Orbis Marine
Optical Smoke Detector

Product overview

Product	Marine Optical Smoke Detector
Part No.	ORB-OP-42001-MAR
Product	Marine Optical Smoke Detector with flashing LED
Part No.	ORB-OP-42003-MAR

Approvals

Note: CRS approval applicable to ORB-OP-42003-MAR only

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 Marine optical detectors is good in black as well as in 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 Marine Optical Smoke Detectors are also designed to reduce significantly the incidence of false alarms through over-sensitivity to transient phenomena.

Orbis Marine 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 slow changes in sensitivity
- 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, 23°C and 50% RH unless otherwise stated.

Detection principle		*Photo-electric detection of light scattered by smoke particles over a wide range of angles. The optical arrangement is made up of an infra-red emitter with a prism and a photo-diode at 90° to the light beam with a wide field of view. The detectors microprocessor uses algorithms to process the sensor readings.*
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		*designed to IP23D*
Standards & approvals		*EN54-7, MED, LR, BV, ABS, CCS and CRS*
Dimensions		*97 mm diameter x 31 mm height* *100 mm diameter x 46 mm height in base*
Weight		*75 g detector* *135 g detector with base*
Materials		*Housing: White flame retardant polycarbonate* *Terminals: Nickel plated stainless steel*

Operation

Orbis Marine Optical Smoke Detectors work on the well established light scatter principle. The remarkable optical design of the Orbis Marine 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 Marine 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 Marine 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

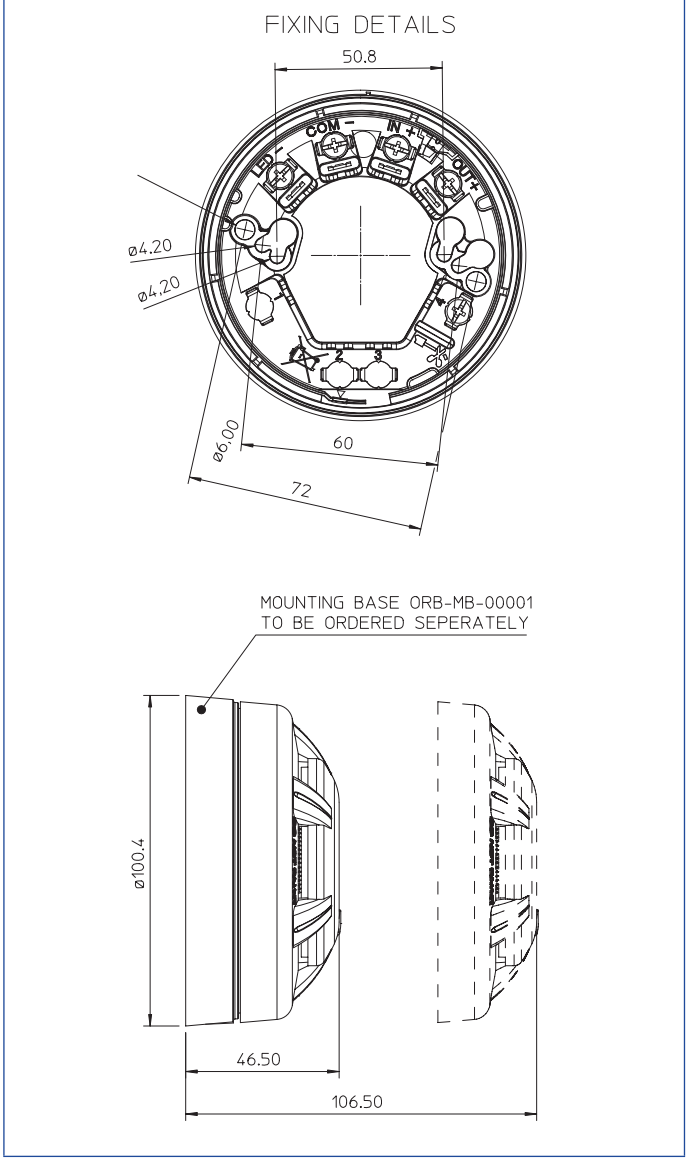
The Orbis Marine Optical Smoke Detector complies with the essential requirements of the Construction Products Regulation 305/2011/EU.

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

Marine Equipment Directive 2014/90/EU

The Orbis Marine Optical Smoke Detector complies with the essential requirements of the Marine Equipment Directive 2014/90/EU.

Orbis Marine 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