



DESCRIPTION

The MS3909 is a chassis-mount pulse shaper (pulse isolator) that converts pulse train signals into mutually isolated dual channel pulse train signals.

- ▽ A multi-slot chassis provides ease of maintenance and high-density mounting.
- ▽ Input, output 1, output 2, and power circuits are all isolated from each other.
- ▽ Equipped with a fuse on the DC power line as standard.

ORDERING INFORMATION

Ordering Code

MS3909-1□□-6□□-7□□-□□□-T□□_

[1] [2] [3] [4] [5] [6]

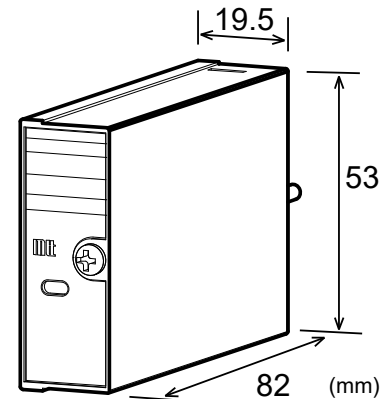
SPECIFICATIONS

POWER SECTION

Power Requirement	24V DC±10%		
Power Sensitivity	Better than ±0.1% of span per 10% change in supply voltage		
Power Line Fuse	160mA fuse		
Current Consumption	w/o transmitter power supply		
	Open Collector (dual output)	TTL (dual output)	Voltage Pulse 12V (dual output)
	30mA max.	35mA max.	40mA max.
	w/ 24V transmitter power supply		
	Open Collector (dual output)	TTL (dual output)	Voltage Pulse 12V (dual output)
	80mA max.	85mA max.	90mA max.

INPUT SECTION

Input (Specify a code in the field [1].)	■ Dry contact or open collector OP (Pull-up: Approx. 12V, 3.3kΩ)
	■ AC voltage pulse (0.1 to 100Vp-p) AP (□□□) (Threshold voltage: Approx. 0.06Vp-p) Specify the peak-to-peak value of input voltage in parentheses.
	■ DC voltage pulse DP (□-□ / SH □ SL □) (Standard threshold voltage: Approx. 2V) Specify a voltage range in parentheses. If you need non-standard threshold voltage, also specify high threshold SH and low threshold SL in parentheses.
	■ 4–20mA DC pulse IP (Threshold current: Approx. 8mA)



Input...continued	■ Other current pulses IP (□-□ / SH □ SL □) Specify a current range between 0–100μA and 0–100mA in parentheses. If you need non-standard threshold current, also specify high threshold SH and low threshold SL in parentheses.
Input Resistance	Voltage input: 1MΩ min. with power (Standard, 5V input) 10kΩ min. without power Current input: 250Ω (Standard for 4–20mA)
Allowable Input Voltage	DC voltage input: 30V DC max., continuous. DC current input: 40mA DC max., continuous. AC voltage input: 200Vp-p AC max., continuous (up to ±100V with reference to 0V)
Input Pulse Width	10μs min. (for both ON and OFF)
Transmitter Power Supply (Optional) (Specify a code in the field [4].)	Maximum current: 30mA (2-wire or 3-wire type) ■ 24V DC (±10%), 2-wire type (specify shunt resistor value) 2E1 ■ 12V DC (±10%), 2-wire type (specify shunt resistor value) 2E4 ■ 24V DC (±10%), 3-wire type 3E1 ■ 12V DC (±10%), 3-wire type 3E4

OUTPUT SECTION

Output (Specify a code in each of the fields [2] & [3].)	■ TTL level TT ■ Open collector OP ■ Voltage pulse (10V±10%) V6 ■ Voltage pulse (12V±10%) V7 Note: When a combination of TTL levels or voltage pulses is selected for Output 1 and Output 2, the voltage levels for both outputs should be the same.
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Allowable 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 (Maximum rating: 30V, 100mA)
Duty Ratio	50% typical (Input pulse duty ratio 50%, standard threshold voltage) DC voltage pulse: 0–5V/1kHz input AC voltage pulse: 5Vp-p/1kHz input Open collector: 1kHz input
Maximum Output Frequency without Pulse Hold Function	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.)
Pulse Hold Time (Optional) (Specify a value in the field [5].)	Specify a pulse width between 200µs and 200ms. When a pulse hold time is specified, the maximum possible output frequency is determined by: $Hz = 1 / (T \times 1.2 + 10\mu s^*)$ * 10µs: Output pulse Lo level for TTL and voltage pulse outputs or output pulse ON for open collector output.
Polarity Reversing Function	See the Output Logic Table on the right.

ADDITIONAL

Option [6]	■ Polyurethane conformal coating ··· /H
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PERFORMANCE

Pulse Hold Time Accuracy	Better than ±20% of a customer-specified value.
Isolation	4-way isolation between input, output 1, output 2, and power.
Insulation Resistance	100MΩ min. (@ 500V DC) between input, output 1, output 2, and power.
Dielectric Strength	Input / [Output 1, Output 2, Power]: 1500V AC for 1 minute (Cutoff current: 0.5mA) Output 1 / Output 2 / Power: 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: 0 to 55°C Humidity: 5 to 90% RH (non-condensing)
Storage Temperature	–10 to 60°C

PHYSICAL

Installation	Mounted in an optional chassis (RC3900A-□□AI or RS3900-01TB).
Wiring	Wired to an optional chassis (RC3900A-□□AI or RS3900-01TB).
External Dimensions	W19.5 × H53 × D82 mm
Weight	80g max.

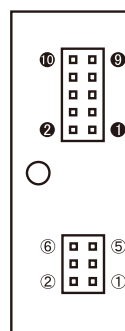
MATERIAL

Housing	ABS resin
PC Board	Glass fabric, epoxy resin (FR-4: UL 94V-0)

OUTPUT LOGIC

Input Signal	Input Waveform	Polarity Reversing Switch	Voltage Pulse Output	Open Collector Output
Voltage Pulse		NORMAL		
		REVERSE		
Open Collector		NORMAL		
		REVERSE		

PIN ASSIGNMENTS



PIN	SIGNAL	PIN	SIGNAL
①	+ INPUT	⑦	+ OUTPUT 1
②	– INPUT	⑧	– OUTPUT 1
③	N. C.	⑨	+ OUTPUT 2
④	N. C.	⑩	– OUTPUT 2
⑤	EX	⑤	+ POWER DC24V
⑥	N. C.	⑥	– POWER DC24V
		⑦	N. C.
		⑧	N. C.
		⑨	F. G.
		⑩	N. C.

BLOCK DIAGRAM

