

Modulating linear actuator for
2-way and 3-way globe valves

- Actuating force 1000 N
- Nominal voltage AC/DC 24 V
- Modulating control DC 0 ... 10 V
- Position feedback DC 0 ... 10 V
- Running time 35 s
- Incl. bracket UNV-010
- Adapter sets for third-party valves as accessories (ZNV-..)



Technical data

Electrical data	Nominal voltage	AC 24 V, 50/60 Hz / DC 24 V	
	Nominal voltage range	AC 19.2 ... 28.8 V / DC 21.6 ... 28.8 V	
	Power consumption	Operation 3 W @ nominal force	
		For wire sizing 5 VA	
	Connection	Cable 1 m, 5 x 0.75 mm ²	
	Parallel operation	Yes (note performance data for supply!)	
Functional data	Actuating force	1000 N	
	Closing force	800 N	
	Inhibiting force	800 N	
	Control	Control signal Y	DC 0.5 ... 10 V, input impedance 100 kΩ
		Operating range	DC 0.5 ... 10 V for 0 ... 100% stroke
	Position feedback (measuring voltage U)	DC 0.5 ... 10 V @ 0.5 mA	
	Position accuracy	±5%	
	Manual override	With hexagon socket screw key, temporary	
	Nominal stroke	20 mm	
	Running time	35 s	
	Sound power level	≤45 dB (A)	
Position indication	mechanical 5 ... 20 mm stroke		
Safety	Protection class	III Safety extra-low voltage	
	Degree of protection	IP54	
	EMC	CE according to 2004/108/EC	
	Software Class	A (EN 60730-1)	
	Mode of operation	Type 1 (EN 60730-1)	
	Rated impulse voltage	0.33 kV (EN 60730-1)	
	Control pollution degree	3 (EN 60730-1)	
	Ambient temperature	0 ... +50 °C	
	Non-operating temperature	-40 ... +80 °C	
	Ambient humidity	95% r.h., non-condensating (EN 60730-1)	
Maintenance	Maintenance-free		
Dimensions / Weight	Dimensions	See «Dimensions» on page 5	
	Weight	approx. 1.6 kg with bracket UNV-010 (without valve)	

Safety notes



- The actuator has been designed for use in stationary heating, ventilation and air conditioning systems and is not allowed to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- It may only be installed by suitably trained personnel. Any legal regulations or regulations issued by authorities must be observed during assembly.
- The device does not contain any parts that can be replaced or repaired by the user.
- The device contains electrical and electronic components and is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.

Product features

- Mode of operation** The actuator is activated with a standard modulating signal DC 0 ... 10 V.
- Parameterisation** Control signal, operating range, feedback, running time and other functions can be adjusted with PC-Tool.
- Installation** A suitable adapter **ZNV-..** set is required for mounting the actuator on the third-party valve (see «Accessories»). The adapter set is comprised of a valve neck adapter and a valve stem adapter. The valve neck adapter, together with a clamping strap on the bracket, makes possible simple installation of the actuator on the valve neck. The valve stem adapter is mounted on the valve stem. The actuator spindle can be coupled to the valve stem with the valve stem coupling. The actuator can be rotated by 360° ↺ on the valve neck.
Actuators **NV..** without brackets are also available which can be used with corresponding **UNV-..** (bracket and adapter set) for valves from a wide array of manufacturers.
- Manual override** The stroke can be adjusted in a voltage-free state by using a hexagon socket screw key (5 mm), which is plugged into the actuator at the top. If the hexagon socket screw key is turned in a clockwise direction, then the actuator spindle will extend from the actuator housing (pushing) and maintain the position until a nominal voltage is applied (the controller has first priority).
- Functional reliability** The actuator is protected against short circuits, polarity reversal and overloading.
- Position indication** The stroke is indicated mechanically on the bracket. The stroke range adjusts itself automatically.

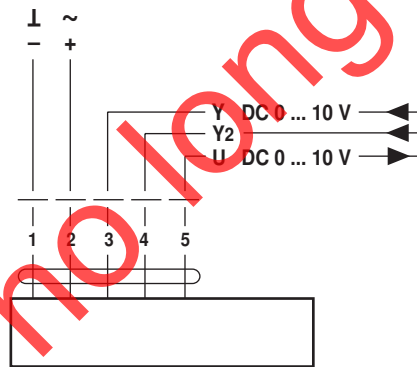
Accessories

	Description
Mechanical accessories	Adapter sets ZNV-.. see www.belimo.eu/retrofit

Electrical installation

Wiring diagram

- Notes**
- Connect via safety isolation transformer.
 - Parallel connection of other actuators possible.
- Note performance data for supply.



- Cable colours:**
- 1 = black
 - 2 = red
 - 3 = white
 - 4 = white
 - 5 = white

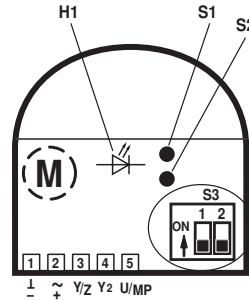
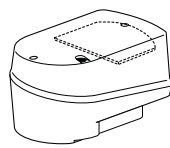
Functions

Alignment of the operating elements

The terminals for the cable connection, the operating elements S1, S2, S3 and the H1 LED indicator are located under the cover of the actuator.

By setting slide switch S3 or pressing pushbuttons S1 and S2, it is possible to configure the actuator very simply on site to suit actual requirements.

- S3.1 Direction of stroke
- S3.2 Valve closing point



S3.1	Symbol
S3.2	Symbol

Functional description

Function	Description	Switch	Symbol	Consequence
Test	The valve effects full stroke with maximum running time and checks the adapted stroke to determine whether the two end-points (H=0% and H=100%) are reached.	Press S1		
Init (Adaption)	The possible stroke effected (between the two mechanical end stops of the valve) is detected a 100% stroke and stored in the microcontroller. The control signal and the running time are then matched to this 100% stroke.	Press S2		
Direction of stroke	Direction of stroke relative to the control signal	S3.1	Symbol	Consequence
direct ¹⁾	0% control signal corresponds to 0% position feedback. (The actuator spindle is retracted or extended according to the selected closing point.)	OFF		
inverted	0% control signal corresponds to 100% position feedback. (The actuator spindle is extended or retracted according to the selected closing point.)	ON		
Valve closing point	Closing point with actuator spindle retracted or extended.	S3.2	Symbol	Consequence
up	The actuator spindle is retracted into the actuator and the valve stem is extended from the fitting. The position feedback indicates 0% if the stroke direction is «direct».	OFF		
down	The actuator spindle is extended from the actuator and the valve stem is retracted into the fitting. The position feedback indicates 0% if the stroke direction is «direct».	ON		

¹⁾ Factory setting

LED display H1

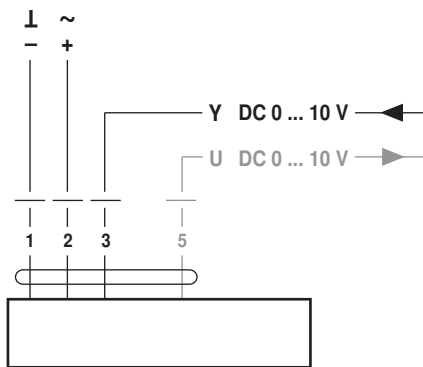
The LED display is two-coloured (red/green) and shows the current status of the actuator.

Green steady light	Actuator working properly	
Green flashing light	Test run or adaptation with synchronisation in progress	
Red steady light	A fault is present	Possible causes of malfunctions: – Actuator installed incorrectly – Valve stem blocked – No valve installed The adaptation must be repeated by pressing pushbutton S2 after the malfunction has been eliminated.
Red flashing light	After every voltage interruption (>2 s). The valve is automatically synchronized at the selected closing point the next time it closes, and the LED indicator changes from a red flashing light to a green steady light.	
Alternating red/green flashing light	Addressing via the control system and operation of the adaptation pushbutton S2 in progress	

Functions

(Continued)

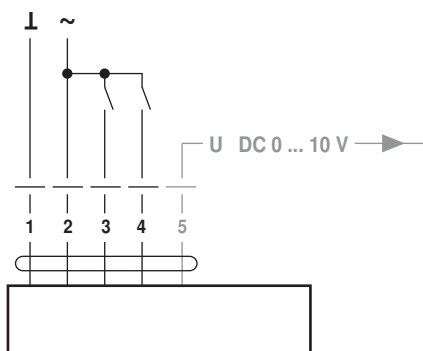
Modulating control



Symbols										Actuator spindle moves	
Direction of stroke	Closing point Valve	Signal direct	Signal inverted	Closing point up	Closing point down	Control signal min. (e.g. Y = 0 V)	Control signal max. (e.g. Y = 10 V)	Measuring signal min. (e.g. U = 0 V)	Measuring signal max. (e.g. U = 10 V)		
										S3.1	
	▲	OFF		OFF		X	X	X		ON	OFF
	▼	OFF			ON	X	X	X		ON	OFF
	▲		ON ¹⁾	OFF		X	X	X		ON	OFF
	▼		ON ¹⁾		ON	X	X	X		ON	OFF

¹⁾ If the controller generates a negative signal (<0.15 V), slide switch S3.1 must not be set to «ON», if the operating range of the actuator is set to 0 ... 10 V (Exception: start point in the parameterized operating range of 0.5 V).

3-point control



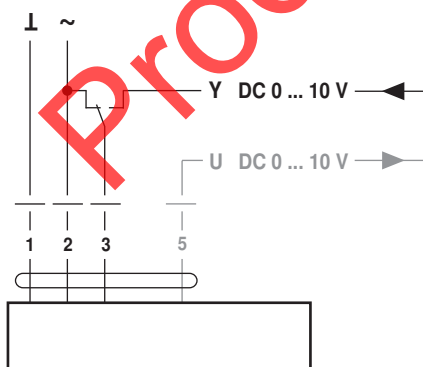
The linear actuator must be accordingly parameterized and equipped with a 3-wire connector for 4-point applications.

Symbols										Actuator spindle moves	
Direction of stroke	Closing point Valve	Signal direct	Signal inverted	Closing point up	Closing point down	Relay contact (Y1)	Relay contact (Y2)	Measuring signal min. (e.g. U = 0 V)	Measuring signal max. (e.g. U = 10 V)		
										S3.1	
	▲	OFF		OFF		1	0	X ²⁾			OFF
	▼	OFF			ON	1	0	X ²⁾		ON	ON
	▲		ON	OFF		1	0	X ²⁾		X ²⁾	ON
	▼		ON		ON	1	0	X ²⁾		X ²⁾	ON

¹⁾ Measuring signal U according to position

²⁾ If relay contact a or b is in switch position 1 for longer than the running time (35 s)

Override control 100%

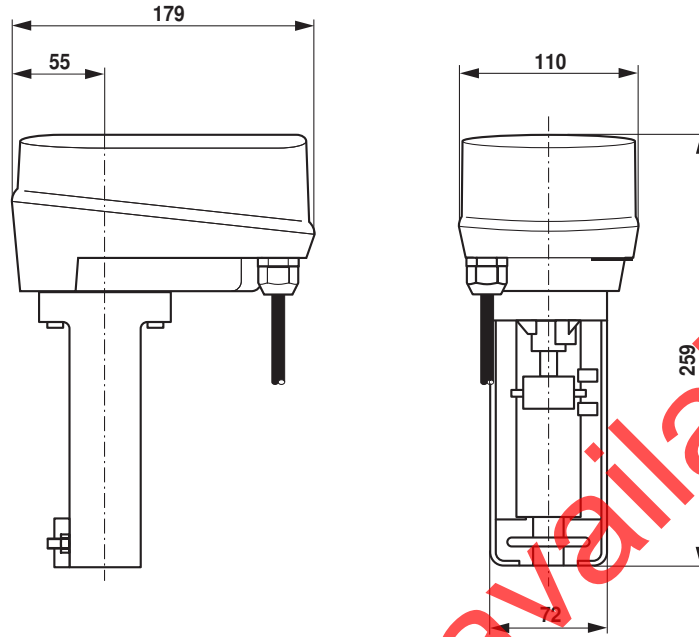


A typical use for 100% override control is in a frost protection circuit. Whether or not the frost thermostat has to interrupt the signal conductor to the controller «d» depends on the make of controller being used (not necessary, if the signal output at the controller is short circuit proof and protected against polarity reversal).

Symbols										Actuator spindle moves	
Direction of stroke	Closing point Valve	Signal direct	Signal inverted	Closing point up	Closing point down	Control signal min. (e.g. Y = 0 V)	Control signal max. (e.g. Y = 10 V)	Measuring signal min. (e.g. U = 0 V)	Measuring signal max. (e.g. U = 10 V)		
										S3.1	
	▲	OFF		OFF		1	0		X		OFF
	▼	OFF			ON	1	0	X	X		ON
	▲		ON	OFF		1	0	X	X		ON
	▼		ON		ON	1	0	X	X		OFF

Dimensions [mm]

Dimensional drawings



Product no longer available

Further documentation

- Overview of brackets and adapter sets on www.belimo.eu/retrofit
- Installation instructions for actuators
- Notes for project planning (hydraulic characteristic curves and circuits, installation regulations, commissioning, maintenance, etc.)
- Specification texts