Orbis Marine

Heat Detector

ORB-HT-41001-MAR A1R standard
ORB-HT-41013-MAR A1R with flashing LED
ORB-HT-41002-MAR A2S standard
ORB-HT-41014-MAR A2S with flashing LED
ORB-HT-41003-MAR BR standard
ORB-HT-41015-MAR BR with flashing LED
ORB-HT-41004-MAR BS standard
ORB-HT-41016-MAR BS with flashing LED
ORB-HT-41005-MAR CR standard
ORB-HT-41017-MAR CR with flashing LED
ORB-HT-41006-MAR CS standard
ORB-HT-41018-MAR CS with flashing LED

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Where to use Heat Detectors

Heat detectors are used in applications where smoke detectors are unsuitable. Smoke detectors are used wherever 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.

Orbis Marine Heat Detector

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

The European standard EN54-5:2001 classifies heat detectors according 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 G. (Class A is subdivided 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 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, A1S, A2S, BR, BS, CR and CS.

Choosing the correct class of Heat Detector

Heat detectors have a wide range of response characteristics and the choice of the right type for a particular application may not always seem straightforward. It is helpful to understand the way that heat detectors are classified as explained earlier and to memorise a simple rule: use the most sensitive heat detector available consistent with avoiding false alarms.

In the case of heat detectors it may be necessary to take an heuristic approach, ie, trial and error, until the best solution for a particular site has been found. The flowchart (Fig 1) will assist in choosing the right class of heat detector.

If the fire detection system is being designed to comply with BS 5839–1: 2002 heat detectors should be installed at heights of less than 12 metres with the exception of class A1 detectors, which can be installed at heights up to 13.5 metres.

How do Orbis Marine Heat Detectors work?

Orbis heat detectors have an open-web casing which allows air to flow freely across a thermistor which measures the air temperature every 2 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.

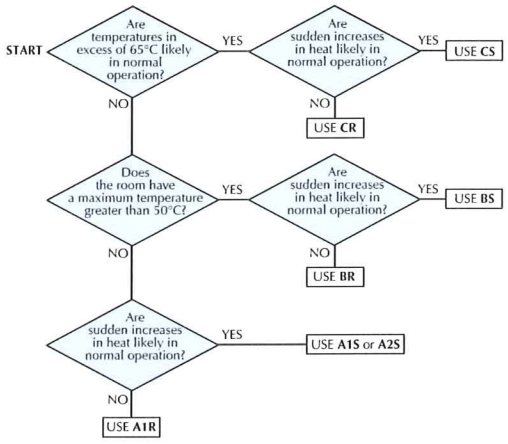
Environmental performance

The environmental performance is similar to that of the Orbis optical smoke detector but it should be noted that heat detectors are designed to work at particular ambient temperatures (See Fig 1).

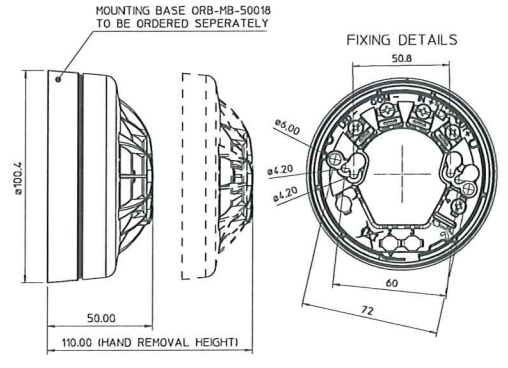
Table 1: Response Modes

Class (EN54–5:2001)	Application Temperature		Static Response Temperature °C		
	Typical	Max	Min	Typ	Max
A1R	25	50	54	57	65
A1S	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

Choosing a Heat Detector (Fig 1)



Dimensional Drawings



Technical Data

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

Principle of detection:	Measurement of heat by means of a thermistor
Sampling frequency:	Once every 4 seconds
Electrical	
Supply voltage:	8.5-33V DC
Supply wiring:	2 wires, polarity sensitive
Maximum polarity reversal:	200ms
Power-up time:	<20 seconds
Minimum 'detector active' voltage:	6V
Switch-on surge current at 24V:	95µA
Average quiescentcurrent at 24V:	95µA
Alarm current:	At 12V 20mA At 24V 40mA
Alarm load:	600Ω
Minimum holding voltage:	5–33V
Minimum voltage to light alarm LED:	5V
Alarm reset voltage:	<1V
Alarm reset time:	1 second
Remote output LED (–) characteristic:	1.2kΩ 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:	97mm diameter x 36mm Weight, 70g 100mm diameter x 51mm (in base) Weight, 130g
Environmental	
Temperature:	Operating and storage (see table 3) –40°C to +70°C (no 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 EN54-5:2001 since smoke detectors have to be open in order to function. An IP rating is therefore not as significant as with other electrical products.*