

### Closed Loop Integrated Controller Provides Long-Term Reliability

Many applications requiring a fixed temperature set point rely on mechanical thermostats for thermal control. But, thermostats are inadequate for many applications because of the long-term reliability issues such as 100,000 cycle rating and poor temperature control.

The SERIES EHG® thermal solution includes a compact precision temperature control, thermocouple sensor and power switching device integrated into the flexible heater's power cord. The SERIES EHG reduces system costs and substantially extends the life over conventional thermostat solutions.

The evolution of miniature microprocessor technology and switching technology fostered the development of a small versatile precision temperature control and thermocouple sensor that can be integrated with silicone rubber heater products. This device senses the temperature via input from a thermocouple strategically placed on the heater mat. The microprocessor is programmed prior to shipment with the customer's application specific set point. This results in quick delivery of a custom, integrated system.

The small mass of the thermocouple provides superior response to changes in process temperature and allows for higher watt density silicone rubber heater designs. Depending on the specific application, the power switching design can extend life up to 40 times greater than thermostats. These features result in an integrated custom set point temperature control product with superior life span, faster heat-up rates and improved accuracy. The SERIES EHG system has been tested to over four million cycles at rated amperage.



### Specifications:

- Maximum Operating Temperatures: 158°F (70°C)
- Maximum Watt Densities: 80W/in<sup>2</sup> (12.5W/cm<sup>2</sup>)
- UL® recognized to 10A max
- UL® recognized to 428°F (220°C) operating temperature
- Voltage rating: 120 or 240VAC 0.30/+10%, 50/60Hz
- Watt densities to 80 W/in<sup>2</sup> (12.5 W/cm<sup>2</sup>)

### Applications:

- Semiconductor processing
- Aerospace composite repair
- Foodservice equipment
- Freeze protection
- Life sciences
- Telecommunications

### Features & Benefits:

- Process controller and safety limit in one package meets UL® 1998 and CE 60730 requirements and eliminates the need for a thermal fuse on a heater
- Optional display/communications module allows easy upgrade onto base device and offers low cost field upgrade
- Accurate and flexible temperature process controller replaces problematic bi-metal thermostats with accurate electronic temperature process controller, allowing easy change of process parameters
- Ambient operating temperature range of 32°F to 158°F (0°C to 70°C) increases reliability when mounting in harsh temperature environments or in close proximity to heaters
- Integrated high/low temperature alert signal relay provides dry contact output to activate external alarm or process function and signals control status with three integrated LEDs
- Health check diagnostics monitor maximum heater process temperature, maximum ambient temperature and thermocouple operation, as well as a health check signal to inform operator that the process is working correctly
- Universal power supply allows an input of 85 to 264VAC, 50/60Hz and provides safe control of up to 2400 watts with 10 amperes switching in both controller and safety limit
- Can be switched from on-off and PID algorithm to increase product life (on-off control is default), offering selectable PID control algorithm for tighter temperature uniformity

### Technical Data

#### Operational Specifications

- SERIES EHG silicone rubber heater solution is UL® recognized to 428°F (220°C) operating temp
- Factory programmed fixed set point
- On-off controller with 6°F (3°C) switching hysteresis
- Temperature band LED indicator ON between -68 and +68°F (-20 and +20°C) of set point

#### Electrical Specifications

- Voltage: 120 or 240VAC – 30/+10%, 50/60Hz
- Silicone rubber heater watt densities up to 80 W/in<sup>2</sup> (12.5 W/cm<sup>2</sup>) dependent on application temperature
- SERIES EHG system UL® recognized to 10A max.

#### Sensor Specifications

- Type K thermocouple
- Controller dimensions 3.75 in. (95 mm) long by 1.75 in. (45 mm) diameter
- Heater per silicone rubber heater specifications

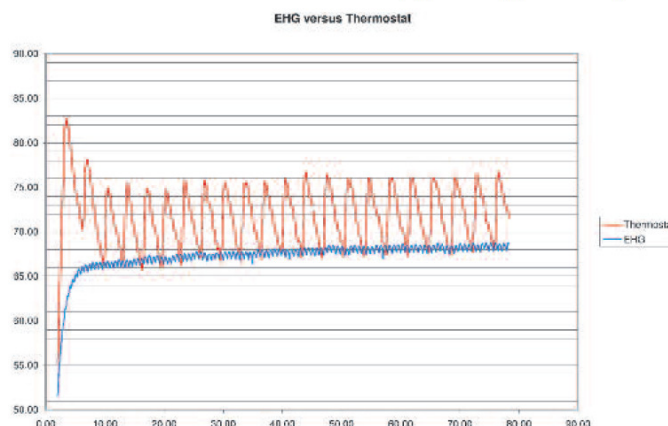
#### Agency Approvals

- Silicone rubber heater: UL® recognized File #E52951
- SERIES EHG controller: TUV File DE 3-3068 to EN 61010-1:2001, UL® File E43684 to UL® 873 temperature indicating and regulating equipment

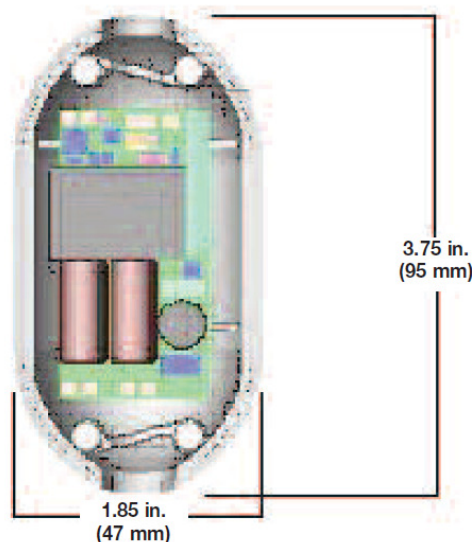
#### Environmental Specifications

- Controller operating temperature range 32 to 128°F (0 to 70°C)
- Controller storage temperature range -40 to 158°F (-40 to 70°C)

SERIES EHG Versus Thermostat (typical application)



#### Dimensions



### Integrated SERIES EHG System vs Integrated Thermostat System

	Integrated EHG System	Integrated Thermostat System	Series EHG Benefit
Life comparison at rated amperage	Tested to greater than 4,000,000 cycles with 10A load	Rated 100,000 cycles	Longer product life of Series EHG system and high reliability in application
Switch hysteresis	6°F (3°C)	15°F (8°C)	Series EHG system will provide superior process control
Improved response time reduces overshoot on start-up	6°F (3°C) typical	25°F (14°C) typical	SERIES EHG system will respond to changes in temperature faster than thermostat
Warranty	2 years on material and workmanship	1 year on material and workmanship	Warranty can be extended because of superior Series EHG life
Zero cross switching	Series EHG has zero cross switching	Random switching during sign wave cycle	Reduces possibility of electrical mechanical interference (EMI)