Macon ZM-12V

The Macon actuator ZM-12V is a thermoelectric actuator for opening and closing valves and small valves used in the scope of HVAC technology. The predominant area of application is the energy-efficient room-by-room temperature control in the area of building services and automation. The Macon ZM-12V is controlled by a 12v room thermostat with two-point output or pulse-width modulation.

1) Features

- 360º installation position
- Patented 100% protection against leaky valves
- Available in normally closed (NC) and normally open (NO)
- Power consumption 1 watt
- Simple snap-on installation
- High functional safety and long expected service life
- First-Open function
- Adaptation check on valve
- Alignment aid on the valve
- Compact size, small dimensions
- All round function display
- Noiseless and maintenance-free

2) Function

The actuator mechanism of the Macon ZM-12V with end switch uses a PTC resistor heated wax element and a compression spring. The wax element is heated by applying the operating voltage and moves the integrated ram. The force generated by this movement is transferred on the valve lifter and opens and closes the valve.

2.1 Version ZMC-12V: **Normally Closed** (valve closed)

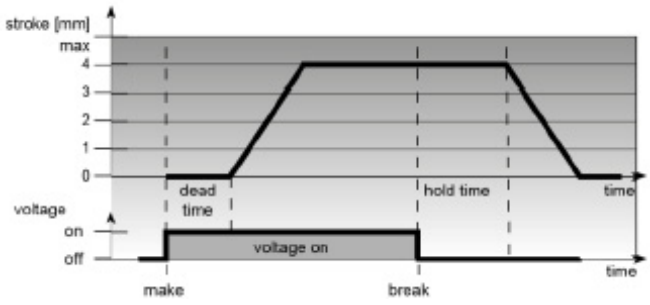


Figure: Example with respect to the travel path of 4 mm. The characteristic curves of the travel path of 5 mm result

In case of the normally closed version, the valve is opened steadily by the ram motion upon switching on the operating voltage and after expiry of the dead time.

After the operating voltage is cut and after expiry of the hold time the valve is closed evenly by the closing force of the compression spring.

The closing force of the compression spring is matched to the closing force of commercially available valves and keeps the valve closed when de-energized.

2.2 Version ZMO-12V: Normally Open (valve open)

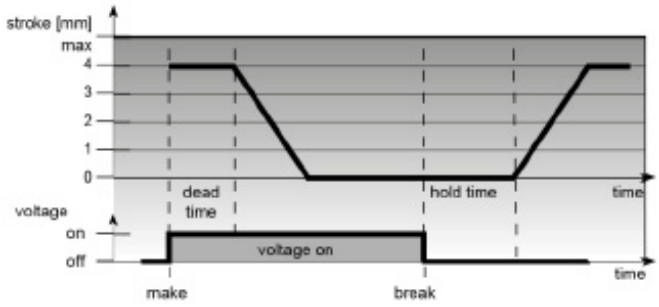


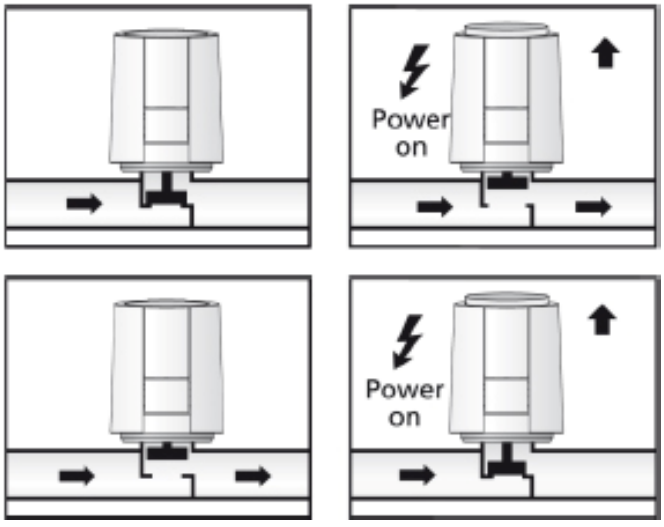
Figure: Example with respect to the travel path of 4 mm. The characteristic curves of the travel path of 5 mm result from this.

In case of the normally open version, the valve is closed steadily by the ram motion upon switching on the operating voltage and after expiry of the dead time.

After the operating voltage is cut and after expiry of the hold time the valve is opened evenly by the closing force of the compression spring.

2.3 Function Display

The function indicator of the Macon ZM-12V (all around view) allows identifying the operating condition (valve open or closed) at a glance. It is also possible to feel the current operating state when it's dark.



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- In case of the NC version, an extended function display shows opening of the valve.

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- In case of the NO version, an extended function display shows closing of the valve.

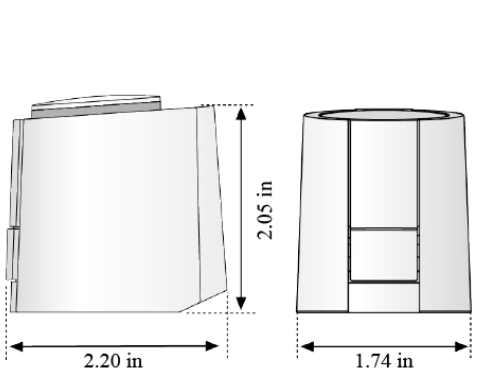
2.3 "First Open" function (for NC only)

In its delivery condition, the Macon ZMC-12V is kept open when de-energized due to the First-Open function. This enables heating operation during the construction phase even when the electric wiring of the individual room control is not yet complete. During the later electrical start-up, the First Open function is automatically unlocked by applying the operating voltage for more than 6 minutes. The valve drive is now fully operable.

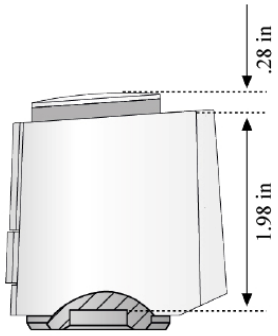
3) Technical Data

Operating voltage	12 V AC/DC +20%...-10%	
Max. inrush current	< 600 mA during max. 2 min.	
Operating power	1 W [1)]	
Stroke (actuator travel)	4.0 / 5.0 mm	
Actuating force	100 N ±5%	
Fluid temperature	32° F to 212° F [2)]	
Storage temperature	-13° F to 140° F	
Ambient temperature	32° F to 140° F	
Degree / class of protection	IP 54 [3)]	
CE conformity according to	EN 60730	
Housing material / color	Polyamide / light grey (RAL 7035)	1) measured with precision reference meter LMG95
Connection line / color	2 x 0.75 mm² PVC / light gray (RAL 7035)	
Cable length	3' 3"	2) or higher, depending on the adapter
Weight with connecting cable (1 m)	approx. 3.5 oz	
Surge protection according to EN 60730-1	min. 2.5 kV	3) in all installation positions

3.1 Dimensions



Dimensions

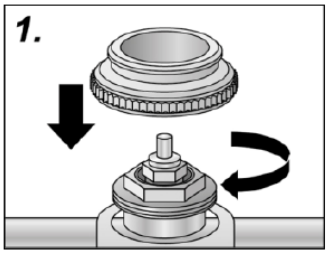


Installation height

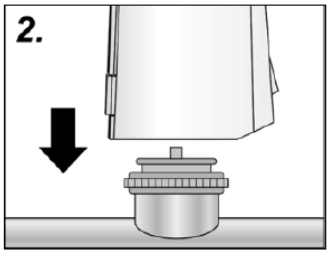
4) Installation notes

4.1 Installation with valve adapter

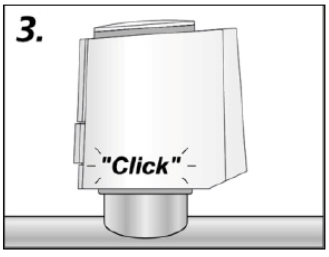
The valve adapter assortment guarantees a perfect match of the valve drive to almost any valve bottom and heating circuit distributor available on the market. Simply snap-on the Macon ZM-12V to the manually pre-installed valve adapter.



Screw the adaptor manually onto the valve.

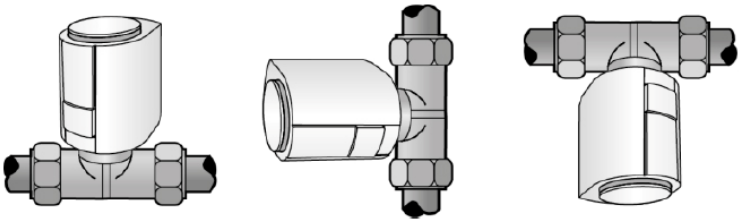


Place the Macon ZM-12V vertically on the valve adaptor.



The Macon ZM-12V snaps onto the valve adaptor with a "click" when pressed down vertically by hand.

4.2 Installation position



vertical horizontal overhead

Preferred installation position of the Macon ZM-12V is vertical or horizontal. An upside down position may reduce product life through special circumstances (e.g. contaminated water).

5) Accessories

- Protection Cap AA SK 1004

Protection against theft and vandalism, available for valve drives with a stroke of 4mm or 5mm