Communicative rotary actuator fail-safe for zone valves

- Torque motor 1 Nm
- Nominal voltage AC/DC 24 V
- Control communicative
- Communication via Belimo MP-Bus
- Snap-assembly of the actuator
- Flow setting variable
- Deenergised closed (NC)

Picture may differ from product

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	2 W
	Power consumption in rest position	0.5 W
	Power consumption for wire sizing	3.5 VA
	Connection supply / control	Cable 1 m, 3x 0.34 mm^2
	Parallel operation	Yes (note the performance data)
Data bus communication	Communicative control	MP-Bus
	Number of nodes	MP-Bus max. 8 (16)
Functional data	Torque motor	1 Nm
	Direction of motion fail-safe	fix deenergised closed (end stop NC = 0%)
	Manual override	with actuator (clicked out)
	Running time motor	75 s / 90°
	Running time fail-safe	60 s / 90°
	Sound power level, motor	35 dB(A)
	Sound power level, fail-safe	35 dB(A)
	Position indication	Mechanical
	Flow setting	see product features
Safety data	Protection class IEC/EN	III, Safety Extra-Low Voltage (SELV)
	Degree of protection IEC/EN	IP40
	EMC	CE according to 2014/30/EU
	Certification IEC/EN	IEC/EN 60730-1 and IEC/EN 60730-2-14
	Type of action	Type 1.AA
	Rated impulse voltage supply / control	0.8 kV
	Pollution degree	2
	Ambient humidity	Max. 95% RH, non-condensing
	Ambient temperature	5...40°C [41...104°F]
	Storage temperature	-40...80°C [-40...176°F]
	Servicing	maintenance-free
Weight	Weight	0.19 kg
Terms	Abbreviations	POP = Power off position / fail-safe position PF = Power fail delay time / bridging time

Safety notes

- This device has been designed for use in stationary heating, ventilation and air-conditioning systems and must not be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- Outdoor application: Only possible if no (sea) water, snow, ice, sunlight or aggressive gases act directly on the device and if it is ensured that the ambient conditions remain within the limit values specified in the data sheet at all times.
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied with 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.
- 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

Operating mode

The actuator receives its digital control signal from the higher level controller via the MP-Bus and drives to the position defined. Connection MP serves as communication interface and does not supply an analogue measuring voltage.

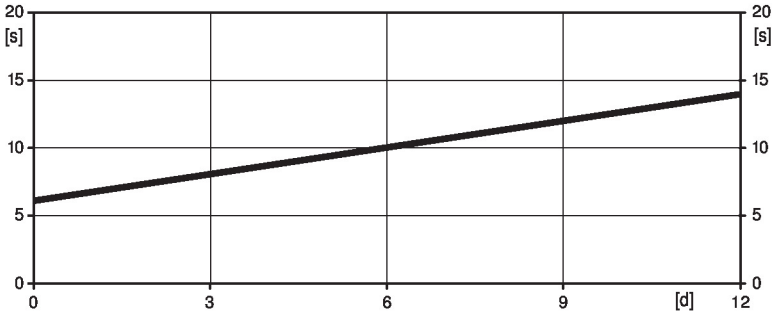
Note: Neither a conventional operation with a standard signal nor a configuration of signals (e.g. running time) is possible. With the configuration devices, a functional check can be executed and the MP adress can be assigned.

When controlling CQ(K) actuators, it must be ensured that via MP-Bus, the setpoint steps are specified in whole percentages.

Pre-charging time (start up)

The capacitor actuators require a pre-charging time. This time is used for charging the capacitors up to a usable voltage level. This ensures that, in the event of a power failure, the actuator can move at any time from its current position into the fail-safe position. The duration of the pre-charging time depends mainly on how long the power was interrupted.

Typical pre-charging time



[d] = Power failure in days
[s] = Pre-charging time in seconds

	[d]				
	0	3	6	9	12
[s]	6	8	10	12	14

Delivery condition (capacitors)

The actuator is completely discharged after delivery from the factory, which is why the actuator requires approximately 25 s pre-charging time before initial commissioning in order to bring the capacitors up to the required voltage level.

Configurable device

The factory settings cover the most common applications. Single parameters can be modified with Belimo Assistant 2.

Operating and service tools

Belimo Assistant 2

Simple direct mounting

Tool-free snap assembly.

The actuator can be plugged on the valve by hand (Caution! Just vertical movements). Pins must match the holes on the flange.

The mounting orientation in relation to the valve can be selected in 180° increments. (Possible two times)

Product features

Manual override
Click out the actuator and rotate the valve spindle with the help of the actuator.

Adjustable angle of rotation
The angle of rotation of the actuator can be changed by clip in 2.5° increments. This is used to set the maximum flow rate of the valve.

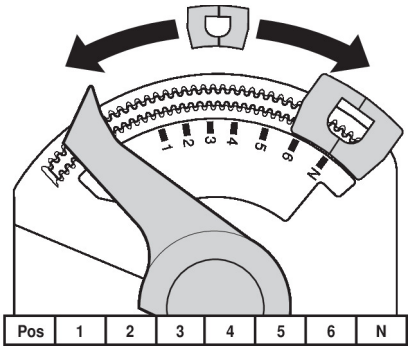
High functional reliability
The actuator is overload protected, requires no limit switches and automatically stops when the end stop is reached.

Flow setting
Adjustable Kv values (C2..Q-.., C4..Q-..) / V'max values (C2..QP(T)-..) are given in the respective zone valve data sheets.

2-way valve: Remove end stop clip and place at desired position.

3-way valve: Remove end stop clip (change-over application).

After every change of the flow setting by means of end stop clip, an adaptation must be triggered on the modulating actuators.



Accessories

Tools

Description	Type
Service tool for wired and wireless setup, on-site operation and troubleshooting.	Belimo Assistant 2
Belimo Assistant Link Bluetooth and USB to NFC and MP-Bus converter for configurable and communicative devices	LINK.10
Connecting cable 5 m, A: RJ11 6/4 LINK.10, B: 6-pin for connection to service socket	ZK1-GEN
Connecting cable 5 m, A: RJ11 6/4 LINK.10, B: free wire end for connection to MP/PP terminal	ZK2-GEN

Electrical accessories

Description	Type
MP-Bus power supply for MP actuators	ZN230-24MP

Gateways

Description	Type
Gateway MP to BACnet MS/TP	UK24BAC
Gateway MP to Modbus RTU	UK24MOD

Mechanical accessories

Description	Type
Spindle extension CQ	ZCQ-E
End stop clip, Multipack 5 pcs.	ZCQ-C
End stop clip, Multipack 20 pcs.	Z-ESCM

Electrical installation

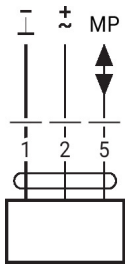
Supply from isolating transformer.

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

Wire colours:
1 = black
2 = red
5 = orange

Electrical installation

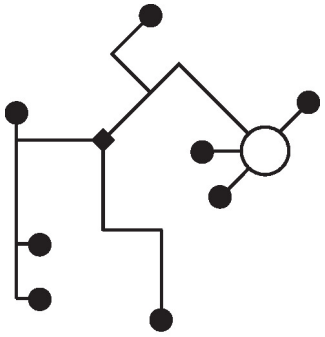
AC/DC 24 V, MPL



Further electrical installations

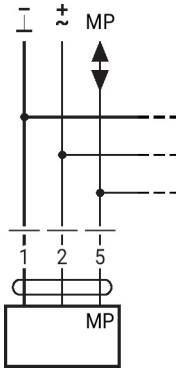
MP-Bus

MP-Bus Network topology



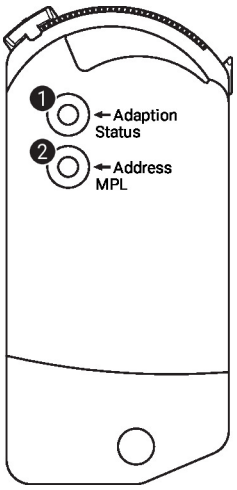
There are no restrictions for the network topology (star, ring, tree or mixed forms are permitted).
Supply and communication in one and the same 3-wire cable
• no shielding or twisting necessary
• no terminating resistors required

Connection on the MP-Bus



Max. 8 (16) additional actuators

Operating controls and indicators



1 Push-button and LED display yellow

On:	Angle of rotation adaptation active
Press button:	Triggers angle of rotation adaptation, followed by standard mode

2 Push-button and LED display green

Off:	No power supply or no MP-Bus level
On:	Power supply and MP-Bus level OK
Flickering:	MP-Bus communication active
Flashing:	Depiction of MP address (command from MP client)
- continous:	No MP address set
- with breaks:	Pulse in accordance with MP address (e.g. 5 = MP5)
Press button:	Confirmation of the addressing

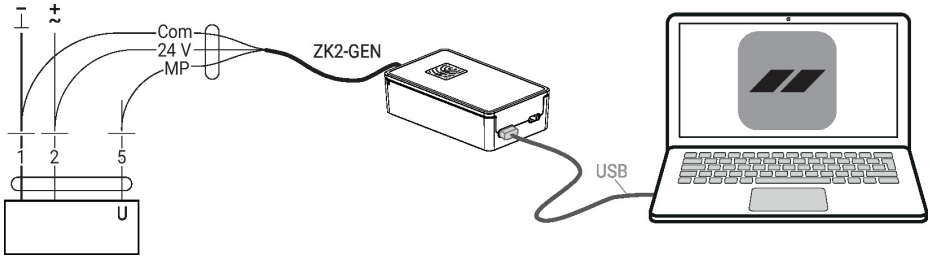
Service

Using Belimo Assistant 2, device parameters can be modified. Belimo Assistant 2 can operate on a smartphone, tablet or PC. The available connection options vary depending on the hardware on which Belimo Assistant 2 is installed.

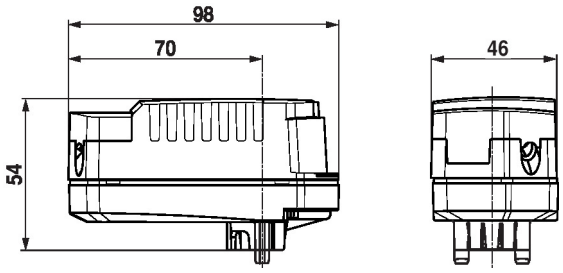
For more information about Belimo Assistant 2, refer to the Quick Guide – Belimo Assistant 2.

Wired connection

Belimo devices can be accessed by connecting Belimo Assistant Link to the USB port on a PC or laptop and to the Service Socket or MP-Bus wire on the device.



Dimensions



Further documentation

- Overview MP Cooperation Partners
- Tool connections
- Introduction to MP-Bus Technology
- The complete product range for water applications
- Data sheet for zone valves
- Installation instructions for zone valves and actuators
- General notes for project planning
- Quick Guide – Belimo Assistant 2