

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...35.0 V
	Power consumption in operation	2 W
	Power consumption in rest position	0.8 W
	Transformer sizing	3.5 VA
	Connection supply/control	cable 3 ft. [1 m], 4x 0.75 mm ²
	Parallel operation	Yes (note the performance data)
Data bus communication	Communicative control	MP-Bus
	Number of nodes	MP-Bus max. 16
Functional data	Torque motor	35 in-lb [4 Nm]
	Torque Fail-Safe	4 Nm
	Operating range Y	2...10 V
	Input impedance	100 kΩ
	Operating range Y variable	Start point 0.5...30 V End point 2.5...32 V
	Operating modes optional	variable (VDC, on/off)
	Position feedback U	2...10 V
	Position feedback U note	Max. 1 mA
	Position feedback U variable	Start point 0.5...8 V End point 2.5...10 V
	Position accuracy	±5%
	Direction of motion motor	selectable with switch L/R
	Direction of motion variable	electronically reversible
	Direction of motion fail-safe	selectable by mounting L/R
	Manual override	No
	Angle of rotation	Max. 95°
	Angle of rotation note	Adjustable 37...100% with integrated mechanical limitation
	Running Time (Motor)	150 s / 90°
	Running time motor variable	75...300 s
	Running time fail-safe	<20 s @ -20...50°C, <60 s @ -30°C
	Sound power level, motor	36 dB(A)
Adaptation Setting Range	with Belimo Assistant 2	
Override control	MIN (minimum position) = 0% MID (intermediate position, AC only) = 50% MAX (maximum position) = 100%	
Override control variable	MIN = 0%...(MAX - 32%) MID = MIN...MAX MAX = (MIN + 32%)...100%	

Technical data

Functional data	Mechanical interface	Universal shaft clamp 8...16 mm
	Position indication	Mechanical
	Service life	Min. 60'000 fail-safe positions
Safety data	Power source UL	Class 2 Supply
	Degree of protection NEMA/UL	NEMA 2
	Housing	UL Enclosure Type 2
	Agency Listing	cULus acc. To UL 873 and CAN/CSA C22.2 No. 24-93
	Quality Standard	ISO 9001
	UL 2043 Compliant	Suitable for use in air plenums per Section 300.22(C) of the NEC and Section 602 of the IMC
	Ambient humidity	Max. 95% RH, non-condensing
	Ambient temperature	-22...122°F [-30...50°C]
	Storage temperature	-40...176°F [-40...80°C]
	Servicing	maintenance-free
Weight	Weight	3.2 lb [1.5 kg]

Product features

Operating mode	<p>Conventional operation:</p> <p>The actuator is connected with an analog control signal Y (note the operating range) and drives to the position defined.</p> <p>The actuator moves the valve to the operating position at the same time as tensioning the return spring. The damper is turned back to the fail-safe position by spring force when the supply voltage is interrupted.</p> <p>Operation on Bus:</p> <p>The actuator receives its digital control signal from the higher level controller via the MP-Bus and drives to the position defined. Connection U serves as communication interface and does not supply an analogue measuring voltage.</p>
Converter for sensors	<p>Connection option for an active sensor. The actuator serves as an analog/digital converter for the transmission of the sensor signal via MP-Bus to the higher-level system.</p> <p>Additional material may be required for the sensor connection. See "Electrical accessories".</p>
Configurable Device	<p>The factory settings cover the most common applications. Single parameters can be modified with the Belimo Assistant 2 or ZTH US.</p>
Adjustable angle of rotation	<p>Adjustable angle of rotation with mechanical end stops.</p>
High functional reliability	<p>The actuator is overload protected, requires no limit switches and automatically stops when the end stop is reached.</p>
Innovative motorization	<p>The actuator uses the powerful Belimo M600 microchip in combination with the INFORM method. It provides the full starting torque from a standstill with high precision (sensorless INFORM-Drive by Prof. Schrödl).</p>
Home position	<p>The first time the supply voltage is switched on, i.e. at the time of commissioning, the actuator carries out a synchronization. The synchronization is in the home position (0%).</p> <p>The actuator then moves into the position defined by the control signal.</p>
Adaptation	<p>An adaptation can be triggered manually by switching the direction-of-rotation switch from the left to the right twice within 5 s or with Belimo Assistant 2. Both mechanical end stops are detected during the adaptation (entire setting range).</p> <p>The actuator then moves into the position defined by the control signal.</p> <p>A range of settings can be made using the Belimo Assistant 2.</p>

Accessories

Tools	Description	Type
	Service tool for wired and wireless setup, on-site operation and troubleshooting.	Belimo Assistant 2
	Connecting cable 16 ft [5 m], A: RJ11 6/4 LINK.10, B: free wire end for connection to MP/PP terminal	ZK2-GEN
	Belimo Assistant Link Bluetooth and USB to NFC and MP-Bus converter for configurable and communicative devices	LINK.10

Electrical installation

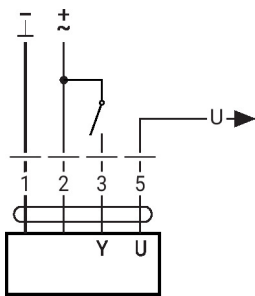


Supply from isolating transformer.
Parallel connection of other actuators possible. Observe the performance data.

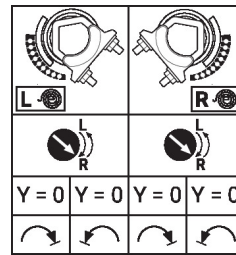
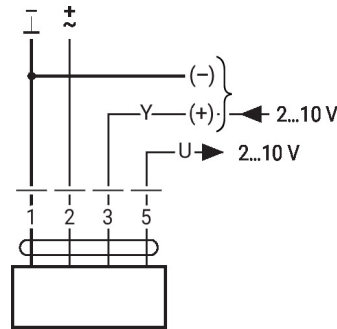
Wire colors:

- 1 = black
- 2 = red
- 3 = white
- 5 = white

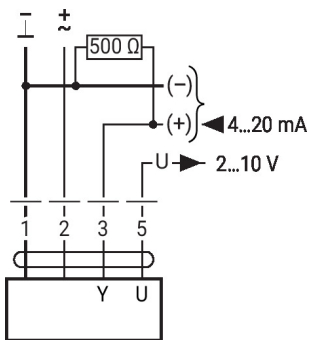
Control on/off



AC/DC 24 V, modulating



Control with 4...20 mA via external resistor

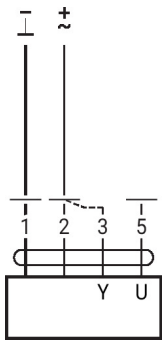


Caution:
The operating range must be set to DC 2...10 V.
The 500 Ohm resistor converts the 4...20 mA current signal to a voltage signal DC 2...10 V.

Further electrical installations

Functions with basic values (conventional mode)

Functional check



Procedure

1. Connect 24 V to connections 1 and 2
2. Disconnect connection 3:
 - With direction of rotation 0: Actuator rotates to the left
 - With direction of rotation 1: Actuator rotates to the right
3. Short-circuit connections 2 and 3:
 - Actuator runs in opposite direction

Functions with basic values (conventional mode)

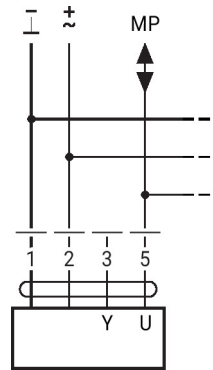
MP-Bus network topology



There are no restrictions regarding the network topology (bus, star, ring or mixed forms are permitted). Supply and communication in one and the same 3-wire cable

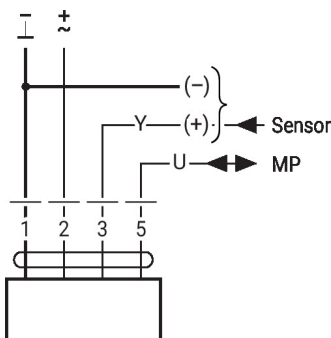
- no shielding or twisting necessary
- no terminating resistors required

Connection on the MP-Bus

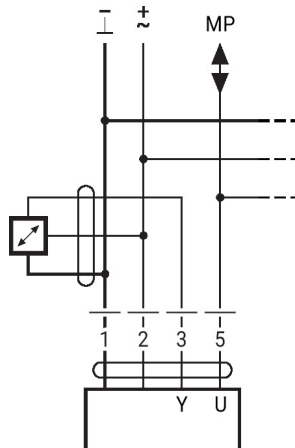


Max. 8 MP-Bus nodes

MP-Bus



Connection of active sensors

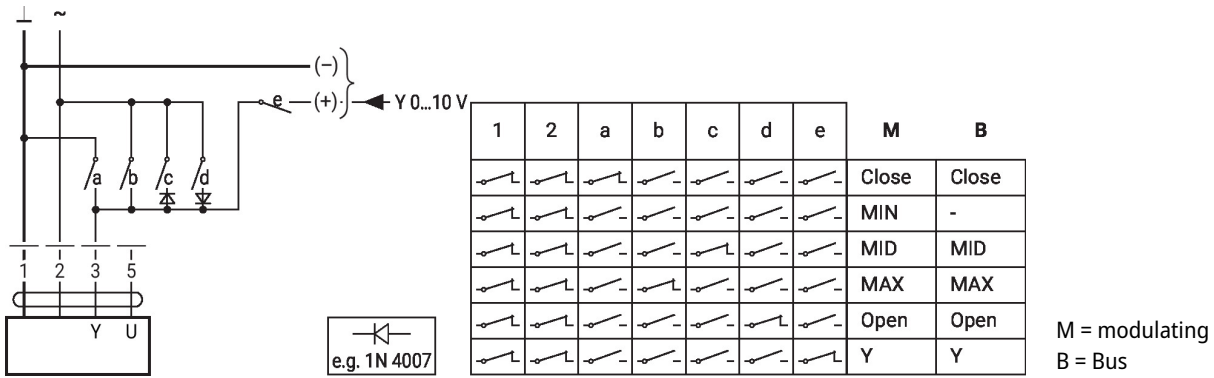


- Supply AC/DC 24 V
- Output signal 0...10 V (max. 0...32 V)
- Resolution 30 mV

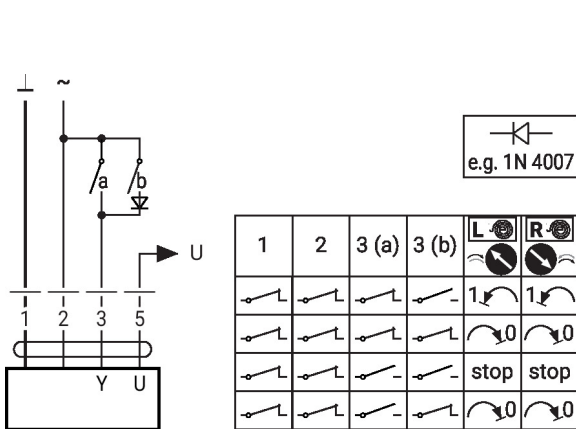
Further electrical installations

Functions with specific parameters (configuration necessary)

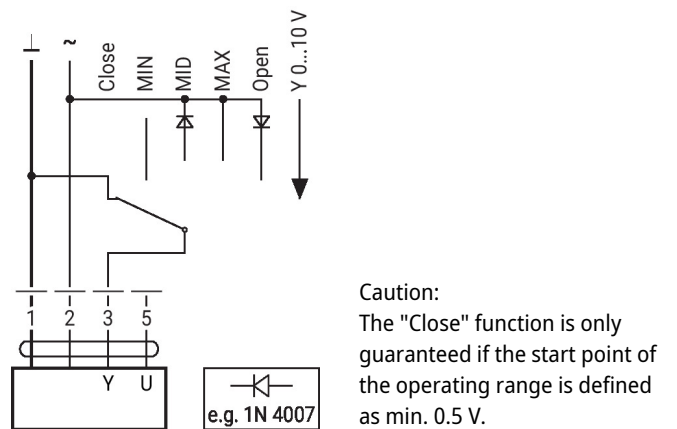
Override control and limiting with AC 24 V with relay contacts



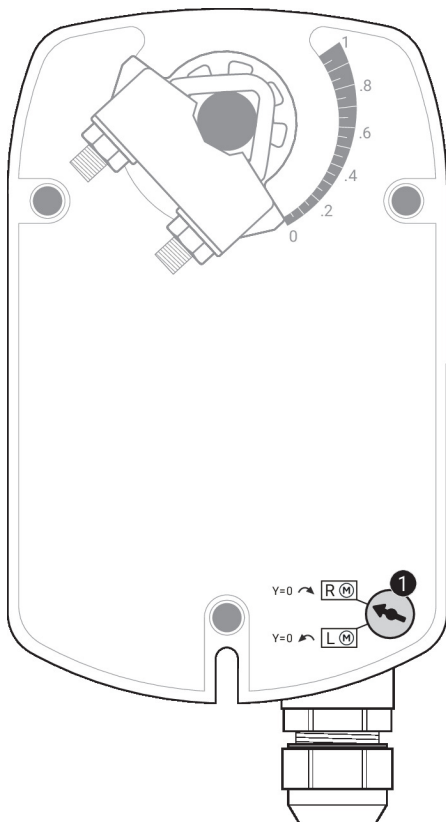
Control 3-point with AC 24 V



Override control and limiting with AC 24 V with rotary switch



Operating controls and indicators



- 1 **MP addressing**
Move direction of rotation switch in opposite position and backwards (within 4 seconds)

Service

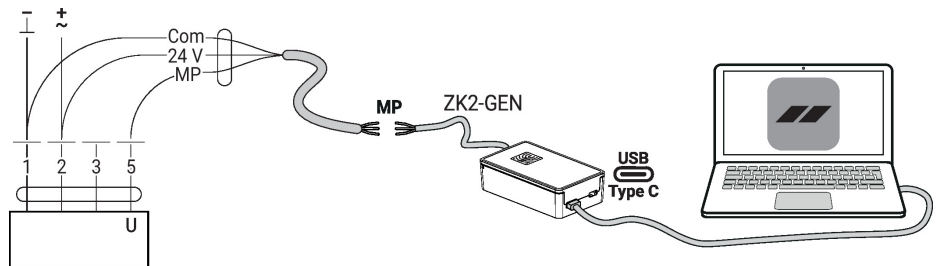
Using Belimo Assistant 2, device parameters can be modified. Belimo Assistant 2 can operate on a smartphone, tablet, or PC. The available connection options vary depending on the hardware on which Belimo Assistant 2 is installed.

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

Wired connection

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

Belimo Assistant 2 acts as MP client. Therefore, no other MP client shall be connected to the device.



Dimensions

Shaft length

		Min. 84
		Min. 0.75" [20 mm]

Clamping range

8...16	8...16

Further documentation

- Overview MP Cooperation Partners
- Tool connections
- Introduction to MP-Bus Technology
- Quick Guide – Belimo Assistant 2