

Communicative rotary actuator for butterfly valves

- Torque motor Max. 90 Nm
- Nominal voltage AC/DC 24 V
- Control modulating, communicative 2...10 V variable
- Position feedback variable
- Communication via Belimo MP-Bus
- Conversion of sensor signals



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	9 W
	Power consumption in rest position	2 W
	Power consumption for wire sizing	12 VA
	Connection supply / control	Cable 1 m, 4x 0.75 mm <sup>2</sup>
	Parallel operation	Yes (note the performance data)
Functional data		
	Torque motor	Max. 90 Nm (not constant)
	Operating range Y	2...10 V
	Position feedback U note	Max. 0.5 mA
	Manual override	with push-button, can be locked
	Running time motor	150 s / 90°
	Running time motor variable	75...290 s
	Sound power level, motor	45 dB(A)
	Position indication	Mechanical, integrated
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
	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
Mechanical data		
	Connection flange	F05
Weight		
	Weight	3.7 kg

## Safety notes



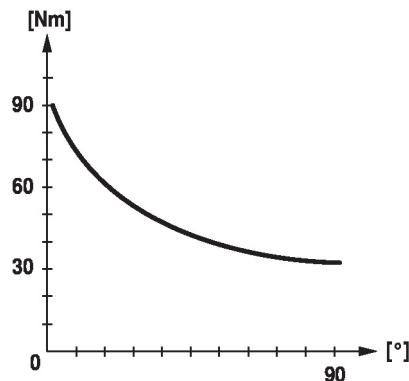
- This device has been designed for use in stationary heating, ventilation and air-conditioning systems and must not be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- Outdoor application: only possible in case that no (sea) water, snow, ice, insulation 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 switch for changing the direction of rotation may not be adjusted.
- The angle of rotation is not permitted to be subjected to mechanical limitation. It is forbidden to alter the mechanical end stops.
- 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

<b>Operating mode</b>	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. 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.
<b>Simple direct mounting</b>	Simple direct mounting on the butterfly valve. The mounting orientation in relation to the butterfly valve can be selected in 90° (angle) increments.
<b>Manual override</b>	Manual override with push-button possible (the gear train is disengaged for as long as the button is pressed or remains locked).
<b>High functional reliability</b>	The actuator is overload protected, requires no limit switches and automatically stops when the end stop is reached.
<b>Home position</b>	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. Factory setting: Y2 (counter-clockwise rotation).
<b>Adaptation and synchronisation</b>	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). Automatic synchronisation after pressing the manual override button is configured. The synchronisation is in the home position (0%). The actuator then moves into the position defined by the control signal. A range of settings can be made using Belimo Assistant 2.

## Product features

**Torque not constant** Due to the non-linear torque characteristic the actuator can only be used for butterfly valves and not for other armatures.



## 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 $\Omega$ add-on	P140A
	Feedback potentiometer 1 k $\Omega$ add-on	P1000A
	Feedback potentiometer 10 k $\Omega$ add-on	P10000A
	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.

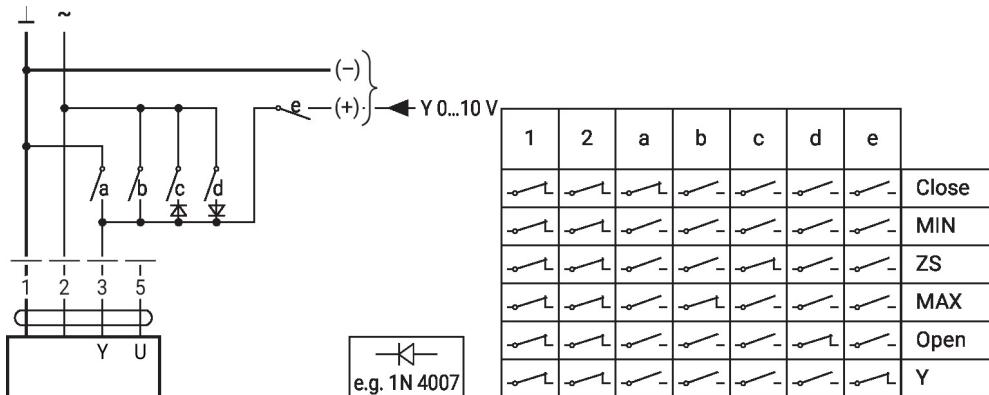
## Wire colours:

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

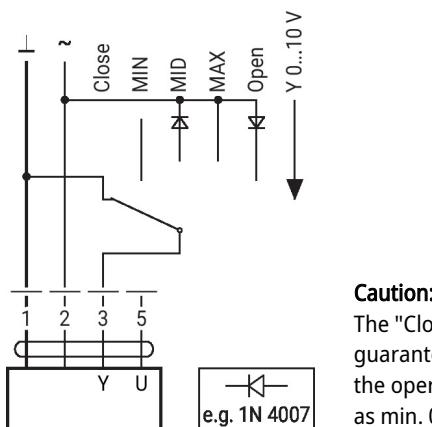
## Further electrical installations

## Functions with specific parameters (configuration necessary)

#### Override control and limiting with AC 24 V with relay contacts



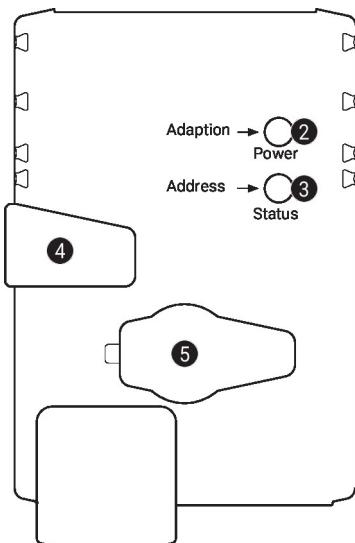
Override control and limiting with AC 24 V with rotary switch



### **Caution:**

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

## Operating controls and indicators



## 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, 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

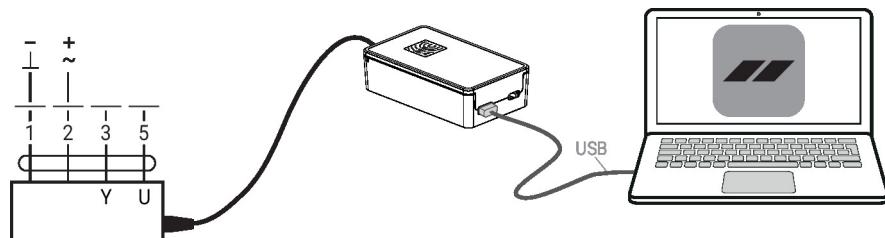
Using Belimo Assistant 2, device parameters can be modified. Belimo Assistant 2 can operate on a smartphone, tablet or PC. The available connection options vary depending on the hardware on which Belimo Assistant 2 is installed.

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

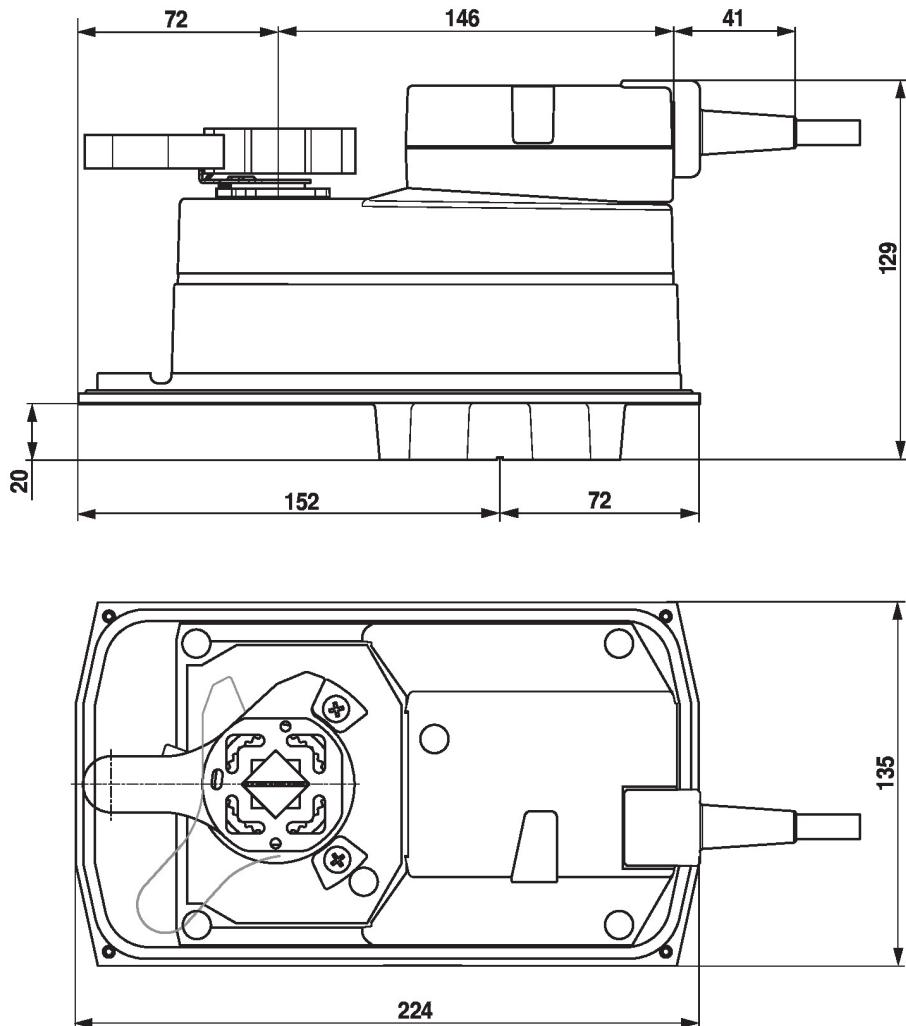


## Wired connection

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



## Further documentation

- Overview MP Cooperation Partners
- Tool connections
- Introduction to MP-Bus Technology
- The complete product range for water applications
- Data sheets for ball valves
- Installation instructions for actuators and/or ball valves
- General notes for project planning
- Quick Guide – Belimo Assistant 2