

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

- Torque motor 270 in-lb [30 Nm]
- Nominal voltage AC/DC 24 V
- Control On/Off



5-year warranty



Technical data

|                        |                                    |                                                                                             |
|------------------------|------------------------------------|---------------------------------------------------------------------------------------------|
| <b>Electrical data</b> | Nominal voltage                    | AC/DC 24 V                                                                                  |
|                        | Nominal voltage frequency          | 50/60 Hz                                                                                    |
|                        | Nominal voltage range              | AC 19.2...28.8 V / DC 21.6...28.8 V                                                         |
|                        | Power consumption in operation     | 9.5 W                                                                                       |
|                        | Power consumption in rest position | 4.5 W                                                                                       |
|                        | Transformer sizing                 | 16 VA                                                                                       |
|                        | Electrical Connection              | 18 GA appliance cable, 1 m, with 1/2" NPT conduit connector                                 |
|                        | Overload Protection                | electronic throughout 0...95° rotation                                                      |
|                        | Electrical Protection              | actuators are double insulated                                                              |
| <b>Functional data</b> | 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 @ -4...122°F [-20...50°C], <60 s @ -22°F [-30°C]                                      |
|                        | Noise level, motor                 | 56 dB(A)                                                                                    |
|                        | Noise level, fail-safe             | 71 dB(A)                                                                                    |
| Position indication    | Mechanical                         |                                                                                             |
| <b>Safety data</b>     | Power source UL                    | Class 2 Supply                                                                              |
|                        | Degree of protection IEC/EN        | IP54                                                                                        |
|                        | Degree of protection NEMA/UL       | NEMA 2                                                                                      |
|                        | Enclosure                          | UL Enclosure Type 2                                                                         |
|                        | Agency Listing                     | cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2014/30/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                   |                                                                                             |
| <b>Weight</b>          | Weight                             | 11 lb [5.2 kg]                                                                              |
| <b>Materials</b>       | Housing material                   | Die cast aluminium and plastic casing                                                       |

**Footnotes** †Rated Impulse Voltage 800V, 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..24 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..24 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..24 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.

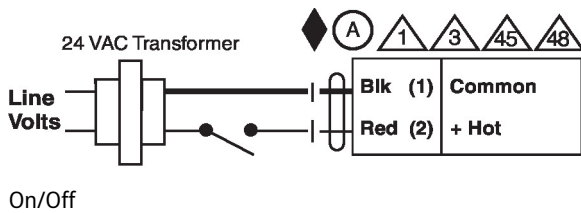
**Typical specification** On/Off spring return damper actuators shall be direct coupled type which require no crank arm and linkage and be capable of direct mounting to a jackshaft up to a 1.05" diameter. The actuators must be designed so that they may be used for either clockwise or counter clockwise 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 |
|                        | Transformer, AC 120 V to AC 24 V, 40 VA                           | ZG-X40   |
| Mechanical accessories | Description                                                       | Type     |
|                        | Shaft extension 240 mm ø20 mm for damper shaft ø8...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               | 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  |
|                        | Mounting bracket for AF..                                         | ZG-100   |
|                        | Jackshaft mounting bracket.                                       | ZG-120   |
|                        | ZG-JSL support plate for EFB(X)                                   | ZG-121   |
|                        | 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.
- Ⓐ Actuators with appliance cables are numbered.
- ⚠ Provide overload protection and disconnect as required.
- ⚠ Actuators may also be powered by DC 24 V.
- ⚠ Actuators may be powered in parallel. Power consumption must be observed.
- ⚠ Parallel wiring required for piggy-back applications.



Dimensions

