

# Discovery UL

## Ionization Smoke Detector



### Product overview

Product	Ionization Smoke Detector
Part No.	58000-550
Digital Communication	XP95, Discovery and CoreProtocol® compatible

### Compliance



### Product information

The Discovery UL Ionization Smoke Detector uses a low activity radioactive foil to detect fires by irradiating the air in the smoke chambers causing a current flow. If smoke enters the chamber the current flow is reduced leading to an alarm. The detector has a choice of five operating modes which are selected at the fire control panel.

- Responds well to fast burning, flaming fires
- Operates in a variety of environments
- Minimal effects from temperature, humidity and atmospheric pressure

### Technical data

All data is supplied subject to change without notice. Specifications are typical at 24 V, 73°F and 50% RH unless otherwise stated.

<b>Detection principle</b>	Ionization Chamber
<b>Chamber configuration</b>	Twin compensating chambers using one single sided ionization radiation source
<b>Radioactive Isotope</b>	0.9 µCi Americium 241
<b>Sampling frequency</b>	Continuous
<b>Sensitivity</b>	1.48 ± 0.6 %/ft
<b>Operating voltage</b>	17 - 28 V dc
<b>Modulation voltage</b>	5-9 V peak to peak
<b>Digital communication</b>	XP95, Discovery and CoreProtocol compatible
<b>Supervisory current</b>	400 µA
<b>Surge current</b>	1mA
<b>Alarm LED current</b>	3.5 mA
<b>Temperature range</b>	32 °F to 100 °F
<b>Humidity</b>	0% to 95% RH (no condensation or icing)
<b>Air velocity</b>	0 - 300 fpm
<b>Standards &amp; approvals</b>	UL, CSFM, MSFM, FM
<b>Dimensions</b>	3.93" diameter x 1.65" height
<b>Weight</b>	3.70 oz
<b>Materials</b>	Housing: White flame-retardant polycarbonate Terminals: Nickel plated stainless steel
<b>Test method</b>	Home safeguard Sensitivity test No climb Gemini 501
<b>Spacing</b>	Install as per NFPA72 and local requirements. On smooth, flat ceilings, spacing of 30 feet may be used as a guide

### Operation

The sensing part of the detector consists of two chambers; an open, outer chamber and a reference chamber within.

Mounted in the reference chamber is a low-activity radioactive foil of Americium 241 which enables current to flow across the inner and outer chambers when the detector is powered up.

As smoke enters the detector, it causes a reduction of the current flow in the outer chamber and hence an increase in the voltage measured at the junction between the two chambers. This analogue voltage signal is converted to a digital signal by the electronic circuitry and transmitted to the control panel on interrogation. The micro-processor in the control equipment then compares the signal with stored data and initiates a pre-alarm or fire alarm as smoke density increases. When a fire condition exists, the panel instructs the detector to switch on its indicator LED.

## Environmental characteristics

The Discovery UL Ionization Smoke Detector like all ionization detectors has some sensitivity to air movement (wind). The extent to which the analog value will change depends on the wind speed and on the orientation of the detector relative to the wind direction. Relatively small changes in wind direction can cause significant changes in analog value. The detector operates over the temperature range  $-4^{\circ}\text{F}$  to  $+140^{\circ}\text{F}$ .

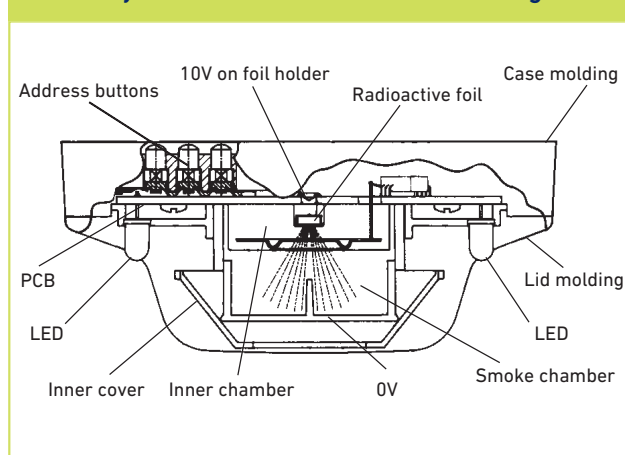
## Electrical description

The Ionization Smoke Detector is designed to be connected to a two wire loop circuit carrying both data and a 17 V to 28 V dc supply. The detector is connected to the incoming and outgoing supply via terminals L1 and L2 in the mounting base. A remote LED indicator requiring not more than 4mA at 5 V may be connected between the +R and -R terminals. An earth connection terminal is also provided. The detector is calibrated to give an analog value of 23  $\pm 4/-0$  counts in clean air. This value increases with smoke density. A count of 55 corresponds to the UL alarm sensitivity level.

### Discovery UL Ionization Smoke Detector operating modes

Mode	Alarm Threshold y value	Minimum time to Alarm (seconds)
1	0.45	5
2	0.45	30
3	0.70	5
4	0.70	30
5	1.0	5

### Discovery UL Ionization Smoke Detector diagram



### Response characteristics of Discovery UL Ionization Smoke Detector

Type of fire	Ionization Detector
Overheating/thermal combustion	Poor
Smouldering/glowing combustion	Moderate/Good
Flaming combustion	Very Good
Flaming with high heat output	Very Good
Flaming - clean burning	Poor



### Safety note

At the end of their recommended working life of ten years ionisation smoke detectors should either be returned to Apollo for safe disposal, or disposed of in accordance with local regulations.