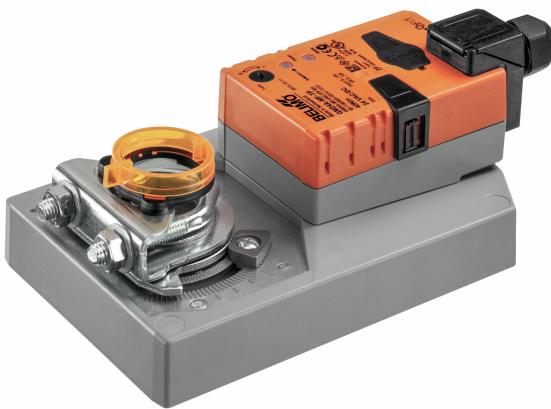


Communicative damper actuator for adjusting dampers in technical building installations

- Air damper size up to approx. 8 m²
- Torque motor 40 Nm
- Nominal voltage AC/DC 24 V
- Control modulating, communicative 2...10 V variable
- Position feedback 2...10 V variable
- Communication via Belimo MP-Bus
- Conversion of sensor signals
- with connecting terminals



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	4.5 W
Power consumption in rest position	1.6 W
Power consumption for wire sizing	7 VA
Connection supply / control	Terminals 4 mm ² (cable ø4...10 mm, 4-wire)

Data bus communication

Communicative control	MP-Bus
Number of nodes	MP-Bus max. 8

Functional data

Torque motor	40 Nm
Torque variable	25%, 50%, 75% reduced
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	Open/close 3-point (AC only) Modulating (DC 0...32 V)
Position feedback U	2...10 V
Position feedback U note	Max. 0.5 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 0/1
Direction of motion variable	electronically reversible
Direction of motion note	Y = 0 V: At switch position 0 (ccw rotation) / 1 (cw rotation)
Manual override	with push-button, can be locked
Angle of rotation	Max. 95°
Angle of rotation note	can be limited on both sides with adjustable mechanical end stops
Running time motor	150 s / 90°
Running time motor variable	75...290 s
Sound power level, motor	45 dB(A)
Adaptation setting range	manual
Adaptation setting range variable	No action Adaptation when switched on Adaptation after pushing the manual override button

Technical data

Functional data	Override control	MAX (maximum position) = 100% MIN (minimum position) = 0% ZS (intermediate position, AC only) = 50%
	Override control variable	MAX = (MIN + 32%)...100% MIN = 0%...(MAX - 32%) ZS = MIN...MAX
	Mechanical interface	Universal shaft clamp reversible 12...26.7 mm
	Position indication	Mechanical, pluggable
Safety data	Protection class IEC/EN	III, Safety Extra-Low Voltage (SELV)
	Power source UL	Class 2 Supply
	Degree of protection IEC/EN	IP54
	Degree of protection NEMA/UL	NEMA 2
	Housing	UL Enclosure Type 2
	EMC	CE according to 2014/30/EU
	Certification IEC/EN	IEC/EN 60730-1 and IEC/EN 60730-2-14
	UL Approval	cULus according to UL60730-1A, UL60730-2-14 and CAN/CSA E60730-1 The UL marking on the actuator depends on the production site, the device is UL-compliant in any case
	Hygiene test	According to VDI 6022 Part 1
	Type of action	Type 1
	Rated impulse voltage supply / control	0.8 kV
	Pollution degree	3
	Ambient humidity	Max. 95% RH, non-condensing
	Ambient temperature	-30...50°C [-22...122°F]
	Storage temperature	-40...80°C [-40...176°F]
	Servicing	maintenance-free
Weight	Weight	1.6 kg

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 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.
- To calculate the torque required, the specifications supplied by the damper manufacturers concerning the cross-section and the design, as well as the installation situation 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

Operating mode	<p>Conventional operation: The actuator is connected with an analogue control signal Y (note the operating range) and drives to the position defined. The measuring voltage U serves for the electrical display of the actuator position 0...100% and as control signal for other actuators.</p> <p>Operation on Bus: 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	Connection option for a sensor (passive or active sensor or switching contact). The MP actuator serves as an analogue/digital converter for the transmission of the sensor signal via MP-Bus to the higher level system.
Configurable device	The factory settings cover the most common applications. Single parameters can be modified with Belimo Assistant 2.
Simple direct mounting	Simple direct mounting on the damper shaft with a universal shaft clamp, supplied with an anti-rotation mechanism to prevent the actuator from rotating.
Manual override	Manual override with push-button possible (the gear train 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	<p>The first time the supply voltage is switched on, i.e. at the time of commissioning, the actuator carries out a synchronisation. The synchronisation is in the home position (0%).</p> <p>The actuator then moves into the position defined by the control signal.</p>
Adaptation and synchronisation	<p>An adaptation can be triggered manually by pressing the "Adaptation" button or with Belimo Assistant 2. Both mechanical end stops are detected during the adaptation (entire setting range).</p> <p>Automatic synchronisation after pressing the manual override button is configured. The synchronisation is in the home position (0%).</p> <p>The actuator then moves into the position defined by the control signal.</p> <p>A range of settings can be made using Belimo Assistant 2.</p>

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
	Auxiliary switch 1x SPDT add-on	S1A
	Auxiliary switch 2x SPDT add-on	S2A
	Feedback potentiometer 140 Ω add-on	P140A
	Feedback potentiometer 1 kΩ add-on	P1000A
	Feedback potentiometer 10 kΩ add-on	P10000A
	Signal converter voltage/current 100 kΩ 4...20 mA, Supply AC/DC 24 V	Z-UIC

Accessories

	Description	Type
Positioner for wall mounting		SGA24
Positioner for built-in mounting		SGE24
Positioner for front-panel mounting		SGF24
Positioner for wall mounting		CRP24-B1
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
Actuator arm for standard shaft clamp		AH-GMA
Ball joint suitable for damper crank arm KH8 / KH10		KG10A
Damper crank arm Slot width 8.2 mm, clamping range ø14...25 mm		KH10
Anti-rotation mechanism 230 mm, Multipack 20 pcs.		Z-ARS230
Mounting kit for linkage operation for flat installation		ZG-GMA
Baseplate extension for GM..A to GM..		Z-GMA
Position indicator, Multipack 20 pcs.		Z-PI
Terminal protection IP54, Multipack 20 pcs.		Z-TP

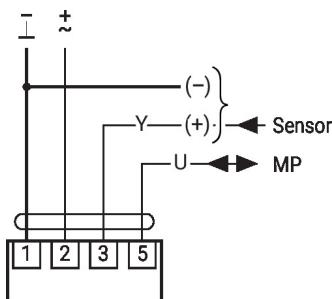
Electrical installation



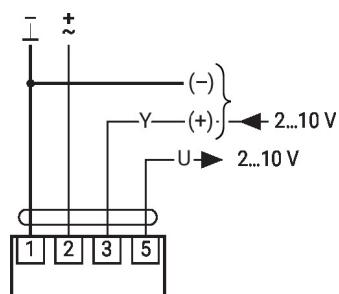
Supply from isolating transformer.

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

MP-Bus



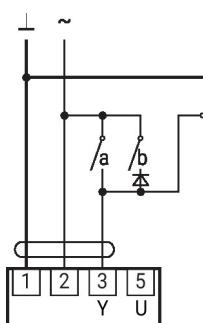
AC/DC 24 V, modulating



Further electrical installations

Functions with basic values (conventional mode)

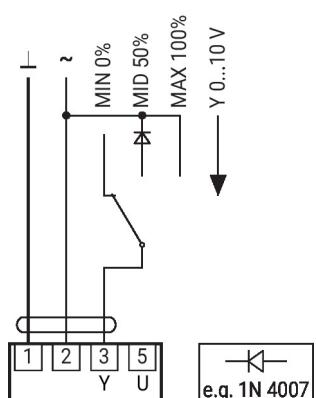
Override control with AC 24 V with relay contacts



e.g. 1N 4007

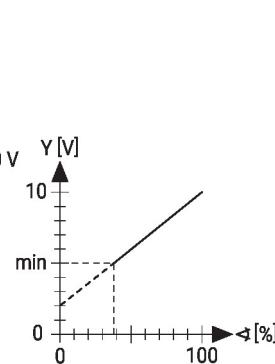
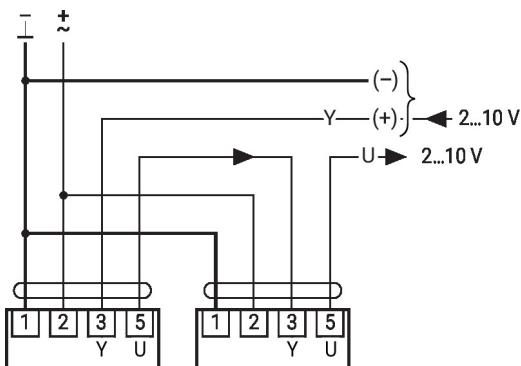
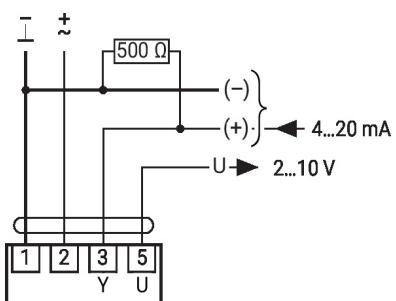
1	2	a	b	c	
—	—	—	—	—	0 %
—	—	—	—	—	ZS 50%
—	—	—	—	—	100 %
—	—	—	—	—	Y

Override control with AC 24 V with rotary switch



Further electrical installations**Functions with basic values (conventional mode)**

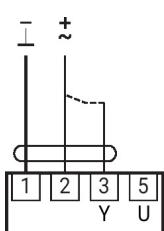
Control remotely 0...100% with
positioner SG..

**Primary/secondary operation (position-dependent)****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.

Functional check**Procedure**

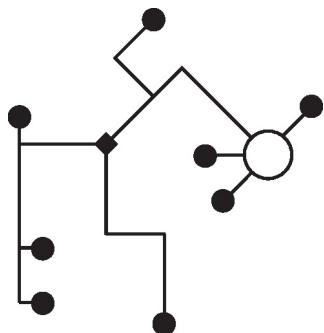
1. Connect 24 V to connections 1 and 2
2. Disconnect connection 3:
 - with direction of rotation L: Actuator rotates to the left
 - with direction of rotation R: Actuator rotates to the right
3. Short-circuit connections 2 and 3:
 - Actuator runs in opposite direction



Further electrical installations

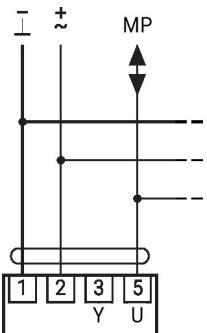
MP-Bus

MP-Bus Network topology



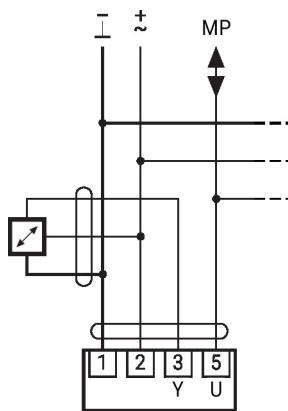
There are no restrictions for the network topology (star, ring, tree or mixed forms are permitted). Supply and communication in one and the same 3-wire cable

- no shielding or twisting necessary
- no terminating resistors required



Max. 8 additional MP-Bus nodes

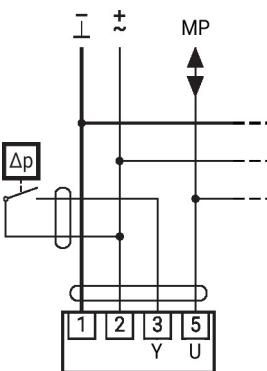
Connection of active sensors



Max. 8 additional MP-Bus nodes

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

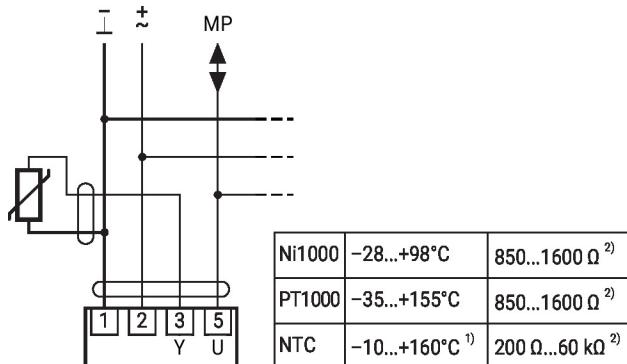
Connection of external switching contact



Max. 8 additional MP-Bus nodes

- Switching current 16 mA @ 24 V
- Start point of the operating range must be configured on the MP actuator as ≥ 0.5 V

Connection of passive sensors



1) Depending on the type

2) Resolution 1 Ohm

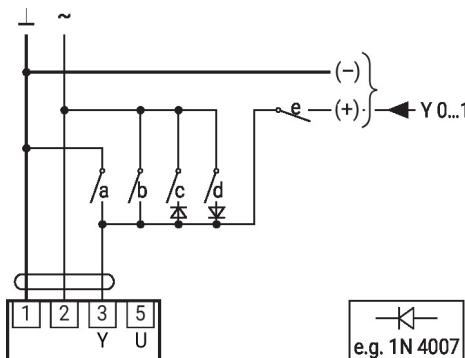
Compensation of the measured value is recommended

Further electrical installations

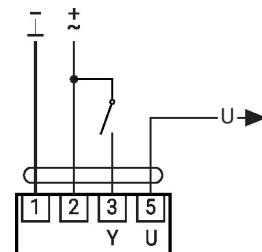
Functions with specific parameters (configuration necessary)

Override control and limiting with AC 24 V with relay contacts

Control open/close

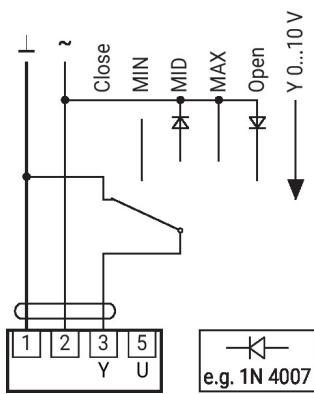


1	2	a	b	c	d	e	
—	—	—	—	—	—	—	Close ¹⁾
—	—	—	—	—	—	—	MIN
—	—	—	—	—	—	—	ZS
—	—	—	—	—	—	—	MAX
—	—	—	—	—	—	—	Open
—	—	—	—	—	—	—	Y



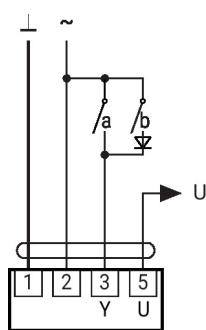
Override control and limiting with AC 24 V with rotary switch

Control 3-point with AC 24 V



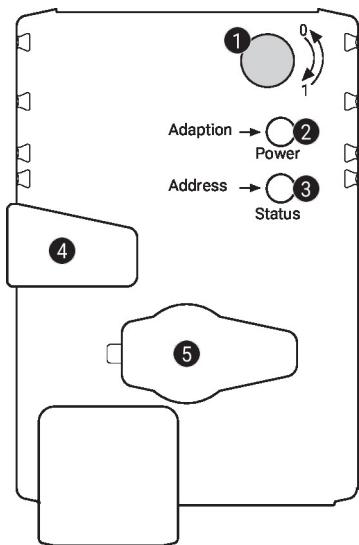
Caution:

The "Close" function is only guaranteed if the start point of the operating range is defined as min. 0.5 V.



1	2	3 (a)	3 (b)	stop	stop
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—

Operating controls and indicators

**① Direction-of-rotation switch**

Switch over: Direction of rotation changes

② Push-button and LED display green

Off: No power supply or malfunction

On: In operation

Press button: Triggers angle-of-rotation adaptation, followed by standard mode

③ Push-button and LED display yellow

Off: Standard mode

On: Adaptation or synchronisation process active

Flickering: MP-Bus communication active

Flashing: Request for addressing from MP client

Press button: Confirmation of the addressing

④ Manual override button

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

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

⑤ Service plug

For connecting configuration and service tools

Check power supply connection

② Off and ③ On Possible wiring error in power supply

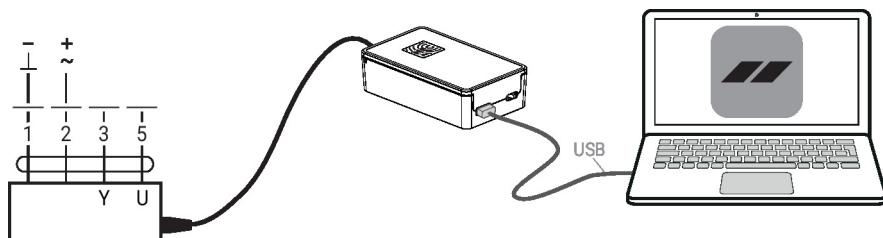
Service

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.

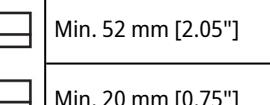
**Wired connection**

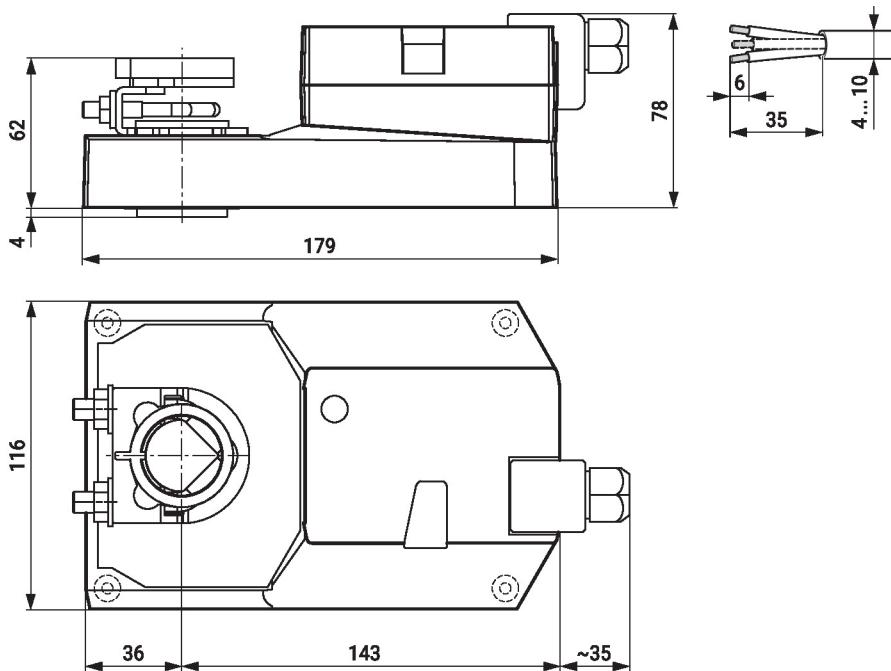
Belimo devices can be accessed by connecting Belimo Assistant Link to the USB port on a PC or laptop and to the Service Socket or MP-Bus wire on the device.



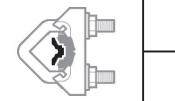
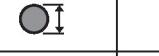
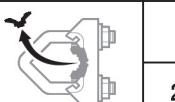
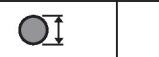
Dimensions

Shaft length

	Min. 52 mm [2.05"]
	Min. 20 mm [0.75"]



Clamping range

		
	12...22	12...18
		
	22...26.7	12...18

Further documentation

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