

Cloud capable and communicative rotary actuator for ball valves

- Torque motor 180 in-lb [20 Nm]
- Nominal voltage AC/DC 24 V
- Control modulating, Cloud, communicative, Hybrid
- Conversion of sensor signals
- Ethernet 10/100 Mbit/s, TCP/IP, integrated web server
- Communication via BACnet IP, Modbus TCP and Cloud



5-year warranty


Technical data

Electrical data	Nominal voltage	AC/DC 24 V
	Nominal voltage frequency	50/60 Hz
	Nominal voltage range	AC 19.2...28.8 V / DC 21.6...28.8 V
	Power consumption in operation	8.5 W
	Power consumption in rest position	5 W
	Power consumption for wire sizing	11 VA
	Transformer sizing	8.5 VA (class 2 power source)
	Connection supply / control	cable 3 ft. [1 m], 6 x 0.5 mm ²
	Parallel operation	Yes (note the performance data)
	Electrical Connection	18 GA appliance cable, 1/2" conduit connector and RJ45 socket (ethernet)
Overload Protection	electronic throughout 0...95° rotation	
Functional data	Torque motor	180 in-lb [20 Nm]
	Communicative control	Cloud BACnet IP Modbus TCP
	Operating range Y variable	0.5...10 V
	Position feedback U	2...10 V
	Position feedback U note	Max. 0.5 mA
	Position feedback U variable	VDC variable
	Position accuracy	±5%
	Direction of motion motor	selectable by ccw/cw mounting
	Direction of motion fail-safe	reversible with cw/ccw mounting
	Manual override	5 mm hex crank (3/16" Allen), supplied
	Angle of rotation note	adjustable with mechanical stop
	Running Time (Motor)	default 150 s, variable 70...220 s
	Running time motor variable	70...220 s
	Adaptation Setting Range	manual
	Noise level, motor	50 dB(A)
Noise level, fail-safe	62 dB(A)	
Position indication	Mechanically, pluggable	
Safety data	Degree of protection IEC/EN	IP54
	Degree of protection NEMA/UL	NEMA 1
	Enclosure	UL Enclosure Type 1
	EMC	CE according to 2014/30/EU

Safety data	Agency Listing	cULus listed to UL60730-1A:02; UL 60730-2-14:02 and CAN/CSA-E60730-1:02; Listed to UL 2043 - suitable for use in air plenums per Section 300.22(c) of the NEC and Section 602.2 of the IMC
	Quality Standard	ISO 9001
	Mode of operation	Type 1
	Rated impulse voltage supply / control	0.8 kV
	Ambient temperature	-22...122°F [-30...50°C]
	Storage temperature	-40...176°F [-40...80°C]
	Ambient humidity	max. 95% RH, non-condensing
	Servicing	maintenance-free
Weight	Weight	5.3 lb [2.4 kg]
Materials	Housing material	Galvanized steel and plastic housing

Safety notes


- The device must not be used outside the specified field of application, especially not in aircraft or in any other airborne means of transport.
- Outdoor application: only possible in case that no (sea) water, snow, ice, insulation or aggressive gases interfere directly with the actuator and that is ensured that the ambient conditions remain at any time within the thresholds according to the data sheet.
- Only authorized specialists may carry out installation. All applicable legal or institutional installation regulations must be complied during installation.
- The device may only be opened at the manufacturer's site. It does not contain any parts that can be replaced or repaired by the user.
- Cables must not be removed from the device.
- To calculate the torque required, the specifications supplied by the damper manufacturers concerning the cross-section, the design, the installation site and the ventilation conditions must be observed.
- The device contains electrical and electronic components and must not be disposed of as household refuse. All locally valid regulations and requirements must be observed.

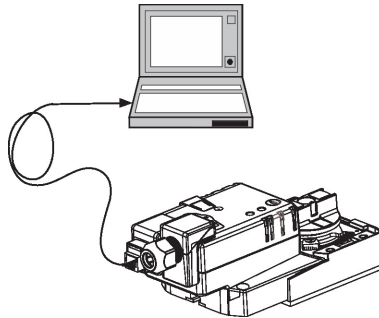
Product features

Mode of operation	<p>The actuator is controlled via the Cloud, BACnet IP or Modbus TCP and drives to the position defined by the control signal. Various data points can be written and read via the same interfaces.</p> <p>Hybrid mode:</p> <p>The actuator receives its analog control signal from the higher level controller and drives to the position defined. Using the Cloud, BACnet IP or Modbus TCP, various data points can be read and with the exception of the control signal written.</p>
Converter for sensors	<p>Connection option for two sensors (passive sensor, active sensor or switching contact). The actuator serves as an analog/digital converter for the transmission of the sensor signal to the higher level system.</p>

Communication The configuration can be carried out through the integrated web server (RJ45 connection to the web browser), by communicative means or via the Cloud.

Additional information regarding the integrated web server can be found in the separate documentation.

- "Peer to Peer" connection**
http://belimo.local:8080
The Notebook must be set to "DHCP".
Make sure that only one network connection is active.
- Standard IP address:**
http://192.168.0.10:8080
Static IP address
- Password (read-only):**
User name: «guest»
Password: «guest»



Positioning signal inversion This can be inverted in cases of control with an analog positioning signal. The inversion causes the reversal of the standard behavior, i.e. for control signal 0%, the actuator is opened to max and for control signal 100%, the actuator is closed.

Application For fail-safe, modulating control of dampers in HVAC systems. Actuator sizing should be done in accordance with the damper manufacturer's specifications. The actuator is mounted directly to a damper shaft up to 1.05" in diameter by means of its universal clamp. A crank arm and several mounting brackets are available for applications where the actuator cannot be direct coupled to the damper shaft. The actuator operates in response to a 2 to 10 VDC or, with the addition of a 500Ω resistor, a 4 to 20 mA control input from an electronic controller or positioner. A 2 to 10 VDC feedback signal is provided for position indication. Not to be used for a master-slave application.

Simple direct mounting Simple direct mounting on the damper shaft with a universal shaft clamp, supplied with an anti-rotation device to prevent the actuator from revolving.

Data recording The recorded data (integrated data recording for 13 months) can be used for analytical purposes.
Download csv files via web browser.

Manual override Manual override with push-button possible (the gear is disengaged for as long as the button is pressed or remains locked).

Adjustable angle of rotation Adjustable angle of rotation with mechanical end stops.

High functional reliability The actuator is overload protected, requires no limit switches and automatically stops when the end stop is reached.

Home position The first time the supply voltage is switched on, i.e. at the time of commissioning, the actuator carries out an adaption, which is when the operating range and position feedback adjust themselves to the mechanical setting range.
The actuator then moves into the position defined by the positioning signal.

Adaptation and synchronisation An adaption can be triggered manually by pressing the "Adaption" button. Both mechanical end stops are detected during the adaptation (entire setting range).
The actuator then moves into the position defined by the positioning signal.

Accessories

Electrical accessories	Description	Type
	Connection cable 16 ft [5 m], A: RJ11 6/4 ZTH EU, B: 6-pin for connection to service socket	ZK1-GEN

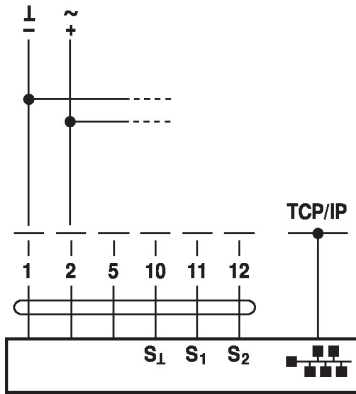
Electrical installation



Supply from isolating transformer.
Parallel connection of other actuators possible. Observe the performance data.

Wiring diagrams

AC/DC 24 V



Cable colors:

- 1 = black
- 2 = red
- 5 = orange
- 10 = yellow-black
- 11 = yellow-pink
- 12 = yellow-grey



Connection of a notebook for parametrisation and manual control via RJ45.

Optional connection via RJ45 (direct connection Notebook / connection via Intranet or Internet) for access to the integrated web server

Functions

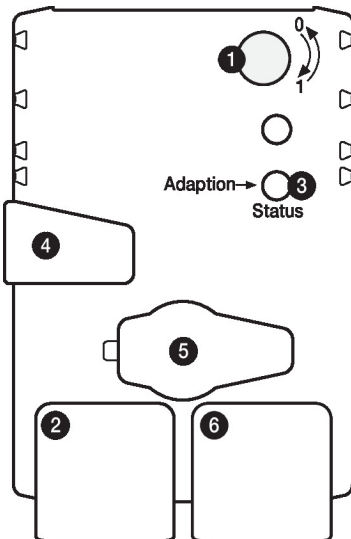


The connection diagrams shows connections for the first sensor on terminal S1, while the second sensor can be connected identically on terminal S2.

Parallel use of different sensor types is permitted.

For hybrid operation, S1 is used for the control signal Y and must be configured as an active sensor.

Operating controls and indicators



- 1** Direction of rotation switch
Switch: Direction of rotation changes
- 2** LED display green
Off: No power supply or wiring errors
On: Actuator starts operation
Flickering: In operation
- 3** Push-button and LED display orange
Off: Standard mode
On: Adaptation or synchronising process active
Press button: Triggers angle of rotation adaptation, followed by standard mode
- 4** Gear disengagement button
Press button: Gear disengages, motor stops, manual override possible
Release button: Gear engages, synchronization starts, followed by standard control mode
- 5** Service plug
Not used in this product
- 6** RJ45 socket
For the connection of TCP/IP (Cloud), BACnet/IP, and Modbus TCP

Dimensions

Dimensional drawings

