Orbis IS
Optical Smoke Detector

ORB-OP-52027-APO
Orbis IS Optical Smoke Detector

ORB-OP-52028-APO
Orbis IS Optical Smoke Detector with flashing LED

CE
0832
1180

Where to use Optical Smoke Detectors

Optical smoke detectors have always been recognised as good detectors for general use. They are regarded as particularly suitable for smouldering fires and escape routes.

The performance of Orbis IS optical detectors is good in black as well as in white smoke. In this respect Orbis IS is different from traditional optical smoke detectors which perform far better in white smoke than in black.

Orbis IS optical detectors are also designed to reduce significantly the incidence of false alarms through over-sensitivity to transient phenomena.

Orbis IS optical detectors are recommended for use as general purpose smoke detectors for early warning of fire in most areas.

Orbis Optical Smoke Detector

The sensing technology in the Orbis IS Optical Smoke Detector is significantly different in design from previous optical detectors. A full description is given in the section 'How do Orbis optical smoke detectors work?' but the advantages of this system and its associated algorithms are:

• Improved sensitivity to black smoke

• Compensation for slow changes in sensitivity

• Extra confirmation of smoke before alarm signal given

The algorithms are used to verify signals from the sensing chamber, to filter out transients and to decide when the detector should change to the alarm state.

All this combines to increase detection reliability and reduce false alarms.

How does the Orbis IS Optical Detector work?

The Orbis IS Optical smoke detector operates on the well established light scatter principle. The remarkable optical design of the Orbis IS optical smoke detector allows it to respond to a wide spectrum of fires.

The sensing chamber of the Orbis IS optical smoke detector contains an optical sensor which measures back-scattered light as well as the more usual forward-scattered light. Sensitivity to black smoke is greatly improved.

The detector is calibrated so that it is highly reliable in detecting fires but is much less likely to generate false alarms than ionisation smoke detectors.

The stability of the detector – high reliability, low false alarm rate – is further increased by the use of algorithms to decide when the detector should change to the alarm state. This removes the likelihood of a detector producing an alarm as a result of smoke from smoking materials or from another non-fire source.

The sensing chamber has been designed to keep out dust and other airborne contaminants.

Environmental performance

The operating temperature for instrinsically safe detectors is restricted by the gas temperature class. See technical data for full details.
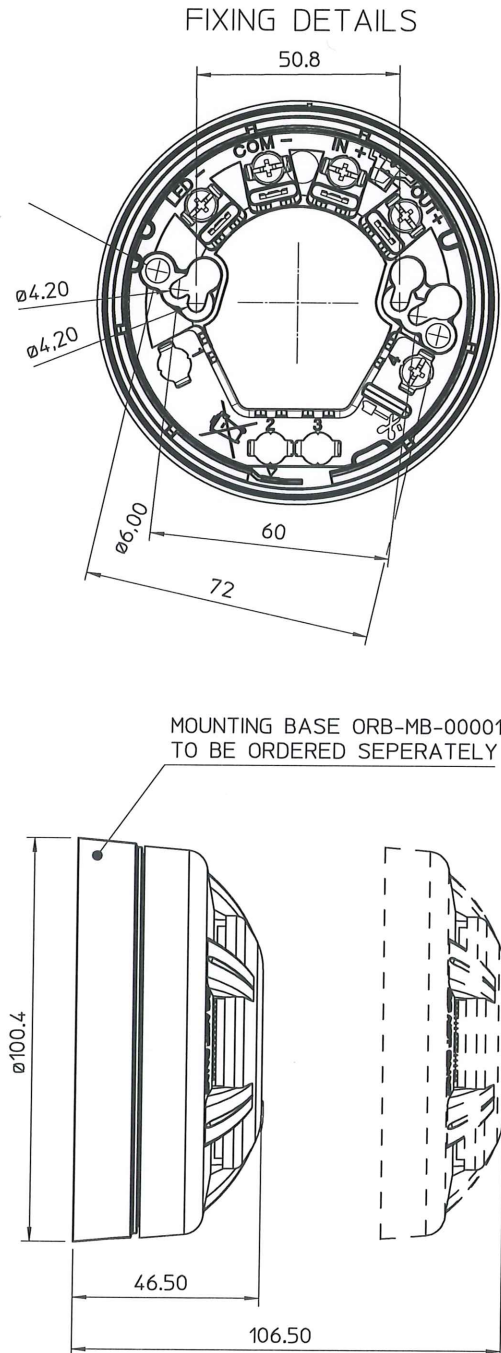
Classification

Ex ia IIC T5 −40°C< Ta <+45°C (T4<60°C)Ga

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BASEEFA Certificate Number

ATEX – BASEEFA 06 ATEX 0007X

IECEx – IECEx BAS 06.0002X

Dimensional Drawings

FIXING DETAILS

50.8

ø4.20

ø4.20

ø6.00

60

72

MOUNTING BASE ORB-MB-00001
TO BE ORDERED SEPERATELY

ø100.4

46.50

106.50

Technical Data

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

Principle of detection:
Photoelectric detection of light scattered by smoke particles over a wide range of angles. The optical arrangement comprises an infra-red emitter with a prism and a photo-diode at 90° to the light beam with a wide field of view. The detector's microprocessor uses algorithms to process the sensor readings.

Sampling frequency:	Once every 4 seconds

Electrical

Supply voltage:	14—28V DC
Supply wiring:	2 wires, polarity sensitive
Polarity reversal:	Not allowed
Power-up time:	<20 seconds
Minimum 'detector active' voltage:	12V
Switch-on surge current at 24V:	105µA
Average quiescent current at 24V:	85µA
Alarm load:	325Ω in series with a 1.0V drop
Minimum holding voltage:	5V
Minimum voltage to light alarm LED:	6V
Alarm reset voltage:	<1V
Alarm reset time:	1 second
Remote output LED (–) characteristic:	4.7kΩ connected to negative supply

Mechanical

Material:	Detector and base moulded in white polycarbonate
Alarm indicator:	Integral indicator with 360° visibility
Dimensions and weight of detector:	100mm diameter x 42mm Weight, 75g (in base) 100mm diameter x 50mm Weight, 135g

Environmental

Operating and storage temperature:	–40°C to +70°C Operating temperature is restricted by the intrinsic safety gas classification. Class T5: –40°C to +45°C Class T4: –40°C to +60°C The detector must be protected from conditions of condensation or icing.
Humidity:	0% to 98% relative humidity (no condensation)
Wind speed:	Unaffected by wind
Atmospheric pressure:	Insensitive to pressure
IP rating to EN 60529: 1992*:	23D
Electromagnetic compatibility:	The detector meets the requirements of BS EN 61000-6-3 for emissions and BS EN50 130-4 for susceptibility

*The IP rating is not a requirement of EN 54–7: 2001 since smoke detectors have to be open in order to function. An IP rating is therefore not as significant as with other electrical products.