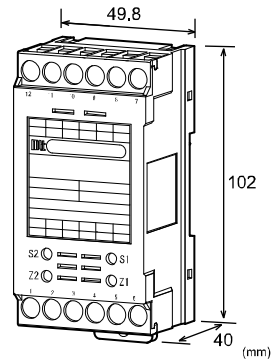
**Input** \_\_\_\_\_  
**P1:** Pt 100Ω                   **J:** JPt 100Ω  
**P5:** Pt 50Ω                   **N:** Ni 508.4Ω  
**Y:** Other than those above.

**Output 1** \_\_\_\_\_  
**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

**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.) MS3102-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": MS3102-A-YAA (Input: Cu 10Ω at 0°C / 0 to 100°C)  
For an output code of "0": MS3102-A-P106 (0 to 150°C / Output: 2 to 5V)  
For an option code of "X": MS3102-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% 110V DC: 90 to 121V 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      110V DC
		Approx. 7.0VA	Approx. 1.8W      Approx. 2.5W

INPUT SECTION

Excitation Current	Approx. 1mA with Pt for 0 to 100°C
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)	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:
		Output 2:
		550Ω max.
		350Ω max.

Zero Adjustment	Approx. ±5% of span. (Adjustable by the front-accessible trimmer.)
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Span Adjustment	Approx. ±5% of span. (Adjustable by the front-accessible trimmer.)
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Burnout Protection	Upscale (even if any of the three wires, A, B, and B' is opened)
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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 + 0.1°C] (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
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● PHYSICAL

Installation	DIN rail mounting
Wiring	M3.5 screw terminal connection (with drop-proof screws)
Screwing Torque	0.8 to 1.0 [Nm] * Recommended
External Dimensions	W49.8 × H102.0 × D40.0 mm (including DIN rail)
Weight	140g max.

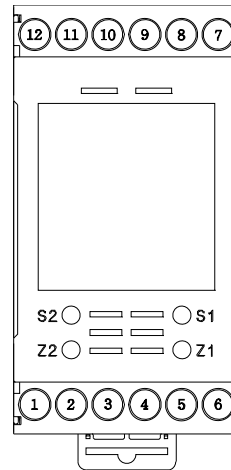
● MATERIAL

Housing	ABS resin (UL 94V-0)
Screw Terminal	Nickel-plated steel
Printed Circuit Board	Glass fabric, epoxy resin (FR-4: UL 94V-0)

● STANDARDS CONFORMITY

EC Directive Conformity	EMC Directive (2014/30/EU) EN61326-1:2013 Low Voltage Directive (2014/35/EU) IEC61010-1 EN61010-1:2010/A1:2019 Installation Category II Pollution Degree 2 Maximum operating voltage 300V Reinforced insulation between [input/output/GND] and power.
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TERMINAL ASSIGNMENTS



①	+ OUTPUT 2
②	- OUTPUT 2
③	N.C.
④	P (+)
⑤	N (-)
⑥	GND
⑦	RTD A
⑧	RTD B
⑨	RTD B'
⑩	N.C.
⑪	+ OUTPUT 1
⑫	- OUTPUT 1

**BLOCK DIAGRAM**

