



## Product Specification Sheet

Model: **MS3769**

**MS3700**

**Slim Plug-In Absolute Value Signal Conditioner with Isolated Single/Dual Output**

### DESCRIPTION

The MS3769 is a slim, plug-in absolute value signal conditioner that converts DC current or voltage signals with polarity into absolute value signals and provides isolated single or dual output.

### ORDERING CODE

**MS3769** - ☐ - ☐ ☐ ☐

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

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

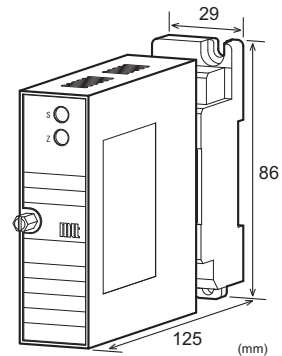
**Input** \_\_\_\_\_  
**D:** ABS 0 to 20mA DC **3:** ABS 0 to 1V DC  
**Z:** Other DC current signals **4:** ABS 0 to 10V DC  
**5:** ABS 0 to 5V DC  
**0:** Other DC voltage signals

**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  
**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  
**/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.  
 (e.g.) MS3769-A-DA6

#### Other Ordering Examples:

For an input code of "Z": MS3769-A-ZAA (Input: 0 to 10mA)

For an output code of "0": MS3769-A-D60 (Output: 2 to 5V)

For an option code of "X": MS3769-A-56/X (0-90% response time: 5ms max.)

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)<br>24V DC: 24V DC±10%<br>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

|               | 100-240V AC | 24V DC   | 100-240V DC |
|---------------|-------------|----------|-------------|
| Single Output | 4.0VA max   | 1.5W max | 2.5W max    |
| Dual Output   | 5.0VA max   | 2.0W max | 3.0W max    |

#### INPUT SECTION

|                                |                                                          |
|--------------------------------|----------------------------------------------------------|
| <b>Input Resistance</b>        |                                                          |
| Voltage Input (DC)             | With or without power: 1MΩ min.                          |
| Current Input (DC)             | 0 to 20mA 250Ω                                           |
| <b>Allowable Input Voltage</b> |                                                          |
| Voltage Input Model            | 30V DC max., continuous. (Standard for a span up to 10V) |
| Current Input Model            | 40mA DC max., continuous. (0 to 20mA)                    |

#### Ranges Available

|                  | Current Signal | Voltage Signal |
|------------------|----------------|----------------|
| Input Range (DC) | -100 to 100mA  | -300 to 300V   |
| Input Span (DC)  | 100μA to 200mA | 200mV to 600V  |

Note: 0mA or 0V corresponds to 0%.

Input values at -100% and 100% have the same absolute value.

## ● OUTPUT SECTION

| Maximum Output Load                                                                                        |                                                                       |                |
|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|----------------|
| Voltage Output<br>(DC)                                                                                     | 1V span and up                                                        | 2mA max.       |
|                                                                                                            | 10mV                                                                  | 10kΩ min.      |
|                                                                                                            | 100mV                                                                 | 100kΩ min.     |
| Current Output<br>(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.<br>(Adjustable by the front-accessible trimmer.) |                |
| Span Adjustment                                                                                            | Approx. ±5% of span.<br>(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              | 85ms 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)<br>Power / Ground: 2000V AC for 1 minute (Cutoff current: 5mA)<br>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<br>Humidity: 5 to 90% RH (non-condensing)                                                                                                                                                         |
| Storage Temperature        | -10 to 60°C                                                                                                                                                                                                                       |

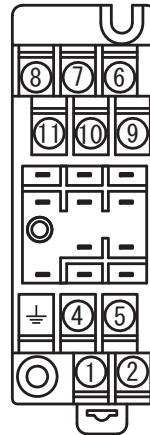
## ● PHYSICAL

|                     |                                                                                        |
|---------------------|----------------------------------------------------------------------------------------|
| 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.<br>Socket: 80g max.                                               |

## ● MATERIAL

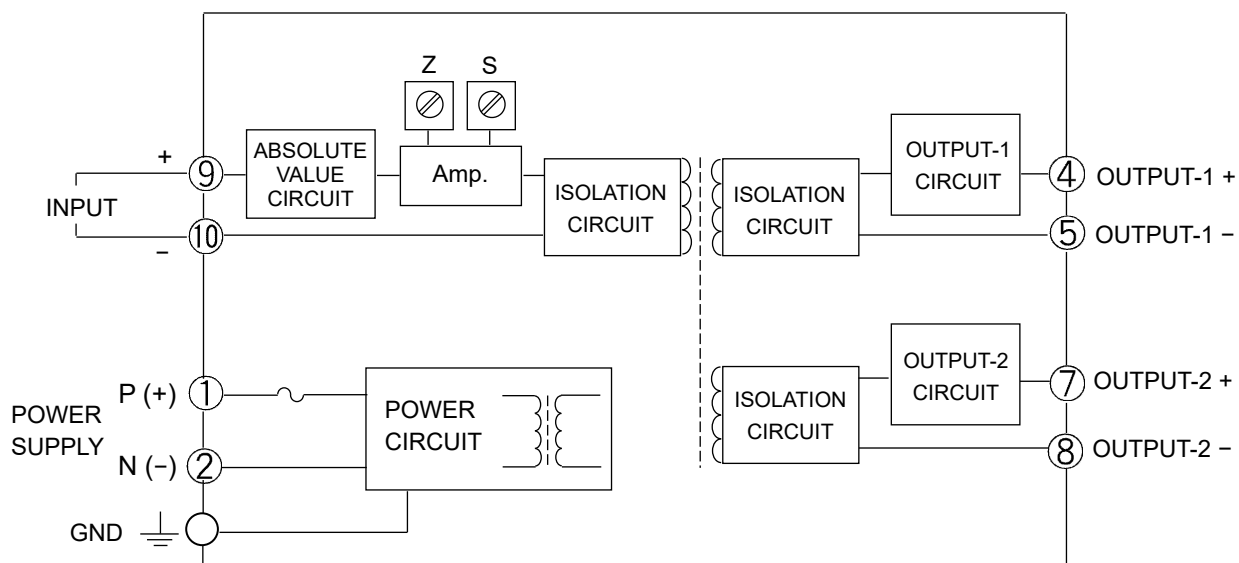
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|------------------------------|--------------------------------------------|
| Housing                      | ABS resin (UL 94V-0)                       |
| Terminal Block               | PBT resin (UL 94V-0)                       |
| Terminal Block 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) |

## TERMINAL ASSIGNMENTS



|   |            |       |
|---|------------|-------|
| ① | P (+)      | POWER |
| ② | N (-)      |       |
| ③ | 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



## INPUT/OUTPUT CHARACTERISTICS

Input: ABS 0 to 10V

Output: 0 to 10V

