

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



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	2.5 W
	Power consumption in rest position	0.5 W
	Power consumption for wire sizing	4 VA
	Connection supply / control	Cable 1 m, 3 x 0.34 mm ²
	Parallel operation	Yes (note the performance data)
Functional data	Torque motor	1 Nm
	Communicative control	MP-Bus
	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
	Mode of operation	Type 1.AA
	Rated impulse voltage supply / control	0.8 kV
	Control pollution degree	2
	Ambient temperature	5...40°C
	Storage temperature	-40...80°C
	Ambient humidity	Max. 95% r.H., non-condensing
	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 in case that no (sea) water, snow, ice, insolation or aggressive gases interfere directly with the device and that it is ensured that the ambient conditions remain within the thresholds according to the data sheet at any time.

- 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.
- 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

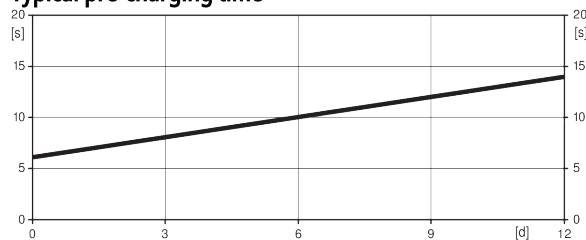
Mode of operation The actuator receives its digital positioning signal from the higher level controller via the MP-Bus and drives to the position defined. Connection MP serves as communication interface and does not supply an analogue measuring voltage.

Note: Neither a conventional operation with a standard signal nor a parametrisation of signals (e.g. running time) is possible. With the parametrisation 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] = Electricity interruption 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.

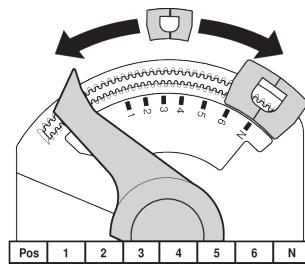
Simple direct mounting Tool-free snap assembly.
The actuator can be plugged on the valve by hand (Caution! Just vertical movements). Pins must match the holes on the flange.
The mounting orientation in relation to the valve can be selected in 180° increments. (Possible two times)

Manual override Click out the actuator and rotate the valve stem 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-.) 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).
6-way valve: Remove end stop clip (cooling and heating application).
After every change of the flow setting by means of end stop clip, an adaptation must be triggered on the modulating actuators.


Accessories

Gateways	Description	Type
	Gateway MP zu BACnet MS/TP	UK24BAC
	Gateway MP to Modbus RTU	UK24MOD
Electrical accessories	Description	Type
	Connection cable 5 m, A: RJ11 6/4 ZTH EU, B: free wire end for connection to MP/PP terminal	EXT-WR-FP20-MP ZK2-GEN
	MP-Bus power supply for MP actuators	ZN230-24MP
Mechanical accessories	Description	Type
	Spindle extension CQ	ZCQ-E
Service tools	Description	Type
	Adapter for Service-Tool ZTH	MFT-C
	Belimo PC-Tool, Software for adjustments and diagnostics	MFT-P
	Service Tool, with ZIP-USB function, for parametrisable and communicative Belimo actuators, VAV controller and HVAC performance devices	ZTH EU

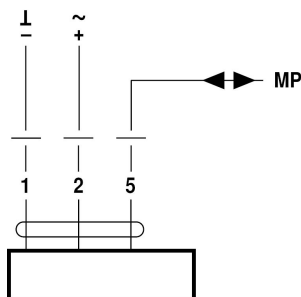
Electrical installation


Supply from isolating transformer.

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

Wiring diagrams

AC/DC 24 V, MPL


Cable colours:

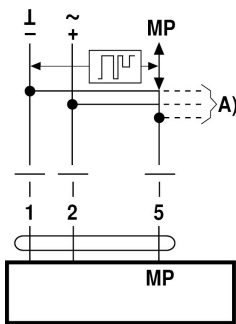
1 = black

2 = red

5 = orange

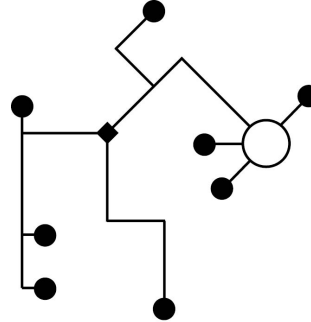
Functions when operated on MP-Bus

Connection on the MP-Bus



A) more actuators (max. 8)

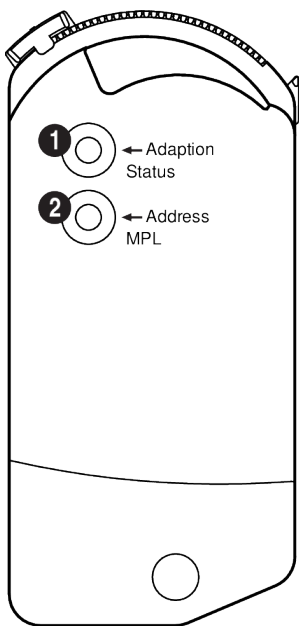
MP-Bus Network topology



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

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
 Flickering: MP communication active
 On: Power supply and MP-Bus level OK
 Flashing: Depiction of MP address (Command from MP master)
 – continuous: No MP address set
 – with breaks: Pulse in accordance with MP address (e.g. 5 = MP5)
 Press button: Confirmation of the addressing

Installation notes

Servicing Ball valves and rotary actuators are maintenance-free.

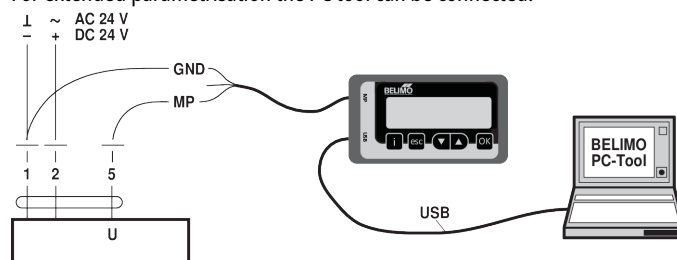
Before any service work on the final controlling device is carried out, it is essential to isolate the rotary actuator from the power supply (by unplugging the electrical cable if necessary). Any pumps in the part of the piping system concerned must also be switched off and the appropriate slide valves closed (allow all components to cool down first if necessary and always reduce the system pressure to ambient pressure level).

The system must not be returned to service until the ball valve and the rotary actuator have been correctly reassembled in accordance with the instructions and the pipeline has been refilled by professionally trained personnel.

Service

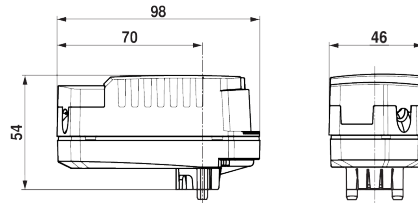
Service Tools connection The actuator can be parametrised by ZTH EU via terminal connection.

For extended parametrisation the PC tool can be connected.



Dimensions

Dimensional drawings



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