

PHOTO-ELECTRIC SMOKE DETECTOR WITH ISOLATOR



FEATURES

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

- PureLight optical technology reduces false alarms and enhances smoke recognition.
- Utilises digital communications.
- Mechanically compatible with existing bases.
- Available with integrated switchable isolator.
- Drift compensation.
- Tri-coloured LED status indicator.
- Polycarbonate housing for colour stability and strength.
- Comprehensively tested to exceed EN 54-7 standard.
- FasTest for quicker testing of detectors.
- XPERT card addressing.

DESCRIPTION

The low profile design of the Shield Photo-Electric 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.

The Shield detector is designed to be connected to a two wire loop circuit carrying both data and power. This device has a short circuit isolator integrated into the detector head.

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

- Cone technology combined with a high-intensity infrared LED to provide stability accurate sensitivity to smoke.
- A photodiode 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).

TECHNICAL DATA

Mode	Response Value		Minimum Time to Alarm
	%/m*	dB/m**	Seconds
1	1.4	0.10	5
2	1.4	0.10	30
3	2.1	0.14	5
4	2.1	0.14	30
5	2.4	0.16	5

Table1

TECHNICAL DATA

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	
	+L2	Loop in & out positive
	-L1 in	Loop (isolated) negative
Terminal functions (note: L1 & L2 are polarity sensitive)	-L1 out	Loop (isolated) negative
	+R	Remote indicator positive connection (internal connection to positive)
	-R	Remote indicator negative connection (4.7mA maximum)
Sensitivity	Nominal response threshold value of 0.12 dB/m when measured in accordance with EN 54-7	
Coverage	112 Sq.m	
Supply voltage (V_{min}-V_{max})	17-35 VDC	
Quiescent current	Isolated detector: 350 µA	
Power-up surge current	560 µA	
Maximum power-up time	10 s	
Alarm current, LED illuminated	3.5 mA	
Maximum loop current (I_C max; L1 in/out)	1 A	
Maximum series resistance (Z_C max; L1 in/out)	80 mΩ	
Maximum switch current (I_S max; L1 in/out)	3 A	
Maximum leakage current (I_L max; during isolation)	33 mA (100ms pulse every 2s)	
Isolation voltage (V_{SO}min-V_{SO}max)	12.5-15 VDC	
Reconnect voltage (V_{SC}min-V_{SC} max)	12.8-19.1 VDC	
Clean-air analogue value	23 +4/-0	
Alarm level analogue value	55	
	Alarm	Red
Status indicator	Fault	Flashing Yellow
	Isolate	Yellow
	Poll	Green
Operating temperature	-40 °C to 70 °C	
Humidity (no condensation or icing)	0-95% RH	
Effect of atmospheric pressure	None	
Effect of wind speed	None, tested up to 10m/s	
Vibration, impact and shock	EN 54-7	
IP Rating	IP44	
Standards & approvals	EN 54-7, EN 54-17 & LPCB	
Dimensions	100mm diameter x 36mm height (48mm height with Shield Standard Mounting Base)	
Weight	83 g	
Materials	Housing: White polycarbonate UL94-VO Terminals: Tin plated stainless steel	