

# MODEL T300 FIXED TEMPERATURE RATE COMPENSATED HEAT DETECTOR

## DESCRIPTION

The SST Model T300 detector is a highly reliable thermal detection device which may be used to sense the surrounding air temperature regardless of the fire growth rate. The detector is designed for use in both "ordinary" and hazardous locations. For general purpose use, these detectors may be mounted on any standard electrical junction box. For hazardous locations, where "explosion proof" construction is required, the detectors must be installed in a 1/2 inch threaded opening in a suitable listed fitting in accordance with the authority having jurisdiction.

For typical applications, each detector can protect 400 to 625 square feet of hazard area.

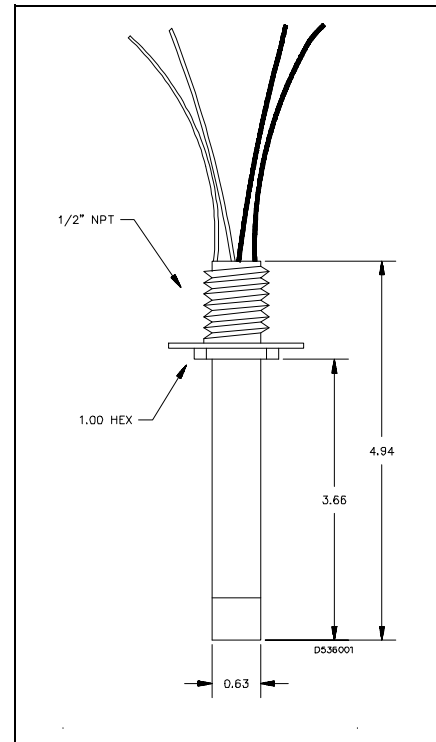


Figure 300-1 Mounting Dimensions

## PRINCIPLE OF OPERATION

*Fixed temperature* thermal detectors must be completely heated to alarm temperature before responding, and therefore, a disastrous time lag may occur with a fast rate fire. *Rate-of-rise* devices, on the other hand, are triggered by the rate of increase in ambient temperatures and are subject to false alarms caused by harmless changes in temperature, such as the rush of warm air from an oven or furnace. By contrast, the SST Model T300 *Fixed Temperature Rate Compensated* detectors have the inherent ability to operate whenever the surrounding air temperature reaches the selected protection level, even if the rise is so fast that the body of the detector is not completely heated. At the same time, the T300 will not respond to sudden temperature changes below the selected rating of the detector.

## SPECIFICATIONS

### Electrical

The detector contains one normally open contact. The contact closes when the fixed temperature is reached. It will automatically restore as the temperature returns to normal. The contact is rated to switch up to 2 amps at 24 VDC or 5 amps at 125 VAC.

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## Environmental

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The SST Model T300 Thermal Detector is intended for use in hazardous areas where explosive atmospheres may be present, or in “general purpose” (non-explosive) areas. The detector is rated for use in Class I Groups B, C, D and Class II Group E, F, and G locations. The detector is suitable for installation in seismically active areas. The detector may be installed in any corrosive location that is suitable for the detector’s stainless steel and brass construction.

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## INSTALLATION STANDARDS

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The location and spacing of heat detectors should be based on good engineering judgement, supplemented by the guidelines provided by the authority having jurisdiction. For most installations, compliance with the applicable sections of NFPA Standard 72E, “*Automatic Fire Detectors*” is required. The following information is provided as a guideline, and is believed by SST to be in compliance with 72E. However, in case of any conflict, installation should always comply with the requirements of the authority having jurisdiction.

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### Location Of Detectors

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Heat detectors should be located on the ceiling in locations that provide good thermal paths and protection from damage. Refer to NFPA 72E for recommended installation details.

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### Spacing Between Detectors (Open Area Locations)

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#### Detectors used for Local Fire Alarm Service

To meet the spacing requirements of UL and FM, the maximum spacing between T300 heat detectors is 25 feet between centers. This results in a maximum square foot coverage of 625 square feet per detector. This rating is based on a smooth ceiling with no obstructions. The distance between the detector and any wall or partition must not exceed 12.5 feet.

#### Detectors used for Releasing Device Service

Releasing applications generally reflect high value protection, and reduced spacings help to reduce detection times. In these applications, the maximum recommended spacing between detectors is 20 feet, with no more than 10 feet between any detector and a wall.

#### Spacing for non-smooth ceilings

When installed in open joist construction, the T300 should be located on the bottom of the joists. Use the spacings listed above, when measured along the direction on the joists. However, **reduce the spacing to one-half of the listed spacings** when measured at right angles to the joists. This will result in about twice as many detectors being required as would be necessary on a smooth ceiling.

Construction with exposed beams can be treated as a smooth ceiling if beams project no more than 4 inches below the ceiling. If the beams are between 4 and 18 inches, **reduce**

**the spacing to two-thirds** of the above listed spacings when measured at right angles to the beam direction. If the beams are more than 18 inches deep, each bay formed by the beams should be treated as a separate area. For additional information, consult National Fire Protection Association Standard 72E.

## SELECTING TEMPERATURE SETTING

For applications in normal areas where ceiling temperatures do not normally exceed 100°F, the 140° rated detector is recommended. For all other areas, the temperature rating selected should be 50 to 100 degrees greater than the highest ambient temperature.

## INSTALLING AND WIRING THE DETECTORS

Refer to the typical wiring diagram, Figure 300-2, which shows typical wiring to heat detectors. In non-hazardous locations, mount the detector to any standard electrical junction box with a 7/8 inch opening, using a standard electrician's connector nut. For hazardous locations, where explosion proof construction is required, the detector must be installed in a 1/2 inch threaded opening in a suitable listed fitting in accordance with the National Electrical Code and/or the authority having jurisdiction.

- ! Note that the two black wires and two white wires from the detector are connected together inside the detector housing, so that either can be used for the required connections.

It is important to connect the wires as shown on the wiring diagram for proper supervision. Make all pigtail connections using wire nuts, crimp splices or other approved connection means. Be sure to insulate any unused leads and the end-of-line resistor, if used. Refer to the wiring diagrams for color code and interconnection details.

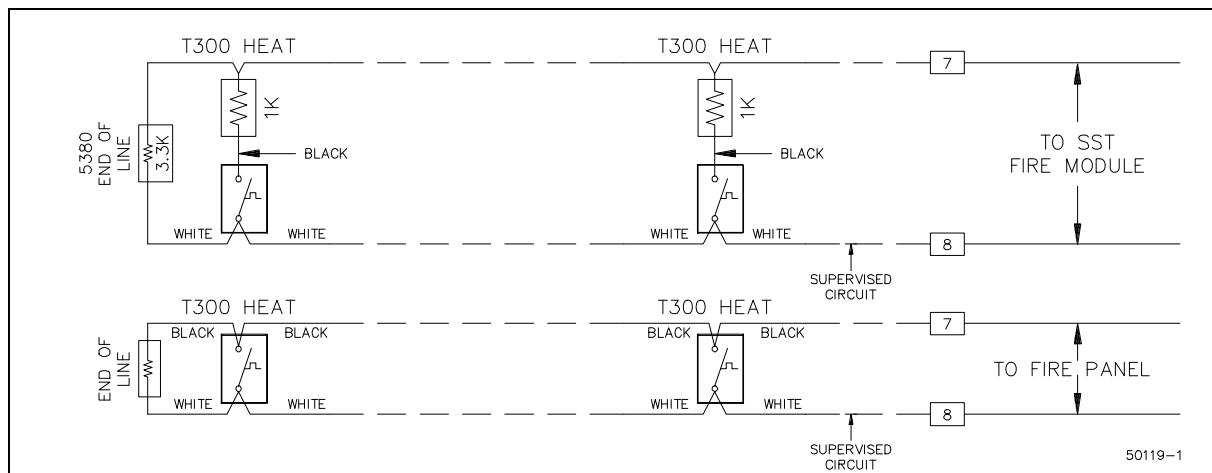


Figure 300-2 Typical Wiring

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## DETECTOR ACCEPTANCE TESTS

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Before conducting any tests, all persons who would automatically receive an alarm signal should be notified so that unnecessary response will not take place. All releasing devices and extinguishing systems should be disconnected or the appropriate control modules put in the "isolated" mode while the operational test is being performed. At the conclusion of testing, all parties, including the building occupants, should be notified that testing has been concluded.

NFPA Standard 72E requires acceptance testing of 100% of the installed heat detectors. The specified test is to be conducted by exposing the detector to a heat source, such as a hair dryer or a heat lamp.

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## MAINTENANCE

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### Maintenance Schedule

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The recommended requirement for detector maintenance consists of a semi-annual test of one or more heat detectors on each initiating circuit. Different detectors shall be selected for each test. Within five years, all heat detectors must have been tested.

### Repair of failed detectors

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These detectors are highly reliable and rarely fail. No field repair should be attempted. Due to the low cost of these heat detectors, it is not feasible to repair failed units. Replace failed detectors with new ones.