



Standard Specifications Type: MS3104

MS3100

Terminal Block Type DC Signal Conditioner with Isolated Single/Dual Output (Isolator)

Overview

MS3104 is a terminal block type DC signal conditioner (isolator) to convert DC or VDC signals into various DC signals as selected.

Ordering Format

MS3104 - □ - □ - □ - □

Type _____

Power Supply _____
 A: AC 100~240V (50~60Hz)
 D: DC 24V P: DC 110V

Input Signal _____
 A: 4 ~ 20mA DC 3 : 0 ~ 1V DC
 B: 2 ~ 10mA DC 4 : 0 ~ 10V DC
 C: 1 ~ 5mA DC 5 : 0 ~ 5V DC
 D: 0 ~ 20mA DC 6 : 1 ~ 5V DC
 E: 4 ~ 20mA DC*1 4W: ±10V DC
 H: 10 ~ 50mA DC 5W: ±5V DC
 Z: Designated DC 0 : Designated VDC

*1 Input Resistance 50Ω

Output-1 _____
 A: 4 ~ 20mA DC 1 : 0 ~ 10mV DC
 D: 0 ~ 20mA DC 2 : 0 ~ 100mV DC
 Z: Designated DC 3 : 0 ~ 1V DC
 4 : 0 ~ 10V DC
 5 : 0 ~ 5V DC
 6 : 1 ~ 5V DC
 3W: ±1V DC
 4W: ±10V DC
 5W: ±5V DC
 0 : Designated VDC

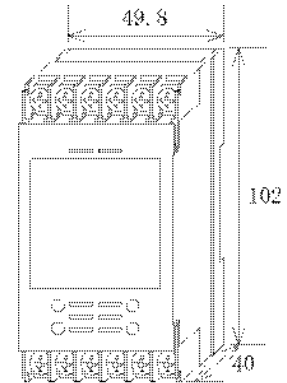
Output-2 _____
 No entry: None.
 Similar to Output-1.
 ☞When Out-1 is set for Voltage, Out-2 cannot be designated for Current.
 ☞When both outputs are set for 4~20mA, the Output Load of Out-1 will be less than 550Ω, the one of Out-2 will be 350Ω.

Option _____
 No entry: None.
 /K : Fast Response (Faster than 10msec: 0~90%)
 /X : Custom Order.
 *Contact us for custom-order requirement.

Please specify upon ordering

•Product Model Number
 (Example) MS3104-A-AA6

- Other items to be specified:
 •For input "Z": MS3104-A-ZAA (Input 8~20mA)
 •For output "0": MS3104-A-A60 (Output 2~5V)
 •For option "X": MS3104-A-66/X (Response Frequency 5msec max:0~90%)
 •For more than one option: Enter Option Codes in succession (/KX)



Specifications

●Power Supply Section

Range of allowable voltages	AC100~240V : AC85~264V (47~63Hz)
	DC24V : DC24V±10%
	DC110V : DC90~121V

Power Sensitivity Within ±0.1% of Span for each power supply voltage.

Power Supply Fuse 160mA Fuse

Maximum Power Consumption

Power Supply	AC100-240V	DC24V	DC110V
Single Output	Approx. 4.0VA	Approx. 1.2W	Approx. 4.8W
Dual Output	Approx. 5.0VA	Approx. 1.6W	Approx. 6.0W

●Input Section

Input Resistance

Voltage Input(DC)	With excitation	1MΩ min.
	Without excitation	1MΩ min.
Current Input(DC)	4~20mA(Standard)	250Ω
	2~10mA	250Ω
	1~5mA	100Ω
	0~20mA	250Ω
	10~50mA	10Ω

Input Voltage Allowable

Voltage Input	30V DC max. continuous (Span 10V or below: Standard)
Current Input	40mA DC max. continuous (4~20mA: Standard)

Range of Products Available

	Current Signal	Voltage Signal
Input Range(DC)	-100~100mA	-300~300V
Input Span(DC)	100 μA*1~200mA	200mV*2~600V
Input Bias	-100~100%	-100~100%

*When negative input is contained, the span becomes *1200 μA~, *2400mV~.
 (e.g.1) 3~8V⇒Input span 5V, Bias 60%
 (e.g.2) -5~0V⇒Input span 5V, Bias -100%

●Output Section

Maximum Output Load

Voltage Output (DC)	1V Span min.	2mA max.
	10mV	10kΩ min.
	100mV	100kΩ min.
Current Output (DC)	4~20mA Single output	750Ω max.
	4~20mA Dual output	Out-1 550Ω max. Out-2 350Ω max.

Zero Adjustment Approx. ±5% of Span
 Range (Adjustable by Trimmer on front panel)

Span Adjustment Approx. ±5% of Span
 Range (Adjustable by Trimmer on front panel)

● Output Section

Range of Products Available		
	Current Signal	Voltage Signal
Output Range (DC)	0~20mA	-10~10V
Output Span(DC)	4~20mA	10mV~20V
Output Bias	0~100%	-100~100%

*For current output smaller than 0.1mA, the accuracy is not guaranteed.
 (e.g.1) 4~20mA⇒Output Span 16mA, Bias 25%
 (e.g.2) -1~4V⇒Output Span 5V, Bias -20%

● Standard Performance

Conversion Accuracy	Within $\pm 0.1\%$ /F. S. (@25°C $\pm 5^\circ$ C)
Temp. Characteristics	Within $\pm 0.2\%$ of Span with every 10°C variation
Response Time	85msec max.(0~90%)@100% step input
CMRR	100dB min. (500V AC, 50/60Hz)
Signal Isolation	Between Input - Out1-Out2-Power Supply-Ground
Isolation Resistance	100M Ω min. (@500V DC) Between Input-Out1-Out2-Power Supply-Ground
Dielectric Strength	Between Input-[Out1,Out2]-[Power Supply, Ground] :200V AC, Shut Down Current 0.5mA for 1 minute Between Power Supply - Ground :200V AC, Shut Down Current 5mA for 1 minute Between Out1 - Out2 :500V AC, Shut Down Current 0.5mA for 1 minute
Measures against SWC	Conform to ANSI/IEEE C37.90.1-1989
Operating Environment	Temperature: -5~55°C Humidity : 5~90%RH (Non-Condensing)
Storage Temp.	-10~60°C

● Installation / Physical Specifications

Installation	DIN-rail mounting
Wiring	M3.5 screw terminal connection (Screw drop-protection)
Screw Tightening Torque	0.8~1[N·m] Recommendable
Outer Dimension	W49.8×H102.0×D40.0mm (incl. DIN rail.)
Mass	140g max.

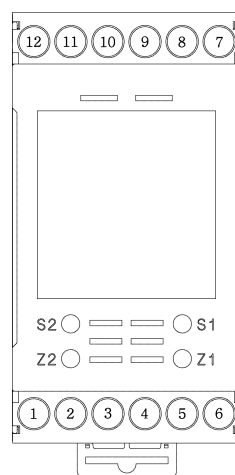
● Materials

Housing	ABS Resin (UL-94V-0)
Terminal Screws	Iron/Nickel-plated
P.C. Board	Glass-Epoxy (FR-4:UL-94V-0)
Moisture-proof Coating	HumiSeal Coating :HumiSeal 1A27NS(Polyurethane Resin)

● Compatible Standards

Compatible EC Directive	EMC Directive (2004/108/EC) EN61326-1:2006 Low Voltage Directive (2006/95/EC) IEC61010-1/EN61010-1 Installation category II, Pollution degree 2, Max. operating voltage 300V Reinforced insulation between [Input·Output·GND]-Power Supply
-------------------------	--

Terminal Arrangement / Signal Assignment



①	+ OUTPUT 2
②	- OUTPUT 2
③	N. C
④	P(+)
⑤	N(-)
⑥	GND
⑦	+ INPUT
⑧	- INPUT
⑨	N. C
⑩	N. C
⑪	+ OUTPUT 1
⑫	- OUTPUT 1

Block Diagram

