



5-year warranty



Technical data

| | | |
|------------------------|-------------------------------------|-------------------------------------------------------------------------------------------|
| Electrical data | Nominal voltage | AC 100...240 V / DC 100...125 V |
| | Nominal voltage frequency | 50/60 Hz |
| | Power consumption in operation | 9.5 W |
| | Power consumption in rest position | 4.5 W |
| | Transformer sizing | 21 VA @ AC 100 V, 29 VA @ AC 240 V |
| | Auxiliary switch | 2 x SPDT, 3 A resistive (0.5 A inductive) @ AC 250 V, one set at 10°, one set at 85° |
| | Switching capacity auxiliary switch | 3 A resistive (0.5 A inductive) @ 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 | 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 | 10 s @ -4...122°F [-20...50°C], <15 s @ -22...-4°F [-30...-20°C] |
| | Noise level, motor | 56 dB(A) |
| | Noise level, fail-safe | 71 dB(A) |
| Safety data | Shaft Diameter | 3/4...1.05" round, centers on 3/4" with insert, 1.05" without insert |
| | Position indication | Mechanical |
| | Degree of protection IEC/EN | IP66 |
| | Degree of protection NEMA/UL | NEMA 4 |
| | Enclosure | 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 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] |
| Weight | Ambient humidity | Max. 100% RH |
| | Servicing | maintenance-free |
| | Weight | 12 lb [5.3 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

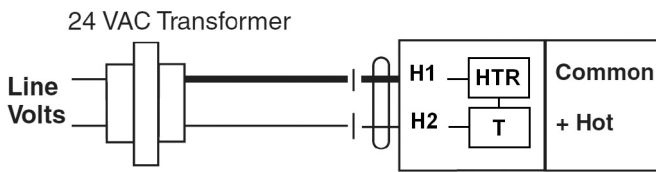
- Application** For On/Off, fail-safe control of dampers in HVAC systems. Actuator sizing should be done in accordance with the damper manufacturer's specifications. Control is On/Off from an auxiliary contact or a manual switch. The actuator is mounted directly to a damper shaft up to 1.05" in diameter 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 Ø 8...22.7 mm | AV8-25 |
| | Anti-rotation bracket EFB(X)/GKB(X)/GMB(X). | EF-P |
| | End stop indicator | IND-EFB |
| | Shaft clamp reversible, clamping range Ø12...26.7 mm | K9-2 |
| | 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 |
| | Actuator arm Slot width 8.2 mm | KH-EFB |
| | Push rod for KG10A ball joint 36" L, 3/8" diameter | SH10 |
| | Wrench 0.512 in. [13 mm] | TOOL-07 |
| | <p>17" Mounting Bracket for AF,NF,GM,AM,SM</p> | ZG-100 |
| | Jackshaft mounting bracket. | ZG-120 |
| | Damper clip for damper blade, 3.5" width. | ZG-DC1 |
| | Damper clip for damper blade, 6" width. | ZG-DC2 |
| | Mounting kit for linkage operation for flat and side installation | ZG-EFB |
| | 1.05" diameter jackshaft adaptor (12" L). | ZG-JSA-3 |

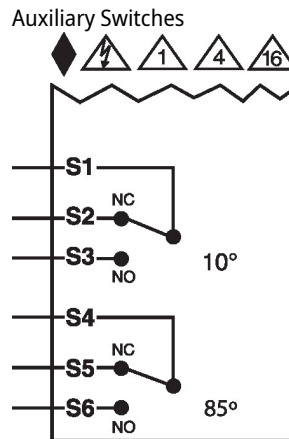
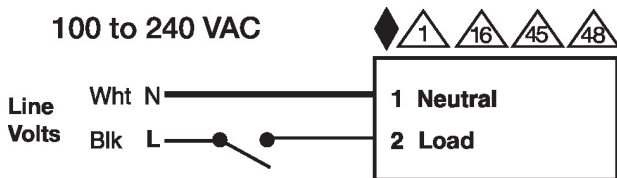
Electrical installation

-  **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.
-  Provide overload protection and disconnect as required.
-  Two built-in auxiliary switches (2x SPDT), for end position indication, interlock control, fan startup, etc.
-  Actuators are provided with a numbered screw terminal strip instead of a cable.
-  Actuators may be powered in parallel. Power consumption must be observed.
-  Parallel wiring required for piggy-back applications.

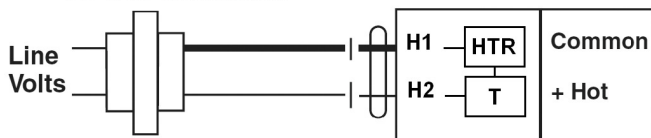


NEMA 4 Heater Option

Wiring diagrams
On/Off



NEMA 4 Heater Option
24 VAC Transformer



Dimensions

