



Standard Specifications Type: MS3739IB

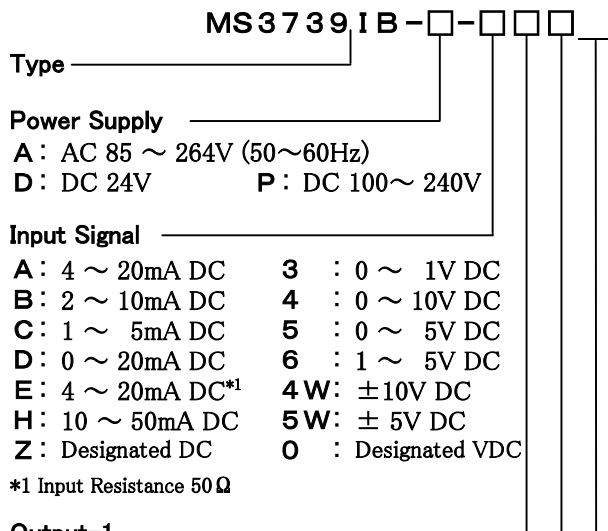
MS3700

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

Overview

MS3739IB is a slim-shaped plug-in ratio setter with isolated single/dual output (input bias model) functions to generate signals as selected, carrying out ratio/bias calculation of DC current/voltage signals. (RoHS-conformed)

Ordering Format



Power Supply

A: AC 85 ~ 264V (50~60Hz)
 D: DC 24V P: DC 100~ 240V

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, and that of Out-2 will be 350Ω.

Option

No entry: None.

/ X : Custom Order.....Additional cost required.

*Contact us for custom-order requirement.

Please specify upon ordering

Product Model Number

(Example) MS3739IB-A-AA6

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

Other items to be specified:

- For input "0": MS3739IB-A-0A6 (Input 2~10V)
- For output "0": MS3739IB-A-AAZ(Output 8~20mA)
- To specify the set value: (Slope/Ratio/Bias)
 MS3739IB-A-AA6(Negative slope/Ratio=2/Bias=0%)



Specifications

Power Supply Section.

Power Supply	AC85~264V (Rating 100V~240V) 47~63Hz
	DC24V ±10%
	DC85~264V (Rating 100V~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	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 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 *1)200 μA~, *2)400mV~.
 (e.g.1) 3~8V⇒Input Span 5V, Bias 60%
 (e.g.2) -5~0V⇒Input Span5V, 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 Range Approx. ±5% of Span (Adjustable by Trimmer on front panel)

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

Standard Specifications Type: MS3739IB Slim-shaped Plug-in Ratio Setter with Isolated Single/Dual Output (Input Bias Model) (Ratio Bias)

● 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 Equation	
Y=K(X+B) (Positive slope)	
Y=K(X+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 Resistance	100MΩ min. (@500V DC)
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

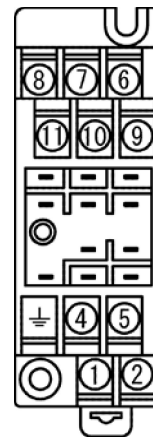
● Installation / Physical Specifications

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

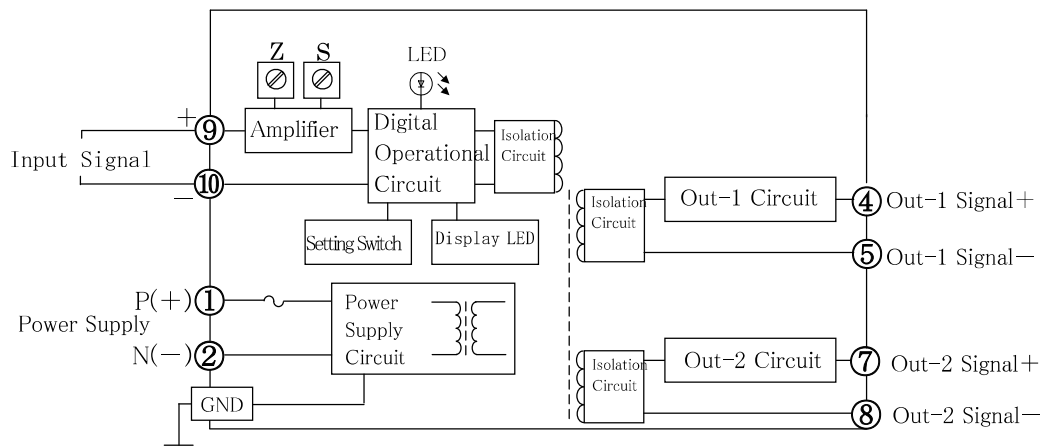
Housing	ABS Resin (UL-94V-0)
Terminal Block	ABS Resin (UL-94V-0)
Terminal Screws	Iron/Nickel-plated
Terminal Surface Treatment	0.2 μm / Gold plated
P.C. Board	Glass-Epoxy (FR-4:UL-94V-0)
Moisture-proof Coating	HumiSeal Coating :HumiSeal 1A27NS(Polyurethane Resin)

Terminal Arrangement / Signal Assignment

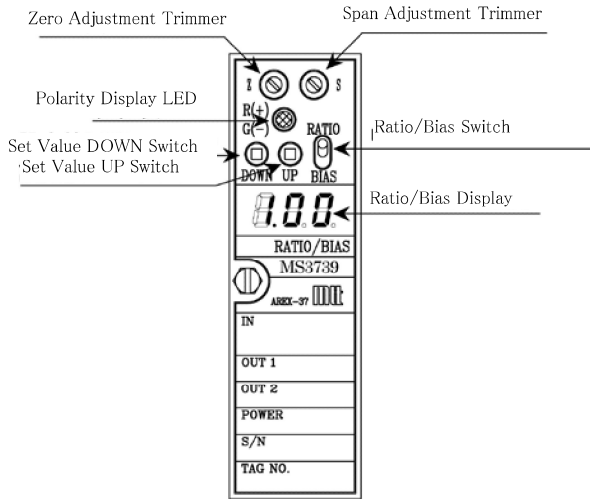


①	P(+)	POWER
②	N(-)	
⊥	GND	
④	+ OUTPUT 1	
⑤	- OUTPUT 1	
⑥	N. C	
⑦	N. C	
⑧	N. C	
⑨	+ INPUT	
⑩	- INPUT	
⑪	N. C	

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.

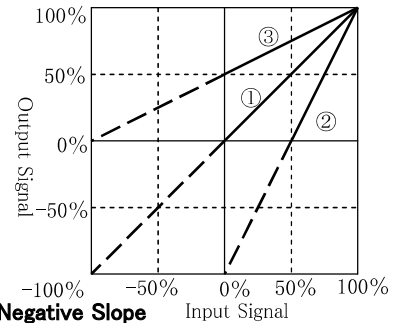
Factory Default Setting

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:

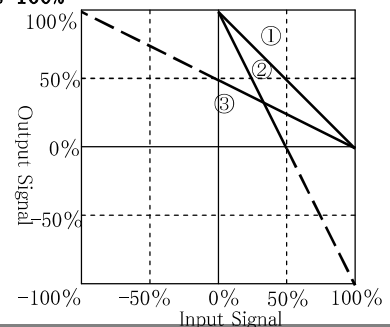
- (1) The setting for the case when input signal is 4~20mADC, the output signal is 4~20mADC will be:
Ratio=1.00, Bias=0%
- (2) The setting for the case when input signal is 12~20mADC, the output signal is 4~20mADC will be:
Ratio=2.00, Bias=-50%
- (3) The setting for the case when input signal is 4~20mADC,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



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=100%



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 7: Red LED may not be ON.