Technical data sheet AFB24-IP

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	5.5 W
	Power consumption in rest position	5 W
	Connection supply / control	cable 1 m, 6 x 0.5 mm²
	Parallel operation	Yes (note the performance data)
Functional Data	Torque motor	180 in-lb [20 Nm]
	Communicative control	Cloud BACnet IP Modbus TCP
	Position accuracy	±5%
	Direction of motion motor	selectable by ccw/cw mounting
	Manual override	5 mm hex crank (3/16” Allen), supplied
	Running Time (Motor)	150 s /
	Running time motor variable	70...220 s
	Adaptation setting range	manual
	Noise level, motor	50 dB(A)
	Position indication	Mechanically, pluggable
Safety	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
	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

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

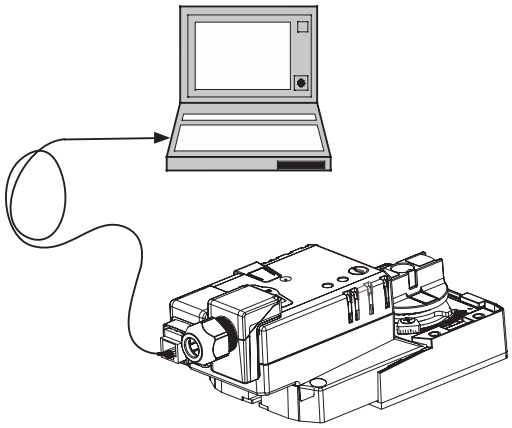
The actuator is controlled via the Cloud, BACnet IP or Modbus TCP and drives to the position defined by the control signal. Various data points can be written and read via the same interfaces.
Hybrid mode:
The actuator receives its analog control signal from the higher level controller and drives to 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 analogue/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 analogue positioning signal. The inversion causes the reversal of the standard behaviour, 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.

AFB24-IP

Damper Actuator, modulating, Cloud, communicative, Hybrid, AC/DC 24 V, 20 Nm

Product features

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 rotating.

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.

Adaption 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

	Description	Type
Electrical accessories	Connection cable 5 m, A: RJ11 6/4 ZTH EU, B: 6-pin service socket for Belimo device	ZK1-GEN

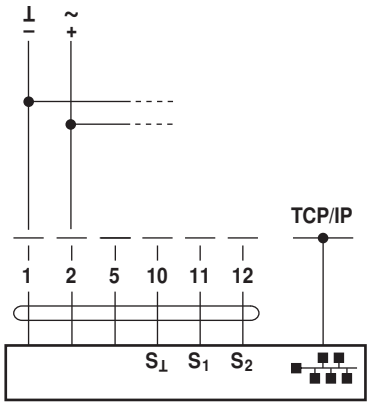
Electrical installation

Notes

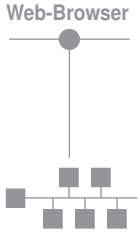
- Connection via safety isolating transformer.
- Parallel power connection of additional actuators is possible. Observe the transformer size and performance data.

Wiring diagrams

AC/DC 24 V



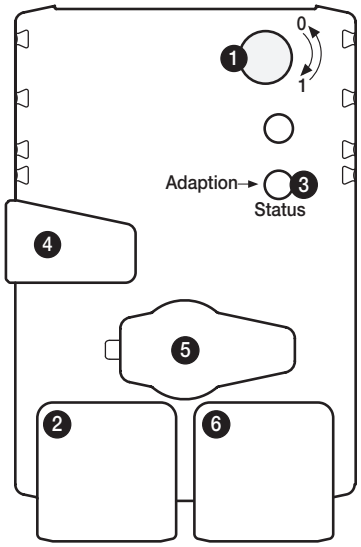
Cable colours:
1 = black
2 = red
5 = orange
10 = yellow-black
11 = yellow-pink
12 = yellow-grey



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

Operating controls and indicators



1 Direction of rotation switch
Switch: Direction of rotation changes

2 LED displa y 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

Operating Controls and Indicators

Dimensional drawings

⌀ 1/4" to 3/4" [6 to 20]
□ 5/16" to 3/4" [8 to 26]