

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

- Torque motor 180 in-lb [20 Nm]
- Nominal voltage AC 24...240 V / DC 24...125 V
- Control On/Off
- 2 x SPDT
- NEMA 4X



5-year warranty



Technical data

<b>Electrical data</b>	Nominal voltage	AC 24...240 V / DC 24...125 V
	Nominal voltage frequency	50/60 Hz
	Nominal voltage range	AC 19.2...264 V / DC 21.6...137.5 V
	Power consumption in operation	7 W
	Power consumption in rest position	3.5 W
	Auxiliary switch	2 x SPDT, 1 mA...3 A (0.5 A inductive), DC 5 V...AC 250 V, one set at 10°, one adjustable 10...90°
	Switching capacity auxiliary switch	1 mA...3 A (0.5 A inductive), DC 5 V...AC 250 V
	Electrical Connection	(2) 18 GA appliance cables, 1 m, 3 m or 5 m, with 1/2" conduit connectors
	Overload Protection	electronic throughout 0...95° rotation
	Electrical Protection	actuators are double insulated
<b>Functional data</b>	Torque motor	180 in-lb [20 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	95°
	Angle of rotation note	adjustable with mechanical end stop, 35...95°
	Running Time (Motor)	75 s / 90°
	Running time fail-safe	<20 s @ -4...122°F [-20...50°C], <60 s @ -22°F [-30°C]
	Noise level, motor	50 dB(A)
	Noise level, fail-safe	62 dB(A)
Position indication	Mechanical, 5...20 mm stroke	
<b>Safety data</b>	Power source UL	Class 2 Supply
	Degree of protection IEC/EN	IP66
	Degree of protection NEMA/UL	NEMA 4X
	Enclosure	UL Enclosure Type 4X
	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...50°C for actuator with integrated heating
	Storage temperature	-40...176°F [-40...80°C]
Servicing	maintenance-free	
<b>Weight</b>	Weight	6.4 lb [2.9 kg]

**Materials** Housing material Polycarbonate

**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. Maximum of two AF's can be piggybacked for torque loads of up to 266 in-lbs. Minimum 3/4" diameter shaft and parallel wiring.

**Operation** The AF..UP-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 AF..UP-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 AF..UP-S N4 version 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 adjustable between 10° to 90°. The AF..UP-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 suitable flexible metallic conduit or its equivalent with the conduit fitting. Not suitable for plenum applications.










For low ambient temperatures, the optional supplemental (-Y) Heater add-on is available.

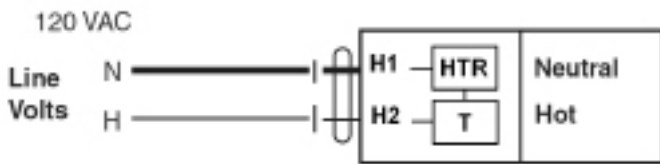
**Typical specification** On/Off spring return damper actuators shall be direct coupled type which require no crank arm and linkage and be capable of direct mounting to a jackshaft up to a 1.05" diameter. The actuators must be designed so that they may be used for either clockwise or counter clockwise 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**

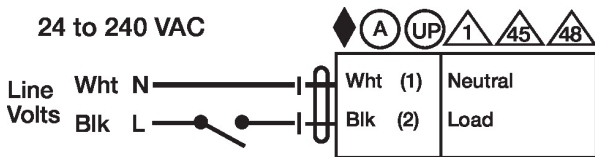
Electrical accessories	Description	Type
	Gasket for cable gland (NEMA 4 models)	11097-00001
	Cable Gland (NEMA 4 models)	43442-00001
	Auxiliary switch, mercury-free	P475
	Auxiliary switch, mercury-free	P475-1
Mechanical accessories	Description	Type
	Anti-rotation bracket, for AF / NF	AF-P
	Ball joint suitable for damper crank arm KH8 / KH10, Multipack 10 pcs.	KG10A
	Damper crank arm Slot width 8.2 mm, clamping range ø14...25 mm	KH10
	Push rod for KG10A ball joint 36" L, 3/8" diameter	SH10
	Wrench 0.32 in and 0.39 in [8 mm and 10 mm]	TOOL-06
	Wrench 0.512 in. [13 mm]	TOOL-07
	Damper clip for damper blade, 3.5" width.	ZG-DC1
	Damper clip for damper blade, 6" width.	ZG-DC2
	1" diameter jackshaft adaptor (11" L).	ZG-JSA-1
	1-5/16" diameter jackshaft adaptor (12" L).	ZG-JSA-2
	1.05" diameter jackshaft adaptor (12" L).	ZG-JSA-3
Tools	Description	Type
	Signal simulator, Power supply AC 120 V	PS-100

Electrical installation

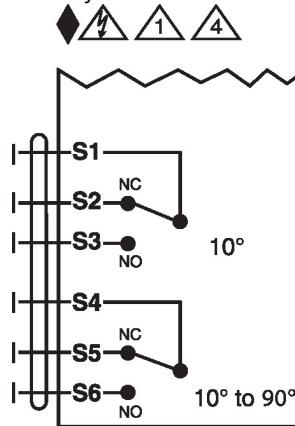
-  **Warning! Live electrical components!**  
During installation, testing, servicing and troubleshooting of this product, it may be necessary to work with live electrical components. Have a qualified licensed electrician or other individual who has been properly trained in handling live electrical components perform these tasks. Failure to follow all electrical safety precautions when exposed to live electrical components could result in death or serious injury.
-  Meets cULus requirements without the need of an electrical ground connection.
-  Apply only AC line voltage or only UL-Class 2 voltage to the terminals of auxiliary switches. Mixed or combined operation of line voltage/safety extra low voltage is not allowed.
-  Actuators with appliance cables are numbered.
-  Universal Power Supply (UP) models can be supplied with 24 VAC up to 240 VAC, or 24 VDC up to 125 VDC.
-  Provide overload protection and disconnect as required.
-  Two built-in auxiliary switches (2x SPDT), for end position indication, interlock control, fan startup, etc.
-  Actuators may be powered in parallel. Power consumption must be observed.
-  Parallel wiring required for piggy-back applications.



**Wiring diagrams**  
On/Off



Auxiliary Switches



Dimensions

