



**DESCRIPTION**

The MS3904 is a chassis-mount high-level signal conditioner (isolator) that converts DC input signals into mutually isolated dual channel DC output signals.

- ▽ A multi-slot chassis provides ease of maintenance and high-density mounting.
- ▽ Input, output 1, output 2, and power circuits are all isolated from each other.
- ▽ Equipped with a fuse on the DC power line as standard.

**ORDERING INFORMATION**

Ordering Code
MS3904-1□□-8□□_ [1]    [2] [3]

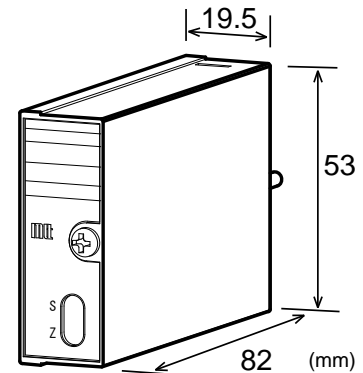
**SPECIFICATIONS**

**POWER SECTION**

Power Requirement	24V DC±10%
Power Sensitivity	Better than ±0.1% of span per 10% change in supply voltage
Power Line Fuse	160mA fuse
Current Consumption	45mA max. at 24V DC

**INPUT SECTION**

Input (Specify a code in the field [1].)	<ul style="list-style-type: none"> <li>■ 1–5V DC ..... V1</li> <li>■ 0–1V DC ..... V4</li> <li>■ 0–5V DC ..... V5</li> <li>■ 0–10V DC ..... V6</li> <li>■ ±5V DC ..... W5</li> <li>■ ±10V DC ..... W6</li> <li>■ Other DC voltage signals ..... X2 (□–□)</li> </ul> <p>Specify a DC voltage range in parentheses. The ranges available are from 0–200mV to 0–50V and from ±200mV to ±50V.</p> <ul style="list-style-type: none"> <li>■ 4–20mA DC (input resistance 250Ω) ..... C1</li> <li>■ Other DC current signals ..... CY (□–□)</li> </ul> <p>Specify a DC current range in parentheses. The ranges available are from 0–100μA to 0–100mA and from ±100μA to ±100mA.</p>
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Input Resistance	Voltage input: 1MΩ min. with or without power Current input: 250Ω (Standard for 4 to 20mA)
Allowable Input Voltage	Voltage input: 30V DC max., continuous. Current input: 40mA DC max., continuous.

**OUTPUT SECTION**

Output (Specify a code in the field [2].)	<table border="0"> <tr> <td>Output 1 / Output 2</td> <td>Code</td> </tr> <tr> <td>■ 1–5V DC / 1–5V DC</td> <td>V1</td> </tr> <tr> <td>■ 0–1V DC / 0–1V DC</td> <td>V4</td> </tr> <tr> <td>■ 0–5V DC / 0–5V DC</td> <td>V5</td> </tr> <tr> <td>■ 0–10V DC / 0–10V DC</td> <td>V6</td> </tr> <tr> <td>■ ±5V DC / ±5V DC</td> <td>W5</td> </tr> <tr> <td>■ ±10V DC / ±10V DC</td> <td>W6</td> </tr> <tr> <td>■ 1–5V DC / 4–20mA DC</td> <td>C1</td> </tr> <tr> <td>■ 4–20mA DC / 4–20mA DC</td> <td>C2</td> </tr> </table> <p>Note: Combinations of two outputs are only available as shown above.</p>	Output 1 / Output 2	Code	■ 1–5V DC / 1–5V DC	V1	■ 0–1V DC / 0–1V DC	V4	■ 0–5V DC / 0–5V DC	V5	■ 0–10V DC / 0–10V DC	V6	■ ±5V DC / ±5V DC	W5	■ ±10V DC / ±10V DC	W6	■ 1–5V DC / 4–20mA DC	C1	■ 4–20mA DC / 4–20mA DC	C2
Output 1 / Output 2	Code																		
■ 1–5V DC / 1–5V DC	V1																		
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■ 1–5V DC / 4–20mA DC	C1																		
■ 4–20mA DC / 4–20mA DC	C2																		
Allowable Output Load	Voltage output: 2mA max. Current output: 300Ω max. (350Ω max. for dual current output)																		
Zero Adjustment	Approx. ±2% of span (Adjustable by front-accessible trimmer)																		
Span Adjustment	Approx. ±2% of span (Adjustable by front-accessible trimmer)																		

**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, and power.

Dielectric Strength	Input / [Output 1, Output 2, Power]: 1500V AC for 1 minute (Cutoff current: 0.5mA) Output 1 / Output 2 / Power: 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: 0 to 55°C Humidity: 5 to 90% RH (non-condensing)
Storage Temperature	-10 to 60°C

**ADDITIONAL**

Option (Specify the code in the field [3].)	<p>■ CE Compliant ..... /C</p> <p>Notes:</p> <p>1. This applies to orders having an output code other than “-8C1” and “-8C2”.</p> <p>2. CE-compliant chassis must be used to meet the CE marking requirements.</p>
Optional Parameter Changes	<p>You can optionally specify the following parameters when ordering. Please ask our Sales representatives for availability in advance.</p> <p>&lt;Parameter&gt; ..... &lt;How to specify&gt;</p> <p>■ Response frequency ... Fc = □□□Hz (Up to 200Hz)</p> <p>■ Response time constant · Tc = □□□s (Up to 2ms @ 90%)</p>

**PHYSICAL**

Installation	Mounted in an optional chassis (RC3900A-□□AI or RS3900-01TB).
Wiring *1	Wired to an optional chassis (RC3900A-□□AI or RS3900-01TB).
External Dimensions	W19.5 × H53 × D82mm
Weight	70g max.

\*1: For a dual current output version, external connection to the Output-1 shall only be made with either the terminal block or D-subminiature connector.

**MATERIAL**

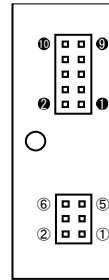
Housing	ABS resin
PC Board	Glass fabric, epoxy resin (FR-4: UL 94V-0)
Conformal Coating	HumiSeal® 1A27NSLU (Polyurethane)

\* HumiSeal® is a registered trademark of Chase Corporation.

**STANDARDS CONFORMITY**

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



PIN	SIGNAL	PIN	SIGNAL
①	+ INPUT	①	+ OUTPUT 1
②	- INPUT	②	- OUTPUT 1
③	N. C.	③	+ OUTPUT 2
④	N. C.	④	- OUTPUT 2
⑤	N. C.	⑤	+ POWER DC24V
⑥	N. C.	⑥	- POWER DC24V
		⑦	N. C.
		⑧	N. C.
		⑨	F. G.
		⑩	N. C.

**BLOCK DIAGRAM**

