

**DESCRIPTION**

The MS3716 is a slim, plug-in first-order delay signal conditioner that adds a first-order delay to DC current or voltage input signals, converts them into commonly used DC signals, and provides isolated single or dual output.

**ORDERING CODE**

Model **MS3716** -  -

**Power Supply**

**A:** 100 to 240V AC (50 to 60Hz)  
**D:** 24V DC                      **P:** 100 to 240V DC

**Input**

**A:** 4 to 20mA DC                      **3:** 0 to 1V DC  
**B:** 2 to 10mA DC                      **4:** 0 to 10V DC  
**C:** 1 to 5mA DC                        **5:** 0 to 5V DC  
**D:** 0 to 20mA DC                      **6:** 1 to 5V DC  
**E:** 4 to 20mA DC \*1                  **4W:** ±10V DC  
**H:** 10 to 50mA DC                    **5W:** ±5V DC  
**Z:** Other DC current signal        **0:** Other DC voltage signal

\*1: Shunt resistor 50Ω

**Output 1**

**A:** 4 to 20mA DC                      **1:** 0 to 10mV DC  
**D:** 0 to 20mA DC                      **2:** 0 to 100mV DC  
**Z:** Other DC current signal        **3:** 0 to 1V DC  
   **4:** 0 to 10V DC  
   **5:** 0 to 5V DC  
   **6:** 1 to 5V DC  
   **3W:** ±1V DC  
   **4W:** ±10V DC  
   **5W:** ±5V DC  
   **0:** Other DC voltage signal

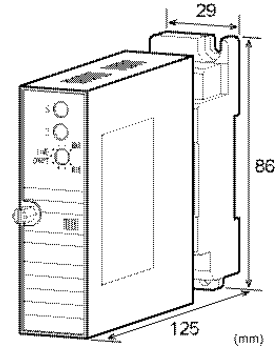
**Output 2**

**No code:** None  
**The codes are the same as for Output 1.**

Note 1: When a voltage output is selected for Output 1, a current output cannot be selected for Output 2.  
 Note 2: When the code A (4 to 20mA) is selected for both of the two outputs, the output load will be 550Ω maximum for Output 1 and 350Ω maximum for Output 2.

**Options**

**No code:** None  
**/L:** Dual current output with high output load (OUT-1: 750Ω / OUT-2: 550Ω)  
**/X:** Others (Special order)  
 \* For non-standard options, ask MTT for availability.


**ORDERING INFORMATION**

To place an order, please use the ordering code format as shown on the left. Also specify a time constant setting range between 0.2 and 20 seconds. (e.g.) MS3716-A-AA6 (0.5 to 10s)

**Other Ordering Examples:**  
 For an input code of "Z": MS3716-A-ZAA (0.2 to 20s / Input: 8 to 20mA)  
 For an output code of "0": MS3716-A-A60 (0.2 to 20s / Output: 2 to 5V)  
 Note: If you wish to include multiple options in your order, specify the option codes in series (e.g. /LX).

**SPECIFICATIONS**
**POWER SECTION**

<b>Power Requirements</b>	100 to 240V AC: 85 to 264V AC (47 to 63Hz)		
	24V DC: 24V DC±10%		
	100 to 240V DC: 85 to 264V DC		
<b>Power Sensitivity</b>	Better than ±0.1% of span for each power supply range.		
<b>Power Line Fuse</b>	160mA fuse is installed (standard).		
<b>Power Consumption</b>			
Power	100-240V AC	24V DC	100-240V DC
Single Output	5.0VA max	1.4W max	6.0W max
Dual Output	6.0VA max	1.8W max	6.0W max

**INPUT SECTION**

<b>Input Resistance</b>	
Voltage Input (DC)	With or without power: 1MΩ min.
Current Input (DC)	4 to 20mA (std.) 250Ω
	2 to 10mA 250Ω
	1 to 5 mA 100Ω
	0 to 20mA 250Ω
	10 to 50mA 10Ω
<b>Allowable Input Voltage</b>	
Voltage Input Model	30V DC max., continuous. (Standard for a span up to 10V)
Current Input Model	40mA DC max., continuous. (Standard for 4 to 20mA)
<b>Time Constant Setting Range</b>	A time constant setting range should be specified between 0.2 and 20 seconds.
<b>Time Constant Setting Trimmer</b>	Rotation of up to 260°

Time Constant Setting Accuracy	Minimum value: -30 to 0% of a user-specified value Maximum value: 0 to +30% of a user-specified value	
Ranges Available	Current Signal	Voltage Signal
Input Range (DC)	-100 to 100mA	-300 to 300V
Input Span (DC)	100 $\mu$ A <sup>(*)</sup> to 200mA	200mV <sup>(*)</sup> to 600V
Input Bias	-100 to 100%	-100 to 100%
Note: For any input range including negative input signals, the input spans for current and voltage signals range from <sup>(*)</sup> 200 $\mu$ A to 200mA and <sup>(*)</sup> 400mV to 600V, respectively.		
Input Spec. Ex. 1: For 3 to 8V input, the input span is 5V and the bias +60%.		
Input Spec. Ex. 2: For -5 to 0V input, the input span is 5V and the bias -100%.		

● **OUTPUT SECTION**

Maximum Output Load		
Voltage Output (DC)	1V span and up	2mA max.
	10mV	10k $\Omega$ min.
	100mV	100k $\Omega$ min.
Current Output (DC)	4-20mA single output	750 $\Omega$ max.
	4-20mA dual output	Output 1: 550 $\Omega$ max. Output 2: 350 $\Omega$ max.
Zero Adjustment	Approx. $\pm$ 5% of span. (Adjustable by the front-accessible trimmer.)	
Span Adjustment	Approx. $\pm$ 5% of span. (Adjustable by the front-accessible trimmer.)	

Ranges Available	Current Signal	Voltage Signal
Output Range (DC)	0 to 20mA	-10 to 10V
Output Span (DC)	4 to 20mA	10mV to 20V
Output Bias	0 to 100%	-100 to 100%
* For current output signals, the accuracy of any current output smaller than 0.1mA is not guaranteed.		
Output Spec. Ex. 1: For 4 to 20mA output, the output span is 16mA and the bias +25%.		
Output Spec. Ex. 2: For -1 to 5V output, the output span is 5V and the bias -20%.		

● **PERFORMANCE**

Accuracy Rating	Better than $\pm$ 0.1% of span (at 25 $^{\circ}$ C $\pm$ 5 $^{\circ}$ C).
Temperature Effect	Better than $\pm$ 0.2% of span per 10 $^{\circ}$ C change in ambient.
CMRR	100dB min. (500V AC, 50/60Hz)
Isolation	4-way isolation between input, output [Output 1/Output 2], power, and ground.
Insulation Resistance	100M $\Omega$ min. (@ 500V DC) between input, output [Output 1/Output 2], power, and ground.
Dielectric Strength	Input / Output [Output 1/Output 2] / [Power, Ground]: 2000V AC for 1 minute (Cutoff current: 0.5mA) Power / Ground: 2000V AC for 1 minute (Cutoff current: 5mA) Output 1 / Output 2: 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: -5 to 55 $^{\circ}$ C Humidity: 5 to 90% RH (non-condensing)
Storage Temperature	-10 to 60 $^{\circ}$ C

● **PHYSICAL**

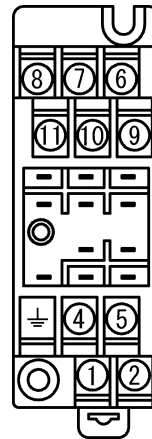
Installation	Wall/DIN rail mounting
Wiring	M3.5 screw terminal connection (with a power terminal block cover & drop-out prevention screws)
Screwing Torque	0.8 to 1.0 [Nm] * Recommended
External Dimensions	W29 x H86 x D125mm (including the mounting screw and socket)
Weight	Main unit: 120g max. Socket: 80g max.

● **MATERIALS**

Housing	ABS resin (UL 94V-0)
Terminal Block	PBT resin (UL 94V-0)
Terminal Block Cover	PC resin (UL 94V-2)
DIN Rail Stopper	PP resin (UL 94HB)
Screw Terminal	Nickel-plated steel
Contacts Material and Finish	Brass with 0.2 $\mu$ m gold plating
Printed Circuit Board	Glass fabric epoxy resin (FR-4: UL 94V-0)
Anti-Humidity Coating	HumiSeal <sup>®</sup> 1A27NS (Polyurethane)

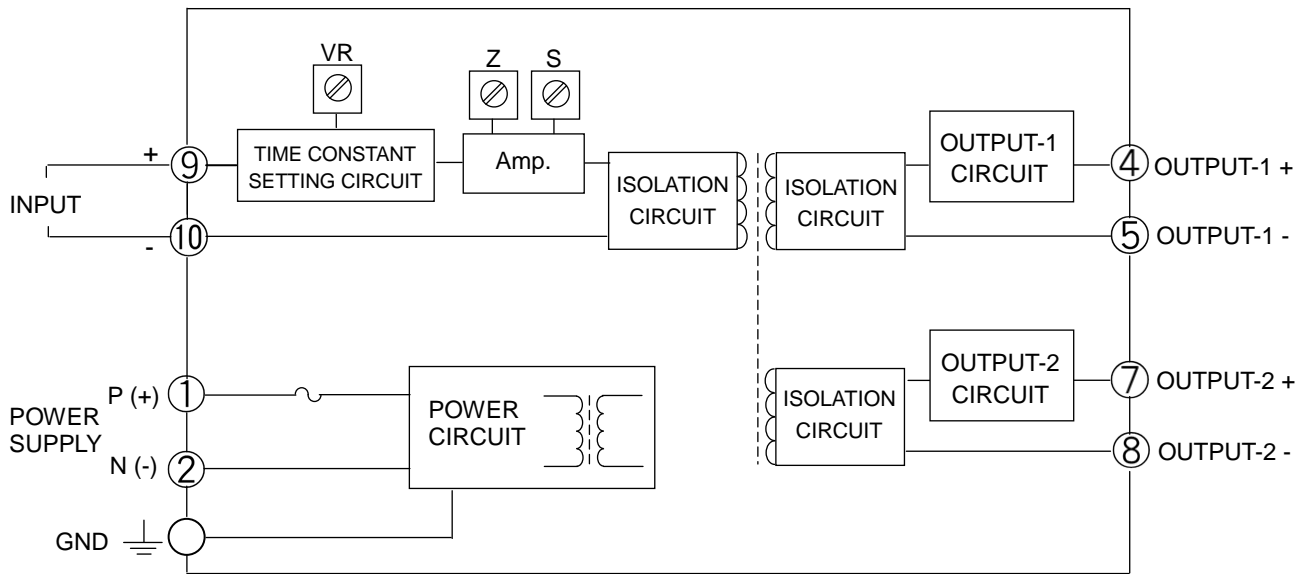
\* HumiSeal<sup>®</sup> is a registered trademark of Chase Corporation.

**TERMINAL 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**



**FACTORY DEFAULT SETTINGS**

If you specify a time constant at the time you place your order, the product will be adjusted to your specified value prior to shipment as far as it is within the given constant setting range. The following example shows how you specify your desired time constant.

(Example) If you specify a time constant of 10 seconds:  
 Time constant: 10s (63%)

If not specified, the time constant will be set to the minimum value of your specified range.