



Standard Specifications Type: MS3739

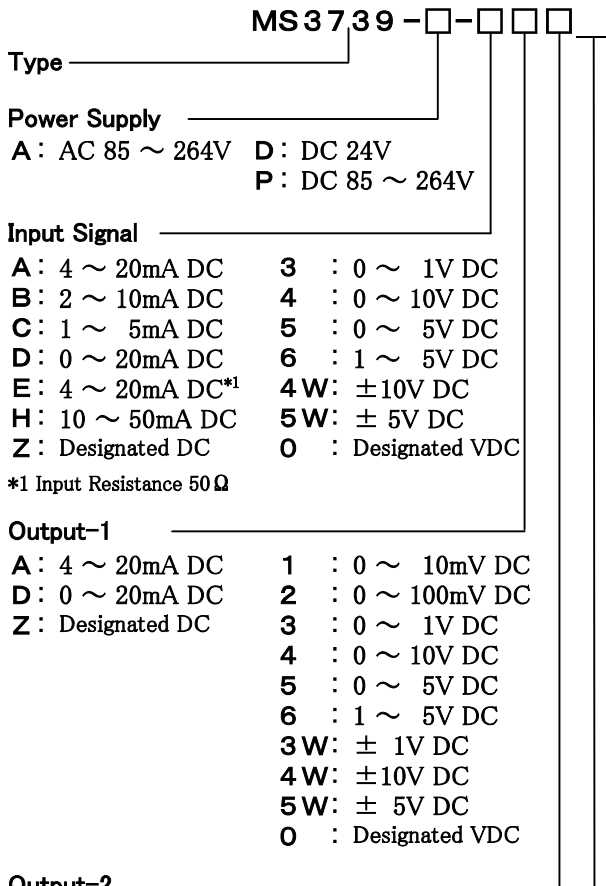
MS3700

Slim-shaped Plug-in Ratio Setter with Isolated Single/Dual Output (Ratio Bias)

Overview

MS3739 is a slim-shaped plug-in ratio(ratio/bias) setter with isolated single/dual output to deliver signals by carrying out ratio/bias calculation of DC current/voltage signals. (RoHS-conformed)

Ordering Format



Please specify upon ordering

•Product Model Number
 (Example) MS3739-A-666

*Factory default setting: Positive slope. Ratio=1, Bias=0%.

Other items to be specified:

•For input "Z": MS3739-A-0AA(Input 0.2~1V)

•For output "0": MS3739-A-A60(Output 2~5V)

•To specify the set value: (Slope/Ratio/Bias)

MS3739-A-666(Negative slope/Ratio=2/Bias=0%)



Specifications

●Power Supply Section.

Power Supply	AC85~264V(Rating100V~240V)47~63Hz
	DC24V±10%
	DC85~264V(Rating100V~240V)

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

Power Supply Fuse 160mA Fuse

Maximum Power Consumption

Power Supply	AC85~264V	DC24V	DC85~264V
Single Output	6.0VA max. / 1.7W max. / 6.0W max.		
Dual Output	6.5VA max. / 2.1W max. / 7.2W max.		

●Input Section

Input Resistance

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

Input Voltage Allowable

Voltage input	30V DC max. continuous (Span 10V max.)
Current input	40mA DC max. continuous (4~20mA)

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.) -5~0V⇒Input span 5V, Bias -100%

●Output Section

Maximum Output Load

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

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

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

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● Output Section

Ratio Setting	Positive slope: 0.1~4.00 (0.01 step)	
Range	Negative slope: -0.1~-4.00 (0.01 step)	
Bias Setting Range	-100~100% (1% step)	
Output Range	Approx. -10~+120% (1~5V DC)	
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 ±0.2%/F.S. (@25°C±5°C)	
When Ratio=1, Bias=0% (Positive slope)	
When Ratio=-1, Bias=0% (Negative slope)	
Arithmetic Expression	
Y=KX+B (Positive slope)	
Y=KX+B+F (Negative slope)	
Y: Output (%)	B: Bias
K: Ratio	F: 100%
X: Input (%)	
Temp Characteristics	Within ±0.15% of Span with every 10°C variation
Response Time	85msec max. (0~90%) @100% step input
Set Value Displays	Red LED Line height: 8.0mm 3 digits
CMRR	100dB min. (500V AC, 50/60Hz)
Signal Isolation	Between Input - Out1-Out2-Power Supply-Ground
Isolation	100MΩ 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

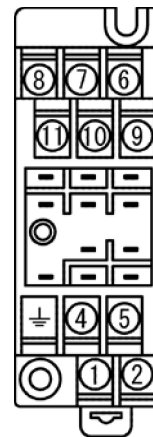
● Installation / Physical Specifications

Installation	Wall mounting &/or DIN-rail mounting
Wiring	M3.5 screw terminal connection (with P.S. terminal cover & screw drop-protection)
Screw Tightening Torque	0.8~1[N·m] Recommendable
Outer Dimension	W29×H86×D125mm (incl. set screws & terminal block)
Mass	Main body 120g max., Terminal Block 80g max.

● Materials

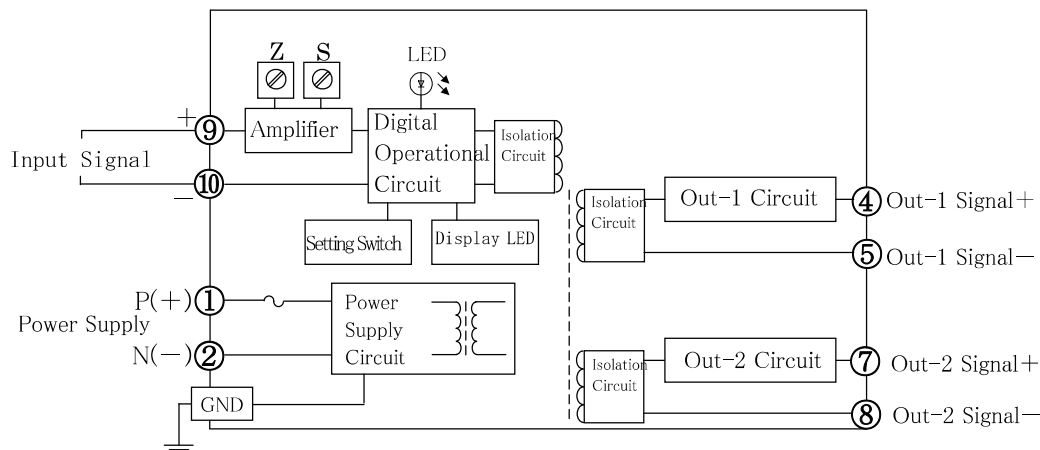
Housing	ABS Resin (UL-94V-0)
Terminal Block	ABS Resin (UL-94V-0)
Terminal Screws	Iron/Nickel-plated
Terminal Surface Treatment	0.2 μm / Gold plated
P.C. Board	Glass-Epoxy (FR-4:UL-94V-0)
Moisture-proof Coating	HumiSeal Coating :HumiSeal 1A27NS(Polyurethane Resin)

Terminal Arrangement / Signal Assignment

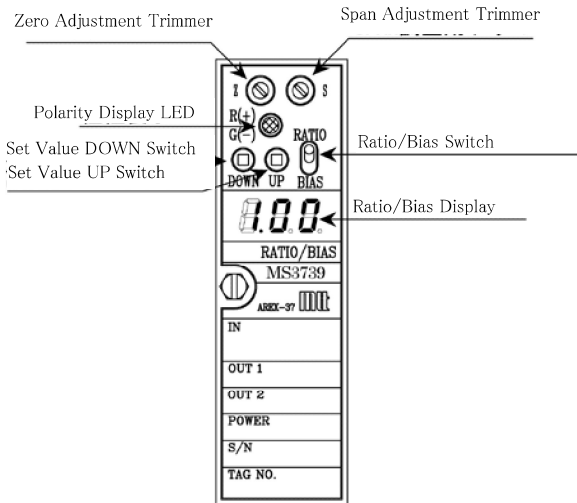


①	P(+)	POWER
②	N(-)	
⊥	GND	
④	+ OUTPUT 1	
⑤	- OUTPUT 1	
⑥	N. C	
⑦	+ OUTPUT 2	
⑧	- OUTPUT 2	
⑨	+ INPUT	
⑩	- INPUT	
⑪	N. C	

Block Diagram



Front Drawing



Setting

● **Setting Ratio/Bias**

Setting Ratio Value

When the Ratio/Bias Switch is on the upper side, the display will show the current ratio. The setting value can be changed by manipulating the Set Value UP/DOWN Switch.

Setting Bias Value

When the Ratio/Bias Switch is on the lower side, the display will show the current bias. The setting value can be changed by manipulating the Set Value UP/DOWN Switch.

Display

The Set Value Polarity Display LED will be lighting in red when the set value is positive and in green when the value is negative. The Ratio/Bias Display will be off in about 1 min. after the last manipulation of the setting switch, but the Set Value Polarity Display will keep lighting in green regardless of the polarity.

Set Value UP/DOWN Switch

During the Set Value UP/DOWN Switch is kept pressed, the shift speed of value setting will be accelerated.

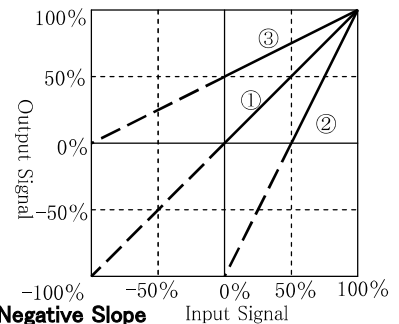
Factory Default Setting

The factory setting upper/lower limit value, unless otherwise specified, will be positive slope, Ratio=1, Bias=0%.

Example of Setting Positive Slope

Examples of setting positive slope when converting input signal 4~20mADC into Output signal 4~20mADC are shown below:

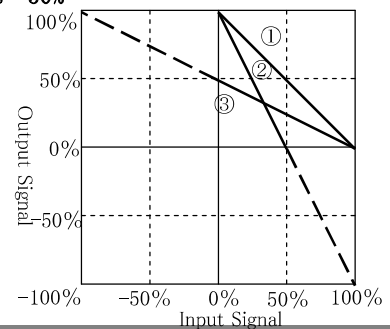
- (1) The setting for the case when input signal is 4~20mADC, the output signal is 4~20mADC will be:
Ratio=1.00, Bias=0%
- (2) The setting for the case when input signal is 12~20mADC, the output signal is 4~20mADC will be:
Ratio=2.00, Bias=-100%
- (3) The setting for the case when input signal is 4~20mADC, the output signal is 12~20mADC will be:
Ratio=0.50, Bias=50%



Example of Setting Negative Slope

Examples of setting negative slope when converting input signal 4~20mADC into Output signal 4~20mADC are shown below:

- (1) The setting for the case when input signal is 4~20mADC, the output signal is 4~20mADC will be:
Ratio=-1.00, Bias=0%
- (2) The setting for the case when input signal is 4~12mADC, the output signal is 20~4mADC will be:
Ratio=-2.00, Bias=0%
- (3) The setting for the case when input signal is 4~20mADC, the output signal is 12~4mADC will be:
Ratio=-0.50, Bias=-50%



State Display LED

● **Display Pattern**

Item	Event	7SEG LED Display	Red LED	Green LED	Output Signal	Recovery
1	Power activation and SW operation	Blinking with 1 sec. ON and 0.5 sec. OFF, 3 times	Blinking with 1 sec. OFF and 0.5 sec. ON, 3 times	Blinking with 1 sec. ON and 0.5 sec. OFF, 3 times	Normal output	—
2	Normal operation	Light OFF	Light OFF	Light ON	Normal output	—
3	Setting	Set value	As per the pattern when setting the SW	As per the pattern when setting the SW	Normal output	—
4	DAC error detected	Error code 1	Blinking with 0.25-sec. interval	Light OFF	0% output	None
5	Set value CRC error detected	Error code 2	Blinking with 1-sec. interval	Light OFF	0% output	Reset
6	Correction value CRC error detected	Error code 4	Blinking with 1-sec. interval	Light OFF	0% output	None
7	System error	Irregular	Light ON	Irregular	0% output	None

*Item 1: "888" and the dot light when 7SEG LED is ON.
*Item 4: Output signals may be irregular.
*Item 7: Output signals may be irregular.

*Item 7: Red LED may not be ON.
*Items 4 to 7: Error code is indicated in the last 1 digit to be distinguished from the normal set value.