XP95
Optical Smoke Detector

Technical data
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 detection of light scattered in a forward direction by smoke particles

Chamber configuration
Horizontal optical bench housing an infrared emitter and sensor arranged radially to detect scattered light

Sensor
Silicon PIN photo-diode

Emitter
GaAs infra-red light emitting diode

Sampling frequency
Once per second

Sensitivity
Nominal response threshold value of 0.12 dB/m when measured in accordance with EN 54-7

Supply wiring
Two wire supply, polarity insensitive

Terminal functions
L1 & L2 Loop in & out positive
+R Remote indicator positive connection (internal 2.2 kΩ resistance to supply +ve)
–R Remote indicator negative connection (internal 2.2 kΩ resistance to supply -ve)

Supply voltage
17 V to 28 V dc

Digital communication
XP95, Discovery and CoreProtocol compatible

Quiescent current
340 µA

Power-up surge current
1 mA for 1 second

Alarm indicator
Clear light emitting diode (LED) emitting red light

Alarm LED current
4 mA

Remote LED current
5 mA maximum

Storage temperature
-30°C to +80°C

Operating temperature
-20°C to + 60°C

Humidity
0% to 95% RH (no condensation or icing)

Effect of atmospheric pressure
Unaffected

Effect of wind speed
Unaffected by wind

Vibration, impact and shock
EN 54-7

IP Rating
IP44

Standards and approvals*
EN 54, CPR, LPCB, VdS, BOSEC, SBSC, CCMG, FG

Dimensions
100 mm diameter x 42 mm height

Weight
105 g

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

Compliance*
Part No. 55000-600; CPR, LPCB only
Part No. 55000-620; CPR, LPCB, VdS, BOSEC, CCMG, FG, SBSC
Part No. 55000-660; CPR, LPCB only

Product overview
Product
Optical Smoke Detector
Part No.
55000-600

Product
Optical Smoke Detector
Part No.
55000-620

Product
Optical Smoke detector - black
Part No.
55000-660

Digital Communication
XP95, Discovery and CoreProtocol® compatible

Product information
The XP95 Optical Smoke Detector works on the light scatter principle and is ideal for applications where slow burning or smouldering fires are likely.

- Responds well to slow burning, smouldering fires
- Well suited to escape routes
- Unaffected by wind or atmospheric pressure

Note: Compliance*
Part No. 55000-600; CPR, LPCB only
Part No. 55000-620; CPR, LPCB, VdS, BOSEC, CCMG, FG, SBSC
Part No. 55000-660; CPR, LPCB only
Operation
The XP95 Optical Smoke Detector uses the same outer case as the ionization smoke detector and is distinguished by the indicator LED which is clear in standby and red in alarm. Within the case is a printed circuit board which on one side has the light proof labyrinth chamber with integral gauze surrounding the optical measuring system and on the other the address capture, signal processing and communications electronics.

An infrared light emitting diode within its collimator is arranged at an obtuse angle to the photo-diode. The photo-diode has an integral daylight blocking filter.

The infrared LED emits a burst of collimated light every second. In clear air the photo-diode receives no light directly from the infrared LED because of the angular arrangement and the dual mask. When smoke enters the chamber it scatters photons from the emitter infrared LED onto the photo-diode in an amount related to the smoke characteristics and density. The photo-diode signal is processed by the optical ASIC and passed to the A/D converter on the communications ASIC ready for transmission when the device is interrogated.

Electrical description
The XP95 Optical Smoke Detector is designed to be connected to a two wire loop circuit carrying both data and a 17 V to 28 V dc supply. The detector is connected to the incoming and outgoing supply via terminals L1 and L2 in the mounting base. A remote LED indicator requiring not more than 4 mA at 5 V may be connected between the +R and -R terminals. An earth connection terminal is also provided. The detector is calibrated to give an analogue value of 25±7 counts in clean air. This value increases with smoke density. A count of 55 corresponds to the EN 54 alarm sensitivity level.

Environmental characteristics
The XP95 Optical Smoke Detector is unaffected by wind or atmospheric pressure and operates over the temperature range -20°C to +60°C.

Remote LED connection
A drive point is provided on the XP95 Optical Smoke Detector for a remote LED indicator. The indicator must be a standard high-efficiency RED LED and does not require a series limiting resistor since current is limited within the detector to approximately 1 mA.

EMC Directive 2014/30/EU
The XP95 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 upon request.

Construction Products Regulation 305/2011/EU
The XP95 Optical Smoke 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 upon request.