Communicative damper actuator for adjusting dampers in technical building installations

- Air damper size up to approx. 0.4 m²
- Torque motor 2 Nm
- Nominal voltage AC/DC 24 V
- Control communicative
- Communication via Belimo MP-Bus

MP-BUS

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 19.2...28.8 V
	Power consumption in operation	1 W
	Power consumption in rest position	0.5 W
	Power consumption for wire sizing	1.5 VA
	Connection supply / control	Cable 1 m, 3x 0.75 mm²
	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	2 Nm
	Position feedback U note	Max. 1 mA
	Position accuracy	±5%
	Direction of motion motor	counter-clockwise rotation
	Direction of motion note	0%: left end stop, position 0
	Manual override	with magnet
	Angle of rotation	0...287.5°
	Running time motor	75 s / 90°
	Sound power level, motor	35 dB(A)
	Adaptation setting range	manual with magnet (automatic on first power-up)
	Mechanical interface	Universal shaft clamp 6...12.7 mm
	Position indication	Mechanical, pluggable (with integrated magnet for gear train disengagement)
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

Technical data

Safety data	Hygiene test	According to VDI 6022 Part 1 / SWKI VA 104-01, cleanable and disinfectable, low emission
	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	0.22 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.
- 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 U 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.

Simple direct mounting

The actuator is mounted directly on the damper shaft (ø6...12.7 mm) with a universal shaft clamp and then secured with the anti-rotation clip, to prevent it from rotating.

The anti-rotation clip Z-ARCM is included in the scope of delivery.

Manual override

Manual override with magnet possible (the gear train is disengaged as long as the magnet adheres to the magnet symbol). The magnet for gear train disengagement is integrated in the position indication.

After a manual override, it is mandatory that an adaptation via magnet be triggered at the position intended for this purpose.

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.

Product features

Home position

The first time the supply voltage is switched on, i.e. at the time of commissioning, the actuator carries out an adaptation, 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 control signal.

Adaptation and synchronisation

An adaptation can be triggered manually through activation of the magnet switch or with the PC-Tool. Both mechanical end stops are detected during the adaptation (entire setting range).

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

Hidden synchronisation

If the actuator drives to the lower end stop during ongoing operation, then it performs a synchronisation.

Accessories

Tools

Description	Type
Service tool, with ZIP-USB function, for parametrisable and communicative Belimo actuators, VAV controller and HVAC performance devices	ZTH EU
Service tool for wired and wireless setup, on-site operation, and troubleshooting.	Belimo Assistant 2
Adapter for Service-Tool ZTH	MFT-C
Connecting cable 5 m, A: RJ11 6/4 ZTH EU, 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

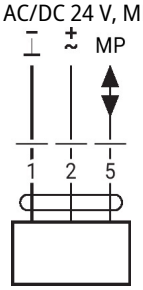
Electrical installation

Supply from isolating transformer.

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

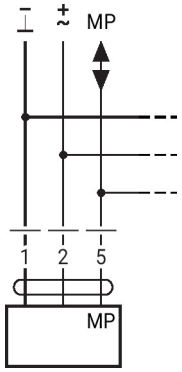
Wire colours:
1 = black
2 = red
5 = orange

AC/DC 24 V, MPL



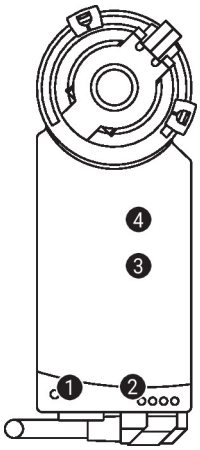
Further electrical installations

MP-Bus
Connection on the MP-Bus



Max. 8 additional actuators

Operating controls and indicators



1 LED display yellow

On: Angle of rotation adaptation active

2 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)

3 Magnet switch

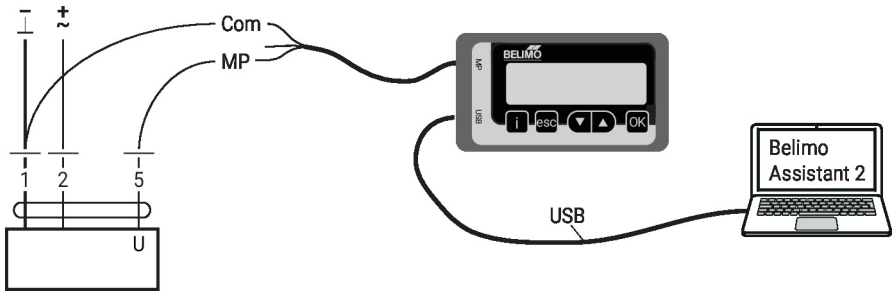
Magnetised: Triggering the angle of rotation adaptation

4 Magnet disengagement

Magnetised: Gear train disengages, manual override possible

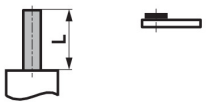
Service

Wired connection The actuator can be parametrised by ZTH EU via terminal connection.
For extended parametrisation the PC tool can be connected.



Dimensions

Spindle length

	Min. 32
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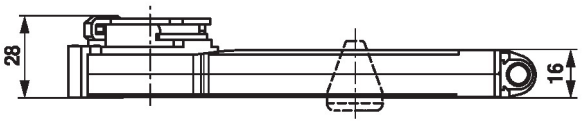
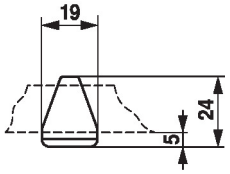
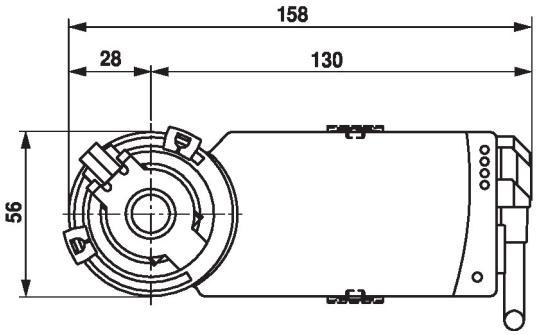
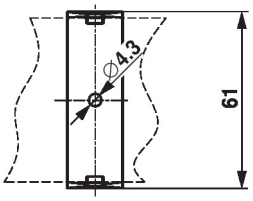




Clamping range

6...12.7	6 / 8 / 10	6...12.7





Further documentation

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

Application notes

- For digital control of actuators in VAV applications patent EP 3163399 must be considered.