

Series 65

Optical Smoke Detector



Product overview

Product	Optical Smoke Detector
Part No.	55000-317
Product	Optical Smoke Detector with flashing LED
Part No.	55000-316
Product	Optical Smoke Detector with magnetic test switch and flashing LED
Part No.	55000-315

Product information

The Series 65 Optical Smoke Detector uses the scattered light principle to 'see' smoke entering the chamber located within the detector housing.

- Responds well to slow burning, smouldering fires
- Well suited for bedrooms and escape routes
- Unaffected by wind or atmospheric pressure
- Flashing LED and magnet operated test switch option on selected detectors

Manufacturer's Specification

All data is supplied subject to change without notice. Specifications are typical at 24 V, 23°C and 50% RH unless otherwise stated.

Detection principle	Photo-electric detection of light scattered in a forward direction by smoke particles
Chamber configuration	Horizontal optical bench housing an infrared emitter and sensor arranged radially to detect scattered light
Sensor	Silicon PIN photo-diode
Emitter	GaAs infra-red light emitting diode
Sampling frequency	Once every three seconds
Confirmation frequency	Once every two seconds
Supply Wiring	Two wire supply, polarity insensitive
Terminal functions	L1 IN Supply in connections and L2 L1 OUT Supply out connections and L2 -R Remote indicator negative connection
Supply voltage	9 V to 33 V dc
Ripple voltage	2 V peak to peak maximum at 0.1 Hz to 100 kHz
Quiescent current	30 - 50 µA at 24 V
Power-up surge current	115 µA at 24 V
Alarm voltage	6 V to 28 V
Normal alarm current	61 mA at 28 V 52 mA at 24 V 18 mA at 10 V
Alarm indicator	Clear light emitting diode (LED) emitting red light
Alarm LED current	4 mA
Remote output characteristics	Remote is a current sink to the negative line limited to 17 mA
Sensitivity	Nominal alarm threshold of 0.15 dB/m obscuration, measured in accordance with EN 54-7
Operating temperature	-20°C to +60°C
Humidity	0% to 95% RH (no condensation or icing)
Effect of atmospheric pressure	Unaffected
Effect of wind speed	Unaffected
Vibration, impact and shock	EN 54-7
Dimensions	100 mm diameter x 42 mm height
Weight	99 g
Materials	Housing: White flame-retardant polycarbonate Terminals: Nickel plated stainless steel

Operating principles

The Series 65 Optical Smoke Detector has a moulded self-extinguishing white polycarbonate case with wind resistant smoke inlets. Inside the case a printed circuit board has the optical system mounted on one side and the signal processing electronics on the other. The sensing chamber is a moulding configured as a labyrinth which prevents penetration of ambient light. The labyrinth has a fine gauze insect-resistant cover. The chamber houses an infrared light emitting diode (LED) and a photo-diode which has an integral visible-light filter as an extra precaution against ambient light.

Every three seconds the LED emits a burst of collimated light, modulated at 4 kHz. In clear air light from the LED does not fall directly on the diode because the LED is positioned at an obtuse angle to the diode.

When smoke enters the chamber a fraction of the collimated light is scattered onto the photo-diode. If the resulting signal from the photo-diode is above a pre-set threshold the LED emits two bursts of light, this time at two-second intervals. If light is scattered onto the photo-diode by both these pulses - due to the presence of smoke - the detector signals an alarm state by switching the alarm latch on increasing the current drawn from the supply from about 40 μ A to a maximum of 75 mA. This fall in the impedance of the detector is recognised by the control panel as an alarm signal.

The alarm current also illuminates the detectors integral LED. A remote indicator connected between the L1 IN terminal and the -R terminal will have a voltage equal to the supply voltage less one volt across it and so will illuminate.

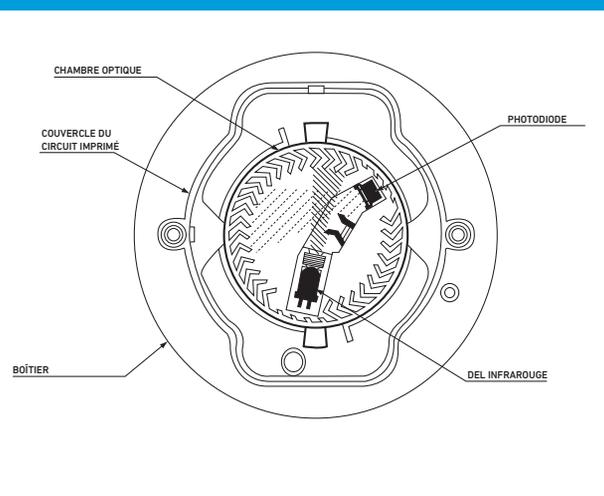
To ensure correct operation of the detector the control panel must be arranged to supply a maximum of 33 V dc and a minimum of 9 V dc in normal operation. The supply may fall to 6 V dc in alarm conditions if a supply current of at least 10 mA is available at this voltage. To ensure effective illumination of the integral LED and any remote indicator the supply to the detector should exceed 12 V.

To restore the detector to quiescent condition it is necessary to expel any smoke and interrupt the electrical supply to the detector for a minimum of one second.

Environmental characteristics

The Optical Smoke Detector is unaffected by wind or atmospheric pressure and operates over the temperature range -20°C to +60°C.

Series 65 Optical Smoke Detector diagram



Response characteristics of Series 65 Optical Smoke Detector

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

EMC Directive 2014/30/EU

The Series 65 Optical Smoke Detector complies with the essential requirements of the EMC Directive 2014/30/EU, provided that it is used as described in this datasheet.

A copy of the Declaration of Conformity is available from Apollo upon request.

Conformity of the Series 65 Optical Smoke detector with the EMC Directive does not confer compliance with the directive on any apparatus or systems connected to it.

Construction Products Regulation (EU) 305/2011

The Series 65 Optical Smoke Detector complies with the essential requirements of the Construction Products Regulation (EU) 305/2011.

A copy of the Declaration of Performance is available from Apollo upon request.