

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



Technical data

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 Silicon PIN photo-diode

Sensor 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 12

L1 OUT Supply out connections

and 12

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 61 mA at 28 V Normal alarm current

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 FN 54-7

Operating temperature -20°C to + 60°C

0% to 95% RH (no condensation or Humidity

icing)

Unaffected

Effect of atmospheric

pressure

Effect of wind speed Unaffected Vibration, impact & shock FN 54-7 IP23D

EN 54-7, LPCB, VdS, DIBt, BOSEC, FG, Standards & approvals

CPR and SBSC

Dimensions 100 mm diameter x 42 mm height

(50 mm high with mounting base)

Weight 99 g

150 g with base

Materials Housing: White polycarbonate

UL94-V0

Terminals: Nickel plated stainless

Hampshire, PO9 1JR, UK.

36 Brookside Road, Havant











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 μA 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 $+60^{\circ}$ C.

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.

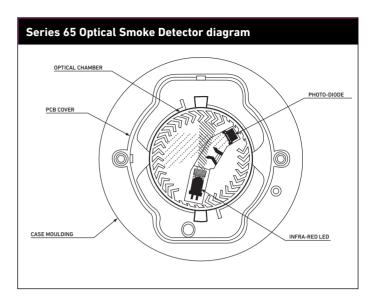
A copy of the Declaration of Conformity is available from Apollo upon request.

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 305/2011/EU

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

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



Response characteristics of Series 65 Optical Smoke Detector		
Type of fire	Optical Smoke Detector	
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	

