

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

- Torque motor 35 in-lb [4 Nm]
- Nominal voltage AC/DC 24 V
- Control On/Off
- 1x SPDT



5-year warranty



Picture may differ from product

## 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      | 5 W                                                                                         |
|                        | Power consumption in rest position  | 2.5 W                                                                                       |
|                        | Transformer sizing                  | 7 VA                                                                                        |
|                        | Auxiliary switch                    | 1x SPDT, 1 mA...3 A (0.5 A inductive), DC 5 V...AC 250 V, adjustable 0...95°                |
|                        | Auxiliary switch note               | adjustable 0...95°                                                                          |
|                        | Switching capacity auxiliary switch | 1 mA...3 A (0.5 A inductive), DC 5 V...AC 250 V                                             |
|                        | Electrical Connection               | (2) 18 AWG appliance cables, 1 m, with 1/2" NPT conduit connectors                          |
|                        | Overload Protection                 | electronic throughout 0...95° rotation                                                      |
|                        | Electrical Protection               | actuators are double insulated                                                              |
| <b>Functional data</b> | Torque motor                        | 35 in-lb [4 Nm]                                                                             |
|                        | Direction of motion fail-safe       | reversible with cw/ccw mounting                                                             |
|                        | Angle of rotation                   | Max. 95°                                                                                    |
|                        | Running Time (Motor)                | 75 s / 90°                                                                                  |
|                        | Running time fail-safe              | <25 s @ -20...50°C, <60 s @ -30°C                                                           |
|                        | Sound power level, motor            | 50 dB(A)                                                                                    |
|                        | Sound power level, fail-safe        | 62 dB(A)                                                                                    |
|                        | Position indication                 | Mechanical                                                                                  |
| <b>Safety data</b>     | Power source UL                     | Class 2 Supply                                                                              |
|                        | Degree of protection NEMA/UL        | NEMA 2                                                                                      |
|                        | Housing                             | UL Enclosure Type 2                                                                         |
|                        | Agency Listing                      | cULus acc. To UL 873 and CAN/CSA C22.2 No. 24-93                                            |
|                        | 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                              | 3.7 lb [1.7 kg]                                                                             |
| <b>Materials</b>       | Housing material                    | galvanized steel                                                                            |

## Technical data

**Footnotes** †Rated Impulse Voltage 800V, Type of Action 1.AA.B, 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 from 3/8" up to 1/2" in diameter by means of its universal clamp, 1/2" shaft centered at delivery. For shafts up to 3/4" use K6-1 accessory. A crank arm and several mounting brackets are available for applications where the actuator cannot be direct coupled to the damper shaft.
- Operation** The LF 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 consistent torque to the damper with, and without, power applied to the actuator. The LF 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. Power consumption is reduced in holding mode. The LF24-S US version is provided with one built in auxiliary switch. This SPDT switch is provided for safety interfacing or signaling, for example, for fan start-up. The switching function is adjustable between 0° and 95°. The auxiliary switch in the LF24-S US is double insulated so an electrical ground connection is not necessary.
- 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 shaft up to a 3/4" diameter and center on a 1/2" shaft (default). Actuator shall deliver a minimum output torque of 35 in-lbs. The actuator must be designed so that they may be used for either clockwise or counter clockwise failsafe operation. Actuators shall be protected from overload at all angles of rotation. If required, one SPDT auxiliary switch shall be provided with one switch having the capability of being adjustable. Actuators with auxiliary switch must be constructed to meet the requirement for Double Insulation so an electrical ground connection is not required to meet agency listings. Actuators shall be cULus listed, 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  |
|                        | Conduit box converter                                                       | ZG-CBLS |
|                        | Electrical junction box                                                     |         |
|                        | Transformer, AC 120 V to AC 24 V, 40 VA                                     | ZG-X40  |
| Mechanical accessories | Description                                                                 | Type    |
|                        | Shaft extension 170 mm Ø10 mm for damper shaft Ø6...16 mm                   | AV6-20  |
|                        | End stop indicator                                                          | IND-LF  |
|                        | Shaft clamp                                                                 | K6 US   |
|                        | for LF..                                                                    |         |
|                        | Shaft clamp reversible, clamping range Ø5/8...3/4" [16...20 mm]             | K6-1    |
|                        | Ball joint suitable for damper crank arm KH8 / KH10                         | KG10A   |
|                        | Ball joint suitable for damper crank arm KH8                                | KG6     |
|                        | Ball joint suitable for damper crank arm KH8                                | KG8     |
|                        | Damper crank arm Slot width 8.2 mm, for Ø1.05"                              | KH12    |
|                        | Damper crank arm Slot width 6.2 mm, clamping range Ø3/8...3/4" [10...18 mm] | KH6     |
|                        | Damper crank arm Slot width 8.2 mm, clamping range Ø3/8...3/4" [10...18 mm] | KH8     |
|                        | Actuator arm, clamping range Ø3/8...5/8" [8...16 mm], Slot width 8.2 mm     | KH-LF   |
|                        |                                                                             | KH-LFV  |

## Accessories

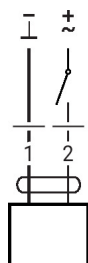
| Description                                                                                                                                                         | Type          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Push rod for KG10A ball joint L 36", 3/8" diameter                                                                                                                  | LF-P          |
|                                                                                                                                                                     | SH10          |
|                                                                                                                                                                     | SH8           |
| Wrench 0.32 in and 0.39 in [8 mm and 10 mm]                                                                                                                         | TOOL-06       |
| Angle of rotation limiter, with end stop                                                                                                                            | ZDB-LF        |
| Form fit adapter 8x8 mm                                                                                                                                             | ZF8-LF        |
| Mounting bracket                                                                                                                                                    | ZG-109        |
| Linkage kit                                                                                                                                                         | ZG-110        |
| Mounting bracket for LF..                                                                                                                                           | ZG-112        |
|                                                                                                                                                                     | ZG-DC1        |
|                                                                                                                                                                     | ZG-DC2        |
|                                                                                                                                                                     | ZG-LF112      |
|                                                                                                                                                                     | ZG-LF2        |
|                                                                                                                                                                     | ZG-LMSA-1     |
|                                                                                                                                                                     | ZG-LMSA-1/2-5 |
| Weather shield 13x8x6" [330x203x152 mm] (LxWxH)                                                                                                                     | ZS-100        |
| Baseplate, for ZS-100                                                                                                                                               | ZS-101        |
| Weather shield 406x213x102 mm [16x8-3/8x4"] (LxWxH)                                                                                                                 | ZS-150        |
| Explosion proof housing 16x10x6.435" [406x254x164 mm] (LxWxH), UL and CSA, Class I, Zone 1&2, Groups B, C, D, (NEMA 7), Class III, Hazardous (classified) Locations | ZS-260        |
| Weather shield 17-1/4x8-3/4x5-1/2" [438x222x140 mm] (LxWxH), NEMA 4X, with mounting brackets                                                                        | ZS-300        |
| Weather shield 17-1/4x8-3/4x5-1/2" [438x222x140 mm] (LxWxH), NEMA 4X, with mounting brackets                                                                        | ZS-300-5      |
| Shaft extension 1/2"                                                                                                                                                | ZS-300-C1     |
| Shaft extension 3/4"                                                                                                                                                | ZS-300-C2     |
| Shaft extension 1"                                                                                                                                                  | ZS-300-C3     |
| Linkage kit                                                                                                                                                         | ZG-JSL        |
| Jackshaft RetroFIT+ Linkage with Belimo Rotary Actuators                                                                                                            |               |

## Electrical installation

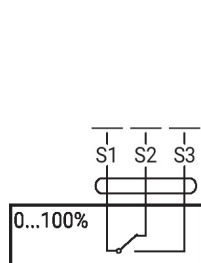
### Wire colors:

- 1 = black
- 2 = red
- S1 = violet
- S2 = red
- S3 = white

AC/DC 24 V, on/off



Auxiliary switch



## Dimensions

PC

