

# ACTUATOR<sub>c</sub> 24V

Thermoelectric actuator for cooling and heating systems



## QUICK FACTS

- Modern design
- Travel path variants 4.0 mm / 5.0 mm (further variants on request)
- Designs "normally closed" (NC) and "normally open" (NO)
- Power consumption 1 watt
- Complete compatibility to the valve adapter system
- Simple plug-in installation
- 360° installation position
- Patented 100% protection in case of leaky valves
- "First open" function
- Adaptation check on the valve
- Alignment aid on the valve
- Compact size, small dimensions
- All around function display
- Noiseless and maintenance-free
- High functional safety and long expected service life
- Certified by the TÜV

# Technical description

The ACTUAROR 24 V is a thermoelectric actuator for opening and closing valves and small valves on heating circuit distributors of surface heating and cooling systems. The predominant area of application is the energy-efficient room-by-room temperature control in the area of building services and automation. The ACTUATOR 24 V is controlled by a 24 V room thermostat with two-point output or pulse-width modulation.

The ACTUATOR 24 V is delivered in a neutral design with fixed connection cable, function display blue/grey, with valve adapter VA 80. The following variants are available.

## Variants

Type	Normal position
ACTUATOR c 24 V NC	NC: Closed
ACTUATOR c 24 V NO	NO: Open

## Function

The actuator mechanism of the Actuator uses a PTC resistor-heated elastic element and a compression spring. The elastic element is heated by applying the operating voltage and moves the integrated plunger. The force generated by this movement is transferred to the plunger, thus opening or closing the valve.

### ACTUATOR c 24 V NC: Normally closed (valve closed)

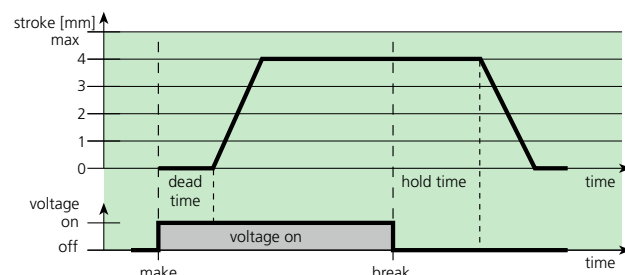


Figure 1. Example with respect to the travel path of 4 mm. The characteristic curve of the travel path of 5 mm is the result.

In case of the normally closed version, the valve is opened steadily by the plunger 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-energised.

### ACTUATOR c 24 V NO: Normally open (valve open)

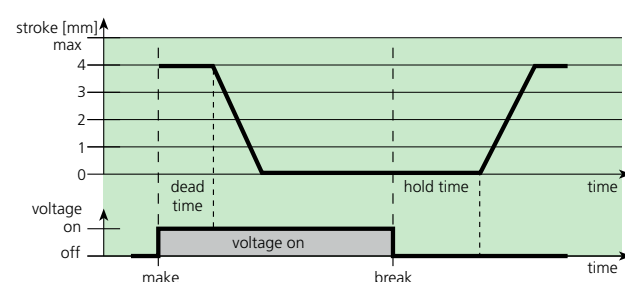


Figure 2. Example with respect to the travel path of 4 mm. The characteristic curve of the travel path of 5 mm is the result.

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

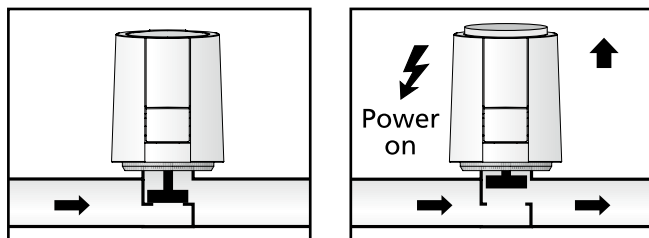
After the operating voltage is cut and after expiry of the hold time the valve is opened evenly by the closing force of the compression spring.

## Function display

The function display (all around display) of the actuator shows at the first glance whether the valve is open or closed; this can also be felt in the dark.

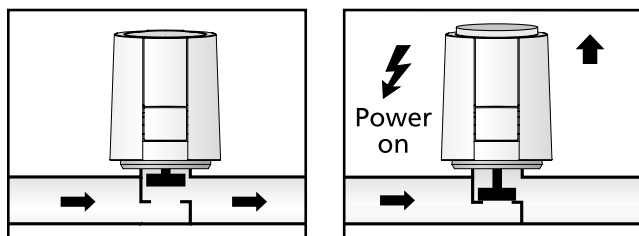
### For the version NC:

Normally closed extracts the function display when the valve opens.



### For the version NO:

Normally open extracts the function display when the valve is closed.



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

In its delivery condition, the Actuator is normally open due to the "First Open" function. This enables heating operation during the carcass construction phase even when the electric wiring of the room-by-room temperature control is not yet complete. When commissioning the system at a later date, the "First Open" function is automatically unlocked by applying the operating voltage (for more than 6 minutes) and the actuator is fully operable.

## Technical data

Voltage	24 V AC/DC, +20%...-10%	
Max. inrush current	< 300 mA during max. 2 min.	
Power rating, start-up:	6 VA for a maximum of 2 minutes	
Power rating, operation:	1 VA	
Stroke	4.0 / 5.0 mm	
Actuation force	100 N +10 %	
Fluid temperature	0 to +100 °C <sup>1)</sup>	
Storage temperature	-25 °C to +60 °C	
Ambient temperature	0 to +60 °C	
Protection class	III	
Degree of protection	IP 54 <sup>2)</sup>	
CE conformity according to	EN 60730	
Casing	Material	Polyamide
	Colour	Light grey (RAL 7035)
		Black*
Connection line	Type	2 x 0.75 mm <sup>2</sup> PVC (Halogen-free)
	Colour	Light grey (RAL 7035)
	Length	1 m
Weight with connection cable (1 m)	100 g	
Surge strength according to EN 60730-1	1 kV	
1) or higher, depending on the adapter		
2) in all installation positions		

\* Only for ACTUATOR c - 24 V - NC with pins on cable ends

# Installation

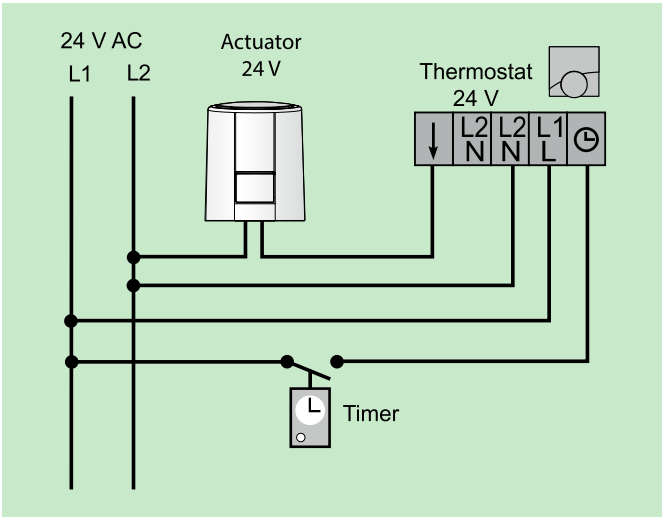
## Installation with valve adapter

The valve adapter assortment guarantees a perfect match of the actuator to almost all valve bottoms and heating circuit distributors available on the market. The Actuator is simply plugged on to the valve adapter previously installed manually.

## Installation position

The Actuator must be installed preferably in vertical or horizontal installation position. In case of "overhead" installation, special circumstances (e. g. drainwater) can reduce the lifetime of the actuator.

## Electric connection



## Cable

We recommend the following cable lengths for installing a 24 V system:

Cable	Section / diameter	Length
J-Y(ST)Y	0.8 mm	45 m
NYM / NYIF	1.5 mm <sup>2</sup>	136 m

## Transformer/power supply (unknown power supply)

A safety isolating transformer according to EN 61558-2-16 (for the AC variant) or a switching power supply according to EN 61558-2-16 (for DC variant) must always be used.

The dimensioning of the transformer or the switching power supply results from the making capacity of the Actuators:

Rule-of-thumb formula:	$P_{\text{transformer}} = 6 \text{ W} \times n$
	$n = \text{number of Actuators}$

When used in a control system, the specifications of the base station apply to the maximum permissible number of actuator.

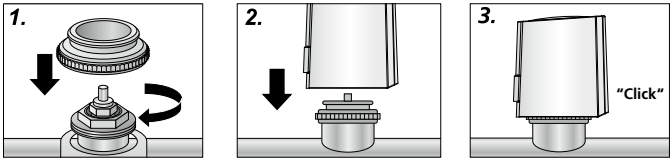


Figure 3.  
1. Screw the valve adapter manually onto the valve.  
2. Position the Actuator manually in vertical position to the valve adapter.  
3. Latch the Actuator to the valve adapter by manually applied vertical pressure until a clicking sound is heard.

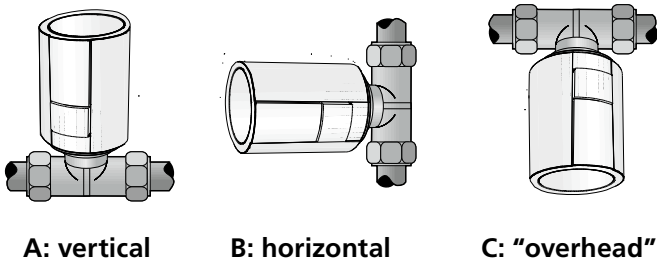


Figure 4. Installation position

Dimensions

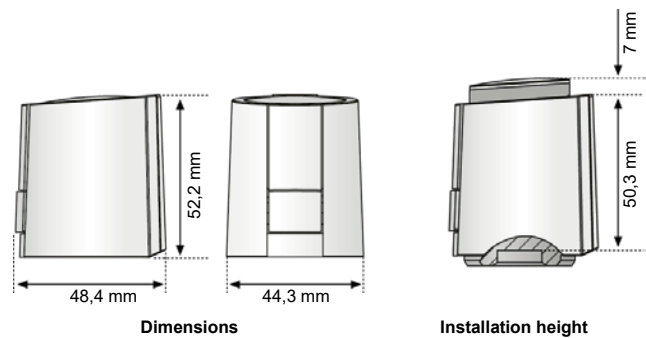


Figure 5. Dimensions

Specification

Valve actuator	ACTUATOR	-c	-24V	-aa	-bb	-ccccc
Version:						
Variant:						
24 V						
Type:						
NC (Normally closed)						
NO (Normally open)						
For NC only:						
-- (pins on cable ends)						
KK (including connector)						
For NC only with pins on cable ends						
Colour:						
BLACK						

Accessories

VA 80-adapter (M30x1,5) included

- ACTUATOR c ADAPTER T&A
- ACTUATOR c ADAPTER OVENTROP
- ACTUATOR c ADAPTER DIV1
- ACTUATOR c ADAPTER MMA
- ACTUATOR c ADAPTER RAV/L
- ACTUATOR c ADAPTER RAV
- ACTUATOR c ADAPTER RA