ACTUONOFF Actuator ON/OFF Normally Closed for valves and manifolds

eu.bac european building automation controls association

In combination with Biofloor Connect regulation system and 9000TP manifold range, the ACTUONOFF M30 24V actuator is eu.bac certified with a CA = 0,5K.

Models

Item code	Description
C430012001	Actuator ONOFF NC 230V M28
C430013001	Actuator ONOFF NC 24V M28
C430014001	Actuator ONOFF NC 230V M30
C430015001	Actuator ONOFF NC 24V M30

Application

Actuation of common valves, for example Comap thermostatic valves for radiators, Ballorex Dynamic valves and Biofloor underfloor heating manifolds.
For controllers with a switching output, 2-point control quasi-continuous control with 'pulse-pause' signal, in combination with intelligent unitary control systems.

Advantages

- Easy to fit onto the valve using the Low-Force-Locking® (LFL) connector;
- Fitted to valve via M30 x 1.5 or M28 x 1.5 thread with automatic adaptation
- Pushing force up to 90 N
- With 230 V or 24 V thermal expansion element
- Large, tangible and visible position indicator
- NC (normally closed)
- Silent
- Maintenance-free

Description

- Housing made of high-quality, self-extinguishing plastic, pure white (RAL 9010) or jet black (RAL 9005), high-gloss finish (fire protection according to EN 60695-2-11, EN 60695-10-2).
- Connected to valve with plastic bayonet connection.
- Bayonet nuts for connection to popular valves with threads M30 x 1.5 (black, included) or M28 x 1.5 (grey, included).
- Including white or black power cable, standard length 0.8 m PVC or halogen-free, Ø 0.5 mm².
- Run time for 'warm-up' for 4.5 mm stroke at 21 °C: min. 3.5 minutes (230 V), min. 4.5 minutes (24 V)
- Installation position: any, including upside-down

Technical features

	230V	24V
Power supply	**~**±15 % 50...60 Hz	**~/=** ±20 % 50...60 Hz
Power consumption during operation	2,5 W	3 W
Activation power	Approx. 40 W / 40VA	5 W / 50VA
Activation current	150 mA	220 mA
Closing force in closing-dimension range (8,5…13,5 mm)	84…102 N +/- 5N	
Min. run-time	3,5 min	4,5 min
Technical data		
Max. stroke (mm)	4,5 mm	
Closing force	90 N ±5 %	
Warm-up time	4,0 min	
Permitted ambient conditions		
Operating temperature	0...50 °C	
Storage and transport temperature	-25…+70 °C	
Max. operating temperature (at valve)	100 °C max	
Humidity, no condensation	< 85 % HR	
Weight	0,18 kg	
Protection type	IP 54 (EN 60730-1, -2, -14)	
Protection class	II (EN 60730-1)	III (EN 60730-1)
Electrical safety 2006/95/EC	EN 60335-1	-
EMC Directive 2004/108/EC	EN 61000-6-1 / EN 61000-6-2 / EN 61000-6-3 / EN 61000-6-4	

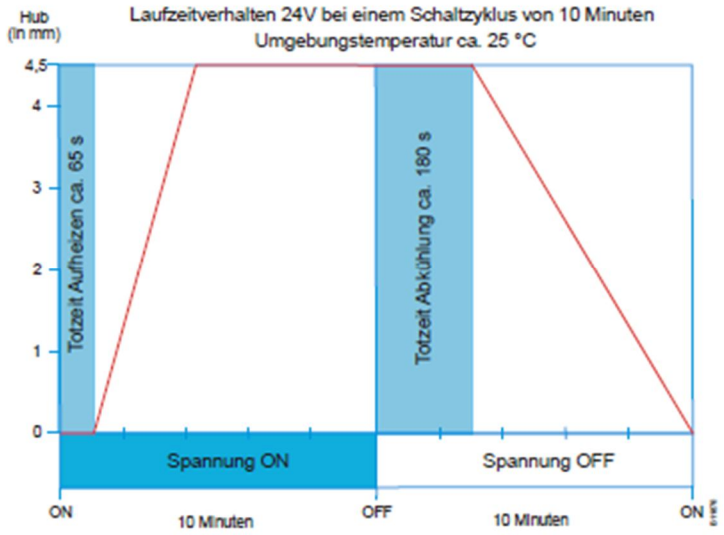
Description du fonctionnement

The actuator has an electrically heated expansion element which transfers its stroke directly to the attached valve. It works silently and is maintenance-free.

- If, when it is cold (ambient temperature of about 21°C), the heating element is turned on, the valve begins opening after a warming-up time of about 1.5 min (230 V and 24 V versions). After an additional period of approx. 2.5 min. (230 V) or 3 min. (24 V), the valve has carried out a stroke of 4.5 mm.
- If the heating element is turned off, the expansion element cools, and the valve is closed by spring force.

Quasi-continuous control is achieved by using a 'pulse-pause' timing signal, which causes a periodic open/closed position.

Run-time behaviour with a switching cycle of 10 minutes



The runtime behaviour for the 230 V version is slightly shorter than the 24 V version, taking 2.5 min. (to achieve a stroke of 4.5 mm).

Intended use

This product is only suitable for the purpose intended by COMAP, as described in the “Description of operation” section.

All related product documents must also be adhered to. Changing or converting the product is not admissible.

Control with thermal actuator

Controller type

For control with ACTUONOFF, there are basically two options: the quasi-continuous and discontinuous (2-point) controller. The quasi-continuous controller can be used whenever the section has linear behaviour, as is usually the case with room temperature control. The control performance using a quasi-continuous controller is better than with a discontinuous controller.
Discontinuous controllers (2-point) are recommended for control of non-linear sections.
Continuous control is not possible with ACTUONOFF actuators

Position control

The ability to move to any desired position of the ACTUONOFF actuator cannot be ensured with a controller. Only the actuator positions “extended” and “retracted” are ensured with a controller, so this actuator is also called a 2-point actuator.

Energy limiter

The ACTUONOFF can consume more energy than needed for opening. The result is that the cooling and thus the closing time are increased unnecessarily.

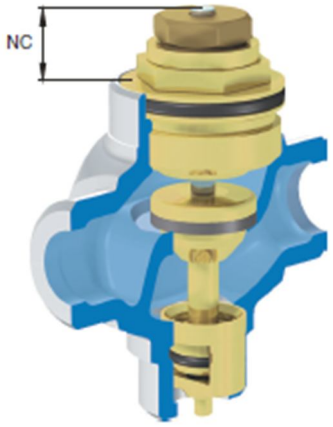
- There should be an element between the controller output terminal and the actuator that ensures that the supplied energy is limited. Reduction of the supplied energy helps shorten the closing time.
- This element is called an energy limiter and is independent of the controller parameters.
- The only dependency arises through the ambient temperature of the ACTUONOFF. Consequently, fixed parameters can be set for the energy limiter and used un-changed for each controller setting.

NC version (normally closed)

After the actuator has been installed, the VUL/BUL valves or normal commercial radiator valves are closed when idle. When power is applied to the actuator, the actuator spindle retracts, so the valve stem extends and opens the valve.
Valve status when actuator is without power: closed.

Closing dimension definition - NC version (normally closed)

The closing dimension of a valve is the distance between the face of the stem (pushed in with pre-tension of < 100 N) and contact surface of the lower thread. The actuator or the bayonet nut sup-ports itself on this surface.



Installation

- Thanks to the Low-Force-Locking® (LFL) technology, no force is needed in order to fit the actuator to the valve.
  - If the actuator is removed from the valve, the closing dimension and the pre-tension are relieved again.
  - The actuator returns to the ex-works condition and can be refitted with LFL functionality.
- First screw the bayonet nut to the valve and tighten with 2 N. Then fit the actuator to the valve, using no force.
  - Three grooves on the actuator ring indicate the correct position opposite the three ribs on the bayonet nut.
- Turn the bayonet ring clockwise until a click is heard. The valve plug is pre-tensioned.
  - When a second click is heard, the actuator is operable.
  - This position is the safety position to prevent slackening caused by vibrations.
- Whilst the bayonet nut is being rotated, the actuator adapts itself to the closing dimension of the valve.

Closing dimension compensation

The closing dimension compensation is mechanical.

- Whilst the bayonet nut is being rotated, the compensation pin in the actuator is released. On the NC version, a force is exerted on the valve stem (locked condition) with a minimum force of 90 N by the built-in spring.
  - The closing dimension is therefore set between this compensation pin and the compensation sleeve and fixed by toothing.
  - The toothing is designed such that the compensation pin automatically engages in the next row of teeth further down.
- This ensures that there is always pre-tension acting on the valve cone, making the valve close reliably.
- Valves may leak due to ageing or because the cone seal has become defective.
  - Simply slacken the bayonet ring and turn it clockwise again until two clicks are heard.
  - The actuator has taken on the new closing dimension and the valve is sealed again.

Closing dimension compensation (normally closed)

- If the standard bayonet nut that is provided is used, the actuator can compensate for a closing dimension of 8.5 mm to 13.5 mm.

Position indicator

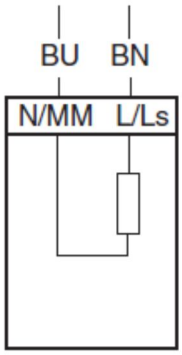
- The cover acts as the largest-possible position indicator. It is visible in all directions and is noticeable in dark installation locations.
- On the 'normally closed' version, the cover rises and the grey stroke part becomes visible.
- At full stroke, the cover stands up to 5 mm above the upper edge of the plug.

Elimination

On disposal, observe the local legal framework currently in force.

Wiring diagram

BU = Blue
BN = Brown



Engineering and fitting notes

- The starting current of the heating element must be taken into account when choosing the switching contacts and the mains fuses. In order to adhere to the technical specifications, the voltage loss due to the electric wires should not exceed 10%.
- The light-blue wire should not be switched and must be connected locally with the neutral wire.
- The controller must always switch the brown wire.

Dimensions

h (max) = 66 mm
h (min) = 59 mm