Soteria®

Optical Smoke Detector



Product overview

Product	**Optical Smoke Detector**
Part No.	**SA5100-600 (isolated)**
Native Protocol	**XP95, Discovery and CoreProtocol®**

Product information

The Soteria Optical Smoke Detector uses new optical sensing technology, PureLight®, to detect smoke particles entering the chamber. PureLight marks a new stage in the development of Apollo optical technology and aims to reduce the possibility of false alarms whilst increasing the reliability of detection of a real fire.

- Available with integrated switchable isolator
- Drift compensation
- Tricoloured LED status indicator
- FasTest® for quicker testing of detectors
- Universal XPERT card addressing
- Locking mechanism (grub screw)

**Note: Not all features are available when Soteria devices are connected to an XP95 or Discovery fire control panel*

Manufacturer's Specification

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 light scattering*	
Sensor configuration	*Chamber with surface-mount infrared emitter and prism. Solid state integrated photo-diode and amplifier.*	
Sampling frequency	*Once per second*	
Terminal functions (note: L1 & L2 are polarity sensitive)	*+L2*	*Loop in and out positive*
	–L1 in	*Loop (isolated) negative*
	–L1 out	*Loop (isolated) negative*
	+R	*Remote indicator positive connection (internal connection to positive)*
	–R	*Remote indicator negative connection (4.7mA maximum)*
Supply voltage (Vmin–Vmax)	*17 V – 35 V dc*	
Digital communication	*XP95, Discovery and CoreProtocol compatible*	
Modulation voltage	*5 V – 13 V peak to peak*	
Quiescent current	*Isolated detector: 350 µA*	
Power-up surge current	*560 µA*	
Maximum power-up time	*10 seconds*	
Alarm current, LED illuminated	*3.5 mA*	
Clean-air analogue value	*23 +4/–0*	
Alarm level analogue value	*55*	
Status indicator	*Alarm*	*Red*
	Fault	*Flashing Yellow*
	Isolate	*Yellow*
	Poll	*Green*
Operating temperature	*–40°C to 70°C*	
Humidity	*0% to 95% RH (no condensation or icing)*	
Effect of atmospheric pressure	*None*	
Effect of wind speed	*None, tested up to 10 m/s*	
Vibration, impact and shock	*EN 54-7:2018*	
IP Rating	*IP44*	
Dimensions	*100 mm diameter x 36 mm height (48 mm height with XPERT 8 Intelligent Mounting Base)*	
Weight	*95 g*	

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Manufacturer's Specification (cont'd)

Materials	*Housing: White flame retardant polycarbonate* *Terminals: Nickel plated stainless steel*

For specifications associated with isolator performance, please refer to PP2090.

Electrical description

The Soteria detector is designed to be connected to a two-wire loop circuit carrying both data and power. All Soteria Detectors feature a short-circuit isolator integrated into the head.

Operation

The low profile design of the Soteria Optical Smoke Detector is sleek and evolutionary, with a 360° LED indicator which illuminates red when in alarm, yellow to indicate a fault and green to indicate protocol activity.

At the heart of the Soteria detector is PureLight Sensing Technology which incorporates:

- Cone technology combined with a high-intensity infra-red LED to provide stability and accurate sensitivity to smoke
- A photo-diode and an amplifier integrated into an Application-Specific Integrated Circuit (ASIC)
- 'Serpentine' pathway designed to provide a barrier against dust and insect ingress
- A sophisticated dynamic algorithm, providing transient rejection and compensation for drift whilst maintaining accurate sensitivity

The sensitivity mode of operation of this processing is selected at the fire control panel (see Table 1).

Device Addressing

A universal XPERT 8 card is supplied with all XPERT 8 Intelligent Mounting Bases. Using a coding guide, pips on the card are removed to set the address of the detector. This simplifies and speeds up installation, commissioning and maintenance. The address location remains the same no matter how often detectors are replaced.

When Soteria devices are used with CoreProtocol, device auto-addressing can be enabled by fire control panels that have been designed to incorporate this feature.

Table 1: Soteria Optical Smoke Detector operating modes

Mode	Response Value	Minimum Time to Alarm
	dB/m**	Seconds
1	0.10	5
2	0.10	30
3	0.14	5
4	0.14	30
5	0.16	5

** Tested in grey smoke*
*** Tested in oil mist to EN 54-7 standard*

Communication

Soteria uses the new digital CoreProtocol to allow more advanced control and configuration, whilst maintaining backwards compatibility with previous generations of Apollo products – XP95 and Discovery. Discovery and CoreProtocol make use of the Normal, Read and Write modes with additional non-volatile data fields made available to the fire control panel.

Backward Compatibility

Soteria detectors have been designed to operate on XP95 and Discovery loops. This allows for Soteria detectors and bases to operate on existing systems and for Soteria detectors to operate on XP95 and Discovery bases (XPERT 7 Intelligent Mounting Base).

It should be noted that not all features of Soteria will be available when used with XP95 or Discovery fire control panels. If Soteria detectors are used with XP95 fire control panels incorporating drift compensation algorithms, these must be disabled when communicating with Soteria devices.

Maintenance and Service

Soteria detectors have been designed with a comprehensive set of features to support maintenance and service, from self test capabilities to drift compensation warnings on dirty detectors.

The new FasTest® mode facility on Soteria can be enabled within a fire control panel that incorporates this feature. This facilitates quicker testing of detectors with appropriate test equipment. FasTest disables the transient rejection algorithms to allow a faster detector response, whilst ensuring the detectors absolute sensitivity remains identical to Mode 3. A visual pass/fail indication is provided by the detector and overall, FasTest reduces commissioning and maintenance time.

Maintenance has to be performed in accordance with all applicable standards. Clean the detector externally using a soft damp cloth. For full cleaning and recalibration detectors should be returned to Apollo Fire Detectors.

EMC Directive 2014/30/EU

The Soteria 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 Apollo on request.

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

Construction Products Regulation (EU) 305/2011

The Soteria Optical Smoke Detector complies with the essential requirements of the Construction Products Regulation (EU) 305/2011.

A copy of the Declaration of Performance is available from Apollo on request.