Soteria Dimension

Specialist Optical Detector

Product overview

Product	Specialist Optical Detector
Part No.	FL6100-600APO
Digital Communication	XP95®, Discovery® and CoreProtocol® compatible

Compliance

CE LPCB VdS BOSEC FG SBSC INTRUSION PRODUKT

Product information

The innovative design of the Soteria Dimension Specialist Optical Detector differs from standard fire detectors, having no chamber and is flush mounted. A new optical sensing technology is used to detect smoke particles outside the detector housing. A combination of Infra-Red (IR) LEDs and photo-diodes identify smoke particles, detected just below the detector housing and initiates an alarm.

- Low profile design
- Integrated switchable isolator as standard
- 8-way DIL switch addressing
- Drift compensation
- FasTest® for quicker testing
- Tricoloured LED status indicator
- Comprehensively tested to exceed EN 54-7 and EN 54-17 standards
- Ruggedized metal face plate which is secured with anti-tamper screws
- Designed and tested to meet the requirements of Ministry of Justice specification STD/E/SPEC/038
- Independently certified to DHF TS001 for anti-ligature use in specialist areas

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

Technical data

All data is supplied subject to change without notice. Specifications are typical at 24V, +25°C and 50% RH unless otherwise stated.

Detection principle	*Photo-electric light scattering*	
Sensor configuration	*Chamberless detector with two photo-diodes. Microcontroller provides sensor timings, digital signal processing and alarm decision.*	
Sampling frequency	*Once per second*	
Terminal functions (note: L1 & L2 are polarity sensitive)	*–L1 in*	*Loop in negative*
	–L1 out	*Loop out negative*
	+L2	*Loop in and out positive*
	+R	*Remote indicator positive connection (internal connection to positive)*
	–R	*Remote indicator negative connection (4.7 mA maximum)*
Supply voltage (Vmin–Vmax)	*17 - 35 V dc*	
Digital communication protocol	*XP95, Discovery compatible and CoreProtocol ready 5 - 13 V peak to peak*	
Quiescent current	*1 mA*	
Power-up surge current	*1 mA*	
Maximum power-up time	*15 s*	
Alarm current, LED illuminated	*4.5 mA*	
Maximum loop current through isolator	*2 A*	
Clean-air analogue value	*23 +4/-0*	
Alarm level analogue value	*55*	
Status indicator	*Alarm*	*Red*
	Fault	*Flashing Yellow*
	Isolated	*Yellow*
	Poll	*Flashing Green*
Operating temperature	*–20 °C to +55 °C*	
Humidity	*0% to 95% RH (no condensation or icing)*	
Effect of atmospheric pressure	*None*	
Effect of wind speed	*None*	
Vibration, impact and shock	*EN 54-7*	
IP Rating	*IP55 - rating not EN 54 approved*	
Standards & approvals	*EN 54-7, EN 54-17, CPR, LPCB, VdS, BOSEC, FG, SBSC and DHF TS001 (anti-ligature)*	
Dimensions:		
Detector	*170 mm diameter x 36.45 mm depth*	
with backbox	*170 mm diameter x 71 mm depth*	
Weight:		
Detector	*321 g*	
with backbox	*445 g*	
Materials:		
Housing	*White flame-retardant polycarbonate*	
Terminals	*Nickel plated stainless steel*	
Frontplate	*Stainless steel (painted)*	

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Electrical operation

The Soteria Dimension Specialist Optical Detector is designed to be connected to a two-wire loop circuit carrying both data and a 17 V to 35 V dc supply. A short-circuit isolator is also integrated into the detector head.

Operation

The Soteria Dimension Specialist Optical Detector contains two daylight filtered photo-diodes and three IR emitters in different positions and angles. Different combinations of these are used to act as smoke sensors and proximity sensors, to measure the smoke level at the detector and to detect any physical obstruction or interference of the detector.

As this detector is chamberless an IR LED emits light outside the detector. The light is scattered by smoke back towards the detector and registered by a photo-diode.

A pair of microprocessors control these sensors, setting the sensor timings and using a digital phase-sensitive detection algorithm to reduce noise and the effect of background light. They then provide digital filtering for transient rejection, compensation for drift and temperature, and ultimately make an alarm decision.

The mode of operation may be selected at the fire control panel (see Table 1).

Table 1: Soteria Dimension Specialist Optical Detector operating modes

Mode	Response Value		Minimum Time to Alarm	Minimum Time to Proximity Fault
	%/m*	dB/m**	Seconds	Seconds
1	4.8	0.27	15	10
2	4.8	0.27	30	10
3	4.8	0.27	15	20
4	4.8	0.27	30	20
5	4.8	0.27	30	30

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

Anti-abrasion coated windows make the detector more resistant to physical damage.

With the detection region external to the detector case, The Soteria Dimension Specialist Optical Detector is designed to be flush mounted, with a very low profile.

The device has a metal frontplate which can be locked into place using four anti-tamper screws. This enables the device to be installed in rugged environments where the devices may be susceptible to tampering.

Three LEDs provide status indication as detailed in the Technical Data table (see page 1).

The Soteria Dimension Specialist Optical Detector has been designed and manufactured in the UK to exacting standards using advanced simulation and development processes.

Application

Fire detectors should always be installed in accordance with all local and national laws and codes of practice.

Optical smoke detectors are recommended for general use, particularly where there is a risk of slow burning fires.

Communication

The Soteria Dimension Specialist Optical Detector uses the Apollo digital CoreProtocol to allow more advanced control and configuration, whilst maintaining backwards compatibility with previous generations of Apollo products – Discovery and XP95. For future feature availability, please check with your panel partner.

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

Device Addressing

The device address may be set using an 8-bit DIL switch on the detector head.

Backward Compatibility

The Soteria Dimension Specialist Optical Detectors have been designed to operate on XP95 and Discovery loops.

EMC Directive 2014/30/EU

The Soteria Dimension Specialist Optical 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 Dimension Specialist Optical Detector with the EMC Directive, does not confer compliance with the directive on any apparatus or systems connected to it.

Construction Products Regulation 305/2011/EU

The Soteria Dimension Specialist Optical Detector complies with the essential requirements of the Construction Products Regulation 305/2011/EU.

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

Maintenance and Service

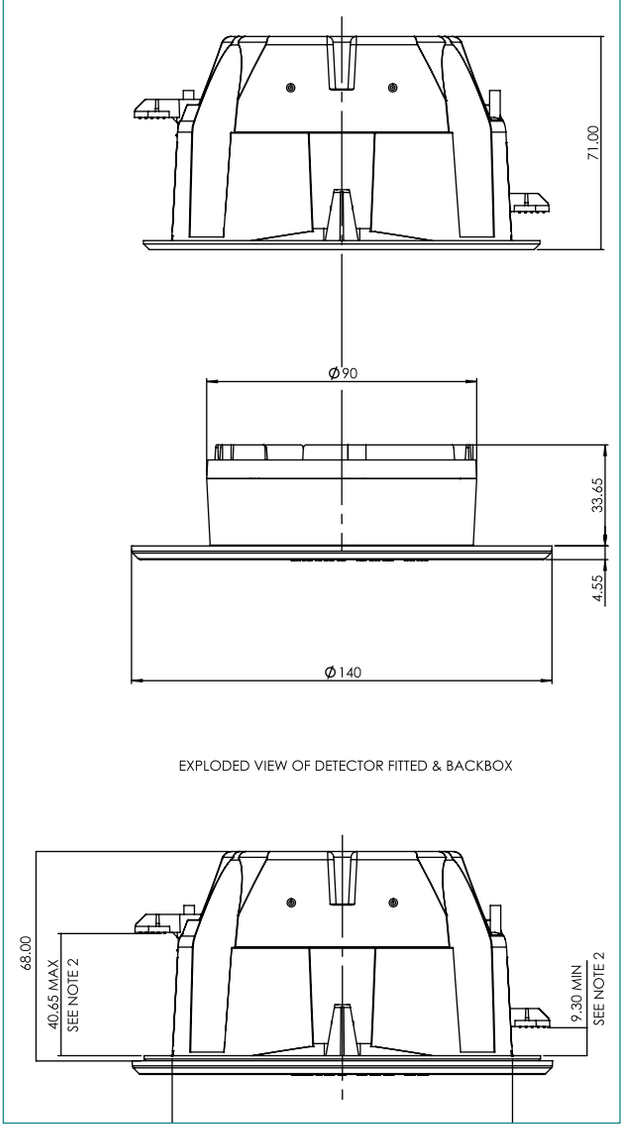
The Soteria Dimension Specialist Optical Detectors have been designed with a comprehensive set of features to support maintenance and service, from self test capabilities to drift compensation warnings on dirty detectors.

The new FasTest mode facility on the Soteria Dimension Optical Detector, which can only be enabled on compatible fire control panels, facilitates quicker testing of detectors with appropriate test equipment. The FasTest disables a portion of the signal processing algorithm and also the built-in proximity sensor to allow for a faster detector response, whilst ensuring that the detectors absolute sensitivity remains identical to that of Mode 3 (refer to Table 1). This helps to reduce commissioning time.

The detector may also be tested using a smoke pen, with the method described in the installation guide for this product - 39215-174.

Maintenance has to be performed in accordance with all applicable standards. Clean the detector externally using a soft damp cloth. If the cleaning process takes more than 10 seconds, the detector may register a fault. For full cleaning and recalibration detectors should be returned to Apollo Fire Detectors.

Figure 1: Soteria Dimension Specialist Optical Detector dimensional drawing



Note:

1) Use a 114 mm (4.5") cutter

2) Ceiling thickness