Slim Plug-In Loop-Powered Isolator
(2-Channel Model)

DESCRIPTION

The MS3764 is a slim, plug-in dual-channel loop-powered isolator that takes the power from its input current loop.

ORDERING CODE

MS3764 - ☐

Model

Input (Channel 1 / Channel 2)
4 to 20mA DC / 4 to 20mA DC

Output (Channel 1 / Channel 2)
A: 4 to 20mA DC / 4 to 20mA DC
V: 1 to 5V DC / 1 to 5V DC

ORDERING INFORMATION

To place an order, please use the ordering code format as shown above.
 (e.g.) MS3764-V

INPUT RESISTANCE CALCULATION

The input resistance for the current output model is calculated by the following equation:
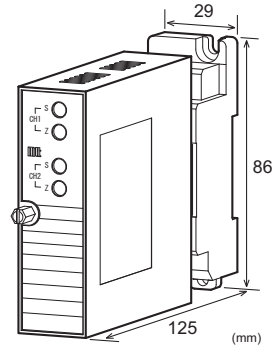
Input resistance = Approx. 230Ω + Load resistance (for 20mA DC input)
Maximum output load: 350Ω
(Allowable load resistance: 50 to 350Ω)

(Example) Input resistance with a load resistance of 250Ω
Input resistance = Approx. 230Ω + 250Ω = Approx. 480Ω
(for 20mA DC input)

The allowable load resistance of an input signal source must be not less than the resistance calculated above, added with the wiring resistance.
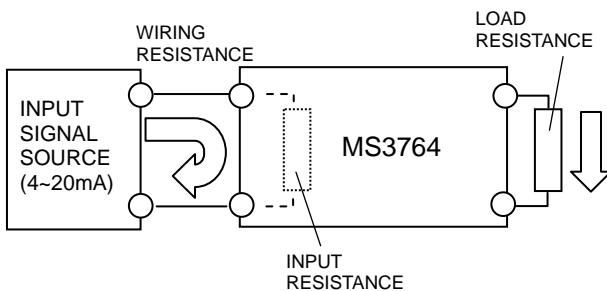
Note: The input resistance for the voltage output model is fixed to approx. 250Ω (for 20mA DC input).

SPECIFICATIONS

●INPUT SECTION

|	
Input Signal	4 to 20mA DC
Input Resistance	
Voltage Output Model	Approx. 250Ω (for 20mA DC input)
Current Output Model	Approx. 230Ω + Load resistance (for 20mA DC input)
Allowable Input Current	30mA DC max.

●OUTPUT SECTION

Allowable Output Load		
Voltage Output (DC)		$50k\Omega$ min.
Current Output (DC)	4 to 20mA	350Ω max.
	(Allowable load resistance: 50 to 350Ω)	
Zero Adjustment		
Voltage Output Model	Approx. ±2.5% of span.	
Current Output Model	Approx. ±0.5% of span. (Adjustable by the front-accessible trimmer.)	
Span Adjustment		
Voltage Output Model	Approx. ±2.5% of span.	
Current Output Model	Approx. ±1.5% of span. (Adjustable by the front-accessible trimmer.)	

Voltage Output

Current Output

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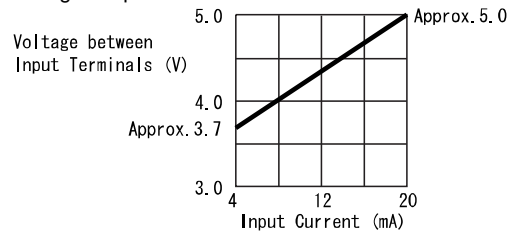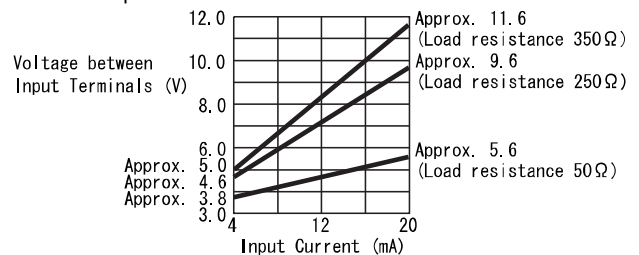
●PERFORMANCE

|	
Accuracy Rating	Better than ±0.15% of span.
Temperature Effect	Better than ±0.2% of span per 10°C change in ambient.
Response Time	15ms max. (0 to 90%) with a step input at 100%.
Output Variation due to Load Change	0.01%/Ω (50 to 150Ω) 0.005%/Ω (150 to 350Ω) * Adjusted at 250Ω for shipment.
CMRR	100dB min. (500V AC, 50/60Hz)
Isolation	Isolation between input and output, and channels.
Insulation Resistance	100MΩ min. (@ 500V DC) between input and output, and channels.
Dielectric Strength	Input / Output: 1500V AC for 1 minute (Cutoff current: 0.5mA) Channel to Channel: 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	Wall/DIN rail mounting
Wiring	M3.5 screw terminal connection (with a power terminal block cover & drop-out prevention screws)
Screwing Torque	0.8 to 1.0 [Nm] * Recommended
External Dimensions	W29 × H86 × D125mm (including the mounting screw and socket)
Weight	Main unit: 100g max. Socket: 80g max.

●MATERIALS

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)
Anti-Humidity Coating	HumiSeal® 1A27NS (Polyurethane)

* HumiSeal® is a registered trademark of Chase Corporation.

TERMINAL ASSIGNMENT
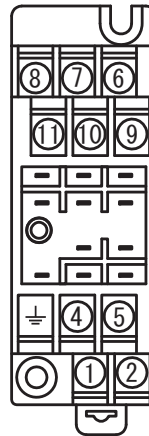
①	N.C.
②	N.C.
⏚	N.C.
④	+ OUTPUT Ch 1
⑤	- OUTPUT Ch 1
⑥	- INPUT Ch 2
⑦	+ OUTPUT Ch 2
⑧	- OUTPUT Ch 2
⑨	+ INPUT Ch 1
⑩	- INPUT Ch 1
⑪	+ INPUT Ch 2

BLOCK DIAGRAM

Current Input / Current Output Model:
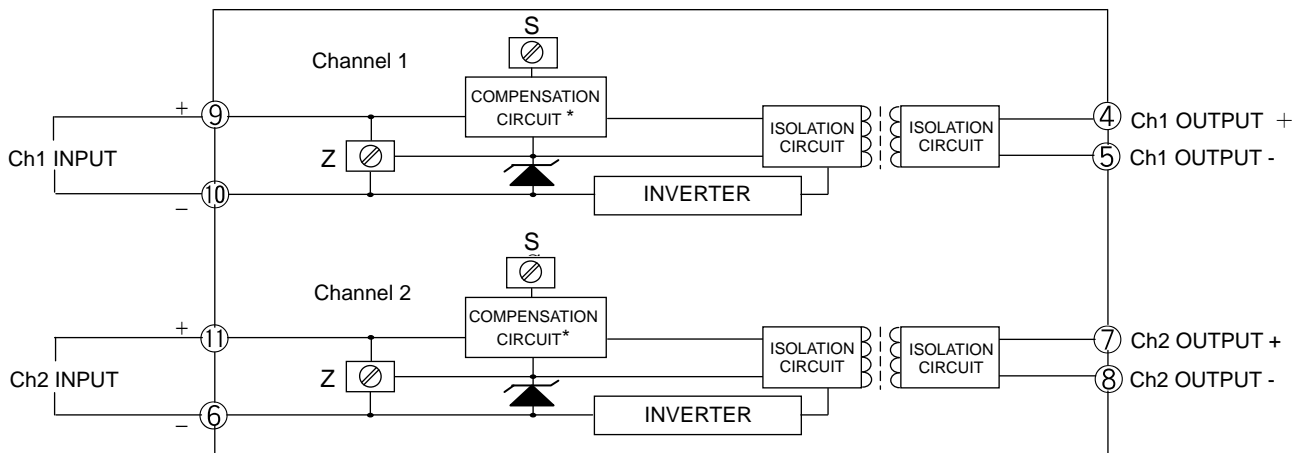
* CIRCUIT FOR COMPENSATING FOR OUTPUT VARIATION DUE TO LOAD CHANGE

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Current Input / Voltage Output Model:

```
                    Channel 1                                      Z      S
                                                                  [⊘]    [⊘]
          +    ⑨                     ┌──────────┐  ┌────────┐ ┌────────┐ ┌──────────────┐  ④  Ch1 OUTPUT  +
  Ch1 INPUT                          │ CHOPPER  │  │ISOLATION│ │ISOLATION│ │ BUFFER AMP.  │
                                     ├──────────┤  │CIRCUIT │ │CIRCUIT │ ├──────────────┤
          _    ⑩                     │ INVERTER │  └────────┘ └────────┘ │  RECTIFIER   │  ⑤  Ch1 OUTPUT -
                                     └──────────┘

                    Channel 2                                      Z      S
                                                                  [⊘]    [⊘]
          +    ⑪                     ┌──────────┐  ┌────────┐ ┌────────┐ ┌──────────────┐  ⑦  Ch2 OUTPUT +
  Ch2 INPUT                          │ CHOPPER  │  │ISOLATION│ │ISOLATION│ │ BUFFER AMP.  │
                                     ├──────────┤  │CIRCUIT │ │CIRCUIT │ ├──────────────┤
          _    ⑥                     │ INVERTER │  └────────┘ └────────┘ │  RECTIFIER   │  ⑧  Ch2 OUTPUT -
                                     └──────────┘
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