



**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]

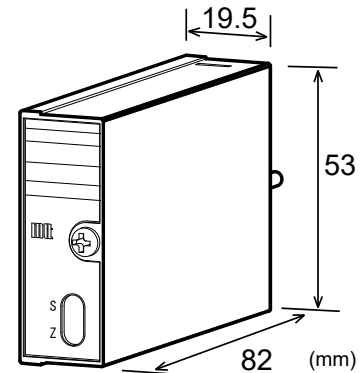
**SPECIFICATIONS**

**POWER SECTION**

Power Requirement	24V DC±10%
Power Sensitivity	Better than ±0.1% of span per 10% change in supply voltage
Power Line Fuse	Output codes other than C2: 160mA fuse Output code C2: 125mA 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 (□–□) Specify a DC voltage range in parentheses. The ranges available are from 0–200mV to 0–50V and from ±200mV to ±50V.</li> <li>■ 4–20mA DC (input resistance 250Ω) ..... C1</li> <li>■ Other DC current signals ..... CY (□–□) Specify a DC current range in parentheses. The ranges available are from 0–100μA to 0–100mA and from ±100μA to ±100mA.</li> </ul>
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Input Resistance	Voltage input: 1MΩ min. with or without power Current input: 250Ω (standard for 4–20mA)
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].)	<p>Output 1 / Output 2 ..... Code</p> <ul style="list-style-type: none"> <li>■ 1–5V DC / 1–5V DC ..... V1</li> <li>■ 0–1V DC / 0–1V DC ..... V4</li> <li>■ 0–5V DC / 0–5V DC ..... V5</li> <li>■ 0–10V DC / 0–10V DC ..... V6</li> <li>■ ±5V DC / ±5V DC ..... W5</li> <li>■ ±10V DC / ±10V DC ..... W6</li> <li>■ 1–5V DC / 4–20mA DC ..... C1</li> <li>■ 4–20mA DC / 4–20mA DC ..... C2</li> </ul> <p>Note: Combinations of two outputs are only available as shown above.</p>
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)

**ADDITIONAL**

Options [3]	<ul style="list-style-type: none"> <li>■ CE compliant ..... /C Note: CE-compliant chassis must be used to meet the CE marking requirements.</li> <li>■ Polyurethane conformal coating ..... /H</li> </ul>
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> <ul style="list-style-type: none"> <li>■ Response frequency Fc = □□□Hz (Up to 200Hz)</li> <li>■ Response time constant Tc = □□□s (Up to 2ms @ 90%)</li> </ul>

**PERFORMANCE**

Accuracy Rating	Better than $\pm 0.1\%$ of span (at $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$ )
Temperature Effect	Better than $\pm 0.2\%$ of span per $10^{\circ}\text{C}$ 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	100M $\Omega$ 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 $55^{\circ}\text{C}$ Humidity: 5 to 90% RH (non-condensing)
Storage Temperature	-10 to $60^{\circ}\text{C}$

**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 × D82 mm
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.

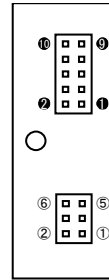
**MATERIAL**

Housing	ABS resin
PC Board	Glass fabric, epoxy resin (FR-4: UL 94V-0)

**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**

