

Customizable Non Fail-Safe multifunction technology actuator for controlling dampers in typical commercial HVAC applications.

- Torque motor 360 in-lb [40 Nm]
- Nominal voltage AC/DC 24 V
- Control MFT/programmable
- Position feedback 2...10 V
- NEMA 4X



5-year warranty

**MFT**

Please note: Due to a supplier issue, certain NEMA 4 actuator covers will be supplied in gray instead of orange until further notice. This change ensures uninterrupted shipping and the same protective properties and product specifications.

## 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 21.6...28.8 V
	Power consumption in operation	4 W
	Power consumption in rest position	2 W
	Transformer sizing	7 VA
	Electrical Connection	Screw terminal (for 26...14 AWG wire), 1/2" NPT conduit connector
	Overload Protection	electronic throughout 0...95° rotation
<b>Functional data</b>	Torque motor	360 in-lb [40 Nm]
	Operating range Y	2...10 V
	Operating range Y note	4...20 mA w/ ZG-R01 (500 Ω, 1/4 W resistor)
	Input impedance	100 kΩ for 2...10 V (0.1 mA), 500 Ω for 4...20 mA, 1500 Ω for PWM, On/Off and Floating point
	Operating range Y variable	Start point 0.5...30 V End point 2.5...32 V
	Operating modes optional	variable (VDC, on/off, floating point)
	Position feedback U	2...10 V
	Position feedback U note	Max. 0.5 mA
	Position feedback U variable	VDC variable
	Direction of motion motor	selectable with switch 0/1
	Manual override	external push button
	Angle of rotation	Max. 95°
	Angle of rotation note	adjustable with mechanical stop
	Running Time (Motor)	150 s / 90°
	Running time motor variable	45...170 s
	Noise level, motor	45 dB(A)
	Position indication	Mechanical, 5...20 mm stroke
<b>Safety data</b>	Power source UL	Class 2 Supply
	Degree of protection NEMA/UL	NEMA 4X
	Housing	UL Enclosure Type 4X
	Agency Listing	cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1, CSA C22.2 No 24-93, CE acc. to 89/336/EC
	Quality Standard	ISO 9001

## Technical data

<b>Safety data</b>	Ambient humidity	Max. 100% RH
	Ambient temperature	-22...122°F [-30...50°C]
	Ambient temperature note	-40...122°F [-40...50°C] for actuator with integrated heating
	Storage temperature	-40...176°F [-40...80°C]
	Servicing	maintenance-free
<b>Weight</b>	Weight	7.6 lb [3.5 kg]
<b>Materials</b>	Housing material	Polycarbonate
<b>Footnotes</b>	†Rated Impulse Voltage 800V, Type action 1, Control Pollution Degree 3.	

## Product features

<b>Application</b>	For modulation of dampers in HVAC systems. Actuator sizing should be done in accordance with the damper manufacturer's specifications. The actuator is mounted directly to a damper shaft up to 1.05" in diameter by means of its universal clamp. The default parameters for 2...10 V applications of the ..MFT actuator are assigned during manufacturing. If necessary, custom versions of the actuators can be ordered. The parameters can be changed by two means: pre-set and custom configurations from Belimo or on-site configurations using the Belimo PC-Tool software.
<b>Operation</b>	<p>The actuator is not provided with and does not require any limit switches, but is electronically protected against overload. The anti-rotation strap supplied with the actuator will prevent lateral movement.</p> <p>The GMB24-SR-T N4 provides 95° of rotation and a visual indicator indicates position of the actuator. When reaching the damper or actuator end position, the actuator automatically stops. The gears can be manually disengaged with a button on the actuator after the cover is removed.</p> <p>The GMB24-SR-T N4 actuator uses a sensorless brushless DC motor, which is controlled by an Application Specific Integrated Circuit (ASIC). The ASIC monitors and controls the actuator's rotation and provides a digital rotation sensing (DRS) function to prevent damage to the actuator in a stall condition. Power consumption is reduced in holding mode.</p> <p>Add-on auxiliary switches or feedback potentiometers are easily fastened directly onto the actuator body for signaling and switching functions.</p> <p>For low ambient temperatures, the optional supplemental (-H) Heater add-on is available.</p>
<b>Typical specification</b>	Floating point, on/off control damper actuators shall be electronic direct-coupled type, which require no crank arm and linkage and be capable of direct mounting to a shaft up to 1.05" diameter. Actuators shall have brushless DC motor technology and be protected from overload at all angles of rotation. Actuators shall have reversing switch and manual override on the cover. Run time shall be constant and independent of torque. Actuators shall be cULus listed, have a 5-year warranty, and be manufactured under ISO 9001 International Quality Control Standards. Actuators shall be as manufactured by Belimo.

## Accessories

Tools	Description	Type
	Service tool for wired and wireless setup, on-site operation and troubleshooting.	Belimo Assistant 2
	Signal simulator, Power supply AC 120 V	PS-100
	Gateway MP to LonWorks	UK24LON
	Gateway MP to Modbus RTU	UK24MOD
	Connecting cable 16 ft [5 m], A: RJ11 6/4 LINK.10, B: 6-pin for connection to service socket	ZK1-GEN
	Connecting cable 16 ft [5 m], A: RJ11 6/4 LINK.10, B: free wire end for connection to MP/PP terminal	ZK2-GEN
	Connecting cable 10 ft [3 m], A: RJ11 6/4 LINK.10, B: 3-pin Weidmüller and supply connection	ZK4-GEN

## Accessories

## Electrical accessories

Description	Type
Service tool, with ZIP-USB function, for configurable and communicative Belimo actuators, VAV controller and HVAC performance devices	ZTH US
Description	Type
DC Voltage Input Rescaling Module	IRM-100
Feedback potentiometer 10 kΩ add-on, grey	P10000A GR
Feedback potentiometer 1 kΩ add-on, grey	P1000A GR
Feedback potentiometer 140 Ω add-on, grey	P140A GR
Feedback potentiometer 2.8 kΩ add-on, grey	P2800A GR
Auxiliary switch, mercury-free	P475
Auxiliary switch, mercury-free	P475-1
Feedback potentiometer 5 kΩ add-on, grey	P5000A GR
Feedback potentiometer 500 Ω add-on, grey	P500A GR
Convert Pulse Width Modulated Signal to a 2...10 V Signal for Belimo Proportional Actuators	PTA-250
Auxiliary switch 1x SPDT add-on	S1A
Auxiliary switch 2x SPDT add-on	S2A
Positioner for wall mounting	SGA24
Positioner for front-panel mounting	SGF24
Cable conduit connector 1/2"	TF-CC US
Transformer, AC 120 V to AC 24 V, 40 VA	ZG-X40
Gateway MP to BACnet MS/TP	UK24BAC
Resistor, 500 Ω, 1/4" wire resistor with 6" pigtail wires	ZG-R01
Resistor kit, 50% voltage divider	ZG-R02
Terminal-strip cover for NEMA 2 rating (-T models).	ZS-T

## Gateways

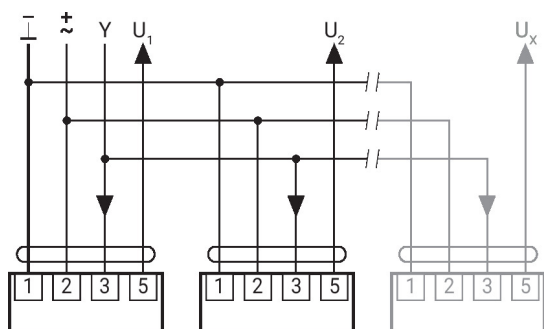
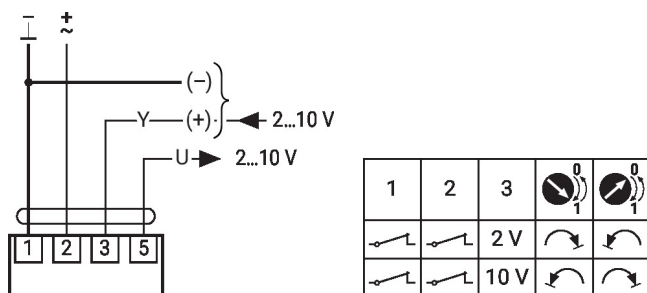
Description	Type
Gateway MP to BACnet MS/TP	UK24BAC
Gateway MP to Modbus RTU	UK24MOD
Gateway MP to LonWorks	UK24LON

## Factory add-on option only

Description	Type
Heater, with adjustable thermostat	ACT_PACK_H

## Electrical installation

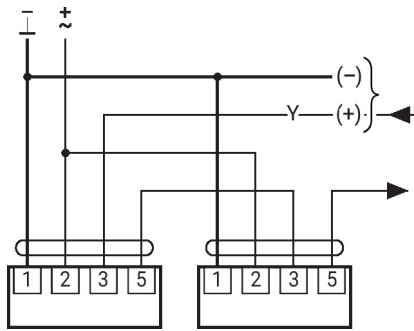
AC/DC 24 V, modulating



Max. 8 actuators in parallel  
Parallel operation is permitted  
only on non-connected axes  
Do not fail to observe  
performance data with parallel  
operation

## Electrical installation

Wiring diagram piggy-back operation (mechanically coupled actuators)

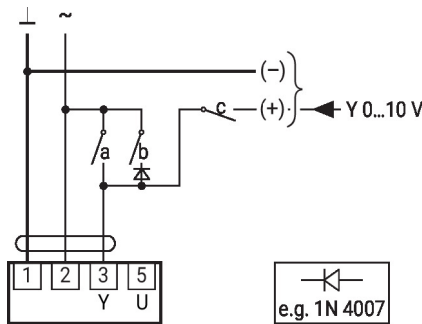


Max. 2 actuators in primary/  
secondary operation  
Primary/secondary operation is  
permitted only on one fixed  
shaft or on two mechanically  
coupled shafts  
The programming of the  
primary actuator is adopted by  
the secondary actuator

## Further electrical installations

### Functions with basic values (conventional mode)

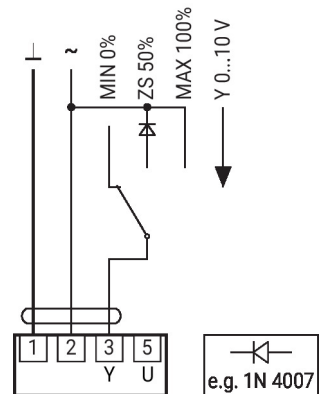
Override control with AC 24 V with relay contacts



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

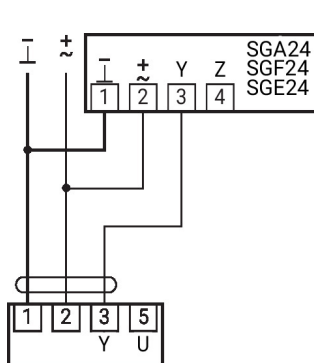
e.g. 1N 4007

Override control with AC 24 V with  
rotary switch

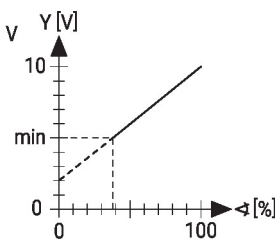
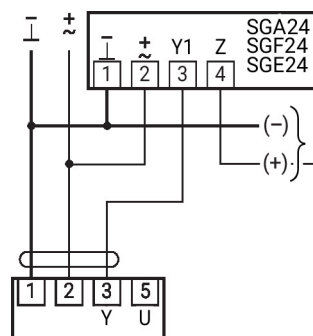


e.g. 1N 4007

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



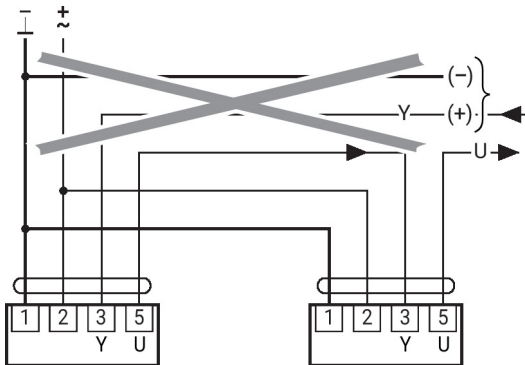
Minimum limit with positioner SG..



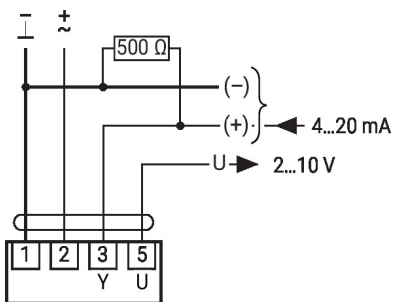
## Further electrical installations

### Functions with basic values (conventional mode)

Primary/secondary operation (position-dependent)



Control with 4...20 mA via external resistor

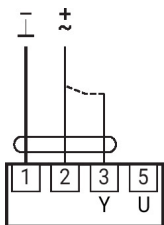


#### Caution:

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

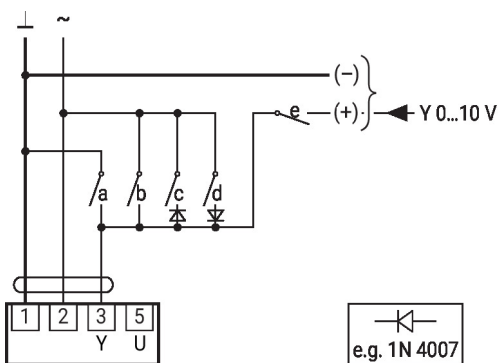


#### Procedure

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

### Functions with specific parameters (configuration necessary)

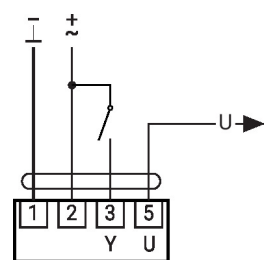
Override control and limiting with AC 24 V with relay contacts



e.g. 1N 4007

1	2	a	b	c	d	e	
							Close <sup>1)</sup>
							MIN
							ZS
							MAX
							Open
							Y

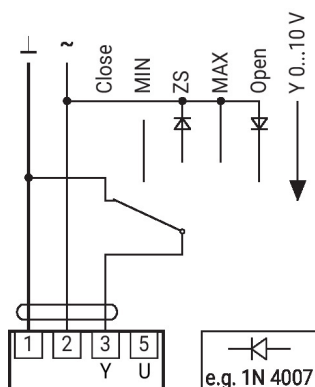
Control on/off



## Further electrical installations

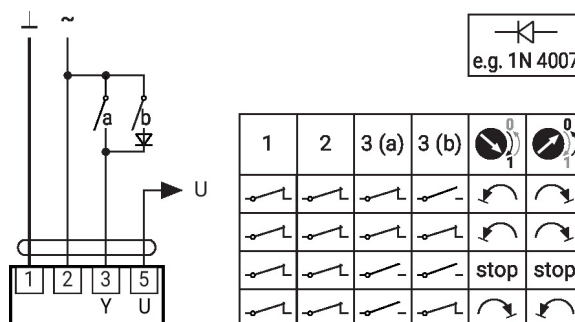
### Functions with specific parameters (configuration necessary)

Override control and limiting with AC 24 V with rotary switch



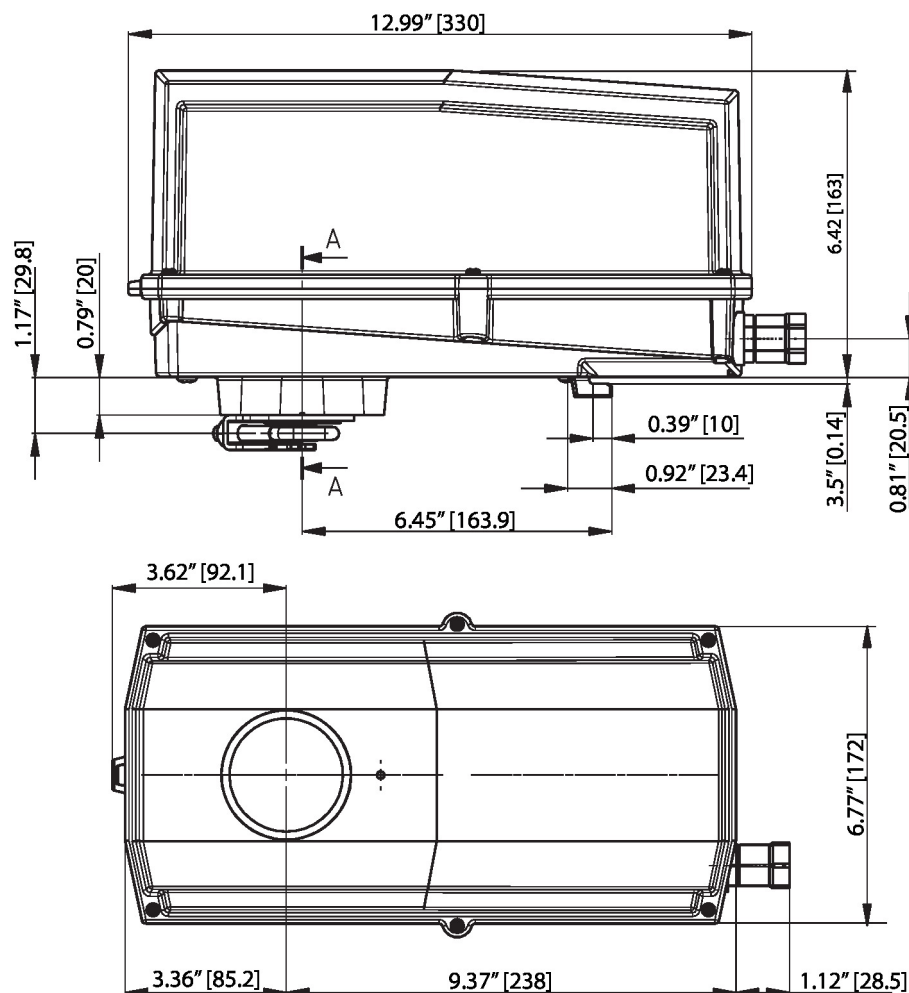
**Caution:**  
The "Close" function is only guaranteed if the start point of the operating range is defined as min. 0.5 V.

Control 3-point with AC 24 V



## Dimensions

PC



## Further documentation

• Quick Guide – Belimo Assistant 2