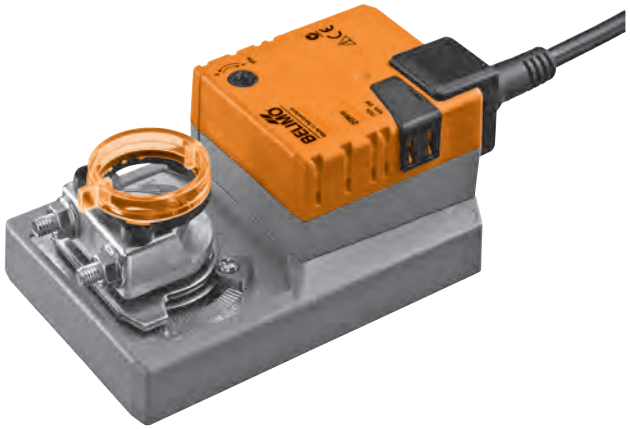
BELIMO

Technical data sheet SM24A

Damper actuator for adjusting air dampers in ventilation and air-conditioning systems for building services installations

- **For air dampers up to approx. 4 m²**
- **Torque 20 Nm**
- **Nominal voltage AC/DC 24 V**
- **Control: Open-close or 3-point**



Technical data

Electrical data	Nominal voltage		AC 24 V, 50/60 Hz / DC 24 V
	Nominal voltage range		AC 19.2 ... 28.8 V / DC 21.6 ... 28.8 V
	Power consumption	In operation	2 W @ nominal torque
		At rest	0.2 W
		For wire sizing	4 VA
	Connection		Cable 1 m, 3 x 0.75 mm²
Functional data	Torque (nominal torque)		Min. 20 Nm @ nominal voltage
	Direction of rotation		Reversible with switch 0 ↶ resp. 1 ↷
	Manual override		Gearing latch disengaged with pushbutton, can be locked
	Angle of rotation		Max. 95° ∢, can be limited at both ends with adjustable mechanical end stops
	Running time		150 s / 90° ∢
	Sound power level		Max. 45 dB (A)
	Position indication		Mechanical, pluggable
Safety	Protection class		**III** Safety extra-low voltage / UL Class 2 Supply
	Degree of protection		IP54 in any mounting position NEMA 2, UL Enclosure Type 2
	EMC		CE according to 2004/108/EC
	Certification		cULus according to UL 60730-1A and UL 60730-2-14 and CAN/CSA E60730-1:02 Certified to IEC/EN 60730-1 and IEC/EN 60730-2-14
	Mode of operation		Type 1
	Rated impulse voltage		0.8 kV
	Control pollution degree		3
	Ambient temperature range		–30 ... +50°C
	Non-operating temperature		–40 ... +80°C
	Ambient humidity range		95% r.h., non-condensating
	Maintenance		Maintenance-free
Dimensions / Weight	Dimensions		See «Dimensions» on page 2
	Weight		Approx. 1 kg

Safety notes

⚠

- **The actuator is not allowed to be used outside the specified field of application, especially in aircraft or any other form of air transport.**
- **Assembly must be carried out by trained personnel. Any legal regulations or regulations issued by authorities must be observed during assembly.**
- **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.**
- **The cable must not be removed from the device.**
- **When calculating the required torque, the specifications supplied by the damper manufacturers (cross section, design, installation site), and the air flow conditions must be observed.**
- **The device contains electrical and electronic components and is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.**

Product features

Simple direct mounting — Simple direct mounting on the damper spindle with a universal spindle clamp, supplied with an anti-rotation strap to prevent the actuator from rotating.

Manual override — Manual override with push-button possible (the gear 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-proof, requires no limit switches and automatically stops when the end stop is reached.

Accessories

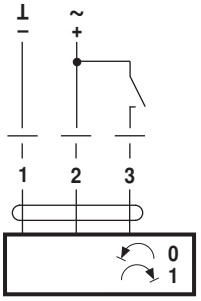
	Description	Data sheet
Electrical accessories	Auxiliary switch S..A..	T2 - S..A..
	Feedback potentiometer P..A..	T2 - P..A..
Mechanical accessories	Various accessories (clamps, shaft extensions etc.)	T2 - Z-SM..A..

Electrical installation

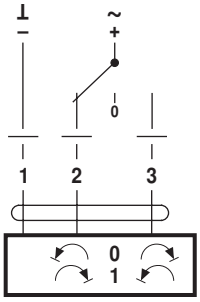
Wiring diagrams

Notes
- Connection via safety isolating transformer.
- Other actuators can be connected in parallel. Please note the performance data.

Open-close control



3-point control

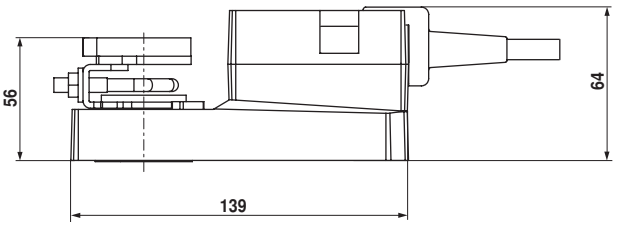


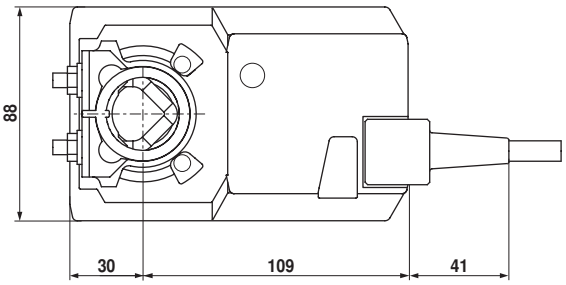
Direction of rotation

Cable colours:
1 = black
2 = red
3 = white

Dimensions [mm]

Dimensional drawings



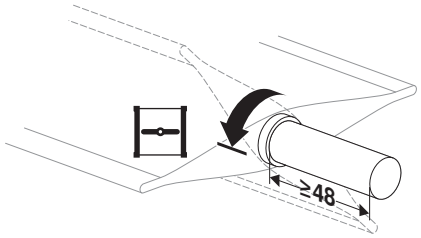


Damper spindle	Length			
	≥48	10 ... 20 [1]	≥10	≤20
	≥20	10 ... 20 [1]	≥10	≤20

[1] CrNi (INOX) 12 ... 20

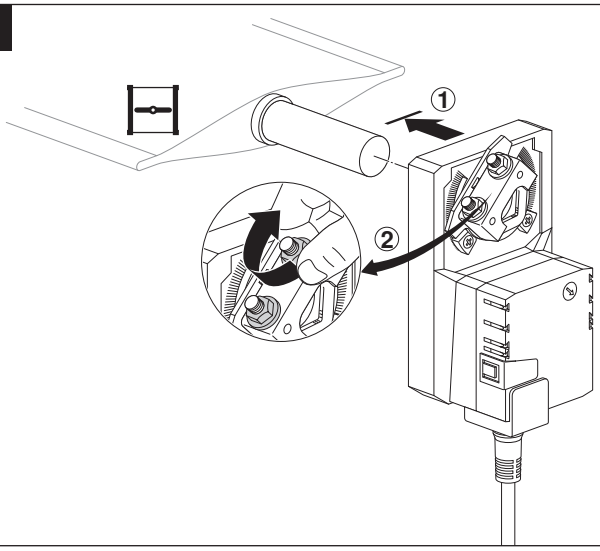
70214-00003.F

1



	10 ... 20	≥10	≤20
CrNi (INOX)	12 ... 20	≥10	≤20

2



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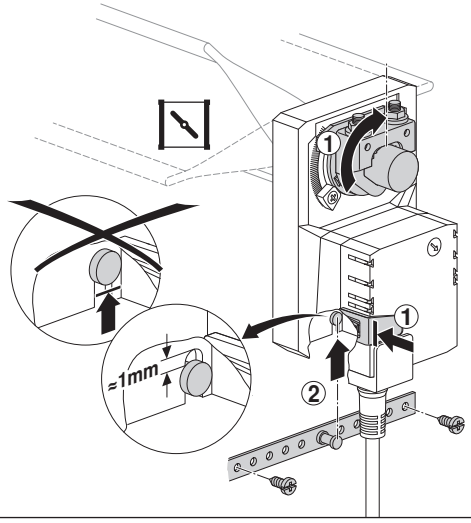

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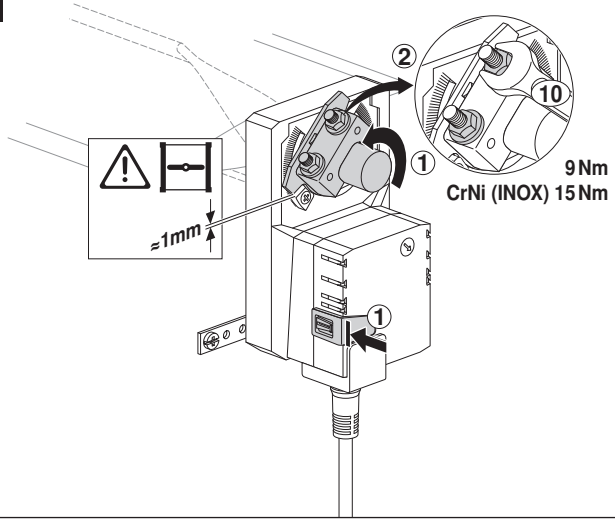

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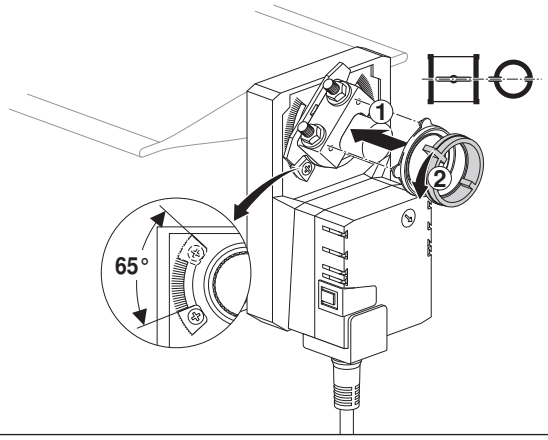
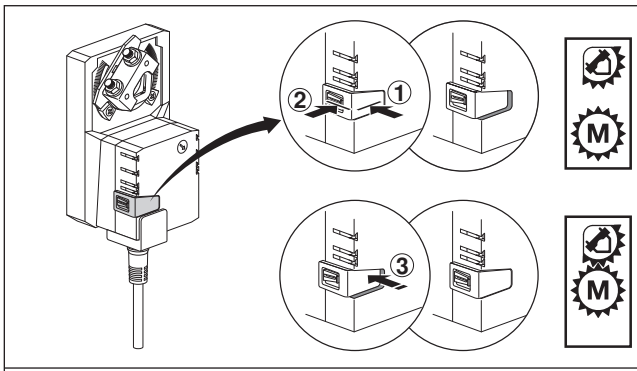
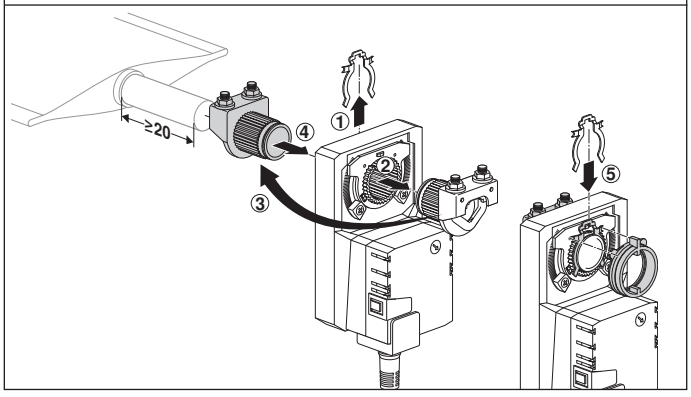
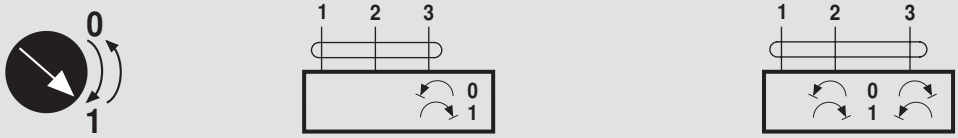
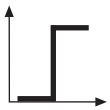


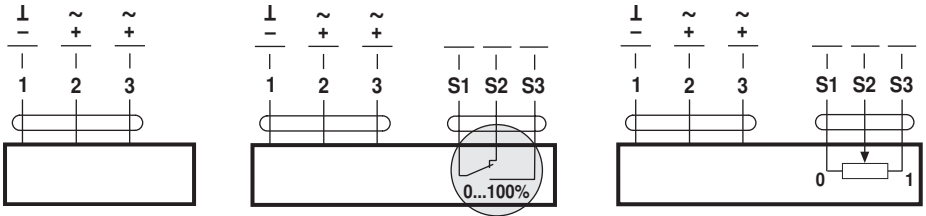








AC 24 V / DC 24 V

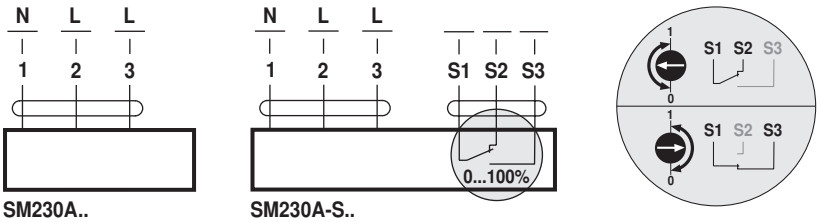


SM24A..
SMD24A..

SM24A-S..

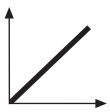
SM24AP5..

AC 100 ... 240 V ⚠

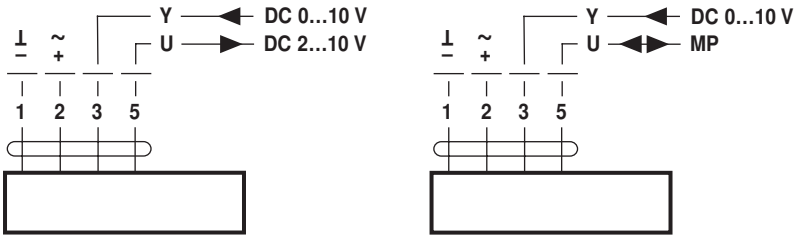


SM230A..
SMD230A..

SM230A-S..



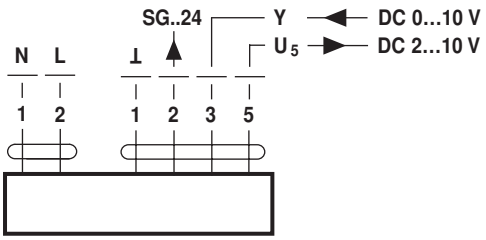
AC 24 V / DC 24 V



SM24A-SR..
SM24A-MF..

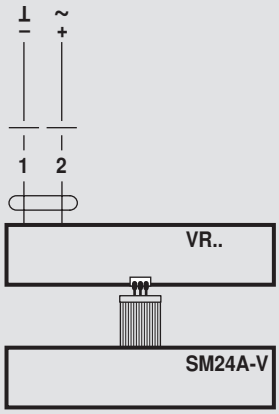
SM24A-MP..

AC 100 ... 240 V ⚠



SM230ASR..

AC 24 V / DC 24 V
(SM24A-V / VR..)



SM24A-V / VR..

BELIMO

Technical data sheet SM24A-S

Damper actuator for adjusting air dampers in ventilation and air-conditioning systems for building services installations

- **For air dampers up to approx. 4 m²**
- **Torque 20 Nm**
- **Nominal voltage AC/DC 24 V**
- **Control: Open-close or 3-point**
- **with integrated auxiliary switch**

Technical data

Electrical data	Nominal voltage		AC 24 V, 50/60 Hz / DC 24 V
	Nominal voltage range		AC 19.2 ... 28.8 V / DC 21.6 ... 28.8 V
	Power consumption	In operation	2 W @ nominal torque
		At rest	0.2 W
		For wire sizing	4 VA
	Auxiliary switch		1 x SPDT, 1 mA ... 3 (0.5) A, AC 250 V ⧈ (0 ... 100% adjustable)
	Connection	Motor	Cable 1 m, 3 x 0.75 mm²
		Auxiliary switch	Cable 1 m, 3 x 0.75 mm²
Functional data	Torque (nominal torque)		Min. 20 Nm @ nominal voltage
	Direction of rotation		Reversible with switch 0 ↶ resp. 1 ↷
	Manual override		Gearing latch disengaged with pushbutton, can be locked
	Angle of rotation		Max. 95°∢, can be limited at both ends with adjustable mechanical end stops
	Running time		150 s / 90°∢
	Sound power level		Max. 45 dB (A)
	Position indication		Mechanical, pluggable
Safety	Protection class		**III** Safety extra-low voltage / UL Class 2 Supply
	Degree of protection		IP54 in any mounting position NEMA 2, UL Enclosure Type 2
	EMC		CE according to 2004/108/EC
	Certification		cULus according to UL 60730-1A and UL 60730-2-14 and CAN/CSA E60730-1:02 Certified to IEC/EN 60730-1 and IEC/EN 60730-2-14
	Mode of operation		Type 1
	Rated impulse voltage		0.8 kV
	Control pollution degree		3
	Ambient temperature range		–30 ... +50°C
	Non-operating temperature		–40 ... +80°C
	Ambient humidity range		95% r.h., non-condensating
	Maintenance		Maintenance-free
Dimensions / Weight	Dimensions		See «Dimensions» on page 2
	Weight		Approx. 1.1 kg

Safety notes

⚠

- **The actuator is not allowed to be used outside the specified field of application, especially in aircraft or any other form of air transport.**
- **Assembly must be carried out by trained personnel. Any legal regulations or regulations issued by authorities must be observed during assembly.**
- **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.**
- **The cable must not be removed from the device.**
- **When calculating the required torque, the specifications supplied by the damper manufacturers (cross section, design, installation site), and the air flow conditions must be observed.**
- **The device contains electrical and electronic components and is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.**

Damper actuator, AC/DC 24 V, 20 Nm, with integrated auxiliary switch

Product features

Simple direct mounting — Simple direct mounting on the damper spindle with a universal spindle clamp, supplied with an anti-rotation strap to prevent the actuator from rotating.

Manual override — Manual override with push-button possible (the gear 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-proof, requires no limit switches and automatically stops when the end stop is reached.

Flexible signalization — Flexible signalization with adjustable auxiliary switch (0 ... 100%).

Accessories

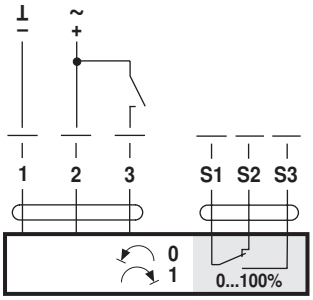
	Description	Data sheet
Electrical accessories	Auxiliary switch S..A..	T2 - S..A..
	Feedback potentiometer P..A..	T2 - P..A..
Mechanical accessories	Various accessories (clamps, shaft extensions etc.)	T2 - Z-SM..A..

Electrical installation

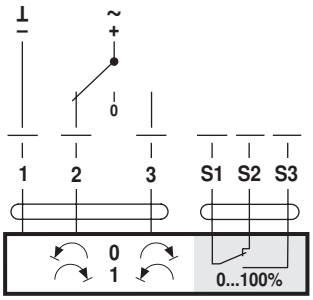
Wiring diagrams

Notes
- Connection via safety isolating transformer.
- Other actuators can be connected in parallel. Please note the performance data.

Open-close control



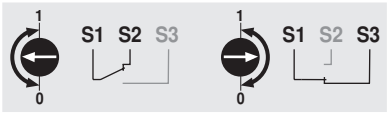
3-point control



Cable colours:
1 = black
2 = red
3 = white
S1 = violet
S2 = red
S3 = white

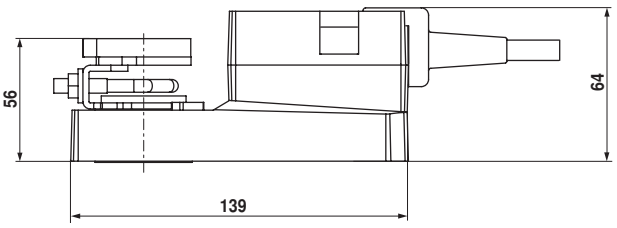
Direction of rotation

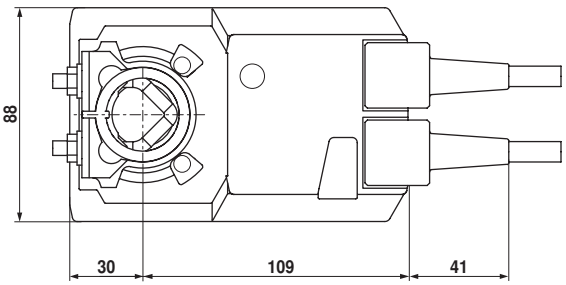
Auxiliary switch



Dimensions [mm]

Dimensional drawings





Damper spindle	Length			
	≥48	10 ... 20 [1]	≥10	≤20
	≥20	10 ... 20 [1]	≥10	≤20

[1] CrNi (INOX) 12 ... 20

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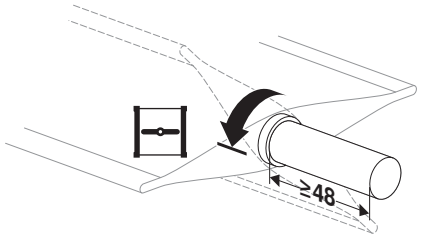
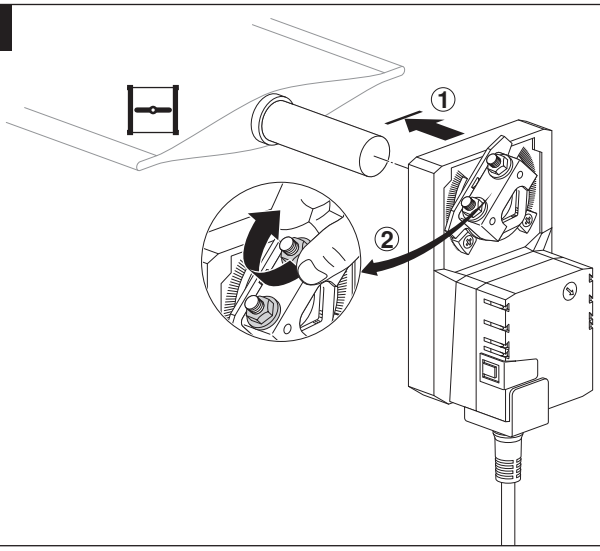
1



	10 ... 20	≥10	≤20
CrNi (INOX)	12 ... 20	≥10	≤20

2



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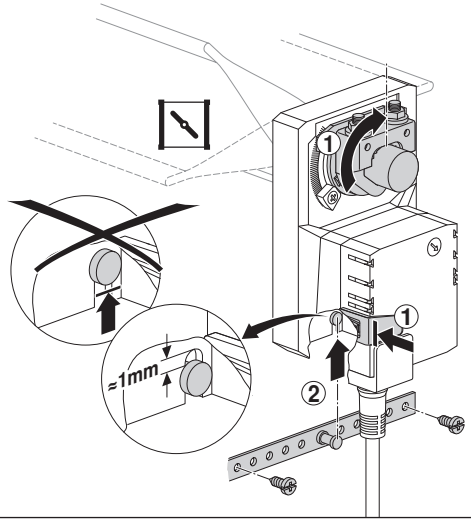

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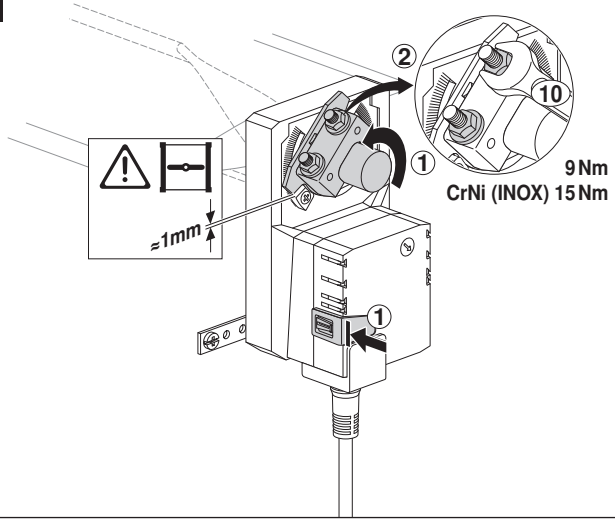

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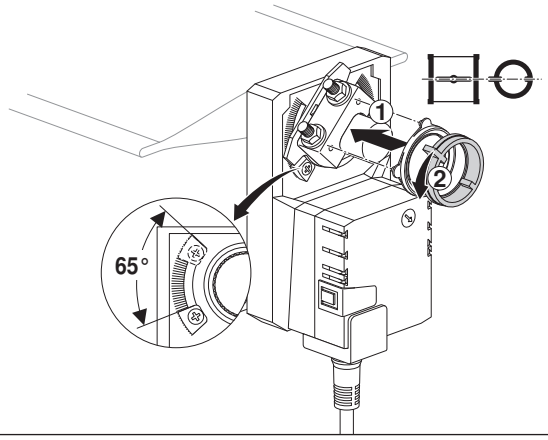
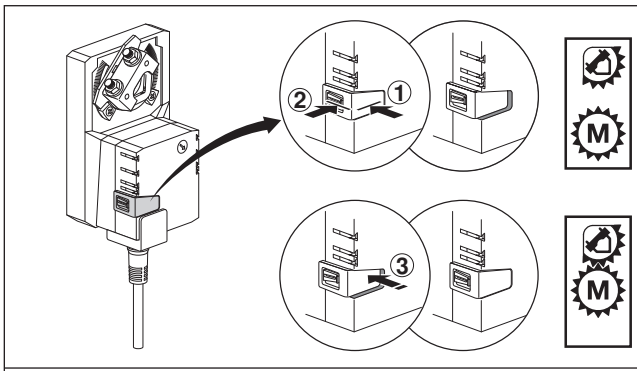
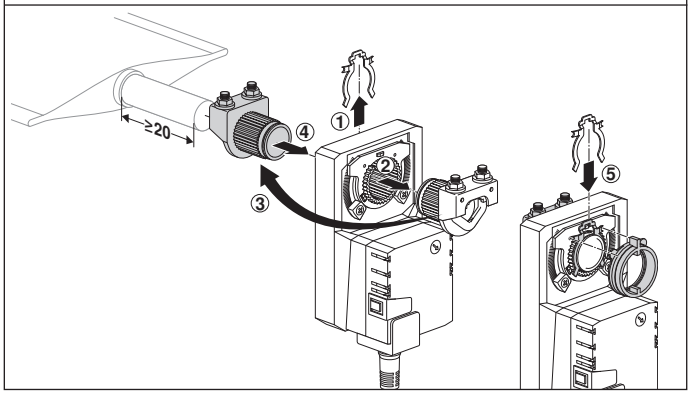
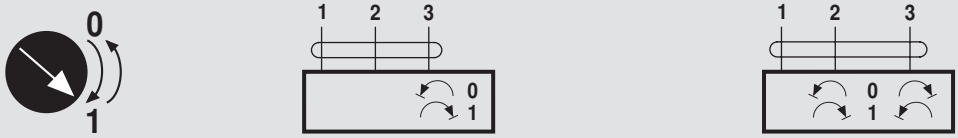
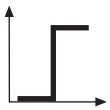


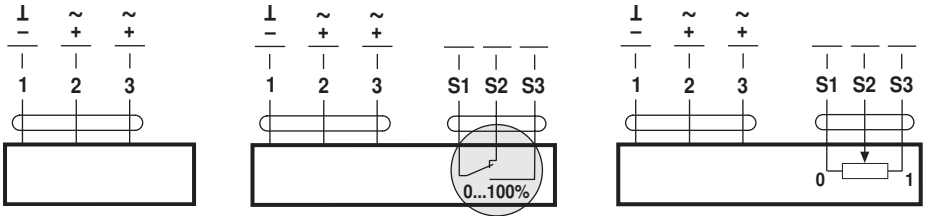








AC 24 V / DC 24 V

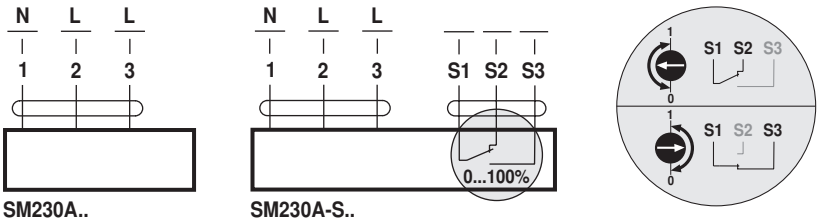


SM24A..
SMD24A..

SM24A-S..

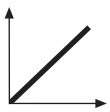
SM24AP5..

AC 100 ... 240 V ⚠

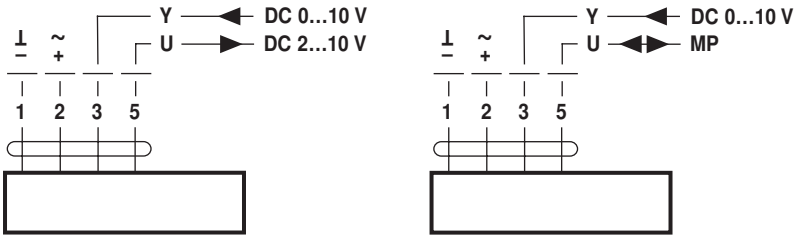


SM230A..
SMD230A..

SM230A-S..



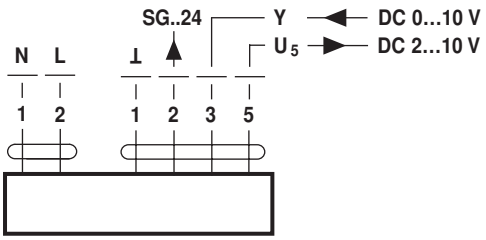
AC 24 V / DC 24 V



SM24A-SR..
SM24A-MF..

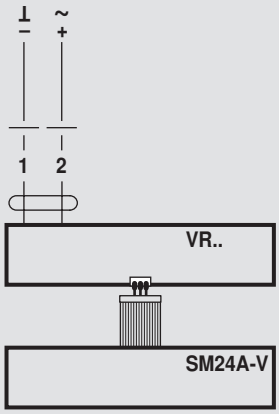
SM24A-MP..

AC 100 ... 240 V ⚠



SM230ASR..

AC 24 V / DC 24 V
(SM24A-V / VR..)



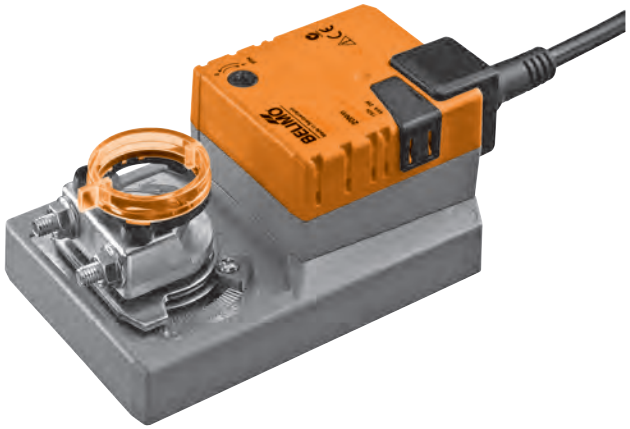
SM24A-V / VR..

BELIMO

Technical data sheet SM24A-SR

Modulating damper actuator for adjusting air dampers in ventilation and air-conditioning systems for building services installations

- **For air dampers up to approx. 4 m²**
- **Torque 20 Nm**
- **Nominal voltage AC/DC 24 V**
- **Control: Modulating DC 0 ... 10 V**
- **Position feedback DC 2 ... 10 V**



Technical data

Electrical data	Nominal voltage		AC 24 V, 50/60 Hz / DC 24 V
	Nominal voltage range		AC 19.2 ... 28.8 V / DC 21.6 ... 28.8 V
	Power consumption	In operation	2 W @ nominal torque
		At rest	0.4 W
		For wire sizing	4 VA
	Connection		Cable 1 m, 4 x 0.75 mm²
Functional data	Torque (nominal torque)		Min. 20 Nm @ nominal voltage
	Control	Control signal Y	DC 0 ... 10 V, typical input impedance 100 kΩ
		Operating range	DC 2 ... 10 V
	Position feedback (Measuring voltage U)		DC 2 ... 10 V, max. 1 mA
	Position accuracy		±5%
	Direction of rotation		Reversible with switch 0 / 1
	Direction of motion at Y = 0 V		In switch position 0 ↶ resp. 1 ↷
	Manual override		Gearing latch disengaged with pushbutton, can be locked
	Angle of rotation		Max. 95°∢, can be limited at both ends with adjustable mechanical end stops
	Running time		150 s / 90°∢
	Sound power level		Max. 45 dB (A)
	Position indication		Mechanical, pluggable
Safety	Protection class		**III** Safety extra-low voltage / UL Class 2 Supply
	Degree of protection		IP54 in any mounting position NEMA 2, UL Enclosure Type 2
	EMC		CE according to 2004/108/EC
	Certification		cULus according to UL 60730-1A and UL 60730-2-14 and CAN/CSA E60730-1:02 Certified to IEC/EN 60730-1 and IEC/EN 60730-2-14
	Mode of operation		Type 1
	Rated impulse voltage		0.8 kV
	Control pollution degree		3
	Ambient temperature range		–30 ... +50°C
	Non-operating temperature		–40 ... +80°C
	Ambient humidity range		95% r.h., non-condensating
	Maintenance		Maintenance-free
Dimensions / Weight	Dimensions		See «Dimensions» on page 2
	Weight		Approx. 1.05 kg

Safety notes

⚠

- **The actuator is not allowed to be used outside the specified field of application, especially in aircraft or any other form of air transport.**
- **Assembly must be carried out by trained personnel. Any legal regulations or regulations issued by authorities must be observed during assembly.**
- **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.**
- **The cable must not be removed from the device.**
- **When calculating the required torque, the specifications supplied by the damper manufacturers (cross section, design, installation site), and the air flow conditions must be observed.**

Safety notes

(Continued)

- **The device contains electrical and electronic components and is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.**

Product features

Mode of operation
The actuator is controlled with a standard modulating signal of DC 0 ... 10 V and travels to the position defined by the control signal. Measuring voltage U serves for the electrical display of the damper position 0 ... 100% and as slave control signal for other actuators.

Simple direct mounting
Simple direct mounting on the damper spindle with a universal spindle clamp, supplied with an anti-rotation strap to prevent the actuator from rotating.

Manual override
Manual override with push-button possible (the gear 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-proof, requires no limit switches and automatically stops when the end stop is reached.

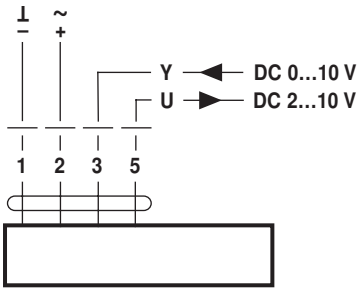
Accessories

	Description	Data sheet
Electrical accessories	Auxiliary switch S..A..	T2 - S..A..
	Feedback potentiometer P..A..	T2 - P..A..
	Range controller SBG24	T2 - SBG24
	Position sensor SGA24, SGE24 and SGF24	T2 - SG..24
	Digital position indication ZAD24	T2 - ZAD24
Mechanical accessories	Various accessories (clamps, shaft extensions etc.)	T2 - Z-SM..A..

Electrical installation

Wiring diagram

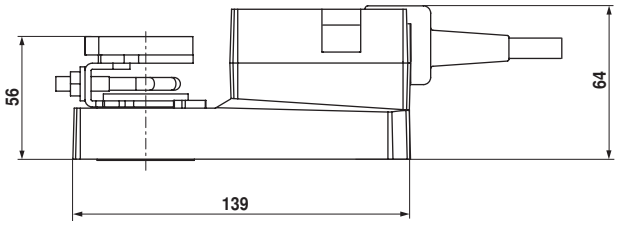
Notes
- Connection via safety isolating transformer.
- Other actuators can be connected in parallel. Please note the performance data.

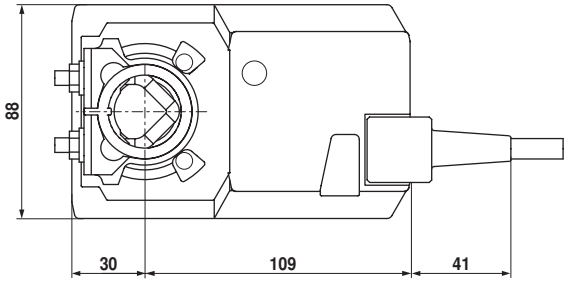


Cable colours:
1 = black
2 = red
3 = white
5 = orange

Dimensions [mm]

Dimensional drawings



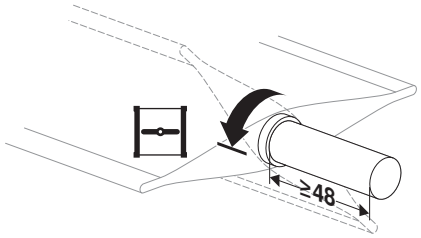


Damper spindle	Length			
	≥48	10 ... 20 [1]	≥10	≤20
	≥20	10 ... 20 [1]	≥10	≤20

[1] CrNi (INOX) 12 ... 20

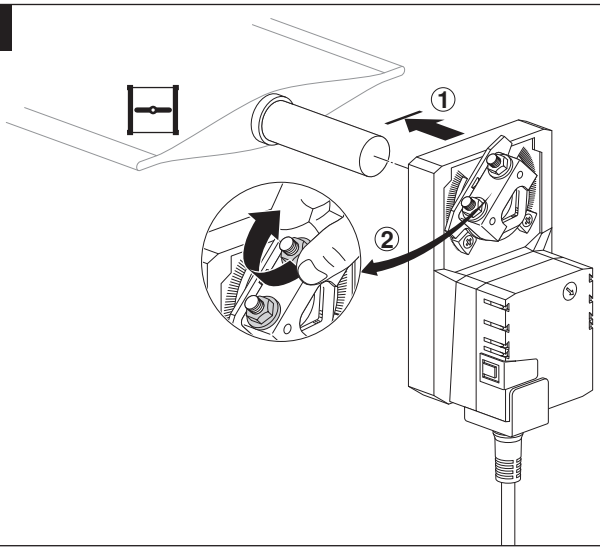
70214-00003.F

1



	10 ... 20	≥10	≤20
CrNi (INOX)	12 ... 20	≥10	≤20

2



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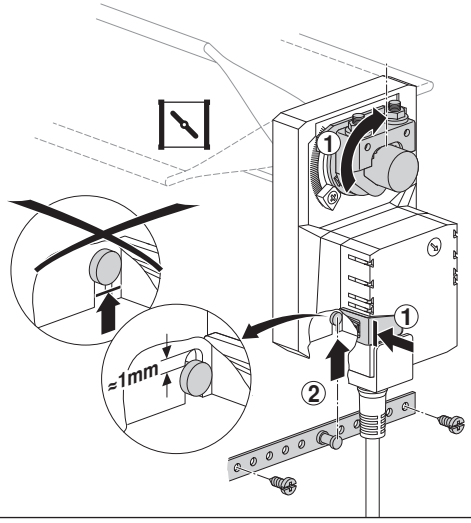

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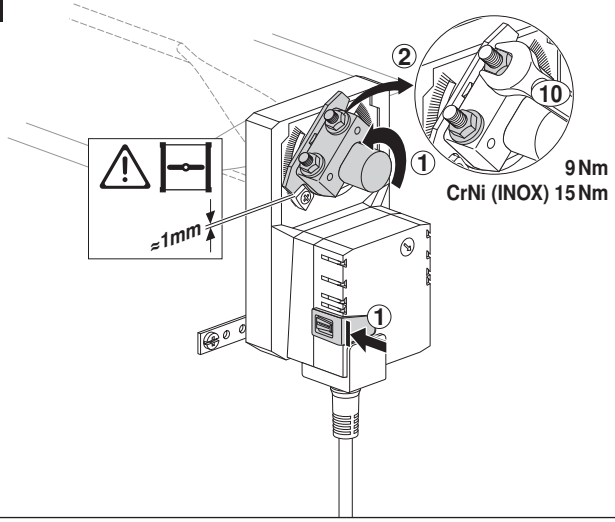

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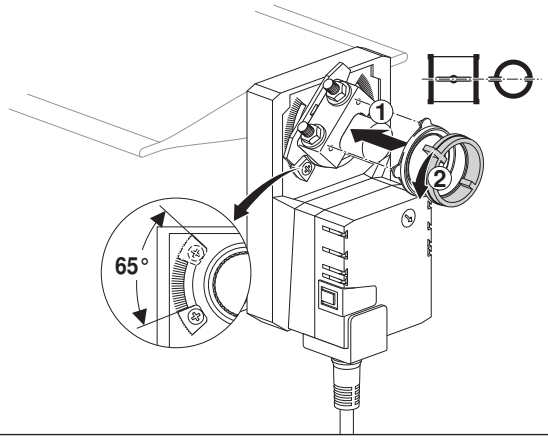
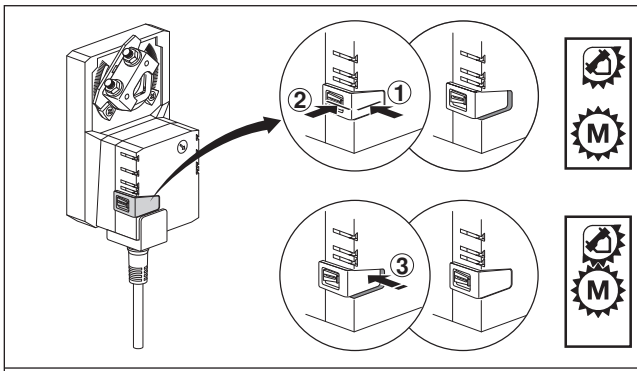
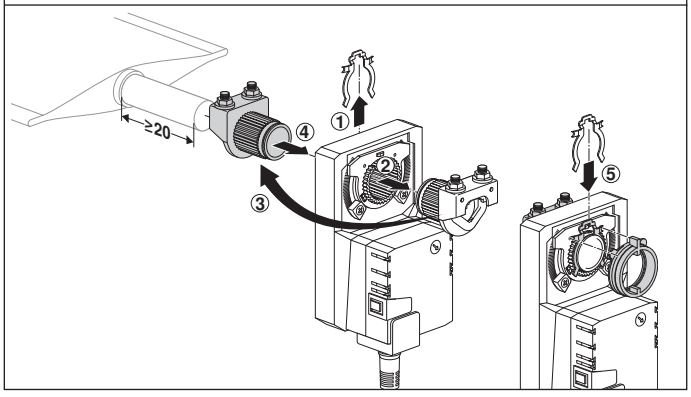
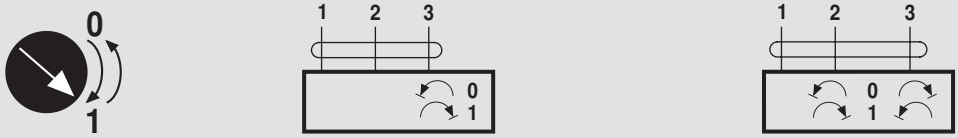
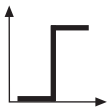


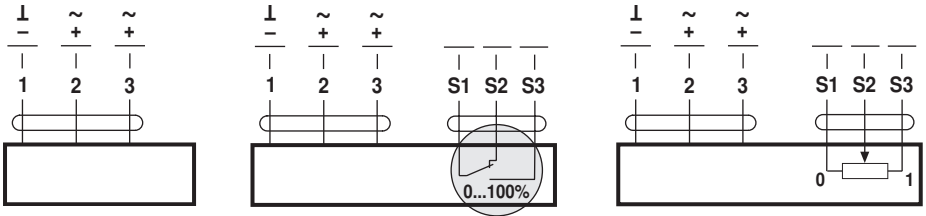








AC 24 V / DC 24 V

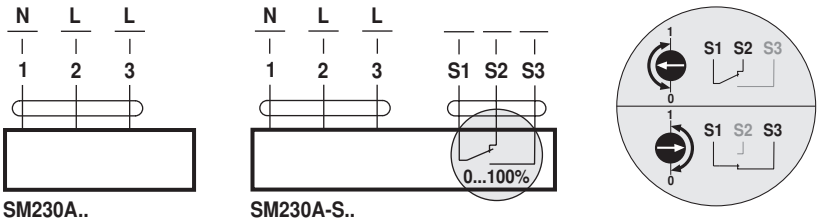


SM24A..
SMD24A..

SM24A-S..

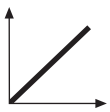
SM24AP5..

AC 100 ... 240 V ⚠

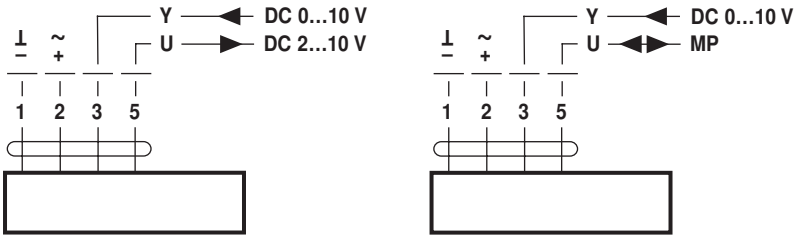


SM230A..
SMD230A..

SM230A-S..



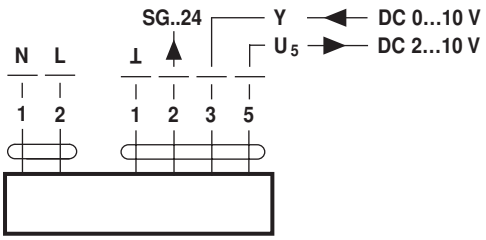
AC 24 V / DC 24 V



SM24A-SR..
SM24A-MF..

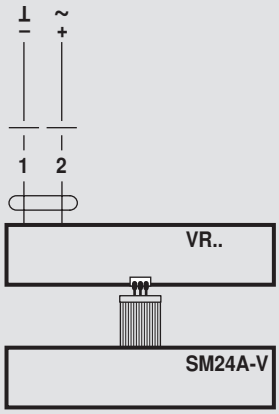
SM24A-MP..

AC 100 ... 240 V ⚠



SM230ASR..

AC 24 V / DC 24 V
(SM24A-V / VR..)



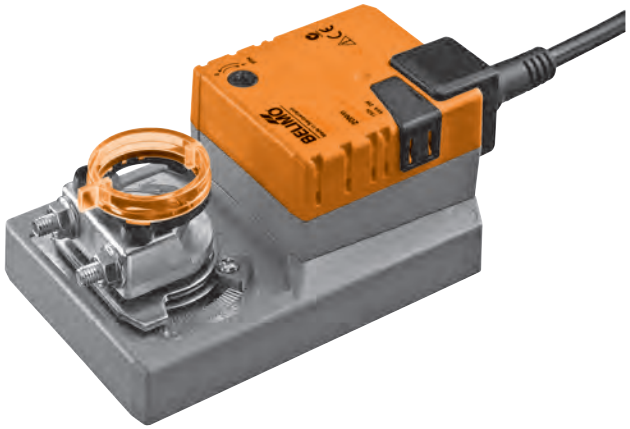
SM24A-V / VR..

BELIMO

Technical data sheet SM230A

Damper actuator for adjusting air dampers in ventilation and air-conditioning systems for building services installations

- **For air dampers up to approx. 4 m²**
- **Torque 20 Nm**
- **Nominal voltage AC 100 ... 240 V**
- **Control: Open-close or 3-point**



Technical data

Electrical data	Nominal voltage		AC 100 ... 240 V, 50/60 Hz
	Nominal voltage range		AC 85 ... 265 V
	Power consumption	In operation	2.5 W @ nominal torque
		At rest	0.6 W
		For wire sizing	6 VA
	Connection		Cable 1 m, 3 x 0.75 mm²
Functional data	Torque (nominal torque)		Min. 20 Nm @ nominal voltage
	Direction of rotation		Reversible with switch 0 ↶ resp. 1 ↷
	Manual override		Gearing latch disengaged with pushbutton, can be locked
	Angle of rotation		Max. 95°∢, can be limited at both ends with adjustable mechanical end stops
	Running time		150 s / 90°∢
	Sound power level		Max. 45 dB (A)
	Position indication		Mechanical, pluggable
Safety	Protection class		**II** Totally insulated ⧈
	Degree of protection		IP54 in any mounting position NEMA 2, UL Enclosure Type 2
	EMC Low voltage directive		CE according to 2004/108/EC CE according to 2006/95/EC
	Certification		cULus according to UL 60730-1A and UL 60730-2-14 and CAN/CSA E60730-1:02 Certified to IEC/EN 60730-1 and IEC/EN 60730-2-14
	Mode of operation		Type 1
	Rated impulse voltage		2.5 kV
	Control pollution degree		3
	Ambient temperature range		–30 ... +50°C
	Non-operating temperature		–40 ... +80°C
	Ambient humidity range		95% r.h., non-condensating
	Maintenance		Maintenance-free
Dimensions / Weight	Dimensions		See «Dimensions» on page 2
	Weight		Approx. 1 kg

Safety notes

⚠

- **The actuator is not allowed to be used outside the specified field of application, especially in aircraft or any other form of air transport.**
- **Caution: Power supply voltage!**
- **Assembly must be carried out by trained personnel. Any legal regulations or regulations issued by authorities must be observed during assembly.**
- **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.**
- **The cable must not be removed from the device.**
- **When calculating the required torque, the specifications supplied by the damper manufacturers (cross section, design, installation site), and the air flow conditions must be observed.**
- **The device contains electrical and electronic components and is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.**

Product features

Simple direct mounting Simple direct mounting on the damper spindle with a universal spindle clamp, supplied with an anti-rotation strap to prevent the actuator from rotating.

Manual override Manual override with push-button possible (the gear 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-proof, requires no limit switches and automatically stops when the end stop is reached.

Accessories

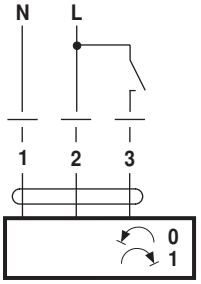
	Description	Data sheet
Electrical accessories	Auxiliary switch S..A..	T2 - S..A..
	Feedback potentiometer P..A..	T2 - P..A..
Mechanical accessories	Various accessories (clamps, shaft extensions etc.)	T2 - Z-SM..A..

Electrical installation

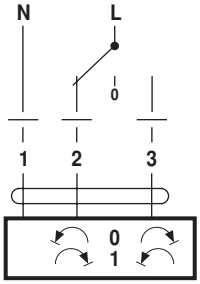
Wiring diagrams

Notes
- Caution: Power supply voltage!
- Other actuators can be connected in parallel. Please note the performance data.

Open-close control



3-point control

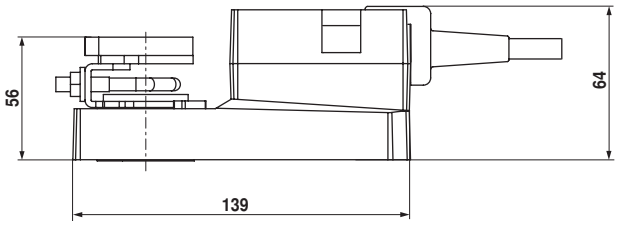


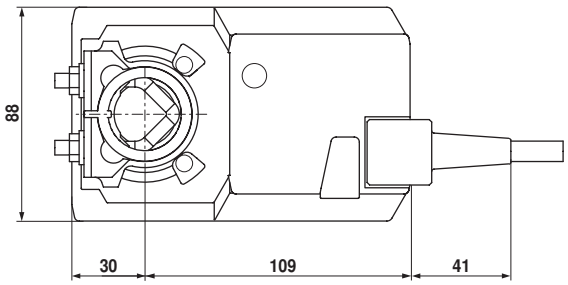
Direction of rotation

Cable colours:
1 = blue
2 = brown
3 = white

Dimensions [mm]

Dimensional drawings



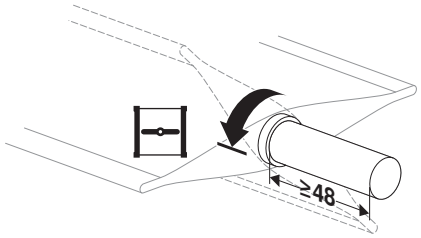


Damper spindle	Length	⌀	□	◇
	≥48	10 ... 20 [1]	≥10	≤20
	≥20	10 ... 20 [1]	≥10	≤20

[1] CrNi (INOX) 12 ... 20

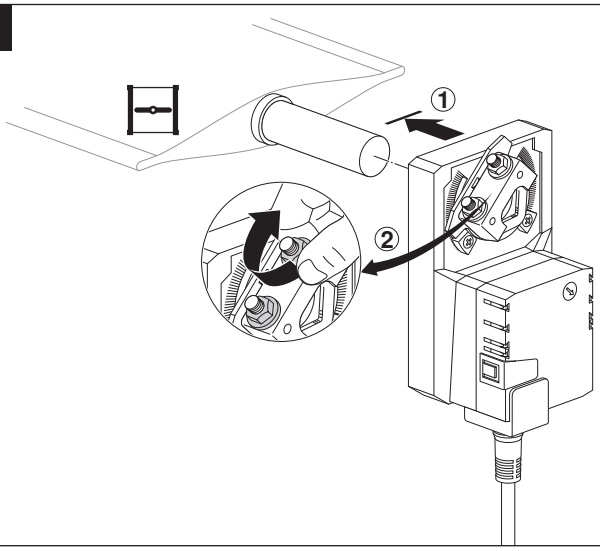
70214-00003.F

1



	10 ... 20	≥10	≤20
CrNi (INOX)	12 ... 20	≥10	≤20

2



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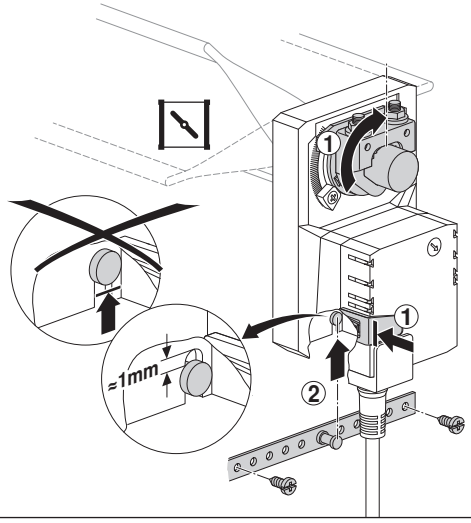

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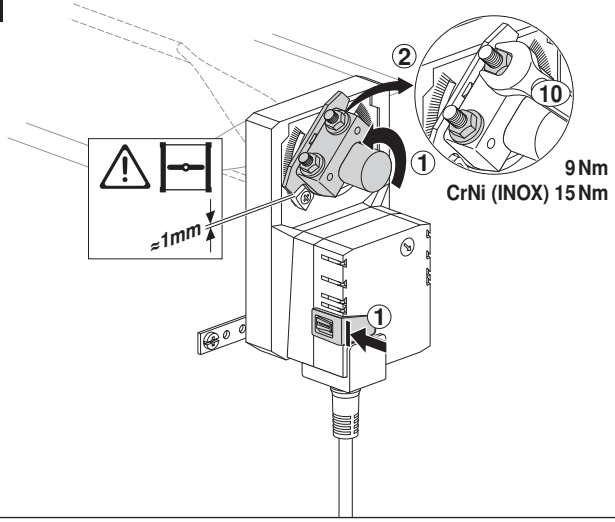
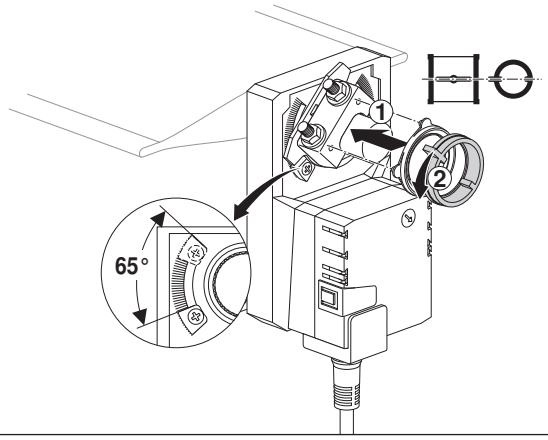
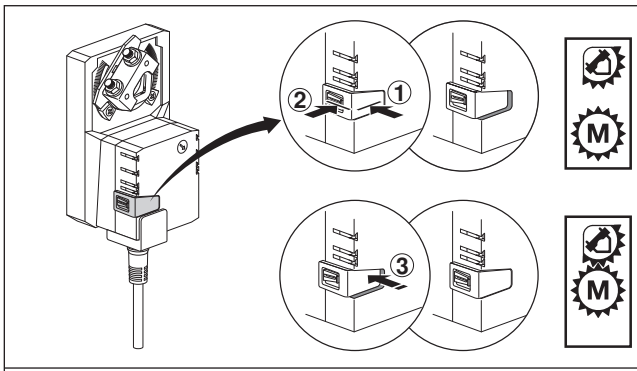
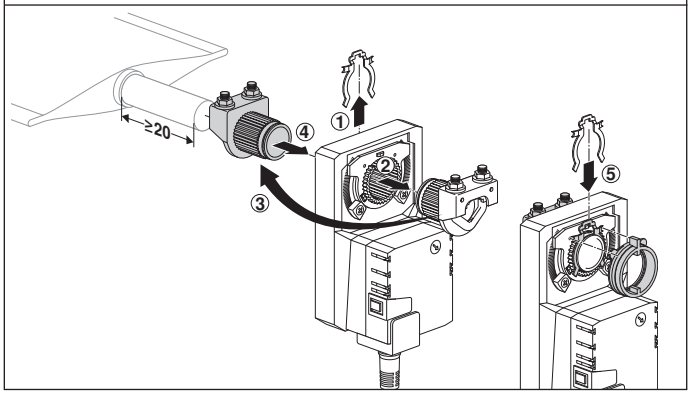
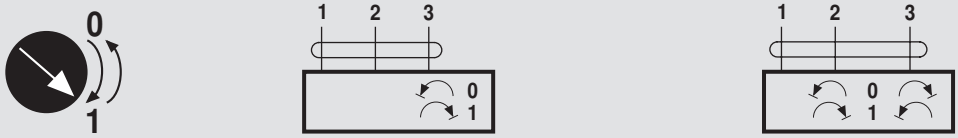


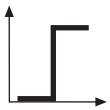
5



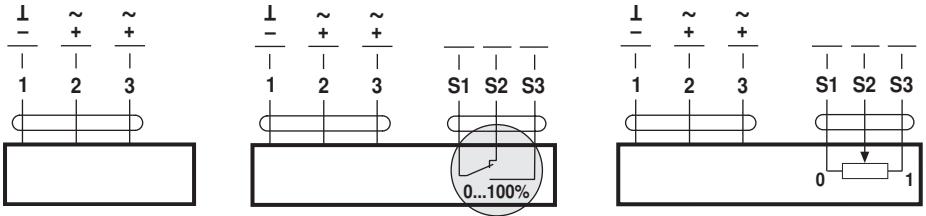








AC 24 V / DC 24 V

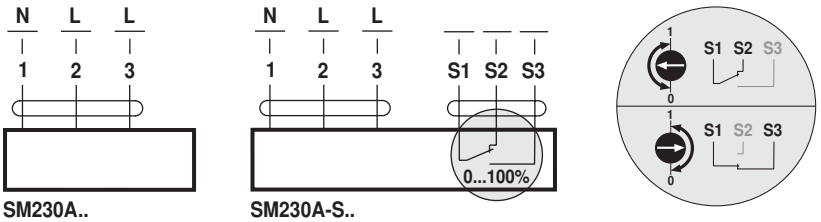


SM24A..
SMD24A..

SM24A-S..

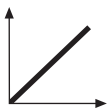
SM24AP5..

AC 100 ... 240 V ⚠

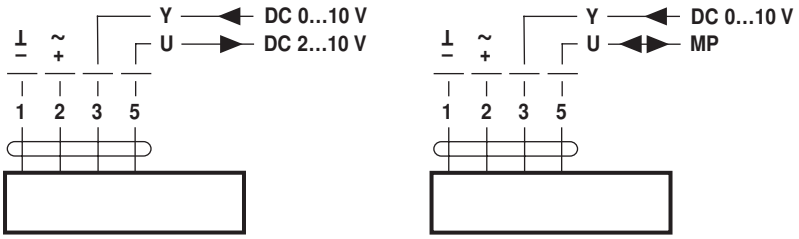


SM230A..
SMD230A..

SM230A-S..



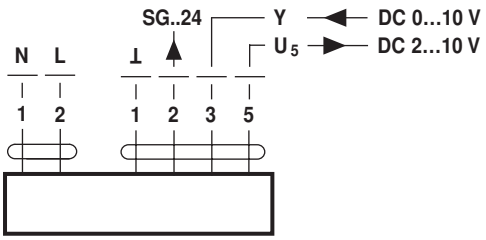
AC 24 V / DC 24 V



SM24A-SR..
SM24A-MF..

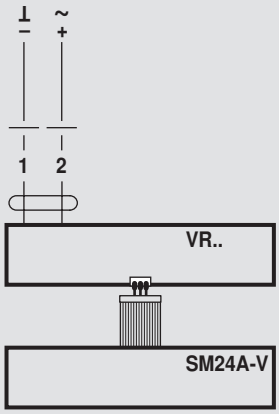
SM24A-MP..

AC 100 ... 240 V ⚠



SM230ASR..

AC 24 V / DC 24 V
(SM24A-V / VR..)



SM24A-V / VR..

BELIMO

Technical data sheet SM230A-S

Damper actuator for adjusting air dampers in ventilation and air-conditioning systems for building services installations

- **For air dampers up to approx. 4 m²**
- **Torque 20 Nm**
- **Nominal voltage AC 100 ... 240 V**
- **Control: Open-close or 3-point**
- **with integrated auxiliary switch**

Technical data

Electrical data	Nominal voltage		AC 100 ... 240 V, 50 / 60 Hz
	Nominal voltage range		AC 85 ... 265 V
	Power consumption	In operation	2.5 W @ nominal torque
		At rest	0.6 W
		For wire sizing	6 VA
	Auxiliary switch		1 x SPDT, 1 mA ... 3 (0.5) A, AC 250 V ⧈ (0 ... 100% adjustable)
	Connection	Motor	Cable 1 m, 3 x 0.75 mm²
		Auxiliary switch	Cable 1 m, 3 x 0.75 mm²
Functional data	Torque (nominal torque)		Min. 20 Nm @ nominal voltage
	Direction of rotation		Reversible with switch 0 ↶ resp. 1 ↷
	Manual override		Gearing latch disengaged with pushbutton, can be locked
	Angle of rotation		Max. 95°∢, can be limited at both ends with adjustable mechanical end stops
	Running time		150 s / 90°∢
	Sound power level		Max. 45 dB (A)
	Position indication		Mechanical, pluggable
Safety	Protection class		**II** Totally insulated ⧈
	Degree of protection		IP54 in any mounting position NEMA 2, UL Enclosure Type 2
	EMC		CE according to 2004/108/EC
	Low voltage directive		CE according to 2006/95/EC
	Certification		cULus according to UL 60730-1A and UL 60730-2-14 and CAN/CSA E60730-1:02 Certified to IEC/EN 60730-1 and IEC/EN 60730-2-14
	Mode of operation		Type 1
	Rated impulse voltage		2.5 kV
	Control pollution degree		3
	Ambient temperature range		–30 ... +50°C
	Non-operating temperature		–40 ... +80°C
	Ambient humidity range		95% r.h., non-condensating
	Maintenance		Maintenance-free
Dimensions / Weight	Dimensions		See «Dimensions» on page 2
	Weight		Approx. 1.1 kg

Safety notes

⚠

- **The actuator is not allowed to be used outside the specified field of application, especially in aircraft or any other form of air transport.**
- **Caution: Power supply voltage!**
- **Assembly must be carried out by trained personnel. Any legal regulations or regulations issued by authorities must be observed during assembly.**
- **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.**
- **The cable must not be removed from the device.**
- **When calculating the required torque, the specifications supplied by the damper manufacturers (cross section, design, installation site), and the air flow conditions must be observed.**

Safety notes

(Continued)

- **The device contains electrical and electronic components and is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.**

Product features

Simple direct mounting — Simple direct mounting on the damper spindle with a universal spindle clamp, supplied with an anti-rotation strap to prevent the actuator from rotating.

Manual override — Manual override with push-button possible (the gear 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-proof, requires no limit switches and automatically stops when the end stop is reached.

Flexible signalization — Flexible signalization with adjustable auxiliary switch (0 ... 100%).

Accessories

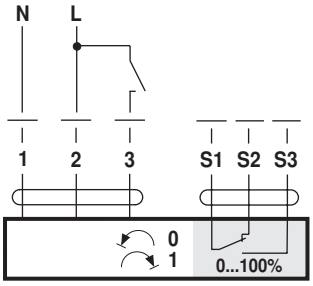
	Description	Data sheet
Electrical accessories	Auxiliary switch S..A..	T2 - S..A..
	Feedback potentiometer P..A..	T2 - P..A..
Mechanical accessories	Various accessories (clamps, shaft extensions etc.)	T2 - Z-SM..A..

Electrical installation

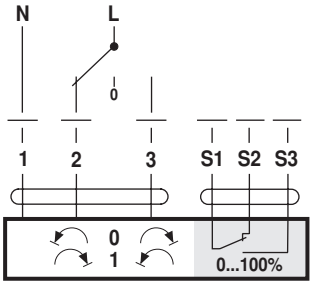
Wiring diagrams

Notes
- Caution: Power supply voltage!
- Other actuators can be connected in parallel. Please note the performance data.

Open-close control



3-point control



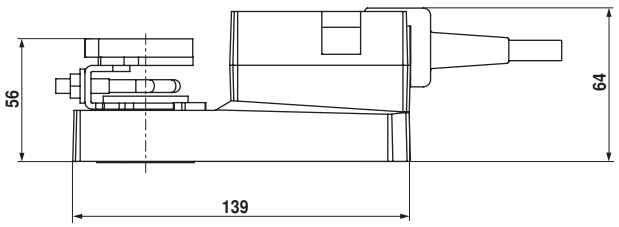
Cable colours:
1 = blue
2 = brown
3 = white
S1 = violet
S2 = red
S3 = white

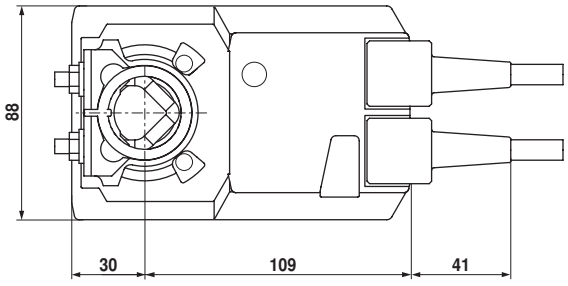
Direction of rotation

Auxiliary switch

Dimensions [mm]

Dimensional drawings



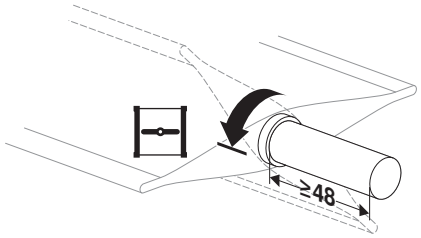


Damper spindle	Length			
	≥48	10 ... 20 [1]	≥10	≤20
	≥20	10 ... 20 [1]	≥10	≤20

[1] CrNi (INOX) 12 ... 20

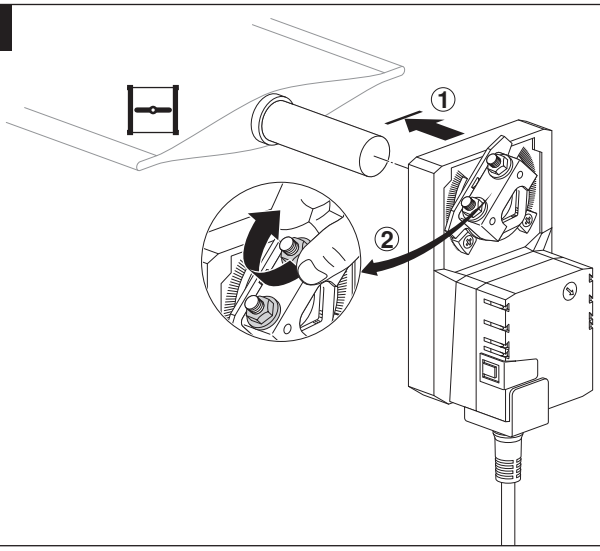
70214-00003.F

1



	10 ... 20	≥10	≤20
CrNi (INOX)	12 ... 20	≥10	≤20

2



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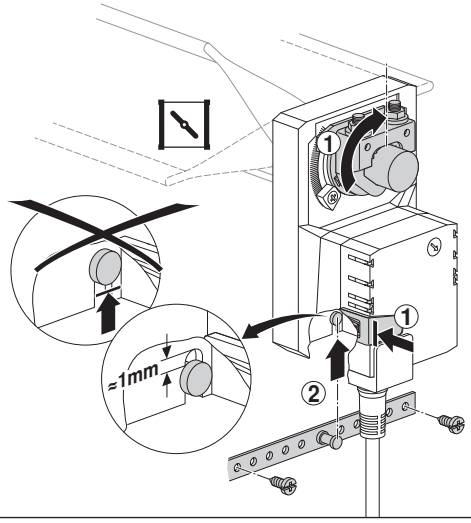

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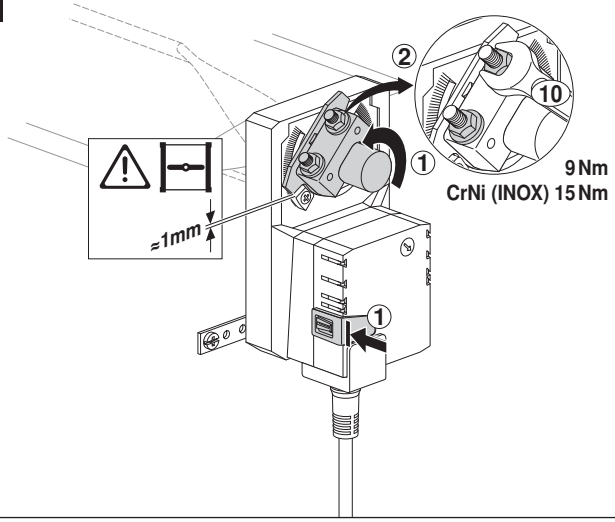

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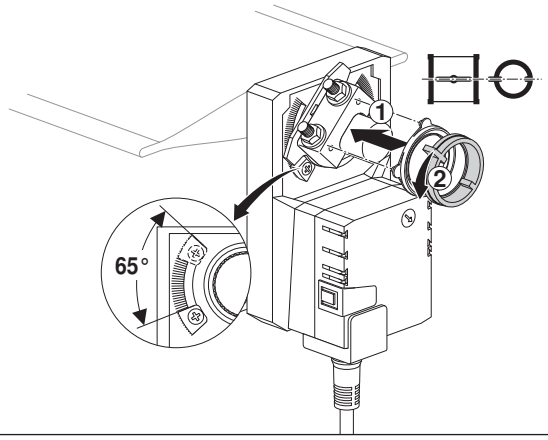
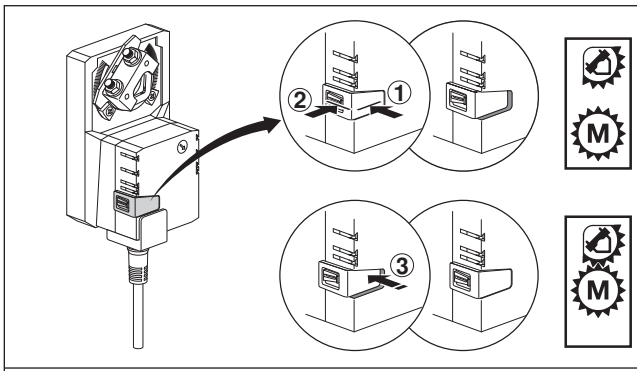
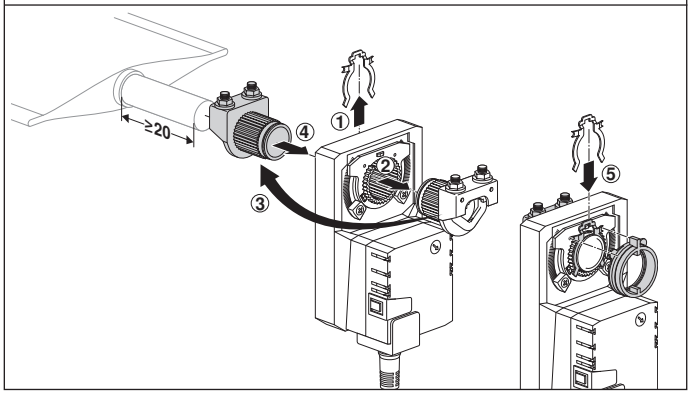
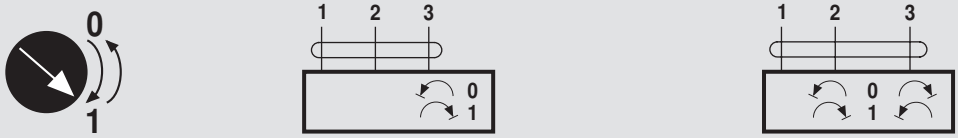
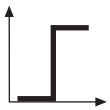


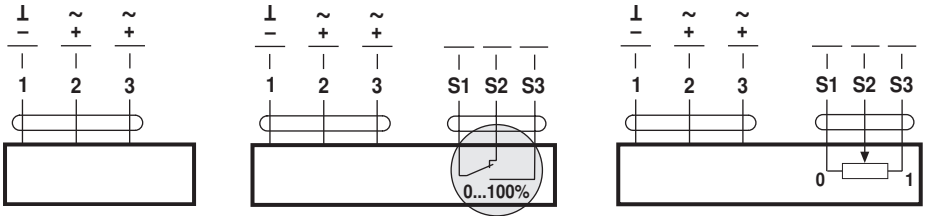








AC 24 V / DC 24 V

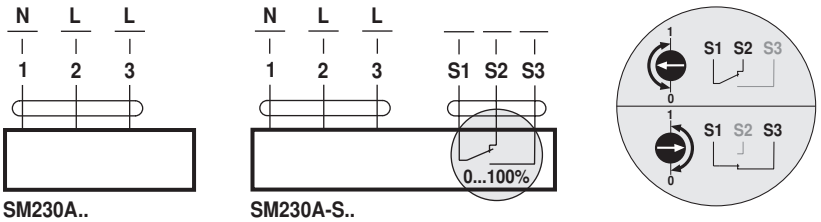


SM24A..
SMD24A..

SM24A-S..

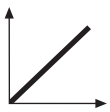
SM24AP5..

AC 100 ... 240 V ⚠

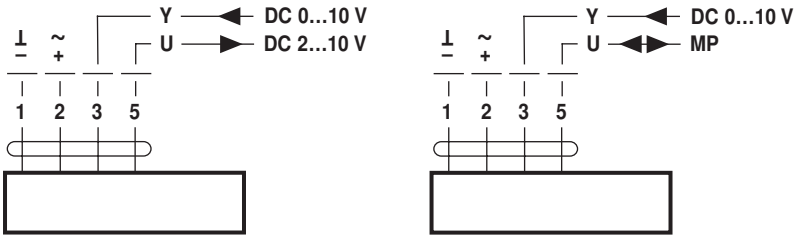


SM230A..
SMD230A..

SM230A-S..



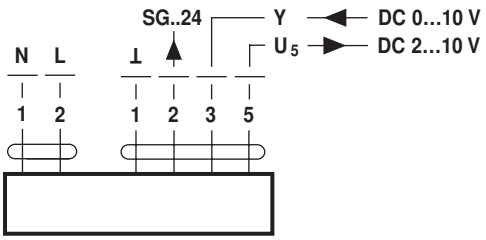
AC 24 V / DC 24 V



SM24A-SR..
SM24A-MF..

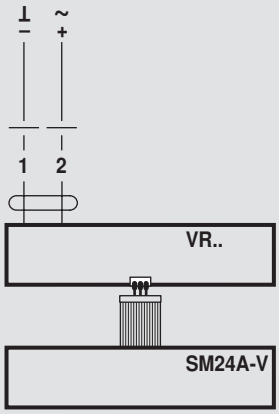
SM24A-MP..

AC 100 ... 240 V ⚠



SM230ASR..

AC 24 V / DC 24 V
(SM24A-V / VR..)



SM24A-V / VR..

BELIMO

Technical data sheet SM230ASR

Modulating damper actuator for adjusting air dampers in ventilation and air-conditioning systems for building services installations

- **For air dampers up to approx. 4 m²**
- **Torque 20 Nm**
- **Nominal voltage AC 100 ... 240 V**
- **Control: Modulating DC 0 ... 10 V**
- **Position feedback DC 2 ... 10 V**

Technical data

Electrical data	Nominal voltage		AC 100 ... 240 V, 50/60 Hz
	Nominal voltage range		AC 85 ... 265 V
	Power consumption	In operation	2.5 W @ nominal torque
		At rest	0.6 W
		For wire sizing	6 VA
	Connection	Power supply	Cable 1 m, 2 x 0.75 mm²
		Signals	Cable 1 m, 4 x 0.75 mm²
Functional data	Torque (nominal torque)		Min. 20 Nm @ nominal voltage
	Control	Control signal Y	DC 0 ... 10 V, typical input impedance 100 kΩ
		Operating range	DC 2 ... 10 V
	Position feedback (Measuring voltage U)		DC 2 ... 10 V, max. 1 mA
	Auxiliary supply		DC 24 V ±30%, max. 10 mA
	Position accuracy		±5%
	Direction of rotation		Reversible with switch 0 / 1
	Direction of motion at Y = 0 V		In switch position 0 ↶ resp. 1 ↷
	Manual override		Gearing latch disengaged with pushbutton, can be locked
	Angle of rotation		Max. 95°∢, can be limited at both ends with adjustable mechanical end stops
	Running time		150 s / 90°∢
	Sound power level		Max. 45 dB (A)
	Position indication		Mechanical, pluggable
Safety	Protection class		**II** Totally insulated ⧈
	Degree of protection		IP54 in any mounting position NEMA 2, UL Enclosure Type 2
	EMC Low voltage directive		CE according to 2004/108/EC CE according to 2006/95/EC
	Certification		cULus according to UL 60730-1A and UL 60730-2-14 and CAN/CSA E60730-1:02 Certified to IEC/EN 60730-1 and IEC/EN 60730-2-14
	Mode of operation		Type 1
	Rated impulse voltage		2.5 kV
	Control pollution degree		3
	Ambient temperature range		–30 ... +50°C
	Non-operating temperature		–40 ... +80°C
	Ambient humidity range		95% r.h., non-condensating
	Maintenance		Maintenance-free
Dimensions / Weight	Dimensions		See «Dimensions» on page 3
	Weight		Approx. 1.05 kg

Safety notes

- **The actuator is not allowed to be used outside the specified field of application, especially in aircraft or any other form of air transport.**
- **Assembly must be carried out by trained personnel. Any legal regulations or regulations issued by authorities must be observed during assembly.**
- **Caution Power supply voltage!**
- **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.**
- **The cable must not be removed from the device.**
- **When calculating the required torque, the specifications supplied by the damper manufacturers (cross section, design, installation site), and the air flow conditions must be observed.**
- **The device contains electrical and electronic components and is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.**

Product features

Mode of operation
The actuator is controlled with a standard modulating signal of DC 0 ... 10 V and travels to the position defined by the control signal. Measuring voltage U serves for the electrical display of the damper position 0 ... 100% and as slave control signal for other actuators.

Simple direct mounting
Simple direct mounting on the damper spindle with a universal spindle clamp, supplied with an anti-rotation strap to prevent the actuator from rotating.

Manual override
Manual override with push-button possible (the gear 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-proof, requires no limit switches and automatically stops when the end stop is reached.

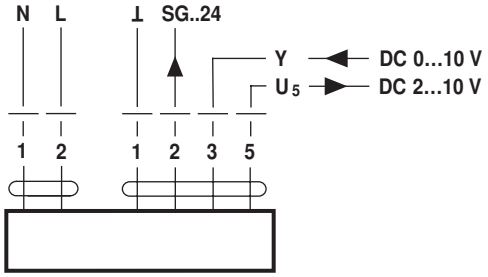
Accessories

	Description	Data sheet
Electrical accessories	Auxiliary switch S..A..	T2 - S..A..
	Feedback potentiometer P..A..	T2 - P..A..
	Position sensor SGA24, SGE24 and SGF24	T2 - SG..24
Mechanical accessories	Various accessories (clamps, shaft extensions etc.)	T2 - Z-SM..A..

Electrical installation

Wiring diagram

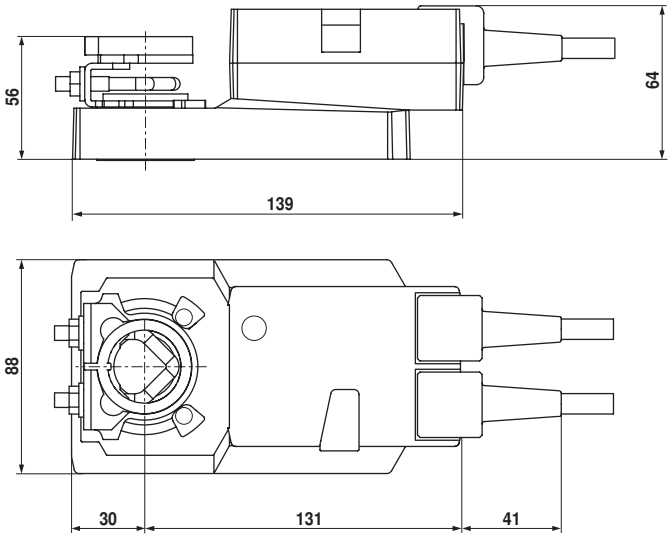
Notes
- Caution Power supply voltage!
- Other actuators can be connected in parallel. Please note the performance data.



Cable colours:
1 = blue
2 = brown
1 = black
2 = red
3 = white
5 = orange

Dimensions [mm]

Dimensional drawings



Damper spindle	Length	⌀	□	◇
	≥48	10 ... 20 [1]	≥10	≤20
	≥20	10 ... 20 [1]	≥10	≤20

[1] CrNi (INOX) 12 ... 20

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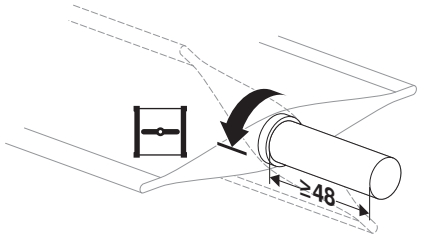
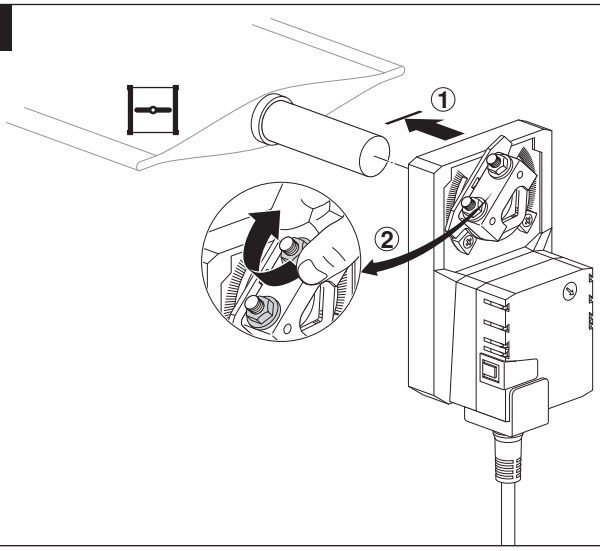
1



	10 ... 20	≥10	≤20
CrNi (INOX)	12 ... 20	≥10	≤20

2



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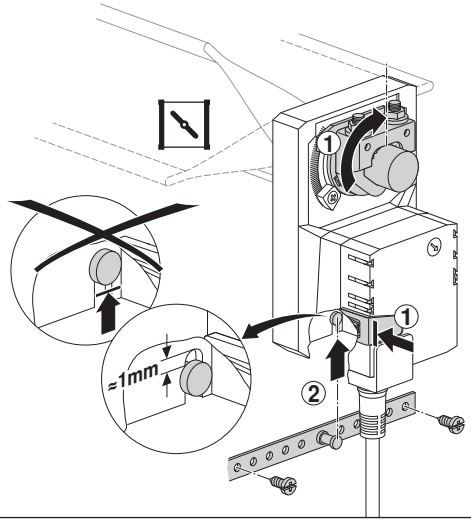

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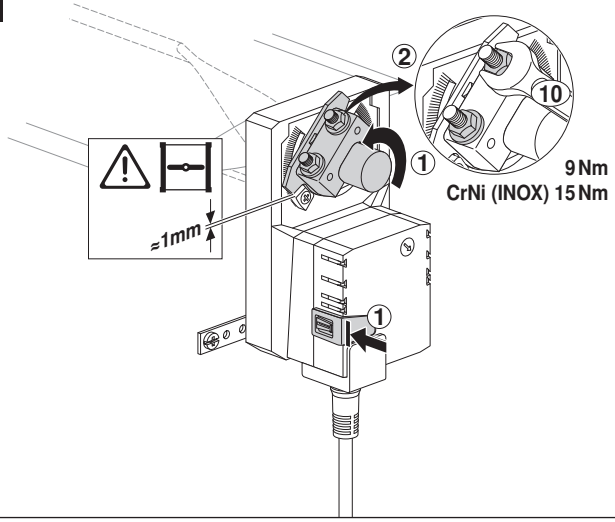
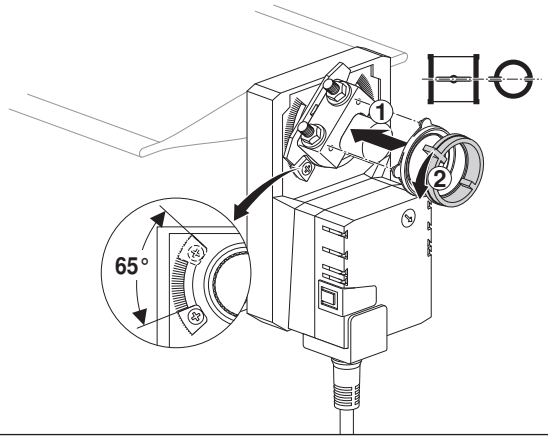
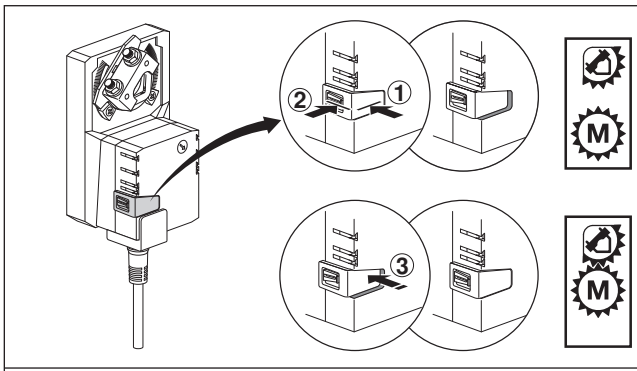
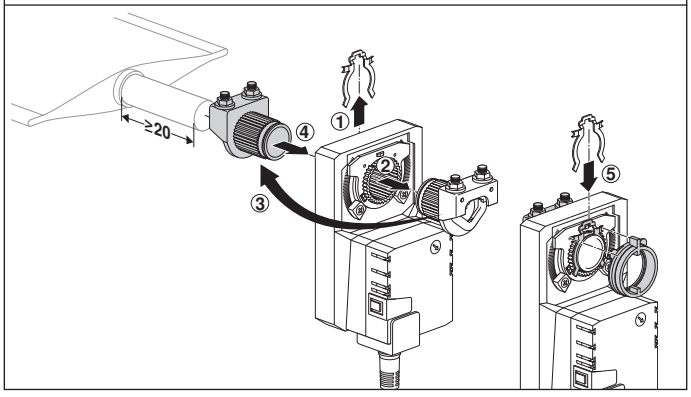
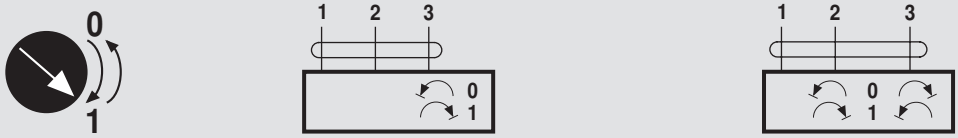


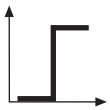
5



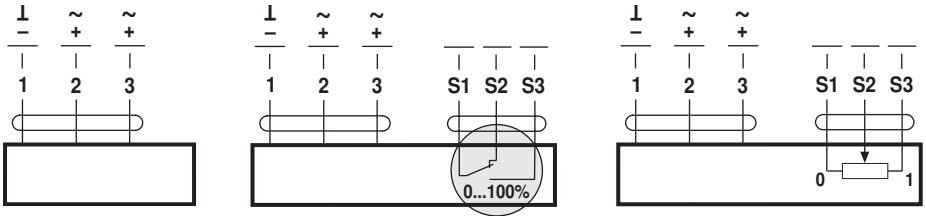








AC 24 V / DC 24 V

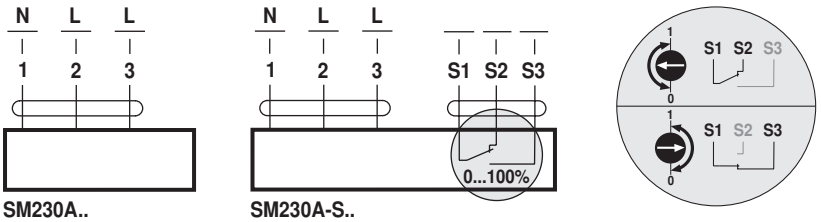


SM24A..
SMD24A..

SM24A-S..

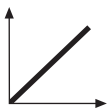
SM24AP5..

AC 100 ... 240 V ⚠

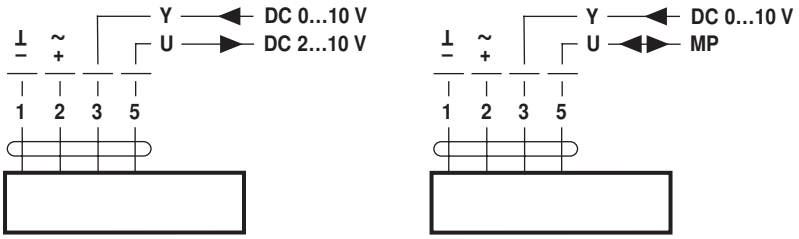


SM230A..
SMD230A..

SM230A-S..



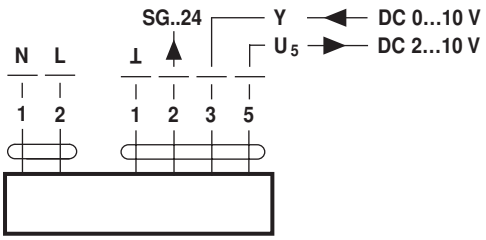
AC 24 V / DC 24 V



SM24A-SR..
SM24A-MF..

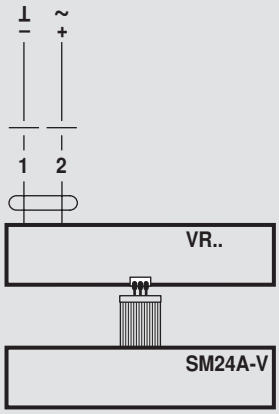
SM24A-MP..

AC 100 ... 240 V ⚠



SM230ASR..

AC 24 V / DC 24 V
(SM24A-V / VR..)



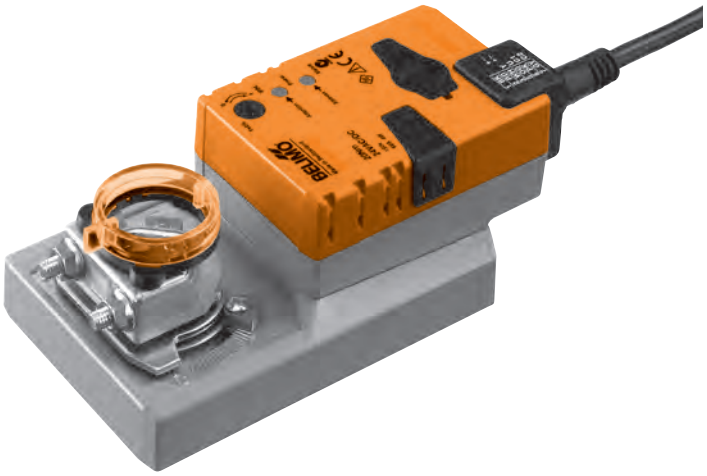
SM24A-V / VR..

BELIMO

Technical data sheet SM24A-MF

Multifunctional damper actuator for adjusting air dampers in ventilation and air-conditioning systems for building services installations

- **For air dampers up to approx. 4 m²**
- **Torque 20 Nm**
- **Nominal voltage AC/DC 24 V**
- **Control: Modulating DC 0 ... 10 V or variable**
- **Position feedback DC 2 ... 10 V or variable**



Technical data

Electrical data				
Nominal voltage		AC 24 V, 50/60 Hz / DC 24 V		
Nominal voltage range		AC 19.2 ... 28.8 V / DC 21.6 ... 28.8 V		
Power consumption	In operation	4 W @ nominal torque		
	At rest	1.25 W		
	For wire sizing	6 VA		
Connection		Cable 1 m, 4 x 0.75 mm²		
Functional data		**Factory settings**	**Variable**	**Settings**
Torque (nominal torque)		Min. 20 Nm @ nominal voltage	25%, 50%, 75% reduziert	.....
Control	Control signal Y	DC 0 ... 10 V, input impedance 100 kΩ	Open-close, 3-point (AC only), modulating (DC 0 ... 32 V)	.....
	Operating range	DC 2 ... 10 V	Start point DC 0.5 ... 30 V End point DC 2.5 ... 32 V	.....
Position feedback (Measuring voltage U)		DC 2 ... 10 V, max. 0.5 mA	Start point DC 0.5 ... 8 V End point DC 2.5 ... 10 V	.....
Position accuracy		±5%		
Direction of rotation		Reversible with switch 0 / 1		
Direction of motion at Y = 0 V		In switch position 0 ↶ resp. 1 ↷	Electronically reversible	.....
Manual override		Gearing latch disengaged with pushbutton, can be locked		
Angle of rotation		Max. 95°∢, can be limited at both ends with adjustable mechanical end stops		
Running time		150 s / 90°∢	86 ... 346 s	.....
Automatic adjustment running time, operating range and measuring signal U to match the mechanical angle of rotation		Manual triggering of the adaption by pressing the «Adaption» button or with the PC-Tool	Automatic adaption whenever the supply voltage is switched on, or manual triggering	.....
Override control		MAX (maximum position) = 100% MIN (minimum position) = 0% ZS (intermediate position, AC only) = 50%	MAX = (MIN + 30°∢) ... 100% MIN = 0% ... (MAX – 30°∢) ZS = MIN ... MAX	.....
Sound power level		Max. 45 dB (A)	With a 86 s = 45 dB (A) running time 346 s = <35 dB (A)	
Position indication		Mechanical, pluggable		
Safety				
Protection class		**III** Safety extra-low voltage / UL Class 2 Supply		
Degree of protection		IP54 in any mounting position NEMA 2, UL Enclosure Type 2		
EMC		CE according to 2004/108/EC		
Certification		cULus according to UL 60730-1A and UL 60730-2-14 and CAN/CSA E60730-1:02 Certified to IEC/EN 60730-1 and IEC/EN 60730-2-14		
Mode of operation		Type 1		
Rated impulse voltage		0.8 kV		
Control pollution degree		3		
Ambient temperature		–30 ... +50°C		
Non-operating temperature		–40 ... +80°C		
Ambient humidity		95% r.h., non-condensating		
Maintenance		Maintenance-free		

Technical data *(Continued)*

Dimensions / Weight

Dimensions	See «Dimensions» on page 5
Weight	ca. 920 g

Safety notes

- **The actuator is not allowed to be used outside the specified field of application, especially in aircraft or any other form of air transport.**
- **Assembly must be carried out by trained personnel. Any legal regulations or regulations issued by authorities must be observed during assembly.**
- **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.**
- **The cable must not be removed from the device.**
- **When calculating the required torque, the specifications supplied by the damper manufacturers (cross section, design, installation site), and the air flow conditions must be observed.**
- **The device contains electrical and electronic components and is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.**

Product features

Mode of operation
The actuator is controlled with a standard modulating signal of DC 0 ... 10 V and travels to the position defined by the control signal. Measuring voltage U serves for the electrical display of the damper position 0 ... 100% and as slave control signal for other actuators.

Parameterisable actuators
The factory settings cover the most common applications. Input and output signals and other parameters can be altered with the MFT-H parameterising device or the BELIMO Service Tool, MFT-P.

Simple direct mounting
Simple direct mounting on the damper spindle with a universal spindle clamp, supplied with an anti-rotation strap to prevent the actuator from rotating.

Manual override
Manual operation is possible with the pushbutton (the gearing latch remains disengaged as long as the pushbutton is pressed or detented).

Adjustable angle of rotation
Adjustable angle of rotation with mechanical end stops.

High functional reliability
The actuator is overload-proof, requires no limit switches and automatically stops when the end stop is reached.

Home position
When the supply voltage is switched on for the first time, i.e. at commissioning or after pressing the «gear disengagement» switch, the actuator travels to the home position.

Pos. direction of rotation switch	Home position
0 / 1: Y = 0	ccw: Left stop
Y = 0	cw: Right stop

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

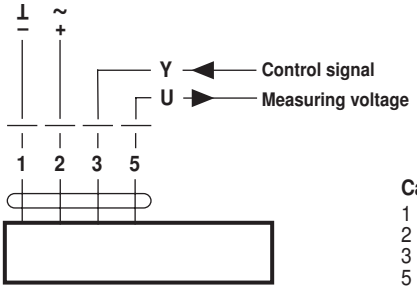
Accessories

	Description	Data sheet
Electrical accessories	Auxiliary switch S..A..	T2 - S..A..
	Feedback potentiometer P..A..	T2 - P..A..
	PC-Tool MFT-P from version 3.3	T2 - MFT-P
	Parameterising device MFT-H	T2 - MFT-H
	Position sensor SGA24, SGE24 and SGF24	T2 - SG..24
	Digital position indication ZAD24	T2 - ZAD24
Mechanical accessories	Various accessories (clamps, shaft extensions etc.)	T2 - Z-SM..A..

Electrical installation

Wiring diagram

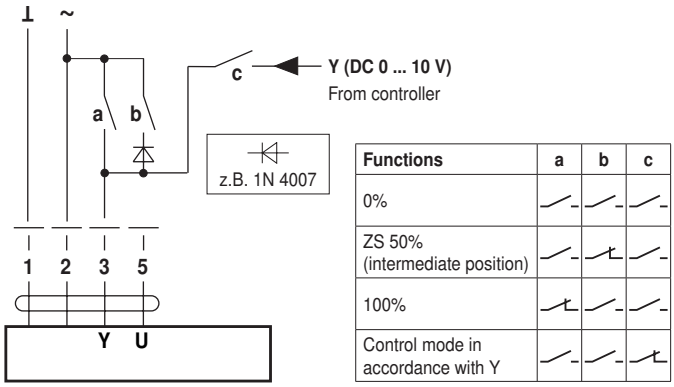
Notes
- Connection via safety isolating transformer!
- Other actuators can be connected in parallel. Please note the performance data!



Cable colours:
1 = black
2 = red
3 = white
5 = orange

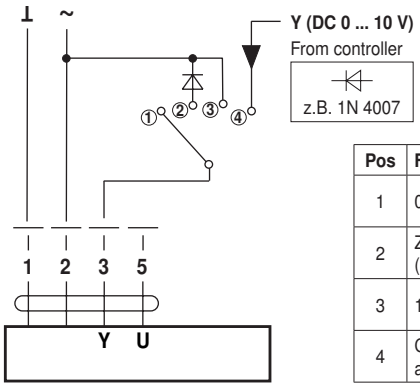
Functions with basic values

Override control with AC 24 V with relay contacts



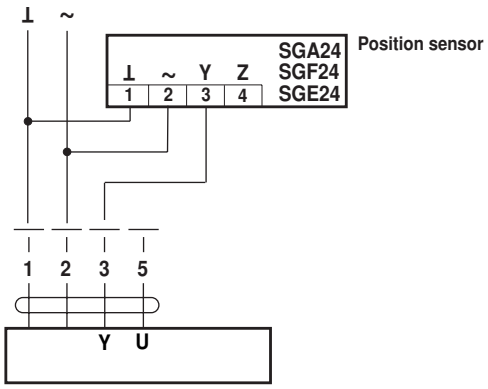
Functions	a	b	c
0%			
ZS 50% (intermediate position)			
100%			
Control mode in accordance with Y			

Override control with AC 24 V with rotary control switch

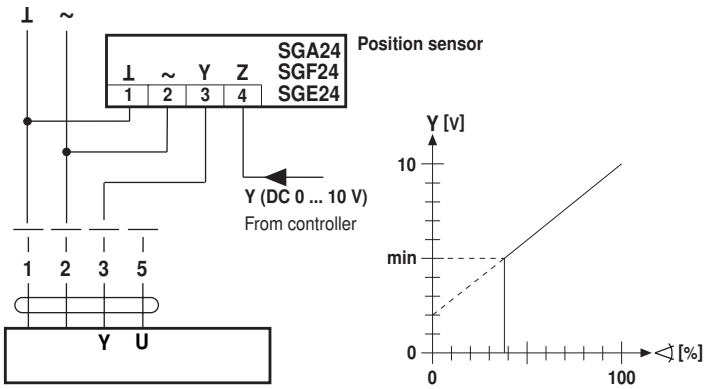


Pos	Functions
1	0%
2	ZS 50% (intermediate position)
3	100%
4	Control mode in accordance with Y

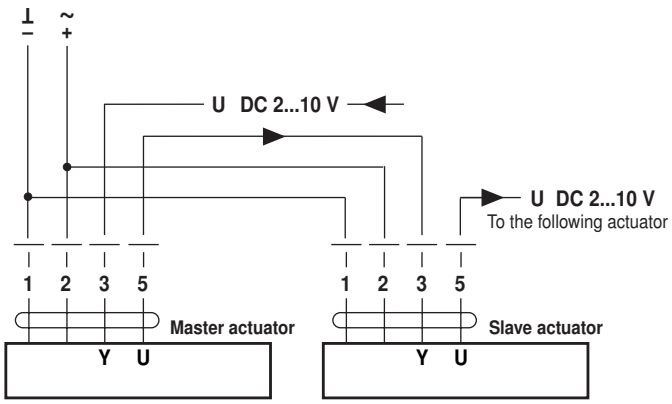
Remote control 0 ... 100 %



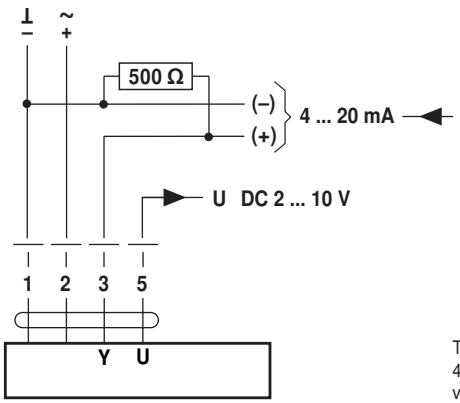
Minimum limit



Master/Slave control (position-dependent)



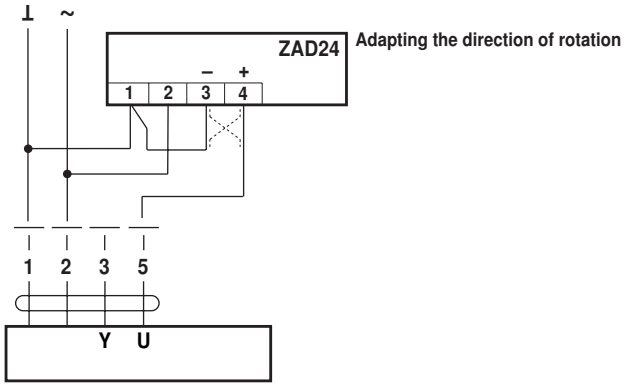
Control with 4 ... 20 mA via external resistance



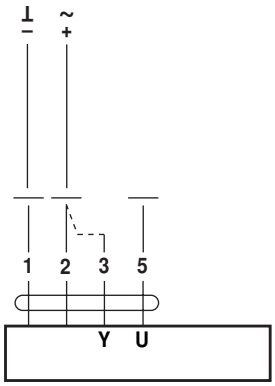
The 500 Ω resistor converts the 4 ... 20 mA current signal to a voltage signal DC 2 ... 10 V

Functions with basic values *(Continued)*

Position indication



Functional check

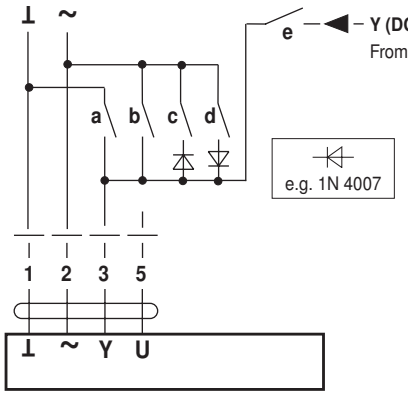


Procedure

- Apply 24 V to connection 1 and 2
- Disconnect connection 3:
  - – For direction of rotation 0: Actuator turns in the direction of
  - – For direction of rotation 1: Actuator turns in the direction of
- Short circuit connections 2 and 3:
  - – Actuator travels in the opposite direction

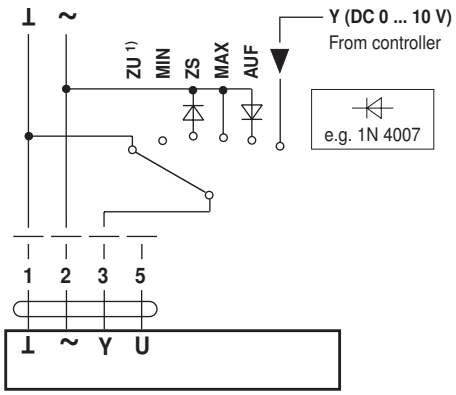
Functions for actuators with specific parameters

Override control and limiting with AC 24 V with relay contacts



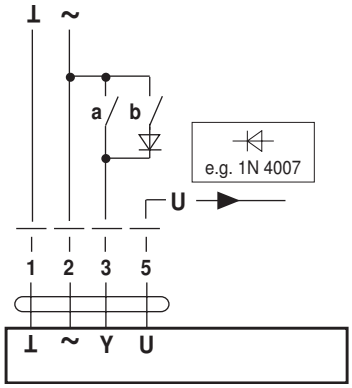
Functions	a	b	c	d	e
CLOSE [1]	⊥	~	~	~	~
MIN	~	~	~	~	~
ZS (intermediate position)	~	~	⊥	~	~
MAX	~	⊥	~	~	~
OPEN	~	~	~	⊥	~
Control mode in accordance with Y	~	~	~	~	⊥

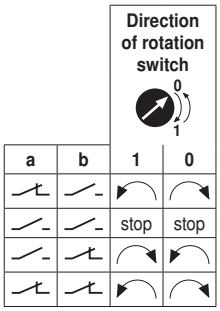
Override control and limiting with AC 24 V with rotary switch



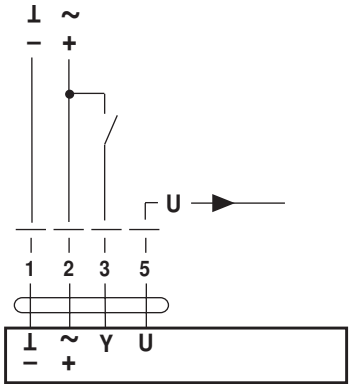
[1] **Caution !** This function is only guaranteed if the start point of the operating range is defined as min. 0.6 V

3-point control



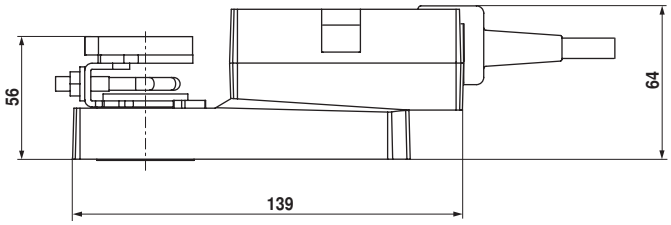


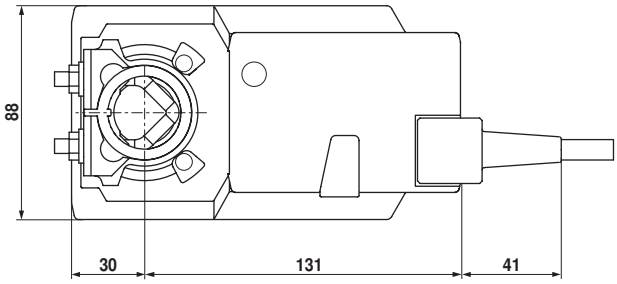
Open-close control



Dimensions [mm]

Dimensional drawings

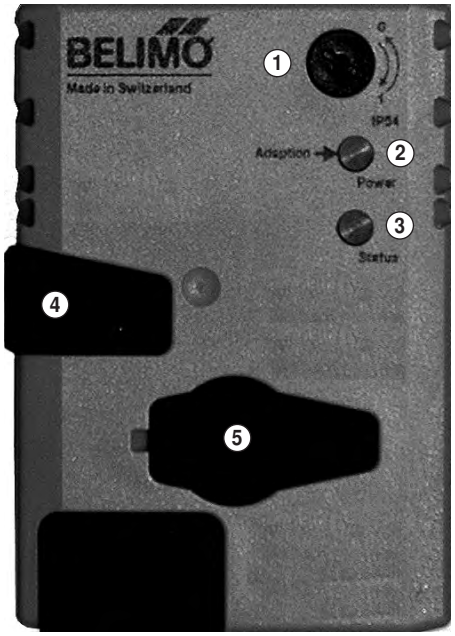




Damper spindle	Length			
	≥48	10 ... 20 [1]	≥10	≤20
	≥20	10 ... 20 [1]	≥10	≤20

[1] CrNi (INOX) 12 ... 20

Operating controls and indicators



① Direction of rotation switch
Switching over: Direction of rotation changes

② Pushbutton and green LED display
Off: No voltage supply or malfunction
On: Operation
Press button: Switches on angle of rotation adaption followed by standard operation

③ Pushbutton and yellow LED display
Off: Standard operation
On: Adaption or synchronising process active
Press button: No function

④ Gear disengagement switch
Press button: Gear disengaged, motor stops, manual operation possible
Release button: Gear engaged, synchronisation starts, followed by standard operation

⑤ Service plug
For connecting parameterising and service tools

Check voltage supply connection

a) ② Off and ③ On
b) ② Blinking and ③ Blinking

} Check the supply connections. Possibly ⏚ and ~ are swapped over.

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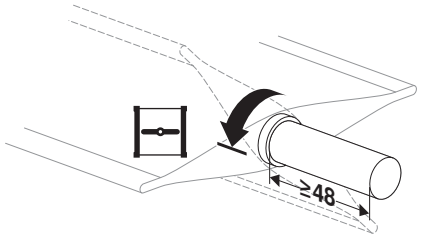
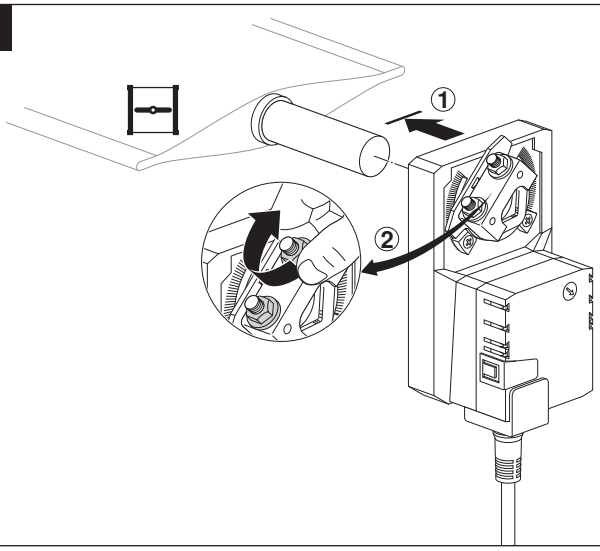
1



	10 ... 20	≥10	≤20
CrNi (INOX)	12 ... 20	≥10	≤20

2



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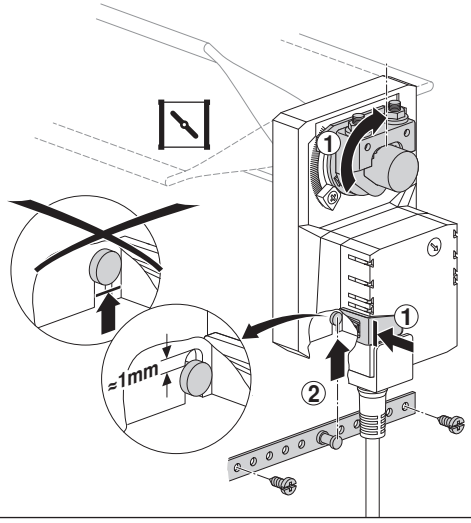

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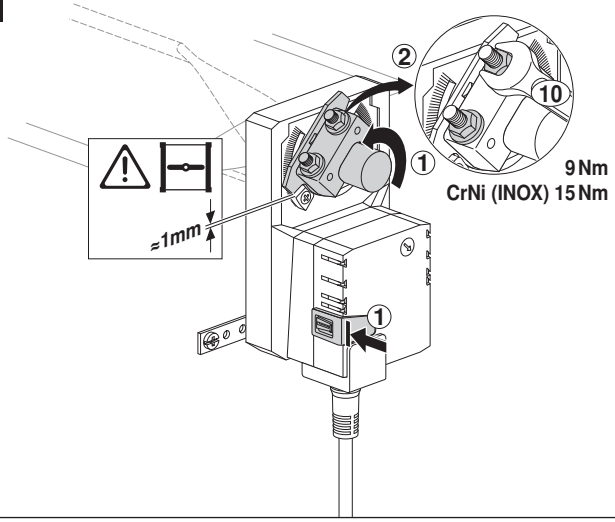

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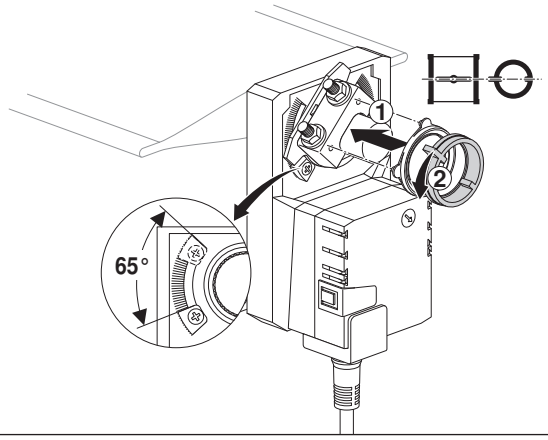
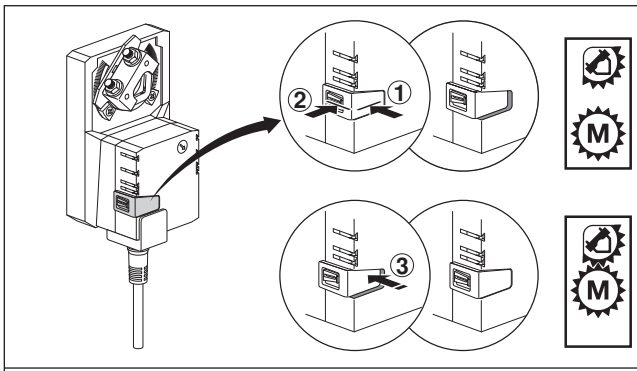
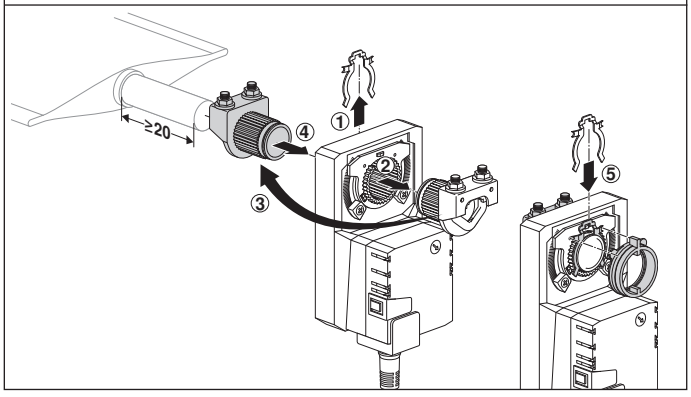
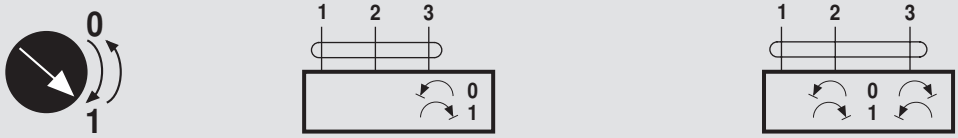
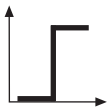


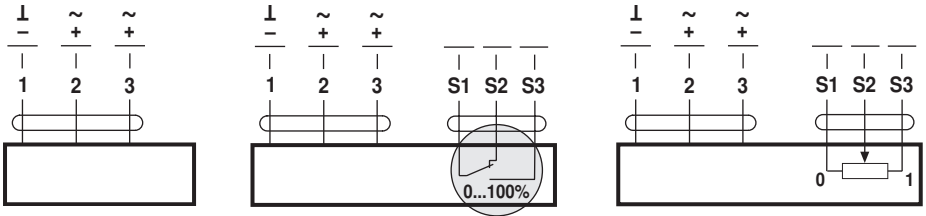








AC 24 V / DC 24 V

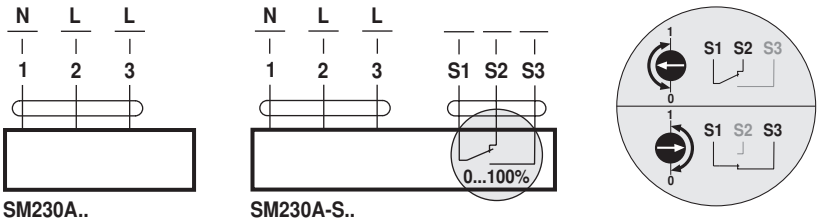


SM24A..
SMD24A..

SM24A-S..

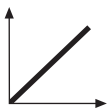
SM24AP5..

AC 100 ... 240 V ⚠

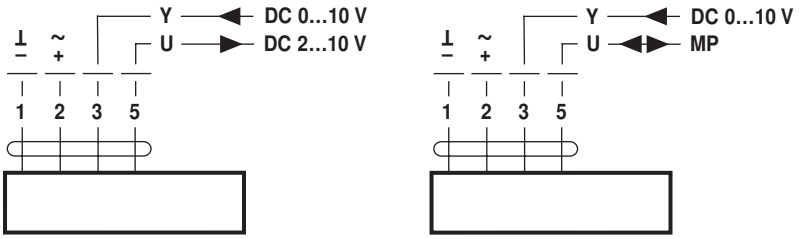


SM230A..
SMD230A..

SM230A-S..



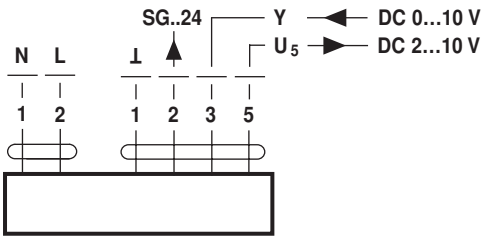
AC 24 V / DC 24 V



SM24A-SR..
SM24A-MF..

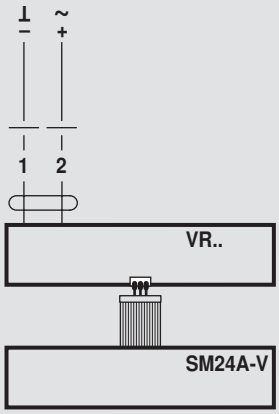
SM24A-MP..

AC 100 ... 240 V ⚠



SM230ASR..

AC 24 V / DC 24 V
(SM24A-V / VR..)



SM24A-V / VR..