BELIMO DAMPER ACTUATORS

SPRING-RETURN OPEN CLOSE ACTUATOR

OPEN/CLOSE ACTUATOR [230V AC, 24V AC/DC]

BF 230-ME, BF 24-ME (SPRING-RETURN)

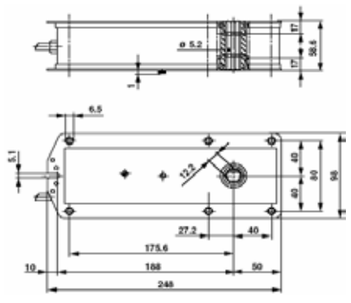
CODE: A1

Mode of Operation:
The 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.

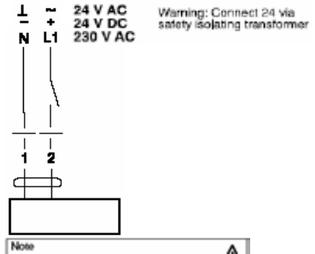
Manual Operations:
Without power supply, the damper can be operated manually and fixed in any required position. Release of the locking mechanism can be achieved manually or automatically by applying the supply voltage.

Technical Data	BF 230-ME	BF 24-ME
Nominal Voltage	AC 230 V, 50/60 Hz	AC 24 V, 50/60 Hz/ DC 24 V
Nominal Voltage Range	AC 198 - 264 V	AC 19.2 - 28.8 V DC 21.6 - 28.8 V
Power Consumption		
• Monitoring	11 W @ nominal torque	8 W @ nominal torque
• Holding	3.5 W	2 W
• For wire Sizing	12 VA / Imax. 500 mA @ 5 ms	11 VA / Imax. 8.3 A @ 5 ms
Connecting	Cable 1 m, 2 × 0.75 m² (halogen-free)	
Torque		
• Motor	Min. 15 Nm	
• Spring-Return	Min. 15 Nm	
Running Time		
• Motor	< 75 s	
• Spring-Return	< 20 s (tamb = 20° C)	
Sound Power Level		
• Motor	Max. 45 dB (A)	
• Spring-Return	~62 dB (A)	
Position Indication	Mechanical with Pointer	
Certification	cULus According to UL873 and CAN/ CSA C22.2 No. 24 Designed to meet UL555S Certified to IEC/EN 60730-1 and IEC/ EN 60730-2-14	
Maintenance	Maintenance-free	
Weight	Approx 3.0 kg	2.7 kg

Dimensions



Wiring Diagram



OPEN/CLOSE ACTUATOR [230V AC, 24V AC/DC]

BF 230-S-ME, BF 24-S-ME (SPRING-RETURN)

CODE: A1S

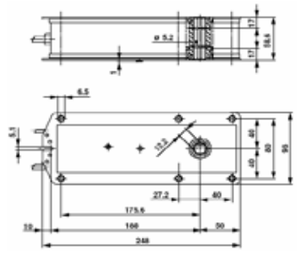
Mode of Operation:
The actuator moves the damper to its normal working position while tensioning the return spring at the same time. If the power supply is interrupted, the energy stored in the spring moves the damper back to its safe position.

Signalling:
Two microswitches with fixed settings are installed in the actuator for indicating the damper end positions. The position of the damper blade can be read off on a mechanical position indicator.

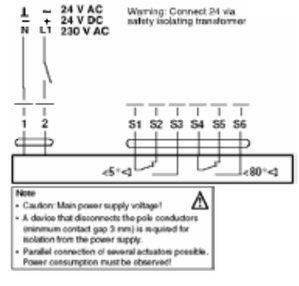
Manual Operation:
Without power supply, the damper can be operated manually and fixed in any required position. Release of the locking mechanism can be achieved manually or automatically by applying the supply voltage.

Technical Data	BF 230-S-ME	BF 24-S-ME
Nominal Voltage	AC 230 V, 50/60 Hz	AC 24 V, 50 60 Hz/ DC 24 V
Nominal Voltage Range	AC 198 - 264 V	AC 19.2 - 28.8 V DC 21.6 - 28.8 V
Power Consumption		
• Monitoring	11 W @ nominal torque	8 W @ nominal torque
• Holding	3.5 W	2 W
• For wire Sizing	12 VA / Imax. 500 mA @ 5 ms	11 VA / Imax. 8.3 A @ 5 ms
Auxillary Switch	2 x SPDT	
• Contact Rating	1 mA... 6 A (3 A), DC 5 V - AC 250 ▭	
• Switching Points	5° ⊀ / 80° ⊀	
Connecting		
• Motor	Cable 1 m, 2 × 0.75 mm² (halogen-free)	
• Auxiliary Switch	Cable 1 m, 6 × 0.75 mm² (halogen-free)	
Torque		
• Motor	Min. 15 Nm	
• Spring-Return	Min. 15 Nm	
Running Time		
• Motor	< 75 s	
• Spring-Return	< 20 s (tamb = 20° C)	
Sound Power Level		
• Motor	Max. 45 dB (A)	
• Spring-Return	~62 dB (A)	
Position Indication	Mechanical with Pointer	
Certification	cULus According to UL873 and CAN/ CSA C22.2 No. 24 Designed to meet UL555S Certified to IEC/EN 60730-1 and IEC/ EN 60730-2-14	
Maintenance	Maintenance-free	
Weight	Approx 3.1 kg	2.8 kg

Dimensions



Wiring Diagram



SPRING-RETURN OPEN CLOSE ACTUATOR FOR DAMPERS UP TO 3M²

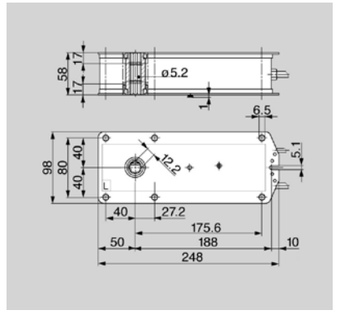
OPEN/CLOSE ACTUATOR [230V AC, 24V AC/DC]
BF 230, BF 24 (SPRING-RETURN)

CODE: A01 & A02

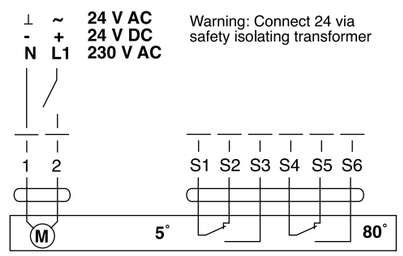
Application:
The type BF 230/BF 24 spring return actuator is intended for the operation of fire and smoke dampers in ventilation and A/C systems.

Mode of Operation:
The BF 230/BF 24 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.

Dimensions



Wiring Diagram



Technical Data	BF 230	BF 24
Power Supply	220-240 V AC 50/60 Hz	24V AC (+ -) 20% 24V AC (+ -) 10%
Power Consumption		
• Monitoring	8 W	7W
• Holding	3 W	2W
For Wire Sizing	12.5 VA	10 VA
Protection Class	II	III
Degree of Protection	IP 54	
Auxiliary Switch	2x SPDT 6(3)A, 250V AC ▭	
Switching Points	5°, 80°	
Connecting Cable	-Motor -Auxillary Swatches	1m, 2 × 0.75 mm² 1m, 6 × 0.75 mm²
Angle of Rotation	95° (including 5 spring pretensioning)	
Damper Rotation	12mm form-fit (10mm with adapter supplied)	
Torque	-Motor -Spring Return	min. 18 Nm min. 12 Nm
Running Time	-Motor -Spring Return	140s ~16s (@ tamb = 20° C)
Direction of Rotation	Selected by Mounting L/R	
Position Indication	Mechanical with Pointer	
Ambient Temp. Range	-30 to +50 °C	
Safe Temperature	-30 to +75 °C (24h guaranteed safety)	
Non-Operating Temp.	-40 to +80 °C	
Ambient Humidity	Class D to DIN 40040	
EMC	CE According to 89/336/EEC and 92/31/EEC	
Sound Power Level	Motor Max. 45 dB (A); spring ~ 62 dB(A)	
Service Life	Min. 60000 Safe Positions	
Maintenance	Maintenance-free	
Weight	3100 g	2800 g

BELIMO DAMPER ACTUATORS

SPRING-RETURN OPEN CLOSE ACTUATOR FOR DAMPERS UP TO 3M²

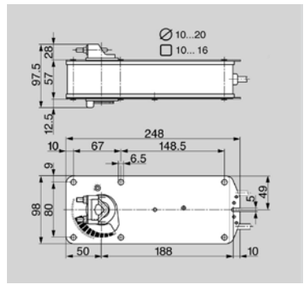
CODE: A03 & A04

OPEN/CLOSE ACTUATOR [230V AC]
AF 230, AF 230-S (SPRING-RETURN)

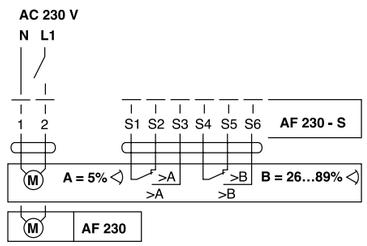
Application:
The type AF 230/AF 230-S spring return actuator are intended for the operation of air dampers that perform safety functions (e.g. frost and smoke protection, hygiene, etc.).

Mode of Operation:
The AF 230/AF 230-S actuator moves the damper to its normal working position while tensioning the return spring at the same time. If the ower supply is interrupted, the energy stored in the spring moves the damper back to its safe position.

Variable End Switch
The AF 230-S actuator has one fixed auxiliary switch and one adjustable auxiliary switch which allows angle of rotation of 5% and between 26 - 89% to be signalled



Wiring Diagram



Technical Data	AF 230	AF 230-S
Power Supply	230 V AC, 50/60 Hz	
Nominal Voltage Range	AC 198 - 264 V	
Power Consumption		
• Monitoring	6.5 W	
• Holding	2.5 W	
For Wire Sizing	11 VA	
Protection Class	II (all insulated)	
Degree of Protection	IP 54	
***Auxiliary Switch AF-S**	2x SPDT 6(3)A, 250V AC ▭	
Switching Points	fixed 5% ⚹, adjustable 26...89% ⚹	
Connecting Cable ***AF... - S**	-Motor -Auxillary Swatches	1m, 2 × 0.75 mm² 1m, 6 × 0.75 mm²
Angle of Rotation	Max. 95° (adj. 26...95% ⚹ with supplied limit stop).	
Torque	-Motor -Spring Return	min. 15 Nm (at rated voltage) min. 15 Nm
Running Time	-Motor -Spring Return	150s ≈ 16s
Direction of Rotation	Selected by Mounting L/R	
Position Indication	Mechanical	
Ambient Temp. Range	-30 to +50 °C	
Non-Operating Temp.	-40 to +80 °C	
Ambient Humidity	to EN 60335-1	
EMC	CE According to 89/336/EEC & 92/31/EEC	
Sound Power Level	Motor Max. 45 dB (A); spring ≈ 62 dB(A)	
Service Life	Min. 60000 Safe Positions	
Maintenance	Maintenance-free	
Weight	3300 g	

* Switch applies for model AF 230-S

SPRING-RETURN OPEN CLOSE ACTUATOR FOR DAMPERS UP TO 3M²

OPEN/CLOSE ACTUATOR [230V AC, 120V AC]

AF 230, AF 120 US (SPRING-RETURN)

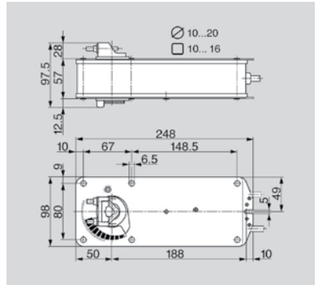
CODE: A05 & A06

Application:
For on-off, fail-safe control of dampers in HVAC systems. Actuator sizing should be done in accordance with the damper manufacturer's specs. Control is on-off from an auxillary contact, or a manual switch.

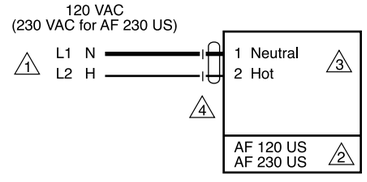
Mode of Operation:
The AF series actuators provide true spring return operation for reliable fail-safe application and positive close off on air tight dampers. The spring return system provide consistent torque to the damper with and without power applied to the actuator.

Technical Data	AF 230	AF 120 US
Power Supply	230 VAC (+-) 14% 50/60Hz	120 VAC (+-) 10%
Power Consumption		
• **Monitoring**	running: 6.5 W	6 W
• **Holding**	holding: 2.5 W	2.3 W
Transormer Sizing	11 VA	10 VA
Electrical Connection	3 ft, 18 GA appliance cable 1/2" conduit connection.	
Overload Protection	electronic throughout 0 to 95° rotation.	
Angle Rotation	95°, adjustable 30 to 95° w/ accessories	
Torque	133 in-lb [15Nm] constant	
Direction of Rotation	Spring Return can be Selected by L/R Mounting.	
Position Indication	Visual Indicator, -5° to 90° (-5° is spring return position).	
Manual Override	3mm hex crank (shipped w/ actuator)	
Running Time	150 sec. constant, independent of load, spring return < 20 sec	
Humidity	5 to 95% RH noncondensing	
Ambient Temperature	-22 °F to 122 °F [-30 °C to +50 °C]	
Storage Temperature	-40 °F to 175 °F [-40 °C to 80 °C]	
Housing	NEMA type 2 / IP54	
Housing Material	Zinc coated steel	
Agency Listings	UL 873 listed, CSA 4813 02 certified	
Noise Level	Max. 45 dB (A)	
Servicing	Maintenance-free	
Quality Standard	ISO 9001	
Weight	6.9 lbs (3.1 kg.)	

Dimensions



Wiring Diagram



1. Provide overload protection & disconnect as required.
2. Actuator may be connected in parallel. Power Consuption must be observed.
3. No ground connection is required.
4. Meets UL & CSA requirements without the need of an electrical ground connection.

SPRING-RETURN OPEN CLOSE ACTUATOR FOR DAMPERS UP TO 3M²

CODE: A07 & A08

OPEN/CLOSE ACTUATOR [230V AC, 120V AC]

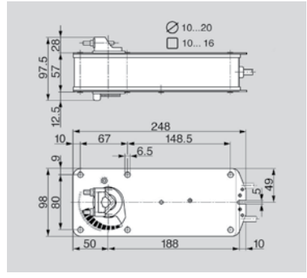
AF 230-S, AF 120-S US (SPRING-RETURN)

Application:
For on-off, fail-safe control of dampers in HVAC systems. Actuator sizing should be done in accordance with the damper manufacturer's specs. Control is on-off from an auxillary contact, or a manual switch.

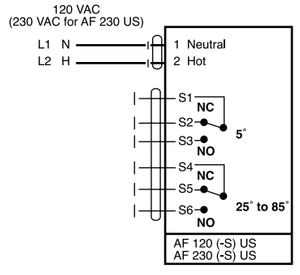
Mode of Operation:
The AF series actuators provide true spring return operation for reliable fail-safe application and positive close off on air tight dampers. The spring return system provide consistent torque to the damper with and without power applied to the actuator.
The actuators is provided with 2 built in auxiliary switches. The SPDT switches are provided for safety interfacing or signalling, for example for fan start up.

Technical Data	AF 230-S	AF 120-S US
Power Supply	230 VAC (+-) 14% 50/60Hz	120 VAC (+-) 10%
Power Consumption		
• **Monitoring**	running: 6.5 W	6 W
• **Holding**	holding: 2.5 W	2.3 W
Transormer Sizing	11 VA	10 VA
Electrical Connection	3 ft, 18 GA appliance cable 1/2" conduit connection.	
Overload Protection	Electronic throughout 0 to 95° rotation.	
Angle Rotation	95°, adjustable 30 to 95° w/ accessories	
Torque	133 in-lb [15Nm] constant	
Direction of Rotation	Spring Return can be Selected by L/R Mounting	
Position Indication	Visual Indicator, -5° to 90° (-5° is spring return position).	
Manual Override	3mm hex crank (shipped w/ actuator)	
Auxiliary Switches	2xSPDT 7A (2.5A) @ 250 VAC, UL listed	
AF...-S	One set at +5°, one adjustable 25° to 85°.	
Running Time	150 sec. constant, independent of load, spring return < 20 sec	
Humidity	5 to 95% RH noncondensing	
Ambient Temperature	-22 °F to 122 °F [-30 °C to +50 °C]	
Storage Temperature	-40 °F to 175 °F [-40 °C to 80 °C]	
Housing	NEMA type 2 / IP54	
Housing Material	Zinc coated steel	
Agency Listings	UL 873 listed, CSA 4813 02 certified	
Noise Level	Max. 45 dB (A)	
Servicing	Maintenance-free	
Quality Standard	ISO 9001	
Weight	6.9 lbs (3.1 kg.)	

Dimensions



Wiring Diagram



BELIMO DAMPER ACTUATORS

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SPRING-RETURN OPEN CLOSE ACTUATOR FOR DAMPERS UP TO 3M²

OPEN/CLOSE ACTUATOR [24V]

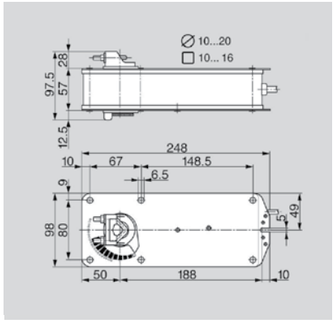
AF 24 US (SPRING-RETURN)

CODE: A09

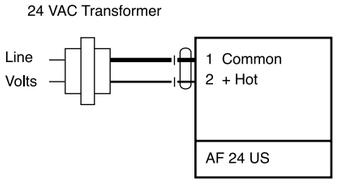
Application:
For on-off, fail-safe control of dampers in HVAC systems. Actuator sizing should be done in accordance with the damper manufacturer's specs. Control is on-off from an auxillary contact, or a manual switch.

Mode of Operation:
This actuator provides true spring return operation for reliable fail-safe application & positive close off on air tight dampers. The spring return system provide consistent torque to the damper with and without power applied to the actuator.

Dimensions



Wiring Diagram



Technical Data	AF 24 US
Power Supply	24 VAC (+-) 20%, 50/60Hz 24 VDC (+-) 10%
Power Consumption	running : 5W holding : 1.5W
Transormer Sizing	10 VA (class 2 power source)
Electrical Connection	3 ft, 18 GA appliance cable 1/2" conduit connection.
Overload Protection	Electronic throughout 0 to 95° rotation.
Angle Rotation	95°, adjustable 30 to 95° w/ accessories
Torque	133 in-lb [15Nm] constant
Direction of Rotation	Spring Return can be Selected by L/R Mounting.
Position Indication	Visual Indicator, -5° to 90° (-5° is spring return position).
Manual Override	3mm hex crank (shipped w/ actuator)
Running Time	150 sec. constant, independent of load, spring return < 20 sec
Humidity	5 to 95% RH noncondensing
Ambient Temperature	-22 °F to 122 °F [-30 °C to +50 °C]
Storage Temperature	-40 °F to 176 °F [-40 °C to 80 °C]
Housing	NEMA type 2 / IP54
Housing Material	Zinc coated steel
Agency Listings	UL 873 listed, CSA 4813 02 certified
Noise Level	Max. 45 dB (A)
Servicing	Maintenance-free
Quality Standard	ISO 9001
Weight	6.0 lbs (2.7 kg.)

SPRING-RETURN OPEN CLOSE ACTUATOR FOR DAMPERS UP TO 3M²

OPEN/CLOSE ACTUATOR [230V AC, 120V AC]

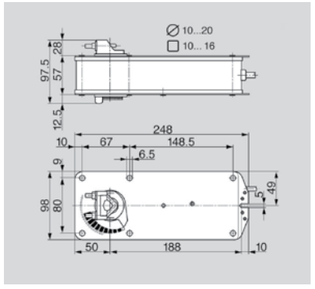
AF 24-S US (SPRING-RETURN)

CODE: A10

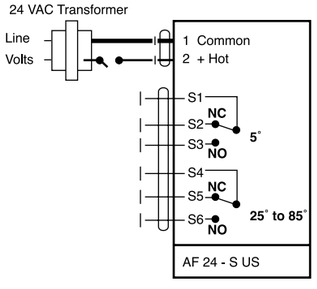
Application:
For on-off, fail-safe control of dampers in HVAC systems. Actuator sizing should be done in accordance with the damper manufacturer's specs. Control is on-off from an auxillary contact, or a manual switch.

Mode of Operation:
This actuator provides true spring return operation for reliable fail-safe application and positive close off on air tight dampers. The spring return system provide consistent torque to the damper with and without power applied to the actuator. The AF 24-S US us is provided with 2 built in auxiliary switches. The SPDT switches are provided for safety interfacing or signalling, for example for fan start up.

Dimensions



Wiring Diagram



Technical Data	AF 24-S US
Power Supply	24 VAC (+-) 20%, 50/60Hz 24 VDC (+-) 10%
Power Consumption	running : 5W holding : 1.5W
Transormer Sizing	10 VA (class 2 power source)
Electrical Connection	3 ft, 18 GA appliance cable 1/2" conduit connection.
Overload Protection	Electronic throughout 0 to 95° rotation.
Angle Rotation	95°, adjustable 30 to 95° w/ accessories
Torque	133 in-lb [15Nm] constant
Direction of Rotation	Spring Return can be Selected by L/R Mounting.
Position Indication	Visual Indicator, -5° to 90° (-5° is spring return position).
Manual Override	3mm hex crank (shipped w/ actuator)
Auxiliary Switches	2xSPDT 7A (2.5A) @ 250 VAC, UL listed
AF24S	One set at +5°, one adjustable 25° to 85°.
Running Time	150 sec. constant, independent of load, spring return < 20 sec
Humidity	5 to 95% RH noncondensing
Ambient Temperature	-22 °F to 122 °F [-30 °C to +50 °C]
Storage Temperature	-40 °F to 176 °F [-40 °C to 80 °C]
Housing	NEMA type 2 / IP54
Housing Material	Zinc coated steel
Agency Listings	UL 873 listed, CSA 4813 02 certified
Noise Level	Max. 45 dB (A)
Servicing	Maintenance-free
Quality Standard	ISO 9001
Weight	6.0 lbs (2.7 kg.)

BELIMO DAMPER ACTUATORS

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SPRING-RETURN MODULATING ACTUATOR FOR DAMPERS UP TO 3M²

MODULATING ACTUATOR [24V]

AF 24-SR (SPRING-RETURN)

CODE: A11

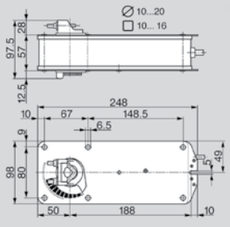
Control: DC0 - 10V or 0 - 20V phase cut
Position Feedback: DC2 - 10V
Manual operation with integral position stop

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

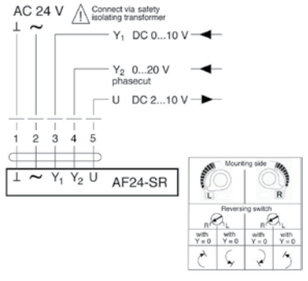
Mode of Operation:
The AF24-SR actuator moves the damper to its normal working position while tensioning the return spring at the same time. If the power supply is interrupted, the energy stored in the spring moves the damper back to its safe position.

Variable End Switch:
The actuator has one fixed auxiliary switch and one adjustable auxiliary switch whic allows angle of rotation of 5% and between 26 - 89% to be signalled.

Dimensions



Wiring Diagram



Technical Data	AF 24-SR	
Power Supply	AC 24 V, 50/60 Hz	
Nominal Voltage Range	AC 19.2 - 28.8 V	
Power Consumption	monitoring 6W holding 2.5W	
For Wire Sizing	10 VA	
Protection Class	III (safety extra- low voltage)	
Degree of Protection	IP 54	
Connecting Cable	-Motor 1m, 5 × 0.75 mm²	
Control Signal Y_1	DC 0 - 10V @ input resistance 100kΩ (0.1mA)	
Control Signal Y_2	0 - 20V phasecut @ input resistance 8kΩ (50mW)	
Operating Range	DC 2 - 10V (at control signal Y_1) 2 - 10V phasecut (at control signal Y_2)	
Measuring Voltage U	DC 2 - 10V @ max.0.5mA (for 0..100% angle of rotation).	
Synchronisation Tolerance	(+-) 5%	
Direction of Rotation	Motor selected with switch L/R spring selected by L/R Mounting	
Torque	-Motor	min. 15Nm (at rated voltage)
	-Spring Return	min. 15 Nm
Angle of Rotation	Max. 95° (adj. 26...95% < with supplied limit stop).	
Running Time	-Motor 150s, spring return ~15s	
Sound Power Level	Motor Max. 45 dB (A); spring ~ 62 dB(A)	
Service Life	Min. 60000 operations	
Position Indication	Mechanical	
Ambient temp. Range	-30 to +50 °C	
Non-Operating Temp.	-40 to +80 °C	
Ambient Humidity	To EN 60335-1	
EMC	CE According to 89/336/EEC & 92/31/EEC	
Maintenance	Maintenance-free	
Weight	3180 g : AF230S = 3370 g	

SPRING-RETURN OPEN CLOSE ACTUATOR FOR DAMPERS UP TO 1.5M²

OPEN/CLOSE ACTUATOR [24V, 120C AC]

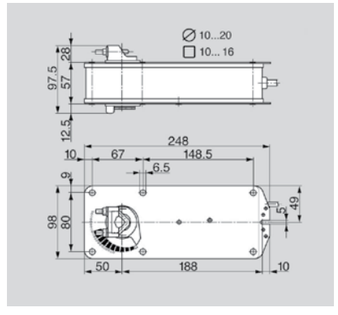
NF 24 US, NF 120 US (SPRING-RETURN)

CODE: A12 & 13

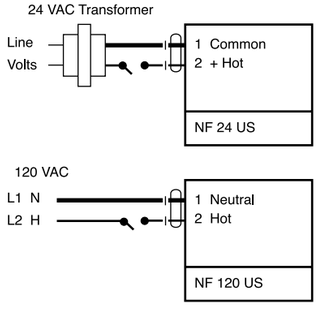
Application:
For on-off, fail-safe control of dampers in HVAC systems. Actuator sizing should be done in accordance with the damper manufacturer's specs. Control is on-off from an auxillary contact, or a manual switch.

Mode of Operation:
The NF series actuators provide true spring return operation for reliable fail-safe application and positive close off on air tight dampers. The spring return system provide consistent torque to the damper with and without power applied to the actuator.

Dimensions



Wiring Diagram



Technical Data	NF 24 US	NF 120 US
Power Supply	24 VAC (+-) 20% 24 VDC (+-) 10%	120V AC (+-) 10% 50/60Hz
Power Consumption	running : 5W holding : 2.6W	6W 3.5W
Transormer Sizing	2 VA	7VA
Electrical Connection	3 ft, 18 GA appliance cable 1/2" conduit connection.	
Overload Protection	Electronic throughout 0 to 95° rotation.	
Angle Rotation	95°, adjustable 30 to 95° w/ accessories	
Torque	60 in-lb [7Nm] constant torque	
Direction of Rotation	Spring Return can be selected by L/R Mounting.	
Position Indication	Visual Indicator, -5° to 90° (0° is spring return position).	
Running Time	Motor: < 75 sec Spring Return < 60 sec	
Humidity	5 to 95% RH noncondensing	
Ambient Temperature	-22 °F to 122 °F [-30 °C to +50 °C]	
Storage Temperature	-40 °F to 175 °F [-40 °C to 80 °C]	
Housing	NEMA type 2 / IP54	
Housing Material	Zinc coated steel	
Agency Listings	UL 873 listed, CSA 4813 02 certified	
Noise Level	Max. 45 dB (A)	
Servicing	Maintenance-free	
Quality Standard	ISO 9001	
Weight	6.6 lbs (3.0 kg.)	7.3 lbs (3.3 kg)

SPRING-RETURN OPEN CLOSE ACTUATOR FOR DAMPERS UP TO 1.5M²

OPEN/CLOSE ACTUATOR [24V, 120C AC]

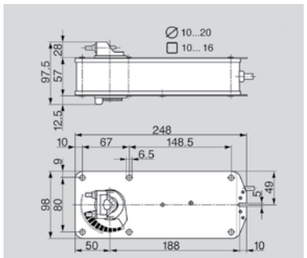
NF 24-S, NF 120-S US (SPRING-RETURN)

CODE: A14 & 15

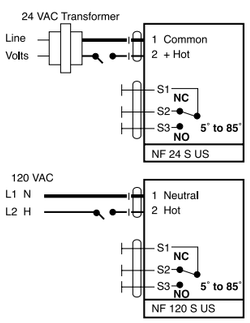
Application:
For on-off, fail-safe control of dampers in HVAC systems. Actuator sizing should be done in accordance with the damper manufacturer'sspecs. Control is on-off from an auxillary contact, or a manual switch.

Mode of Operation:
The NF series actuators provide true spring return operation for reliable fail-safe application and positive close off on air tight dampers. The spring return system provide consistent torque to the damper with and without power applied to the actuator. The actuators is provided with one built-in auxiliary switch. The SPDT switches are provided forsafety interfacing or signaling, for example for fan start up.

Dimensions



Wiring Diagram



Technical Data	NF 24-S US	NF 120-S US
Power Supply	24 VAC (+-) 20% 24 VDC (+-) 10%	120VAC (+-) 10% 50/60Hz
Power Consumption	running: 5 W holding: 2.6 W	6 W 3.5 W
Transormer Sizing	2 VA	7 VA
Electrical Connection	3 ft, 18 GA appliance cable 1/2" conduit connection.	
Overload Protection	electronic throughout 0 to 95° rotation.	
Angle Rotation	95°, adjustable 30 to 95° w/ accessories	
Torque	60 in-lb [7Nm] constant torque	
Direction of Rotation	Spring Return can be selected by L/R Mounting.	
Position Indication	Visual Indicator, -5° to 90° (0° is spring return position).	
Auxiliary Switch	1xSPDT 7A (2.5A) @ 250 VAC, UL listed	
NF...-S	Adjustable 5° to 85°.	
Running Time	Motor: < 75 sec Spring Return < 60 sec	
Humidity	5 to 95% RH noncondensing	
Ambient Temperature	-22 °F to 122 °F [-30 °C to +50 °C]	
Storage Temperature	-40 °F to 176 °F [-40 °C to 80 °C]	
Housing	NEMA type 2 / IP54	
Housing Material	Zinc coated steel	
Agency Listings	UL 873 listed, CSA 4813 02 certified	
Noise Level	Max. 45 dB (A)	
Servicing	Maintenance-free	
Quality Standard	ISO 9001	
Weight	6.6 lbs (3.0 kg.)	7.3 lbs (3.3 kg)

SPRING-RETURN OPEN CLOSE ACTUATOR FOR DAMPERS UP TO 1.5M²

CODE: A16

OPEN/CLOSE ACTUATOR [24V]

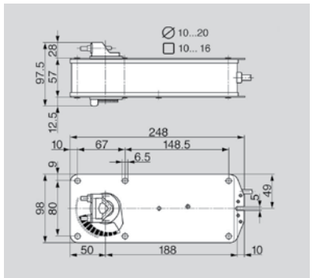
NF 24-SR US (SPRING-RETURN)

Proportional Damper Actuator: 24 V for 0 - 10 VDC or to 10 mA control signal. Output signal of 2 to 10 VDC for position indicator.

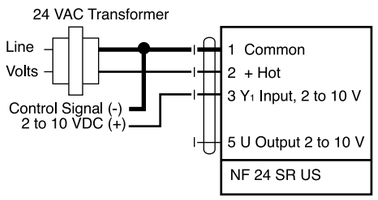
Application:
For on-off, fail-safe control of dampers in HVAC systems. Actuator sizing should be done in accordance with the damper manufacturer's specs.

Mode of Operation:
The NF series actuators provide true spring return operation for reliable fail-safe application and positive close off on air tight dampers. The spring return system provide consistent torque to the damper with and without power applied to the actuator.

Dimensions



Wiring Diagram



Technical Data	
Power Supply	24 VAC (+-) 20%, 50/60Hz 24 VDC (+-) 10%
Power Consumption	running : 3W holding : 1.W
Transormer Sizing	10 VA (class 2 power source)
Electrical Connection	3 ft, 18 GA appliance cable 1/2" conduit connection.
Overload Protection	Electronic throughout 0 to 95° rotation.
Control Signal	Y_1 0 to 10 VDC, 0 to 20 mA
Imput Impedance	100 kW (0.1 mA), 500W
Operating Range	2 to 10 VDC, 4 to 20 mA
Feedback output "U"	2 to 10 VDC (max. 0.5 mA) for 95°
Angle Rotation	95°, adjustable 30 to 95° with accessories
Torque	60 in-lb [7Nm] constant torque
Direction of Rotation	Spring Return Selected by L/R Mounting Control Direction Selected by L/R Switch
Position Indication	Visual Indicator, -5° to 95° (0° is spring return position).
Running Time	Motor: 150 sec constant independent of load Spring Return < 60 sec
Humidity	5 to 95% RH noncondensing
Ambient Temperature	-22 °F to 122 °F [-30 °C to +50 °C]
Storage Temperature	-40 °F to 175 °F [-40 °C to 80 °C]
Housing	NEMA type 2 / IP54
Housing Material	Zinc coated steel
Agency Listings	UL 873 listed, CSA 4813 02 certified
Noise Level	Max. 45 dB (A)
Servicing	Maintenance-free
Quality Standard	ISO 9001
Weight	6.0 lbs (2.7 kg.)

BELIMO DAMPER ACTUATORS

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OPEN CLOSE ACTUATOR FOR DAMPERS UP TO 4M²

OPEN/CLOSE ACTUATOR [230V AC, 24V AC/DC]
SM 230A, SM 24A (OPEN/CLOSE)

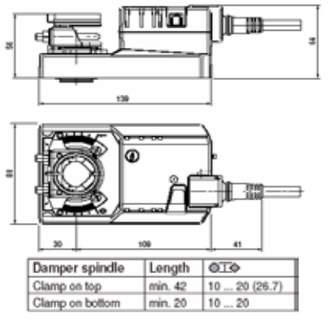
CODE: A17 & 18

Control:
Open-Close or 3-point

Application:
The actuator is overload-proof, requires no limith switches and automatically stops when the end stop is reached.

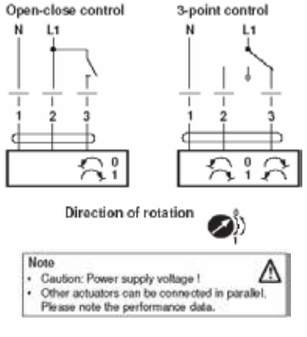
Mode of Operation:
Manual operation is possible with the selfresetting pushbutton (the gearing latch remains disengaged as long as the pushbutton is pressed).

Dimensions



Damper spindle	Length	
Clamp on top	min. 42	10 ... 20 (26.7)
Clamp on bottom	min. 20	10 ... 20

Wiring Diagram



Technical Data	SM 230A	SM 24A
Power Supply	230 V AC 50/60 Hz	24 V AC/DC
Nominal Voltage Range	AC 85 - 265 V	AC/DC 19.2 - 28.8 V
Power Consumption		
• In Operation	2.5 @ nominal torque	2 W @ nominal torque
• At Rest	0.6 W	
• For wire Sizing	6 VA	
Connecting	Cable 1 m, 3 × 0.75 mm²	
Direction of Rotation	Reversible with switch 0 ↶ or 1 ↷	
Torque	Min. 20Nm @ nominal voltage	
Angle of Rotationt	Max. 95° ⊀, limited on both sides by means of adjustable, mechanical end stops	
Running Time	150 s	
Sound Power Level	Max. 45 dB (A)	
Position Indication	Mechanical, pluggable	
Protection Class	II totally insulated ▭	
Protection Class (SM24A)	III safety extra-low voltage	
Degree of Protection	IP54 in any mounting position	
Ambient temp. Range	-30 to +50 °C	
Non-Operating temp.	-40 to +80 °C	
Ambient Humidity	95% r.H., Non-condensating (EN 60730-1)	
EMC	CE According to 89/336/EEC	
Maintenance	Maintenance-free	
Weight	Approx. 1050 g	1000 g

OPEN CLOSE ACTUATOR FOR DAMPERS UP TO 4M²

CODE: A17.1 & 18.1

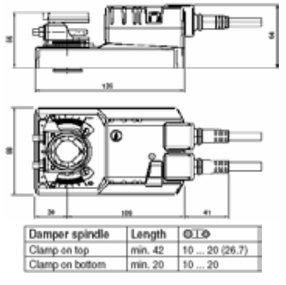
OPEN/CLOSE ACTUATOR [230V AC, 24V AC/DC]
SM 230A-S, SM 24A-S (OPEN/CLOSE)

Control:
Open-close or 3-point
Integrated auxilliary switch

Application:
The actuator is overload-proof, requires no limith switches and automatically stops when the end stop is reached.

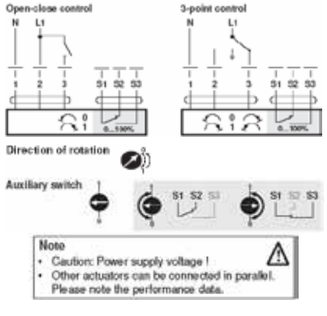
Mode of Operation:
Manual operation is possible with the self resetting push button (the gearing latch remains disengaged as long as the pushbutton is pressed). Flexible signalization with adjustable auxilliary switch (0 - 100%).

Dimensions



Damper spindle	Length	
Clamp on top	min. 42	10 ... 20 (26.7)
Clamp on bottom	min. 20	10 ... 20

Wiring Diagram



Technical Data	SM230A -S	SM24A-S
Power Supply	230 V AC 50/60 Hz	24 V AC/DC
Nominal Voltage Range	AC 85 - 265 V	AC/DC 19.2 - 28.8V
Power Consumption		
• In Operation	2.5 @ nominal torque	2 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 × 0.75 mm²	
• Auxiliary Switch	Cable 1 m, 3 × 0.75 mm²	
Direction of Rotation	Reversible with switch 0 ↶ or 1 ↷	
Torque	Min. 20Nm @ nominal voltage	
Angle of Rotationt	Max. 95° ⊀, limited on both sides by means of adjustable, mechanical end stops	
Running Time	150 s	
Sound Power Level	Max. 45 dB (A)	
Position Indication	Mechanical, pluggable	
Protection Class	II totally insulated ▭	
Protection Class (SM24A)	III safety extra-low voltage	
Degree of Protection	IP54 in any mounting position	
Ambient temp. Range	-30 to +50 °C	
Non-Operating temp.	-40 to +80 °C	
Ambient Humidity	95% r.H., non-condensating (EN 60730-1)	
EMC	CE According to 89/336/EEC	
Maintenance	Maintenance-free	
Weight	Approx. 1100 g	1050 g

BELIMO DAMPER ACTUATORS

MODULAITING ACTUATOR FOR DAMPERS UP TO 4M²

MODULATING ACTUATOR [230V AC]
SM 230-ASR (MODULATING)

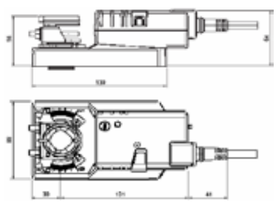
CODE: A19

Control:
DC 0 - 10 V
Position Feedback: DC 2 - 10 V6.

Application:
The actuator is overload-proof, requires no limith switches and automatically stops when the end stop is reached.

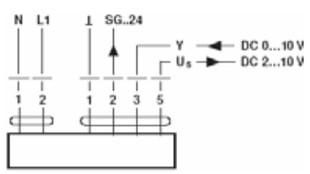
Mode of Operation:
The actuator is controlled by means of a standard control signal DC 0 - 10 V. It opens to the position dictated by this signal. The measuring voltage U allows the damper position (0 - 100%) to be electrically indicated and serves as a follow-up control signal forother actuators. Manual operation is possible with the self-resetting push button (the gearing latch remains disengaged as long as the pushbutton is pressed).

Dimensions



Damper spindle	Length	⌀
Clamp on top	min. 42	10 ... 20 (26.7)
Clamp on bottom	min. 20	10 ... 20

Wiring Diagram



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

Technical Data	SM 230-ASR
Power Supply	AC 100 - 230 V, 50/60 Hz
Nominal Voltage Range	AC 85 - 265 V
Power Consumption	
• **In Operation**	3.5 @ nominal torque
• **At Rest**	1 W
• **For wire Sizing**	6.5 VA
Connection	Cable 1 m, 2 × 0.75 mm²
• **Motor**	Cable 1 m, 4 × 0.75 mm²
• **Auxiliary Switch**	
Control Signal Y	DC 0 - 10 V, typical input impedance 100 kΩ
Working Rang	DC 2 - 10 V
Positioning Accuracy	DC 2 - 10 V
Direction of Rotation (at Y=0 V)	Reversible with switch 0 ↶ or 1 ↷
Torque	Min. 20Nm @ nominal voltage
Angle of Rotationt	Max. 95° ⊀ , limited on both sides by means of adjustable, mechanical end stops
Running Time	150 s
Sound Power Level	Max. 45 dB (A)
Position Indication	Mechanical, pluggable
Protection Class	II totally insulated ▭
Degree of Protection	IP54 in any Mounting Position
Ambient temp. Range	-30 to +50 °C
Non-Operating temp.	-40 to +80 °C
Ambient Humidity	95% r.H., Non-condensating (EN 60730-1)
EMC	CE According to 89/336/EEC
Maintenance	Maintenance-free
Weight	Approx. 1050 g 1000 g

OPEN CLOSE ACTUATOR FOR DAMPERS UP TO 1.5M²

OPEN/CLOSE ACTUATOR [230V AC, 24V AC/DC]
NM 230, NM 24 (OPEN/CLOSE)

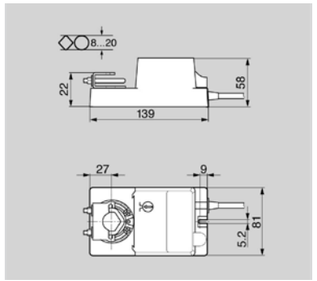
CODE: A20 & 21

NM 230: Control by single-pole contact (single wire control). NM24: Reversible.

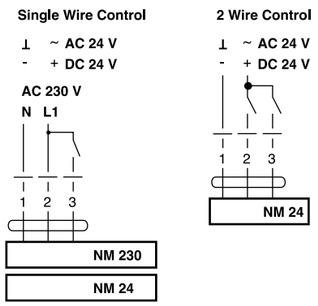
Application:
The damper actuator has no limit switches and is overload-proof. It stops automatically when it reaches the damper or actuator end stop.

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

Dimensions



Wiring Diagram



Technical Data	NM 230	NM 24
Power Supply	230 V AC 50/60 Hz	24 V AC/DC
Nominal Voltage Range	AC 198 - 264 V	AC/DC 19.2 - 28.8 V
For Wire Sizing	18 VA	3.5 VA
Power Consumption	2W	2W
Torque	1m long, 3 × 0.75mm²	
Direction of Rotation	selected with L/R switch	
Torque	Min. 8Nm (at rated voltage)	
Angle of Rotationt	Max 95° (adjustable by mechanical stops)	
Running Time	75 - 150s (0 - 8Nm)	
Sound Power Level	Max. 35 dB (A)	
Position Indication	Mechanical	
Protection Class	II (all insulated)	III (safety low voltage)
Degree of Protection	IP 54 (cable entry down)	
Ambient temp. Range	-20 to +50 °C	
Non-Operating temp.	-40 to +80 °C	
Ambient Humidity	To EN 60335-1	
EMC	CE According to 89/336/EEC & 92/31/EEC	
Maintenance	Maintenance-free	
Weight	800 g	

MODULAITING ACTUATOR FOR DAMPERS UP TO 1.5M²

MODULATING ACTUATOR [AC 24V]
NM 24-SR (MODULATING)

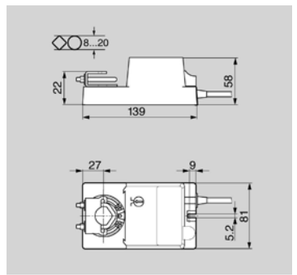
CODE: A22

Control: DC0 - 10 V
Position Feedback: DC2 - 10V
Self-adapting, automatic angle of rotation and running time adjustment.

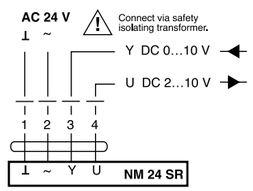
Application:
The damper actuator has no limit switches and is overload-proof. It stops automatically when it reaches the damper or actuator end stop.

Mode of Operation:
When the power supply is first switched on, or when the override push button is pressed the actuator actuator performs an automatic function test. A functional check of damper operation is simplicity itself: the gearing can be disengaged by simply pressing a pushbutton on top of th case. While the pushbutton remains depressed, the damper can be operated by hand.

Dimensions



Wiring Diagram



Technical Data	NM 24-SR
Power Supply	AC 24 V AC 50/60 Hz
Nominal Voltage Range	AC/DC 19.2...28.8 V
For Wire Sizing	3 VA
Power Consumption	1.3 W running, 0.5 W at rest
Connecting Cable	1m long, 4×0.75 mm²
Control Signal Y	DC 0 - 10 V input resistance 100kΩt
Operating Range	DC 2 - 10V (for 0 - 100% angle of rotation)
Measuring Voltage U	DC 2 - 10V @ <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. 8Nm (at rated voltage)
Angle of Rotation	Max. 95° (adjustable by mechanical stops)
Running Time	150s, 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	III (safety low voltage)
Degree of Protection	IP 54 (cable entry down)
Ambient temp. Range	-20 to +50 °C
Non-Operating Temp.	-40 to +80 °C
Ambient Humidity	To EN 60335-1
EMC	CE According to 89/336/EEC & 92/31/EEC
Maintenance	Maintenance-free
Weight	900 g

OPEN CLOSE ACTUATOR FOR DAMPERS UP TO 6M²

CODE: A23

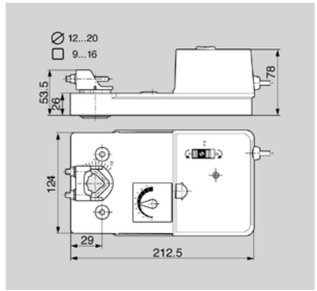
OPEN/CLOSE ACTUATOR [230 V AC]
GM 240 (OPEN/CLOSE)

2-Wire Control

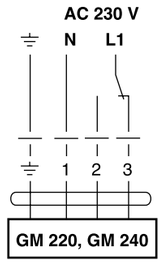
Application:
The damper actuator has no limit switches and is overload-proof. It stops automatically when it reaches the damper or actuator end stop.

Mode of Operation:
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.

Dimensions



Wiring Diagram



Technical Data	
Power Supply	230 V AC, 50/60 Hz
Nominal Voltage Range	AC 198 - 264 V
For Wire Sizing	10 VA @ 50Hz, 13VA @ 60Hz
Power Consumption	10 W @ 50Hz, 13W @ 60Hz
Connecting Cable	0.9m long, 4×0.75 mm²
Direction of Rotation	Reversible with switch A/B
Torque	Min. 30Nm (at rated voltage)
Angle of Rotationt	Mechanically limited to 95°
Running Time	~ 180 s
Sound Power Level	Max. 45 dB (A)
Position Indication	0 - 10 (0=stop)and Reversible Indicator
Protection Class	I (with PE conductor)
Degree of Protection	IP 54 (cable entry down)
Ambient temp. Range	-30 to +50 °C
Non-Operating temp.	-40 to +80 °C
Ambient Humidity	To EN 60335-1
EMC	CE According to 89/336/EEC & 92/31/EEC
Maintenance	Maintenance-free
Weight	2000 g

OPEN CLOSE ACTUATOR FOR DAMPERS UP TO 6M²

OPEN/CLOSE ACTUATOR [AC/DC 24V]

GM 24 (OPEN/CLOSE)

CODE: A24

Reversible

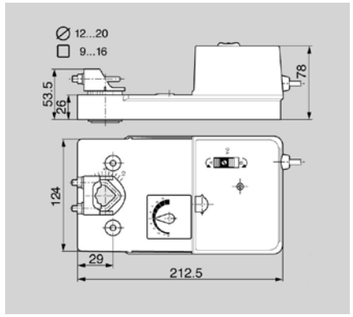
Application:
The damper actuator has no limit switches and is overload-proof. It stops automatically when it reaches the damper or actuator end stop.

Mode of Operation:
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.

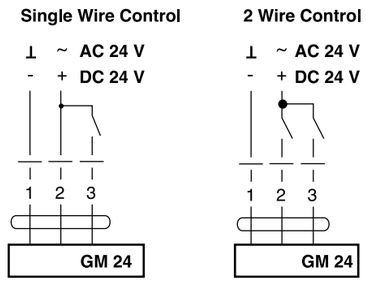
Technical Data

Power Supply	AC 24 V, 50/60 Hz, DC 24 V
Nominal Voltage Range	AC 19.2 - 28.8 V, DC 21.6 - 26.4 V
For Wire Sizing	6 VA
Power Consumption	3 W running, 1 W at the end position
Connecting Cable	0.9m long, 3×0.75 mm²
Direction of Rotation	Reversible with switch A/B
Torque	Min. 30Nm (at rated voltage)
Angle of Rotationt	Mechanically limited to 95°
Running Time	~ 135 s (+-) 15 s
Sound Power Level	Max. 45 dB (A)
Position Indication	0 - 10 (0=stop ↶) and reversible indicator
Protection Class	III (safety low voltage)
Degree of Protection	IP 54 (cable entry down)
Ambient temp. Range	-30 to +50 °C
Non-Operating temp.	-40 to +80 °C
Ambient Humidity	To EN 60335-1
EMC	CE According to 89/336/EEC & 92/31/EEC
Maintenance	Maintenance-free
Weight	2000 g

Dimensions



Wiring Diagram



MODULAITING ACTUATOR FOR DAMPERS UP TO 6M²

MODULATING ACTUATOR [AC 24V]

GM 24-SR (MODULATING)

CODE: A25

Control DC 0...10 V or 0...20 V phasecut Position feedback DC 2...10 V

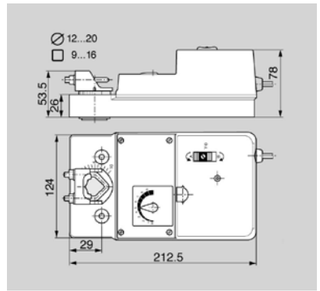
Application:
The damper actuator has no limit switches and is overload-proof. It stops automatically when it reaches the damper or actuator end stop.

Mode of Operation:
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.

Technical Data

Power Supply	AC 24 V AC 50/60 Hz
Nominal Voltage Range	AC/DC 19.2 - 28.8 V
For Wire Sizing	7 VA
Power Consumption	3 W running, 2 W at rest
Connecting Cable	0.9m long, 5 × 0.75 mm²
Control Signal Y_1	DC 0 - 10 V input resistance 100kΩ (0.1mA)
Control Signal Y_2	0 - 20 V phasecut @ input resistance 8 k (50 mW)
Operating Range	DC 2 - 10V (at control signal Y_1) 2 - 10V phasecut (at control signal Y_2)
Measuring Voltage U	DC 2 - 10V @ max.0.5mA(for 0...100% angle of rotation)
Synchronisation Tolerance	(+-) 5%
Override Control	Y open or 0 V = 0% angle of rotation Y at AC24 V = 100% angle of rotation
Direction of Rotation (at Y = 0 V)	reversible with switch A/B (at Y=0 V) at switch position A ↶ resp. B ↷
Torque	Min. 30Nm (at rated voltage)
Angle of Rotation	Mechanically limited to 95°
Running Time	~ 135 s (+-) 15 s
Sound Power Level	Max. 45 dB (A)
Position Indication	0...10 (0=stop ↶) and reversible indicator
Protection Class	III (safety low voltage)
Degree of Protection	IP 54 (cable entry down)
Ambient temp. Range	-30 to +50 °C
Non-Operating Temp.	-40 to +80 °C
Ambient Humidity	To EN 60335-1
EMC	CE According to 89/336/EEC & 92/31/EEC
Maintenance	Maintenance-free
Weight	2000 g

Dimensions



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