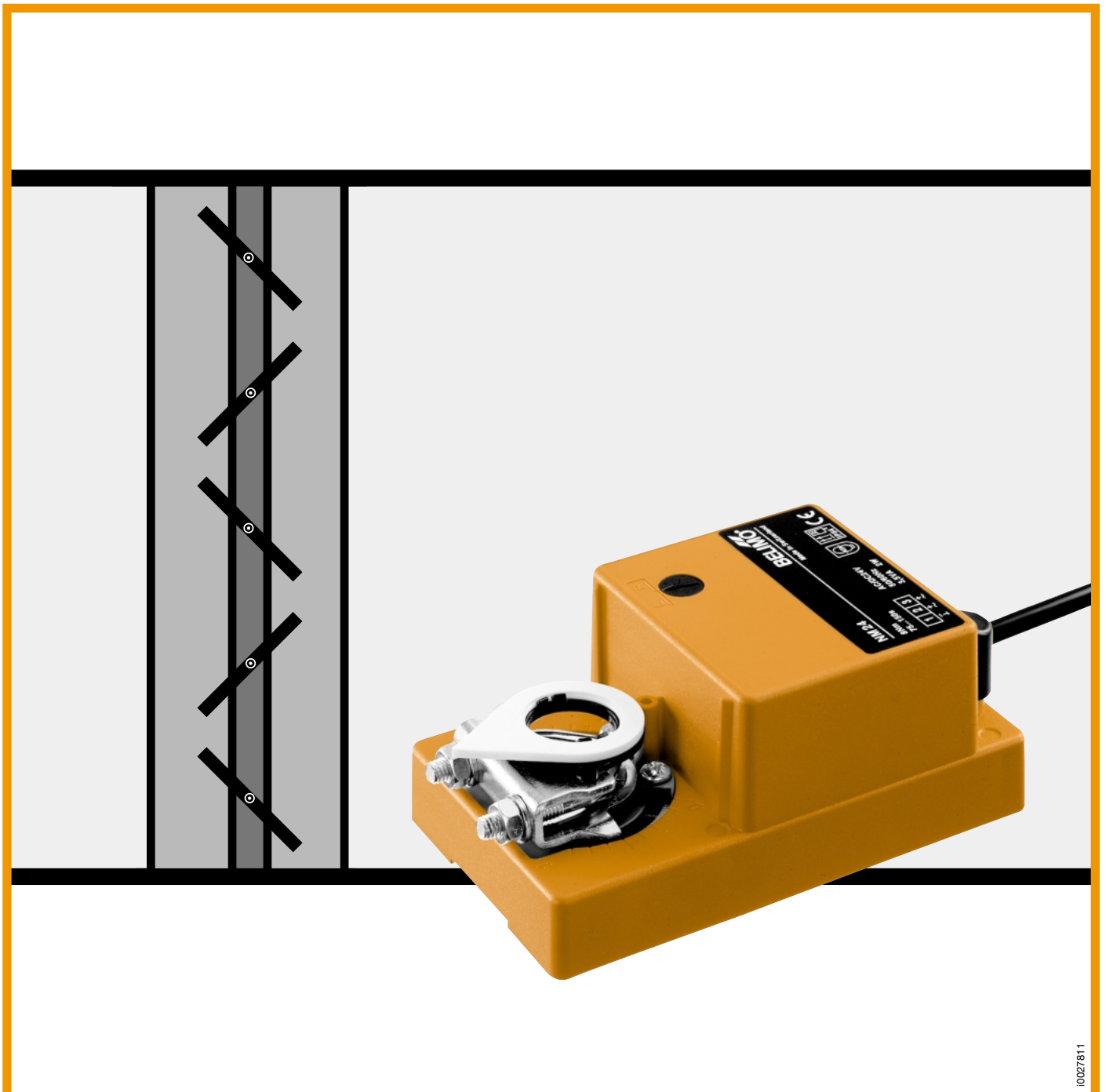


2. NM-3-CD










Product Information

Damper actuators

NM



The complete range of damper actuators for general use in HVAC systems

Type	LM	NM	SM	AM	GM	LF	AF
							
Torque	4 Nm	8 Nm	15 Nm	18 Nm	30 Nm	4 Nm	15 Nm
Spring return function	-	-	-	-	-		
For dampers up to approx.	0.8 m ²	1.5 m ²	3 m ²	3.6 m ²	6 m ²	0.8 m ²	3 m ²

For more information, please contact your Belimo Representative or order any brochures you need by fax.

Fax to: **BELIMO** (address overleaf)

Please send us product brochures on the following damper actuators:

LM... SM... AM... GM... LF... AF... Electrical accessories

Please also send information on:

Motorized fire and smoke dampers
 Variable air-volume control (VAV-Control)

Please call us back

Sender

Company: _____

Name: _____

Address: _____

Post code: _____ Country: _____

Tel.: _____ Fax: _____

E-Mail: _____ Date: _____

Selection table

			NM24	NM230	NM24-SR	NM24-SRS
Torque	8 Nm					
Nominal voltage	AC 24 V DC 24 V AC 230 V		•	•	•	•
Running time	75...150 s 150 s		•	•	•	•
Control	Open/Close Single-wire 2-wire Modulating DC 0...10 V		•	•	•	•
Direction of rotation reversible (right/left)			•	•	•	•
Manual operation by pushbutton			•	•	•	•
Mechanical angle of rotation limiting			•	•	•	•
Automatic angle of rotation and running time adjustment					•	•
Continuous position feedback					•	•
Adjustable electrical working range						•
Damper rotation with universal spindle clamp			•	•	•	•

Actuators with damper rotation for square form-fit spindles (8 mm) and conforming to US standards on request.

Damper actuators, Open/Close

NM24	4
NM230	5

Damper actuators, modulating

NM24-SR	6
NM24-SRS	7
Control and monitoring functions	8

Electrical accessories

Auxiliary switches SN1, SN2	9
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Mounting instructions

Damper actuators	10
Auxiliary switches	10

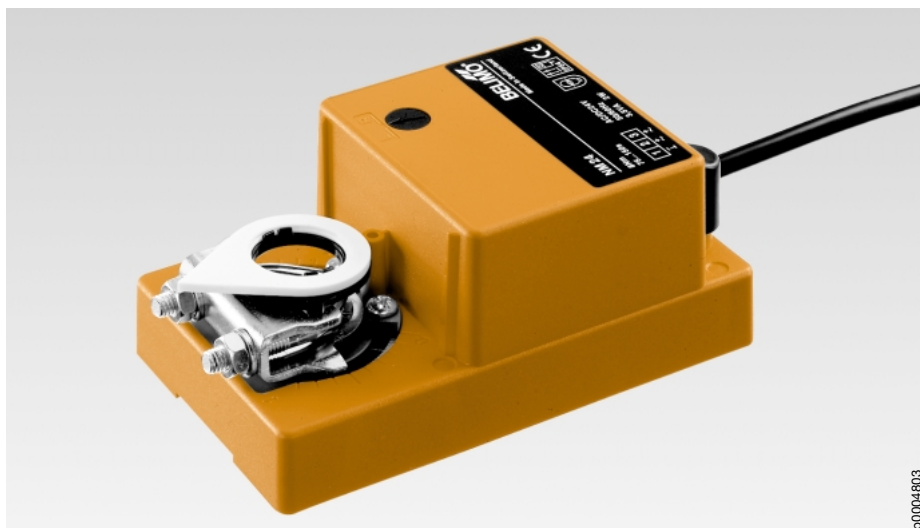
Note

Using BELIMO damper actuators

The actuators listed in this catalogue are intended for the operation of air dampers in HVAC systems.

Torque requirements

When calculating the torque required to operate dampers, it is essential to take into account all the data supplied by the damper manufacturer concerning cross sectional area, design, mounting and air flow conditions.



p0004803

Dampers up to approx. 1.5 m²

Open/Close actuator (AC/DC 24 V)

Reversible

Improved functional safety

The damper actuator has no limit switches and is overload-proof. It stops automatically when it reaches the damper or actuator end stop.

Easy functional check

A functional check of damper operation is simplicity itself: the gearing can be disengaged by simply pressing a pushbutton on top of the case. While the pushbutton remains depressed, the damper can be operated by hand.

Simple installation

The damper actuator is fitted with a universal spindle clamp for quick and easy mounting directly on the damper spindle. The actuator is supplied with an anti-rotation strap for fixing it in position.

Electrical accessories

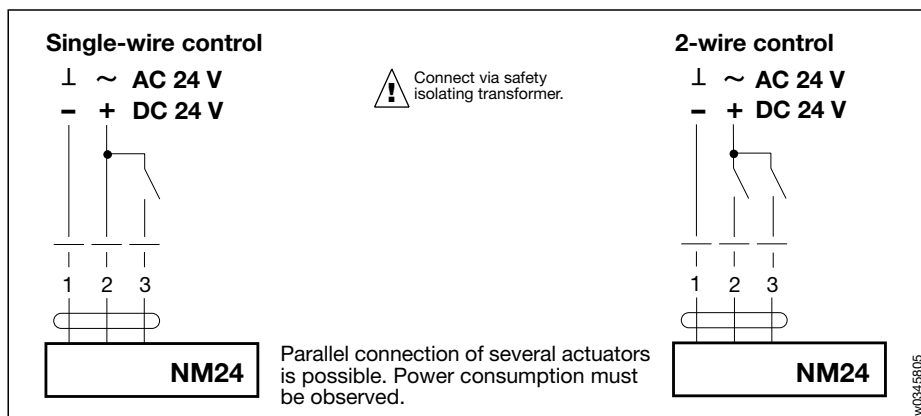
SN1, SN2 Auxiliary switches, page 9

Mounting instructions, page 10

Important

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

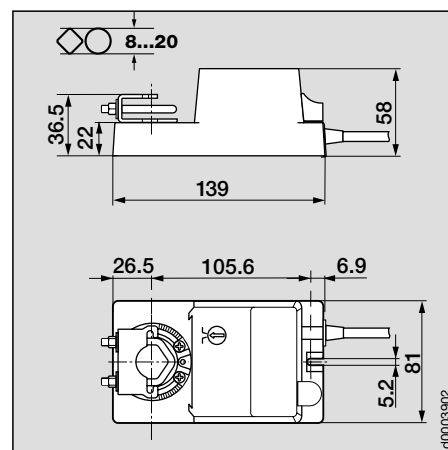
Wiring diagram



w0345805

Technical data	NM24
Nominal voltage	AC 24 V 50/60 Hz, DC 24 V
Nominal voltage range	AC/DC 19.2...28.8 V
For wire sizing	3.5 VA
Power consumption	2 W
Connecting cable	1 m long, 3×0.75 mm ²
Direction of rotation	selected with L/R switch
Torque	min. 8 Nm (at rated voltage)
Angle of rotation	max. 95° (adjustable by mechanical stops)
Running time	75...150 s (0...8 Nm)
Sound power level	max. 35 dB (A)
Position indication	mechanical
Protection class	⚡ (safety low voltage)
Degree of protection	IP 54 (bottom cable entry)
Ambient temperature range	-20... +50 °C
Non-operating temperature	-40... +80 °C
Humidity test	to EN 60335-1
EMC	CE according to 89/336/EEC, 92/31/EEC, 93/68/EEC
Maintenance	maintenance free
Weight	800 g

Dimensions



d0003902



p0005803

Dampers up to approx. 1.5 m²
Open/Close actuator (AC 230 V)
Control by single-pole contact (single-wire control)

Improved functional safety
 The damper actuator has no limit switches and is overload-proof. It stops automatically when it reaches the damper or actuator end stop.

Easy functional check
 A functional check of damper operation is simplicity itself: the gearing can be disengaged by simply pressing a pushbutton on top of the case. While the pushbutton remains depressed, the damper can be operated by hand.

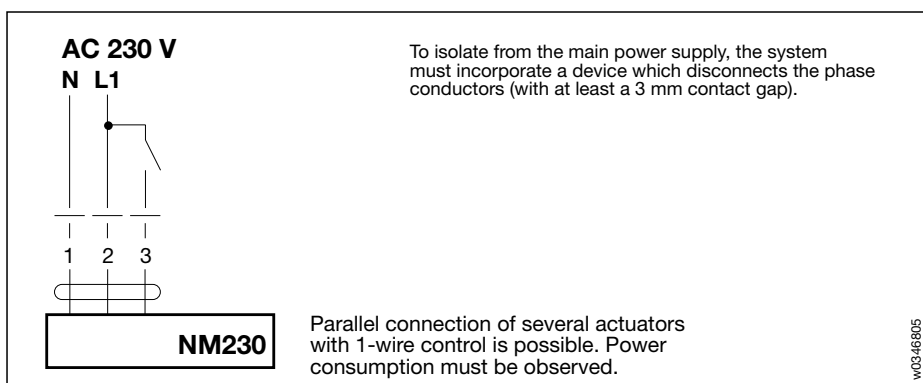
Simple installation
 The damper actuator is fitted with a universal spindle clamp for quick and easy mounting directly on the damper spindle. The actuator is supplied with an anti-rotation strap for fixing it in position.

Electrical accessories
 SN1, SN2 Auxiliary switches, page 9

Mounting instructions, page 10

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

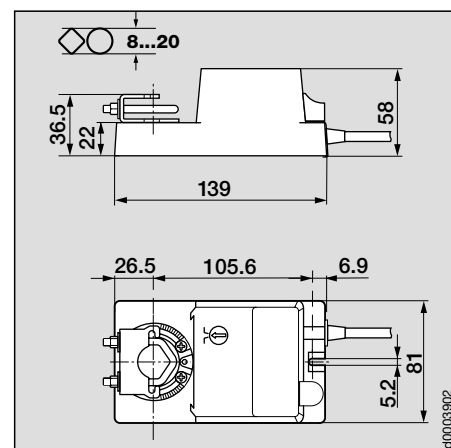
Wiring diagram



w0346805

Technical data	NM230
Nominal voltage	AC 230 V 50/60 Hz
Nominal voltage range	AC 198... 264 V
For wire sizing	18 VA
Power consumption	2 W
Connecting cable	1 m long, 3×0.75 mm ²
Direction of rotation	selected with L/R switch
Torque	min. 8 Nm (at rated voltage)
Angle of rotation	max. 95° (adjustable by mechanical stops)
Running time	75...150 s (0...8 Nm)
Sound power level	max. 35 dB (A)
Position indication	mechanical
Protection class	II (all insulated)
Degree of protection	IP 54 (bottom cable entry)
Ambient temperature range	-20... +50 °C
Non-operating temperature	-40... +80 °C
Humidity test	to EN 60335-1
EMC Low Voltage Directive	CE according to 89/336/EEC, 92/31/EEC, 93/68/EEC CE according to 73/23/EEC
Maintenance	maintenance free
Weight	800 g

Dimensions

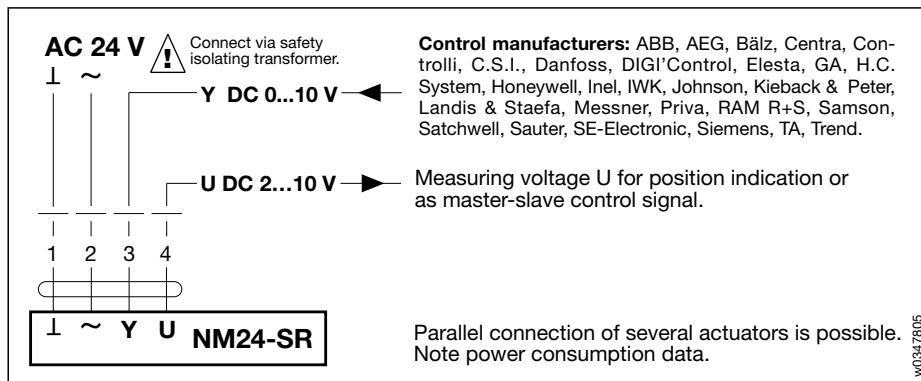


c0003902



p0006803

Wiring diagram



Technical data	NM24-SR
Nominal voltage	AC 24 V 50/60 Hz
Nominal voltage range	AC 19.2...28.8 V
For wire sizing	3 VA
Power consumption	1.3 W running, 0.5 W at rest
Connecting cable	1 m long, 4×0.75 mm ²
Control signal Y	DC 0...10 V @ input resistance = 100 kΩ
Operating range	DC 2...10 V (for 0...100% angle of rotation)
Measuring voltage U	DC 2...10 V @ ≤ 0.7 mA (for 0...100% angle of rotation)
Synchronisation tolerance	± 5%
Override control	Y open or 0 V = 0% angle of rotation Y at AC 24 V = 100% angle of rotation
Direction of rotation (at Y = 0 V)	selected with L/R switch at switch position L ↶ resp. R ↷
Torque	min. 8 Nm (at rated voltage)
Angle of rotation	max. 95° (adjustable by mechanical stops)
Running time	150 s, regardless of the mechanically limited angle of rotation from 0...35° ↯ to 0...95° ↯
Sound power level	max. 35 dB (A)
Position indication	mechanical
Protection class	⚡ (safety low voltage)
Degree of protection	IP 54 (bottom cable entry)
Ambient temperature range	-20... +50 °C
Non-operating temperature	-40... +80 °C
Humidity test	to EN 60335-1
EMC	CE according to 89/336/EEC, 92/31/EEC, 93/68/EEC
Maintenance	maintenance free
Weight	900 g

Dampers up to approx. 1.5 m²

Modulating damper actuator (AC 24 V)

Control DC 0...10 V and position feedback DC 2...10 V

Self-adapting, automatic angle of rotation and running time adjustment

Improved functional safety

The damper actuator has no limit switches and is overload-proof. It stops automatically when it reaches the damper or actuator end stop.

Automatic commissioning, easy functional check

When the power supply is first switched on, or when the override push button is pressed, the actuator performs an automatic function test. It runs to each end position and, in the process, adapts its electrical working range of DC 2...10 V and running time of 150 s to the effective mechanical angle of rotation of the damper. After performing this function, the actuator moves to the position demanded by the positioning signal.

A functional check of damper operation is simplicity itself: the gearing can be disengaged by simply pressing a push-button on top of the case. While the pushbutton remains depressed, the damper can be operated by hand.

Simple installation

The damper actuator is fitted with a universal spindle clamp for quick and easy mounting directly on the damper spindle. The actuator is supplied with an anti-rotation strap for fixing it in position.

Electrical accessories *(see Doc. 2. Z-...)

- SN1, SN2 Auxiliary switches, page 9
- *SG...24 Positioners
- *ZAD24 Digital position indicator

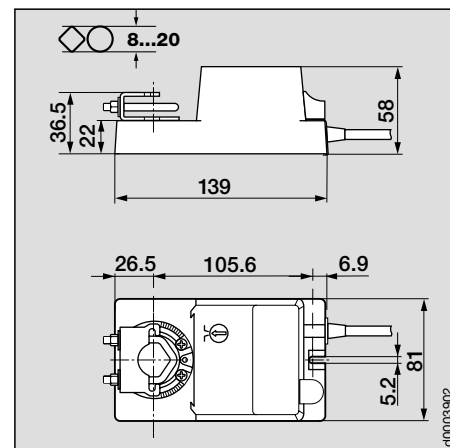
Control and monitoring functions, page 8

Mounting instructions, page 10

Important

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

Dimensions





p0007803

Dampers up to approx. 1.5 m²
Modulating damper actuator (AC 24 V)

Control DC 0...10 V (DC 8...18 V) and position feedback DC 2...10 V

Adjustable electrical working range

Self-adapting, automatic angle of rotation and running time adjustment

Improved functional safety

The damper actuator has no limit switches and is overload-proof. It stops automatically when it reaches the damper or actuator end stop.

Automatic commissioning, easy functional check

When the power supply is first switched on, or when the override push button is pressed, the actuator performs an automatic function test. It runs to each end position and, in the process, adapts its electrically defined working range and running time of 150 s to the effective mechanical angle of rotation of the damper. After performing this function, the actuator moves to the position demanded by the positioning signal.

A functional check of damper operation is simplicity itself: the gearing can be disengaged by simply pressing a push-button on top of the case. While the pushbutton remains depressed, the damper can be operated by hand.

Simple installation

The damper actuator is fitted with a universal spindle clamp for quick and easy mounting directly on the damper spindle. The actuator is supplied with an anti-rotation strap for fixing it in position.

Electrical accessories *(see Doc. 2. Z-...)

SN1, SN2 Auxiliary switches, page 9

*SG...24 Positioners

*ZAD24 Digital position indicator

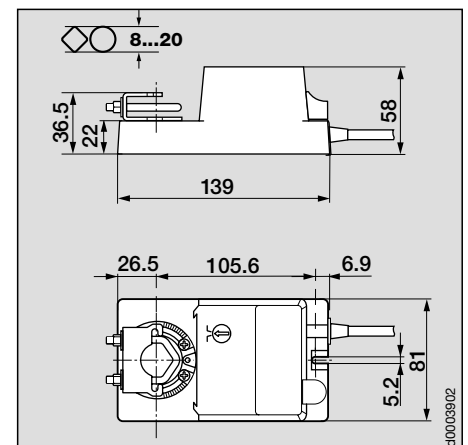
Control and monitoring functions, page 8

Mounting instructions, page 10

Important

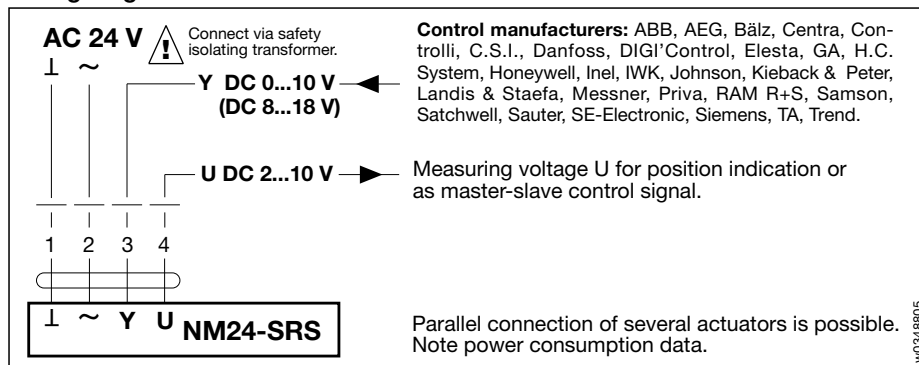
Read the notes about the use and torque requirements of the damper actuators on page 3.

Dimensions



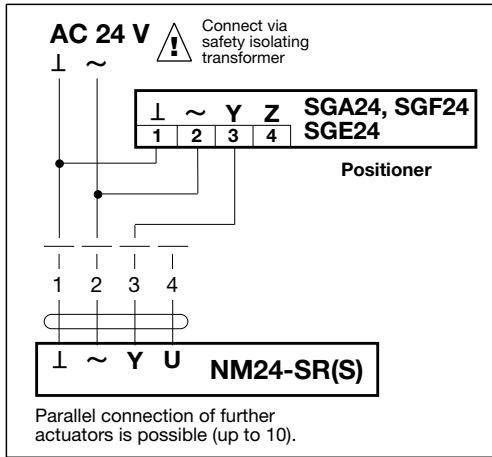
d0003902

Wiring diagram

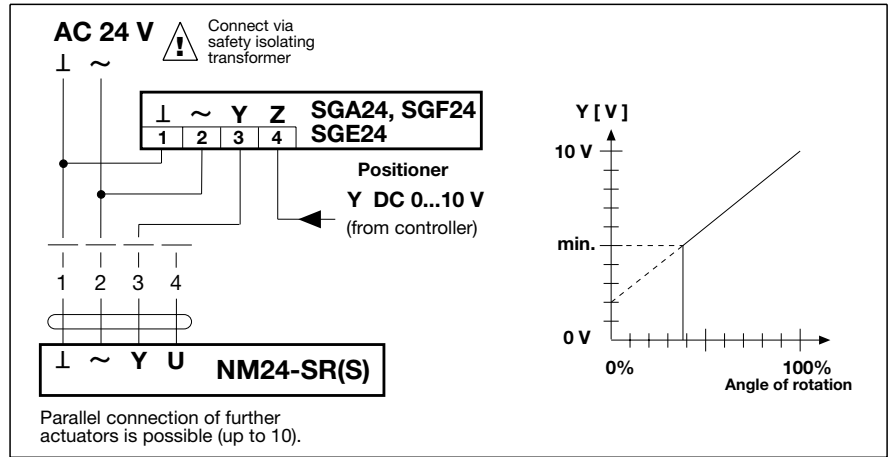


Technical data	NM24-SRS
Nominal voltage	AC 24 V 50/60 Hz
Nominal voltage range	AC 19.2...28.8 V
For wire sizing	3 VA
Power consumption	1.3 W running, 0.5 W at rest
Connecting cable	1 m long, 4×0.75 mm ²
Control signal Y	DC 0...18 V @ input resistance = 100 kΩ
Starting point U ₀	adjustable DC 0...8 V
Span ΔU	adjustable DC 2...10 V (for 0...100% angle of rotation)
Factory setting	U ₀ = DC 0 V, ΔU = DC 10 V
Measuring voltage U	DC 2...10 V @ ≤ 0.7 mA (for 0...100% angle of rotation)
Synchronisation tolerance	± 5%
Override control	Y open or 0 V = 0% angle of rotation Y at AC 24 V = 100% angle of rotation
Direction of rotation (at Y = 0 V)	selected with L/R switch at switch position L ↶ resp. R ↷
Torque	min. 8 Nm (at rated voltage)
Angle of rotation	max. 95° (adjustable by mechanical stops)
Running time	150 s, regardless of the mechanically limited angle of rotation from 0...35° ↶ to 0...95° ↶
Sound power level	max. 35 dB (A)
Position indication	mechanical
Protection class	⊠ (safety low voltage)
Degree of protection	IP 54 (bottom cable entry)
Ambient temperature range	-20... +50 °C
Non-operating temperature	-40... +80 °C
Humidity test	to EN 60335-1
EMC	CE according to 89/336/EEC, 92/31/EEC, 93/68/EEC
Maintenance	maintenance free
Weight	900 g

Remote control 0...100%

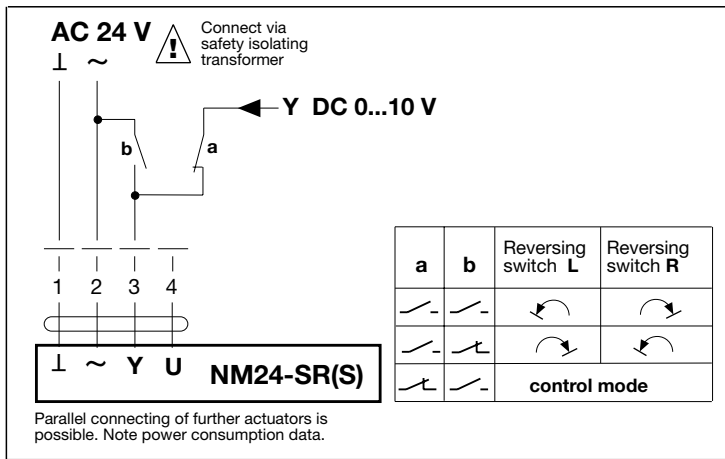


Minimum position

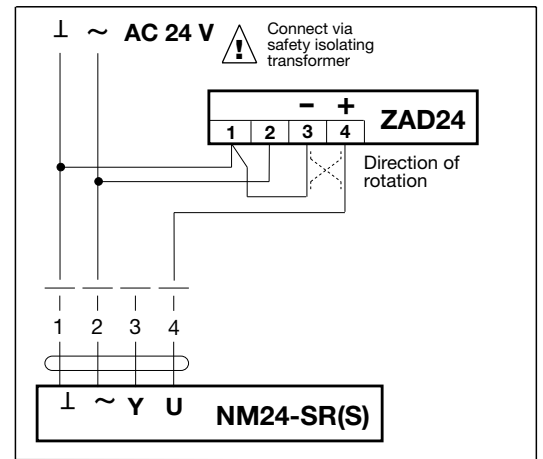


w0349907

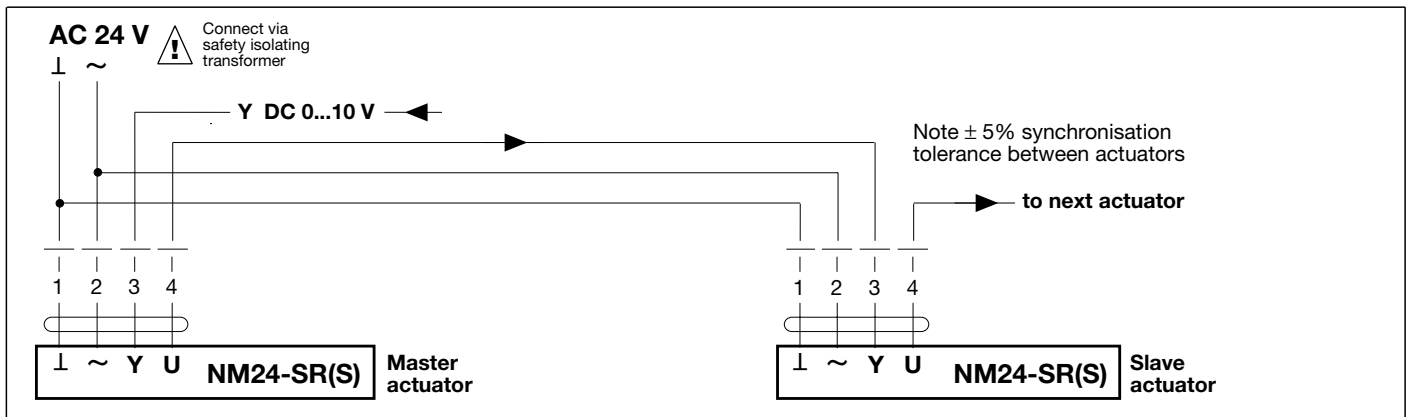
Override control



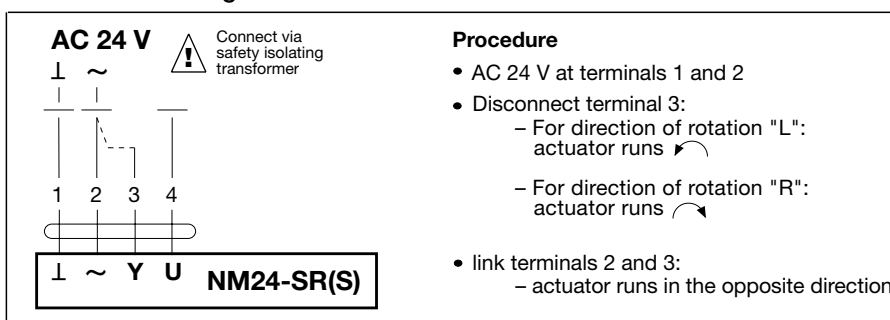
Position indication



Master-slave control (depending on position)



Function monitoring





p0008707

Compatible with NM... damper actuators

Application

The auxiliary switch units SN1 and SN2 are designed to fit damper actuators from the NM range and are intended for the signalling of end positions or for performing switching functions at any angular position.

Mode of operation

A driver disk is positively attached to the spindle clamp so that there is a direct link between its position and the microswitch operating cams.

The switching points can be set anywhere in the range from 0 to 10 by means of a dial. The switch position can be read off at any time.

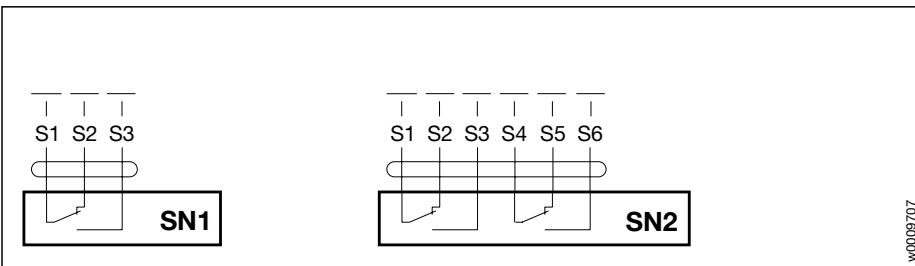
Installation

The auxiliary switch units plug directly on to the spindle clamp of the NM... damper actuators. The guide slots between the housing and the switch unit ensure proper location. The unit is secured to the motor housing with a prefitted screw.

Note

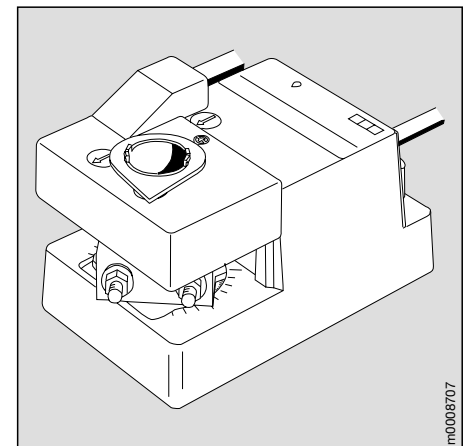
Instructions for fitting and setting the switches will be found on page 10.

Wiring diagram

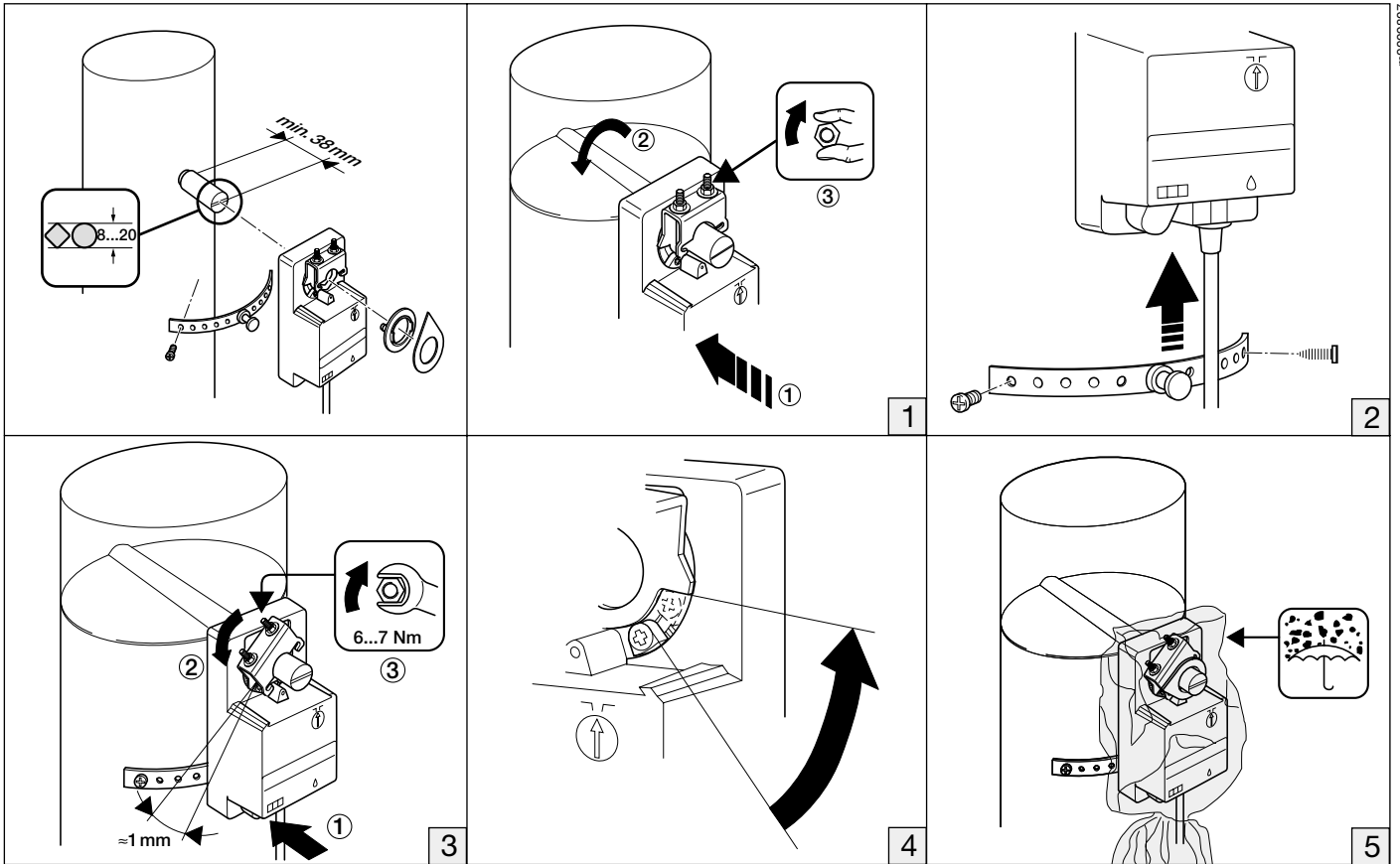


w0008707

Technical data	SN1	SN2
Number of switches	1×SPDT	2×SPDT
Switching capacity	6 A (2.5 A) AC 250 V	
Connecting cable	1 m, 3×0.75 mm ²	1 m, 6×0.75 mm ²
Switching point	Adjustable over full actuator rotation 0...10 Pre-setting by scale possible	
Protection class	II (all-insulated)	
Degree of protection	IP 54	
Ambient temperature range	-30... +50 °C	
Non-operating temperature	-40... +80 °C	
Humidity test	to EN 60335-1	
Weight	125 g	175 g



m0008707



Mounting instructions for auxiliary switches SN1, SN2

