

DESCRIPTION

The MS3729 is a slim, plug-in analog to frequency converter that converts DC current or voltage signals into pulse train signals. The unit provides isolated single or dual output.

ORDERING CODE

MS3729 - -

Model _____

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 **0:** Other DC voltage signal
H: 10 to 50mA DC
Z: Other DC current signal

*1: Shunt resistor 50Ω

Output 1 _____

1: TTL level
2: Open collector
5: Photo MOS relay

Output 2 _____

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

Options _____

No code: None
/T: Pulse Hold Function provided.
/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 above. Also specify an output frequency range.

(e.g.) MS3729-A-611 (0 to 4.3kHz)

* Note that the output frequency range should be specified between 0-0.001Hz and 0-5kHz (30Hz max. for the photo MOS relay).

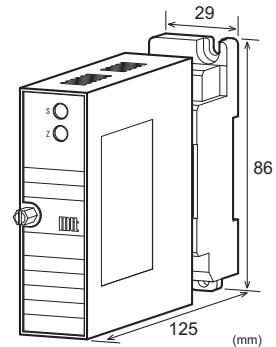
Other Ordering Examples:

For an input code of "0": MS3729-A-011 (0 to 4.3kHz / Input: 0.2 to 1V)

For an option code of "T": MS3729-A-611/T (0 to 2Hz / 200ms)

Note 1: For the option code "T", specify a pulse hold time between 200μs and 500ms.

Note 2: If you wish to include multiple options in your order, specify the option codes in series (e.g. /TX).


SPECIFICATIONS
POWER SECTION

Power Requirements	100 to 240V AC: 85 to 264V AC (47 to 63Hz) 24V DC: 24V DC±10%
Power Sensitivity	Better than ±0.1% of span for each power supply range.
Power Line Fuse	160mA fuse is installed (standard).
Power Consumption	
Power	100-240V AC 24V DC 100-240V DC
Single Output	3.5VA max 1.0W max 3.6W max
Dual Output	4.0VA max 1.2W max 4.8W max

INPUT SECTION

Input Resistance	With or without power: 1MΩ min.	
Voltage Input (DC)	4 to 20mA (std.)	250Ω
Current Input (DC)	2 to 10mA	250Ω
	1 to 5mA	100Ω
	0 to 20mA	250Ω
	10 to 50mA	10Ω
Allowable Input Voltage	30V DC max., continuous. (Standard for a span up to 10V)	
Voltage Input	40mA DC max., continuous.	
Current Input	(Standard for 4 to 20mA)	

Ranges Available

	Current Signal	Voltage Signal
Input Range (DC)	-100 to 100V	-300 to 300V
Input Span (DC)	100μA*1 to 200mA	200mV*2 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 (*1)200μA to 200mA and (*2)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

Zero Adjustment	Approx. ±5% of span. (Adjustable by the front-accessible trimmer.)
Span Adjustment	Approx. ±5% of span. (Adjustable by the front-accessible trimmer.)

Ranges Available	Output frequency range between 0-0.001Hz and 0-5kHz Note: When the photo MOS relay is selected, the range should be between 0-0.001Hz and 0-30Hz.
Maximum Output Load	TTL level: Maximum output 10mA at 3.5V
Maximum Rating Open Collector	Maximum rating: 30V, 100mA (Resistive load)
Photo MOS Relay	Maximum load voltage: 400V (Peak AC) Maximum continuous load current: 0.15A (Peak AC) Peak load current: 0.5A @ 100ms (1 shot) DC Maximum output power dissipation: 360mW ON resistance: 16Ω max. Off-state leakage current: 1μA max.
Maximum Output Frequency <With Pulse Hold Function>	When a pulse hold time is specified, the maximum possible output frequency is determined by the following equation: $Hz = 1 / (T \times 1.2 + 10\mu s^*)$ * 10μs: Output pulse Lo level for TTL or voltage pulse output, or output pulse ON for open collector output (Example) When a pulse hold time of 200ms is set, the output frequency is: $1 / (0.2 \times 1.2 + 0.0001) = 4.166 \text{ Hz}$
Duty Ratio without Pulse Hold Function	40 to 60%
● PERFORMANCE	
Accuracy Rating	Better than ±0.1% of span (at 25°C±5°C).
Pulse Hold Time Accuracy	Better than ±20% of a user-specified value.
Temperature Effect	Better than ±0.2% of span per 10°C change in ambient.
Response Time	Output Frequency 0 to 90% with a step input at 100%
	0.5Hz 3.1s max. 5Hz 310ms max. 50Hz 65ms max. 500Hz ≤ 35ms max.
Isolation	4-way 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

● PHYSICAL

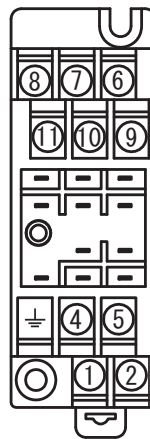
Installation	Wall/DIN rail mounting
Wiring	M3.5 screw terminal connection (with a power terminal block cover & drop-out prevention screws)
Screwing Torque	0.8 to 1.0 [Nm] * Recommended
External Dimensions	W29 × H86 × D125mm (including the mounting screw and socket)
Weight	Main unit: 120g max. Socket: 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)
Anti-Humidity Coating	HumiSeal® 1A27NS (Polyurethane)

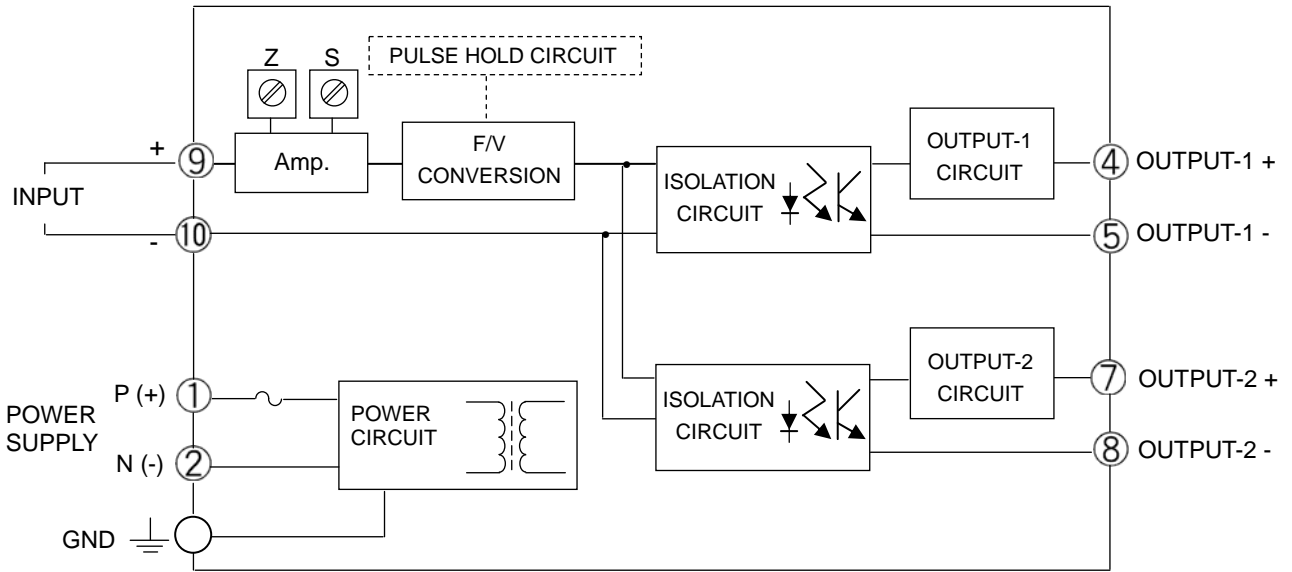
* HumiSeal® is a registered trademark of Chase Corporation.

TERMINAL ASSIGNMENT



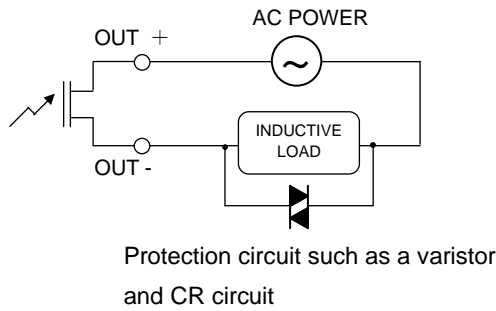
①	P (+)	POWER
②	N (-)	
③	GND	
④	+ OUTPUT 1	
⑤	- OUTPUT 1	
⑥	N.C.	
⑦	+ OUTPUT 2	
⑧	- OUTPUT 2	
⑨	+ INPUT	
⑩	- INPUT	
⑪	N.C.	

BLOCK DIAGRAM



Note: When an inductive load, such as an electric motor, is connected to the photo MOS relay output, a relay contact protection circuit must be connected across the load.

Example of AC power connection:



Example of DC power connection:

