

Timers Multi-function Type A 109

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- 2 selectable functions: - Delay on operate
- Interval timer
- 5 selectable time ranges: A 109 ...M: 1 s to 10 m
A 109 ...H: 1 m to 10 h
- Automatic start
- Knob-adjustable time within range
- Oscillator-controlled time circuit
- Repeatability deviation: $\leq 1\%$
- Output: 10 A SPDT or 8 A DPDT relay
- Plug-in type module
- LED-indication for relay on
- AC or DC power supply

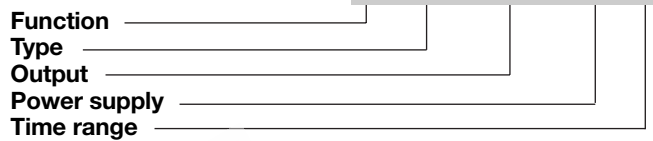
Product Description

Multi-function, multi-voltage, miniature time relays up to 10 h each covering 3 selectable time ranges. The combination of functions causes these

economical timers to be extensively applied, e.g. monitoring pumps or where a time function is needed to extend a certain operation.

Ordering Key

A 109 156 220M



Type Selection

Plug	Output	Time ranges	Supply: 120 VAC, 24 VAC/DC	Supply: 220 VAC, 24 VAC/DC
Circular	SPDT	1 s - 10 m 1 m - 10 h	A 109 156 120M A 109 156 120H	A 109 156 220M A 109 156 220H
	DPDT	1 s - 10 m 1 m - 10 h	A 109 166 120M A 109 166 120H	A 109 166 220M A 109 166 220H

Time Specifications

Time ranges Selectable by DIP-switch	A 109M 1 s - 10 s 10 s - 100 s 1 m - 10 m	A 109H 1 m - 10 m 10 m - 100 m 1 h - 10 h	Repeatability deviation $\leq 1\%$
Time range accuracy	0 to +30% on max. min. actual time \leq min. set time		Time variation Within rated power supply and ambient temperature $\leq 0.2\%/^{\circ}\text{C}$ $\leq 0.05\%/V$
			Reset Time and/or relay Power supply interruption min. ≥ 500 ms

Output Specifications

	A 109 156	A 109 166
Output	SPDT relay	DPDT relay
Basic electrical insulation	250 VAC (rms) (contact/electronics)	250 VAC (rms)(contacts/elec., contact/contact)
Contact ratings (AgCdO)	μ (micro gap)	μ (micro gap)
Resistive loads	AC 1 DC 1 or 10 A/250 VAC (2500 VA) 1 A/250 VDC (250 W) 10 A/25 VDC (250 W)	8 A/250 VAC (2000 VA) 0.4 A/250 VDC (100 W) 4 A/25 VDC (100 W)
Small inductive loads	AC 15 DC 13 2.5 A/230 VAC 5 A/24 VDC	2.5 A/230 VAC 5 A/24 VDC
Mechanical life	$\geq 30 \times 10^6$ operations	$\geq 30 \times 10^6$ operations
Electrical life	AC 1 $\geq 2.5 \times 10^5$ operations (at max. load)	$\geq 2.5 \times 10^5$ operations (at max. load)
Operating frequency	≤ 7200 operations/h	≤ 7200 operations/h
Insulation voltages	≥ 2.0 kVAC (rms)(contact/electronics) 4 kV (1.2/50 μs) (contact/electronics) (IEC 60664)	≥ 2.0 kVAC (rms) (contact/electronics) 4 kV (1.2/50 μs)(contact/electronics) (IEC 60664)



Supply Specifications

Power supply AC types		Installation cat. III (IEC 60664)
Rated operational voltage through pins 2 & 10	220	220 VAC + 15/- 20%, 45 to 65 Hz
	120	120 VAC + 15/- 20%, 45 to 65 Hz
or pins 6 & 10		24 VAC + 15/- 20%, 45 to 65 Hz
Dropout tolerance		≥ 10 ms
Rated insulation voltage		None
Rated transient protection volt.		4 kV (1.2/50 μs) @ 230 VAC 2.5 kV (1.2/50 μs) @ 120 VAC 800 V (1.2/50 μs) @ 24 VAC (line/neutral)
Power supply DC types		
Rated operational voltage through pins 6 & 10		24 VDC ± 15% 24 VDC + 15/- 20% (pin 6 pos.)
Rated insulation voltage		None
Rated transient protection volt.		800 V (1.2/50 μs)
Consumption		
AC supply		60 mA @ 50 Hz/ 70 mA @ 60 Hz
DC supply		1 W

General Specifications

Power ON delay	≤ 500 ms
Power OFF delay	≥ 500 ms
Indication for Output ON	LED, red
Environment	
Degree of protection	IP 20 B
Pollution degree	2 (IEC 60664)
Operating temperature	-20° to +50°C (-4° to +122°F)
Storage temperature	-40° to +80°C (-40° to +176°F)
Weight	85 g

Mode of Operation

Example 1

Delay on operate

The delay period begins when power supply is applied.

At the end of the set delay period, the relay will operate and not release again until power supply is disconnected.

After disconnection of power supply, a recovery period of 500 ms should be allowed before the relay is activated again.

If power supply is removed for more than 500 ms before the relay operates, the time is reset and the relay is ready for a new time period.

Example 2

Interval timer

The relay operates and the time period starts when power supply is applied.

At the end of the set delay period, the relay releases and will not operate again until power supply is reapplied.

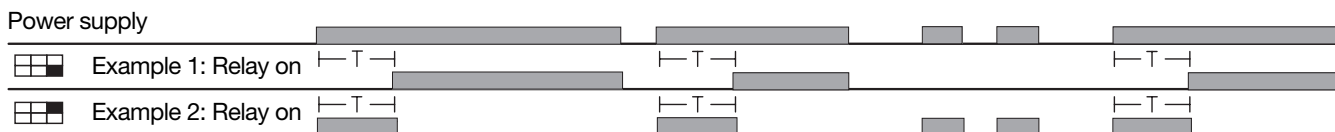
A recovery period of 500 ms should be allowed before the relay is activated again.

If power supply is removed for more than 500 ms before the time has expired, the relay releases and the time is reset.

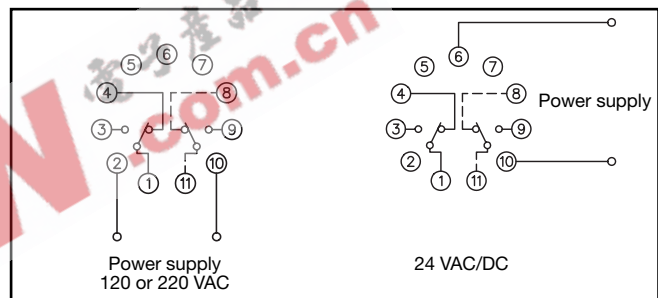
Accessories

Socket◇	S 411	For further information refer to "Accessories". For other AC/DC voltages refer to "General Information".
Hold down spring◇	HF	
Mounting rack	SM 13	
Socket cover	BB 4	
Potentiometer lock	PL 1	

Operation Diagram



Wiring Diagrams



Function/Time Setting

Selection of time range
DIP-switch selector (1 & 2).

Selection of function
DIP-switch selector (3).

Time ranges	A 109M	A 109H
<input type="checkbox"/> <input type="checkbox"/>	1 - 10 s	1 - 10 m
<input type="checkbox"/> <input type="checkbox"/>	10 - 100 s	10 - 100 m
<input type="checkbox"/> <input type="checkbox"/>	1 - 10 m	1 - 10 h

- 1. Delay on operate
- 2. Interval timer

Time setting:
Knob-adjustable on relative scale 1-10.