



# THERMOSTAT

## DETECT-A-FIRE®



P/N: See Chart

### Features

- Repeatable - resets itself, nothing to replace, testable
- Rugged - withstands shock and vibration
- Versatile - offers various temperature settings
- Durable - long lasting stainless steel shell
- Economical - wide spacing, reduces installation cost
- Factory set and the internal contact area is hermetically sealed in stainless steel

### Applications

- Protection of schools, factories, offices, libraries, etc.
- Paint spray booths
- Range hoods
- Industrial application

### Engineering Specifications

DETECT-A-FIRE units are the “heart” of many Fire Protection Systems. These highly reliable devices have been a standard of the industry for over 45 years. Many thousands of these units are now in use controlling the release of extinguishants such as clean agents, CO<sub>2</sub>, water, or dry chemicals. In some systems the device is used as an ALARM device, to sense overheat or fire, and alert personnel. In other systems, it is used as a RELEASE device, to sense fire and actuate fire extinguishing systems.

DETECT-A-FIRE units have met with wide acceptance because they are designed with RATE COMPENSATION. This provides a unique advantage over both fixed temperature and rate-of-rise types of detectors because only the DETECT-A-FIRE unit accurately senses the surrounding air temperature regardless of the fire growth rate. At precisely the predetermined danger point, the system is activated.

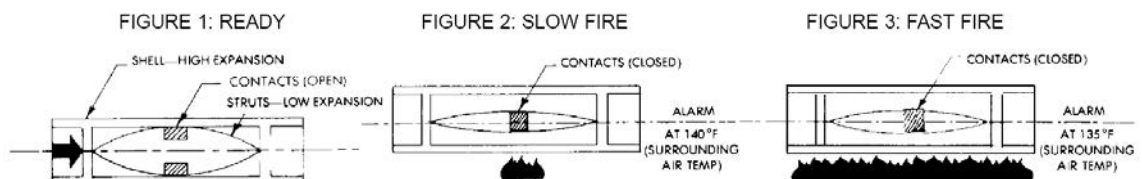
Fixed temperature detectors must be completely heated to alarm temperature and therefore a disastrous lag in time may occur with a fast rate fire. Rate-of-rise devices, on the other hand, are triggered by the rate of increase in ambient temperature and are subject to false alarms caused by harmless, transient thermal gradients such as the rush of warm air from process ovens.

The secret of the unit’s sensitivity is in the design (Figure 1). The outer shell is made of a rapidly expanding alloy which closely follows changes in surrounding air temperature. The inner struts are made of a lower expanding alloy. Designed to resist thermal energy absorption and sealed inside the shell, the struts follow temperature changes more slowly.

A slow rate fire (Figure 2) will heat the shell and struts together. At the “set point,” the unit will trigger, actuating the alarm or releasing the extinguishant.

A transient rush of warm air up to 40°F/min. may expand the shell, but not enough to trigger the unit. By ignoring transient warm air excursions, the DETECT-A-FIRE unit virtually eliminates false alarms prevalent with rate-of-rise devices.

If a fast rate fire (Figure 3) starts, the shell will expand rapidly. The struts will close, actuating the alarm or releasing the agent. The faster the fire rate of growth, the sooner the DETECT-A-FIRE unit will react.





## Vertical Detect-A-Fire Units

Vertical detectors are designed for use in both “ordinary” or “hazardous” locations. For “ordinary” use, they may be mounted to any approved junction box with 7/8” diameter opening by using 1/2-14 NPT mounting nuts. The device may be wired in or out of conduit, depending on local preference and codes. Four leadwires are provided on normally open vertical units (that close on temperature rise), per UL requirement, to facilitate supervision of system wiring. Instruments are Underwriters Laboratory and Underwriters Laboratory of Canada listed and Factory Mutual approved for hazardous locations, when mounted in a suitable fitting.

### Mounting

DETECT-A-FIRE units are not position sensitive. Vertical detectors refer to the most common mounting configuration for that unit. It can be mounted either horizontally or vertically depending on the application and installation requirements.

Hazardous Location	Fitting Required For UL & ULC Listings and FM Approval
Class I, Groups B, C and D; Class II Groups E, F and G	Mount detector to a suitable listed fitting in accordance with National Electric Code and/or local authority having jurisdiction.

### Temperature Rating

(Suggest setting a minimum of 100°F above ambient)

°F Setting	°F Tolerance	Spacings (in feet) See NOTE A			Color Coding
		UL	ULC	FM	
160	+ 7/-8	25	25	25	Black
190	+ 7/-8	50	50	25	White
225	+ 7/-8	25	50	25	White
275	± 10	25	50	25	Blue
325	± 10	50	50	25	Red
450	± 15	25	50	25	Green
600	± 20	N/A	50	25	Orange
725	± 25	N/A	50	25	Orange

NOTE A: Spacings shown are distances between units on smooth ceilings, the distances from partitions or walls would be half that shown. Authority having LOCAL jurisdiction should be consulted before installation.

NOTE B: Temperature preset at factory only.

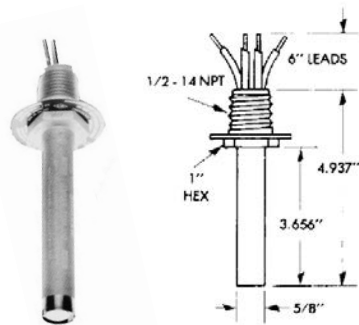
NOTE C: In applications where corrosion is suspect, care should be taken to protect the DETECT-A-FIRE unit to realize optimum performance and maximum life. Consult factory for suggestions.

NOTE D: Up to 375°F-#18 AWG Teflon insulated wire used on units. Above 375°F-#16 AWG TGGT insulated wire used on units.

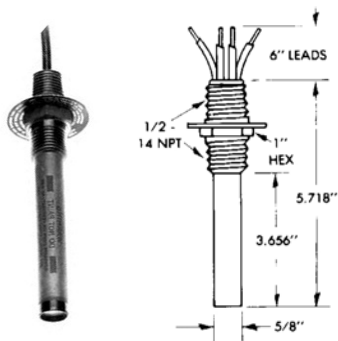
NOTE E: Per UL521 requirements - low temperature exposure test is -22°F (-30°C)

Specifications subject to change without notice.

Although incandescent lamps are considered resistive, their inrush current is 10-15 times their steady current. Do not exceed ratings.



**Standard Model**



**Coupling Style**

**Mounting Head Material:**

Standard - Brass (Type 300 SST available)  
Coupling Style - Type 300 SST

**Shell Material:**

Type 300 Stainless Steel

**Contact Operation on Temperature Rise:**

Closes

**Electrical Rating (Resistive Only):**

5.0 Amps 125 VAC  
0.5 Amps 125 VDC  
2.0 Amps 24 VDC  
1.0 Amps 48 VDC

**Approximate Weight Per Unit:**

5 oz.

This chart shows three categories of fire detection devices and their relative response levels for reaction to three different rate-of-rise condition. Statistics indicate that 97% of all fires fall within these categories.

Type of Device	Rate-Of-Rise		
	Under 10°F/Min	Between 10-40°F/Min	Over 40°F/Min
Rate Compensated Detect-A-Fire Unit	FIRST	FIRST	SECOND but at selected protection level
Fixed Temperature	SECOND	SECOND	THIRD
Rate-Of-Rise	Will not operate unless fixed temperature supplement at 165°F is proved, then it is THIRD in sequence	Will not operate unless fixed temperature supplement at 165°F is proved, then it is THIRD in sequence	FIRST but may be a false alarm

**Agency Listings**

DETECT-A-FIRE units are UL and ULC listed and FM approved as fire detection thermostats (close on temperature rise).

Agency	File Number	Location
UL	S492	Ordinary
UL	E19310	Hazardous
ULC	CS341-E	Ordinary and Hazardous
FM	J.I. OV3HO.AE	Hazardous
FM	17302	Ordinary
UL	S2410	Ordinary (600 & 725°F)
UL	E895999	Hazardous (600 & 725°F)



## Ordering Information

Description	P/N
Thermostat, Detect-A-Fire, 160°F, Brass	20338
Thermostat, Detect-A-Fire, 190°F, Brass	16194
Thermostat, Detect-A-Fire, 225°F, Brass	16195
Thermostat, Detect-A-Fire, 275°F, Brass	19720
Thermostat, Detect-A-Fire, 325°F, Brass	16196
Thermostat, Detect-A-Fire, 450°F, Brass	10776
Thermostat, Detect-A-Fire, 600°F, Brass	10777
Thermostat, Detect-A-Fire, 725°F, Brass	10778
Thermostat, Detect-A-Fire, 160°F, SST	98015
Thermostat, Detect-A-Fire, 190°F, SST	98016
Thermostat, Detect-A-Fire, 225°F, SST	20305
Thermostat, Detect-A-Fire, 275°F, SST	20306
Thermostat, Detect-A-Fire, 325°F, SST	20307
Thermostat, Detect-A-Fire, 450°F, SST	20308
Thermostat, Detect-A-Fire, 600°F, SST	98345
Thermostat, Detect-A-Fire, 725°F, SST	97370
Thermostat, Detect-A-Fire, 190°F, SST, Coupling Style	20339
Thermostat, Detect-A-Fire, 225°F, SST, Coupling Style	20309
Thermostat, Detect-A-Fire, 275°F, SST, Coupling Style	20310
Thermostat, Detect-A-Fire, 325°F, SST, Coupling Style	20311
Thermostat, Detect-A-Fire, 450°F, SST, Coupling Style	20312
Thermostat, Detect-A-Fire, 600°F, SST, Coupling Style	98346

*Note: Approvals/Listings maintained by and manufactured by Fenwal "Detect-A-Fire".*

The seller makes no warranties, express or implied, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose, except as expressly stated in the seller's sales contract or sales acknowledgment form. Every attempt is made to keep our product information up-to-date and accurate. All specific applications cannot be covered, nor can all requirements be anticipated. All specifications are subject to change without notice.



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