Orbis

Optical Smoke Detector

Product overview

Product	**Optical Smoke Detector**
Part No.	**ORB-OP-12001-APO**
Product	**Optical Smoke Detector with flashing LED**
Part No.	**ORB-OP-12003-APO**

Compliance*

Product information

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 optical detectors is good with black as well as with white smoke. In this respect Orbis detectors are different from traditional optical smoke detectors which perform far better in white smoke than in black.

Orbis Optical Smoke Detectors are also designed to reduce significantly the incidence of false alarms through over-sensitivity to transient phenomena.

Orbis Optical Smoke Detectors are recommended for use as general purpose smoke detectors for early warning of fires in most areas.

- Improved sensitivity to black smoke
- Compensation for build-up of dirt
- Extra confirmation of smoke before an alarm signal is given

Technical data

All data is supplied subject to change without notice. Specifications are typical at 24 V, 25°C and 50% RH unless otherwise stated.

Detection principle		*Photo-electric detection of light scattered by smoke particles over a wide range of angles.*
Sampling frequency		*Once every four seconds*
Operating voltage		*8.5 V dc to 33 V dc*
Supply Wiring		*Two wire supply, polarity sensitive*
Maximum polarity reversal		*200 ms*
Power up time		*< 20 seconds*
Minimum 'detector active' voltage		*6 V*
Power-up surge current at 24 V		*95 µA*
Average quiescent current at 24 V		*95 µA*
Alarm current	*12 V* *24V*	*20 mA* *40 mA*
Alarm load		*600 Ω*
Holding voltage		*5 V - 33 V*
Minimum holding current		*8 mA*
Minimum voltage to light alarm LED		*5 V*
Alarm reset voltage		*< 1 V*
Alarm reset time		*One second*
Alarm indicator		*Integral indicator with 360° visibility*
Remote output LED (-) characteristic		*1.2 kΩ connected to negative supply*
Operating and storage temperature		*-40°C to +70°C*
Humidity (no condensation or icing)		*0% to 98% RH*
Effect of atmospheric pressure on optical sensor		*None*
Effect of wind speed		*None*
IP Rating		*IP44*
Standards and approvals		*EN54-7, CPR, LPCB, VdS, BOSEC, SBSC, FG, CSIRO*
Dimensions		*97 mm diameter x 31 mm height*
Weight		*75 g*
Materials		*Housing: White flame retardant polycarbonate* *Terminals: Tin plated stainless steel*

Compliance*
Part No. ORB-OP-12001-APO - CPR, LPCB, VdS, BOSEC, SBSC, FG
Part No. ORB-OP-12003-APO - CPR, LPCB, BOSEC, FG, CSIRO

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Operation

Orbis Optical Smoke Detectors work on the well established light scatter principle. The remarkable optical design of the Orbis Optical Smoke Detector enables it to respond to a wide spectrum of fires.

The sensing chamber 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 Orbis is highly reliable in detecting fires, but is much less likely to generate false alarms.

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.

EMC Directive 2014/30/EU

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

A copy of the Declaration of Conformity is available from the Apollo website: www.apollo-fire.co.uk

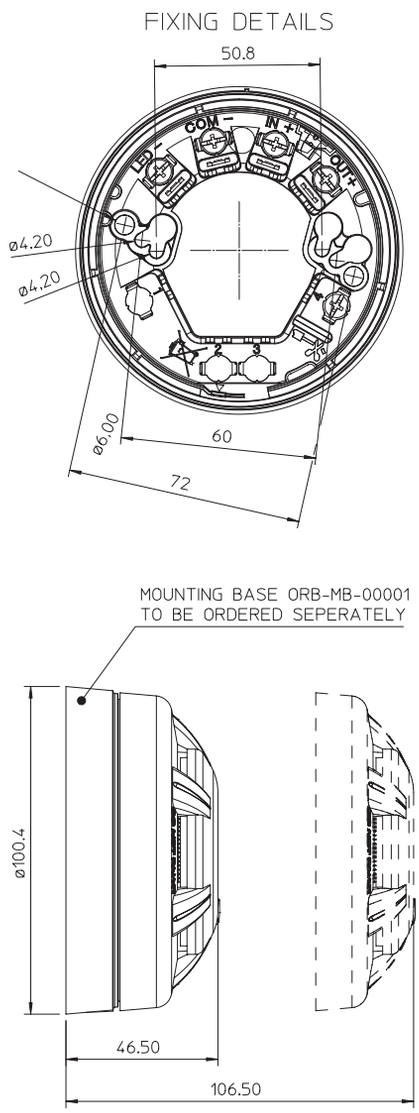
Conformity of the Orbis Optical Smoke Detector with the EMC Directive, does not confer compliance with the directive on any apparatus or systems connected to them.

Construction Products Regulation 305/2011/EU

The Orbis 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 the Apollo website: www.apollo-fire.co.uk

Orbis Optical Smoke Detector dimensional drawing



Orbis detectors - LED status

Feature	Description	Red LED status	Yellow LED status
StartUp™	Confirms that the detectors are wired in the correct polarity	Flashes once per second	No flash
FasTest™	Maintenance procedure, takes just four seconds to functionally test and confirm detectors are functioning correctly	Flashes once per second	No flash
DirtAlert™	Shows that the drift compensation limit has been reached	No flash	Flashes once per second in StartUp (Stops flashing when StartUp finishes)
SensAlert™	Indicates that the sensor is not operating correctly	No flash	Flashes every four seconds (Flashes once per second in StartUp)
Normal operation	At the end of StartUp and FasTest (without flashing LED as standard)	No flash	No flash
Flashing LED version	Detectors red LED flashes in normal operation (at the end of FasTest)	Flashes every four seconds	No flash

Orbis

Heat Detector

Product overview

Product	Orbis Heat Detector	Orbis Heat Detector with flashing LED
	Part No.	Part No.
Class A1R	ORB-HT-11001-APO	ORB-HT-11013-APO
Class A1S	ORB-HT-11166-APO	ORB-HT-11167-APO
Class A2S	ORB-HT-11002-APO	ORB-HT-11014-APO
Class BR	ORB-HT-11003-APO	ORB-HT-11015-APO
Class BS	ORB-HT-11004-APO	ORB-HT-11016-APO
Class CR	ORB-HT-11005-APO	ORB-HT-11017-APO
Class CS	ORB-HT-11006-APO	ORB-HT-11018-APO

Compliance

CE, LPCB, VdS, BOSEC, SBSC, FG, CSIRO

Note: *Not all standards and approvals apply to all Part Numbers, please check applicability at www.apollo-fire.co.uk*

Product information

The Orbis Heat Detector range incorporates six heat detector classes to suit a wide variety of operating conditions in which smoke detectors are unsuitable.

The European Standard EN 54-5 classifies heat detectors to the highest ambient temperature in which they can safely be used without risk of false alarm. The classes are identified by the letters A to C (Class 1 is sub-divided into A1 and A2). In addition to the basic classification, detectors may be identified by a suffix to show that they are rate-of-rise (suffix R) or fixed (static) temperature (suffix S) types.

All heat detectors in the Orbis range are tested as static or rate-of-rise detectors and are classified as A1R, A2S, BR, BS, CR or CS.

Technical data

All data is supplied subject to change without notice. Specifications are typical at 24 V, 25°C and 50% RH unless otherwise stated.

Detection principle		*Measurement of heat by means of a thermistor*
Sampling frequency		*Once every two seconds*
Supply voltage		*8.5 V dc to 33 V dc*
Supply Wiring		*Two wire supply, polarity sensitive*
Maximum polarity reversal		*200 ms*
Power up time		*< 20 seconds*
Minimum 'detector active' voltage		*6 V*
Power-up surge current at 24 V		*95 µA*
Average quiescent current at 24 V		*95 µA*
Alarm current	*12 V* *24V*	*20 mA* *40 mA*
Alarm load		*600 Ω*
Holding voltage		*5 V - 33 V*
Minimum holding current		*8 mA*
Minimum voltage to light alarm LED		*5 V*
Alarm reset voltage		*< 1 V*
Alarm reset time		*One second*
Alarm indicator		*Integral indicator with 360° visibility*
Remote output LED (-) characteristic		*1.2 kΩ connected to negative supply*
Operating and storage temperature		*-40°C to +70°C*
Humidity (no condensation or icing)		*0% to 98% RH*
Effect of atmospheric pressure on optical sensor		*None*
Effect of wind speed		*None*
IP Rating		*IP44*
Standards and approvals		*EN54-5, CPR, LPCB, VdS, BOSEC, SBSC, FG and CSIRO*
Dimensions		*97 mm diameter x 36 mm height*
Weight		*70 g detector*
Materials		*Housing: White flame-retardant polycarbonate* *Terminals: Nickel plated stainless steel*

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Operation

Orbis Heat Detectors have an open-web casing which enables air to flow freely across a thermistor which measures the air temperature every two seconds. A microprocessor stores the temperatures and compares them with pre-set values to determine whether a fixed upper limit - the alarm level - has been reached.

In the case of rate-of-rise detectors the microprocessor uses algorithms to determine how fast the temperature is increasing.

Static heat detectors respond only when a fixed temperature has been reached. Rate-of-rise detectors also have a fixed upper limit but they also measure the rate of increase in temperature. A fire might thus be detected at an earlier stage than with a static detector so that a rate-of-rise detector is to be preferred to a static heat detector unless sharp increases of heat are part of the normal environment in the area protected by the heat detector.

Orbis Heat Detectors response modes

Detector class	Application temperature		Static response temperature °C		
	Typ	Max	Min	Typ	Max
A1R	25	50	54	57	65
A2S	25	50	54	61	70
BR	40	65	69	73	85
BS	40	65	69	73	85
CR	55	80	84	90	100
CS	55	80	84	90	100

Where to use heat detectors

Heat detectors are used in applications where smoke detectors are unsuitable. Smoke detectors are used whenever possible since smoke detection provides earlier warning of fire than heat detection.

Heat detectors should be used if there is a danger of nuisance alarms from smoke detectors.

EMC Directive 2014/30/EU

The Orbis Heat Detector complies with the essential requirements of the EMC Directive 2014/30/EU, provided that it is used as described in this data sheet.

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Construction Products Regulation 305/2011/EU

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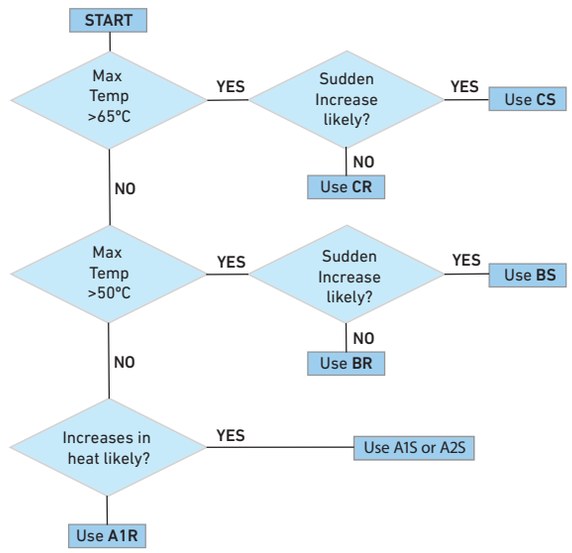
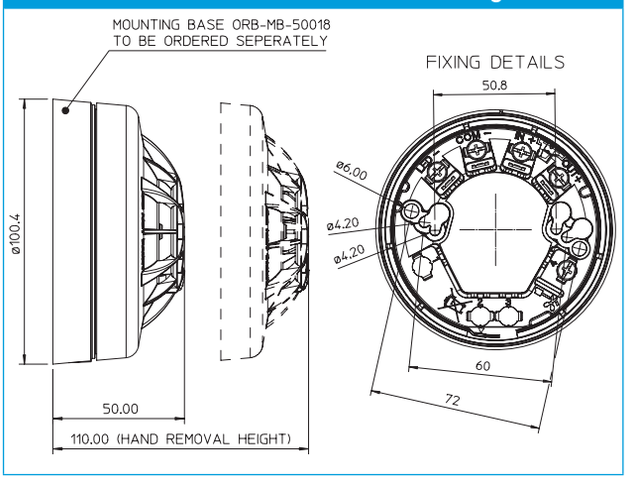
Choosing a heat detector



Orbis Heat Detector dimensional drawing



Orbis detectors - LED status

Feature	Description	Red LED status	Yellow LED status
StartUp™	Confirms that the detectors are wired in the correct polarity	Flashes once per second	No flash
FasTest™	Maintenance procedure, takes just four seconds to functionally test and confirm detectors are functioning correctly	Flashes once per second	No flash
DirtAlert™	Shows that the drift compensation limit has been reached	No flash	Flashes once per second in StartUp (Stops flashing when StartUp finishes)
SensAlert™	Indicates that the sensor is not operating correctly	No flash	Flashes every four seconds (Flashes once per second in StartUp)
Normal operation	At the end of StartUp and FasTest (without flashing LED as standard)	No flash	No flash
Flashing LED version	Detectors red LED flashes in normal operation (at the end of FasTest)	Flashes every four seconds	No flash

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Orbis

Optical/Heat Multisensor Detector

Product overview

Product	**Optical/Heat Multisensor Detector**
Part No.	**ORB-OH-13001-APO**
Product	**Optical/Heat Multisensor Detector with flashing LED**
Part No.	**ORB-OH-13003-APO**

Compliance*

CE, LPCB, VdS, BOSEC, SBSC INTYGAD PRODUKT, FG, CSIRO

Product information

The Orbis Optical/Heat Multisensor Detector is recognised as a good detector for general use but is more sensitive to fast burning, flaming fires - including liquid fires - than optical detectors.

They can be readily used instead of optical detectors but should be used as the detector of choice for areas where the fire risk is likely to include heat at an early stage in the development of the fire.

The Multisensor detector has two sensors, one for smoke and one for heat with the alarm decision derived from either sensor or combination of both.

- Responds well to fast-burning, flaming fires
- Transient rejection algorithms reduce false alarms
- Automatic drift compensation with DirtAlert™, a yellow flashing LED, to easily identify dirty detectors
- Red flashing LED at start up confirms the device is operating. SensAlert™, yellow flashing LED indicates faulty operation
- FasTest™ takes just four seconds to test and confirm detectors are functioning correctly

Technical data

All data is supplied subject to change without notice. Specifications are typical at 24 V, 25°C and 50% RH unless otherwise stated.

Detection principle		***Smoke:** Photo-electric detection of light scattered by smoke particles **Heat:** Temperature-dependent resistances.*
Sampling frequency		*Once every four seconds*
Operating voltage		*8.5 V dc to 33 V dc*
Supply Wiring		*Two wire supply, polarity sensitive*
Maximum polarity reversal		*200 ms*
Power up time		*< 20 seconds*
Minimum 'detector active' voltage		*6 V*
Power-up surge current at 24 V		*95 µA*
Average quiescent current at 24 V		*95 µA*
Alarm current	*12 V* *24V*	*20 mA* *40 mA*
Alarm load		*600 Ω*
Holding voltage		*5 V - 33 V*
Minimum holding current		*8 mA*
Minimum voltage to light alarm LED		*5 V*
Alarm reset voltage		*< 1 V*
Alarm reset time		*One second*
Alarm indicator		*Integral indicator with 360° visibility*
Remote output LED (-) characteristic		*1.2 kΩ connected to negative supply*
Operating and storage temperature		*-40°C to +70°C*
Humidity (no condensation or icing)		*0% to 98% RH*
Effect of atmospheric pressure on optical sensor		*None*
Effect of wind speed		*None*
IP Rating		*IP44*
Standards and approvals		*CPR, LPCB, VdS, BOSEC, SBSC, FG, CSIRO*
Dimensions		*97 mm diameter x 31 mm height*
Weight		*75 g detector*
Materials		*Housing: White flame-retardant polycarbonate* *Terminals: Nickel plated stainless steel*

Compliance*

Part No. ORB-OH-13001-APO - CPR, LPCB, VdS, BOSEC, SBSC
Part No. ORB-OH-13003-APO - CPR, LPCB, BOSEC, FG, CSIRO

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EMC Directive 2014/30/EU

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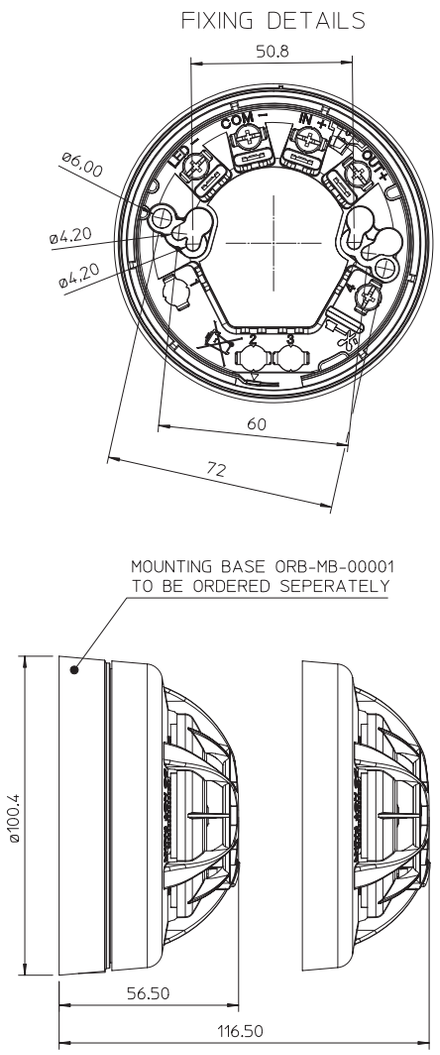
Orbis Optical /Heat Multisensor Detector dimensional drawing



Orbis detectors; LED status

Feature	Description	Red LED status	Yellow LED status
StartUp™	Confirms that the detectors are wired in the correct polarity	Flashes once per second	No flash
FasTest™	Maintenance procedure, takes just four seconds to functionally test and confirm detectors are functioning correctly	Flashes once per second	No flash
DirtAlert™	Shows that the drift compensation limit has been reached	No flash	Flashes once per second in StartUp (Stops flashing when StartUp finishes)
SensAlert™	Indicates that the sensor is not operating correctly	No flash	Flashes every four seconds (Flashes once per second in StartUp)
Normal operation	At the end of StartUp and FasTest (without flashing LED as standard)	No flash	No flash
Flashing LED version	Detectors red LED flashes in normal operation (at the end of FasTest)	Flashes every four seconds	No flash