



Certificate of Conformity

Certificate num.	Registration date	Version	Valid until	
afp - 2076	15-Sep-2006	Number 14	Issue date 28-Jun-2019	30-Apr-2020
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Product designation

Ampac Orbis™, o/c 201-0514, multi-sensor type smoke detector

(Refer to the Schedule/enclosures for further specified details)

Agent/distributor

Ampac Pty Ltd
7 Ledger Road, BALCATTA, WA, AUSTRALIA, 6021

Registrant

Ampac Pty Ltd
7 Ledger Road, BALCATTA, WA, AUSTRALIA, 6021

Producer

Apollo Fire Detectors Ltd
36 Brookside Road, HAVANT, HAMPSHIRE, ENGLAND, PO9 1JR

Conformance criteria and evaluation

The Ampac Orbis™, o/c 201-0514, multi-sensor type smoke detector has been evaluated and verified as conforming with the relevant requirements of the following criteria.

1. Australian Standard AS 7240.7-2004, 'Fire detection and alarm systems - Part 7: Point-type smoke detectors using scattered light, transmitted light or ionization (ISO 7240-7:2003, MOD)'

Limitations/conditions of conformance

Limitations/conditions of conformance, where identified on this certificate, are derived from qualifications from evaluation(s) for conformity and/or other related technical documentation. All details with respect to design, assembly and installation instructions and restrictions should be checked against the producer's current technical manual/data sheets and the requirements of the Authority having Jurisdiction.

Specified limitations/conditions, determined from the evaluation for conformity, include the following.

- i. The detector is installed and maintained as recommended by the manufacturer.
- ii. It is used indoors, in a dry environment.
- iii. Compatibility of this fire detector and its base assembly with new or existing control and indicating equipment should be confirmed prior to installation.

Issued by

David Whittaker
Executive Officer – ActivFire Scheme



This certification is issued within the scope of CSIRO Verification Services – Rules governing ActivFire Scheme and is valid only for the product(s) as submitted for evaluation and verification of conformity, subject to the following conditions.

- Reference to details, limitations and requirements, where documented as a schedule/enclosure with this certificate.
- The Registrant is responsible for their attestation of conformity and ensuring that on-going production complies with the conformance criteria defined in this certificate.
- This certificate will not be valid if any changes or modifications are made to the product which have not been notified and validated by CSIRO Verification Services.
- This certificate is subject to periodical re-validation upon verification that all requirements, as determined by the conformity assessment body, continue to be satisfactorily met by the Registrant.
- This certificate may only be reproduced in its published form, without modification and inclusive of all schedules/enclosures.
- Any changes, errors or omissions, must be submitted in writing and if necessary or requested, substantiated with relevant evidence.
- Any representations, such as advertising or other marketing related activities or articles shall reflect the correct contents of this certificate and conform with all relevant trade practices and consumer protection legislation and regulations.
- Any terms or conditions of use as applicable to content and documentation as published or accessed through web sites administered by the CSIRO Verification Services.

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Producer's description

The Ampac Orbis™, o/c 201-0514, multi-sensor type smoke detector operates using the technique of modifying the sensitivity of a light-scatter detector with a temperature sensing device. It comprises a separate photoelectric smoke and temperature sensor arrangement mounted on a PCB contained within a plastic sensing chamber.

The sensing chamber is a black moulding configured as a labyrinth, which prevents ambient light penetrating onto the photoelectric sensor. The temperature sensing element protrudes through the sensing chamber and outer mouldings into the surrounding air. A protective cage arrangement surrounds this element and protects it from mechanical damage.

The photoelectric sensor arrangement is made up of an optical bench on which is mounted a prism and lens assembly. The IR LED is surface mounted to the PCB and illuminates the prism which reflects the emitted light through an angle of 90° and into the lens. The lens produces a collimated beam that passes along the optical bench and is then terminated by an "optical dump".

The photo-diode that detects scattered light from smoke particles is a surface mounted component fitted to the PCB, underneath the optical bench. An aperture in the optical bench enables the scattered light to pass through the optical bench and enter the photo-diode. The "optical dump" prevents light from being scattered into the sensing chamber and ensures that photocurrent in the photo-diode due to the background light is minimised.

Every four seconds the IR LED pulses and a collimated beam is present along the axis of the optical bench.

When combustion products enter the sensing chamber, some of the light from the IR LED is scattered by the smoke particles onto the photodiode. The scattered light produces a pulse within the photodiode, which is amplified and shaped by the detection and signal processing electronics. By measuring the magnitude of the detected signal the amount of smoke present within the sensing chamber can be determined.

If the amount of smoke present exceeds the calibrated level set in the factory six times consecutively, then an alarm condition is signalled. The sensitivity of the detector is increased automatically when an increase in temperature is measured. At the rate of rise threshold of the temperature sensor the sensitivity of the smoke detector is doubled. The algorithms incorporated in the software embedded within the microcontroller control the change in smoke sensitivity.

Temporarily removing the detector from its power supply will release the latching alarm circuit and reset the detector. The detector is polarity sensitive but the electronic circuit design prevents the accidental reverse polarity connection of the detector to its supply from causing damage.

The effect of dust and other airborne contaminants on the sensor is minimised by the outer smoke lid that covers the PCB and Multisensor sensor assemblies.

Technical specification

The following details are a representative extract of the technical specification for the Ampac Orbis™, o/c 201-0514, multi-sensor type smoke detector and may be subject to change. Complete and current details should be determined from the designated producer's technical manual/data sheets.

Electrical

Supply voltage	8.5 – 33 Vdc
Supply wiring	2 wires, polarity sensitive
Power-up time	< 20 seconds
Minimum 'detector active' voltage	6 V
Switch-on surge current	< 100 µA
Quiescent current at 24V	100 µA
Alarm current	
@ 12 Volts	
@ 24 Volts	
Alarm load	600Ω (<2W)
Holding voltage	5 - 33 V
Minimum holding current	8 mA
Minimum voltage to light alarm LED	5 V
Alarm reset voltage	< 1 V
Alarm reset time	1 second

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Maximum polarity reversal 200 ms
Remote output (-R) characteristic 1.2 k Ω 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 height, 100 grams

Dimensions and weight of base

100mm diameter x 50mm height, 150 grams

Environmental

Operating and storage temperature

-40°C to +70°C (no condensation or icing)

Humidity

0% to 98% relative humidity (no condensation)

Electromagnetic Compatibility

The detector meets the requirements of BS EN 50 081-1 for emissions and BS EN 50 130-4 for susceptibility.

Base designation	Base + detector circuit type
Ampac Orbis™, o/c 201-0540, Timesaver base	Conventional
Ampac Orbis™, o/c 201-0541, Timesaver LX base	Conventional
Ampac Orbis™, o/c 201-0542, Timesaver diode base	Conventional
Ampac Orbis™, o/c 201-0543, Timesaver relay base	Conventional
Ampac Orbis™, o/c 201-0545, LX base	Conventional