

Damper actuator for adjusting dampers in technical building installations

GM24SR-T2

- Torque motor 360 in-lb [40 Nm]
- Nominal voltage AC/DC 24 V
- Control Modulating, On/Off, Floating point, Communicative via MP-Bus
- Running Time (Motor) 150 s (90...150 s)
- 5-year warranty
- UL Listed device



Picture may differ from product

### Technical data

<b>Electrical data</b>	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	2 W
	Power consumption in rest position	0.5 W
	Transformer sizing	5 VA
	Connection supply/control	Terminals 2.5 mm <sup>2</sup> [14 AWG] (cable $\varnothing$ 0.16...0.29" [ $\varnothing$ 4...7.5 mm], 4-wire) with 1/2" NPT conduit connector
Parallel operation	See Electrical Installation or contact your local Belimo representative	
<b>Data bus communication</b>	Communicative control	MP-Bus
	Number of nodes	MP-Bus max. 16
<b>Functional data</b>	Torque motor	360 in-lb [40 Nm]
	Operating range Y	2...10 V
	Input impedance	100 k $\Omega$
	Operating range Y variable	Start point 0.5...30 V End point 2.5...32 V
	Operating modes optional	On/Off Floating Point communicative
	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
	Response sensitivity	1.0% of $\Delta$ U
	Reversal hysteresis	2.5% of $\Delta$ U
	Position accuracy	$\pm$ 5%
	Direction of motion motor	Y = 0 V: left end stop, position CW
	Direction of motion variable	electronically reversible
	Direction of motion note	selectable with Belimo Assistant 2
	Manual override	with lateral handle, can be locked
	Angle of rotation	Max. 95°
	Angle of rotation note	can be electronically limited on both sides with Belimo Assistant 2
Running Time (Motor)	150 s / 90°	
Running time motor variable	90...150 s	
Sound power level, motor	40 dB(A)	

**Technical data**

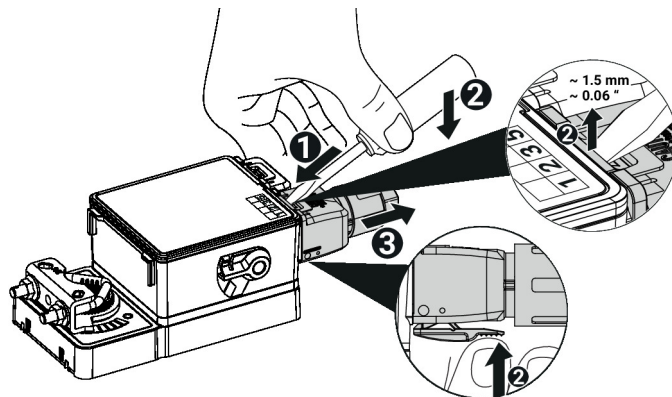
<b>Functional data</b>	Adaptation Setting Range	with Belimo Assistant 2
	Override control	MIN (minimum position) = 0% MID (intermediate position, AC only) = 50% MAX (maximum position) = 100%
	Override control variable	MIN = 0%...(MAX - 20%) MID = MIN...MAX MAX = (MIN + 20%)...100%
	Mechanical interface	Universal shaft clamp reversible 0.47...1.05" [12...26.7 mm]
	Position indication	Mechanical
<b>Safety data</b>	Protection class IEC/EN	III, Protective Extra-Low Voltage (PELV)
	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
	UL 2043 Compliant	Suitable for use in air plenums per Section 300.22(C) of the NEC and Section 602 of the IMC
	Type of action	Type 1
	Rated impulse voltage supply / control	0.8 kV
	Pollution degree	3
	Environmental Conditions Operation	Class 3K23 according to IEC 60721-3-3
	Ambient humidity	Max. 95% RH, non-condensing
	Ambient temperature	-22...131°F [-30...55°C]
	Ambient temperature note	up to 140°F [60°C], max. 2 h/day
	Environmental Conditions Transport	Class 2K11 according to IEC 60721-3-2
	Environmental Conditions Storage	Class 1K21 according to IEC 60721-3-1
	Storage temperature	-22...131°F [-30...55°C]
	Servicing	maintenance-free
<b>Weight</b>	Weight	3.5 lb [1.6 kg]
<b>Materials</b>	Housing material	UL94-5VA

**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 actuator and that is ensured that the ambient conditions remain at any time within the thresholds according to the data sheet.
- Only authorized 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 design, as well as the installation site and 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** Conventional operation:  
The actuator is connected with an analog 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 and as control signal for other actuators.
- 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.
- Visual status display** The device indicates its operation by means of a green LED.
- Converter for sensors** 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.  
Additional material may be required for the sensor connection. See "Electrical accessories".
- Configurable Device** The factory settings cover the most common applications.  
Parameters can be modified wireless via NFC (Near Field Communication) or wired using 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 possible with lateral handle (the gear train is disengaged for as long as the handle is actuated or remains locked).  
Manual override with stationary actuator is used for installation, commissioning and maintenance of the application.
- Adjustable angle of rotation** Adjustable angle of rotation with electrical end stops. The setting of the control range (Min – Max) is made with Belimo Assistant 2.
- High functional reliability** The actuator is overload protected, requires no limit switches and automatically stops when the end stop is reached.
- Innovative motorization** 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).
- Adaptation** An adaptation can be triggered with Belimo Assistant 2. During adaptation of a mounted actuator, both damper end stops on the system are detected (entire setting range).  
The actuator then moves into the position defined by the control signal.
- Connection** The connection is set up with pluggable spring-loaded terminals. The cable can be plugged in and unplugged from the device.



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 16 ft [5 m], A: RJ11 6/4 LINK.10, B: free wire end for connection to MP/PP terminal	ZK2-GEN
Electrical accessories	Description	Type
	Signal converter voltage/current 100 kΩ 4...20 mA, Supply AC/DC 24 V	Z-UIC
	Positioner for wall mounting	SGA24
	Positioner for built-in mounting	SGE24
	Positioner for front-panel mounting	SGF24
	Positioner for wall mounting	CRP24-B1
	Connecting terminal compl. IP65 for 24 V applications, with 1/2" NPT conduit connector	A.EIST.12
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
	Position indicator	S.MISPI.10

Electrical installation



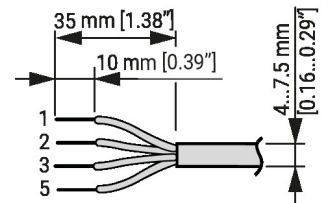
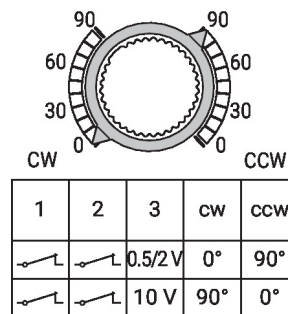
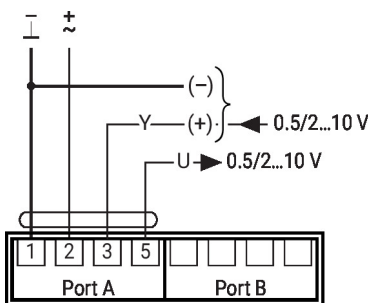
Supply from isolating transformer.

Actuators may be connected in parallel if not mechanically linked. Power consumption and input impedance must be observed.

The cable cross-section (mm<sup>2</sup>) must be determined on the basis of the actuator performance data (VA, W), the cable resistance, the number of actuators, and the total cable length according to electrotechnical principles. High voltage drops across the installation cables can affect the function of the actuator if, for example, the nominal voltage range (AC/DC) is not respected.

High voltage drops across the control signal and position feedback lines (Y/U) with respect to ground affect the signal values (0.5/2...10 V) and can change the actuator position.

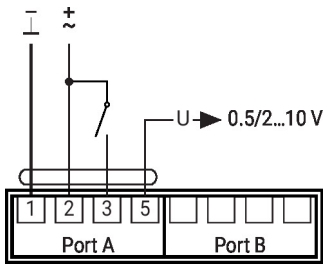
AC/DC 24 V, modulating



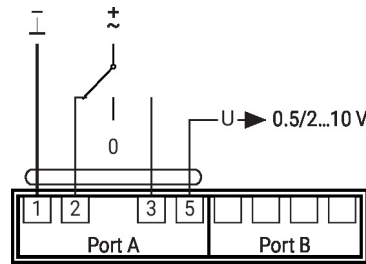
**Further electrical installations**

**Hardwired control with specific parameters**

AC/DC 24 V, on/off



AC/DC 24 V, floating point



**Functions with basic values (conventional mode)**

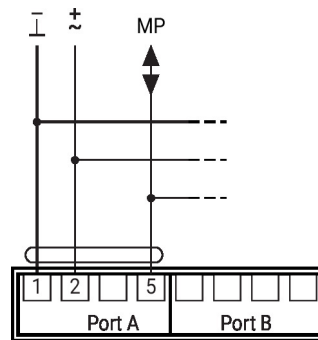
MP-Bus network topology



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

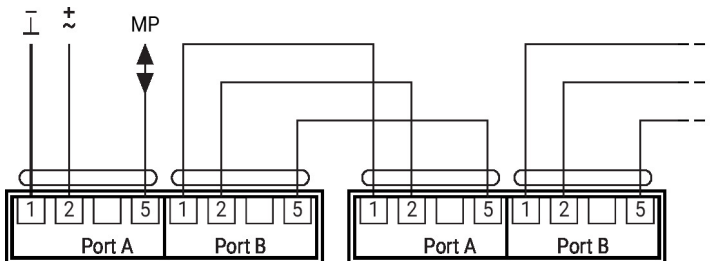
- no shielding or twisting necessary
- no terminating resistors required

Connection on the MP-Bus



Max. 16 MP-Bus nodes

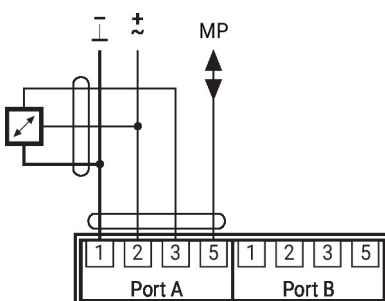
Possibility of daisy-chain wiring



Additional material may be required for daisy-chain wiring. See "Electrical accessories".

**Sensor Connection**

Connection with active sensor



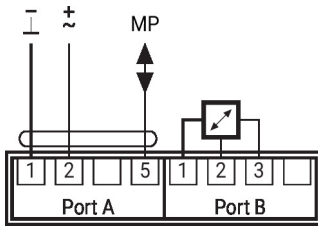
Possible input voltage range:  
0...10 V  
Resolution 10 mV  
To capture for example:

- Active temperature, humidity, and air quality sensors
- Pressure / differential pressure sensors

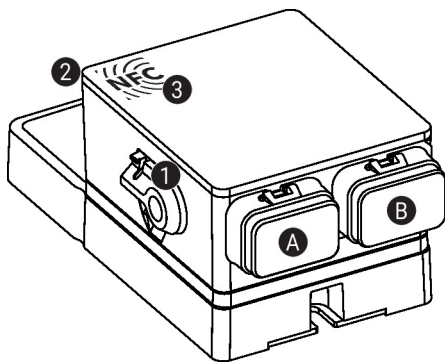
## Further electrical installations

### Alternative sensor connection

Connection with active sensor



## Operating controls and indicators



### 1 Manual override lever

Rotate lever counterclockwise to end position:

- Gear train disengages, manual override possible

Return lever clockwise to starting position:

- Gear train engages, followed by standard mode

### 2 Status display, LED green

LED on: operation OK

LED flashing: Connect device with Belimo Assistant 2 for additional information

LED off: No power supply

### 3 NFC interface

**A** Port A, see Electrical Installation

**B** Port B, see Electrical Installation

## Service

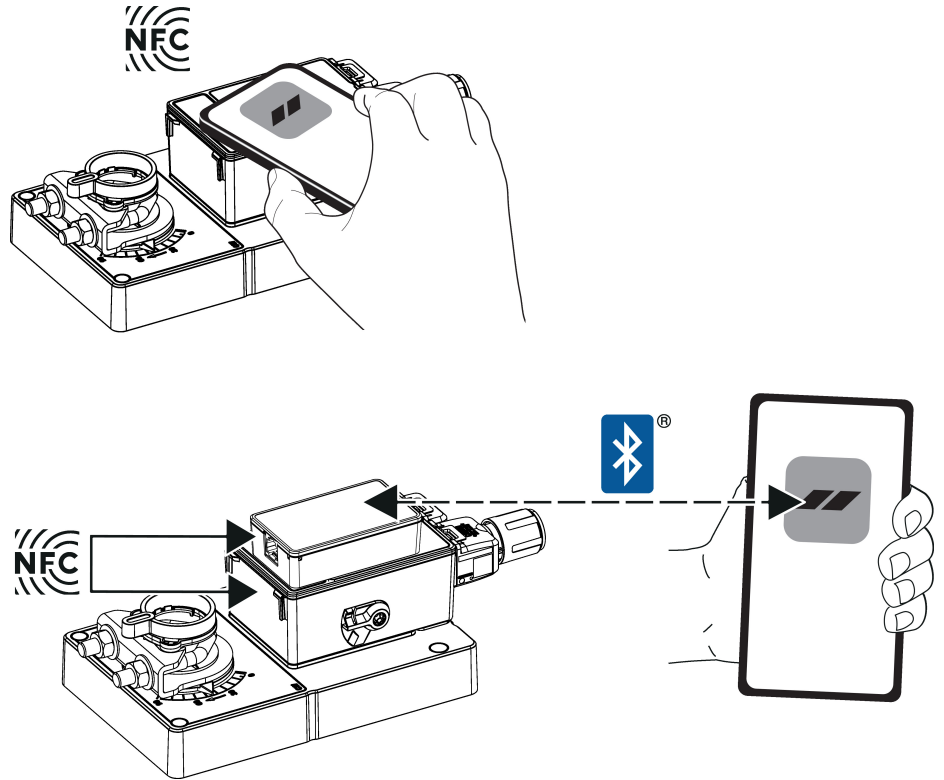
Using Belimo Assistant 2, device parameters can be modified. Belimo Assistant 2 can operate on a smartphone, tablet, or PC. The available connection options vary depending on the hardware on which Belimo Assistant 2 is installed.

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

Service

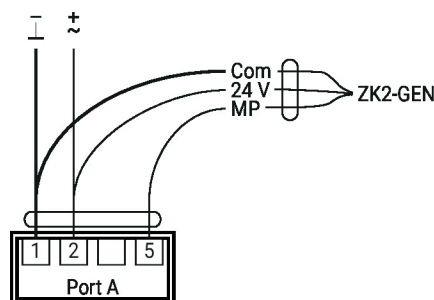
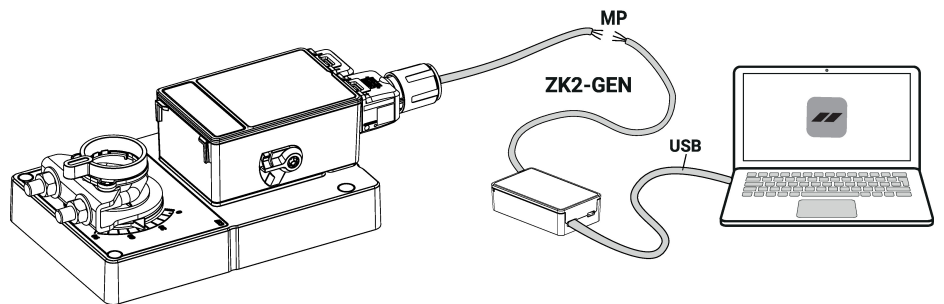
**Wireless connection** Belimo devices marked with the NFC logo can be accessed either directly with an NFC-capable smartphone or with a Bluetooth-capable smartphone connected to Belimo Assistant Link or ZIP-BT-NFC.

Align the NFC-capable smartphone or Belimo Assistant Link with the device's NFC logo so that both NFC antennas are superposed.



**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.

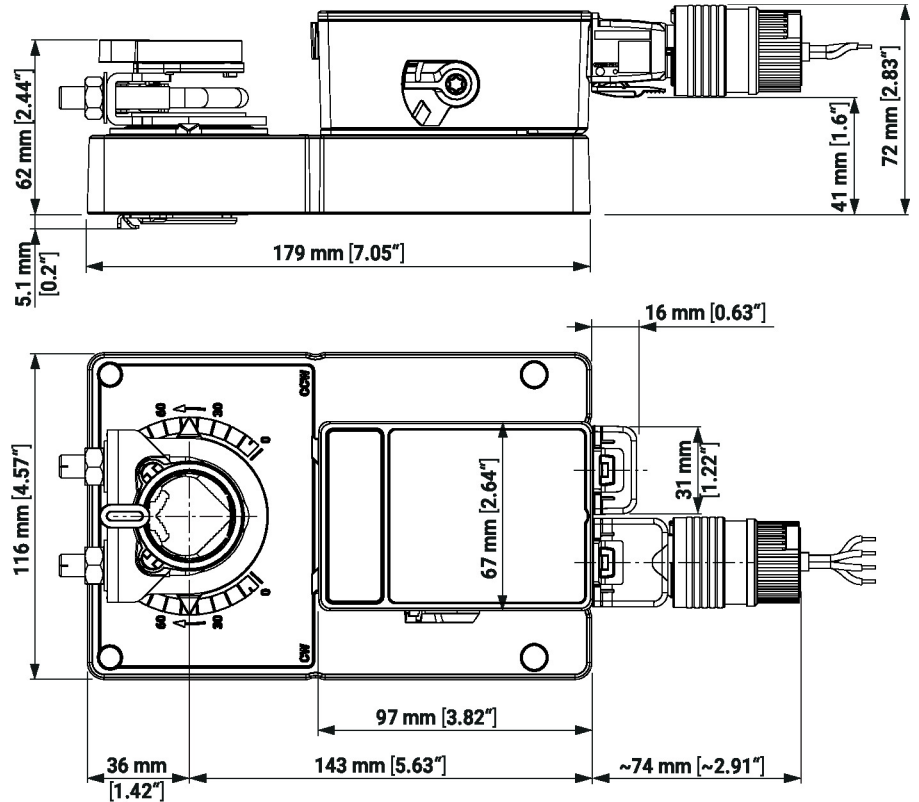
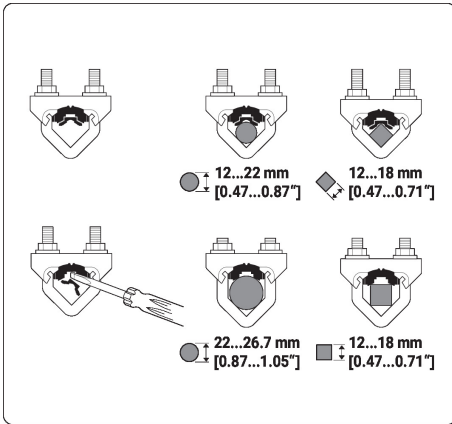


Dimensions

Shaft length

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

Clamping range



Further documentation

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