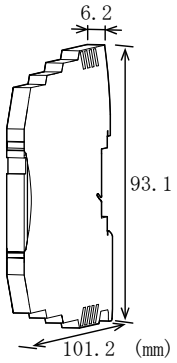
Product Specification Sheet Model: MS5003

Ultra-Slim Millivolt Isolator with Isolated Single Output

DESCRIPTION

The MS5003 is an ultra-slim millivolt (mV) isolator that converts mV input signals from sensors or other devices into commonly used DC signals and provides an isolated single output.



ORDERING CODE

MS5003 - □□/□□

Model

Input

1: 0 to 10mV DC
2: 0 to 100mV DC
1W: ±10mV DC
2W: ±100mV DC
0: Other DC voltage signals

Output

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

Connection Type

No code: Screw connection
S: Spring-cage connection

Options

No code: None
/X: Special order

* For non-standard options, ask MTT for availability.

ORDERING INFORMATION

To place an order, please use the ordering code format as shown above.

(e.g.) MS5003-26
MS5003-26/S
MS5003-26/X (Frequency characteristics 1Hz-3dB)
MS5003-26/SX (Frequency characteristics 1Hz-3dB)

Other Ordering Examples:
For an input code of "0": MS5003-0A (Input: 0 to 150mV)
For an output code of "Z": MS5003-2Z (Output: 8 to 20mA)

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	13mA max. (at 24V DC) (Approx. 9mA for 100% input)
Current Output	30mA max. (at 24V DC) (Approx. 25mA for 100% input)

●INPUT SECTION

Input Resistance	With or without power: 1MΩ min.
Allowable Input Voltage	30V DC max., continuous.
Range Available	
Input Range (DC)	-200mV to 200mV
Input Span (DC)	5mV* to 400mV
Input Bias	-100 to 100%

Note: For any input range including negative input signals, the input span ranges from *10mV to 400mV.

Input Spec Ex. 1: For 50 to 150mV input, the input span is 100mV and the bias +50%.

Input Spec Ex. 2: For -10 to 30mV input, the input span is 40mV and the bias -25%.

●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.)	
Span Adjustment	Approx. ±5% of span. (Adjustable by the front-accessible trimmer.)	

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 ±0.1% of span (at 25°C±5°C).
Temperature Effect	Better than ±0.1% of span per 10°C change in ambient.
Response Time	160ms 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	100MΩ 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

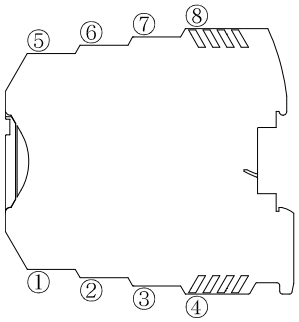
Installation	DIN rail mounting
Wiring	Screw connection or spring-cage connection Recommended tightening torque for screw connection: 0.5 to 0.6 Nm
Wire Size	0.2 to 2.5 mm^2
External Dimensions	W93.1 × H101.2 × D6.2 mm
Weight	60g max.

●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)
Conformal Coating	HumiSeal® 1A27NSLU (Polyurethane)

*HumiSeal® is a registered trademark of Chase Corporation.

TERMINAL ASSIGNMENTS



①	INPUT +
②	INPUT −
③	N.C.
④	N.C.
⑤	OUTPUT +
⑥	OUTPUT −
⑦	POWER +
⑧	POWER −

BLOCK DIAGRAM