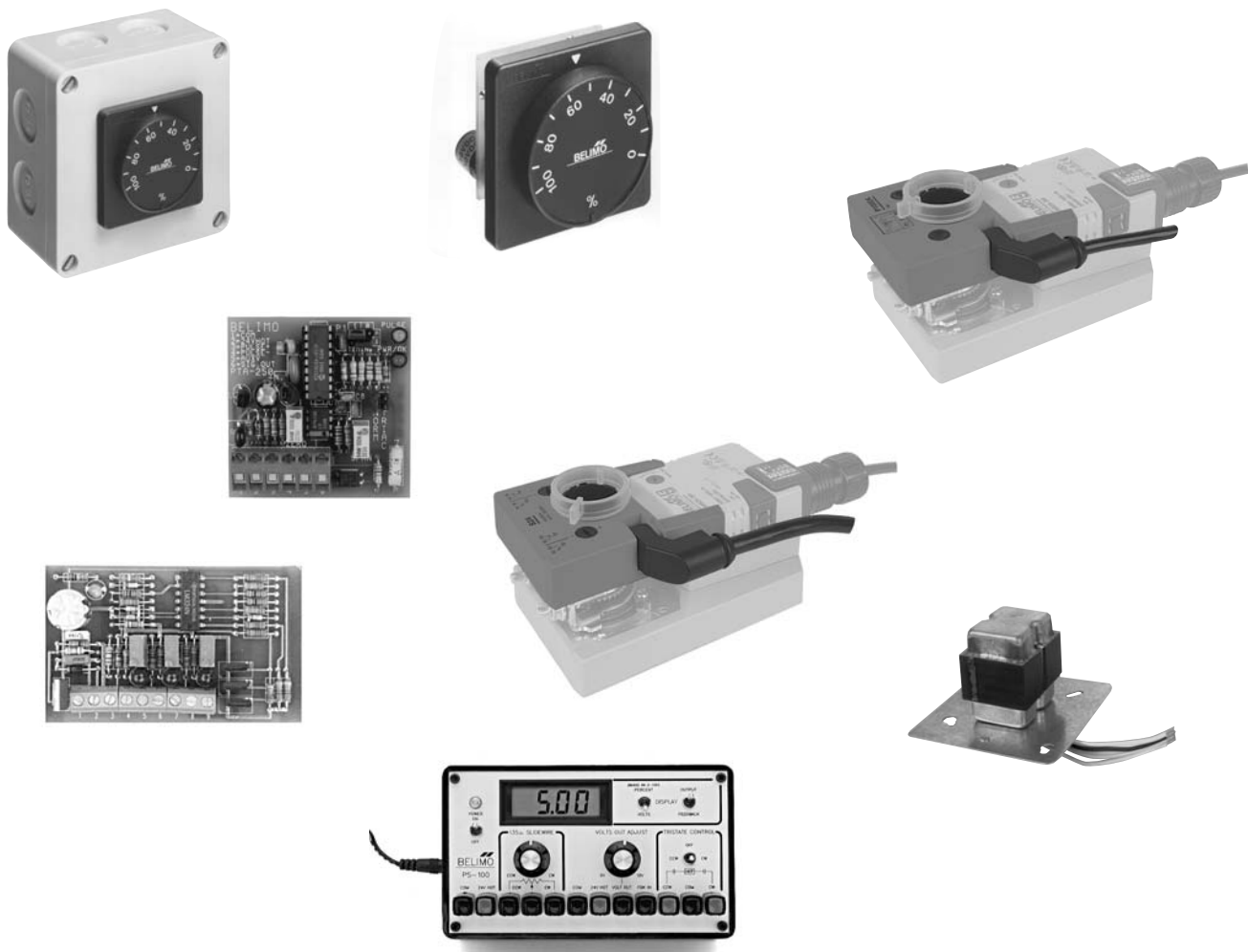


We'll help solve any application problem with a wide range of accessories and unparalleled customer service.



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## The Belimo Difference

- Customer Commitment.**  
 Extensive product range. Competitive project pricing. Application assistance.  
 Same-day shipments. Free technical support. Five year warranty.
- Low Installation and Life-Cycle Cost.**  
 Easy installation. Accuracy and repeatability.  
 Low power consumption. No maintenance.
- Long Service Life.**  
 Components tested before assembly. Every product tested before shipment.  
 20+ years direct coupled actuator design.

# Electronic Accessory Usage Chart



SEE PAGE NUMBER	425	374	—	373	418	419	420	421	423	423	423	422	425	426	Refer to MFT Technical Documentation						
BELIMO ACTUATOR	PS-100	S1A, SZA	P370	P.. A GR	SGA24, SGF24	PTA-250	IRM-100	ADS-100	ZG-R01	ZG-R02	ZG-R03, ZG-R05, ZG-R06	NSV24	ZG-X40	ZG-HTR	MFT-P US	ZIP-RS232 US	ZIP-USB-MP US	ZK1-GEN	ZK2-GEN	ZK3-GEN	
AF24 (-S) US	●		●										●	●							
AF120 (-S) US			●											●							
AF230 (-S) US			●											●							
AF24-SR US	●		●		●	●		●	●	●			●	●							
AFB24-MFT (-S), AFX24-MFT (-S)	●		●		●			●	●	●		●	●		●	●				●	
AFB24-MFT95, AFX24-MFT95	●		●								●		●		●	●				●	
AF24-PC US	●		●										●	●							
NFB24 (-S), NFX24 (-S)	●		●										●								
NFBUP (-S), NFXUP (-S)	●		●										●								
NFB24-SR (-S), NFX24-SR (-S)	●		●		●	●		●	●	●			●								
NFB24-MFT (-S), NFX24-MFT (-S)	●		●		●			●	●	●		●	●		●	●				●	
LF24 (-S) US	●		●										●								
LF120 (-S) US			●																		
LF230 (-S) US			●																		
LF(C)24-3... US	●		●										●								
LF24-SR... US	●		●		●	●	●	●	●	●			●								
LF24-ECON... US	●		●		●				●	●			●								
LF24-MFT... US	●		●		●			●	●	●		●	●		●	●					
TF24 (-S) US	●												●								
TF120 (-S) US																					
TF24-3 (-S) US	●												●								
TF24-SR (-S) US	●				●	●	●	●	●	●			●								
GM_24-3	●	●	●	●								●	●								
GMX120-3		●	●	●								●	●								
GM_24-SR	●	●	●	●	●	●	●	●	●	●		●	●								
GMX24-MFT	●	●	●	●	●				●	●		●	●		●	●	●	●	●	●	●
GMX24-MFT95	●	●	●	●							●	●	●		●	●	●	●	●	●	●
GMX24-PC	●	●	●	●								●	●		●	●	●	●	●	●	●
AM_24-3(-S)(-T)	●	●	●	●	●	●	●	●	●	●		●	●								
AM120-3		●	●	●								●	●								
AM_24-SR(-T)	●	●	●	●	●	●	●	●	●	●		●	●								
AMX120-SR		●	●	●	●	●	●	●	●	●		●	●								
AMX24-MFT	●	●	●	●	●				●	●		●	●		●	●	●	●	●	●	●
AMX24-MFT95	●	●	●	●							●	●	●		●	●	●	●	●	●	●
AMX24-PC	●	●	●	●								●	●		●	●	●	●	●	●	●
NM_24-3(-T)	●	●	●	●	●	●	●	●	●	●		●	●								
NM120-3		●	●	●								●	●								
NM_24-SR(-T)	●	●	●	●	●	●	●	●	●	●		●	●								
NM120-SR		●	●	●	●	●	●	●	●	●		●	●								
NMX24-MFT	●	●	●	●	●				●	●		●	●		●	●	●	●	●	●	●
NMX24-MFT95	●	●	●	●							●	●	●		●	●	●	●	●	●	●
NMX24-PC	●	●	●	●								●	●		●	●	●	●	●	●	●
NMQ24-MFT US	●	●	●	●								●	●								
LM_24-3 (-P5) (-P10) (-S) (-T)	●	●	●	●	●	●	●	●	●	●		●	●								
LMX120-3		●	●	●								●	●								
LM_24-SR(-T)	●	●	●	●	●	●	●	●	●	●		●	●								
LMX120-SR		●	●	●	●	●	●	●	●	●		●	●								
LMX24-MFT	●	●	●	●	●				●	●		●	●		●	●	●	●	●	●	●
LMX24-MFT95	●	●	●	●							●	●	●		●	●	●	●	●	●	●
LMX24-PC	●	●	●	●								●	●								

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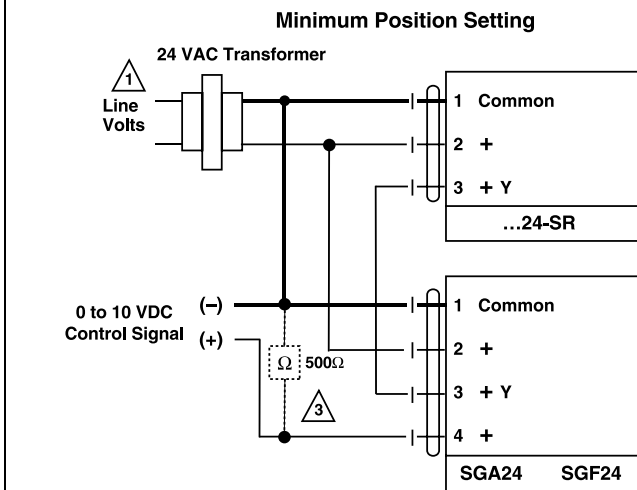
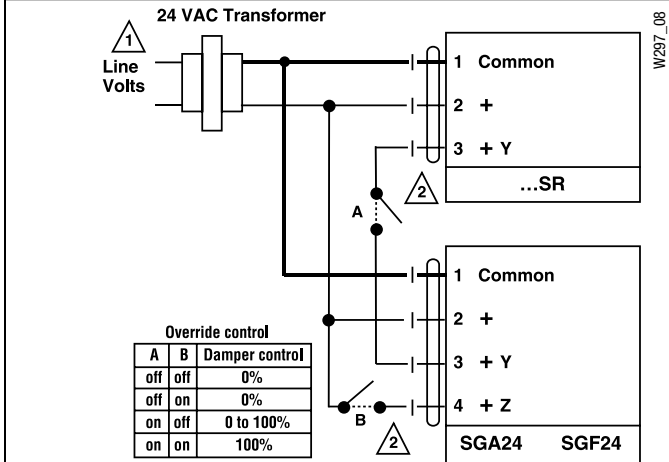
SGA24



SGF24

Technical Data	SGA24, SGF24
Power supply	24 VAC ± 20% 50/60 Hz, 24 VDC ± 10%
Transformer sizing	1 VA
Control signal Y	0.5 to 10 VDC; 2 to 10 VDC (switchable)
Power output	up to 10 actuators (1 mA max)
Degree of protection	(SGA24 only NEMA 2 [IP54])
Connection	Terminals (14 ga. wire max)
Humidity	5 to 95% RH non-condensing

### Wiring Diagrams



- 1 Provide overload protection and disconnect as required.
- 2 Override switches are optional.
- 3 A 500Ω resistor (ZG-R01) must be added for 4 to 20 mA control.

### Application

These positioners are intended for the remote control of modulating actuators or for use as a minimum positioner (providing a minimum limit for the output signal from a modulating controller). The control range is 0 to 100% of the angle of rotation of the actuator.

Positioner SGA24 is for surface mounting with a NEMA 2 housing included. Positioner SGF24 is for flush mounting.

### Operation

The positioner receives its supply voltage through terminals 1 and 2. A rotary knob is turned, producing a proportional control signal (Y) at the output (terminal 3) of either 0.5 to 10 VDC or 2 to 10 VDC and therefore a proportional change in the position of the actuator between 0 and 100%. When used for a minimum limit, the positioner works as a higher of 2 signal selector. This function allows only the signal from the controller or positioner, whichever is greater, to go to the actuator.

### Function

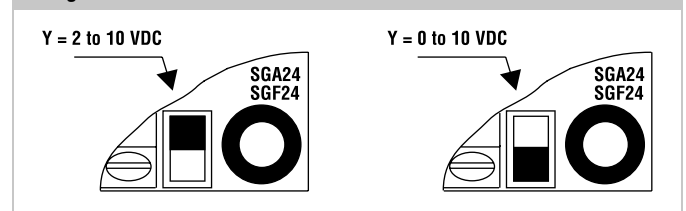
The changeover from 2 to 10 V to 0 to 10 V is selected by means of a slide switch on the printed circuit board.

The angle of rotation of the knob can be limited mechanically, by moving the adjustable stops under the knob.

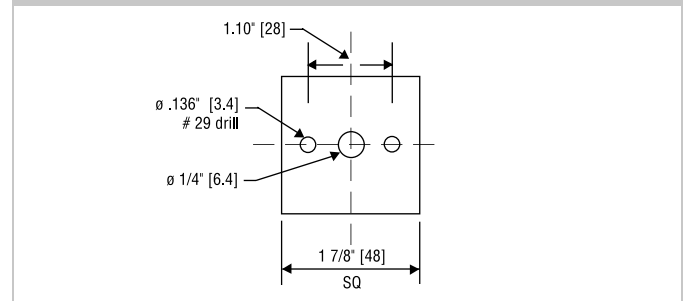
### Accessory

ZG-SGF Mounting plate for single gang wiring box

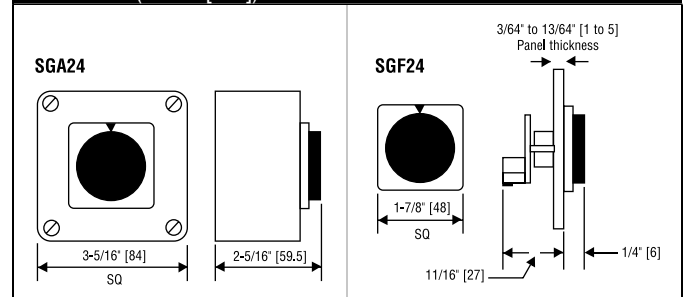
### Changeover Switch



### Drilling template for SGF24 (flush mount)

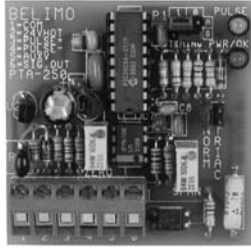


### Dimensions (Inches [mm])



# Pulse Width Modulation Interface PTA-250

To Convert a Pulse Width Modulated Signal to a 2 to 10 VDC Signal for Belimo Proportional Actuators  
(Series 3)



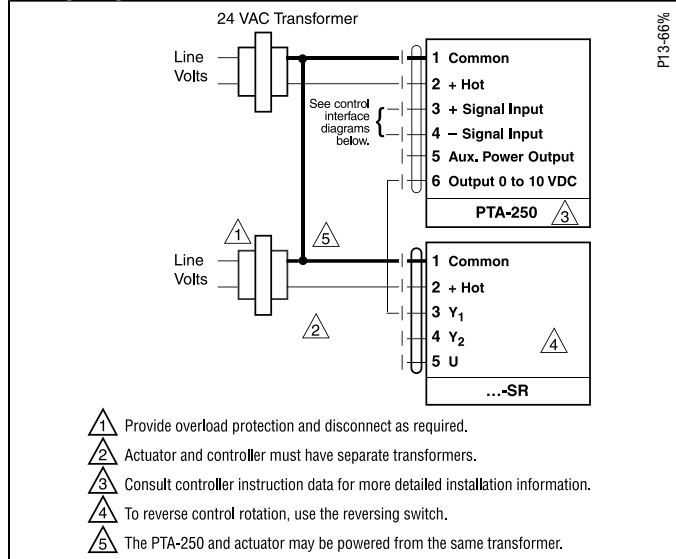
Technical Data	PTA-250
Power supply	24 VAC ±15% 24 VDC ±15%
Power consumption	<1 W
Transformer sizing	2 VA

Input	
Isolation	optically isolated (when wired as such)
Type	normal or triac, jumper selectable
Trigger level	12 to 24 VAC/VDC or dry contact to com
Time between trigger pulses	12.5 milliseconds min
Impedance	VAC - 500Ω, VDC - 10 kΩ
Pulse duration/resolution	four selectable ranges, in seconds of dry contact or SSR closure ± 40% of signal increment
Range 1	0.0235 to 6 seconds/in 0.0235 sec increments
Range 2	0.0196 to 5 seconds/in 0.0196 sec increments
Range 3	0.1 to 25.5 seconds/in 0.100 sec increments
Range 4	0.59 to 2.93 seconds/in in 0.0092 increments

Output	
Voltage	2 to 10 VDC
Current	15 mA max
Accuracy	± 2%

Electrical connection	wire terminals, 14 gauge max
Ambient temperature	-20°F to 150° F [-30°C to 65° C]
Operating humidity	5% to 95% non-condensing
Mounting	Snap-Track (provided)
Dimensions	board 2 3/16" x 2 3/16" x 9/16"
	with Snap-Track 2 3/8" x 2 1/4" x 15/16"
Weight	1.5 oz

## Wiring Diagram



## Application

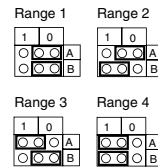
The PTA-250 converts a single pulse-width modulated input to an analog, 2 to 10 VDC, output to modulate a Belimo -SR actuator. The PTA-250 is available for replacement of existing installations. The ...MFT product can replace 100% of the PTA-250 applications, more effectively.

## Operation

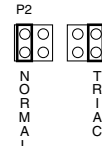
A timed contact or solid state closure from the controlling microprocessor controller is converted to a linear analog output with 256 steps of resolution. The last output is held until the PTA-250 receives the end of the next pulsed output. The PTA-250's output will not wrap around if an excessively long input pulse is received. Four input pulse clock rates are jumper selectable. Normal/Triac input positions are also jumper selectable. The input signal can be optically isolated from the PTA-250 circuit and can accept either positive or negative polarity. A red LED indicator is provided to indicate that power is applied to the PTA-250 and that the microprocessor is functioning. A green LED indicator is provided to indicate the presence of a pulse from the controller.

**NOTE:** The onboard zero and span adjustments are not for field use.

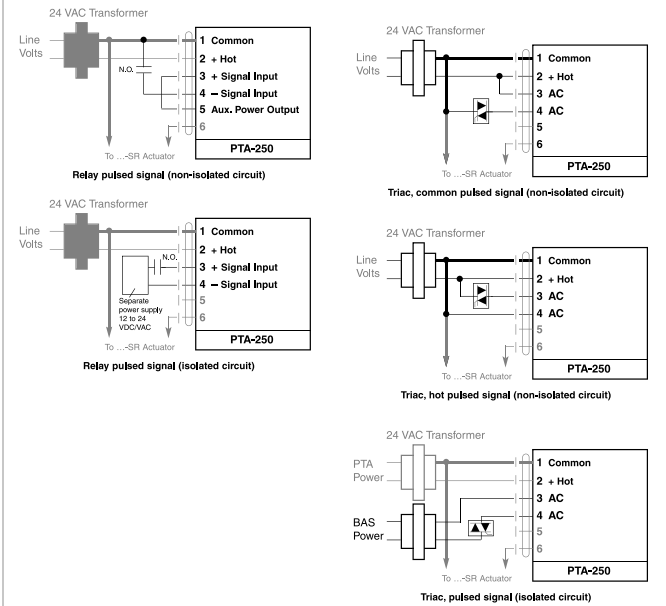
## Pulse Timing Selection



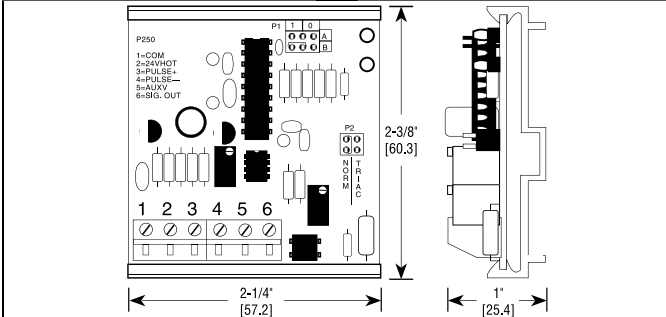
## Normal/Triac Input Selection



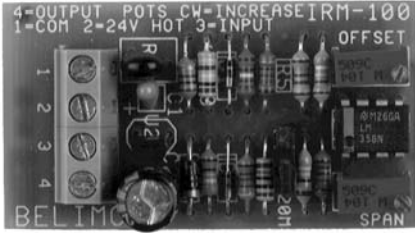
## Control Interface Drawings



## Dimensions (Inches [mm])



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### Technical Data IRM-100

Power supply	24 VAC ± 15% 24 VDC ± 15%
Power consumption	< 1 W
Transformer sizing	1 VA

### Input

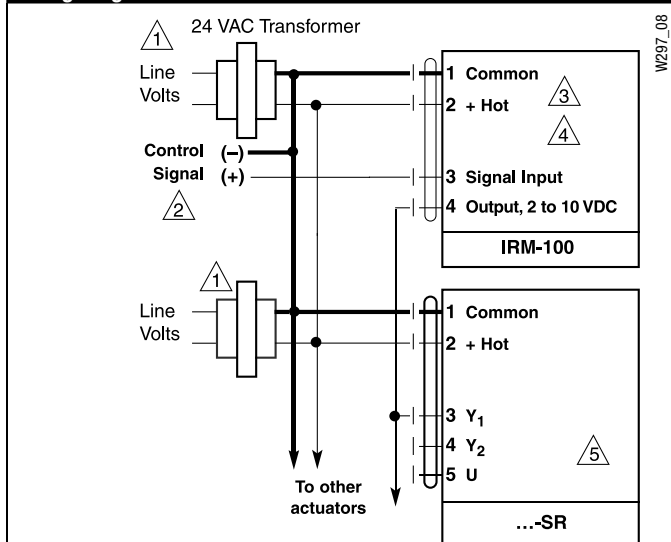
Voltage (max)	25 VDC
Zero (starting point)	0 to 18 VDC
Span adjustment	2.6 to 17 VDC
Impedance	400 kΩ
Current	0 to 20 mA
Impedance	500 Ω

### Output

Voltage	2 to 10 VDC
Current	15 mA max

Electrical connection	wire terminals, 14 gauge max
Ambient temperature	-20° F to 150° F [-30° C to 65° C]
Humidity	5 to 95% RH non-condensing
Mounting	Snap-Track (provided)
Dimensions	board: 1-3/16" x 2-3/16" x 9/16" with Snap-Track: 1-7/8" x 2-3/8" x 15/16"
Weight	0.9 oz.

### Wiring Diagram



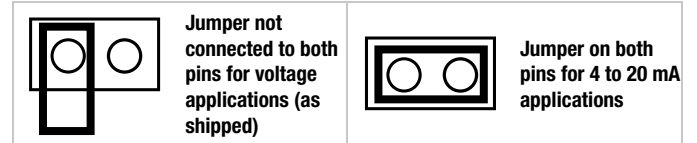
- ① Provide overload protection and disconnect as required.
- ② The controller should be powered from a separate transformer.
- ③ The actuator and IRM-100 may be powered from the same transformer.
- ④ Consult controller instruction data for more detailed installation information.
- ⑤ To reverse control rotation, use the reversing switch.

### Application

The IRM-100 input rescaling module is designed to change non-standard voltage or current signal levels into a 2 to 10 VDC output to modulate Belimo ...SR type actuators. The IRM-100 is available for replacement of existing installations. The ...MFT product can replace 100% of the IRM-100 applications, more effectively.

### Operation

The IRM-100 is installed between a controller and a Belimo ...SR actuator. The module can be adjusted to work with a zero offset of 0 to 18 VDC and a span range of 2.6 to 17 VDC. The IRM-100 has a 2 pin jumper mounted to the circuit board. When the jumper is connected between these 2 pins, a 4 to 20 mA signal can be fed directly into the IRM. The result being the conversion of a wide range of analog control signals to a 2 to 10 VDC range.



The IRM may also be used to sequence several actuators from one signal source. This is done by adjusting the IRM units to work at different in put ranges.

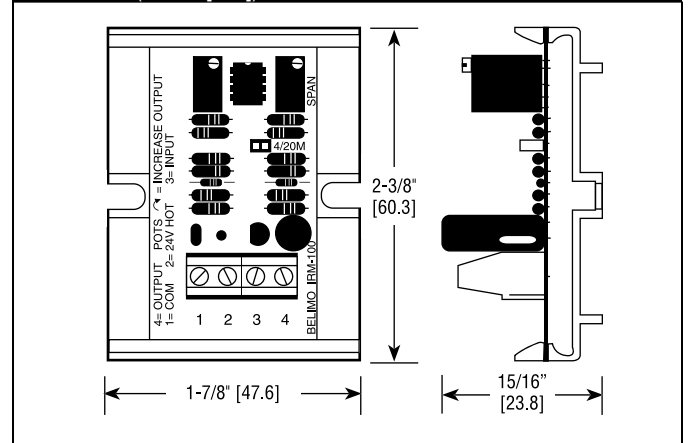
### IRM-100 Used as a Current Amplifier

In some applications, the capacity of a controller output may not have current available to control multiple end devices. An example would be a controller which has an output current of .5 mA maximum. If 10 AF24-SR US actuators have to be driven from the same output, the current requirement would be  $I = E/R = (10 \text{ volts})/(100000 \Omega) = .1 \text{ mA}$  for each actuator. For the 10 actuators, 1 mA of current would be necessary to properly control the actuators.

The IRM-100 may be used as an interface to provide a higher current capacity to the system. The IRM-100 has an output capacity of 15 mA. This higher level output can handle a greater number of actuators. By calibrating the IRM-100 for a 2 to 10 VDC input to achieve a 2 to 10 VDC output, IRM-100 provides this added capacity for the system.

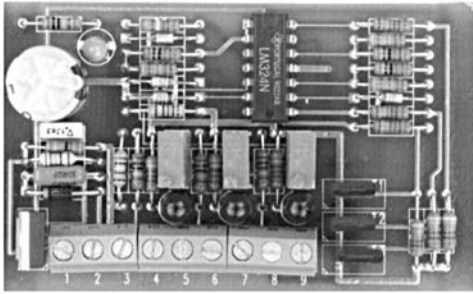
The same circuit will also work if a 4 to 20 mA signal is used. A 500 Ω resistor is placed across terminal #1 and #3 which converts the 4 to 20 mA to 2 to 10 VDC.

### Dimensions (Inches [mm])

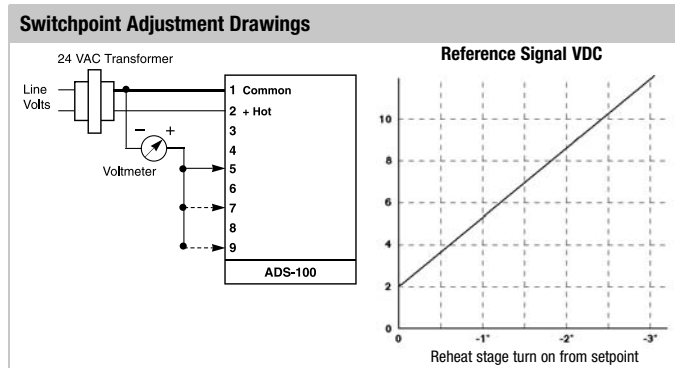
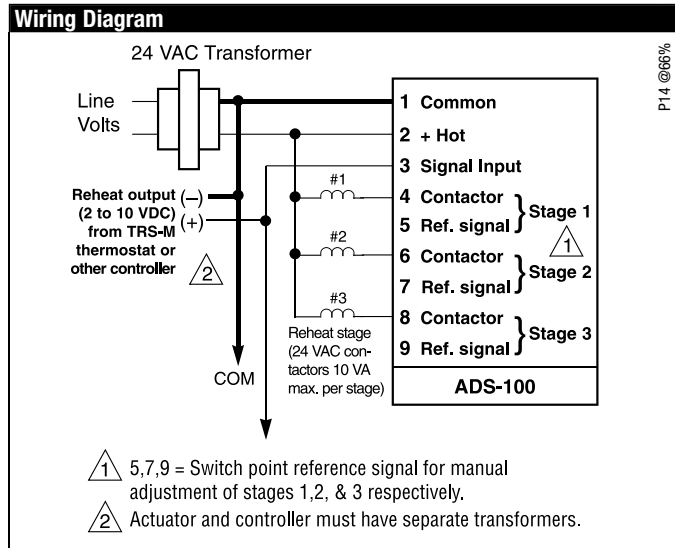


# Analog to Digital Switch ADS-100

For Belimo Proportional ( ... -SR) Actuators



Technical Data	ADS-100
Power supply	24 VAC $\pm$ 20% 50/60 HZ
Power consumption	1.5 W
Transformer sizing	3 VA (not including contactors)
Electrical connection	9 pole wire-terminal
Control input	2 to 10 VDC
Input impedance	100 k $\Omega$
Adjusting range	2.5 to 9.5 VDC
Dead band	0.3°F fixed
Switching capacity	24 VAC 10 VA max., (voltage sinking triac)
Mounting	Snap-Track (provided)
Dimensions	3-1/4" x 2"
	with Snap-Track 3-7/16" x 2"



## Application

To control reheat coils and/or a fan stage in a fan-powered terminal unit. The ADS-100 is controlled by a 2 to 10 VDC reheat output of a temperature controller. (TRS-M)

## Operation

The ADS-100 is designed to switch up to three independent stages of reheat on and off, according to a 2 to 10 VDC signal. The three output stages are furnished with a triac output. Each stage can be adjusted independently from each other over the 0 to 2.4° F throttling range of the TRS-M temperature controller.

The ADS-100 is shipped pre-adjusted, as shown in the following table. (Based on differential from setpoint)

	1st. stage	2nd. stage	3rd. stage
Switch ON	-0.45°F	-1.35°F	-2.25°F
Switch OFF	-0.15°F	-1.05°F	-1.95°F
Switch ON	2.8V	5.8V	8.8V
Switch OFF	0.4V	0.2V	0.4V

If desired, each stage may be field readjusted for special requirements. Three red LED indicators are provided to verify when the stages are energized.

## Setpoint Readjustment

**Tools required:** small screwdriver, voltmeter.

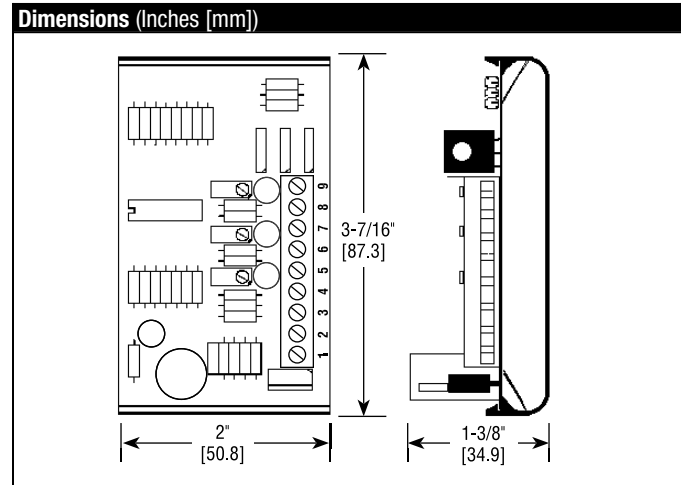
**To readjust the output stages, the following procedure is used:**

Connect the voltmeter to the desired switchpoint reference signal output and terminal 1 (COM). Readjust the switch point reference signal output with the corresponding potentiometer to your desired switch point. The adjustment range is 2.5 to 9.5 VDC. If you go below or above these values the ADS-100 may not switch off or on properly. If this occurs you have to increase or decrease your switching level until the ADS-100 works correctly.

## ADS-100 Used as an Auxiliary Switch

The ADS-100 was originally designed as an accessory to switch on stages of electric reheat from an electronic thermostat. However, it can also function as an electronic auxiliary switch from any device which can provide 0 to 10 VDC signal, such as any feedback wire 5 from any ...SR or ...MFT type actuator.

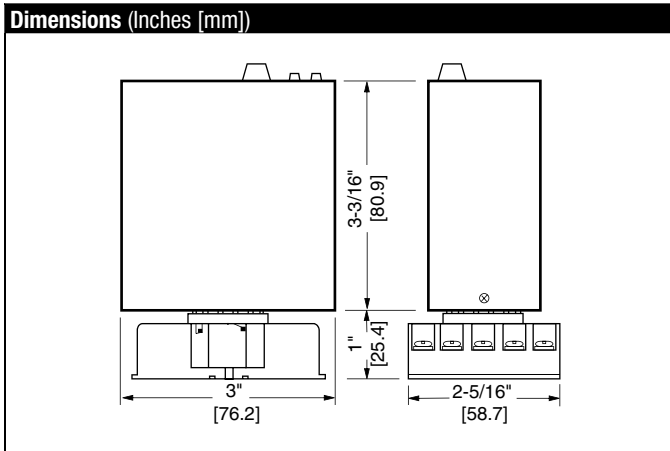
The ADS-100 has 3 triac outputs rated at 10 VA maximum each which will turn on, in sequence, with an increasing voltage.



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Technical Data	
Power supply	24 VAC $\pm$ 20% 50/60 Hz
Fusing	4A slow blow fuse
Power consumption	min. 5W (without actuator load)
Transformer	8 VA
Batteries	24 V Nominal 1.2 Ah (2-12 volt lead-acid batteries; batteries not supplied with module)
Maintenance	the batteries should be checked annually (approximate life is 6 years)
Charging circuit	charge current max. 150 mA charge voltage 24-27 V, temperature compensated
Battery back-up operation	24 V nominal 1.2 Ah, max. 60 W auto shut off after 250 seconds
Indication LED	green - main power source operation (battery will be charged) red - battery back-up operation
Mounting	mounted in the control panel with an 11 terminal plug-in base (not supplied with module)
Ambient temperature	14°F to 122°F [-10°C ... 50°C]



## Application

Several Belimo damper actuators can be used either with 24 VAC or 24 VDC.

In case of a power failure, the NSV24 battery back-up unit switches the damper actuator from its main AC power supply over to the 24 VDC battery to drive the actuators to their safety position.

For easy maintenance, the battery back-up system is placed in the control panel, not in the actuator. Several actuators may be powered by one back-up module. The batteries are separate from the NSV24.

## Operation

The NSV24 is connected to the same 24 VAC power source as the damper actuators. It also charges the 24 V (2-12 volt batteries) storage battery. Its charge current is limited to 150 mA maximum, and the maximum charge voltage is temperature compensated.

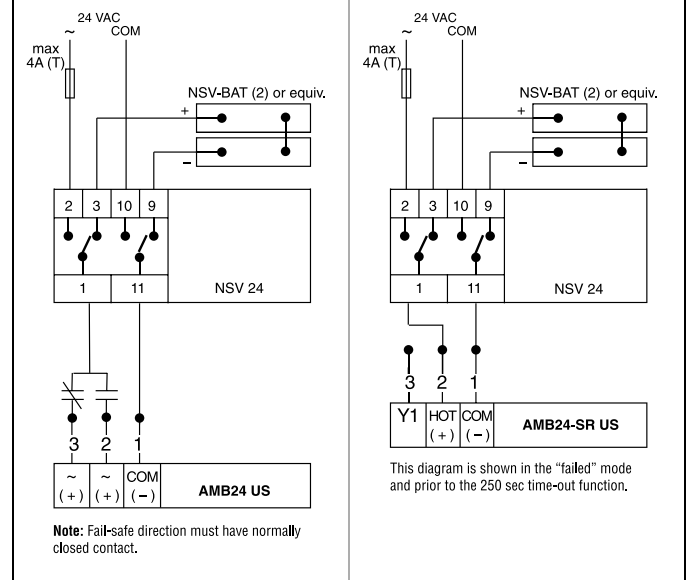
In case of a power failure, the NSV24 switches immediately over to the battery power source, and according to the control function, the actuators will move to their safety position. After 250 seconds, the batteries are disconnected from the actuators to prolong battery life. Because of this, a safe battery back-up can be provided for several short-term failures. The main power source operation is indicated by a green LED, and the battery power source by a red LED.

Connectable Actuator Models	Maximum per module
GMB24-3X1	20
GMX24-3	15
GMX24-MFTX1	15
GMB24-SR	15
AMB24-3	30
AMX24-MFT	30
AMB24-SR	30
NMB24-3	30
NMX24-MFT	30
NMB24-SR	30
LMB24-3	30
LMX24-MFT	30
LMB24-SR	30

## Accessories

**NSV-BAT** 12 VDC 1.2 Ah battery (2 required)

## Wiring Diagrams



# NSV-BAT, ZGR01, ZGR02 and Resistor Kits for Multiple Actuators



## NSV-BAT 12V Battery

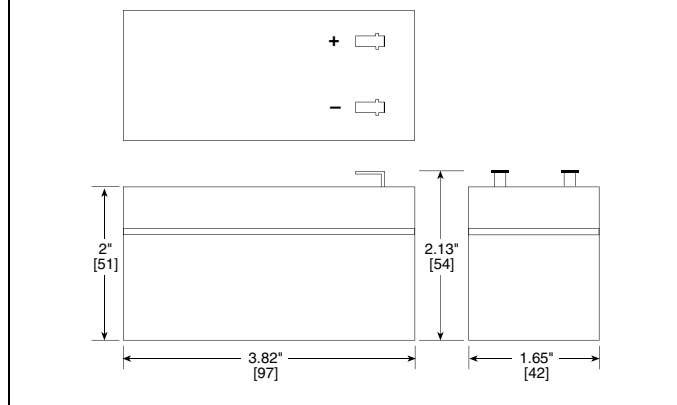


Technical Data	NSV-BAT
Battery type	lead-acid
Voltage	12 VDC
Nominal capacity	1.2 AH
Connections	.187 male spade
Weight	1.32 lb [.6 kg]

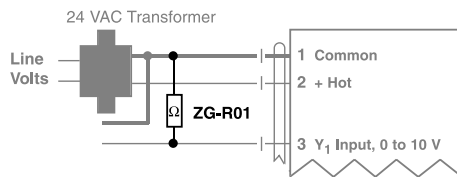
## Application

The NSV-BAT battery is for use with the NSV24 battery back-up module. It is a sealed, maintenance free, lead-acid battery. Two NSV-BAT batteries are required for one NSV24.

## Dimensions (Inches [mm])



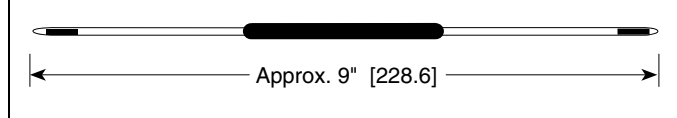
## ZG-R01 Resistor for 4 to 20 mA conversions



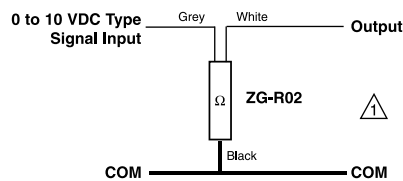
## Application

The ZG-R01 is a 499  $\Omega$  Resistor which has been encased in a section of heat shrink tubing with short sections of hook up wire. The ZG-R01 is used to convert a 4 to 20mA signal into a 2 to 10 VDC control signal.

## Dimensions (Inches [mm])



## ZG-R02 50% Voltage Divider

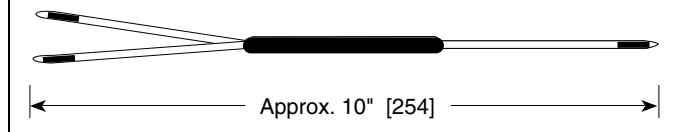


The impedance of the device attached must be 100k $\Omega$ .

## Application

The ZG-R02 is a voltage divider designed so that when connected to a 100 K $\Omega$  input impedance, the output signal is 50% if the input signal. The voltage divider circuit is encased in a short section of heat shrink tubing with three short sections of hook up wire.

## Dimensions (Inches [mm])



## Resistor kits for Multiple Actuator Applications

### Resistor Kit No. ZG-R03

135  $\Omega$  Operation

No. of Actuators	Resistance $\Omega$
2	140
3	71.5
4	47.5
5	37.5
6	28

### Resistor Kit No. ZG-R05

4 to 20 mA Operation

No. of Actuators	Resistance $\Omega$
1	237
2	150
3	124
4	113
5	105
6	97.6

### Resistor Kit No. ZG-R06

For Honeywell® Electronic Series 90 Circuits (W7100, W973, T775)

No. of Actuators	Resistance $\Omega$
2	1300
3	910
4	768

## Application

For use with the ...MFT95 actuators and Honeywell® controllers

**ZG-R03** See table to left

**ZG-R05** See table to left

**ZG-R06** See table to left



**ZG-CBNS Junction box**



## ZG-CBNS

### Application

The ZG-CBNS accessory is used when the application requires the wiring terminations to be made at the actuator.

### Operation

The ZG-CBNS serves as an electrical junction box. The products that can be used with this accessory are as follows:

AF24 US, AF120 US, AF230 US, AF24-SR US

\* Due to the internal volume of this junction box, according to UL requirements, The ZG-CBNS CANNOT be used with the following products:

NF24-S2 US, AF24-S US, AF120-S US, AF230-S US

**ZG-CBLS Junction box**



## ZG-CBLS

### Application

The ZG-CBLS accessory is used when the application requires the wiring terminations to be made at the actuator.

### Operation

The ZG-CBLS serves as an electrical junction box.

This product can be used with any standard LF product.

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Technical Data	ZG-CBNS / ZG-CBLS
Voltage rating	250 VAC
Electrical connection	maximum 5 line voltage connection
Housing rating	UL94 5VA
Material type	FR/ABS CYCOLAC FR15
Ambient temperature	-22°F to 122°F [-30°C to 50°C]
Storage temperature	-40°F to 176°F [-40°C to 80°C]
Agency listing	UL pending
Quality standards	ISO 9001
Weight	<0.5 lbs

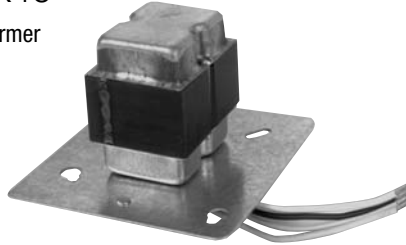
# Transformer ZG-X40

## Power Supply, Signal Simulator PS-100



### Transformer ZGX40

40 VA, 120 to 24 VAC Transformer



#### Application

The ZG-X40 is a 40 VA, 120 to 24 VAC transformer. It is designed so that both the primary and secondary leads exit through the same side of a 4-1/4" square outlet box cover. With this design, all wiring can be done inside a standard J-box with a minimum amount of labor.

Technical Data	ZG-X40
Primary voltage	120 VAC 50/60 Hz
Secondary voltage	24 VAC
Max VA rating	40 VA
Connections	6-1/2" leads with stripped ends
Type	Class 2
Mounting method	4-1/4" square outlet box cover
Agency approvals	UL 1585, CSA 22.2 #66

#### Wire Specification

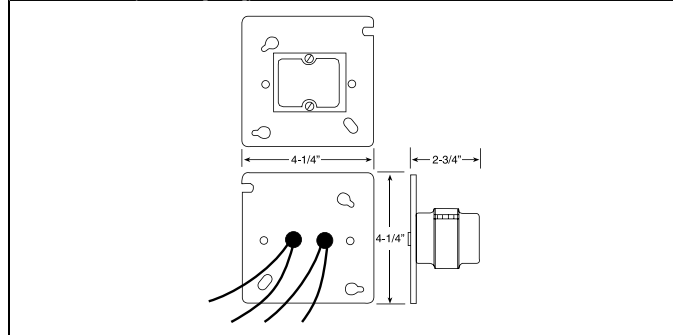
Wire	No. 18 AWG leads, 6-1/2" length
Termination	Color
Primary	White-Black
Secondary	Yellow-Yellow

#### Maximum Number of like Actuators per Transformer

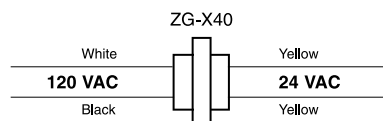
Model #	Quantity	Model #	Quantity
NMB24-3	11	NFB24(-S), NFX24(-S)	4
NMB24-SR	13	NFB24-SR(-S), NFX24-SR(-S)	6
AMB24-3	8	NFB24-MFT(-S), NFX24-MFT(-S)	4
AMX24 MFT	3	Original NF24(-S) US	5
AMB24-SR	8	Original NF24-SR(-S) US, ...MFT US	6
AMX24-MFT95	8	LF24(-S) US	5
GMB24-3	6	LF24-3(-S), ...SR(-S),...MFT(-S) US	8
GMB24-SR	5	TF24(-S) US	8
AFB24..., AFX24..	4	TF24-3(-S), ...SR(-S),...MFT(-S) US	10
Original AF24..US	4		

Refer to appropriate actuator documentation for specific VA ratings.

#### Dimensions (Inches [mm])



#### Wiring Diagram



P14 @66%

### Power Supply, Signal Simulator PS-100



#### Application

The PS-100 power supply and signal simulator is designed to operate most proportional, floating, and On/Off style actuators without the presence of a controller.

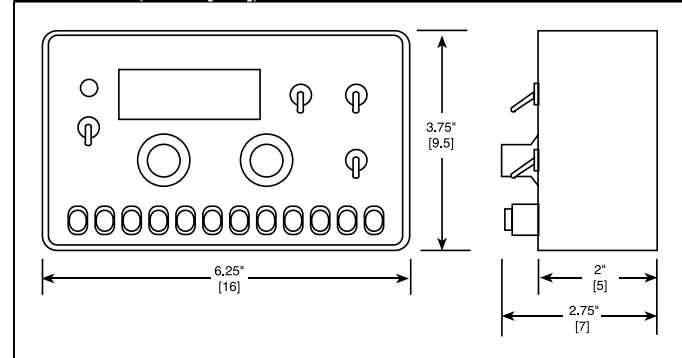
The PS-100 can produce 24 VAC On/Off and floating control signal along with a 0 to 10 VDC and 135Ω proportional signal. A multi-function digital display is provided which can read either the 0 to 10 VDC output or a 0 to 10 VDC feedback signal either as voltage or percentage of control.

The PS-100 comes with a 120 to 24 VAC, plug into the wall transformer for power. Both the PS-100 and transformer are supplied in a black fabric carrying case.

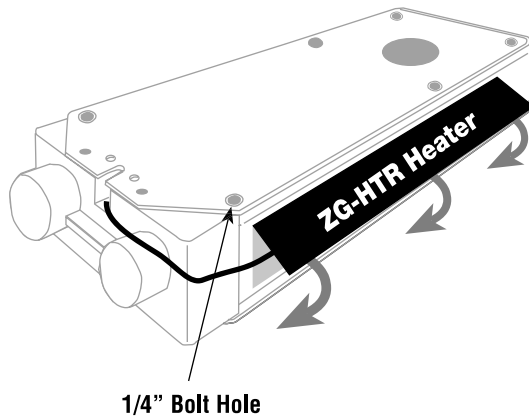
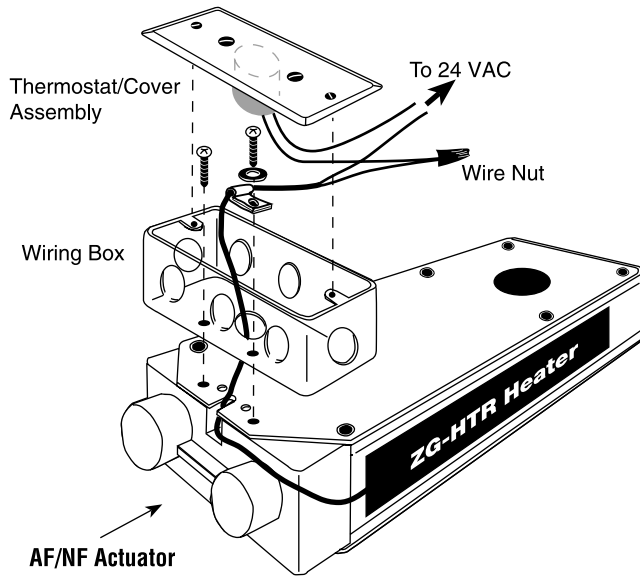
#### Replacement Power Supply: PS-XFMR

Technical Data	PS-100	
Power supply	120 VAC 50/60 Hz	
Power consumption	<4 W without actuator	
Transformer	Primary	120 VAC, 35 W
	Secondary	24 VAC, Class 2 trans.
	PN	PS-XFMR
Terminal outputs	push-button, wire terminals (12) on/off, floating point, 135 Ω, 0 to 10 VDC	
VDC output range	0 to 10 VDC	
Display	LCD	
Readouts	Output	0 to 10 VDC in volts or percentage based on a 2 to 10 VDC control span
	Input	0 to 10 VDC in volts or percentage based on a 2 to 10 VDC control span
Weight	3 lbs [1.4 kg] with case	

#### Dimensions (Inches [mm])



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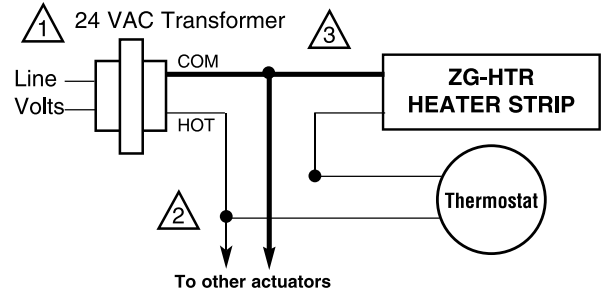
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Technical Data	ZG-HTR
Power supply	24 VAC ± 20% 50/60 Hz
Transformer sizing	35 VA
Heater output	35 watts
Actuator low ambient rating	
with enclosure	-40° F [-40° C]
enclosure with 1" insulation	-58° F [-50° C]
Weight	11 oz [320 g]

### Application

The ZG-HTR Thermostat/Heater kit is designed to be field installed to the original AF and NF series actuators. The ZG-HTR provides a thermostatically controlled heater which allows the original AF and NF actuators to be used below their normal low ambient temperature rating. At approximately 10° F [-12° C] the heater energizes to maintain the actuators internal temperature to within working limits. The rubberized heating element has an adhesive back which attaches to the side of the actuator housing. The thermostat assembly mounts to the rear of the actuator and provides for the connection of the 24 VAC supply voltage. The actuator/heater assembly should be contained in a housing, similar to the ZS-100 Weather Shield, to achieve best results.

### Wiring Diagram



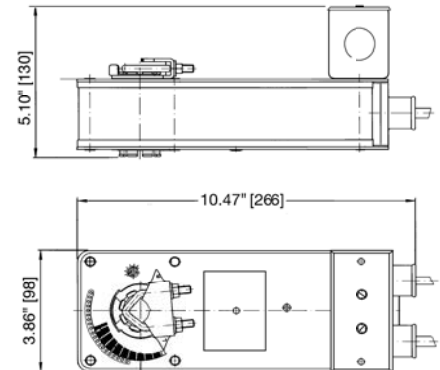
- 1 Provide overload protection and disconnect as required.
- 2 The ZG-HTR may be wired to the same transformer as the actuator. Total VA ratings must be observed.
- 3 Power to the ZG-HTR must be applied continuously during the heating season. Do not wire the ZG-HTR to the on-off control signal when on-off type actuators are being used.

ZG-Heater Wiring Diagram\_08

### Dimensions (Inches [mm])

- Standard:**
- ∅ 3/8" to 3/4"
  - 3/8" to 5/8"
- Optional\***
- ∅ 3/4" to 1.05"

\*with K4-1 US clamp



ZG-HTR Dimensions

## Special Control Range Applications

Control Signal	Belimo Actuator	Accessory	Notes	
1 to 5 VDC	AFX24-MFT NFX24-MFT LF24-MFT US TF24-MFT US	GMX24-MFT AMX24-MFT NMX24-MFT LMX24-MFT	None	Preset at factory or use PC tool software. Set start point for 1 VDC, span for 4 VDC.
4 to 20 mA	Any -MFT,-SR Actuator	ZG-R01, or 500Ω, 1/2 W resistor		Wire the ZG-R01 across the wires #1 and #3.
10.5 to 13.5 VDC	AFX24-MFT NFX24-MFT LF24-MFT US TF24-MFT US	GMX24-MFT AMX24-MFT NMX24-MFT LMX24-MFT	None	Preset at factory or use PC tool software. Set start point for 10.5 VDC, span for 3 VDC.
14 to 17 VDC	AFX24-MFT NFX24-MFT LF24-MFT US TF24-MFT US	GMX24-MFT AMX24-MFT NMX24-MFT LMX24-MFT	None	Preset at factory or use PC tool software. Set start point for 14 VDC, span for 3 VDC.
Pulse Width Modulation	AFX24-MFT NFX24-MFT LF24-MFT US TF24-MFT US	GMX24-MFT AMX24-MFT NMX24-MFT LMX24-MFT	None	Preset at factory or use PC tool software.

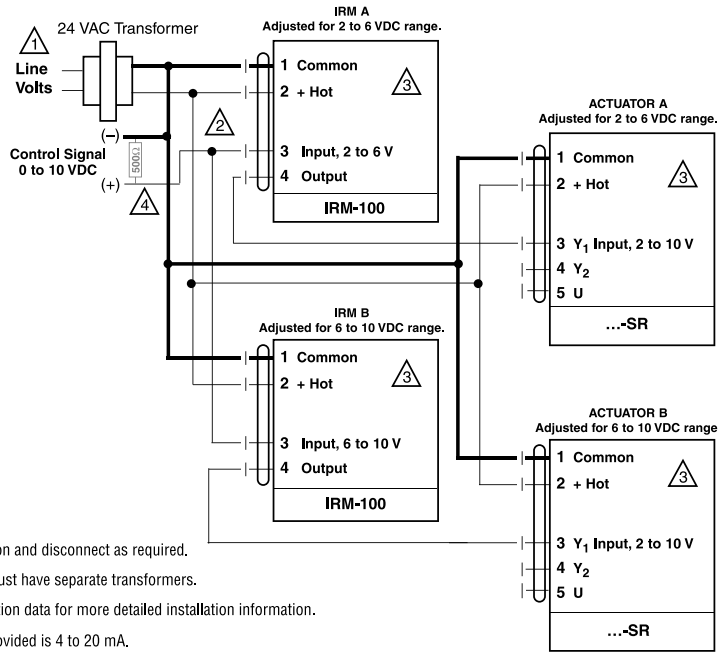
\*Preset at factory or use MFT PC tool software  
IRM-100 Calibrate the IRM-100 for an input range of 1 to 5 VDC. Calibrate IRM-100 2-10 in 2 to 10 out for signal amplification.

## Sequencing Two or More Actuators With One Control Signal using the IRM-100

IRM-100  
Voltage Settings  
Based on  
4 to 20 mA

mA	VDC
4	2
5	2.5
6	3
7	3.5
8	4
9	4.5
10	5
11	5.5
12	6
13	6.5
14	7
15	7.5
16	8
17	8.5
19	9.5
20	10

- 1 Provide overload protection and disconnect as required.
- 2 Actuator and controller must have separate transformers.
- 3 Consult controller instruction data for more detailed installation information.
- 4 500Ω resistor if signal provided is 4 to 20 mA.



IRM-100 Diagram\_08

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