

**DESCRIPTION**

The MS3718 is a slim, plug-in frequency to analog converter that converts pulse train signals from flow sensors and the like into commonly used DC signals and provides isolated single or dual output.

**ORDERING CODE**

**Model** \_\_\_\_\_ **MS3718** - □ - □ □ □

**Power Supply** \_\_\_\_\_

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

**Input** \_\_\_\_\_

**O:** Dry contact or open collector  
(Pull-up: Approx. 13V, 3.3k $\Omega$ )  
**A:** AC voltage pulse  
(Threshold voltage for input full scale up to 20Hz:  
Approx. 0.05V<sub>p-p</sub>)  
**D:** DC voltage pulse (Threshold voltage: Approx. 2V)  
**I:** 4 to 20mA DC pulse (Threshold current: Approx. 8mA)  
**Y:** Other input signal and/or threshold voltage

**Output 1** \_\_\_\_\_

<b>A:</b> 4 to 20mA DC	<b>1:</b> 0 to 10mV DC
<b>D:</b> 0 to 20mA DC	<b>2:</b> 0 to 100mV DC
<b>Z:</b> Other DC current signal	<b>3:</b> 0 to 1V DC
	<b>4:</b> 0 to 10V DC
	<b>5:</b> 0 to 5V DC
	<b>6:</b> 1 to 5V DC
	<b>3W:</b> $\pm$ 1V DC
	<b>4W:</b> $\pm$ 10V DC
	<b>5W:</b> $\pm$ 5V DC
	<b>0:</b> Other DC voltage signal

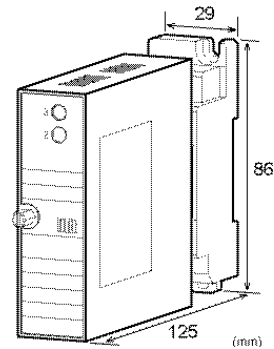
**Output 2** \_\_\_\_\_

**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 550 $\Omega$  maximum for Output 1 and 350 $\Omega$  maximum for Output 2.

**Options** \_\_\_\_\_

**No code:** None  
**/B:** Sensor power supply: 12V DC ( $\pm$ 10%), 2-wire type  
**/D:** Sensor power supply: 12V DC ( $\pm$ 10%), 3-wire type  
**/E:** Sensor power supply: 5V DC ( $\pm$ 10%), 2-wire type  
**/F:** Sensor power supply: 5V DC ( $\pm$ 10%), 3-wire type  
**/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 measuring frequency range.  
(e.g.) MS3718-A-DA6 (0 to 10Hz)

**Other Ordering Examples:**

For an input code of "Y": MS3718-A-YAA (0 to 10Hz / Input DC voltage pulse: 0 to 12V / SH=8.5V, SL=2.5V)  
For an input code of "Y": MS3718-A-YAA (0 to 10Hz / Input AC voltage pulse: 200V<sub>p-p</sub> / S=2V<sub>p-p</sub>)  
\* SH= Threshold level HI, SL=Threshold level LO, S=Threshold level

Note 1: For a specific DC current pulse input, the range should be specified between 0-100 $\mu$ A and 0-100mA.  
Note 2: If you wish to include multiple options in your order, specify the option codes in series (e.g. /BX).

**SPECIFICATIONS**
**POWER SECTION**

Power Supply	100 to 240V AC: 85 to 264V AC (47 to 63Hz)
	24V DC: 24V DC $\pm$ 10%
	100 to 240V DC: 85 to 264V DC

Power Sensitivity	Better than $\pm$ 0.1% of span for each power supply range.
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Power Line Fuse	160mA fuse is installed (standard).
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**Power Consumption**

Power	100-240V AC	24V DC	100-240V DC
Single Output	8.3VA max	2.6W max	8.3W max
Dual Output	9.0VA max	3.0W max	9.0W max

**INPUT SECTION**
**Input Resistance**

Voltage Input Model (DC)	With power: 1M $\Omega$ min. (Standard, 5V input)
	Without power: 30k $\Omega$ min.
Current Input Model (DC)	250 $\Omega$ (Standard for 4 to 20mA)
	Note: When a 2-wire type sensor power supply is specified, a shunt resistor of 100 $\Omega$ is used.

<b>Allowable Input Voltage</b>	
DC Voltage Input Model	30V DC max., continuous.
DC Current Input Model	40mA DC max., continuous.
AC Voltage Input Model	200V <sub>p-p</sub> AC max., continuous (up to ±100V with reference to 0V).
Input Pulse Width	10μs min.
Sensor Supply Current	20mA max.

<b>Ranges Available</b>		
	AC Voltage Pulse	DC Voltage Pulse
Input Range	-300 to 300V	0 to 300V
Input Voltage Span	0.1 to 600V <sub>p-p</sub>	1 to 300V
Input Bias	N/A	0 to +300%
Threshold Voltage		
Input Frequency up to 20Hz	50mV <sub>p-p</sub> min.	Hi-Lo voltage: 0.2V min.
Input Frequency	Within the range between 0-0.01Hz and 0-20Hz.	

Input Spec. Ex.: For 10 to 15V DC voltage pulse input, the input voltage span is 5V and the bias +200%.

### ● OUTPUT SECTION

<b>Maximum Output Load</b>		
Voltage Output (DC)	1V span and up	2mA max.
	10mV	10kΩ min.
	100mV	100kΩ min.
Current Output (DC)	4-20mA single output	750Ω max.
	4-20mA dual output	Output 1: 550Ω max.
		Output 2: 350Ω max.
Zero Adjustment	Approx. ±5% of span. (Adjustable by the front-accessible trimmer.)	
Span Adjustment	Approx. ±5% of span. (Adjustable by the front-accessible trimmer.)	

<b>Ranges Available</b>		
	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 4V output, the output span is 5V and the bias -20%.

### ● PERFORMANCE

Accuracy Rating	Better than ±0.15% of span (at 25°C).
Temperature Effect	Better than ±0.2% of span per 10°C change in ambient.
Response Time	2 pulses + 0.2S for the start, and subsequently 1 pulse + 0.2S (0 to 90%).
Cutoff Function*	Available upon request (when ordering)
CMRR	100dB min. (500V AC, 50/60Hz)
Isolation	Isolation between input, output [Output 1, Output 2], power, and ground.

Insulation Resistance	100MΩ 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°C Humidity: 5 to 90% RH (non-condensing)
Storage Temperature	-10 to 60°C

\* Cutoff function: It forces output to be fixed to 0% when input becomes equal to or less than a set value.

### ● PHYSICAL

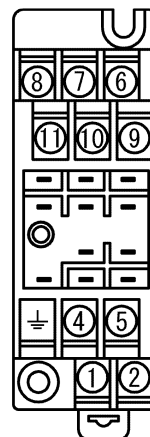
Installation	Wall/DIN rail mounting
Wiring	M3.5 screw terminal connection (with a power terminal block cover & drop-proof screws)
Screwing Torque	0.8 to 1.0 [Nm] * Recommended
External Dimensions	W29 × H86 × D125mm (including the mounting screw and socket)
Weight	Main unit: 120g max. Socket: 80g max.

### ● 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 0.2μm gold plating
Printed Circuit Board	Glass fabric epoxy resin (FR-4: UL 94V-0)
Conformal Coating	HumiSeal® 1A27NSLU (Polyurethane)

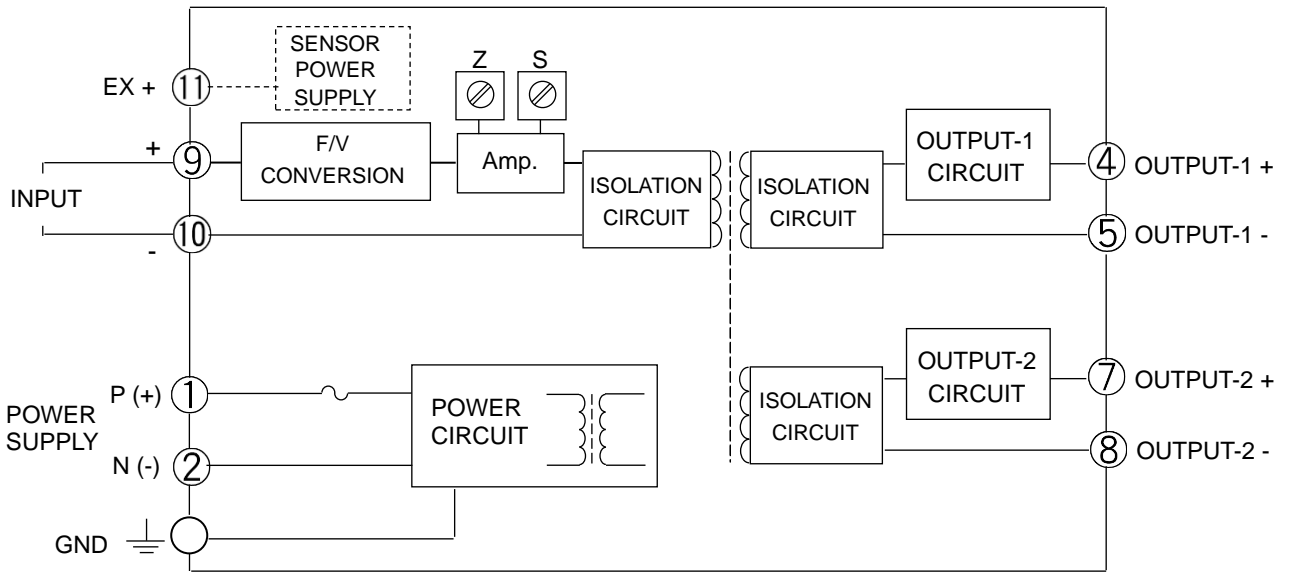
\* HumiSeal® is a registered trademark of Chase Corporation.

### TERMINAL ASSIGNMENT



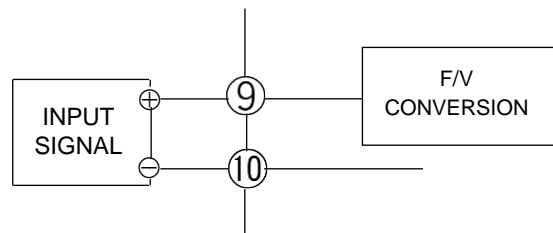
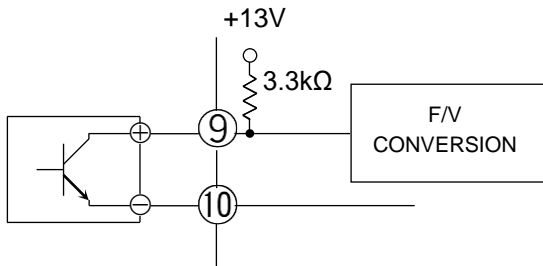
①	P (+)	POWER
②	N (-)	
⊥	GND	
④	+ OUTPUT 1	
⑤	- OUTPUT 1	
⑥	N.C.	
⑦	+ OUTPUT 2	
⑧	- OUTPUT 2	
⑨	+ INPUT	
⑩	- INPUT	
⑪	EX	

**BLOCK DIAGRAM**



For dry contact or open collector input:

For voltage pulse input:



When a 2-wire sensor is used:

Note: The connections may vary depending on the type of the sensor used.

