

## Features

- ▶ 2 Flashing LEDs
- ▶ Rejection of Transient Signals
- ▶ 360° Visibility in Alarm



*F1000-650 Discovery Photoelectric Smoke Detector*

## Description

The F1000-650 Discovery Photoelectric Smoke Detector has a moulded self-extinguishing white polycarbonate case with wind resistant smoke inlets. It uses the same outer case as the F1000-550 Addressable Ionization Smoke Monitor and is distinguished by the indicator LED which is clear in standby and red in alarm. Within the case is a printed circuit board which on one side has the light proof labyrinth chamber with integral gauze surrounding the optical measuring system and on the other the address capture, signal processing, and communication electronics. An infra-red (IR) light emitting diode (LED) within its collimator is arranged at an obtuse angle to the photo-diode. The photo-diode has an integral daylight filter.

The IR LED emits a burst of collimated light every 0.5 seconds. In clear air the photo-diode receives no light directly from the IR LED because of the angular arrangement and the dual mask. When smoke enters the chamber it scatters light from the emitter IR LED onto the photo-diode proportionally to the smoke characteristics and density. The photo-diode signal is processed by the optical ASIC and passed to the A/D converter on the communications ASIC ready for transmission when the device is interrogated.

## Electrical Description

The detector is designed to be connected to a two wire loop circuit carrying both data and a 17V to 28V 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 5V may be connected between the R+ and R- terminals. An earth connection terminal is also provided.

When the device is energized the ASIC regulates the flow of power and control the data processing. The optical ASIC is controlled by the communications ASIC and pulses the IR LED. The signal from the photo-diode is processed by the sensor ASIC and transferred to the A/D converter in the communications ASIC where it is then stored. When smoke enters the chamber the photo-diode signal increases. The information to the A/D converter is updated once per second or when either the monitor or the preceding address is interrogated. When the device is interrogated this data is sent to the control equipment.

## Approvals and Listings

Underwriters Laboratories (File No. S6349)  
Fire Department - City of NY COA #6051



# Electrical Specifications

Specifications are typical and given at 24V, 23°C and 50% relative humidity unless otherwise specified.

<b>Detector Type:</b>	F1000-650 Discovery Photoelectric Smoke Detector
<b>Detection Principle:</b>	Photoelectric detection of light scattered in a forward direction by smoke particles
<b>Chamber Configuration:</b>	Horizontal optical bench housing an infra-red emitter and sensor arranged radially to detect forward scattered light.
<b>Supply Wiring:</b>	Two wire supply
<b>Terminal Functions:</b>	L1 and L2; supply in and out connections +R; remote indicator positive connection (internal 2.2KΩ resistance to positive) -R; remote indicator negative connection (internal 2.2KΩ resistance to negative)
<b>Operating Voltage:</b>	17 to 28 VDC
<b>Quiescent Current:</b>	300μA
<b>Power-up Surge Current:</b>	1mA
<b>Maximum Power-up Time:</b>	10 seconds
<b>Operating Temperature:</b>	0°C to 49°C
<b>Alarm Indicator:</b>	2 colourless Light Emitting Diodes (LEDs) illuminating red in alarm
<b>Alarm Current, LED illuminated:</b>	3.5mA
<b>Remote Output Characteristics:</b>	Connects to positive line through 4.5KΩ (5mA maximum)
<b>Humidity:</b>	0% to 95% relative humidity (no condensation)
<b>Effects of Wind Speed:</b>	Less than 20% change in sensitivity at speed up to 10m/s
<b>Atmospheric Pressure:</b>	Suitable for installation up to 2000m above sea level
<b>Dimensions:</b>	4 in x 1.65 in (diameter x height)
<b>Weight:</b>	3.0 oz.
<b>Materials:</b>	Housing: White polycarbonate V-O rated to UL 94 Terminals: Stainless Steel, nickel plated

# Ordering Information

Model No.	Part No.	Description
F1000-650	75161	Discovery Photoelectric Smoke Detector

It is our intention to keep the product information up to date and accurate. We cannot cover all specific applications or anticipate all requirements. All specifications are subject to change without notice. For more information contact: FIRECOM, INC.