GKB24-3, GKX24-3

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

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

Application

For proportional modulation of dampers in HVAC systems.

The GKB24-3 and GKX24-3 provide electrical power off operation for reliable fail-safe application.

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.

Operation

The actuator is electronically protected against overload. The anti-rotation strap supplied with the actuator will prevent lateral movement.

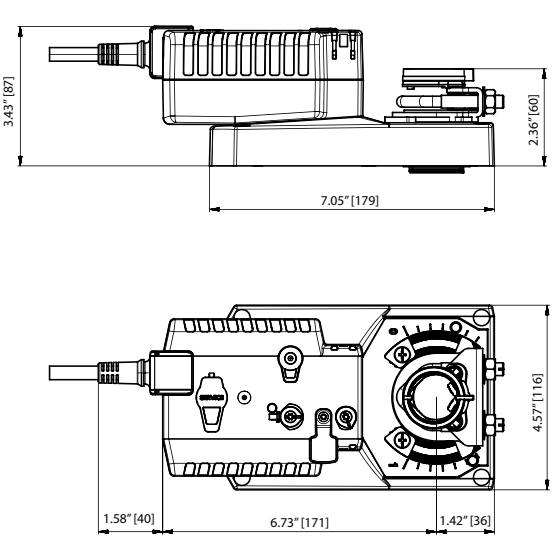
The GKB24-3 and GKX24-3 actuators provide 95° of rotation and a visual indicator shows the position of the actuator. When reaching the damper or actuator end position, the actuator automatically stops. The gear can be manually disengaged by pressing the button located on the actuator cover.

The GKB24-3 and GKX24-3 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.

Add-on auxiliary switches or feedback potentiometers are easily fastened directly onto the actuator body for signaling and switching functions.

Technical Data	GKB24-3, GKX24-3
Power supply	24VAC ±20% 50/60Hz 24VDC ±10%
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	100kΩ (0.1 mA), 500Ω 1500Ω (floating point, on/off)
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 or tool 0 to 100% in 10% increments
Position indication	reflective visual indicator (snap-on)
Manual override	external push button
Running time normal operation fail-safe	 150 seconds (default), variable 90 to 150 seconds 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/EEC and 2006/95/EC
Noise level	< 45dB(A)
Servicing	maintenance free
Quality standard	ISO 9001
Weight	3.85 lbs [1.75 kg]

Dimensions (inches [mm])



Accessories

K-GM20	¾" [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

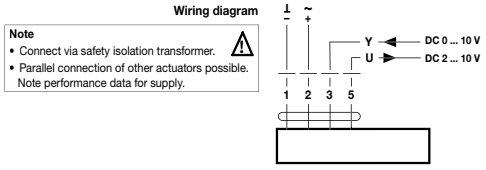
Note: When using GKB24-3, GKX24-3 actuators, only use accessories listed on this page.

Typical Specification

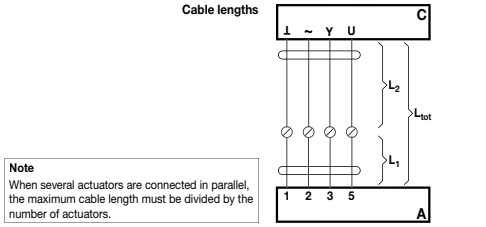
On/off, floating point control damper actuators shall be electronic direct-coupled type, which require no crank arm and linkage and be capable of direct mounting to shaft up to 1.05" diameter. Actuators shall have brushless DC motor technology and be protected from overload at all angles of rotation. 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.

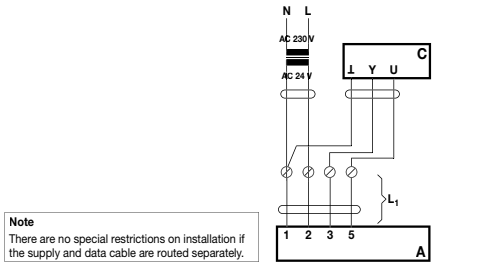
Electrical Installation

Wiring diagram



Cable lengths





Cable colors:
1 = black
2 = red
3 = white
5 = orange

A = Actuator
C = Control unit
L_1 = Belimo connecting cable, 1 m (4 x 0.75 mm²)
L_2 = Customer cable
L_{tot} = Maximum cable length

Cross section L_2 ⊥ / ~	Max. cable length $L_{tot} = L_1 + L_2$ AC	DC	Example for DC
0.75 mm²	≤30 m	≤5 m	1 m (L_1) + 4 m (L_2)
1.00 mm²	≤40 m	≤8 m	1 m (L_1) + 7 m (L_2)
1.50 mm²	≤70 m	≤12 m	1 m (L_1) + 11 m (L_2)
2.50 mm²	≤100 m	≤20 m	1 m (L_1) + 19 m (L_2)

A = Actuator
C = Control unit
L_1 = Belimo connecting cable, 1 m (4 x 0.75 mm²)

Wiring Diagrams

INSTALLATION NOTES

1. Provide overload protection and disconnect as required.

2. ***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.

3. Actuators may also be powered by 24 VDC.

4. Position feedback cannot be used with Triac sink controller. The actuator internal common reference is not compatible.

5. Control signal may be pulsed from either the Hot (source) or the Common (sink) 24 VAC line.

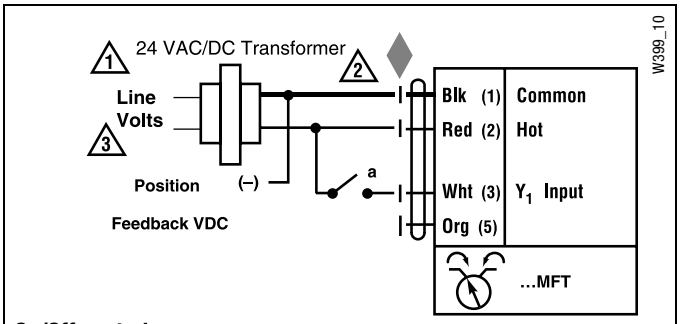
8. Contact closures A & B also can be triacs.
A & B should both be closed for triac source and open for triac sink.

9. For triac sink the common connection from the actuator must be connected to the hot connection of the controller.

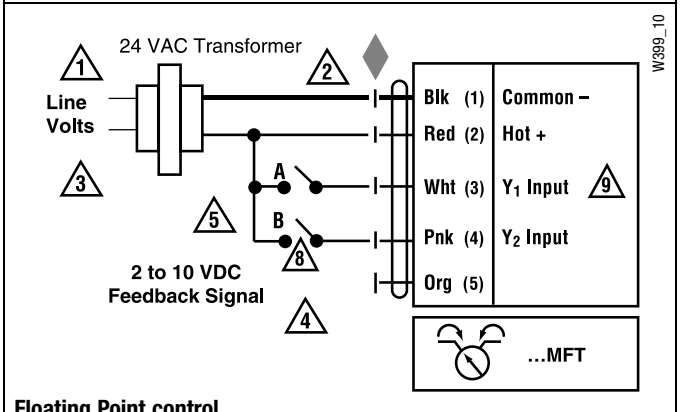
APPLICATION NOTES

- 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.



On/Off control



Floating Point control