Product Specification Sheet Model: MS3003

Terminal Block Type Millivolt Isolator with Isolated Single Output

DESCRIPTION

The MS3003 is a terminal block type 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

MS3003 - □ - □□

Model

Power Supply

D: 24V DC **P**: 12V DC

* The 12V DC version is not subject to CE approval.

Input

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

Output

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

Options

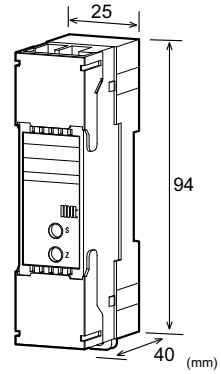
No code: None
/K: Fast response (0 to 90% response time: 10ms max.)
/X: Others (Special order)

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

ORDERING INFORMATION

To place an order, please use the ordering code format as shown above.
(e.g.) MS3003-D-2A

Other Ordering Examples:
For an input code of "0": MS3003-D-0A (Input: 0 to 75mV)
For an output code of "Z": MS3003-D-2Z (Output: 8 to 20mA)
For an option code of "X": MS3003-D-2A/X (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	24V DC: 24V DC±10% 12V DC: 12V DC±20%	
Power Sensitivity	Better than ±0.1% of span for each power supply range.	
Power Line Fuse	250mA fuse is installed (standard).	
Power Consumption		
Power	24V DC	12V DC
Current Output	40mA max.	70mA max.
Voltage Output	16mA max.	25mA max.

Note: The above figures are in the condition of the rated voltage supplied.

INPUT SECTION

Input Resistance	1MΩ min. with or without power.
Allowable Input Voltage	30V DC max., continuous.
Ranges 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)	1V span and up	2mA max.
	10mV	10kΩ min.
	100mV	100kΩ min.
Current Output (DC)		550Ω max.
Zero Adjustment	Approx. ±2.5% of span. (Adjustable by the front-accessible trimmer.)	
Span Adjustment	Approx. ±2.5% 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 ±0.2% 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	Input / Output / Power: 1500V 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	DIN rail mounting
Wiring	M3.5 screw terminal connection (with drop-out prevention screws)
Screwing Torque	0.8 to 1.0 [Nm] * Recommended
External Dimensions	W25.0 × H94.0 × D40.0mm
Weight	90g max.

●MATERIALS

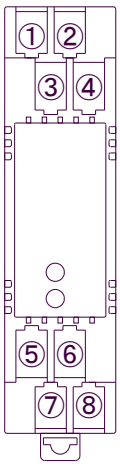
Housing	ABS resin (UL 94V-0)
Screw Terminal	Nickel-plated steel
Printed Circuit Board	Glass fabric epoxy resin (FR-4: UL 94V-0)
Anti-Humidity Coating	HumiSeal® 1A27NS (Polyurethane)

* HumiSeal® is a registered trademark of Chase Corporation.

●STANDARDS CONFORMITY

EC Directive Conformity	EMC Directive (2014/30/EU) EN61326-1: 2013

TERMINAL ASSIGNMENT



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

BLOCK DIAGRAM