

GKB24-3, GKX24-3

On/Off, Floating Point, Electronic Fail-Safe, Direct Coupled, 24V



Technical Data	GKB24-3, GKX24-3
Power supply	24VAC ±20% 50/60Hz
Power consumption	12W (3W)
Transformer sizing	21VA (class 2 power source)
Electrical connection	18 GA plenum rated cable ½" conduit connector protected NEMA 2 (IP54) 3 ft [1m] 10 ft [3m] 16 ft [5m]
Overload protection	electronic throughout 0 to 95 rotation
Operation range Y	on/off, floating point
Input impedance	1500 Ω
Feedback output U	2 to 10VDC, 0.5mA max, VDC variable
Angle of rotation	max. 95°, adjustable with mechanical stop electronically variable
Torque	360 in-lb [40 Nm]
Direction of rotation	reversible with switch
Fail-safe position	adjustable with dial, 0 to 1 in 10° increments
Position indication	reflective visual indicator (snap-on)
Manual override	external push button
Running time	
normal operation	150 seconds (default), variable 90 to 150 seconds
fail-safe	35 seconds
Humidity	5 to 95% RH non-condensing (EN 60730-1)
Ambient temperature	-22°F to +122°F [-30°C to +50°C]
Storage temperature	-40°F to +176°F [-40°C to +80°C]
Housing	NEMA2, IP54, UL enclosure type 2
Housing material	UL94-5VA
Agency list	cULus acc. to UL 60730-1A/-2-14 CAN/CSA E60730-1:02 CE acc. to 2004/108/EC and 2006/95/EC
Noise level	< 45dB(A)
Servicing	maintenance free
Quality standard	ISO 9001
Weight	3.85 lbs [1.75 kg]
Initial charge	5 to 20 seconds
Bridge time	2 second delay before fail-safe activates

Torque min. 360 in-lb for control damper surfaces up to 90 sq ft.

Application

For on/off and floating point, fail-safe control of dampers in HVAC systems. Actuator sizing should be done in accordance with the damper manufacturer's specifications. The actuator is mounted directly to a damper shaft up to 1.05" in diameter by means of its universal clamp. The actuator is mounted directly to a damper shaft up to 1.05" in diameter by a universal clamp. A crank arm and several mounting brackets are available for applications where actuator cannot be direct coupled to the damper shaft. Control is floating point from a triac or relay, or On/Off from an auxiliary contact from a fan motor contactor, controller or manual switch.

Operation

The GK..24-3 actuator provides 95° of rotation and a visual indicator shows the position of the actuator. When reaching the damper or actuator end position, the actuator automatically stops. The gear can be manually disengaged by pressing the button located on the actuator cover. The GK..24-3 actuators use a brushless DC motor, which is controlled by an Application Specific Integrated Circuit (ASIC). The ASIC monitors and controls the actuators rotation and provides a digital rotation sensing (DRS) function to prevent damage to the actuator in a stall condition. Power consumption is reduced in a holding mode. The actuator is electronically protected against overload. The anti-rotation strap supplied with the actuator will prevent lateral movement. Add-on auxiliary switches or feedback potentiometers are easily fastened directly onto the actuator body for signaling and switching functions.

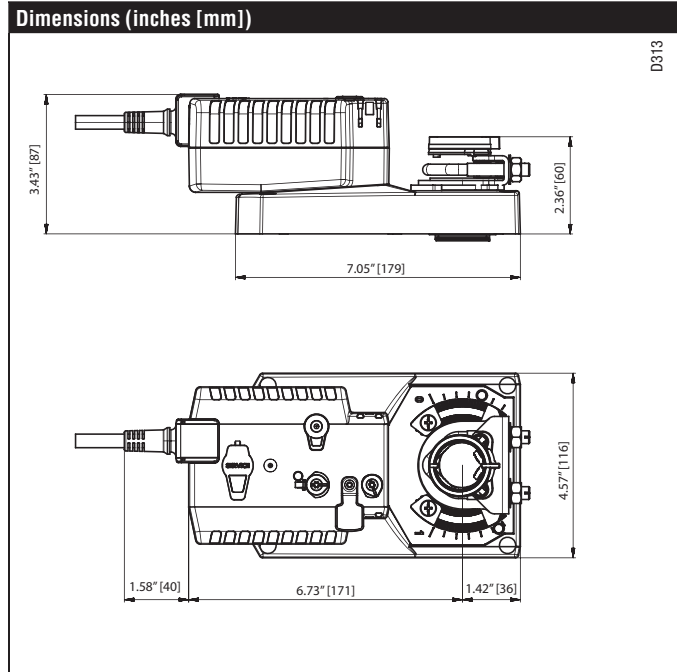
Fail-Safe Indication

Green LED status indicator light sequence:

On: operation ok, no faults

Blinking: fail-safe mechanism is active

Off: fault is detected or not in operation / capacitors charging



P10412 - 05/13 - Subject to change. © Belimo Aircontrols (USA), Inc.

Accessories

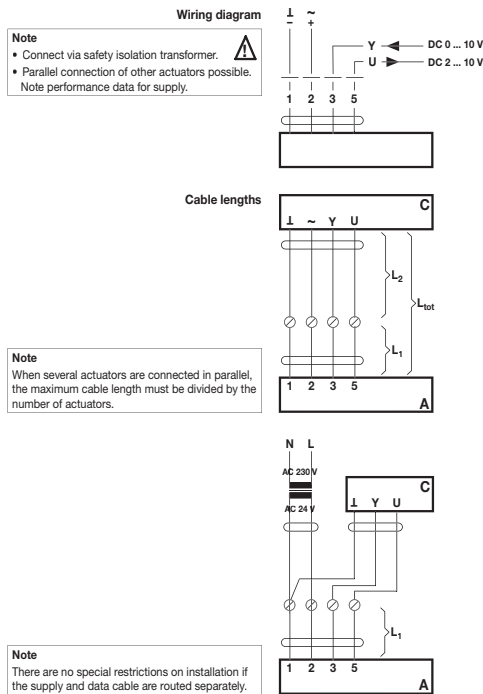
K-GM20	3/4" [20mm] Shaft Clamp
ZG-102	Multiple Actuator Mounting Bracket
ZG-GMA	Crank arm Adaptor Kit
ZG-JSA (-1,2,3)	Jackshaft Adaptors for Hollow Jackshafts
ZS-100	Weather Shield - Steel
ZS-150	Weather Shield - Polycarbonate
ZS-260	Explosion Proof Housing
ZS-300 (-1) (-5)	NEMA 4X Housing
Tool-07	13 mm Wrench
PS-100	Actuator Power Supply Simulator
S1A, S2A	Auxiliary Switch(es)
P370	Shaft Mount Auxiliary Switch
P...A	Feedback Potentiometers

Note: When using GKB24-3, GKX24-3 actuators, only use accessories listed on this page.

Typical Specification

On/off, floating point control damper actuators shall be electronic direct-coupled type, which require no crank arm and linkage and be capable of direct mounting to shaft up to 1.05" diameter. Actuators shall have brushless DC motor technology and be protected from overload at all angles of rotation. Actuators shall have reversing switch and manual override on the cover. Run time shall be constant and independent of torque. 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.

Electrical Installation



Cable colors:

- 1 = black
- 2 = red
- 3 = white
- 4 = pink

- A = Actuator
- C = Control unit
- L₁ = Belimo connecting cable, 1 m (4 x 0.75 mm²)
- L₂ = Customer cable
- L_{tot} = Maximum cable length

Cross section L ₂ l / ~	Max. cable length L _{tot} = L ₁ + L ₂		Example for DC
	AC	DC	
0.75 mm ²	≤30 m	≤5 m	1 m (L ₁) + 4 m (L ₂)
1.00 mm ²	≤40 m	≤8 m	1 m (L ₁) + 7 m (L ₂)
1.50 mm ²	≤70 m	≤12 m	1 m (L ₁) + 11 m (L ₂)
2.50 mm ²	≤100 m	≤20 m	1 m (L ₁) + 19 m (L ₂)

- A = Actuator
- C = Control unit
- L₁ = Belimo connecting cable, 1 m (4 x 0.75 mm²)

Wiring Diagrams

INSTALLATION NOTES

- Provide overload protection and disconnect as required.
- CAUTION Equipment Damage!**
Actuators may be connected in parallel if not mechanically mounted to the same shaft. Power consumption and input impedance must be observed.
- Control signal may be pulsed from either the Hot (source) or the Common (sink) 24 VAC line.
- Contact closures A & B also can be triacs.
- A & B should both be closed for triac source and open for triac sink.
- For triac sink the common connection from the actuator must be connected to the hot connection of the controller.

APPLICATION NOTES

- Meets UL requirements without the need of an electrical ground connection.
- 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.

