

DESCRIPTION

The MS3711 is a slim, plug-in pulse divider that accepts pulse train signals from sensors or other devices, shapes and divides these pulses, converts signal levels as necessary, and provides isolated single or dual output.

ORDERING CODE

MS3711 - -

Model _____

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

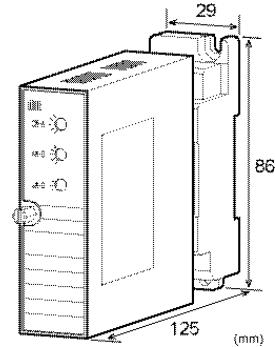
Input _____
O: Dry contact or open collector
(Pull-up: Approx. 13V, 3.3kΩ)
A: AC voltage pulse
(Threshold voltage: Approx. 0.06V_{p-p})
D: DC voltage pulse
(Threshold voltage: Approx. 2V)
I: 4 to 20mA DC pulse
(Threshold current: Approx. 8mA)
Y: Other input signal and/or threshold voltage

Output 1 _____
1: TTL level
2: Open collector
3: Voltage pulse 10V±10%
4: Voltage pulse 12V±10%

Output 2 _____
No code: None
The codes are the same as for Output 1.

Note: When a combination of TTL levels or voltage pulses is selected for Outputs 1 and 2, the voltage levels for both outputs should be the same.

Options _____
No code: None
/A: Sensor power supply: 24V DC (±10%), 2-wire type
/B: Sensor power supply: 12V DC (±10%), 2-wire type
/C: Sensor power supply: 24V DC (±10%), 3-wire type
/D: Sensor power supply: 12V DC (±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.
(e.g.) MS3711-A-O22

* With the default setting, the division ratio is 1/1.

Other Ordering Examples:

For an input code of "Y": MS3711-A-Y22 (Input DC voltage pulse: 0 to 12V / SH=8.5V, SL=2.5V)

For an input code of "Y": MS3711-A-Y22 (Input AC pulse: 200V_{p-p} / S= 2V_{p-p})

For a specific division ratio: MS3711-A-O22 (Division ratio: 1/100)

* SH=Threshold level HI, SL=Threshold level LO, S=Threshold level

Note 1: When a DC current pulse is selected for input, the range should be specified between 0-100μA and 0-100mA.

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

SPECIFICATIONS
POWER SECTION

Power Requirements	100 to 240V AC: 85 to 264V AC (47 to 63Hz)		
	24V DC: 24V DC±10%		
	100 to 240V DC: 85 to 264V DC		
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	5.0VA max	2.1W max	7.2W max
Dual Output	5.5VA max	2.2W max	7.2W max

INPUT SECTION

Input Resistance		
Voltage Input (DC)	With power:	1MΩ min. (Standard, 5V input)
	Without power:	10kΩ min.
Current Input (DC)	250Ω (Standard for 4 to 20mA)	
* When a 2-wire type sensor power supply is specified, a shunt resistor of 100Ω is used.		
Allowable Input Voltage		
DC Voltage Input	30V DC max., continuous.	
Model		
DC Current Input	40mA DC max., continuous.	
Model		
AC Voltage Input	200V _{p-p} AC max., continuous (up to ±100V with reference to 0V).	
Model		
Maximum Input Frequency	50kHz	
Input Pulse Width	20μs min.	
Duty Ratio	40 to 60% (at standard threshold voltage)	
Sensor Power Supply	30mA max. (2-wire or 3-wire type)	
Ranges Available		
	AC Voltage Pulse	DC Voltage Pulse
Input Range	-300 to 300V	0 to 300V
Input Voltage Span	0.1 to 600V _{p-p}	1 to 300V
Input Bias	N/A	0 to +300%
Threshold Voltage	50mV _{p-p} min.	Hi-Lo range: 0.2V min.
Input Spec. Ex.: For 10 to 15V DC voltage pulse input, the input span is 5V and the bias +200%.		

OUTPUT SECTION

Maximum Output Load	
TTL Level	(Maximum output 10mA @ 3.5V)
Voltage Pulse 10V	(Maximum output 7mA @ ±10%)
Voltage Pulse 12V	(Maximum output 7mA @ ±10%)
Maximum Rating	Open collector: 30V, 50mA

Division Ratio

Division ratios can be set within the range of 1 to 1/3200 by combination of the settings for three switches.

[Setting method]

1. Set either the switch A or B to 1 (N.C.).
2. To make input and output frequencies equal, set the switch A to 2 (TH) and the switch B to 1 (N.C.).
3. The division ratio is determined by multiplying a value defined for the switch A or B by a value selected for the switch C.

[Example]

If the switch A = 1 (N.C.), the switch B = 4 (1/64), and the switch C = 2 (1/5), the division ratio will be 1/64×1/5=1/320.

Switch No.	Switch A	Switch B	Switch C
1	N.C.	N.C.	1/1
2	TH	1/16	1/5
3	1/2	1/32	1/25
4	1/4	1/64	
5	1/8	1/128	

Note: A correct division cannot be achieved if the switches A and B are both set to 1 (N.C.) or both set to other than 1.

* See page 3 for a list of division ratios.

Duty Ratio

50% typical (Input pulse duty ratio 50%, standard threshold voltage)

DC voltage pulse: 0-5V/1kHz input
AC voltage pulse: 5V_{p-p}/1kHz input
Open collector: 1kHz input

Maximum Output Frequency

Voltage Pulse Output 50kHz

Open Collector Output 20kHz

(For both of the above, the conditions are as follows: input pulse duty ratio 50% and standard threshold voltage 1.)

PERFORMANCE

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

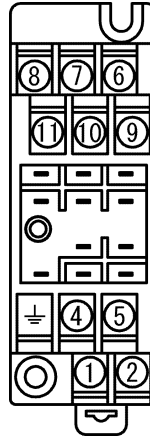
Housing	ABS resin (UL-94V-0)
Terminal Block	PBT resin (UL-94V-0)
Terminal Block Cover	PC resin (UL-94V-2)
DIN Rail Stopper	PP resin (UL-94HB)
Screw Terminal	Nickel-plated steel
Contacts Material and Finish	Brass with 0.2μm gold plating
Printed Circuit Board	Glass fabric epoxy resin (FR-4: UL-94V-0)
Anti-Humidity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

* HumiSeal® is a registered trademark of Chase Corporation.

LIST OF DIVISION RATIOS

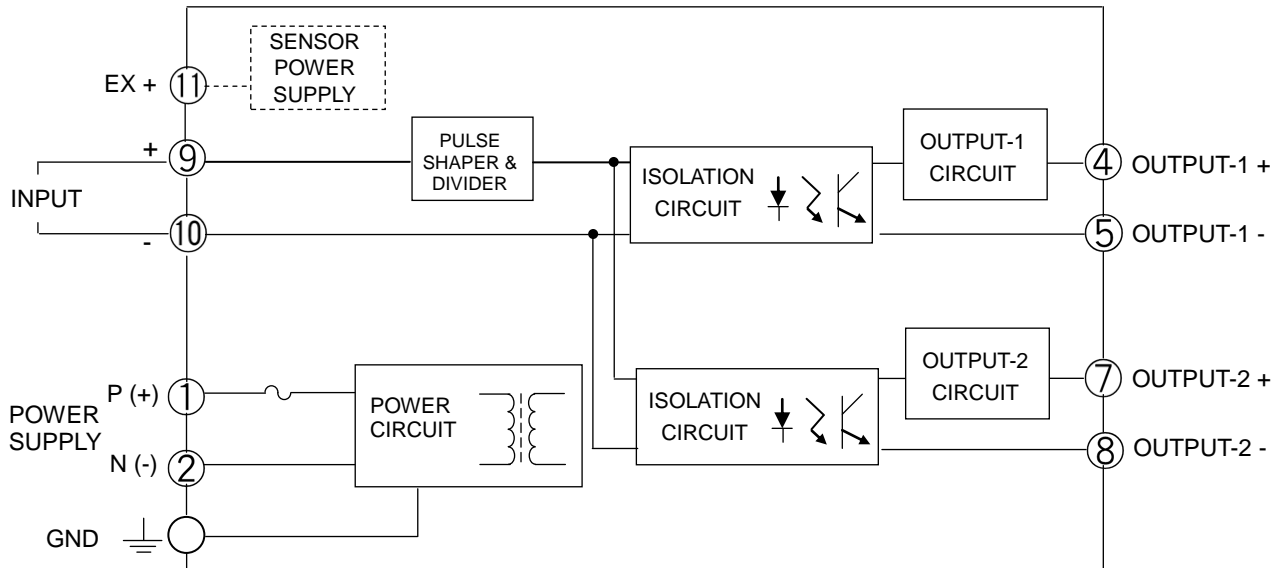
Division Ratio	Switch A		Switch B		Switch C	
	Switch No.	Type	Switch No.	Type	Switch No.	Type
1/1	2	TH	1	N.C.	1	1/1
1/1	2	TH	1	N.C.	2	1/5
1/1	2	TH	1	N.C.	3	1/25
1/2	3	1/2	1	N.C.	1	1/1
1/4	4	1/4	1	N.C.	1	1/1
1/8	5	1/8	1	N.C.	1	1/1
1/10	3	1/2	1	N.C.	2	1/5
1/16	1	N.C.	2	1/16	1	1/1
1/20	4	1/4	1	N.C.	2	1/5
1/32	1	N.C.	3	1/32	1	1/1
1/40	5	1/8	1	N.C.	2	1/5
1/50	3	1/2	1	N.C.	3	1/25
1/64	1	N.C.	4	1/64	1	1/1
1/80	1	N.C.	2	1/16	2	1/5
1/100	4	1/4	1	N.C.	3	1/25
1/128	1	N.C.	5	1/128	1	1/1
1/160	1	N.C.	3	1/32	2	1/5
1/200	5	1/8	1	N.C.	3	1/25
1/320	1	N.C.	4	1/64	2	1/5
1/400	1	N.C.	2	1/16	3	1/25
1/640	1	N.C.	5	1/128	2	1/5
1/800	1	N.C.	3	1/32	3	1/25
1/1600	1	N.C.	4	1/64	3	1/25
1/3200	1	N.C.	5	1/128	3	1/25

TERMINAL ASSIGNMENT

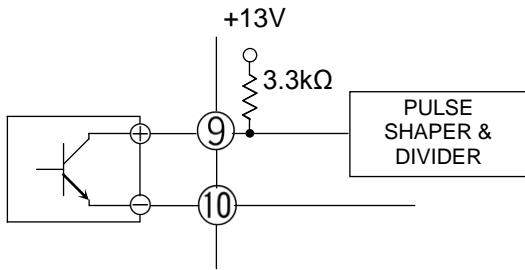


①	P (+)	POWER
②	N (-)	
⊥	GND	
④	+ OUTPUT 1	
⑤	- OUTPUT 1	
⑥	N.C.	
⑦	+ OUTPUT 2	
⑧	- OUTPUT 2	
⑨	+ INPUT	
⑩	- INPUT	
⑪	EX	

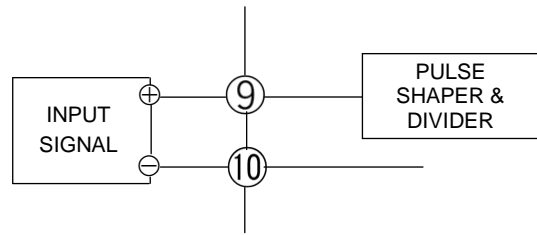
BLOCK DIAGRAM



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.

