GKB24-MFT - Damper Actuator

Modulating, Electronic Fail-Safe, 24 V, Multi-Function Technology®











Т	TEMP IND. & CULJ US REG. EQUIP.	
Technical Data		
Power Supply	24 VAC ± 20%, 50/60 Hz, 24 VDC ± 10%	
Power Consumption Running	11 W	
Power Consumption Holding	3 W	
Transformer Sizing	21 VA (class 2 power source)	
Shaft Diameter	1/2" to 1.05" round, centers on 3/4" with	
	insert, 1.05" without insert	
Electrical Connection	3ft [1m], 10ft [3m] or 16ft [5m] 18 GA	
	appliance or plenum cables, with or without 1/2" conduit connector	
Overload Protection	electronic throughout 0° to 95° rotation	
Electrical Protection	actuators are double insulated	
Operating Range Y	2 to 10 VDC, 4 to 20 mA w/ ZG-R01 (500 Ω,	
operating range i	1/4 W resistor), variable (VDC, PWM, floating	
	point, on/off)	
Input Impedance	100 k Ω for 2 to 10 VDC (0.1 mA), 500 Ω for	
	4 to 20 mA, 1500 Ω for PWM, floating point	
Fredhard O. Ivaddi	and On/Off	
Feedback Output U	2 to 10 VDC, 0.5 mA max, VDC variable	
Angle of Rotation	Max. 95°, adjustable with mechanical stop	
Torque	360 in-lbs [40 Nm] minimum	
Direction of Rotation (Motor)	reversible with built-in switch	
Direction of Rotation (Fail-Safe) Fail-Safe Position	reversible with switch	
Fail-Sate 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 (Motor)	150 sec (default), variable (90 to 150 sec)	
Running Time (Fail-Safe)	35 sec	
Bridge Time	programmable 0 to 10 sec (2 sec default)	
	delay before fail-safe activates	
Pre-charging Time	5 to 26 seconds	
Angle of Rotation Adaptation	Off (default)	
Override Control	min. position = 0%, mid. Position = 50%,	
Lumidity	max. position = 100% (Default)	
Humidity Ambient Temperature Benge	max. 95% RH non-condensing -22°F to 122°F [-30°C to 50°C]	
Ambient Temperature Range	-40°F to 172°F [-40°C to 50°C]	
Storage Temperature Range Housing	NEMA 2, IP54, UL enclosure type 2	
Housing Material	UL94-5VA	
Agency Listings†	CULus acc. to UL60730-1A/-2-14, CAN/CSA	
Ayoncy Listings	E60730-1:02, CE acc. to 2004/108/EC	
Noise Level (Motor)	≤53 dB (A)	
Noise Level (Fail-Safe)	≤61 dB (A)	
Servicing	maintenance free	
Quality Standard	ISO 9001	
Weight	4 lb [1.8 kg]	
******	[9]	

^{*}Variable when configured with MFT options.

†Rated Impulse Voltage 800V, Type of action 1.AA, Control Pollution Degree 3

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

Application

For fail-safe, modulating control of dampers in HVAC systems. Actuator sizing should be done in accordance with the damper manufacturer's specifications. A feedback signal is provided for position indication or master-slave applications. Maximum of two GK's can be piggybacked for torque loads of up to 720 in-lbs. Minimum 1" diameter shaft and Master-Slave wiring.

Default/Configuration

Default parameters for 2 to 10 VDC applications of the GK..-MFT actuator are assigned during manufacturing. If required, custom versions of the actuator can be ordered. The parameters are variable and can be changed by three means: Factory pre-set or custom configuration, set by the customer using PC-Tool software or the handheld ZTH US.

Operation

The GK..24-MFT 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-MFT actuator uses 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

LED status indicator lights sequence:

Yellow off / Green on: operation ok, no faults

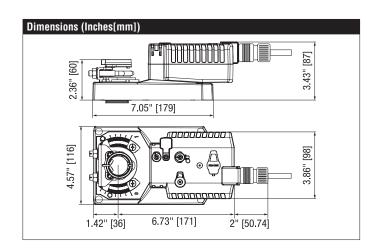
Yellow off / Green blinking: fail-safe mechanism is active

Yellow on / Green off: fault is detected

Yellow off / Green off: not in operation / capacitors charging

Yellow on / Green on: adaption running

Yellow blinking / Green on: communication with programming tool



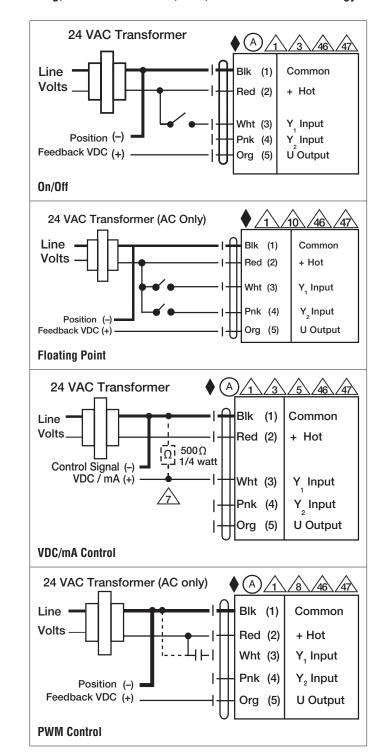




GKB24-MFT - Damper Actuator

Modulating, Electronic Fail-Safe, 24 V, Multi-Function Technology®

AH-GMA AV8-25 9.8" shaft extension for 5/16" to 1" diameter shafts. KG10A Ball joint for 3/8" diameter rod, zinc plated. K-GM20 Standard GK/GM clamp (1/2" to 1.05"). KH10 Push rod for KG10A ball joint (36" L, 3/8" diameter). TOOL-07 13 mm wrench. ZG-100 Univ. right angle bracket (17" H x 11-1/8" W x 6" base). ZG-101 Univ. right angle bracket (17" H x 11-1/8" W x 2-3/4" base). ZG-102 Dual actuator mounting bracket. ZG-103 Univ. right angle bracket (7-1/2" H x 11" W x 2-3/4" base). ZG-104 Univ. right angle bracket (7-1/2" H x 11" W x 2-3/4" base). ZG-105 Univ. right angle bracket (7-1/2" H x 11" W x 2-3/4" base). ZG-104 Univ. right angle bracket (7-1/2" H x 11" W x 2-3/4" base). ZG-109 Right angle bracket for ZS-260. ZG-109 Right angle bracket for ZS-260. ZG-DC1 Damper clip for damper blade, 3.5" width. ZG-GMA GKB(X), GMB(X), cankarm adaptor kit. ZG-JSA-1 1" diameter jackshaft adaptor (11" L). ZG-JSA-2 1-5/16" diameter jackshaft adaptor (12" L). ZG-JSA-3 1.05" diameter jackshaft adaptor (12" L). ZG-JSA-3 NEM X-4" X **W X **G**D ZG-JSA-3 NEM X-4" X **W X **G**D ZG-JSA-3 NEM X-4" X **W X	Accessories	
KG10A Ball joint for 3/8" diameter rod, zinc plated. K-GM2O Standard GK/GM clamp (1/2" to 1.05"). K-GM2O Univ. crankarm, slot 21/64" w, for 9/16" to 1" dia. shafts. SH10 Push rod for KG10A ball joint (36" L, 3/8" diameter). TOOL-07 13 mm wrench. ZG-100 Univ. right angle bracket (17" H x 11-1/8" W x 6" base). ZG-101 Univ. right angle bracket (13" H x 11" W x 7-7/16" base). ZG-102 Dual actuator mounting bracket. ZG-103 Univ. right angle bracket (13-5/8" H x 71" W x 2-3/4" base). ZG-104 Univ. right angle bracket (13-5/8" H x 7-1/2" W x 4" base). ZG-105 Right angle bracket (13-5/8" H x 7-1/2" W x 4" base). ZG-106 Right angle bracket for ZS-260. ZG-110 Stand-off bracket for ZS-260. ZG-110 Stand-off bracket for ZS-260. ZG-101 Damper clip for damper blade, 3.5" width. ZG-DC2 Damper clip for damper blade, 6" width. ZG-DC2 Damper clip for damper blade, 6" width. ZG-JSA-1 1" diameter jackshaft adaptor (11" L). ZG-JSA-2 1-5/16" diameter jackshaft adaptor (12" L). ZG-JSA-3 1.05" diameter jackshaft adaptor (12" L). ZG-JSA-3 1.05" diameter jackshaft adaptor (12" L). ZG-JSA-3 1.05" diameter jackshaft adaptor (12" L). ZS-100 Weather shield - galvaneal (13" L x 8" W x 6" D). ZS-150 Weather shield - PC w/ foam seal (16" L x 8-3/8" W x 4" D). ZS-260 Explosion proof housing. ZS-300-5 NEMA 4X, 316L stainless steel enclosure. ZS-300-5 NEMA 4X, 316L stainless steel enclosure. ZS-300-1 1/2" shaft adaptor for ZS-300(-5). ZS-300-6 1/2" shaft adaptor for ZS-300(-5). ZS-300-6 1/2" shaft adaptor for ZS-300(-5). ZS-300-6 Analog to digital switch for modulating actuators. RM-100 Input rescaling module for modulating actuators. RM-100 Analog to digital switch for modulating actuators. RM-100 Actuator power supply and control simulator. PS-100 Actuator power		GKB(X), GMB(X) crankarm.
K-GM20 Standard GK/GM clamp (1/2" to 1.05"). KH10 Univ. crankarm, slot 21/64" w, for 9/16" to 1" dia. shafts. SH10 Push rod for KG10A ball joint (36" L, 3/8" diameter). TOOL-07 13 mm wrench. ZG-100 Univ. right angle bracket (17" H x 11-1/8" W x 6" base). ZG-101 Univ. right angle bracket (13" H x 11" W x 7-7/16" base). ZG-102 Dual actuator mounting bracket. ZG-103 Univ. right angle bracket (7-1/2" H x 11" W x 2-3/4" base). ZG-104 Univ. right angle bracket (7-1/2" H x 11" W x 2-3/4" base). ZG-109 Right angle bracket (7-1/2" H x 11" W x 2-3/4" base). ZG-109 Right angle bracket for ZS-260. ZG-101 Stand-off bracket for ZS-260. ZG-101 Damper clip for damper blade, 3.5" width. ZG-102 Damper clip for damper blade, 6" width. ZG-JSA-1 "diameter jackshaft adaptor (11" L). ZG-JSA-1 1" diameter jackshaft adaptor (11" L). ZG-JSA-3 1.05" diameter jackshaft adaptor (12" L). ZS-300	AV8-25	9.8" shaft extension for 5/16" to 1" diameter shafts.
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SH10 Push rod for KG10A ball joint (36" L, 3/8" diameter). TOOL-07 13 mm wrench. ZG-100 Univ. right angle bracket (17" H x 11-1/8" W x 6" base). ZG-101 Univ. right angle bracket (13" H x 11" W x 7-7716" base). ZG-102 Dual actuator mounting bracket. ZG-103 Univ. right angle bracket (13" H x 11" W x 2-3/4" base). ZG-104 Univ. right angle bracket (17-1/2" H x 11" W x 2-3/4" base). ZG-104 Univ. right angle bracket (17-5/8" H x 7-1/2" W x 4" base). ZG-104 Univ. right angle bracket (17-5/8" H x 7-1/2" W x 4" base). ZG-105 Right angle bracket for ZS-260. ZG-100 Stand-off bracket for ZS-260. ZG-101 Damper clip for damper blade, 3.5" width. ZG-DC1 Damper clip for damper blade, 6" width. ZG-G-GMA GKB(X), GMB(X) crankarm adaptor kit. ZG-JSA-1 1" diameter jackshaft adaptor (12" L). ZG-JSA-2 1-5/16" diameter jackshaft adaptor (12" L). ZG-JSA-3 1.0.5" diameter jackshaft adaptor (12" L). ZG-JSA-3 1.0.6" diameter jackshaft adaptor (12" L). ZS-101 Base plate for ZS-100. ZS-101 Weather shield - palvaneal (13" L x 8" W x 6" D). ZS-101 Base plate for ZS-100. ZS-102 Weather shield - palvaneal (13" L x 8" W x 6" D). ZS-260 Explosion proof housing. ZS-300-5 NEMA 4X, 304 stainless steel enclosure. ZS-300-5 NEMA 4X, 304 stainless steel enclosure. ZS-300-1 1/2" shaft adaptor for ZS-300(-5). ZS-300-C2 3/4" shaft adaptor for ZS-300(-5). ZS-300-C3 1" shaft adaptor for ZS-300(-5	KH10	
T00L-07 T3G-100 Univ. right angle bracket (17" H x 11-1/8" W x 6" base). ZG-101 Univ. right angle bracket (13" H x 11" W x 7-7/16" base). ZG-102 Dual actuator mounting bracket. ZG-103 Univ. right angle bracket (7-1/2" H x 11" W x 2-3/4" base). ZG-104 Univ. right angle bracket (7-1/2" H x 11" W x 2-3/4" base). ZG-109 Right angle bracket for ZS-260. ZG-109 Right angle bracket for ZS-260. ZG-101 Stand-off bracket for ZS-260. ZG-DC1 Damper clip for damper blade, 3.5" width. ZG-02 ZG-DC1 Damper clip for damper blade, 6" width. ZG-GMA GKB(X), GMB(X) crankarm adaptor kit. ZG-JSA-1 1" diameter jackshaft adaptor (11" L). ZG-JSA-2 1-5/16" diameter jackshaft adaptor (12" L). ZG-JSA-3 1.05" diameter jackshaft adaptor (12" L). ZS-100 Weather shield - galvaneal (13" L x 8" W x 6" D). ZS-101 Base plate for ZS-100. ZS-150 Weather shield - PC w/ foam seal (16" L x 8-3/8" W x 4" D). ZS-260 Explosion proof housing. ZS-300 NEMA 4X, 304 stainless steel enclosure. ZS-300-C1 1/2" shaft adaptor for ZS-300(-5). ZS-300-C2 3/4" shaft adaptor for ZS-300(-5). ZS-300-C3 1" shaft adaptor for ZS-300(-5). ZS-300-C3 1" shaft adaptor for ZS-300(-5). ZS-300-C3 REM-100 Analog to digital switch for modulating actuators. Input rescaling module for modulating actuators. Input rescaling module for modulating actuators. P1000A GR Feedback potentiometer 1000Ω. P140A GR Feedback potentiometer 1000Ω. P500A GR Feedback potentiometer 1000Ω. P500A GR Feedback potentiometer 1000Ω. P500A GR Feedback potentiometer 500Ω. P500A GR Feedback potentiometer 2800Ω. P500A GR Feedback potentiometer 2800Ω. P500A GR Feedback potentiometer 500Ω. P500A GR Feedback potentiometer 500Ω. P500A GR Feedback potentiometer 500Ω. P500A GR Feedback potentiometer 1000Ω. P500A GR Feedback potentiometer 500Ω. P500A GR Feedb	SH10	
ZG-100 Univ. right angle bracket (17" H x 11-1/8" W x 6" base). ZG-101 Univ. right angle bracket (13" H x 11" W x 7-7/16" base). ZG-102 Dual actuator mounting bracket. ZG-103 Univ. right angle bracket (7-1/2" H x 11" W x 2-3/4" base). ZG-104 Univ. right angle bracket (7-1/2" H x 11" W x 2-3/4" base). ZG-109 Right angle bracket for ZS-260. ZG-110 Stand-off bracket for ZS-260. ZG-101 Damper clip for damper blade, 3.5" width. ZG-DC1 Damper clip for damper blade, 6" width. ZG-DC2 Damper clip for damper blade, 6" width. ZG-JSA-1 1" diameter jackshaft adaptor (11" L). ZG-JSA-2 1-5/16" diameter jackshaft adaptor (12" L). ZG-JSA-3 1.05" diameter jackshaft adaptor (12" L). ZG-JSA-3 1.05" diameter jackshaft adaptor (12" L). Z-GMA Classic GM to GMB(X) retrofit bracket. ZS-100 Weather shield - galvaneal (13" L x 8" W x 6" D). ZS-1101 Base plate for ZS-100. ZS-150 Weather shield - PC W foam seal (16" L x 8-3/8" W x 4" D). ZS-260 Explosion proof housing. ZS-300 NEMA 4X, 304 stainless steel enclosure. ZS-300-5 NEMA 4X, 316L stainless steel enclosure. ZS-300-5 NEMA 4X, 316L stainless steel enclosure. ZS-300-C2 3/4" shaft adaptor for ZS-300(-5). ZS-300-C3 1" shaft adaptor for ZS-300(-5). ZS-300-C3 1" shaft adaptor for ZS-300(-5). ZS-300-C3 1" shaft adaptor for ZS-300(-5). ZS-300-C3 Feedback potentiometer 1000Ω. PF-P Anti-rotation bracket EFB(X)/GKB(X)/GMB(X). ZG-120 Jackshaft mounting bracket. ADS-100 Input rescaling module for modulating actuators. IRM-100 Input rescaling module for modulating actuators. IRM-100 Input rescaling module for modulating actuators. PF-P Belimo MFT configuration software (hardware not included). PF0000A GR Feedback potentiometer 1000Ω. PF000A GR Feedback potentiometer 1000Ω. PF000A GR Feedback potentiometer 500Ω. PS-100 A GR Feedback potentiometer 500Ω. PS-100 A GR Feedback potentiometer 500Ω. PS-100 A Catuator power supply and control simulator. PTA-250 Pulse width modulation interface for modulating actuators. UK24H0D LON gateway module for up to 8 MFT actuators. UK24BAC BACnet gateway module for	T00L-07	
ZG-101 Univ. right angle bracket (13" H x 11" W x 7-7/16" base). ZG-102 Dual actuator mounting bracket. ZG-103 Univ. right angle bracket (7-1/2" H x 11" W x 2-3/4" base). ZG-104 Univ. right angle bracket (7-1/2" H x 11" W x 2-3/4" base). ZG-109 Right angle bracket for ZS-260. ZG-100 Right angle bracket for ZS-260. ZG-110 Stand-off bracket for ZS-260. ZG-101 Damper clip for damper blade, 3.5" width. ZG-DC2 Damper clip for damper blade, 6" width. ZG-GMA GKB(X), GMB(X) crankarm adaptor kit. ZG-JSA-1 1" diameter jackshaft adaptor (11" L). ZG-JSA-2 1-5/16" diameter jackshaft adaptor (12" L). ZG-JSA-3 1.0.5" diameter jackshaft adaptor (12" L). ZG-JSA-3 1.0.5" diameter jackshaft adaptor (12" L). ZG-MA Classic GM to GMB(X) retrofit bracket. ZS-100 Weather shield - galvaneal (13" L x 8" W x 6" D). ZS-101 Base plate for ZS-100. ZS-150 Weather shield - PC w/ foam seal (16" L x 8-3/8" W x 4" D). ZS-260 Explosion proof housing. ZS-300 NEMA 4X, 304 stainless steel enclosure. ZS-300-S NEMA 4X, 316L stainless steel enclosure. ZS-300-C1 1/2" shaft adaptor for ZS-300(-5). ZS-300-C2 3/4" shaft adaptor for ZS-300(-5). ZS-300-C3 1" shaft adaptor for ZS-300(-5). ZS-300-C3 1" shaft adaptor for ZS-300(-5). ZS-300-C3 NEMA 4X, 316L stainless steel enclosure. ZS-300-C3 1" shaft adaptor for ZS-300(-5). ZS-300-C3 1" shaft		Univ. right angle bracket (17" H x 11-1/8" W x 6" base).
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ZG-103 Univ. right angle bracket (7-1/2" H x 11" W x 2-3/4" base). ZG-104 Univ. right angle bracket (13-5/8" H x 7-1/2" W x 4" base). ZG-109 Right angle bracket for ZS-260. ZG-101 Damper clip for damper blade, 3.5" width. ZG-DC2 Damper clip for damper blade, 6" width. ZG-DC2 Damper clip for damper blade, 6" width. ZG-GMA GKB(X), GMB(X) crankarm adaptor kit. ZG-JSA-1 1" diameter jackshaft adaptor (11" L). ZG-JSA-2 1-5/16" diameter jackshaft adaptor (12" L). ZG-JSA-3 1.05" diameter jackshaft adaptor (12" L). ZG-JSA-3 1.05" diameter jackshaft adaptor (12" L). Z-GMA Classic GM to GMB(X) retrofit bracket. ZS-100 Weather shield - galvaneal (13" L x 8" W x 6" D). ZS-101 Base plate for ZS-100. ZS-150 Weather shield - PC w/ foam seal (16" L x 8-3/8" W x 4" D). ZS-260 Explosion proof housing. ZS-300 NEMA 4X, 304 stainless steel enclosure. ZS-300-5 NEMA 4X, 316L stainless steel enclosure. ZS-300-5 NEMA 4X, 316L stainless steel enclosure. ZS-300-1 1/2" shaft adaptor for ZS-300(-5). ZS-300-23 1" shaft adaptor for ZS-300(-5). ZS-300-31 1" shaft adaptor for ZS-300(-5). ZS-300-31 1" shaft adaptor for modulating actuators. Input rescaling module for modulating actuators. P1000A GR Feedback potentiometer 1000Ω. P5000A GR Feedback potentiometer 500Ω. P5000A GR Feedback		,
ZG-104 Univ. right angle bracket (13-5/8" H x 7-1/2" W x 4" base). ZG-109 Right angle bracket for ZS-260. ZG-110 Stand-off bracket for ZS-260. ZG-110 Damper clip for damper blade, 3.5" width. ZG-DC2 Damper clip for damper blade, 6" width. ZG-DC2 Damper clip for damper blade, 6" width. ZG-GMA GKB(X), GMB(X) crankarm adaptor kit. ZG-JSA-1 1" diameter jackshaft adaptor (11" L). ZG-JSA-2 1-5/16" diameter jackshaft adaptor (12" L). ZG-JSA-3 1.05" diameter jackshaft adaptor (12" L). Z-GMA Classic GM to GMB(X) retrofit bracket. ZS-100 Weather shield - galvaneal (13" L x 8" W x 6" D). ZS-150 Weather shield - PC w/ foam seal (16" L x 8-3/8" W x 4" D). ZS-150 Weather shield - PC w/ foam seal (16" L x 8-3/8" W x 4" D). ZS-260 Explosion proof housing. ZS-300 NEMA 4X, 304 stainless steel enclosure. ZS-300-5 NEMA 4X, 304 stainless steel enclosure. ZS-300-1 1/2" shaft adaptor, standard with ZS-300(-5). ZS-300-C2 3/4" shaft adaptor for ZS-300(-5). ZS-300-C3 1" shaft adaptor for ZS-300(-5). ZS-300-C3 1" shaft adaptor for ZS-300(-5). ZS-300-C3 1" shaft adaptor for ZS-300(-5). ZG-120 Jackshaft mounting bracket. ADS-100 Analog to digital switch for modulating actuators. IRM-100 Input rescaling module for modulating actuators. IRM-100 Input rescaling module for modulating actuators. P1000A GR Feedback potentiometer 1000Ω. P1000A GR Feedback potentiometer 1000Ω. P1000A GR Feedback potentiometer 100ΩΩ. P5000A GR Feedback potentiometer 100ΩΩ. P5000A GR Feedback potentiometer 500ΩΩ. P5		
ZG-109 Right angle bracket for ZS-260. ZG-110 Stand-off bracket for ZS-260. ZG-DC1 Damper clip for damper blade, 3.5" width. ZG-DC2 Damper clip for damper blade, 6" width. ZG-GCA GKB(X), GMB(X) crankarm adaptor kit. ZG-JSA-1 1" diameter jackshaft adaptor (11" L). ZG-JSA-2 1-5/16" diameter jackshaft adaptor (12" L). ZG-JSA-3 1.05" diameter jackshaft adaptor (12" L). Z-GMA Classic GM to GMB(X) retrofit bracket. Z-GMA Classic GM to GMB(X) retrofit bracket. ZS-100 Weather shield - galvaneal (13" L x 8" W x 6" D). ZS-101 Base plate for ZS-100. ZS-150 Weather shield - PC w/ foam seal (16" L x 8-3/8" W x 4" D). ZS-260 Explosion proof housing. ZS-300 NEMA 4X, 304 stainless steel enclosure. ZS-300-S NEMA 4X, 316 L stainless steel enclosure. ZS-300-C1 1/2" shaft adaptor, standard with ZS-300(-5). ZS-300-C2 3/4" shaft adaptor for ZS-300(-5). ZS-300-C3 1" shaft adaptor for ZS-300(-5). ZS-300-C3 1" shaft adaptor for ZS-300(-5). ZS-300-C3 1" shaft mounting bracket. ADS-100 Analog to digital switch for modulating actuators. IRM-100 Input rescaling module for modulating actuators. IRM-100 Input rescaling module for modulating actuators. MFT-P Belimo MFT configuration software (hardware not included). P10000A GR Feedback potentiometer 10000Ω. P140A GR Feedback potentiometer 1000Ω. P140A GR Feedback potentiometer 2800Ω. P500A GR Feedback potentiometer 2800Ω. P500A GR Feedback potentiometer 500Ω. PS-100 Actuator power supply and control simulator. P14-250 Pulse width modulation interface for modulating actuators. S1A Auxiliary switch, 2x SPDT, 3A (0.5A inductive) @250 VAC max. S2A Auxiliary switch, 2x SPDT, 3A (0.5A inductive) @250 VAC max. S2A Positioner control for modulating actuators (flush mount). TF-CC US Cable conduit connector, 1/2". UK24MOD MODbus gateway module for up to 8 MFT actuators. UK24MOD MODbus gateway module for up to 8 MFT actuators. UK24MOD MODbus gateway module for up to 8 MFT actuators. UK24MOD MODbus gateway module for Up to 8 MFT actuators. UK24MOD MODbus gateway module for Up to 8 MFT actuators. UK24MOD		
ZG-110 Stand-off bracket for ZS-260. ZG-DC1 Damper clip for damper blade, 3.5" width. ZG-DC2 Damper clip for damper blade, 6" width. ZG-DC3 GKB(X), GMB(X) crankarm adaptor kit. ZG-JSA-1 1" diameter jackshaft adaptor (11" L). ZG-JSA-2 1-5/16" diameter jackshaft adaptor (12" L). ZG-JSA-3 1.05" diameter jackshaft adaptor (12" L). Z-GMA Classic GM to GMB(X) retrofit bracket. ZS-100 Weather shield - galvaneal (13" L x 8" W x 6" D). ZS-151 Weather shield - PC w/ foam seal (16" L x 8-3/8" W x 4" D). ZS-260 Explosion proof housing. ZS-300 NEMA 4X, 304 stainless steel enclosure. ZS-300-S NEMA 4X, 316L stainless steel enclosure. ZS-300-C1 1/2" shaft adaptor, standard wtih ZS-300(-5). ZS-300-C2 3/4" shaft adaptor for ZS-300(-5). ZS-300-C3 1" shaft adaptor for ZS-300(-5). ZS-300-C3 1" shaft adaptor for ZS-300(-5). ZF-P Anti-rotation bracket EFB(X)/GKB(X)/GMB(X). ZG-120 Jackshaft mounting bracket. ADS-100 Analog to digital switch for modulating actuators. IRM-100 Input rescaling module for modulating actuators. IRM-100 Input rescaling module for modulating actuators. MFT-P Belimo MFT configuration software (hardware not included). P1000A GR Feedback potentiometer 1000Ω. P140A GR Feedback potentiometer 1000Ω. P140A GR Feedback potentiometer 1000Ω. P500A GR Feedback potentiometer 2800Ω. P500A GR Feedback potentiometer 500Ω. P5-100 Actuator power supply and control simulator. PT-250 Pulse width modulation interface for modulating actuators. S1A Auxiliary switch, 1x SPDT, 3A (0.5A inductive) @250 VAC max. S2A Auxiliary switch, 1x SPDT, 3A (0.5A inductive) @250 VAC max. SGA24 Positioner control for modulating actuators (flush mount). TF-CC US Cable conduit connector, 1/2". UK24BAC BACnet gateway module for up to 8 MFT actuators. UK24HOD MODbus gateway module for up to 8 MFT actuators. UK24HOD MODbus gateway module for up to 8 MFT actuators. UK24HOD MODbus gateway module for up to 8 MFT actuators. UK24HOD MODbus gateway module for up to 8 MFT actuators. UK24HOD Hoto 24 VAC, 40 VA transformer. ZK1-GEN Cable for ZTH US to diagnost		· · · · · · · · · · · · · · · · · · ·
ZG-DC1 Damper clip for damper blade, 3.5" width. ZG-DC2 Damper clip for damper blade, 6" width. ZG-GMA GKB(X), GMB(X) crankarm adaptor kit. ZG-JSA-1 1" diameter jackshaft adaptor (11" L). ZG-JSA-2 1-5/16" diameter jackshaft adaptor (12" L). ZG-JSA-3 1.05" diameter jackshaft adaptor (12" L). Z-GMA Classic GM to GMB(X) retrofit bracket. ZS-100 Weather shield - galvaneal (13" L x 8" W x 6" D). ZS-150 Weather shield - PC w/ foam seal (16" L x 8-3/8" W x 4" D). ZS-150 Weather shield - PC w/ foam seal (16" L x 8-3/8" W x 4" D). ZS-260 Explosion proof housing. ZS-300 NEMA 4X, 304 stainless steel enclosure. ZS-300-5 NEMA 4X, 304 stainless steel enclosure. ZS-300-1 1/2" shaft adaptor, standard wtih ZS-300(-5). ZS-300-C2 3/4" shaft adaptor for ZS-300(-5). ZS-300-C3 1" shaft adaptor for ZS-300(-5). ZS-300-C4 2 Jackshaft mounting bracket. ADS-100 Analog to digital switch for modulating actuators. MFT-P Belimo MFT configuration software (hardware not included). P10000 GR Feedback potentiometer 1000Ω. P10000 GR Feedback potentiometer 1000Ω. P140A GR Feedback potentiometer 1000Ω. P140A GR Feedback potentiometer 2800Ω. P2800A GR Feedback potentiometer 2800Ω. P2800A GR Feedback potentiometer 2800Ω. P500A GR Fe		
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ZG-JSA-2 1-5/16" diameter jackshaft adaptor (12" L). ZG-JSA-3 1.05" diameter jackshaft adaptor (12" L). Z-GMA Classic GM to GMB(X) retrofit bracket. ZS-100 Weather shield - galvaneal (13" L x 8" W x 6" D). ZS-110 Base plate for ZS-100. ZS-150 Weather shield - PC w/ foam seal (16" L x 8-3/8" W x 4" D). ZS-260 Explosion proof housing. ZS-300 NEMA 4X, 304 stainless steel enclosure. ZS-300-5 NEMA 4X, 316L stainless steel enclosure. ZS-300-C1 1/2" shaft adaptor, standard wtih ZS-300(-5). ZS-300-C2 3/4" shaft adaptor for ZS-300(-5). ZS-300-C3 1" shaft adaptor for ZS-300(-5). EF-P Anti-rotation bracket EFB(X)/GKB(X)/GMB(X). ZG-120 Jackshaft mounting bracket. ADS-100 Analog to digital switch for modulating actuators. Imm-100 Input rescaling module for modulating actuators. Imm-100 Input rescaling module for modulating actuators. P10000A GR Feedback potentiometer 1000Ω. P140A GR Feedback potentiometer 1000Ω. P140A GR Feedback potentiometer 140Ω. P2800A GR Feedback potentiometer 140Ω. P2800A GR Feedback potentiometer 500Ω. P5000A GR Feedback potentiom		1 ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' '
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ZS-100 Weather shield - galvaneal (13" L x 8" W x 6" D). ZS-101 Base plate for ZS-100. ZS-150 Weather shield - PC w/ foam seal (16" L x 8-3/8" W x 4" D). ZS-260 Explosion proof housing. ZS-300 NEMA 4X, 304 stainless steel enclosure. ZS-300-5 NEMA 4X, 316L stainless steel enclosure. ZS-300-61 1/2" shaft adaptor, standard with ZS-300(-5). ZS-300-C2 3/4" shaft adaptor for ZS-300(-5). ZS-300-C3 1" shaft mounting bracket EFB(X)/GKB(X)/GMB(X). ZG-120 Jackshaft mounting bracket. ADS-100 Analog to digital switch for modulating actuators. IRM-100 Input rescaling module for modulating actuators. IRM-100 Input rescaling module for modulating actuators. MFT-P Belimo MFT configuration software (hardware not included). P10000A GR Feedback potentiometer 10000Ω. P140A GR Feedback potentiometer 140Ω. P2800A GR Feedback potentiometer 140Ω. P2800A GR Feedback potentiometer 5000Ω. P5000A GR Feedback potentiometer 5000Ω. P5000A GR Feedback potentiometer 5000Ω. P5-100 Actuator power supply and control simulator. PTA-250 Pulse width modulation interface for modulating actuators. S1A Auxiliary switch, 1x SPDT, 3A (0.5A inductive) @250 VAC max. S2A Auxiliary switch, 2x SPDT, 3A (0.5A inductive) @250 VAC max. S2A Auxiliary switch, 2x SPDT, 3A (0.5A inductive) @250 VAC max. SGA24 Positioner control for modulating actuators (flush mount). TF-CC US Cable conduit connector, 1/2". UK24BAC BACnet gateway module for up to 8 MFT actuators. UK24LON LON gateway module for up to 8 MFT actuators. UK24LON LON gateway module for up to 8 MFT actuators. UK24MOD MODbus gateway module for up to 8 MFT actuators. UK24MOD MODbus gateway module for up to 8 MFT actuators. UK24MOD MODbus gateway module for up to 8 MFT actuators. UK24MOD MODbus gateway module for up to 8 MFT actuators. UK24MOD MODbus gateway module for up to 8 MFT actuators. UK24GEN 120 to 24 VAC, 40 VA transformer.		
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ZS-150 Weather shield - PC w/ foam seal (16" L x 8-3/8" W x 4" D). ZS-260 Explosion proof housing. ZS-300 NEMA 4X, 304 stainless steel enclosure. ZS-300-5 NEMA 4X, 316L stainless steel enclosure. ZS-300-C1 1/2" shaft adaptor, standard with ZS-300(-5). ZS-300-C2 3/4" shaft adaptor for ZS-300(-5). ZS-300-C3 1" shaft adaptor for ZS-300(-5). ZS-300-C3 1" shaft adaptor for ZS-300(-5). ZG-120 Jackshaft mounting bracket. ADS-100 Analog to digital switch for modulating actuators. Input rescaling module for modulating actuators. IRM-100 Input rescaling module for modulating actuators. P10000A GR Feedback potentiometer 10000Ω. P140A GR Feedback potentiometer 1000Ω. P140A GR Feedback potentiometer 140Ω. P2800A GR Feedback potentiometer 2800Ω. P5000A GR Feedback potentiometer 500Ω. P500A GR F		- '
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PTA-250 Pulse width modulation interface for modulating actuators. S1A Auxiliary switch, 1x SPDT, 3A (0.5A inductive) @250 VAC max. S2A Auxiliary switch, 2x SPDT, 3A (0.5A inductive) @250 VAC max. SGA24 Positioner control for modulating actuators (surface mount). SGF24 Positioner control for modulating actuators (flush mount). TF-CC US Cable conduit connector, 1/2". UK24BAC BACnet gateway module for up to 8 MFT actuators. UK24LON LON gateway module for up to 8 MFT actuators. UK24MOD MODbus gateway module for up to 8 MFT actuators. ZG-R01 4 to 20 mA adaptor, 500Ω, 1/4 W resistor w 6" pigtail wires. ZG-R02 50% voltage divider kit (resistors with wires). ZG-SGF Mounting plate for SGF. ZG-X40 120 to 24 VAC, 40 VA transformer. ZK1-GEN Cable for ZTH US to diagnostic/programming socket. ZK2-GEN Cable for ZTH US to actuators w/o diagnostics socket.		l · · · · · · · · · · · · · · · · · · ·
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ZK2-GEN Cable for ZTH US to actuators w/o diagnostics socket.	ZK1-GEN	Cable for ZTH US to diagnostic/programming socket.
	ZK2-GEN	
gasto for out to to to to the or to or to or to or the or to or the or to or the or	ZK4-GEN	Cable for ZTH US to connect to UK24 gateways and VRP-M.
ZTH US Handheld programming tool w/ ZK1-GEN, ZK2-GEN, ZK6-GEN.	ZTH US	



GKB24-MFT - Damper Actuator

Modulating, Electronic Fail-Safe, 24 V, Multi-Function Technology®



Typical Specification

Modulating control, electronic fail-safe 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 must provide modulating damper control response to a 2 to 10 VDC or, with the addition of a 500Ω resistor, a 4 to 20 mA control input from an electronic controller or positioner. 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. A 2 to 10 VDC feedback signal shall be provided for position feedback or master slave applications. 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.

Wiring Diagrams



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.



Provide overload protection and disconnect as required.



Actuators may also be powered by 24 VDC.



Only connect common to negative (-) leg of control circuits.



A 500 Ω resistor (ZG-R01) converts the 4 to 20 mA control signal to 2 to 10 VDC



Control signal may be pulsed from either the Hot (Source) or Common (Sink) 24 VAC line.



For triac sink the Common connection from the actuator must be connected to the Hot connection of the controller. Position feedback cannot be used with a triac sink controller; the actuator internal common reference is not compatible.



 ${\sf IN4004}$ or ${\sf IN4007}$ diode. (${\sf IN4007}$ supplied, Belimo part number 40155).



Actuators may be controlled in parallel. Current draw and input impedance must be observed.



Master-Slave wiring required for piggy-back applications. Feedback from Master to conrol input(s) of Slave(s).

