DETECTION & RELEASE DEVICES
DETECT-A-FIRE

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*

DESCRIPTION

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, C02, 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 attack 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.

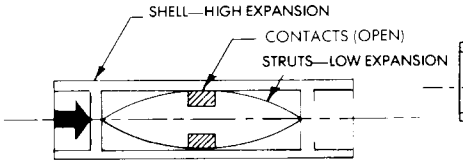


FIGURE 1: READY

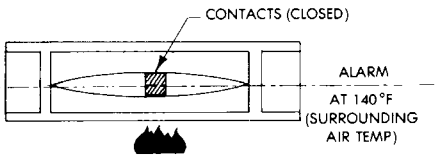


FIGURE 2: SLOW FIRE

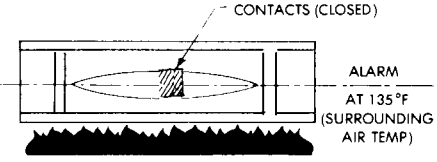


FIGURE 3: FAST FIRE

SPECIFICATIONS

HORIZONTAL DETECT-A-FIRE-UNITS

Horizontal detectors are designed for locations where appearance is a factor. The attractive, functional design lends physical protection of the unit while making it suitable for commercial, industrial, mercantile and public buildings,institutions and ships in non-hazardous locations (those classified as "ordinary" under the National Electric Code). Flush mounted units are designed to fit standard 4" octagonal electrical boxes and surface mounting units are designed to mount directly on ceilings or on 4" electrical junction boxes. Canadian Electrical Codes requires mounting only to an electrical junction box.

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. Horizontal and vertical detectors refer to the most common mounting configuration for that unit. However, each type can be mounted either horizontally or vertically depending on the application and installation requirements.

HAZARDOUS LOCATIONS	DETECTOR TYPE	FITTING REQUIRED FOR UL & ULC LISTINGS AND FM APPROVAL
Class I, Groups A, B, C and D; Class II, Groups E, F and G	12-X27120-022 12-X27121-020 12-X28020-003 12-X28021-005	Mount detector to a suitable listed fitting in accordance with National Electric Code and/or local authority having jurisdiction.
Class I, Groups B, C and D; Class II , Groups E, F and G	12-X27120-000 12-X27121-000 12-X28021-000	

NOTE: Only units with stainless steel shell and head are approved for Class I, Group A locations.

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. Special settings available upon request. Consult factory or Fenwal Representative for additional information.

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.

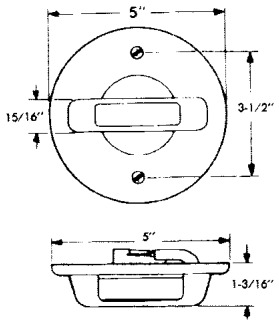
NOTE E: Per UL521 requirements - low temperature exposure test is -22°F (-30°C)

Specifications subject to change without notice.
UL of Canada labeling available upon request.
Although incandescent lamps are considered resistive, their inrush current is 10-15 times their steady current. Do not exceed ratings.

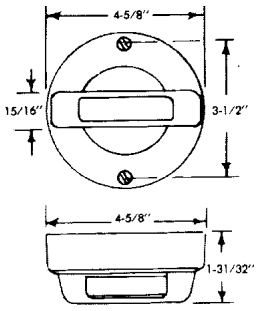
HORIZONTAL DETECT-A-FIRE-UNITS

Flush Mounting Unit for Concealed Wiring

Surface Mounting Unit for Exposed Wiring



12-X27020-000
12-X27021-000



12-X27020-001
12-X27021-001

MODEL NO.	CONTRACT OPERATION ON TEMPERATURE RISE	APPROX. WEIGHT PER UNIT	ELECTRICAL RATING (RESISTIVE ONLY)
12-X27020-001 12-X27020-001	Opens (325°F Max	10 oz	5.0 Amps 125 VAC 0.5 Amps 125 VDC
12-X27021-000 12-X27021-001	Closes (325°F (Max)	10 oz	5.0 Amps 125 VAC 0.5 Amps 125 VDC 2.0 Amps 24 VDC 1.0 Amps 48 VDC

CONSTRUCTION

Stainless steel shell sensing element. Cold rolled steel mounting facility. Off-White finish.

TEMPERATURE RATING

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

°F SETTING	°F TOLERANCE	SPACINGS (in feet) See NOTE A			COLOR CODING
		UL	ULC	FM	
140	+ 7/-8	50	50	25	Black
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
360	± 10	25	50	25	Red
450	± 15	25	50	25	Green
600	± 20	N/A	50	25	Orange
725	± 25	N/A	50	25	Orange