Technical data sheet

Communicative globe valve actuator for 2-way and 3-way globe valves

- · Actuating force 2500 N
- Nominal voltage AC/DC 24 V
- · Control modulating, communicative, hybrid
- Stroke 40 mm
- · Conversion of sensor signals
- · Communication via BACnet MS/TP, Modbus RTU, Belimo-MP-Bus or conventional control





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Globe valve actuator, modulating, communicative, hybrid, AC/DC 24 V



Technical data		
Safety	Control pollution degree	3
	Ambient temperature	050°C
	Storage temperature	-4080°C
	Ambient humidity	Max. 95% r.H., non-condensing
	Servicing	maintenance-free

Safety notes



Weight

Weight

 This device has been designed for use in stationary heating, ventilation and airconditioning systems and must not be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.

3.6 kg

- · 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
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied during installation.
- The switch for changing the direction of motion and so the closing point may be adjusted only by authorised specialists. The direction of motion is critical, particularly in connection with frost protection circuits.
- 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 is fitted with an integrated interface for BACnet MS/TP, Modbus RTU and MP-Bus. It receives the digital positioning signal from the control system and returns the current status.

Converter for sensors

Connection option for a sensor (passive, active or with switching contact). In this way, the analogue sensor signal can be easily digitised and transferred to the bus systems: BACnet, Modbus or MP-Bus.

Parametrisable actuators

The factory settings cover the most common applications. Single parameters can be modified with the Belimo Service Tools MFT-P or ZTH EU.

The communication parameters of the bus systems (address, baud rate etc.) are set with the ZTH EU. Pressing the "Address" button on the actuator while connecting the supply voltage, resets the communication parameters to the factory setting.

Quick addressing: The BACnet and Modbus address can alternatively be set using the buttons on the actuator and selecting 1...16. The value selected is added to the «Basic address» parameter and results in the effective BACnet and Modbus address.

Combination analogue - communicative

(hybrid mode)

With conventional control by means of an analogue positioning signal, BACnet or Modbus can be used for the communicative position feedback

Simple direct mounting

Simple direct mounting on the globe valve by means of form-fit hollow clamping jaws. The actuator can be rotated by 360° on the valve neck.

Manual override

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

The stroke can be adjusted by using a hexagon socket screw key (5 mm), which is inserted into the top of the actuator. The stroke shaft extends when the key is rotated clockwise.

High functional reliability

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

Combination valve/actuator

Refer to the valve documentation for suitable valves, their permitted fluid temperatures and closing pressures.

Globe valve actuator, modulating, communicative, hybrid, AC/DC 24 V



Product features

Position indication

The stroke is indicated mechanically on the bracket with tabs. The stroke range

adjusts itself automatically during operation.

Home position F

Factory setting: Actuator spindle is retracted. When valve-actuator combinations are shipped, the direction of motion is set in

accordance with the closing point of the valve.

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.

Setting direction of stroke

When actuated, the stroke direction switch changes the running direction in normal

operation.

Adaption and synchronisation

An adaption can be triggered manually by pressing the "Adaption" button or with the PC-Tool. Both mechanical end stops are detected during the adaption (entire setting

range).

Automatic synchronisation after pressing the gearbox disengagement button is

configured. The synchronisation is in the home position (0%).

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

A range of settings can be adapted using the PC-Tool (see MFT-P documentation)

Accessories

	Description	Туре
Electrical accessories	Connection cable 5 m, A: RJ11 6/4 ZTH EU, B: 6-pin for connection to service socket	ZK1-GEN
	Connection cable 5 m, A: RJ11 6/4 ZTH EU, B: free wire end for connection to MP/PP terminal	ZK2-GEN
	Description	Туре
Service Tools	Service Tool, with ZIP-USB function, for parametrisable and communicative Belimo actuators / VAV controller and HVAC performance devices	ZTH EU
	Belimo PC-Tool, Software for adjustments and diagnostics	MFT-P
	Adapter for Service-Tool ZTH	MFT-C

Electrical installation

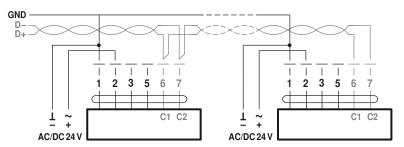


Notes

- · Connection via safety isolating transformer.
- Direction of stroke switch factory setting: Actuator spindle retracted (▲).
- The wiring of the line for BACnet MS/TP / Modbus RTU is to be carried out in accordance with applicable RS485 regulations.
- Modbus / BACnet: Supply and communication are not galvanically isolated.
 Connect earth signal of the devices with one another.

Wiring diagrams

BACnet MS/TP / Modbus RTU



Cable colours:

1= black

2 = red3 = white

5 = orange

6 = pink

7 = grey

BACnet / Modbus signal assignment:

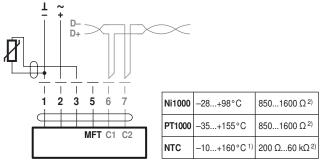
C1 = D - = A

C2 = D + = B



Electrical installation

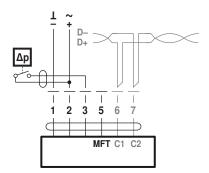
Connection with passive sensor, e.g. Pt1000, Ni1000, NTC



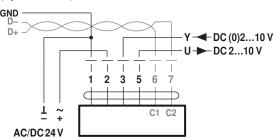
Connection with active sensor, e.g. 0...10 V @ 0...50°C

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1 +	2		5 MFT	6 + C1	7 C2	7	

Connection with switching contact, e.g. Δp monitor



Modbus RTU / BACnet MS/TP with analogue setpoint (hybrid mode)



- 1) depending on type
- 2) Resolution 1 Ohm

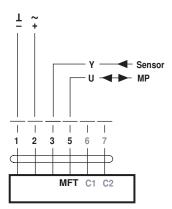
Possible voltage range: 0...32 V (resolution 30 mV)

Requirements for switching contact: The switching contact must be able to accurately switch a current of 16 mA @ 24 V.

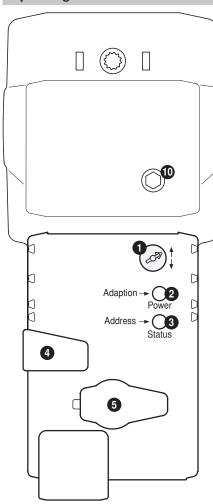


Electrical installation

Operation on the MP-Bus



Operating controls and indicators



Direction of stroke switch

Switch over: Direction of stroke changes

2 Push-button and LED display green

Off: No power supply or malfuntion

On: In operation

Flashing: In address mode: Pulses according to set address (1...16)

When starting: Reset to factory setting (Communication)

Press button: In standard mode: Triggers stroke adaptation

In address mode: Confirmation of set address (1...16)

3 Push-button and LED display yellow

Off: Standard mode

Flickering: BACnet / Modbus communication active
On: Adaptation or synchronising process active

or actuator in address mode (LED display green flashing)
Press button: In operation (>3 s): Switch address mode on and off

In address mode: Address setting by pressing several times

When starting (>5 s): Reset to factory setting (Communication)

4 Gear disengagement button

Press button: Gear disengages, motor stops, manual override possible

Release button: Gear engages, synchronisation starts, followed by standard mode

Service plug

For connecting parameterisation and service tools

Manual override

Clockwise: Actuator spindle extends
Counterclockwise: Actuator spindle retracts



Service

Quick adressing

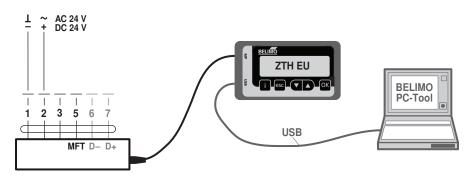
- 1. Press the "Address" button until the green "Power" LED is no longer illuminated. LED flashes in accordance with the previously set address.
- 2. Set the address by pressing the "Address" button the corresponding number of times (1...16).
- 3. The green LED flashes in accordance with the address that has been entered (...16). If the address is not correct, then this can be reset in accordance with Step 2.
- 4. Confirm the address setting by pressing the green "Adaption" button.

If no confirmation occurs for 60 seconds, then the address procedure is ended. Any address change that has already been started will be discarded.

The resulting BACnet MS/TP and Modbus RTU address is made up of the set basic address plus the short address (e.g. 100+7=107).

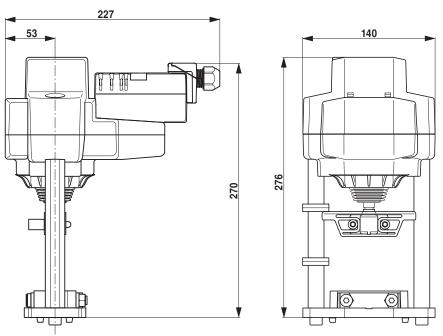
Service Tools connection

The actuator can be parametrised by ZTH EU via the service socket. For an extended parametrisation the PC tool can be connected.



Dimensions [mm]

Dimensional drawings



Globe valve actuator, modulating, communicative, hybrid, AC/DC 24 $\rm V$



Further documentation

- · Tool connections
- · Description Protocol Implementation Conformance Statement PICS
- Description Modbus register
- Overview MP Cooperation Partners
- MP Glossary
- Introduction to MP-Bus Technology
- The complete product range for water applications
- Data sheets for globe valves
- Installation instructions for actuators and/or globe valves
- Notes for project planning 2-way and 3-way globe valves
- · General notes for project planning