

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



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	4 W
	Power consumption in rest position	3 W
	Power consumption for wire sizing	6 VA
	Transformer sizing	21 VA (class 2 power source)
	Connection supply / control	cable {97}, {233} x {98}
	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	2...10 V
	Operating range Y note	Hybrid via 2...10 V
	Operating range Y variable	0.5...10 V
	Bridging time	2 s delay before fail-safe activates
	Pre-charging time	5...20 s
	Position accuracy	±5%
	Direction of motion motor	selectable with switch 0/1
	Direction of motion fail-safe	reversible with switch
	Manual override	external push button
	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	52 dB(A)	
Noise level, fail-safe	61 dB(A)	
Position indication	Mechanically, pluggable	

Safety data	Protection class IEC/EN	III Safety Extra-Low Voltage (SELV)
	Degree of protection IEC/EN	IP54
	Degree of protection note	IP54 when using protective cap or protective grommet for RJ45 socket
	Degree of protection NEMA/UL	NEMA 1 UL Enclosure Type 1
	EMC	CE according to 2014/30/EU
	Agency Listing	cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2014/30/EU and 2014/35/EU; 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% r.H., non-condensing
	Servicing	maintenance-free
	Weight	Weight
Materials	Housing material	UL94-5VA

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, insolation 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 authorised 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	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. Hybrid mode: 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.
Converter for sensors	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.
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:

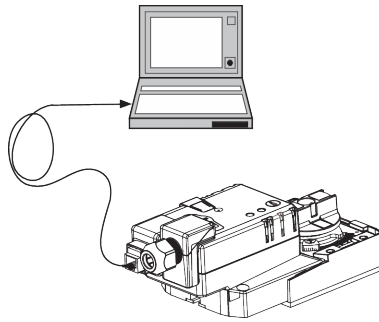
http://192.168.0.10:8080

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.

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 adaption (entire setting range).

The actuator then moves into the position defined by the positioning signal.

Accessories

Electrical accessories

Description

Type

Grommet for RJ connection module, 50 pcs.

Z-STRJ.1

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

ZK1-GEN

Service tools

Description

Type

Service Tool, with ZIP-USB function, for parametrisable and communicative Belimo actuators, VAV controller and HVAC performance devices

ZTH EU

Electrical installation

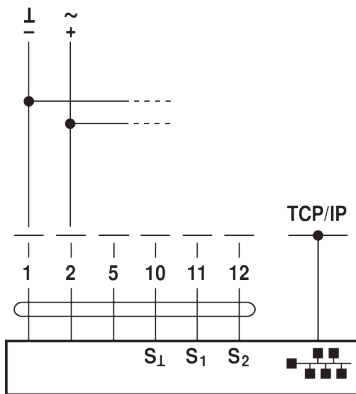


Connection via safety isolating transformer.

Parallel connection of other actuators possible. Observe the performance data.

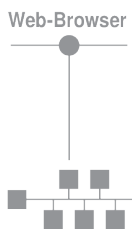
Wiring diagrams

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 parameterisation 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

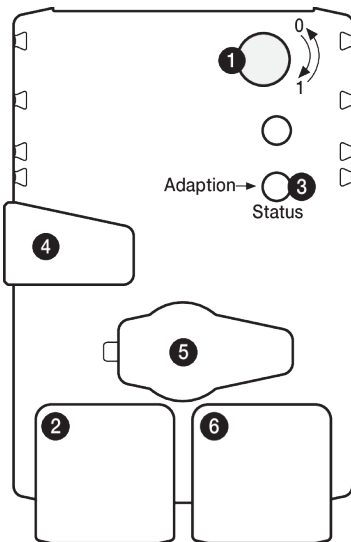


The connection diagrams shows connections for the first sensor on terminal S1, while the second sensor can be connected identically on terminal S2.

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

- ∅ 1/4" to 3/4" [6 to 20]
- 5/16" to 3/4" [8 to 26]

