



Slim Plug-In Millivolt Isolator with Isolated Single/Dual Output (Fast Response Model)

DESCRIPTION

The MS3743 is a slim, plug-in millivolt (mV) isolator that converts mV input signals from sensors or other devices into commonly used DC signals and provides isolated single or dual output. This model features a fast response time of 80µs (0-90%) with voltage output or 150µs (0-90%) with current output.

ORDERING CODE

Model **MS3743** - -

Power Supply

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

Input

7: 0 to 50mV DC **7W:** ±50mV DC
2: 0 to 100mV DC **2W:** ±100mV DC
0: Other DC voltage signals

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

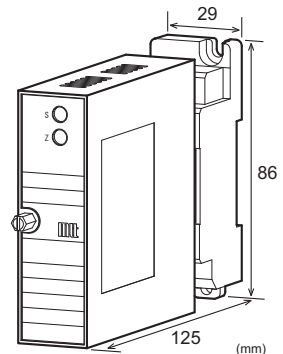
Output 2

No code: None
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.

Options

No code: None
/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. (e.g.) MS3743-A-244

Other Ordering Examples:
For an input code of "0": MS3743-A-044 (Input: 0 to 75mV)
For an output code of "0": MS3743-A-240 (Output: 2 to 10V)
For an option code of "X": MS3743-A-24/X (Response frequency: 5kHz)

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 is installed (standard). | | |
| Power Consumption | | | |
| Power | 100-240V AC | 24V DC | 100-240V DC |
| Single Output | 4.0VA max | 1.6W max | 4.8W max |
| Dual Output | 5.0VA max | 1.8W max | 6.0W max |

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) | 20mV* to 400mV |
| Input Bias | -100 to 100% |

Note: For any input range including negative input signals, the input span ranges from *40mV 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 -20 to 80mV input, the input span is 100mV and the bias -20%.

● **OUTPUT SECTION**

| | | |
|--|---|---|
| Allowable Output Load | | |
| Voltage Output (DC) | 1V span and up 10mV 100mV | 2mA max. 10kΩ min. 100kΩ min. |
| Current Output (DC) | 4-20mA single output 4-20mA dual output | 750Ω max. Output 1: 550Ω max. Output 2: 350Ω max. |
| Zero Adjustment | Approx. ±5% of span. (Adjustable by the front-accessible trimmer.) | |
| Span Adjustment | Approx. ±5% 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% |
| Note: 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 | Voltage output: 80μs max. (0 to 90%) with a step input at 100% (Frequency characteristics: 10kHz-3dB). Current output: 150μs max. (0 to 90%) with a step input at 100% (Frequency characteristics: 3kHz-3dB). |
| 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**

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|---------------------|--|
| Installation | Wall/DIN rail mounting |
| Wiring | M3.5 screw terminal connection (with a power terminal block cover & drop-proof screws) |
| Screwing Torque | 0.8 to 1.0 [Nm] * Recommended |
| External Dimensions | W29 × H86 × D125 mm (including the mounting screw and socket) |
| Weight | Main unit: 120g max. Socket: 80g max. |

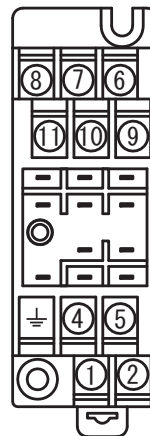
● **MATERIAL**

| | |
|------------------------------|--|
| Housing | ABS resin (UL 94V-0) |
| Terminal Block | PBT resin (UL 94V-0) |
| Terminal Block Cover | PC resin (UL 94V-2) |
| DIN Rail Stopper | PP resin (UL 94HB) |
| Screw Terminal | Nickel-plated steel |
| Contacts Material and Finish | Brass with 0.2μm gold plating |
| Printed Circuit Board | Glass fabric, epoxy resin (FR-4: UL 94V-0) |

● **STANDARDS CONFORMITY**

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|-------------------------|---|
| 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. |
|-------------------------|---|

TERMINAL ASSIGNMENTS



| | | |
|---|------------|-------|
| ① | P (+) | POWER |
| ② | N (-) | |
| ⊥ | GND | |
| ④ | + OUTPUT 1 | |
| ⑤ | - OUTPUT 1 | |
| ⑥ | N.C. | |
| ⑦ | + OUTPUT 2 | |
| ⑧ | - OUTPUT 2 | |
| ⑨ | + INPUT | |
| ⑩ | - INPUT | |
| ⑪ | N.C. | |

BLOCK DIAGRAM

