Technical data sheet EFB120

Basic 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**

Picture may differ from product

5-year warranty

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 W
	Power consumption in rest position	4.5 W
	Transformer sizing	21 VA
	Electrical Connection	18 AWG appliance cable, 1 m, with 1/2" NPT conduit connector
	Overload Protection	electronic throughout 0...95° rotation
	Electrical Protection	actuators are double insulated
Functional data	Torque motor	270 in-lb [30 Nm]
	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	<20 s @ -20...50°C, <60 s @ -30°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 2
	Housing	UL Enclosure Type 2
	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
	UL 2043 Compliant	Suitable for use in air plenums per Section 300.22(C) of the NEC and Section 602 of the IMC
	Ambient humidity	Max. 95% RH, non-condensing
	Ambient temperature	-22...122°F [-30...50°C]
	Storage temperature	-40...176°F [-40...80°C]
	Servicing	maintenance-free
Weight	Weight	12 lb [5.3 kg]

Technical data

Materials	Housing material	Die cast aluminium and plastic casing

Footnotes †Rated Impulse Voltage 4kV, Type of action 1.AA, Control Pollution Degree 3.

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 3/4" diameter shaft and parallel wiring.

Operation The EF..120 series actuators provide true spring return operation for reliable failsafe 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 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 actuator is shipped at 5° (5° from full fail-safe) to provide automatic compression against damper gaskets for tight shut-off.

Installation Note: Use flexible metal conduit. Push the UL listed conduit fitting device over the actuator's cable to butt against the enclosure. Screw in conduit connector. Jacket the actuator's input wiring with UL listed flexible conduit. Properly terminate the conduit in a suitable junction box.

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 having the capability of one being adjustable. 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
Cable conduit connector 1/2"	TF-CC US

Mechanical accessories

Description	Type
Shaft extension 240 mm ø20 mm for damper shaft ø8...22.7 mm	AV8-25
	EF-P
End stop indicator	IND-EFB
Shaft clamp reversible, clamping range ø1/2...1" [12...26.7 mm]	K9-2
Ball joint suitable for damper crank arm KH8 / KH10	KG10A
Damper crank arm Slot width 8.2 mm, clamping range ø1/2...1" [14...25 mm]	KH10
Actuator arm Slot width 8.2 mm	KH-EFB
Push rod for KG10A ball joint L 36”, 3/8” diameter	SH10
Wrench 0.512 in. [13 mm]	TOOL-07
Mounting bracket for AF..	ZG-100
	ZG-120
	ZG-121
	ZG-DC1
	ZG-DC2

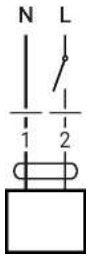
Accessories

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

Electrical installation

Wire colors:
1 = blue
2 = brown

AC 230 V, on/off



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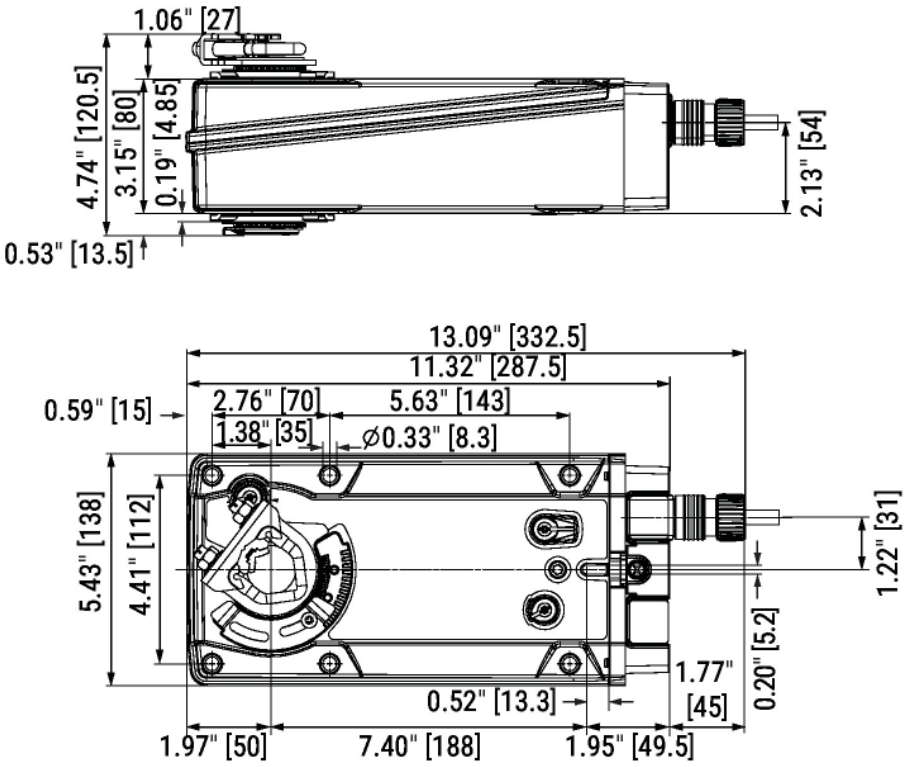
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