

ULC Listed  
CSA Certified

Heat Detectors  
4255 Series

## FEATURES

- Automatic detection of fires
- Compact, rugged construction
- Rate-of-Rise and Fixed Temperature principles of operation
- Large area of protection per unit

## DESCRIPTIONS

The 4255 series heat detectors are an ultra-sensitive electric thermostat designed to automatically detect the excessive heat created by a fire. The compact, simple designed units are rugged and unaffected by vibration. All metal parts are brass, or aluminum and are mounted on a durable, mineral-filled, phenolic base. No exposed metal parts carry current. Electrical contacts are all silver clad and of ample size.

Large line terminals and wire ways are provided in the base for easy and efficient installation in either open wiring or concealed wiring systems. Two versions are available: Rate-of Rise and Fixed Temperature, and Fixed Temperature only.

- **Rate-of-Rise and Fixed Temperature**

The rate-of-rise and fixed temperature detector is a dual-element thermostat employing two independent methods of detection — rate-of-rise and fixed temperature.

The rate-of-rise method detects fires that grow rapidly in intensity by quickly responding to abnormally fast temperature increases. The fixed temperature method detects smoldering fires, which build temperatures to a high level at a slow rate, by responding to a specific temperature setting.

- **Fixed Temperature Only**

The fixed temperature only version is of the same size and style of construction as the rate-of-rise and fixed temperature version, but without the rate-of-rise element.

## CONTACT RATINGS

3 A @ 6-125 V AC  
1 A @ 6-28V DC  
0.3 A @ 125 V DC



**4255 Series Heat Detector**

## OPERATION

Heat detectors having the rate-of-rise principle of operation include an air chamber, a vent, and a flexible metal diaphragm. When the unit is heated, the air in the chamber expands. The vent permits the chamber to breathe and slowly release the expanded air. If a fire occurs, the air in the chamber will expand more rapidly than it can be vented. This causes the diaphragm to close a set of silver contacts (normally open) to set off a fire alarm. The rate-of-rise heat detector restores itself to a normally open contact position when the heat is dissipated or remains constant.

All heat detectors have fixed temperature principle of operation. This consists of a phosphor bronze spring held under tension by standard sprinkler fusible solder. When the heat detector is heated to the melting point of the solder, the spring releases and closes the silver contacts (normally open) setting off a fire alarm. The heat detector which operates by a fixed temperature principle can be recognized by a small hole in the shell. Units operated by the fixed temperature principle cannot be reset and must be replaced.

The combination rate-of-rise and fixed temperature heat detectors are suitable for the majority of locations. They should not be mounted in line with space heater blowers, directly over stoves and ovens, and other heat generating units. These detectors are available in two fixed temperature ratings.

Those rated at 135°F (57.2°C) are suitable for most applications; those rated at 200°F (93.3°C) are suitable whenever the temperature exceeds 100°F (37.7°C) but not 150°F (65.5°C) for extended periods of time. Therefore, 200°F (93.3°C) units are particularly useful in those installations which lack air conditioning.

## SELECTION CHART

PID	Contacts	Description	Maximum Area Protected	
4255-51	1 N/O	135°F (57.2°C) R of R and Fixed	2500 sq. ft. (50' x 50')	225m <sup>2</sup> (15 m x 15 m)
4255-52		200°F (93.3°C) R of R and Fixed		
4255-53		135°F (57.2°C) Fixed	900 sq. ft. (30' x 30')	81 m <sup>2</sup> (9 m x 9m)
4255-54		200°F (93.3°C) Fixed		

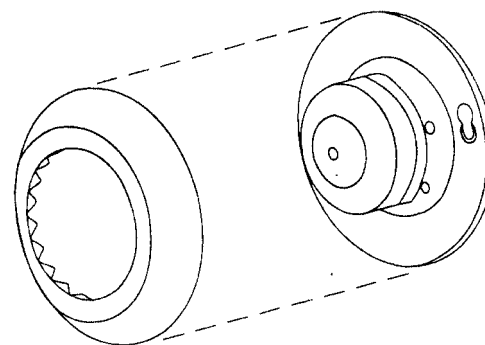
**NOTE:** In most fires, hazardous levels of smoke and toxic gases can build up before a heat detector would initiate an alarm. In cases where life safety is a factor, the use of smoke detectors is recommended.

## APPLICATION GUIDELINES

Ceiling Temperature Conditions (Location of Heat Detectors)		Type of Detector	Principle(s) of Operation	Fixed Temperature Rating
<b>NORMAL TEMPERATURE CHANGES</b> Offices, schoolrooms, and industrial locations where no equipment is used which could cause a ceiling temperature rate-of-rise of 15°F (9.44°C).	100°F (37.8°C) or less	4255-51	Rate-of-Rise and Fixed Temperature	135°F (57.2°C)
	Between 100°F (37.8°C) and 150°F (65.6°C)	4255-52		200°F (93.3°C)
<b>ABNORMAL TEMPERATURE CHANGES</b> Locations directly over stoves, furnaces or in line with space heater blowers, etc., where ceiling temperature will have a rate-of-rise near or exceeding 15°F (9.44°C) per minute.	100°F (37.8°C) or less	4255-53	Fixed Temperature	135°F (57.2°C)
	Between 100°F (37.8°C) and 150°F (65.6°C)	4255-54		200°F (93.3°C)

## INSTALLATION

Heat detectors should be mounted on ceilings of the areas to be protected. Underwriters' Laboratories of Canada allows a 50-foot (15m) centre to centre spacing for units operating on the rate-of-rise and fixed temperature principles. Thus, one unit gives protection for a maximum of 2500 square feet (225m<sup>2</sup>) of unrestricted floor and ceiling space with smooth ceilings up to 75 feet (20m) high. For joisted ceilings use 25-foot (7.5m) centres or even closer spacing. Additional units should be used where coverage appears limited due to structural characteristics of the protected area.



**Mounting Details**  
**4255 Series Heat Detectors**