Orbis Australian Product Guide

*" Our aim is to provide ' **Consistently Excellent Service** ' in the eyes of our customers "*

Table of Contents

Section **Page No.**

1 Introduction

Orbis is a range of conventional detectors which has been developed and tested to create advantages for fire engineers and installers, as well as owners and users of buildings.

Advantages for the Engineer:
Environmental flexibility: Orbis has a voltage range of 8.5 to 33V, an operating temperature of –40°C to +70°C and a tolerance of 98% relative humidity.

Unrestriced choice of panel as polarity reversal for 200mS will not affect detectors.
Ease of commissioning with ***StartUp***. Detectors flash (red 1x/sec) to show correct installation — detectors revert to normal operation automatically after 4 minutes.

Efficient maintenance procedure with ***FasTest***®*.* FasTest takes just four seconds to test and confirm that smoke and heat detectors are functioning correctly.

Advantages for the Installer:
Fast and easy base installation with the ***TimeSaver***® ***Base****:* fit screws to mounting box or surface, place the base over the screws and slide into place using the E-Z Fit slots, then tighten the screws.

Fast cable termination: the base has an open working area, single quadrant terminals, captive screws, a guide to cable stripping and detector LED alignment.

Simplified stockholding. The Orbis base is compatible with existing mounting boxes and backplates.
Ease of testing with the ***Continuity Link*** which enables voltage testing of zone wiring prior to commissioning.

Advantages for the Owner:
Visually pleasing, harmonious design.
Orbis has entirely new styling and combines a modern look and enhanced ease of use.

Factory-set performance maintained with ***DirtAlert***™*:* A yellow flashing LED indicates that the drift compensation level has been reached.

Contamination unlikely anyway with the ***DustDefy*** system which prevents dust ingress while maintaining airflow.

False alarms are reduced with ***Transient Rejection*** which filters out transient high readings that might otherwise cause a false alarm.

Orbis is an entirely new range with modern styling and a completely revised mounting base. It is electrically compatible with Series 60 range of conventional detector.

Orbis is a demonstration of a commitment to the market for high quality conventional detectors for use in small to medium size installations. Development of this range has put ease of installation and reliability in daily operation at the forefront of considerations. The attractive and compact design means that Orbis will blend in well with all architectural styles.

2 Range of Products

The Orbis range consists of
1. an optical smoke detector
2. a mutisensor smoke detector
3. a range of heat detectors
4. a standard electronics-free base
5. a relay base

3 Features of Orbis™

Orbis incorporates entirely new designs, both mechanical and electronic. The aim has been to increase the attractiveness of the detector, make installation quicker, enhance the reliability of detection and reduce the incidence of false alarms.

3.1 Orbis features

- Modern styling
- TimeSaver Base® designed for fast installation and cable termination
- Wide voltage and operating temperature ranges
- StartUp™ for fast commissioning
- DustDefy™ housing which limits ingress of dirt into detector
- New optical sensor for high reliability and reduced false alarm incidence
- New Multisensor smoke detector for detecting fast-burning fires
- Algorithms for transient rejection
- Chamber designed to inhibit dirt penetration and thus reduce false alarms
- Automatic drift compensation with DirtAlert™ warning
- FasTest® which reduces the time taken to test detectors
- Optional flashing LED to indicate normal operation
- SensAlert® which indicates that the detector is not operating properly

4 Choosing a detector: questions and answers

Question: The Orbis range does not include an ionisation smoke detector. Are ionisation detectors redundant?

Answer: Ionisation detectors have been used for many years as extremely reliable smoke detectors. They have traditionally been recommended for use where the fire risk is likely to include very small-particle smoke.

One reason why ionisation detectors have become less popular is that they are more sensitive to phenomena that cause false alarms than optical detectors.

Question: Any other reasons?

Answer: Ionisation detectors use a tiny radioactive foil. Although they are entirely safe to use, ionisation detectors are subject to strict regulations concerning transport, storage and disposal. Thus it is becoming increasingly difficult to use ionisation detectors.

Question: When would I use a multisensor

Answer: Multisensor smoke detectors have a heat sensing element which makes them more sensitive if a fire develops heat as well as smoke. This speeds up the response of the detector in certain fires where heat is generated rapidly, for instance in test fire TF5, which is an open, flaming liquid fire in which n-heptane is burned.

Multisensor smoke detectors are recommended for open flaming fire risks.

If there is any doubt as to whether an optical detector or a multisensor smoke detector should be used it is wise to fit a multisensor smoke detector.

Question: Should I use optical detectors to detect smoke in all applications?

Answer: As stated, optical detectors have long been recommended as good general purpose smoke detectors. Laboratory tests have been carried out to compare the performance of optical detectors in the standard test fires described in the Australian Standard AS7240.

The results of these tests are given in *Figure 1*. The graph shows the acceptable response in terms of smoke density which is given as, 'm' on the y axis. Detectors must respond before the end of test which is an 'm' = value of 2. The performance of Orbis detectors is given as a solid line which shows how evenly the optical detectors respond to the test fires.

If detectors respond *too quickly* (the lower shaded portion of the graph) they may be too sensitive and hence likely to generate false alarms.

If detectors respond *too slowly* (the upper shaded portion) they are in danger of not changing to the alarm state before the end of test. An even response in the centre is the ideal response.

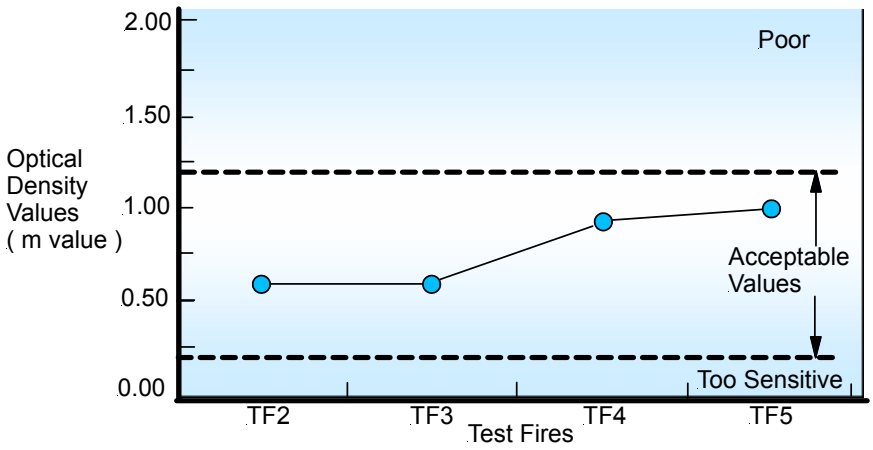


Figure 1: Orbis Optical Detector Response to Test Fires

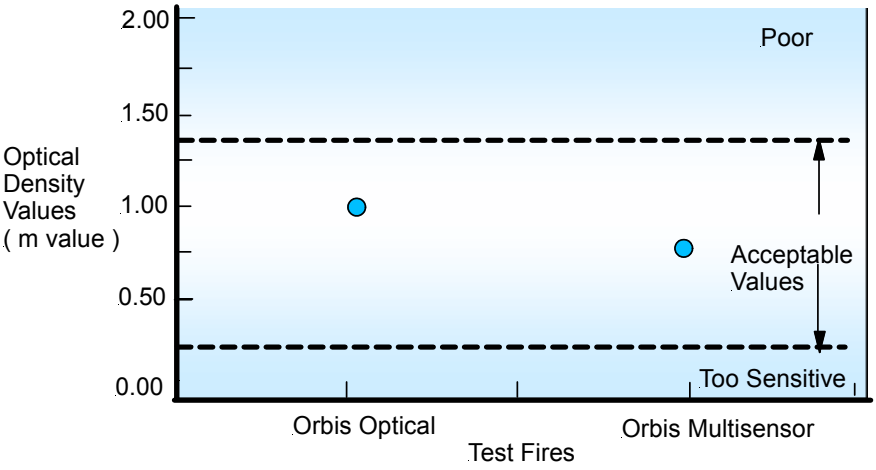


Figure 2: Comparisons to Response Between Orbis Optical & Multisensor

Question: Where would there be a need to install heat detectors?

Question: Heat detectors should be used if it is not possible to use smoke detectors. This will be the case where normal industrial processes produce substances which could be mistaken for smoke by a smoke detector, eg, flour mills, textile mills or loading bays with diesel engine vehicles.

The type of substance encountered here would cause frequent false alarms if smoke detectors were fitted, so a heat detector is used instead.

Question: How are heat detectors classified?

Answer: AS7240 classifies heat detectors according to the ambient temperature in which they will be working and according to whether they may be tested as 'static' detectors (changing to alarm at a preset temperature) or 'rate-of-rise' (changing to alarm at a preset increase of temperature).

Heat detectors may also be marketed without either classification; but then the detection characteristics are unknown.

All Orbis heat detectors are tested and classified as either static or rate-of-rise.

Question: So what is the best way to choose a heat detector?

Answer: To make things easier we have produced a flow chart which is shown in Section 15.

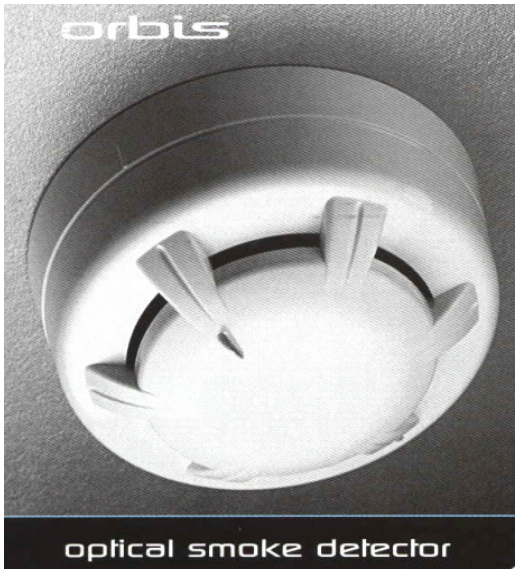
5 Where to use optical smoke detectors

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

Orbis optical detectors are

- ✓ also designed to significantly reduce the incidence of false alarms from transient phenomena
- ✓ are recommended for use as general purpose smoke detectors for early warning of fire in most areas



5.1 Orbis optical smoke detector

The sensing technology in the Orbis 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.

5.2 How does the orbis optical detector work?

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

The sensing chamber of the Orbis optical smoke detector contains an optical sensor which measures back-scattered light as well as the more usual forward scattered light. As a result 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 than ionisation smoke detectors.

The stability of the detectors high reliability and 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.

5.3 Environmental performance

Orbis optical detectors operate over a broad range of voltages at extremes of temperature. This operating voltage is 8.5V to 33V at –40° to +70°C, a unique achievement for a conventional smoke detector.

5.4 Technical Data

All is supplied subject to change without notice.
Specifications are given at 23°C and 50% relative humidity unless otherwise stated.

DETECTOR OPERATING PRINCIPLES

Principle of detection:
Photo-electric 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:
8.5—33V DC

Supply wiring:
2 wires, polarity sensitive

Power-up time:
<20 seconds

Minimum 'detector active' voltage:
6V

Switch-on surge current at 24V:
120µA

Average quiescent current at 24V:
65µA

Alarm current:
At 12 volts 20mA
At 24 volts 40mA

Alarm load:
600Ω

Holding voltage:
5–33V

Minimum holding current:
8mA

Minimum voltage to light alarm LED:
5V

Alarm reset voltage:
<1V

Alarm reset time:
1 Second

Remote output (–R) characteristic:
1.2kΩconnected to negative supply

MECHANICAL

Material:
Detector and base moulded in white polycarbonate.

Alarm Indicator:
Integral indicator with 360° visibility (See Table 1 for details of flash rate)

Dimensions and weight of detector:
100mm diameter x 42mm height, 75g

Dimensions and weight of detector in base:
100mm diameter x 50mm height, 135g

Environmental:
Operating and storage temperature
–40°C to +70°C
(no condensation or icing)

Humidity:
0% to 98% relative humidity (no condensation)

Wind speed:
Unaffected by wind

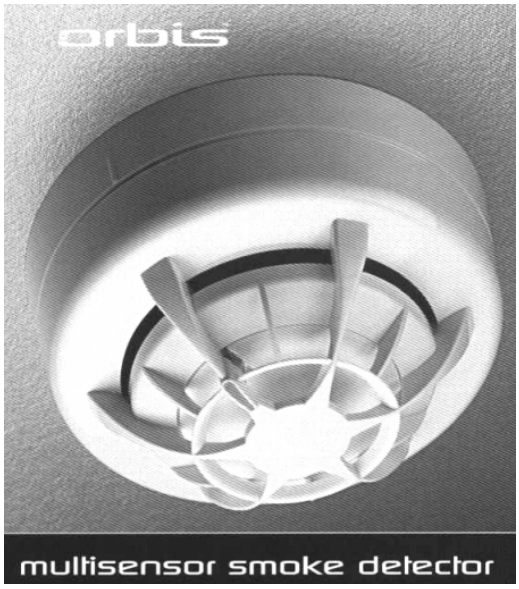
Atmospheric pressure:
Insensitive to pressure

6 Where to use multisensor smoke detectors

Multisensor smoke detectors are recognised as good detectors for general use but are additionally more sensitive to fast burning, flaming fires (including liquid fires) than optical detectors.

They can be readily used instead of optical smoke 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.

As with Orbis optical smoke detectors the increased reliability of detection is combined with high immunity to false alarms.



6.1 Orbis multisensor smoke detector

The multisensor smoke detector is a thermally enhanced smoke detector and as such will not give an alarm from heat alone. It is a development of the Orbis optical detector described in the previous chapter and goes further in its capabilities of fire detection.

6.2 How does the orbis multisensor detector work?

The optical sensor is identical to the one in the Orbis optical detector. Its sensitivity is, however, influenced by a heat sensing element which makes the detector more responsive to fast-burning, flaming fires.

It should be noted that the detector is a smoke detector. Although Orbis multsensor relies on both smoke and heat sensors it is not possible to switch from smoke detection to heat detection.

6.3 Environmental performance

The environmental performance of the multisensor detector is the same as that of the Orbis optical smoke detector.

6.4 Technical Data

All data is supplied subject to change without notice.
Specifications are given at 23°C and 50% relative humidity unless otherwise stated.

DETECTOR OPERATING PRINCIPLES

Principle of detection: Photo-electric 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. Heat sensing element which increases the sensitivity of the detector as the temperature rises.

Sampling frequency:
Once every 4 seconds

ELECTRICAL

Supply voltage:
8.5—33V DC

Supply wiring:
2 wires, polarity sensitive

Power-up time:
<20 seconds

Minimum 'detector active' voltage: 6V

Switch-on surge current at 24V:
120µA

Average quiescent current at 24V:
65µA

Alarm current:
At 12 volts 20mA
At 24 volts 40mA

Alarm load:
600Ω

Holding voltage:
5–33V

Minimum holding current:
8mA

Minimum voltage to light alarm LED:
5V

Alarm reset voltage:
<1V

Alarm reset time:
1 second

Maximum polarity reversal:
200ms

Remote output (–R) characteristic:
1.2kΩconnected to negative supply

MECHANICAL

Material:
Detector and base moulded in white polycarbonate.

Alarm Indicator:
Integral indicator with 360° visibility (See Table 1)

Dimensions and weight of detector:
100mm diameter x 50mm
height, 80g

Dimensions and weight of detector in base:
100mm diameter x 60mm
height, 140g

Environmental:
Operating and storage temperature
–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

7 Where to use heat detectors

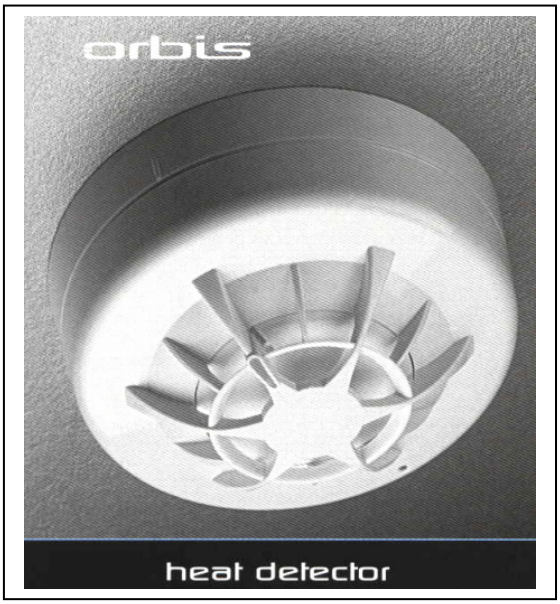
Heat detectors are used in applications where smoke detectors are unsuitable. Smoke detectors are used wherever possible since smoke detection provides earlier warning of fire than heat detection.

There are, however, limits to the application of smoke detectors and these are described in the section 'Choosing a detector'.

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

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

All heat detectors in the Orbis range are tested as static or rate-of-rise detectors and are classified as such.



Old Terminology	Dot Colors	New Terminology	Temperature Range
A	White	BR (Rate of Rise)	55 - 88˚C ("R" Rate of rise)
B	Blue	A2S (Static)	55 - 88˚C ("S" Static)
C	Green	CR (Rate of Rise)	88 - 132˚C ("R" Rate of rise)
D	Red	CS (Static)	88 - 132˚C ("S" Static)

7.1 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 above will assist in choosing the right class of heat detector.

7.2 How do orbis heat detectors work?

Orbis heat detectors have an open web casing that 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.

7.3 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 Figure 3).

7.4 Technical data

All data is supplied subject to change without notice.
Specifications are given at 23°C and 50% relative humidity unless otherwise stated.

DETECTOR OPERATING PRINCIPLES

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:
120µA

Average quiescent current at 24V:
65µA

Alarm current:
At 12 volts 20mA
At 24 volts 40mA

Alarm load:
600Ω
Holding voltage:
5–33V

Minimum holding current:
8mA

Minimum voltage to light alarm LED:
5V

Alarm reset voltage:
<1V

Alarm reset time:
1 second

Remote output (–R) characteristic:
1.2kΩconnected to negative supply

MECHANICAL

Material:
Detector and base moulded in white polycarbonate.

Alarm Indicator:
Integral indicator with 360° visibility (See Table 1 for details of flash rate)

Dimensions and weight of detector:
100mm diameter x 42mm height, 70g

Dimensions and weight of detector in base:
100mm diameter x 50mm height, 130g

Environmental:
Operating and storage temperature
–40°C to +70°C (no condensation or icing)

Humidity:
0% to 98% relative humidity (no condensation)

Wind speed:
Unaffected by wind

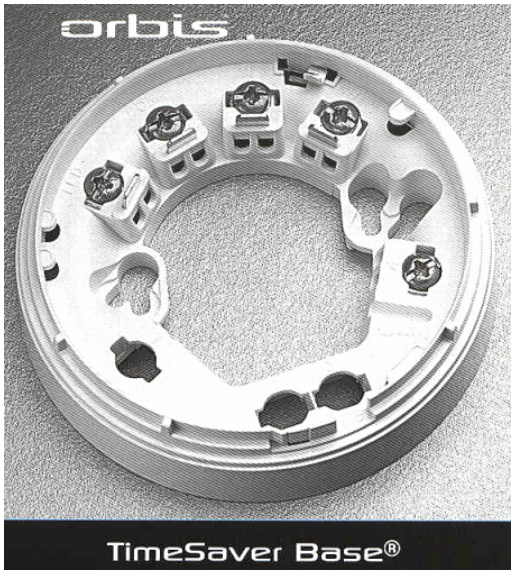
Atmospheric pressure:
Insensitive to pressure

8 Orbis Detector Bases

There are a number of bases available within the Orbis range of detectors.

- ✓ Orbis TimeSaver Base – is the standard base
- ✓ Orbis TimeSaver LX Base – incorporates all of the features of the standard Orbis base less the continuity link
- ✓ Orbis Diode Base – used in installations where active End-Of-Line devices are used on the detector circuits
- ✓ Orbis Relay Base – incorporates features of the standard Orbis base with the inclusion of a relay. This relay is activated when the detector goes into alarm

Orbis detectors and their bases been designed to make installation fast and simple. *Figure 4* shows the TimeSaver mounting base as it is seen from the installer's point of view.



The E-Z fit fixing holes are shaped to allow a simple three-step mounting procedure:

1. Fit two screws to the mounting box or surface
2. Place the Orbis base over the screws and slide home
3. Tighten the screws

The base offers two fixing centres at 51 and 60mm.

A guide on the base interior indicates the length of cable to be stripped. The terminals have captive screws and will not fall out of the terminals. The base is supplied with the screws unscrewed in order to

8.1 Installing orbis

Five terminals are provided for the cables, four being grouped together for ease of termination. The terminals are:

1. positive IN
2. positive OUT
3. negative IN and OUT (common terminal)
4. remote LED negative connection
5. functional earth (screen)

Note: The end-of-line resistor or active device should be connected between the OUT+ and COM– terminals.

As shown in *Figure: 3.* The detector and base can be made to be "locking". To unlock the detector or convert the base to permanently non-locking follow the below procedure.

Unlocking the detector
If the detector is locked, it can be unlocked from the base by inserting a 1.5mm hexagonal driver into the small hole on the detector face and gently levering the handle of the driver outward whilst rotating the detector anti-clockwise.

Non Locking Base Conversion
If the locking mechanism of the Orbis TimeSaver base has been activated in error the base may be converted to a permanently non-locking base by removing the detector and cutting out the small portion of the rim marked with a cross-hatch as shown below.

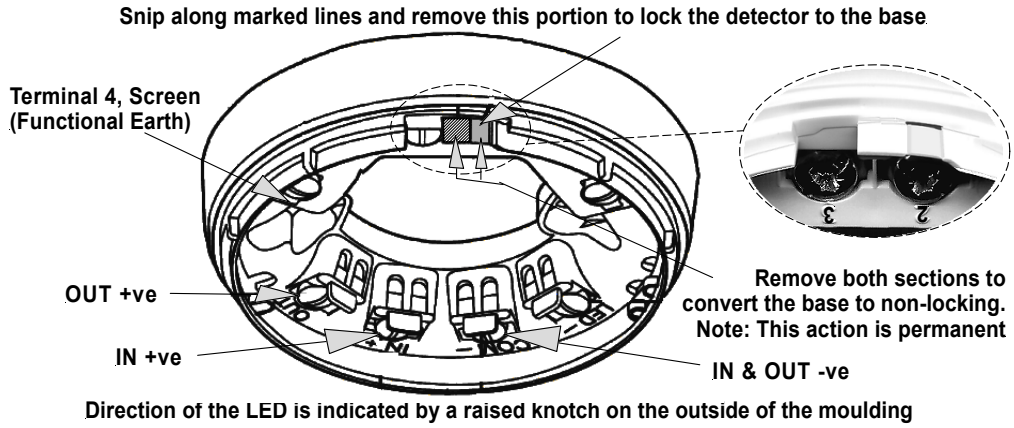


Figure 3: TimeSaver Base

If it is required that all detectors be fitted with their LEDs facing in the same direction the bases must be fitted to the ceiling observing the marking on the exterior which indicates the position of the LED.

The bases may be connected as shown in *Figure 4* where remote LEDs, if required, are connected to the associated base.

When all the bases have been fitted a voltage test for wiring continuity may be carried out. The base is fitted with a continuity link which automatically opens when a detector is fitted to the base for the first time. Once satisfied the circuit is wired correctly fit the detectors.

Note: TimeSaver Base LX does not have the continuity link.

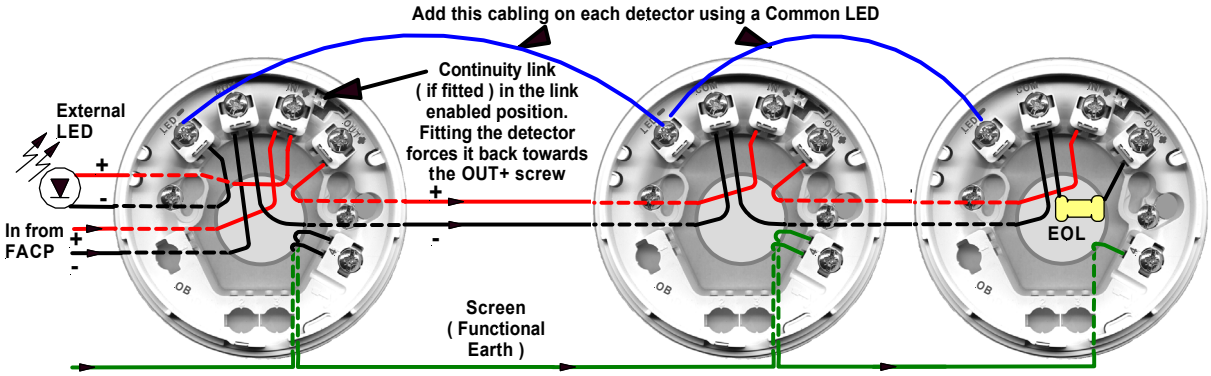


Figure 4: Base Wiring Diagram

Figure 4 also shows how to connect one remote LED to more than one base so that an alarm in any of the connected detectors will switch the remote LED.

8.2 Fitting orbis detector heads

When the bases have been installed and the system wiring tested detector circuits can be populated.

Two methods are suggested:

1. Apply power and fit the detectors one by one, starting at the base nearest the panel and working towards the end of the circuit. As each detector is powered up it will enter 'StartUp' and flash red (see next page for a full description of this feature). If the LED does not flash, check the wiring polarity on the base and ensure there is power across IN+ and COM–. If the LED is flashing yellow the detector is not operating correctly and may require maintenance or replacing (see DirtAlert and SensAlert® below and the section 'Maintenance and servicing'.

2. Fit all detectors to the circuit, apply power and check detectors by observing the LED status of each device. The Start Up feature lasts for 4 minutes so it may be necessary to reset or de-power the circuit to allow all detectors to be observed. The LED status is the same as method 1.

8.3 Relay Base

The relay base incorporates a single-pole voltage-free changeover contact for switching ancillary equipment.

The maximum contact rating is 30VDC @ 1A.

When the detector changes to the alarm state the relay is energised causing the contact to change state. The contact will remain in this condition until the detector is reset.

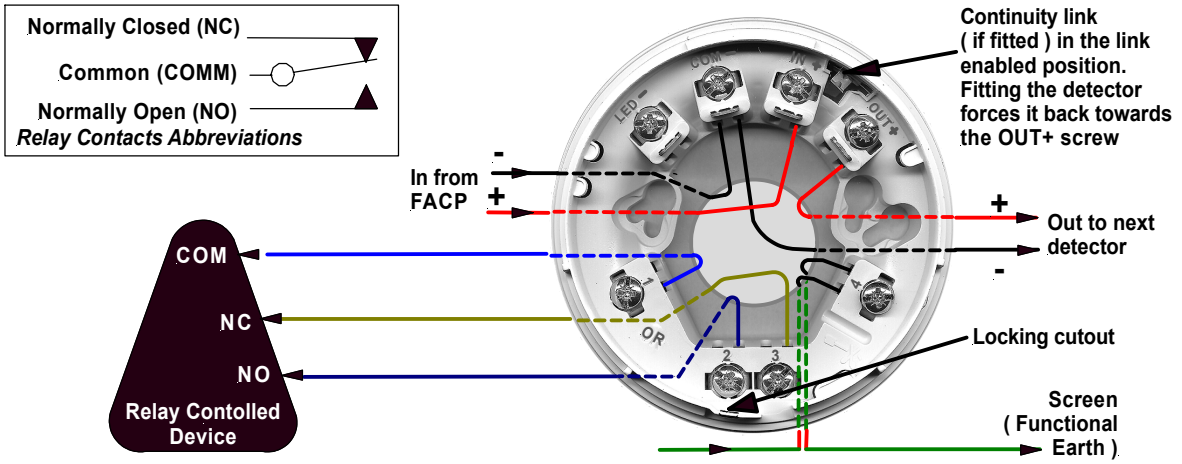


Figure 5: TimeSaver Relay Base Wiring Connections

9 Orbis features: LED status

Feature	Description of Feature	Red LED Status	Yellow LED Status
StartUp	Confirms that the detectors are wired in the correct polarity	Flashes once per second for 4 minutes	No Flash
FasTest®	Maintenance procedure, takes just 4 seconds to functionally test and confirm detectors are functioning correctly	Flashes once per second for 4 minutes	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 4 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 operation (at the end of FasTest)	Detector's red LED flashes in normal	Flashes every 4 seconds	No Flash

Table 1

10 Commissioning made easy

Orbis has been designed with a number of features that make commissioning easier and hence save time.

10.1 StartUp

When Orbis detectors are powered up they automatically enter a timed 4 minute phase known as "StartUp". After this they revert to normal operation. If the detector is reset, ie, if power is disconnected for one second or longer, the detector will always enter StartUp for the first four minutes after power has been restored. The detector LED flashes red once a second to indicate that it is in StartUp.

10.2 What StartUp indicates

StartUp is used to check that the positive and negative cables are connected in the correct polarity and that power has been applied to the detector. If this is the case, the LED will flash red once a second.

StartUp will not check whether the IN+ and OUT+ connections have been transposed. This is not a problem if standard bases are used as the detector will operate normally.

If, however, diode bases are used and a detector is removed from a base with transposed positive connections none of the detectors beyond this point will operate.

10.3 FasTest®

Orbis detectors incorporate a test facility known as FasTest®.

In normal operation Orbis smoke detectors do not change to the alarm state at the first sensing of smoke. If they did, they could be too sensitive and cause false alarms. Algorithms determine the point at which the detector changes to alarm.

This could slow down routine maintenance during which detectors are tested by means of smoke or a smoke-simulating substance.

In order to avoid such a problem Orbis detectors have FasTest, a facility which is automatically available during StartUp and which modifies algorithms

The problem of testing is even more acute in the case of heat detectors as they absorb a great deal of heat during testing. Orbis heat detectors also incorporate FasTest®.

In the case of heat detectors a fast test is defined as a sample which recognises a rise of 10°C within one minute. Since sampling takes place every 2 seconds an Orbis heat detector will respond within about 4 seconds.

10.4 Smoke or Heat Testing

Smoke or heat testing Orbis detectors is aided by the FasTest® feature. A detector will react rapidly to the correct stimulus if applied within 4 minutes after power up.

Choose the appropriate test function on the control panel and reset the detector circuit. This should place the detectors into FasTest®. Apply smoke or heat as appropriate and the detector should enter the alarm state within 4 seconds. The panel may sound the alarm and reset the zone automatically (refer to control panel's instructions). If not, silence the alarm and reset the panel. Repeat the procedure as necessary.

Note that the multisensor detector will respond to either smoke or heat while in FasTest®. It will not respond to heat only in normal operating mode.

11 Maintenance and testing

Detectors should be checked regularly at the intervals indicated by the locally applicable code of practice.

Ampac recommends that detectors be checked at least once a year.

One of the features of Orbis is FasTest® which makes it possible to carry out a functional test, using smoke or heat, within about four seconds. See Section 26 for details.

If detectors are externally dirty they can be cleaned carefully with a damp cloth using a small amount of industrial alcohol.

12 DirtAlert™

Orbis detectors have drift compensation to compensate for changes caused by the environment. The most usual change is contamination.

If the detector is dirty to the point where it can no longer compensate, its LED will flash yellow while it is in StartUp. Maintenance checks should therefore include removing a detector from its base and re-inserting it or pressing reset on the panel to initiate StartUp.

A flashing yellow LED is not a sign that the detector needs to be replaced immediately. The decision to replace the detector should be made by the service engineer who in turn should take into account the operating environment. If the detector is not replaced it will eventually cause false alarms.

When deciding how long to leave the detector on site in such a case, the following rule of thumb may be used:

Installation time + 25%- that is by way of example, if a detector had been installed for four years when the LED flashed yellow, it could be left in place for up to 12 months.

13 Item Numbers & Description

Ampac Item Number	Description
Detectors	
201-0500	ORBIS HEAT DETECTOR AIR BR (type A –rate of rise)
201-0504	ORBIS HEAT DETECTOR AIR A2S (type B)
201-0508	ORBIS HEAT DETECTOR CR (type C rate of rise)
201-0510	ORBIS HEAT DETECTOR CS (type D)
201-0512	ORBIS OPTICAL SMOKE DETECTOR
201-0514	ORBIS MULTISENSOR SMOKE DETECTOR
Bases	
201-0540	ORBIS TIMESAVER BASE
201-0541	ORBIS TIMESAVER LX BASE
201-0543	ORBIS TIMESAVER RELAY BASE
201-0544	ORBIS S60 BASE ADAPTER

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NOTE: Due to Ampac's commitment to continuous improvement specifications may change without notice.