

Electronic Fail-Safe Actuators – Enhanced Control During Power Outages



Designed for the toughest conditions.

Belimo electronic fail-safe actuators were developed for the HVAC market using several patented technologies to provide reliable operation and new selectable fail-safe positioning. Unique electronics, software and super capacitor technology not only enables user selection of fail position (0-100%), but also delays unnecessary actuator movements during short brown out conditions – avoiding changes in the HVAC and building automation system.

Reliable and versatile

Environmental and climate conditions often result in short power interruptions which can cause damper and valve actuators to begin fail-safe operation and temporarily destabilize the room or building temperature control. This causes unnecessary actuator movements and additional energy usage. The new electronic fail-safe actuator series with the control power-off function and durable, maintenance-free capacitors provide solutions to these climate conditions.

Like all Belimo actuators – the electronic fail-safe actuators are easy to install, commission, inspect and connect to higher level systems and have a complete line of accessories available. The electronic fail-safe actuators are available in the following models:

- High Torque: GK Series – 360 in-lbs [40 Nm], approximately 90 sq. ft.
- High Torque: Tandem Mounted: GK Series – 720 in-lbs [80 Nm], approximately 180 sq. ft
- Quick Speed: NKQ Series – 54 in-lbs [6 Nm], approximately 12 sq. ft.
- Linear Motion: AHKX Series – 101 in-lbs [450 N force]

Reliability and Safety Performance.

Direction of rotation (stroke switch for linear models)

Fail-safe (power-off) position switch

Manual override button

MFT service tool socket

Electrical connection
3 ft [1m] cable

LED power and status indicators

Actuator electronics:

- Patented super capacitor technology
- Manages a uniform charge in the capacitors assuring complete charge and long product life.

Separator
Performs as an insulator as well to insulate electricity between anode and cathode aluminum foil, while keeping electrolyte in it.

Current flow during charging
Charging and discharging indefinitely and offer a long service life.

5 YEAR WARRANTY

As a leading manufacturer of electric direct coupled actuators and motorized valves, we have committed ourselves to help create comfort, safety, and efficiency in buildings. Our sophisticated electronic fail-safe solutions provide fail-safe operation that is adapted to your needs, whether for air-conditioned buildings, hospitals, pharmaceutical facilities, trains, ships, tunnels, animal stock breeding, greenhouses or paint drying systems.

Technology

The electronic fail-safe actuators were developed by integrating super capacitor technology to provide reliable operation and bridge short voltage interruptions to control the damper into a defined power-off position.

Super capacitors supply sufficient power to bridge power interruptions for up to 10 seconds and moves the dampers or valves accurately into the predefined fail-safe or power-off position avoiding an extreme open or close position.

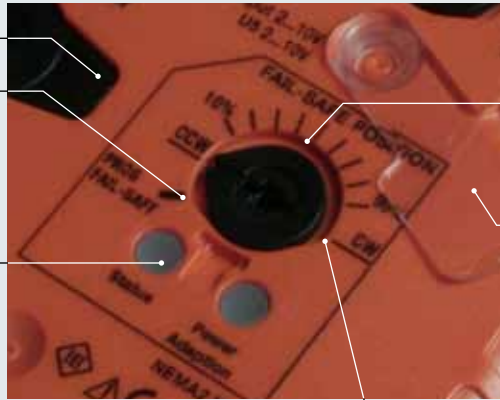
The fail-safe position can be set 0-100% in 10% increments providing the user a wide range of power-off positions. Power consumption is significantly reduced in standby and hold mode by a patented function; offering further energy savings.

0% position at end stop CCW

0...100% Setting by PC-Tool (MFT version only).

LED power status, 10 volt signal on feedback line when there is a cap failure the LED status will illuminate yellow.

Fail-safe delay during brown outs and spikes in the voltage supply. Default 2 seconds, programmable between 0-10 seconds with MFT models.



0...100% intermediate positions in step of 10% from front panel.

Rotating clear protective cover.

100% position at end stop CW



Performance Innovation

With over 5 years of development these electronic fail-safe actuators incorporate the latest super capacitor technology. Offering:

- Increase cycle life
- Selectable fail-safe position (0-10%)
- Rapid charging
- Charging diagnostics
- Maintenance free

Design

The electronic fail-safe actuator market has experienced serious problems in the past. Actuators designs have had short life cycle, capacitors have not charged completely, problems were experienced at high and low temperatures, and long start-up times; all of these past concerns have been addressed with Belimo Electronic Fail-Safe actuator series.

- Maintenance free
- 100,000 full cycles
- 1,000,000 partial cycles
- Current reduction in standby/hold mode

Testing

- Over 5 years of research and testing to ensure long life cycle.
- Evaluated over 30 worldwide suppliers of super capacitors to ensure the best and most consistent quality.
- Detailed testing criteria with recognized testing labs and universities to provide quality product offering.
- Extensive endurance and environmental testing at high and low humidity and temperature conditions to ensure reliable operation.

Fail-Safe Solutions Offering Protection for People and Tangible Assets.



Product Range

Technical data	Rotary actuators	Fast-running rotary actuators	Linear actuators
	GK*	NKQ	AHKX
Torque	360 in-lb [40 Nm]	54 in-lb [6 Nm]	101 lbf
Max. angle of rotation/stroke height	95°	95°	4" [100 mm]
Power supply	24 VAC/DC	24 VAC/DC	24 VAC/DC
Motor running time	150 seconds / 95°	4 seconds / 95°	150 seconds / 100 mm
Adjustable fail-safe (power-off) position	0...100%	0...100%	0...100%
Fail-safe (power-off) running time	35 seconds / 95°	4 seconds / 95°	35 seconds / 3.94" [100 mm]
Power supply	24 VAC	24 VAC	24 VAC
Adjustable fail-safe delay	0...10 seconds	N/A	0...10 seconds
Control input	On/Off, SR, 3-point, MFT	On/Off, SR, MFT	On/Off, SR, 3-point, MFT
Choice of rotation/stroke direction	•	•	•
Angle of rotation/stroke limitation	Integrated	Integrated	Integrated
Mechanical coupling	Clamp	Clamp	Gear rod head
Protection class	NEMA 2, IP54	NEMA 2, IP54	NEMA 2, IP54
Piggyback-compatible*	•		

* Dual mounting capability will be available in 4th quarter 2010.
NEMA 4 available for GK models in September 2010.



Electronic fail-safe actuator solutions providing safety and protection in hospitals, laboratories, commercial buildings, greenhouses, paint rooms...



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