Technical data sheet LM230A

Damper actuator for adjusting dampers in technical building installations

- **Air damper size up to approx. 1 m²**
- **Nominal torque 5 Nm**
- **Nominal voltage AC 230 V**
- **Control Open-close, 3-point**

Technical data

Electrical data	Nominal voltage	AC 230 V
	Nominal voltage frequency	50/60 Hz
	Nominal voltage range	AC 85...264 V
	Power consumption in operation	1.5 W
	Power consumption in rest position	0.5 W
	Power consumption for wire sizing	3.5 VA
	Connection supply / control	Cable 1 m, 3 x 0.75 mm²
	Parallel operation	Yes (note the performance data)
Functional data	Torque motor	Min. 5 Nm
	Direction of motion motor	Selectable with switch 0 (ccw rotation) / 1 (cw rotation)
	Manual override	Gear disengagement with push-button, can be locked
	Angle of rotation	Max. 95°
	Angle of rotation note	can be limited on both sides with adjustable mechanical end stops
	Running time motor	150 s / 90°
	Sound power level motor	35 dB(A)
	Spindle driver	Universal spindle clamp 6...20 mm
	Position indication	Mechanically, pluggable
Safety	Protection class IEC/EN	II Protective insulated
	Protection class UL	II Protective insulated
	Degree of protection IEC/EN	IP54
	Degree of protection NEMA/UL	NEMA 2, UL Enclosure Type 2
	EMC	CE according to 2004/108/EC
	Low voltage directive	CE according to 2006/95/EC
	Certification IEC/EN	IEC/EN 60730-1 and IEC/EN 60730-2-14
	Certification UL	cULus according to UL 60730-1A, UL 60730-2-14 and CAN/CSA E60730-1:02
	Mode of operation	Type 1
	Rated impulse voltage supply / control	2.5 kV
	Control pollution degree	3
	Ambient temperature	-30...50°C
	Non-operating temperature	-40...80°C
	Ambient humidity	95% r.h., non-condensing
	Maintenance	Maintenance-free
Weight	Weight approx.	0.50 kg

Safety notes

- The device must not be used outside the specified field of application, especially not in aircraft or in any other airborne means of transport.
- Outdoor application: only possible in case that no (sea)water, snow, ice, insolation or aggressive gases interfere directly with the actuator and that is ensured that the ambient conditions remain at any time within the thresholds according to the data sheet.
- Caution: Power supply voltage!

Safety notes

- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied during installation.
- The device may only be opened at the manufacturer's site. It does not contain any parts that can be replaced or repaired by the user.
- Cables must not be removed from the device.
- To calculate the torque required, the specifications supplied by the damper manufacturers concerning the cross-section, the design, the installation site and the ventilation conditions must be observed.
- The device contains electrical and electronic components and must not be disposed of as household refuse. All locally valid regulations and requirements must be observed.

Product features

Simple direct mounting — Simple direct mounting on the damper spindle with an universal spindle clamp, supplied with an anti-rotation device 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).

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

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

Accessories

Electrical accessories

Description	Type
Auxiliary switch, add-on, 1 x SPDT	S1A
Auxiliary switch, add-on, 2 x SPDT	S2A
Auxiliary switch, add-on, 2 x SPDT, grey	S2A GR
Feedback potentiometer 140 Ohm, add-on	P140A
Feedback potentiometer 140 Ohm, add-on, grey	P140A GR
Feedback potentiometer 200 Ohm, add-on	P200A
Feedback potentiometer 500 Ohm, add-on	P500A
Feedback potentiometer 500 Ohm, add-on, grey	P500A GR
Feedback potentiometer 1 kOhm, add-on	P1000A
Feedback potentiometer 2.8 kOhm, add-on	P2800A
Feedback potentiometer 2.8 kOhm, add-on, grey	P2800A GR
Feedback potentiometer 1 kOhm, add-on, grey	P1000A GR
Feedback potentiometer 5 kOhm, add-on	P5000A
Feedback potentiometer 5 kOhm, add-on, grey	P5000A GR
Feedback potentiometer 10 kOhm, add-on	P10000A
Feedback potentiometer 10 kOhm, add-on, grey	P10000A GR

Mechanical accessories

Description	Type
Shaft extension 170 mm, for damper spindles Ø 6...20 mm	AV6-20
Spindle clamp for LM..A, clamping range 6...20 mm	K-ELA
Spindle clamp for LM..A, clamping range 6...10 mm	K-ELA10
Spindle clamp for LM..A, clamping range 6...13 mm	K-ELA13
Spindle clamp for LM..A, clamping range 6...16 mm	K-ELA16
Universal mounting bracket 180 mm	Z-ARS180
Form fit insert 10x10 mm, for LM..A	ZF10-LMA
Form fit insert 12x12 mm, for LM..A	ZF12-LMA
Form fit insert 8x8 mm, für LM..A	ZF8-LMA
Form fit insert 10x10 mm, with angle of rotation limiter and position indication for LM..A	ZFRL10-LMA
Form fit insert 12x12 mm, with angle of rotation limiter and position indication for LM..A	ZFRL12-LMA

Accessories

Description	Type
Form fit insert 8x8 mm, with angle of rotation limiter and position indication for LM..A	ZFRL8-LMA
Position indication for LM..A, NM..A, SM..A, GM..A	Z-PI

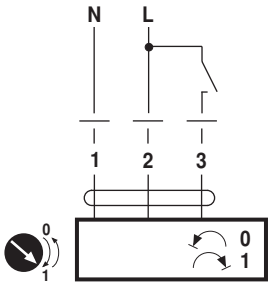
Electrical installation

Notes

- Caution: Power supply voltage!
- Parallel connection of other actuators possible. Observe the performance data.

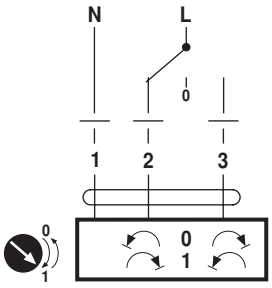
Wiring diagrams

AC 230 V, open-close



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

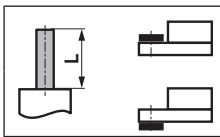
AC 230 V, 3-point



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

Dimensions [mm]

Spindle length

	Min. 37
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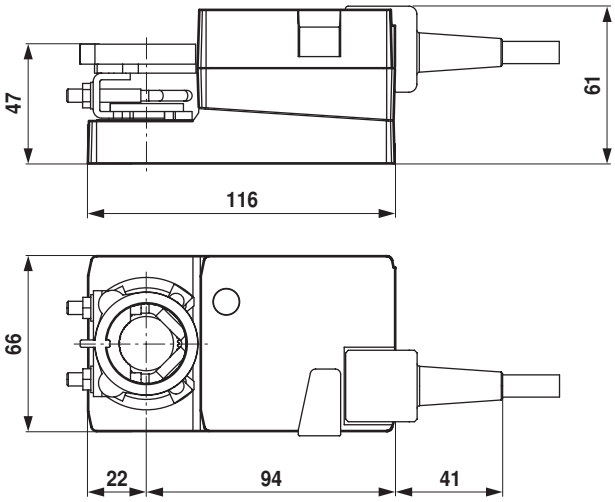
Clamping range

6...20	≥6	≤20

Dimensional drawings



BELIMO

Technical data sheet LM230A-S

Damper actuator for adjusting dampers in technical building installations

- **Air damper size up to approx. 1 m²**
- **Nominal torque 5 Nm**
- **Nominal voltage AC 230 V**
- **Control Open-close, 3-point**
- **With integrated auxiliary switch**

Technical data

Electrical data	Nominal voltage	AC 230 V
	Nominal voltage frequency	50/60 Hz
	Nominal voltage range	AC 85...264 V
	Power consumption in operation	1.5 W
	Power consumption in rest position	0.5 W
	Power consumption for wire sizing	3.5 VA
	Auxiliary switch	1 x SPDT, 0...100%
	Switching capacity auxiliary switch	1 mA...3 (0.5 inductive) A, AC 250 V
	Connection supply / control	Cable 1 m, 3 x 0.75 mm²
	Connection auxiliary switch	Cable 1 m, 3 x 0.75 mm²
	Parallel operation	Yes (note the performance data)
Functional data	Torque motor	Min. 5 Nm
	Direction of motion motor	Selectable with switch 0 (ccw rotation) / 1 (cw rotation)
	Manual override	Gear disengagement with push-button, can be locked
	Angle of rotation	Max. 95°
	Angle of rotation note	can be limited on both sides with adjustable mechanical end stops
	Running time motor	150 s / 90°
	Sound power level motor	35 dB(A)
	Spindle driver	Universal spindle clamp 6...20 mm
	Position indication	Mechanically, pluggable
Safety	Protection class IEC/EN	II Protective insulated
	Protection class UL	II Protective insulated
	Protection class auxiliary switch IEC/EN	II Protective insulated
	Degree of protection IEC/EN	IP54
	Degree of protection NEMA/UL	NEMA 2, UL Enclosure Type 2
	EMC	CE according to 2004/108/EC
	Low voltage directive	CE according to 2006/95/EC
	Certification IEC/EN	IEC/EN 60730-1 and IEC/EN 60730-2-14
	Certification UL	cULus according to UL 60730-1A, UL 60730-2-14 and CAN/CSA E60730-1:02
	Mode of operation	Type 1.B
	Rated impulse voltage supply / control	2.5 kV
	Rated impulse voltage auxiliary switch	2.5 kV
	Control pollution degree	3
	Ambient temperature	-30...50°C
	Non-operating temperature	-40...80°C
	Ambient humidity	95% r.h., non-condensing
	Maintenance	Maintenance-free
Weight	Weight approx.	0.59 kg

Safety notes

- The device must not be used outside the specified field of application, especially not in aircraft or in any other airborne means of transport.

Safety notes

- Outdoor application: only possible in case that no (sea)water, snow, ice, insolation or aggressive gases interfere directly with the actuator and that is ensured that the ambient conditions remain at any time within the thresholds according to the data sheet.
- Caution: Power supply voltage!
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied during installation.
- The device may only be opened at the manufacturer's site. It does not contain any parts that can be replaced or repaired by the user.
- Cables must not be removed from the device.
- To calculate the torque required, the specifications supplied by the damper manufacturers concerning the cross-section, the design, the installation site and the ventilation conditions must be observed.
- The device contains electrical and electronic components and must not be disposed of as household refuse. All locally valid regulations and requirements must be observed.

Product features

Simple direct mounting Simple direct mounting on the damper spindle with an universal spindle clamp, supplied with an anti-rotation device 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).

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

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

Flexible signalization With adjustable auxiliary switch (0 ... 100%)

Accessories

Electrical accessories

Description	Type
Auxiliary switch, add-on, 1 x SPDT	S1A
Auxiliary switch, add-on, 2 x SPDT	S2A
Auxiliary switch, add-on, 2 x SPDT, grey	S2A GR
Feedback potentiometer 140 Ohm, add-on	P140A
Feedback potentiometer 140 Ohm, add-on, grey	P140A GR
Feedback potentiometer 200 Ohm, add-on	P200A
Feedback potentiometer 500 Ohm, add-on	P500A
Feedback potentiometer 500 Ohm, add-on, grey	P500A GR
Feedback potentiometer 1 kOhm, add-on	P1000A
Feedback potentiometer 2.8 kOhm, add-on	P2800A
Feedback potentiometer 2.8 kOhm, add-on, grey	P2800A GR
Feedback potentiometer 1 kOhm, add-on, grey	P1000A GR
Feedback potentiometer 5 kOhm, add-on	P5000A
Feedback potentiometer 5 kOhm, add-on, grey	P5000A GR
Feedback potentiometer 10 kOhm, add-on	P10000A
Feedback potentiometer 10 kOhm, add-on, grey	P10000A GR

Mechanical accessories

Description	Type
Shaft extension 170 mm, for damper spindles Ø 6...20 mm	AV6-20
Spindle clamp for LM..A, clamping range 6...20 mm	K-ELA
Spindle clamp for LM..A, clamping range 6...10 mm	K-ELA10
Spindle clamp for LM..A, clamping range 6...13 mm	K-ELA13
Spindle clamp for LM..A, clamping range 6...16 mm	K-ELA16
Universal mounting bracket 180 mm	Z-ARS180
Form fit insert 10x10 mm, for LM..A	ZF10-LMA
Form fit insert 12x12 mm, for LM..A	ZF12-LMA
Form fit insert 8x8 mm, for LM..A	ZF8-LMA

Accessories

Description	Type
Form fit insert 10x10 mm, with angle of rotation limiter and position indication for LM..A	ZFRL10-LMA
Form fit insert 12x12 mm, with angle of rotation limiter and position indication for LM..A	ZFRL12-LMA
Form fit insert 8x8 mm, with angle of rotation limiter and position indication for LM..A	ZFRL8-LMA
Position indication for LM..A, NM..A, SM..A, GM..A	Z-PI

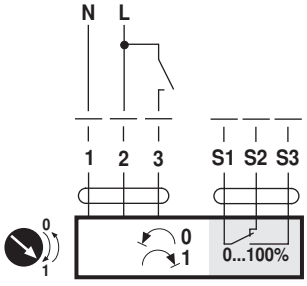
Electrical installation

Notes

- Caution: Power supply voltage!
- Parallel connection of other actuators possible. Observe the performance data.

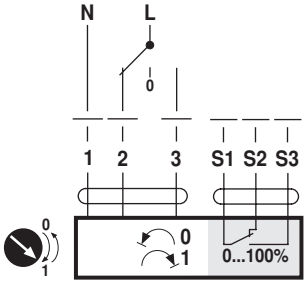
Wiring diagrams

AC 230 V, open-close



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

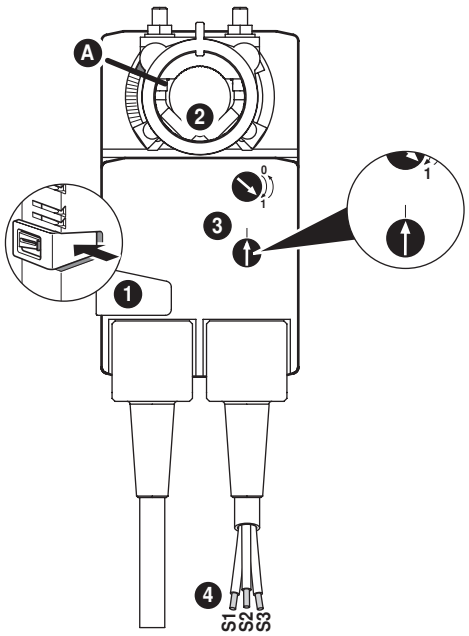
AC 230 V, 3-point



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

Operating controls and indicators

Auxiliary switch settings



Note Perform settings on the actuator only in deenergised state.

1 Gear disengagement
Holding button pressed down: Gear is disengaged.
Manual override is possible.

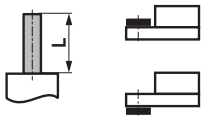
2 Spindle clamp
Turn until edge line A displays the desired switching position of the actuator and release button 1.

3 Auxiliary switch
Turn rotary knob until the arrow points to the vertical line.

4 Cable
Connect continuity tester to S1 + S2 or to S1 + S3.
If the auxiliary switch should switch in the opposite direction, rotate the auxiliary switch by 180°.

Dimensions [mm]

Spindle length

	Min. 37
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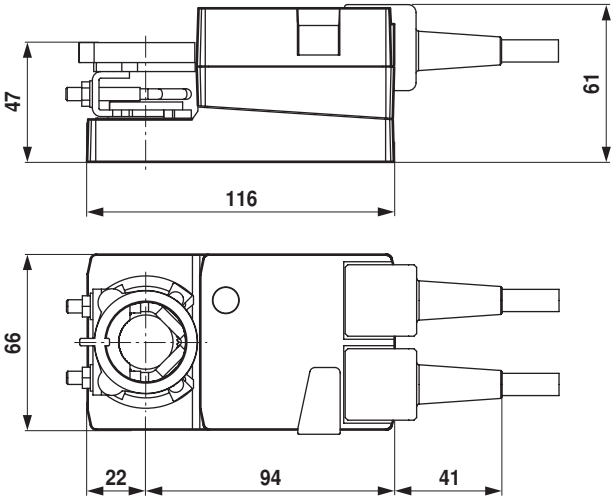
Clamping range

6...20	≥6	≤20

Dimensional drawings

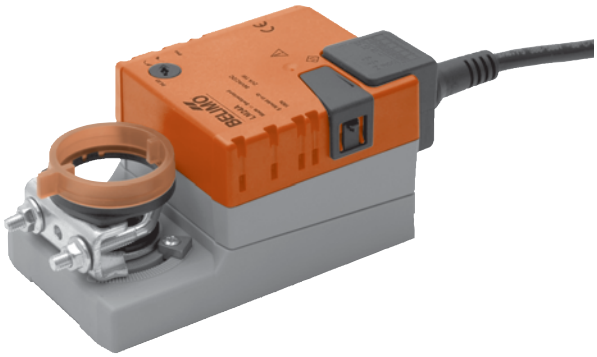


BELIMO

Technical data sheet Damper actuator LM24A

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

- **For air control dampers up to approx. 1 m²**
- **Torque 5 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/DC 19.2 ... 28.8 V
	Power consumption	In operation	1 W @ nominal torque
		At rest	0.2 W
		For wire sizing	2 VA
	Connection		Cable 1 m, 3 x 0.75 mm²
Functional data	Torque (nominal torque)		Min. 5 Nm @ nominal voltage
	Direction of rotation		Reversible with switch 0 ↶ or 1 ↷
	Manual override		Gearing latch disengaged with pushbutton, self-resetting
	Angle of rotation		Max. 95°◁, limited on both sides by means of adjustable, mechanical end stops
	Running time		150 s
	Sound power level		Max. 35 dB (A)
	Position indication		Mechanical, pluggable
Safety	Protection class		**III** Safety extra-low voltage
	Degree of protection		IP54 in any mounting position
	EMC		CE according to 89/336/EEC
	Mode of operation		Type 1 (to EN 60730-1)
	Ambient temperature range		–30 ... +50°C
	Non-operating temperature		–40 ... +80°C
	Ambient humidity range		95% r.H., non-condensating (EN 60730-1)
	Maintenance		Maintenance-free
Dimensions / Weight	Dimensions		See «Dimensions» on page 2
	Weight		Approx. 500 g

Safety notes

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- **The damper 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 operation is possible with the self-resetting pushbutton (the gearing latch remains disengaged as long as the pushbutton is pressed).

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

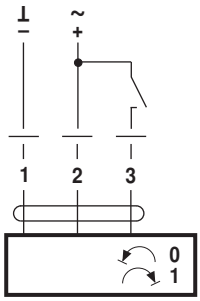
	Description	Data sheet
Electrical accessories	Auxiliary switch S..A..	T2 - S..A..
	Feedback potentiometer P..A..	T2 - P..A..
Mechanical accessories	Shaft extension AV6-20	T2 - Z-LM..A..

Electrical installation

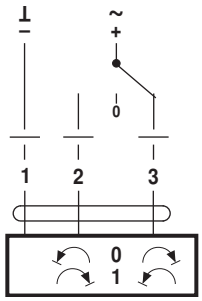
Wiring diagrams

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

Open-close control



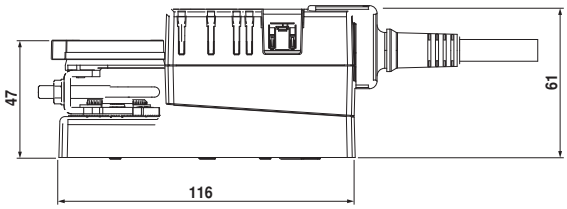
3-point control

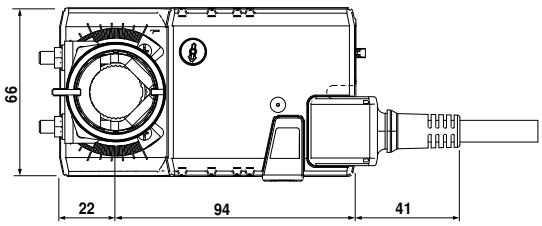


Direction of rotation

Dimensions [mm]

Dimensional drawings





Damper spindle	Length	○I◇
	min. 37	6 ... 20

Data sheet T2-LM24A • en • v1.3 • 04.2005 • Subject to modifications

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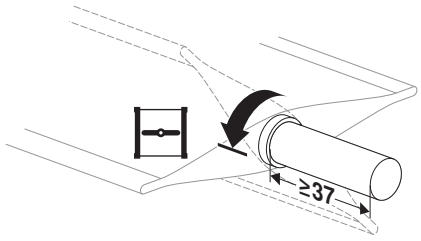

6 ... 20	≥6	≤20

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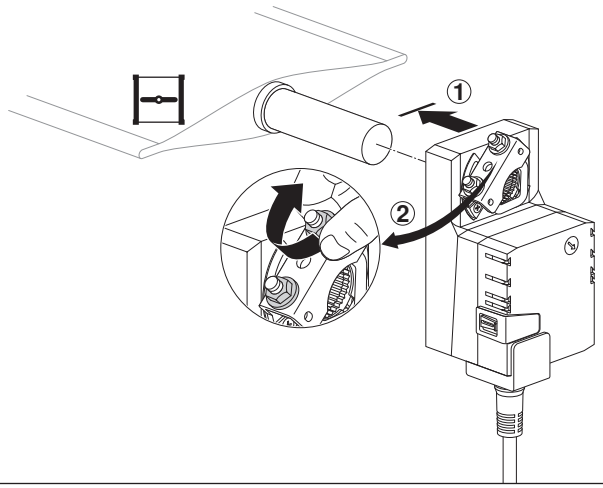

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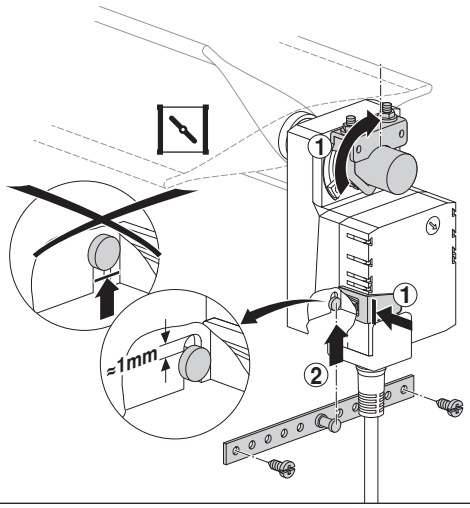

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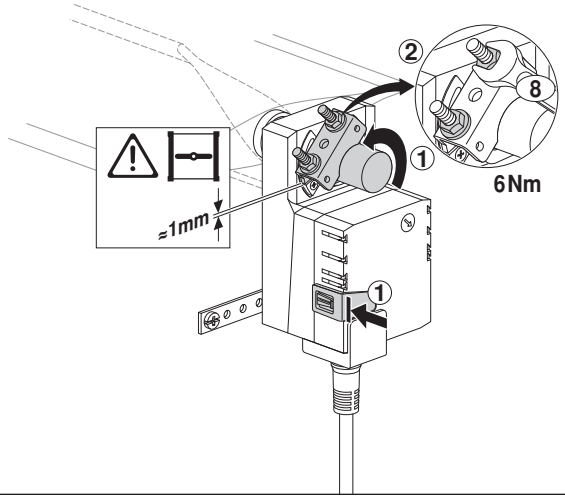

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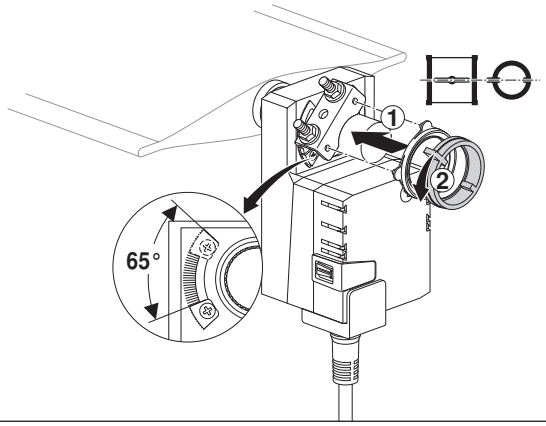
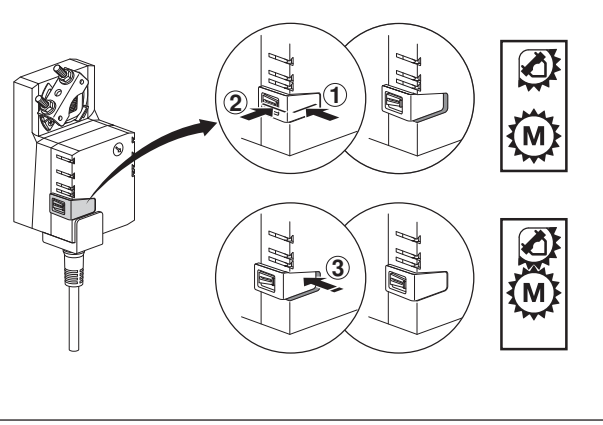
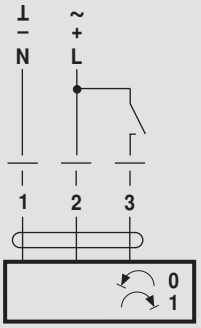
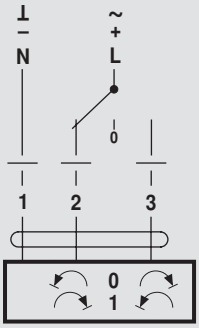
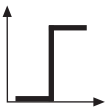




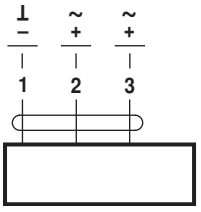




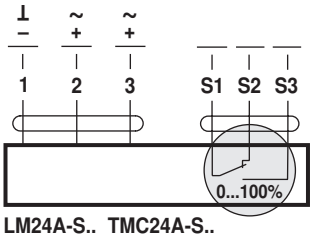


AC 24 V / DC 24 V

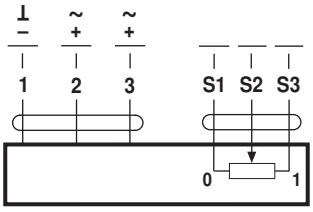
DC 48 ... 110 V ⚠
(LM72A..)



LM24A.. LMC24A..
LM72A.. TMC24A..

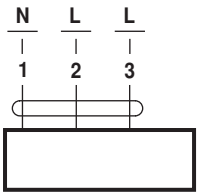


LM24A-S.. TMC24A-S..
LM72A-S..

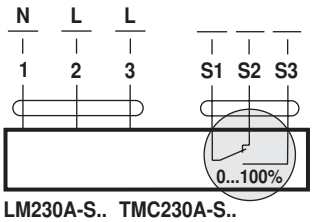


LM24AP5..

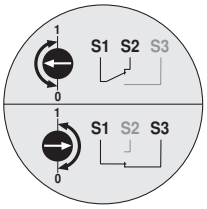
AC 100 ... 240 V ⚠

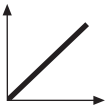


LM230A.. LMC230A..
TMC230A..

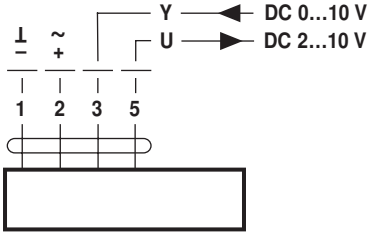


LM230A-S.. TMC230A-S..

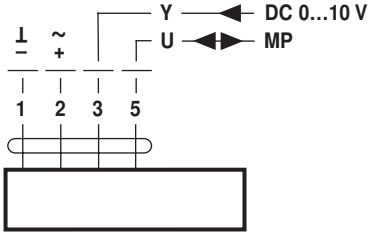




AC 24 V / DC 24 V

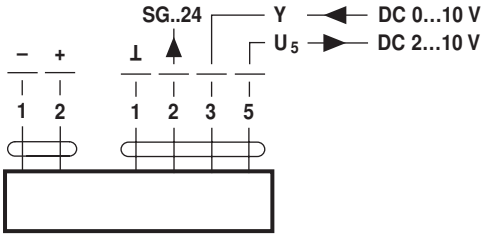


LM24A-SR.. LMC24A-SR..
LM24A-MF.. TMC24A-SR..



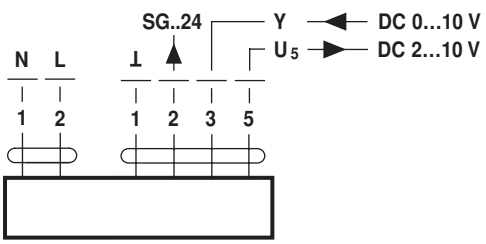
LM24A-MP..

DC 48 ... 110 V ⚠
(LM72A-SR..)



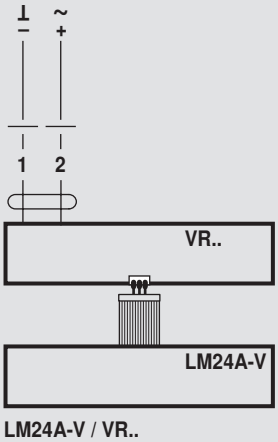
LM72A-SR..

AC 100 ... 240 V ⚠



LM230ASR.. TMC230ASR..

AC 24 V / DC 24 V
(LM24A-V / VR..)



LM24A-V / VR..

BELIMO

Technical data sheet LM24A-S

Damper actuator for adjusting dampers in technical building installations

- **Air damper size up to approx. 1 m²**
- **Nominal torque 5 Nm**
- **Nominal voltage AC/DC 24 V**
- **Control Open-close, 3-point**
- **With integrated auxiliary switch**

Technical data

Electrical data	Nominal voltage	AC/DC 24 V
	Nominal voltage frequency	50/60 Hz
	Nominal voltage range	AC 19.2...28.8 V / DC 19.2...28.8 V
	Power consumption in operation	1 W
	Power consumption in rest position	0.2 W
	Power consumption for wire sizing	1.5 VA
	Auxiliary switch	1 x SPDT, 0...100%
	Switching capacity auxiliary switch	1 mA...3 (0.5 inductive) A, AC 250 V
	Connection supply / control	Cable 1 m, 3 x 0.75 mm²
	Connection auxiliary switch	Cable 1 m, 3 x 0.75 mm²
	Parallel operation	Yes (note the performance data)
Functional data	Torque motor	Min. 5 Nm
	Direction of motion motor	Selectable with switch 0 (ccw rotation) / 1 (cw rotation)
	Manual override	Gear disengagement with push-button, can be locked
	Angle of rotation	Max. 95°
	Angle of rotation note	can be limited on both sides with adjustable mechanical end stops
	Running time motor	150 s / 90°
	Sound power level motor	35 dB(A)
	Spindle driver	Universal spindle clamp 6...20 mm
	Position indication	Mechanically, pluggable
Safety	Protection class IEC/EN	II Protective insulated
	Protection class UL	II Protective insulated
	Protection class auxiliary switch IEC/EN	II Protective insulated
	Degree of protection IEC/EN	IP54
	Degree of protection NEMA/UL	NEMA 2, UL Enclosure Type 2
	EMC	CE according to 2004/108/EC
	Low voltage directive	CE according to 2006/95/EC
	Certification IEC/EN	IEC/EN 60730-1 and IEC/EN 60730-2-14
	Certification UL	cULus according to UL 60730-1A, UL 60730-2-14 and CAN/CSA E60730-1:02
	Mode of operation	Type 1.B
	Rated impulse voltage supply / control	0.8 kV
	Rated impulse voltage auxiliary switch	2.5 kV
	Control pollution degree	3
	Ambient temperature	-30...50°C
	Non-operating temperature	-40...80°C
	Ambient humidity	95% r.h., non-condensing
	Maintenance	Maintenance-free
Weight	Weight approx.	0.58 kg

Safety notes

- The device must not be used outside the specified field of application, especially not in aircraft or in any other airborne means of transport.

Safety notes

- Outdoor application: only possible in case that no (sea)water, snow, ice, insolation or aggressive gases interfere directly with the actuator and that is ensured that the ambient conditions remain at any time within the thresholds according to the data sheet.
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied during installation.
- The device may only be opened at the manufacturer's site. It does not contain any parts that can be replaced or repaired by the user.
- Cables must not be removed from the device.
- To calculate the torque required, the specifications supplied by the damper manufacturers concerning the cross-section, the design, the installation site and the ventilation conditions must be observed.
- The device contains electrical and electronic components and must not be disposed of as household refuse. All locally valid regulations and requirements must be observed.

Product features

Simple direct mounting — Simple direct mounting on the damper spindle with an universal spindle clamp, supplied with an anti-rotation device 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).

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

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

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

Accessories

Electrical accessories

Description	Type
Auxiliary switch, add-on, 1 x SPDT	S1A
Auxiliary switch, add-on, 2 x SPDT	S2A
Auxiliary switch, add-on, 2 x SPDT, grey	S2A GR
Feedback potentiometer 200 Ohm, add-on	P200A
Feedback potentiometer 500 Ohm, add-on	P500A
Feedback potentiometer 500 Ohm, add-on, grey	P500A GR
Feedback potentiometer 1 kOhm, add-on	P1000A
Feedback potentiometer 1 kOhm, add-on, grey	P1000A GR
Feedback potentiometer 2.8 kOhm, add-on	P2800A
Feedback potentiometer 2.8 kOhm, add-on, grey	P2800A GR
Feedback potentiometer 5 kOhm, add-on	P5000A
Feedback potentiometer 5 kOhm, add-on, grey	P5000A GR
Feedback potentiometer 10 kOhm, add-on	P10000A
Feedback potentiometer 10 kOhm, add-on, grey	P10000A GR

Mechanical accessories

Description	Type
Shaft extension 170 mm, for damper spindles Ø 6...20 mm	AV6-20
Spindle clamp for LM..A, clamping range 6...20 mm	K-ELA
Spindle clamp for LM..A, clamping range 6...10 mm	K-ELA10
Spindle clamp for LM..A, clamping range 6...13 mm	K-ELA13
Spindle clamp for LM..A, clamping range 6...16 mm	K-ELA16
Universal mounting bracket 180 mm	Z-ARS180
Form fit insert 10x10 mm, for LM..A	ZF10-LMA
Form fit insert 12x12 mm, for LM..A	ZF12-LMA
Form fit insert 8x8 mm, for LM..A	ZF8-LMA
Form fit insert 10x10 mm, with angle of rotation limiter and position indication for LM..A	ZFRL10-LMA

Accessories

Description	Type
Form fit insert 12x12 mm, with angle of rotation limiter and position indication for LM..A	ZFRL12-LMA
Form fit insert 8x8 mm, with angle of rotation limiter and position indication for LM..A	ZFRL8-LMA
Position indication for LM..A, NM..A, SM..A, GM..A	Z-PI

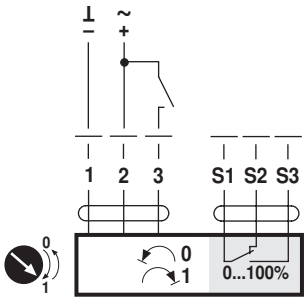
Electrical installation

Notes

- Connection via safety isolating transformer.
- Parallel connection of other actuators possible. Observe the performance data.

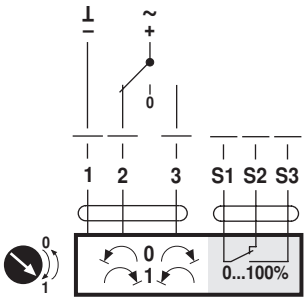
Wiring diagrams

AC/DC 24 V, open-close



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

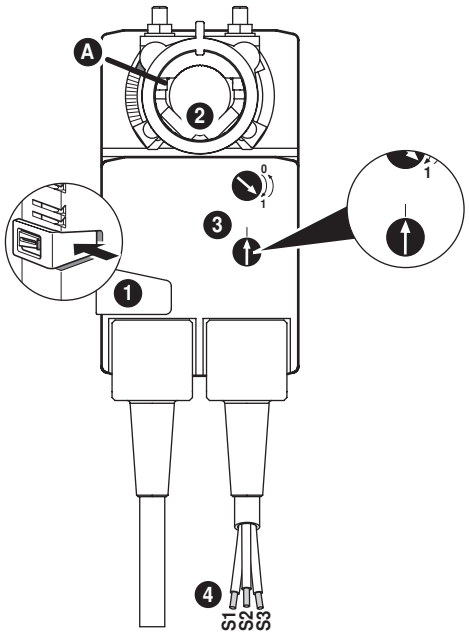
AC/DC 24 V, 3-point



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

Operating controls and indicators

Auxiliary switch settings



Note Perform settings on the actuator only in deenergised state.

1 Gear disengagement
Holding button pressed down: Gear is disengaged.
Manual override is possible.

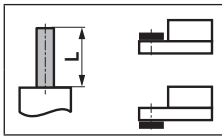
2 Spindle clamp
Turn until edge line A displays the desired switching position of the actuator and release button 1.

3 Auxiliary switch
Turn rotary knob until the arrow points to the vertical line.

4 Cable
Connect continuity tester to S1 + S2 or to S1 + S3.
If the auxiliary switch should switch in the opposite direction, rotate the auxiliary switch by 180°.

Dimensions [mm]

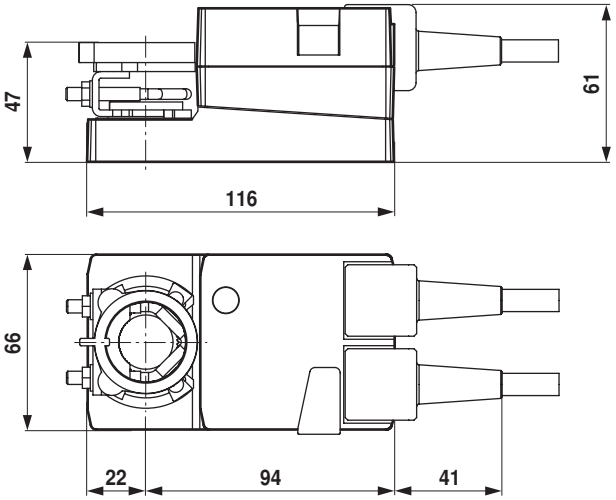
Spindle length

	Min. 37
	-

Clamping range

		
6...20	≥6	≤20

Dimensional drawings



BELIMO

Technical data sheet LM24A-SR

Modulating damper actuator for adjusting dampers in technical building installations

- **Air damper size up to approx. 1 m²**
- **Nominal torque 5 Nm**
- **Nominal voltage AC/DC 24 V**
- **Control Modulating DC (0)2...10 V**
- **Position feedback DC 2...10 V**

Technical data

Electrical data	Nominal voltage	AC/DC 24 V
	Nominal voltage frequency	50/60 Hz
	Nominal voltage range	AC 19.2...28.8 V / DC 19.2...28.8 V
	Power consumption in operation	1 W
	Power consumption in rest position	0.4 W
	Power consumption for wire sizing	2 VA
	Connection supply / control	Cable 1 m, 4 x 0.75 mm²
	Parallel operation	Yes (note the performance data)
Functional data	Torque motor	Min. 5 Nm
	Positioning signal Y	DC 0...10 V
	Positioning signal Y note	Input impedance 100 kΩ
	Operating range Y	DC 2...10 V
	Position feedback U	DC 2...10 V
	Position feedback U note	Max. 1 mA
	Position accuracy	±5%
	Direction of motion motor	Selectable with switch 0 / 1
	Direction of motion note	Y = 0 V: At switch position 0 (ccw rotation) / 1 (cw rotation)
	Manual override	Gear disengagement with push-button, can be locked
	Angle of rotation	Max. 95°
	Angle of rotation note	can be limited on both sides with adjustable mechanical end stops
	Running time motor	150 s / 90°
	Sound power level motor	35 dB(A)
	Spindle driver	Universal spindle clamp 6...20 mm
	Position indication	Mechanically, pluggable
Safety	Protection class IEC/EN	III Safety extra-low voltage
	Protection class UL	UL Class 2 Supply
	Degree of protection IEC/EN	IP54
	Degree of protection NEMA/UL	NEMA 2, UL Enclosure Type 2
	EMC	CE according to 2004/108/EC
	Certification IEC/EN	IEC/EN 60730-1 and IEC/EN 60730-2-14
	Certification UL	cULus according to UL 60730-1A, UL 60730-2-14 and CAN/CSA E60730-1:02
	Mode of operation	Type 1
	Rated impulse voltage supply / control	0.8 kV
	Control pollution degree	3
	Ambient temperature	-30...50°C
	Non-operating temperature	-40...80°C
	Ambient humidity	95% r.h., non-condensing
	Maintenance	Maintenance-free
Weight	Weight approx.	0.51 kg

Safety notes

- The device must not be used outside the specified field of application, especially not in aircraft or in any other airborne means of transport.
- Outdoor application: only possible in case that no (sea)water, snow, ice, insolation or aggressive gases interfere directly with the actuator and that is ensured that the ambient conditions remain at any time within the thresholds according to the data sheet.
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied during installation.
- The device may only be opened at the manufacturer's site. It does not contain any parts that can be replaced or repaired by the user.
- Cables must not be removed from the device.
- To calculate the torque required, the specifications supplied by the damper manufacturers concerning the cross-section, the design, the installation site and the ventilation conditions must be observed.
- The device contains electrical and electronic components and must not be disposed of as household refuse. All locally valid regulations and requirements must be observed.

Product features

Mode of operation
The actuator is connected with a standard modulating signal of DC 0...10V and drives to the position defined by the positioning 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 an universal spindle clamp, supplied with an anti-rotation device 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).

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

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

Accessories

Electrical accessories

Description	Type
Auxiliary switch, add-on, 1 x SPDT	S1A
Auxiliary switch, add-on, 2 x SPDT	S2A
Auxiliary switch, add-on, 2 x SPDT, grey	S2A GR
Feedback potentiometer 200 Ohm, add-on	P200A
Feedback potentiometer 500 Ohm, add-on	P500A
Feedback potentiometer 500 Ohm, add-on, grey	P500A GR
Feedback potentiometer 1 kOhm, add-on	P1000A
Feedback potentiometer 1 kOhm, add-on, grey	P1000A GR
Feedback potentiometer 2.8 kOhm, add-on	P2800A
Feedback potentiometer 2.8 kOhm, add-on, grey	P2800A GR
Feedback potentiometer 5 kOhm, add-on	P5000A
Feedback potentiometer 5 kOhm, add-on, grey	P5000A GR
Feedback potentiometer 10 kOhm, add-on	P10000A
Feedback potentiometer 10 kOhm, add-on, grey	P10000A GR
Signal converter voltage/current, supply AC/DC 24V	Z-UIC
Digital position indicator for front-panel mounting, 0...99%, front mass 72 x 72 mm	ZAD24
Range controller for wall mounting, adjustable electron. Min./max. angle of rotation limitation	SBG24
Positioner for wall mounting, range 0...100%	SGA24
Positioner in a conduit box, range 0...100%	SGE24
Positioner for front-panel mounting, range 0...100%	SGF24
Positioner for wall mounting, range 0...100%	CRP24-B1

Accessories

	Description	Type
Mechanical accessories	Shaft extension 170 mm, for damper spindles Ø 6...20 mm	AV6-20
	Spindle clamp for LM..A, clamping range 6...20 mm	K-ELA
	Spindle clamp for LM..A, clamping range 6...10 mm	K-ELA10
	Spindle clamp for LM..A, clamping range 6...13 mm	K-ELA13
	Spindle clamp for LM..A, clamping range 6...16 mm	K-ELA16
	Universal mounting bracket 180 mm	Z-ARS180
	Form fit insert 10x10 mm, for LM..A	ZF10-LMA
	Form fit insert 12x12 mm, for LM..A	ZF12-LMA
	Form fit insert 8x8 mm, für LM..A	ZF8-LMA
	Form fit insert 10x10 mm, with angle of rotation limiter and position indication for LM..A	ZFRL10-LMA
	Form fit insert 12x12 mm, with angle of rotation limiter and position indication for LM..A	ZFRL12-LMA
	Form fit insert 8x8 mm, with angle of rotation limiter and position indication for LM..A	ZFRL8-LMA
	Position indication for LM..A, NM..A, SM..A, GM..A	Z-PI

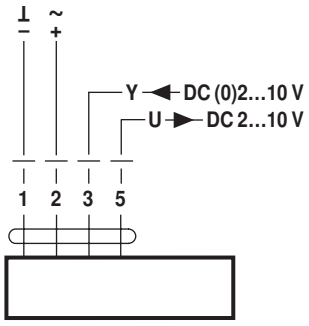
Electrical installation

Notes

- Connection via safety isolating transformer.
- Parallel connection of other actuators possible. Observe the performance data.

Wiring diagrams

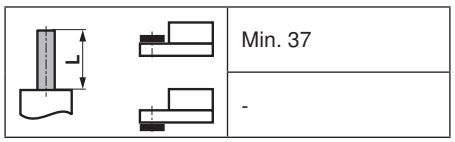
AC/DC 24 V, modulating



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

Dimensions [mm]

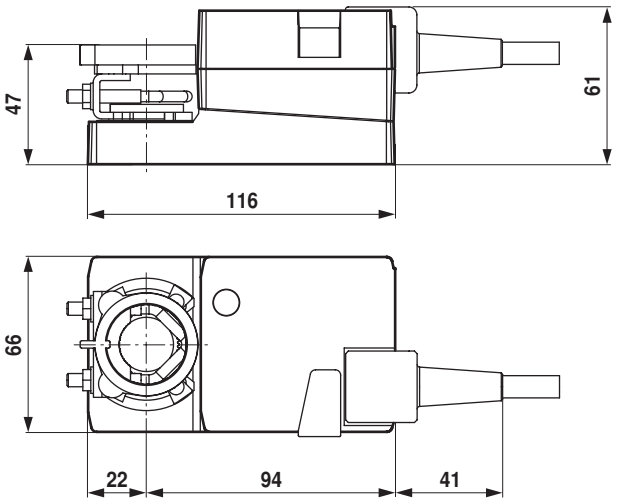
Spindle length



Clamping range

6...20	≥6	≤20

Dimensional drawings



Dampers up to approx. 0.8 m²

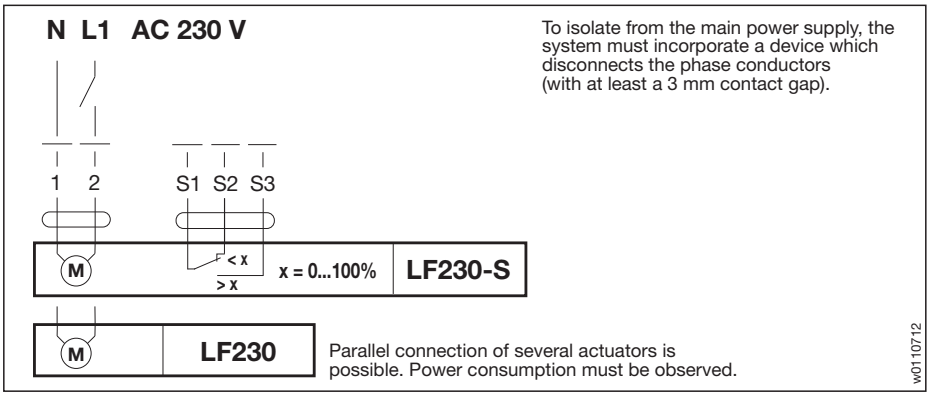
Open/Close actuator (AC 230 V)

Control by single-pole contact

Application
For the operation of air dampers that perform safety functions (e.g. frost and smoke protection, hygiene, etc.).

Mode of operation
The LF... actuator moves the damper to its normal working position while tensioning the return spring at the same time. If the power supply is interrupted, the energy stored in the spring moves the damper back to its safe position.

Wiring diagram



Technical data	LF230, LF230-S
Nominal voltage	AC 230 V 50/60 Hz
Nominal voltage range	AC 198...264 V
For wire sizing	7 VA (Imax 150 mA @ 10 ms)
Power consumption – motoring – holding	 5 W 3 W
Connecting cable	– motor 1 m long, 2 x 0.75 mm² – auxiliary switch (LF230-S) 1 m long, 3 x 0.75 mm²
Auxiliary switch (LF230-S) – Switching point	1 x SPDT 6 (1.5) A, AC 250 V adjustable 0...100%
Direction of rotation	selected by mounting L/R
Torque	– motor min. 4 Nm (at rated voltage) – spring return min. 4 Nm
Torque	max. 95° (adjustable 37...100% with built-in mechanical stop)
Running time	– motor 40...75 s (0...4 Nm) – spring return ≈ 20 s @ –20...50 °C / max. 60 s @ –30 °C
Sound power level	motor max. 50 dB (A), spring ≈ 62 dB (A)
Service life	min. 60 000 operations
Position indication	mechanical
Protection class	II (all insulated)
Degree of protection	IP 54
Ambient temp. range Non-operating temp. Humidity test	–30...+50 °C –40...+80 °C to EN 60730-1
EMC Low Voltage Directive	CE according to 2004/108/EEC CE according to 2006/95/EEC
Maintenance	maintenance-free
Weight	1550 g

Product features

Simple direct mounting on the damper spindle by universal spindle clamp. An anti-rotation device is supplied to prevent unwanted rotation of the whole unit.

Mechanical angle of rotation limiting adjustable with built-in stop.

High functional reliability
The actuator is overload proof, needs no limit switches and halts automatically at the end stop.

Flexible signalling 0...100% , with adjustable auxiliary switch (LF230-S only).

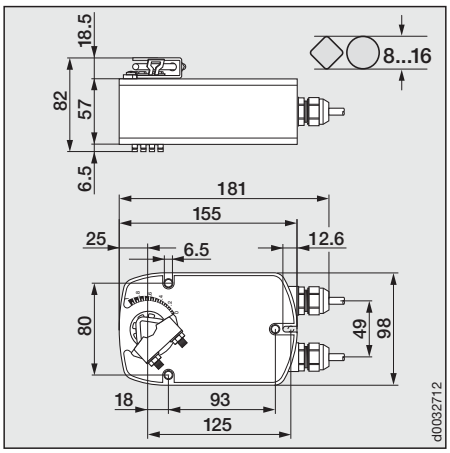
Adjusting the auxiliary switch LF230-S, page 6

Mounting accessories, page 11

Mounting instructions, pages 13...15

Important: Read the notes about the use and torque requirements of the damper actuators on page 3.

Dimensions



Dampers up to approx. 0.8 m²

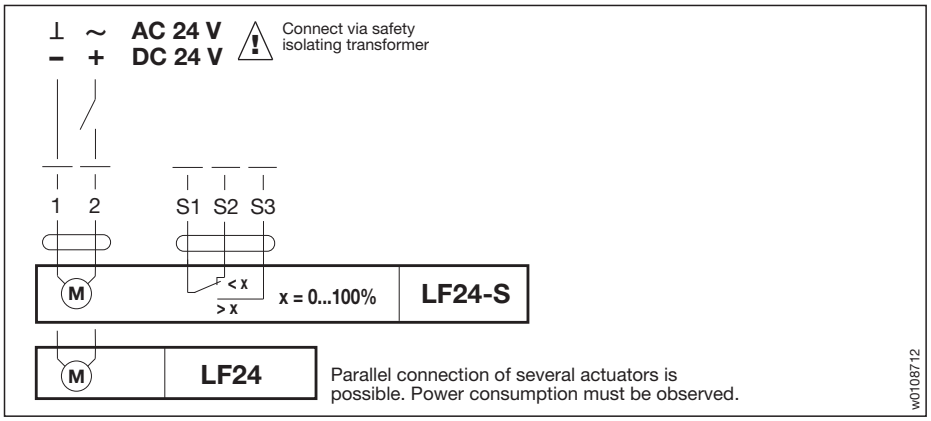
Open/Close actuator (AC/DC 24 V)

Control by single-pole contact

Application
For the operation of air dampers that perform safety functions (e.g. frost and smoke protection, hygiene, etc.).

Mode of operation
The LF... actuator moves the damper to its normal working position while tensioning the return spring at the same time. If the power supply is interrupted, the energy stored in the spring moves the damper back to its safe position.

Wiring diagram



Product features

Simple direct mounting on the damper spindle by universal spindle clamp. An anti-rotation device is supplied to prevent unwanted rotation of the whole unit.

Mechanical angle of rotation limiting adjustable with built-in stop.

High functional reliability
The actuator is overload proof, needs no limit switches and halts automatically at the end stop.

Flexible signalling 0...100% ◁, with adjustable auxiliary switch (LF24-S only).

Adjusting the auxiliary switch LF24-S, page 6

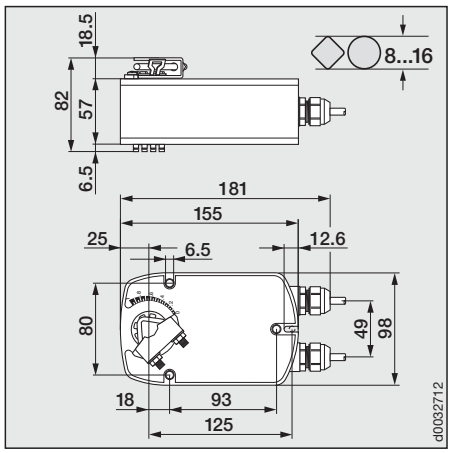
Mounting accessories, page 11

Mounting instructions, pages 13...15

Important: Read the notes about the use and torque requirements of the damper actuators on page 3.

Technical data	LF24, LF24-S
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
For wire sizing	7 VA (Imax 5.8 A @ 5 ms)
Power consumption – motoring – holding	 5 W 2.5 W
Connecting cable	– motor 1 m long, 2 x 0.75 mm² – auxiliary switch (LF24-S) 1 m long, 3 x 0.75 mm²
Auxiliary switch (LF24-S) – Switching point	1 x SPDT 6 (1.5) A, AC 250 V ⧈ adjustable 0...100% ◁
Direction of rotation	selected by mounting L/R
Torque	– motor min. 4 Nm (at rated voltage) – spring return min. 4 Nm
Angle of rotation	max. 95° (adjustable 37...100% ◁ with built-in mechanical stop)
Running time	– motor 40...75 s (0...4 Nm) – spring return ≈ 20 s @ –20...50 °C / max. 60 s @ –30 °C
Sound power level	motor max. 50 dB (A), spring ≈ 62 dB (A)
Service life	min. 60 000 operations
Position indication	mechanical
Protection class	⧫ (safety extra-low voltage)
Degree of protection	IP 54
Ambient temp. range Non-operating temp. Humidity test	–30...+50 °C –40...+80 °C to EN 60730-1
EMC Low Voltage Directive	CE according to 2004/108/EEC CE according to 2006/95/EEC
Maintenance	maintenance-free
Weight	1400 g

Dimensions



BELIMO

Technical data sheet LF24-SR

Spring-return actuator with emergency control function for adjusting dampers in technical building installations

- **Air damper size up to approx. 0.8 m²**
- **Nominal torque 4 Nm**
- **Nominal voltage AC/DC 24 V**
- **Control Modulating DC (0)2...10 V**
- **Position feedback DC 2...10 V**

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	2.5 W
	Power consumption in rest position	1 W
	Power consumption for wire sizing	5 VA
	Connection supply / control	Cable 1 m, 4 x 0.75 mm²
	Parallel operation	Yes (note the performance data)
Functional data	Torque motor	Min. 4 Nm
	Torque spring return	Min. 4 Nm
	Positioning signal Y	DC 0...10 V
	Positioning signal Y note	Input impedance 100 kΩ
	Operating range Y	DC 2...10 V
	Position feedback U	DC 2...10 V
	Position feedback U note	Max. 0.7 mA
	Position accuracy	±5%
	Direction of motion motor	Selectable with switch L / R
	Direction of motion emergency control function	Selectable by mounting L / R
	Manual override	No
	Angle of rotation	Max. 95°
	Angle of rotation note	Adjustable 37...100% with integrated mechanical limitation
	Running time motor	150 s / 90°
	Running time emergency control position	<20 s / 90°
	Running time emergency setting position note	<20 s @ -20...50°C / <60 s @ -30°C
	Sound power level motor	30 dB(A)
	Spindle driver	Universal spindle clamp 8...16 mm
	Position indication	Mechanical
	Service life	Min. 60,000 emergency positions
Safety	Protection class IEC/EN	III Safety extra-low voltage
	Degree of protection IEC/EN	IP54
	EMC	CE according to 2004/108/EC
	Low voltage directive	CE according to 2006/95/EC
	Certification IEC/EN	IEC/EN 60730-1 and IEC/EN 60730-2-14
	Mode of operation	Type 1
	Rated impulse voltage supply / control	0.8 kV
	Control pollution degree	3
	Ambient temperature	-30...50°C
	Non-operating temperature	-40...80°C
	Ambient humidity	95% r.h., non-condensing
	Maintenance	Maintenance-free
Weight	Weight approx.	1.6 kg

Safety notes

- The device must not be used outside the specified field of application, especially not in aircraft or in any other airborne means of transport.
- Outdoor application: only possible in case that no (sea)water, snow, ice, insolation or aggressive gases interfere directly with the actuator and that is ensured that the ambient conditions remain at any time within the thresholds according to the data sheet.
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied during installation.
- The device may only be opened at the manufacturer's site. It does not contain any parts that can be replaced or repaired by the user.
- Cables must not be removed from the device.
- To calculate the torque required, the specifications supplied by the damper manufacturers concerning the cross-section, the design, the installation site and the ventilation conditions must be observed.
- The device contains electrical and electronic components and must not be disposed of as household refuse. All locally valid regulations and requirements must be observed.

Product features

Mode of operation
The actuator is connected with a standard modulating signal of DC 0 ... 10 V and moves the damper to the operating position at the same time as tensioning the return spring. The damper is turned back to the emergency position by spring force when the supply voltage is interrupted.

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

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

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

Accessories

Electrical accessories

Description	Type
Auxiliary switch, 2 x SPDT	S2A-F
Feedback potentiometer, 200 Ohm, incl. installation accessories	P200A-F
Feedback potentiometer 1 kOhm, incl. installation accessories	P1000A-F
Signal converter voltage/current, supply AC/DC 24V	Z-UIC
Digital position indicator for front-panel mounting, 0...99%, front mass 72 x 72 mm	ZAD24
Range controller for wall mounting, adjustable electron. Min./max. angle of rotation limitation	SBG24
Positioner for wall mounting, range 0...100%	SGA24
Positioner in a conduit box, range 0...100%	SGE24
Positioner for front-panel mounting, range 0...100%	SGF24
Positioner for wall mounting, range 0...100%	CRP24-B1

Mechanical accessories

Description	Type
Shaft extension 170 mm, for damper spindles Ø 6...20 mm	AV6-20
Shaft extension 250 mm, for damper spindles Ø 8...25 mm	AV8-25
Spindle clamp, for damper spindles Ø 16...20 mm	K6-1
Straight ball joint with M8, suitable for damper crank arms KH8	KG10A
Angled ball joint with M8, suitable for damper crank arms KH8	KG8
Damper crank arm, for damper spindles	KH8
Actuator arm, for damper spindles Ø 8...16 mm	KH-LF
Angle of rotation limiter, for LF with end stop	ZDB-LF
Additional shaft adapter 4-kt. 8x8mm for LF	ZF8-LF
Mounting kit for linkage operation LF..	ZG-LF1
Mounting kit for linkage operation LF.., suitable for damper spindles Ø 10...18 mm	ZG-LF3

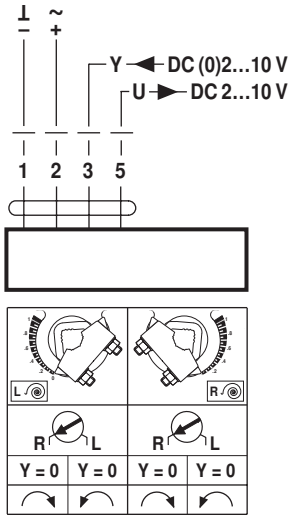
Electrical installation

Notes

- Connection via safety isolating transformer.
- Parallel connection of other actuators possible. Observe the performance data.

Wiring diagrams

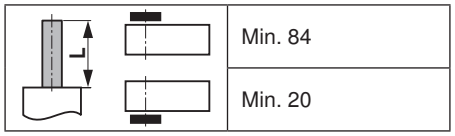
AC/DC 24 V, modulating



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

Dimensions [mm]

Spindle length



Min. 84
Min. 20

Clamping range

8...16	8...16

Dimensional drawings