

Customizable Fail-Safe actuator for controlling dampers in typical commercial HVAC applications.

- Torque motor 270 in-lb [30 Nm]
- Nominal voltage AC 100...240 V
- Control On/Off
- 2x SPDT
- NEMA 4



5-year warranty



Please note: Due to a supplier issue, certain NEMA 4 actuator covers will be supplied in gray instead of orange until further notice. This change ensures uninterrupted shipping and the same protective properties and product specifications.

Technical data

Electrical data	Nominal voltage	AC 100...240 V
	Nominal voltage frequency	50/60 Hz
	Nominal voltage range	AC 85...265 V
	Power consumption in operation	9.5 W
	Power consumption in rest position	4.5 W
	Transformer sizing	21 VA
	Auxiliary switch	2x SPDT, 1 mA...3 A (0.5 A inductive), DC 5 V...AC 250 V, 1x 10° / 1x 85°
	Switching capacity auxiliary switch	1 mA...3 A (0.5 A inductive), DC 5 V...AC 250 V
	Electrical Connection	Terminal block(s) inside junction box with knockouts
	Overload Protection	electronic throughout 0...95° rotation
	Electrical Protection	actuators are double insulated
	Functional data	Torque motor
Direction of motion motor		selectable by ccw/cw mounting
Direction of motion fail-safe		reversible with cw/ccw mounting
Manual override		5 mm hex crank (3/16" Allen), supplied
Angle of rotation		Max. 95°
Angle of rotation note		adjustable with mechanical end stop, 35...95°
Running Time (Motor)		75 s / 90°
Running time fail-safe		10 s @ -4...122°F [-20...50°C], <15 s @ -22...-4°F [-30...-20°C]
Sound power level, motor		56 dB(A)
Sound power level, fail-safe		71 dB(A)
Position indication	Mechanical	
Safety data	Degree of protection NEMA/UL	NEMA 4
	Housing	UL Enclosure Type 4
	Agency Listing	cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2014/30/EU and 2014/35/EU
	Quality Standard	ISO 9001
	Ambient humidity	Max. 100% RH
	Ambient temperature	-22...122°F [-30...50°C]
	Ambient temperature note	-40...122°F [-40...50°C] for actuator with integrated heating
	Storage temperature	-40...176°F [-40...80°C]

Technical data

Safety data	Servicing	maintenance-free
Weight	Weight	10 lb [4.6 kg]
Materials	Housing material	Die cast aluminium and plastic casing
Footnotes	†Rated Impulse Voltage 4kV, Type of action 1.AA.B, Control Pollution Degree 4.	

Product features

Application For On/Off, fail-safe control of dampers in HVAC systems. Actuator sizing should be done in accordance with the damper manufacturer's specifications. Control is On/Off from an auxiliary contact or a manual switch. The actuator is mounted directly to a damper shaft up to 1.05" in diameter by means of its universal clamp. A crank arm and several mounting brackets are available for applications where the actuator cannot be direct coupled to the damper shaft. Maximum of two EF's can be piggybacked for torque loads of up to 540 in-lbs. Minimum 1" diameter shaft and parallel wiring.

Operation The EF..120-S N4 series actuators provide true spring return operation for reliable fail-safe application and positive close off on air tight dampers. The spring return system provides constant torque to the damper with, and without, power applied to the actuator. The EF..120-S N4 series provides 95° of rotation and is provided with a graduated position indicator showing 0° to 95°. The actuator may be stalled anywhere in its normal rotation without the need of mechanical end switches. The EF..120-S N4 versions are provided with two built-in auxiliary switches. These SPDT switches provide safety interfacing or signaling, for example, for fan start-up. The switching function at the fail-safe position is fixed at 10°, the other switch function is fixed at 85°. The EF..120-S N4 actuator is shipped at 5° (5° from full fail-safe) to provide automatic compression against damper gaskets for tight shut-off.

Installation Note: Use 60°C/75°C copper (CU) conductor and wire size range 12-26 AWG, stranded or solid. If conduit is used, use flexible metal conduit; UL listed and CSA certified strain relief or conduit fitting suitable for outdoor applications, rated NEMA type 4, 4X, 6 or 6X or watertight.

Typical specification On/Off spring return damper actuators shall be direct coupled type which require no crank arm and linkage and be capable of direct mounting to a jackshaft up to a 1.05" diameter. The actuators must be designed so that they may be used for either clockwise or counter clockwise fail-safe operation. Actuators shall be protected from overload at all angles of rotation. If required, two SPDT auxiliary switch shall be provided. Actuators with auxiliary switches must be constructed to meet the requirements for Double Insulation so an electrical ground is not required to meet agency listings. Actuators shall be cULus listed and have a 5 year warranty, and be manufactured under ISO 9001 International Quality Control Standards. Actuators shall be as manufactured by Belimo.

Accessories

Electrical accessories	Description	Type
	Auxiliary switch, mercury-free	P475
	Auxiliary switch, mercury-free	P475-1
	Signal simulator, Power supply AC 120 V	PS-100
Mechanical accessories	Description	Type
	Shaft extension 240 mm ø20 mm for damper shaft ø8...22.7 mm	AV8-25
	End stop indicator	EF-P
	Shaft clamp reversible, clamping range ø12...26.7 mm	IND-EFB
	Ball joint suitable for damper crank arm KH8 / KH10	K9-2
	Damper crank arm Slot width 8.2 mm, clamping range ø14...25 mm	KG10A
	Actuator arm Slot width 8.2 mm	KH10
	Push rod for KG10A ball joint L 36", 3/8" diameter	KH-EFB
	Wrench 0.512 in. [13 mm]	SH10
	Mounting bracket for AF..	TOOL-07
		ZG-100
		ZG-120

Accessories

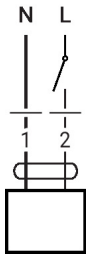
Description	Type
Mounting kit for linkage operation for flat and side installation	ZG-DC1
	ZG-DC2
	ZG-EFB
	ZG-JSA-3

Electrical installation

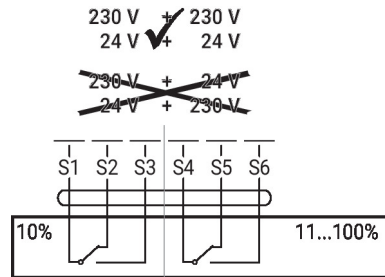
Wire colors:

- 1 = blue
- 2 = brown
- S1 = violet
- S2 = red
- S3 = white
- S4 = orange
- S5 = pink
- S6 = grey

AC 230 V, on/off



Auxiliary switch



Dimensions

PC

