

### **Macon ZMC - ES**

Macon Model ZMC- ES 24V End switch is a thermoelectric valve drive for opening and closing valves and small valves used in the scope of HVAC technology. The integrated micro switch with floating contact allows direct operation of a pump or fan control unit. The Macon ZMC - ES 24V End switch is controlled by a 24 V room thermostat with two-point output or pulse-width modulation.



### 1) Features

- 360° installation position
- Integrated switch with floating contact
- Patented 100% protection against leaky valves
- Available in normally closed (NC)
- 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 ZMC-ES 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. The integrated micro switch allows the use of its switching signal depending on the opening of the valve.

#### 2.1 Version NC: Normally Closed (valve closed)

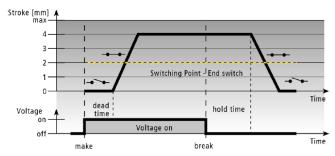


Figure: Example with respect to the travel path of 4 mm. The characteristic curves of the travel path of 5 mm result from this.

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. The integrated micro switch is switched with a travel path of approx. 2 mm.

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 integrated switch is closed after an actuator travel of approx. 2 mm.

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.

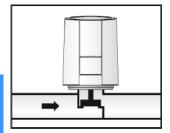


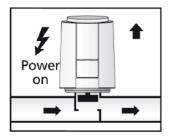
We reserve the right to alter designs, specifications and information without notice.



#### 2.2 Function Display

The function indicator of the Macon ZMC - ES (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.





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

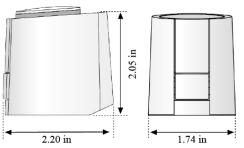
#### 2.3 "First Open" function (for NC only)

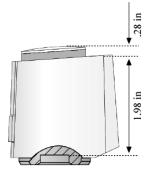
In its delivery condition, the Macon ZMC - ES is kept open when de-energized due to the First-Open function. This enables heating operation during the construction phase even when the electric wiring of the individual room control is not yet complete. During the later electrical start-up, the First Open 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	24 V AC/DC +20%10%	
Max. inrush current	< 300 mA during max. 2 min.	
Operating power	1 W <sup>1)</sup>	
Stroke (actuator travel)	4.0 / 5.0 mm	
Actuating force	100 N ±5%	
Switching current for micro switch	24 V AC: 3 A resistive load 1 A inductive load	
Switching point of micro switch NC	approx. 2 mm	
Fluid temperature	32° F - 212° F <sup>2)</sup>	
Storage temperature	-130° F - 140° F	
Ambient temperature	32° F - 140° F	
Degree / class of protection	IP 54 <sup>3)</sup>	
CE conformity according to	EN 60730	
Housing material / color	Polyamide / light grey (RAL 7035)	1) measured with precision
Connection line / color	4 x 0.75 mm <sup>2</sup> PVC / light gray (RAL 7035)	reference meter LMG95
Cable length	3' 3"	2) depending on the adapter
Weight with connecting cable (1 m)	approx. 5.3 oz	even higher
Surge protection according to EN 60730-1	min. 2.5 kV	3) in all installation positions

# 3.1 Dimensions





Dimensions

Installation height

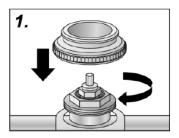




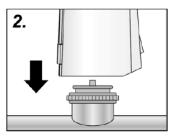
### 4) Installation notes

#### 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 ZMC-ES to the manually pre-installed valve adapter.



Screw the adaptor manually onto the valve.

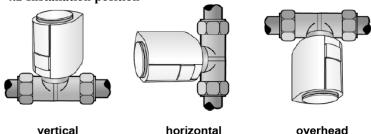


Place the Macon ZMC-ES vertically on the valve adaptor.

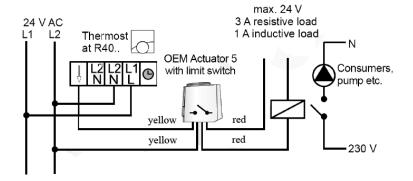


The Macon ZMC-ES snaps onto the valve adaptor with a "click" when pressed down vertically by hand.

### 4.2 Installation position



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



Calculation of maximum cable length (copper cable) for 24 V rated voltage

 $L = C \times A / n$ 

L Cable length in m

K Constant (269 m/mm<sup>2</sup>)

A Conductor cross-section in mm<sup>2</sup>

n Number of Alpha-Actuators

We recommend the following cables for installing a 24 V system:

Telephone wire J-Y(ST)Y 0.8 mm<sup>2</sup> Light plastic-sheathed cable: NYM 1.5 mm<sup>2</sup> Flat webbed building wire: NYIF 1.5 mm<sup>2</sup>

Transformer:

A safety isolating transformer according to EN 61558-2-6 (Europe) must always be used. Transformer dimensioning results from the making capacity of the Macon ZMC-ES.

Rule-of-thumb formula:

 $P_{Transformer} = 6 \text{ W x n}$ n = Number of Actuators





## 5) Accessories

• Protection Cap AA SK 1004



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

