

# 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

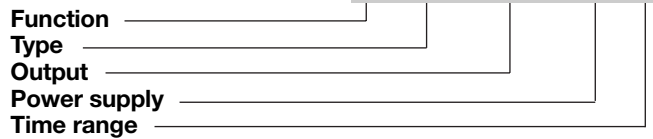
## Product Description

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

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

## Output Specifications

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



## Supply Specifications

<b>Power supply AC types</b>		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)
<b>Power supply DC types</b>		
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)
<b>Consumption</b>	AC supply	60 mA @ 50 Hz/ 70 mA @ 60 Hz
	DC supply	1 W

## General Specifications

<b>Power ON delay</b>	≤ 500 ms
<b>Power OFF delay</b>	≥ 500 ms
<b>Indication for Output ON</b>	LED, red
<b>Environment</b>	
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)
<b>Weight</b>	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.

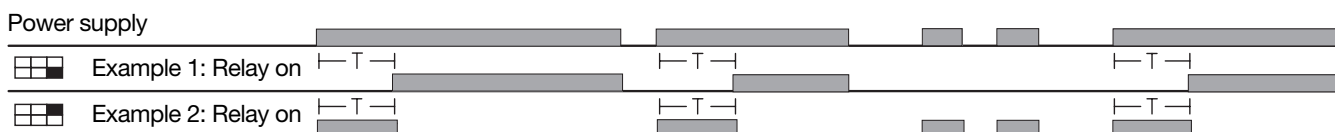
A recovery period of 500 ms should be allowed before the relay is activated again.

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

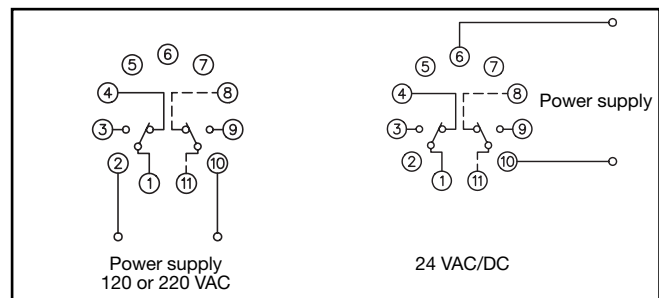
## Accessories

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 109 ... ..M	A 109 ... ..H
<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.