

# SERIES 27100, 28000

## Vertical DETECT-A-FIRE® Units Installation Instructions



### 12.01.G

#### DESCRIPTION

DETECT-A-FIRE® (D-A-F) thermal detectors are UL Listed (UL of Canada available upon request), and FM Approved detection and release devices for use with fire detection systems to activate alarms and extinguishing systems. This Rate Compensated device combines the best features of both fixed temperature and rate-of-rise detectors.

#### Electrical Rating

Model Number	Contact Operation on Temperature Rise	Electrical Rating* (Resistive Only)
12-X27120	Opens (450°F Max)	5.0 amps 125 VAC
12-X28020		0.5 Amps 125 VDC
12-X27121	Closes	5.0 Amps 125 VAC 0.5 Amps 125 VDC 2.0 Amps 24 VDC 1.0 Amps 48 VDC
12-X28021		

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

#### LOCATION

D-A-F detectors are precision temperature sensors. They must be mounted in an area (normally a ceiling) so that:

1. The detector spacing complies with both system requirements and requirements of the agency having local jurisdiction.
2. The thermal air path to the shell is not obstructed.

Spacing per UL, FM, and UL of Canada is shown in Table 1. Distances given are for between units on smooth ceilings. Distances from partitions or walls are half that shown. To assure that all spacing requirements are met, consult the authority having local jurisdiction.

**TABLE 1: MODEL NUMBER 12-X27120\*, 12-X27121**

X	°F Setting	°F Tolerance	Spacings (in feet)			RTI	Color Coding
			UL	ULc	FM		
E	140	+7/-8	50	50	20	Quick	Black
	160	+7/-8	25	25	20	Quick	Black
	190	+7/-8	50	50	25	Fast	White
	210	+7/-8	25	50	25	Fast	White
	225	+7/-8	25	50	25	Fast	White
F	275	±10	25	50	25	Fast	Blue
	325	±10	50	50	25	Fast	Red
	360	±10	25	50	30	V-Fast	Red
G	450	±15	25	50	30	V-Fast	Green
	500	±15	50	50	30	V-Fast	Orange
H	600	±20	N/A	50	30	V-Fast	Orange
	725	±20	N/A	50	30	V-Fast	Orange

**Notes:**

- For clean agents and CO2 suppression systems, ceiling spacing is 20 ft. apart unless otherwise specified.
- 27120 is a 2-wire device and RTI is not applicable.
- 27120 is a normally closed device and does not meet the requirements of NFPA-72 for use as an initiating device.

#### MOUNTING

D-A-F 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.

**TABLE 2: MODEL NUMBER 12-X28020\*, 12-X28021**

X	°F Setting	°F Tolerance	Spacings (in feet)			RTI	Color Coding
			UL	ULc	FM		
E	140	+7/-8	50	50	30	V-Fast	Black
	160	+7/-8	25	25	30	V-Fast	Black
	190	+7/-8	50	50	30	V-Fast	White
	210	+7/-8	25	50	30	V-Fast	White
	225	+7/-8	25	50	30	V-Fast	White
F	275	±10	25	50	30	V-Fast	Blue
	325	±10	50	50	30	V-Fast	Red
	360	±10	25	50	30	V-Fast	Red
G	450	±15	25	50	30	V-Fast	Green
	500	±15	50	50	30	V-Fast	Orange
H	600	±20	N/A	50	30	V-Fast	Orange
	725	±20	N/A	50	30	V-Fast	Orange

**Notes:**

- For clean agents and CO2 suppression systems, ceiling spacing is 20 ft. apart unless otherwise specified.
- 28020 is a 2-wire device and RTI is not applicable.
- 28020 is a normally closed device and does not meet the requirements of NFPA-72 for use as an initiating device.

Hazardous Location	Model Number	Fitting Required For UL, ULc Listings and FM Approvals
Class 1*, Groups A, B, C and D; Class II*, Groups E, F and G	27120-22 27121-20 28020-3 28021-5	Mount detector to a suitably listed fitting in accordance with National Electric Code and/or local authority having jurisdiction.
Class 1*, Groups B, C and D; Class II*, Groups E, F and G	27120-0 27121-0 28021-0	

**Note:** \* Division 1 and 2.

#### INSTALLATION

**Note:** Kidde-Fenwal recommends that standard 4-inch octagonal outlet boxes be used to mount detectors.

1. Attach detector to outlet box cover through a 0.875 inch diameter hole and using two 1/2-14NPT retainer nuts as indicated.
  2. Connect system wiring to detector per Figure 1 and applicable electrical codes.
- **Ordinary Locations:** The D-A-F Units are to be installed in grounded metallic junction boxes only. They are to be secured to the boxes using two lock nuts, one on either side of the mounting plate. D-A-F Units are not to be installed in non-metallic junction boxes.

- **Hazardous Locations:** For Class I, Division 1 and 2 locations install the D-A-F Unit in a listed explosion-proof enclosure with a minimum thread engagement of five full turns. No non-conductive material is to be placed on the threaded joint of the D-A-F Unit or in the listed explosion-proof enclosure. For Division 2 locations assure that a protective ground terminal is provided in the listed explosion-proof enclosure when flexible metal conduit is used.
- **Non-Hazardous Outdoor Locations:** Mount the D-A-F in a Listed NEMA Type 3 outlet box, cover and conduit, with 1/2- 14 NPT threads and a minimum thread engagement of 5 full turns. Use pipe plugs with RTV silicone rubber sealant, a rubber gasket and self-sealing screws to attach the cover, and PTFE thread sealtape on the D-A-F threads. For additional requirements consult the local fire department, the National Electric Code and/or the local authority having jurisdiction in the area.

**Note:** Do not exceed a maximum torque without thread lubricant of 20 foot-pounds (27.1 Newton Meters).

Series 28000 units are similar to Series 27100 units except they have two 1/2-14 NPT threads for mounting.

The unit may be mounted as described above or may be threaded into a 1/2-14 NPT tapped hole in the vessel wall or threaded into a coupling brazed or welded to the vessel wall.

## DETECT-A-FIRE MOUNTING

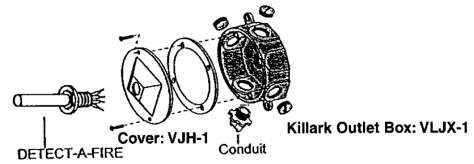


TABLE 3

Non-Hazardous Outdoor Locations		
Model Number	°F Temperature Setting	Fitting Required for UL Listing and FM Approval
12-X27120-0 12-X27120-22 12-X27121-0 12-X27121-20	140, 160, 190, 225	Mount detector to a fitting suitable for outside use, (NEMA Type 3), in accordance with National Electric Code and/or local authority having jurisdiction.
FM requires the use of a Killark Outlet Box P/N VLJK-1, with P/N VJH-1 cover, and P/N VBNB Gasket to satisfy Outdoor NEMA 3 rated installation requirements.		

## FUNCTIONAL TEST

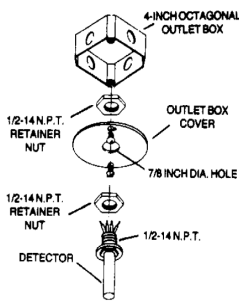
When used with automatic fire extinguishing systems first disconnect the initiator/solenoid leads from the panel and connect a 24 VDC bulb to initiator terminals in the control unit. Gently heat the D-A-F units with a heat lamp or other convenient source (see WARNING below). When the bulb in the control unit changes state, remove heat source and allow D-A-F unit to cool. Reset control unit. Test lamp must change state and stay changed after system is reset. Do not reconnect initiator/ solenoid leads until all D-A-F units have cooled below set point as indicated by test lamp. When D-A-F units are used in other types of systems, disconnect them from the system, connect a 24 VDC lamp and power source in series with the D-A-F units and test with heat source as above. Make sure that contacts have reset to normal condition before reconnecting to system circuit.

1. **DO NOT overshoot the setpoint of the unit by more than 100F (55C). DO NOT contact the sensing shell with a heating device. Either action could result in a shift of the set point temperature or damage the unit.**
2. **Keep the sensing shell of the unit free from paint, grease, oil, etc. If a buildup occurs, do not attempt to remove the buildup. Replace the unit.**
3. **Detectors mounted in an area subject to physical abuse or damage must be suitably protected without obstructing the thermal airpath to the unit.**
4. **Do not install the unit where the shell would be physically damaged by sand, grain, rocks, etc.**
5. **Any detector that has been involved in a fire or damaged must be replaced.**
6. **Do not over torque the unit when installing. Recommended practice is to hand tighten the unit. Then using a suitable sized wrench, turn 1 1/2 additional turns without damaging the hex surfaces.**
7. **Consult the factory for special precautions necessary for outdoor use or moist environments.**

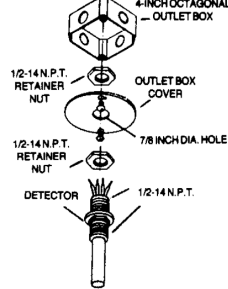
**ANY OF THE ABOVE COULD CHANGE THE FACTORY TEMPERATURE SETTING, WHICH MAY RESULT IN PROPERTY DAMAGE AND/OR PERSONAL INJURY OR DEATH. IT IS POSSIBLE FOR A UNIT TO HAVE BEEN ABUSED OR DAMAGED AND NOT DISPLAY ANY OUTWARD INDICATION OF THE DAMAGE. ALL UNITS SHOULD BE TESTED PERIODICALLY IN ACCORDANCE WITH NATIONAL FIRE PROTECTION ASSOCIATION REQUIREMENTS (72e) OR THE AGENCY HAVING LOCAL JURISDICTION.**



Series 27120 and 27121



Series 28020 and 28021

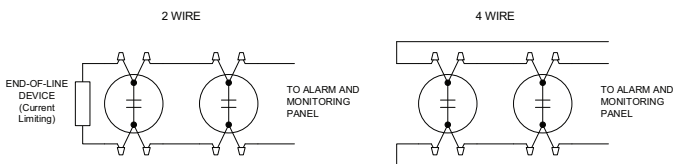


## Field Wiring Requirement

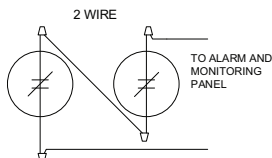
Field wiring must be capable of withstanding the maximum anticipated ambient temperature in the application. For Type G and H Detectors, field wiring should be capable for continuous operation at the maximum rated ambient temperature of 250°C.

## SYSTEM WIRING

### Typical Fire Alarm System Method



### Typical Security System Method



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