

# Rate Compensation Heat Detectors

## 302 Series

### Overview

Series 302 heat detectors are designed for use in normal environments as well as environments where the detectors are subject to weather, moisture (internal condensation), and explosive atmospheres. They are normally-open devices designed to close an electrical circuit upon activation. All models feature rate compensation and are available with either 135 °F (57.2 °C) or 194 °F (90 °C) ratings. They are self restoring, hermetically sealed, shock and corrosion resistant, and are tamperproof.

### Standard Features

- Rate compensation offsets thermal lag
- Self-restoring – no manual reset required
- Explosion proof and weatherproof models available
- Weatherproof models available that do not require a special backbox
- Box mount and surface mount models available

### Application

Sensors rated at 135 °F (57.2 °C) will not respond to momentary temperature fluctuations less than 30 °F/minute between 60 °F (16 °C) and 100 °F (38 °C). Sensors rated at 194°F (90 °C) will not respond to momentary temperature fluctuations less than 50 °F/minute between 60 °F (16 °C) and 150 °F (66 °C). 302 Series sensors should not be used in environments where conditions exceed these parameters. Do not install them in hot air ducts, in front of heaters, in paint booths that use heat to cure paint, or any other location subject to temperature fluctuation.

Sensor's Rated Temperature	Minimum Ambient Air Temperature	Maximum Ceiling Temperature
135 °F (57.2 °C)	-40 °F (-40 °C)	100 °F (38 °C)
194 °F (90 °C)	-40 °F (-40 °C)	150 °F (66 °C)

The sensor's aluminum tube acts as a heat collector when sources of heat radiate directly on the tube. Install these sensors out of direct sunlight and away from radiating heat sources including the direct flow from heaters and heat ducts.

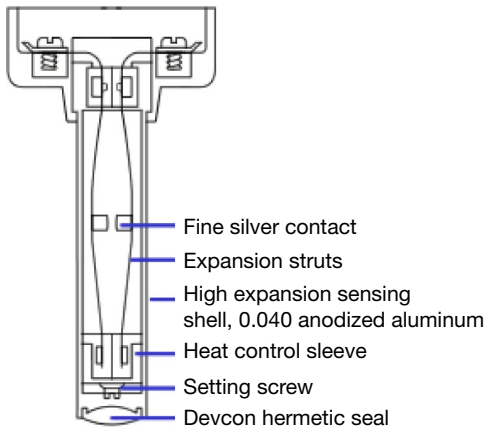
Rate Compensation

302 Series sensors feature rate compensation, which improves performance by offsetting thermal lag, an inherent property of conventional fixed temperature heat sensors.

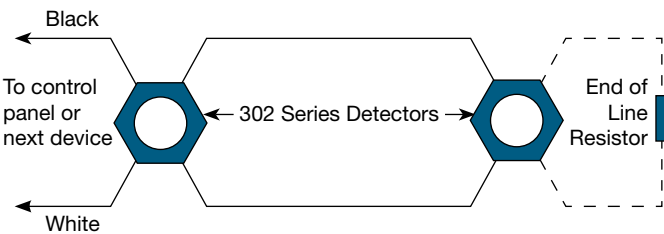
A slow rate of temperature rise allows the heat to penetrate the inner expansion struts. The tubular shell and the struts expand slowly until the total device has been heated to its rated temperature level of 135 °F (57.2 °C) or 194 °F (90 °C). At this point, the silver contact points close and an alarm is initiated.

When subjected to a rapid rate temperature rise, there is not as much time for heat to penetrate the inner strut. However, the rapid lengthening of the shell allows the struts to come together at a lower level.

When the surrounding air temperature returns to below the rated level, the shell contracts, forcing the contacts to open, thus automatically resetting the sensor.



Typical Wiring



Electrical Rating

Voltage	Current
6-125 VAC	5 amps
6-25 VDC	1 amp
125 VDC	0.5 amp

Maintenance

302 Series heat sensors are low maintenance. Sensors automatically restore when temperatures drop below their rated temperatures. The accumulation of dust and dirt does not normally affect the sensors’ operation.

Testing

Testing for operation is simple and can be done before or after the sensor has been installed. Heat the sensor with a hair dryer (do not use any device with an open flame to test sensors). The sensor should operate shortly after the hot air is applied.

Refer to NFPA 72, National Fire Alarm Code and/or the local authority having jurisdiction to determine testing frequency, record keeping, and other testing considerations.

Detector Spacing

Model	302	302-AW	302-ET	302-EPM
UL- Vertical Spacing (all models)	50' x 50' (15.2 x 15.2 m)	50' x 50' (15.2 x 15.2 m)	50' x 50' (15.2 x 15.2 m)	40' x 40' (12.2 x 12.2 m)
UL- Horizontal Spacing (all models)	40' x 40' (12.2 x 12.2 m)	40' x 40' (12.2 x 12.2 m)	40' x 40' (12.2 x 12.2 m)	30' x 30' (9.1 x 9.1m)
FM - Horizontal or vertical spacing.*	30' x 30' (9.1 x 9.1m)	30' x 30' (9.1 x 9.1m)	30' x 30' (9.1 x 9.1m)	Not Listed

Spacing is based on smooth ceilings that are up to 10' (3 m) high. Refer to NFPA 72 for ceilings that are not considered smooth or are higher than 10' (3 m).

\* EPM models are not FM approved.

Dimensions

Model	ET	EMP
Tube Length	3" (76.2 mm)	3" (76.2 mm)
Tube Diameter	0.5" (12.7 mm)	0.5" (12.7 mm)
NPT Thread	0.5" (12.7 mm)	0.5" (12.7 mm)
Hex Base	1" (25.4 mm) plastic	1.25" (31.75 mm) brass

**WARNING – Use For Property Protection Only:** Heat detectors do not protect life against fire and smoke. In most fires, hazardous levels of smoke, heat and toxic gases can build up before a heat sensor would initiate an alarm. Independent studies indicate that heat sensors should only be used when property protection alone is involved. In cases where life safety is a factor, the use of smoke detectors is recommended.

Under no circumstances should heat detectors be relied upon as the sole measure to ensure fire safety. However, if they are spaced in accordance with the specifications found under Application, these sensors can contribute, within an overall fire safety program, to reducing the risk of avoidable property losses.

When used with automatic fire suppression systems such as pre-action and deluge sprinkler systems, carbon dioxide systems, halon systems, and dry chemical systems, at least two sensors should be used to initiate the alarm. This is commonly referred to as cross-zoning or priority matrix zoning and is necessary to eliminate premature discharge of the system. Refer to NFPA 72 for more information.

## Ordering Information

Interior applications			Ship Wt.
302-135	Heat Detector - Rate Compensation, Interior Vertical Surface Mount FM & UL, 135 °F (57.2 °C)	For interior mounting.	 0.2 lb. (0.09 kg)
302-194	Heat Detector - Rate Compensation, Interior Vertical Surface Mount FM & UL, 194°F (90 °C).		
Moisture & dust proof applications			Ship Wt.
302-AW-135	All-weather Heat Detector - Rate Compensation, Vertical Mounting FM & UL, 135 °F (57.2 °C)	Hermetically sealed for moisture proof or dust proof installations. Requires no special back box when the all-weather leads are properly spliced to “THW” or equivalent type wire and splices are moisture proof. For indoor or outdoor use.	 0.2 lb. (0.09 kg)
302-AW-194	All-weather Heat Detector - Rate Compensation, Vertical Mounting FM & UL, 194°F (90 °C)		
Moisture & dust proof applications (box mount)			Ship Wt.
302-ET-135	All-weather Heat Detector - Rate Compensation, Vertical, Box Mount (½" NPT), FM & UL, 135 °F (57.2 °C). Requires STONCO27 or equivalent.	Hermetically sealed for moisture proof or dust proof installations. Requires no special back box. Has plastic hexagonal grip bushing with ½" conduit threads for attachment to threaded hub cover, or any outlet box. For indoor or outdoor use when watertight seal is required, use weatherproof box.	 0.2 lb. (0.09 kg)
302-ET-194	All-weather Heat Detector - Rate Compensation, Vertical, Box Mount (½" NPT), FM & UL, 194°F (90 °C). Requires STONCO27 or equivalent.		
Explosion proof applications			Ship Wt.
302-EPM-135	Heat Detector - Rate Compensation, Explosionproof Mounting UL (Not FM approved), 135 °F (57.2 °C). Requires JALX-11 or equivalent	Explosion proof for installation in hazardous locations. Has hexagonal grip bushing with ½" conduit threads for attachment to threaded hub covers of series JL fixture fitting manufactured by Killark Electric Co., or equivalent. Must be hand tightened only. For indoor use only.	 0.3 lb. (0.14 kg)
302-EPM-194	Heat Detector - Rate Compensation, Explosionproof Mounting UL (not FM approved), 194°F (90 °C). Requires JALX-11 or equivalent.		
Adapter plate			Ship Wt.
AP-P	Decorative white plastic adaptor plate for mounting 302 and 302-AW to any 3" outlet box or 4" octagon outlet box.		0.1 lb. (0.05 kg)
Outlet body			Ship Wt.
Use with standard backboxes and covers such as those manufactured by Killark Electric Co., or equivalent.			
Explosion proof outlet body			Ship Wt.
JALX11	Explosion proof outlet body with cover (½" thread hubs back, four sides and cover) - Killark		3.5 lb. (1.6 kg)