

OEM-Actuator 24 V with end-switch (4-wire)

The OEM-Actuator 24 V is a thermoelectric actuator for opening and closing valves used in the fields of heating, ventilation and air conditioning engineering. The integrated micro switch with floating contact allows direct operation of a pump or a fan control unit.

The OEM-Actuator has been developed especially for customer-specific usage in the oem business. Features, as protection in case of leaky valves, compact and modern casing, versions in normally closed and normally open, valve adapter concept and an enhanced life time have been of particular importance. This allows to fulfill the requirements within the bounds of technical reliability, improved installation and customer-/service friendliness. Additional differentiations through customer specific versions are possible.

The OEM-Actuator with end switch is controlled by a corresponding room thermostat with two-point output or pulse-width modulation.



Features

- OEM design
- Integrated micro switch with floating contact
- Compact size, small dimensions
- Available in normally closed (NC) or normally open (NO)
- Patented protection against leaky valves
- All around function indicator
- Maintenance-free
- High functional safety and long expected service life
- Low power consumption
- 360° installation position
- Snap-on installation
- Valve-adapter concept
- Adaptation check on valve

Application

- Two-point control systems in heating, air conditioning and ventilation systems
- Control of circuit distributors for individual room temperature control of concealed heating and cooling systems
- Control of radiators, convectors and similar units
- The integrated switch with floating contact allows direct or with a relay operation of a pump or fan control unit.

General Information

Scope of Supply (standard)

- 1x OEM-Actuator 24 V with end switch (Version: normally closed)
- 1x cable 1 meter
- 1x installation manual with ten languages

Alternative Version:

- Version normally open

Type

A 4024: Version 24 V with 24 V end switch – normally closed
A 4124: Version 24 V with 24 V end switch – normally open

Optional available extensions:

- First-Open function (for NC only)

Accessories

A valve adapter suiting your application can be enclosed in the actuator packing.

Customer-specific Version

Customer-specific versions are possible on request.

Functions

In General

The actuator mechanism of the OEM-Actuator uses a PTC resistor-heated elastic element and a compression spring. The wax element is heated by applying the operating voltage and moves the integrated ram. The force generated by the movement is transferred on the valve lifter and thus opens and closes the valve.

Standard Version

Normally Closed (valve closed)

Upon switching on the operating voltage the valve is opened steadily from the position “closed” by the ram motion. The integrated micro switch is closed after an actuator travel of 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. This allows using the micro switch signal as a function corresponding to the opening of the valve. The closing force of the compression spring is matched to the closing force of commercially available valves and keeps the valve normally closed.

Valve-Adapter-Concept

A valve-adapter concept guarantees a perfect match of the actuator to almost any valve bottom or heating circuit distributor available on the market. Simply snap-on the OEM-Actuator to the pre-installed valve adapter.

Function Display

The function display of the OEM-Actuator (all-round display) allows identifying the operating condition (valve open and closed and positions) at a glance.

Extended Version

First-Open Function (for NC only)

In its delivery condition, the OEM-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 single room 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 OEM-Actuator is fully operable.

Alternative Version

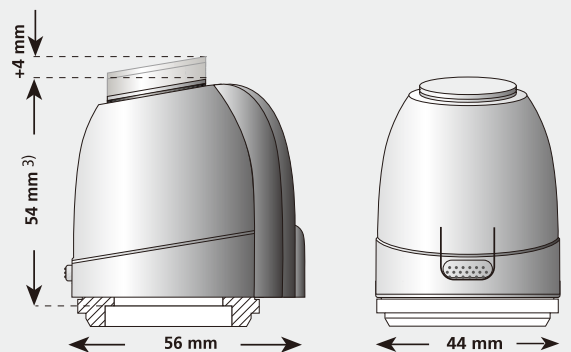
Normally Open (valve open)

In case of the normally open version, ram motion is redirected by mechanical means, resulting in precisely opposite actuator function.

Technical Data

Type	A 4024 / A 4124
Version	normally closed / normally open
Voltage	24 V AC/DC, +20%...-10%, 0-60 Hz
Max. inrush current	250 mA during 2 min. max.
Operating current	75 mA
Operating power	1.8 W
Closing and opening times	approx. 3 min.
Actuator travel	4 mm
Actuating force	100 N ± 5%
Micro-Switch	24 V AC: 3 A ohm resistive load, 1 A inductive load
Switching point	approx. 2 mm
Fluid temperature	10 - 100 °C 1)
Storage temperature	-25 to +60 °C
Ambient temperature	0 to +60 °C
Degree	IP 54 2)
CE conformity according to	EN 60730
Housing / housing colour	Polyamide / grey
Weight	155 g with a 1 m connecting cable
Connecting cable / length	4 x 0.75 mm² PVC, grey / 1 m

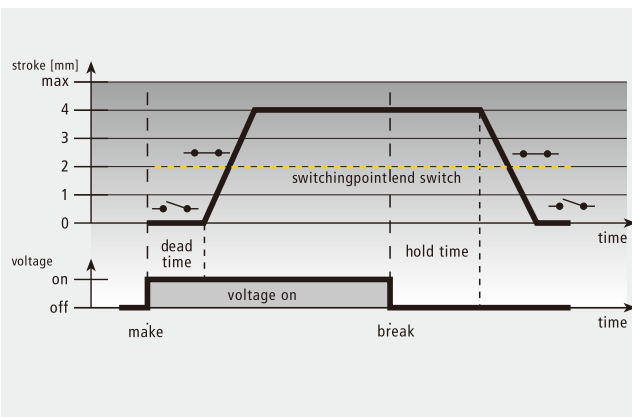
OEM-Actuator with valve adapter



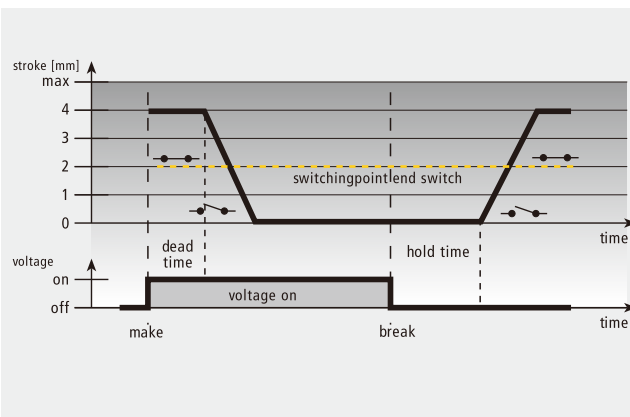
- 1) in dependence of the adapter even higher
- 2) in all installation positions
- 3) referring to standard valves

Characteristic Curves

Normally Closed (NC)

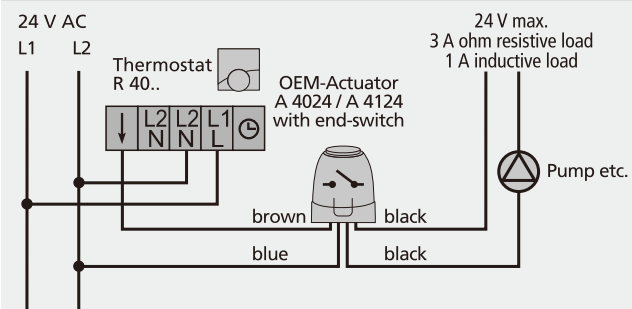


Normally Open (NO)



Planning and Installation Notes

Connections Overview



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

$$L = K \times A / n$$

A Conductor cross-section in mm²
 n Number of Actuators
 K Constant (269 m/mm²)
 L Cable length in m

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

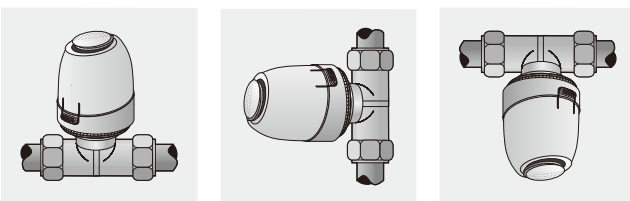
Bell wire:	Y(R)	0,6 mm²
Light plastic-sheathed cable:	NYM	1,5 mm²
Flat webbed building wire:	NYIF	1,5 mm²

Transformer:

A safety isolating transformer according to EN 60335 must always be used. Transformer dimensioning results from the making capacity of the OEM-Actuators.

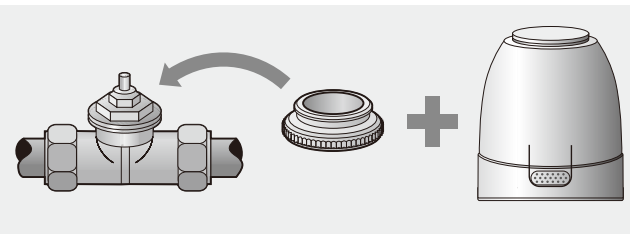
Rule-of-thumb formula: $P_{\text{Transformer}} = 6 W \times n$
n = number of OEM-Actuators

Recommended Installation Positions



Preferred installation positions of the OEM-Actuator are vertical and horizontal. An up-side down position may reduce product life through special circumstances (e.g. contaminated water).

Valve Adaptation



Valve adaptation is achieved by a valve adapter which is available in different versions to suit the most common valve bottoms and heating circuit distributors (please consider when ordering).