OSID Smoke Detection

Open-area Smoke Imaging Detection (OSID) by Xtralis is a new innovation in projected beam smoke detection technology. By using advanced dual wavelength projected beams and optical imaging technology for early warning smoke detection, OSID provides a low-cost, reliable and easy-to-install solution that overcomes typical beam detection issues such as false alarm incidents and alignment difficulties.

Unique Detection Technology

The OSID system measures the level of smoke entering beams of light projected over an area of protection. A single OSID Imager can detect up to seven Emitters to provide a wide coverage area. Two innovations in smoke detection technology have been developed for the revolutionary OSID smoke detector:

Dual Wavelength Particle Detection

The beam projected from each Emitter contains a unique sequence of ultraviolet (UV) and infrared (IR) pulses that are synchronised with the Imager and enable the rejection of any unwanted light sources.

By using two wavelengths of light to detect particles, the system is able to distinguish between particle sizes. The shorter UV wavelength interacts strongly with both small and large particles while the longer IR wavelength is affected only by larger particles. Dual wavelength path loss measurements therefore enable the detector to provide repeatable smoke obscuration measurements, while rejecting the presence of dust particles or solid intruding objects.

Optical Imaging with a CMOS Imaging Chip

An optical imaging array in the OSID Imager provides the detector with a wide viewing angle to locate and track multiple Emitters. Consequently, the system can tolerate a much less precise installation and can compensate for the drift caused by natural shifts in building structures.

Optical filtering, high-speed image acquisition and intelligent software algorithms also enable the OSID system to provide new levels of stability and sensitivity with greater immunity to high level lighting variability.

Operation

Status information (Fire Alarm, Trouble and Power) is communicated through the Imager via Status LEDs, dedicated Trouble and Alarm relays, and the Remote Indicator interface. Specific Trouble (Fault) conditions are identified through coded flashes of the Trouble LED.

An internal heating option is also provided on the Imager to prevent condensation on the optical surface, and a reset input enables an external signal to reset the device.

Simple Installation and Maintenance

The OSID system consists of up to seven Emitters, for the 45° and 90° Imager units, located along the perimeter of the protected area, and an Imager mounted opposite. Each component can be mounted directly to the surface or can be secured with the supplied mounting brackets. Battery powered Emitters with up to five years battery life are also available to reduce installation time and cost.

Features

- Maximum detection range of 150 m (492 ft) for the OSI-10
- Status LEDs for Fire, Trouble and Power
- High false alarm immunity
- Dust and intrusive solid object rejection
- Easy alignment with large adjustment and viewing angles
- No need for precise alignment
- Tolerant of alignment drift
- Automatic commisioning in under ten minutes
- Simple DIP switch configuration
- Dual wavelength LED-based smoke detection
- Simple and easy maintenance requirements
- Conventional alarm interface for straightforward fire system integration
- Three selectable alarm thresholds

Listings/Approvals

- UL
- ULC
- AFNOR
- CE - EMC and CPD
- Major Agency Approvals pending

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On the Imager, a termination card provides all field wiring terminals, and DIP switches enable the user to configure the detector for particular applications.

Alignment of the Emitter is simply achieved using a laser alignment tool to rotate the optical spheres until the laser beam projected from the alignment tool is close to the Imager.

The Imager is aligned in a similar way so that its Field of View (FOV) encompasses all Emitters. A Trouble or Fault will be indicated if an Emitter is missing or outside the Imager field of view.

The OSID system is highly tolerant to dust and dirt and requires little maintenance in practice. Preventative maintenance is limited to occasionally cleaning the optical faces of the detector components.

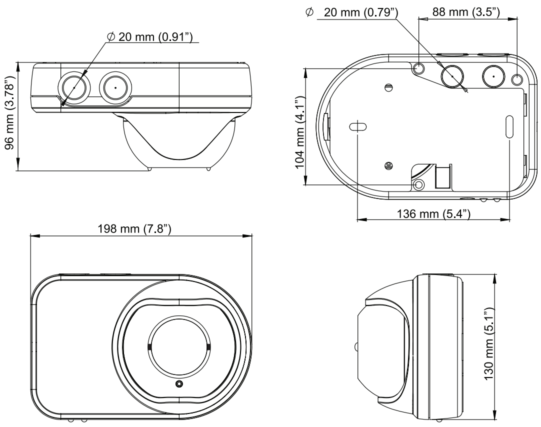
Configuration Options

OSID systems may be configured to suit a range of detection spaces by selecting the number of Emitters and type of Imager. Each type of Imager differs by the lens used in the unit, which determines the field of view and range of the system.

Imager	Field of View		Detection Range				Max. Number of Emitters
	Horizontal	Vertical	Standard Power		High Power		
			Min	Max	Min	Max	
10°	7°	4°	30 m (98 ft)	150 m (492 ft)	- -	- -	1
45°	38°	19°	15 m (49 ft)	60 m (197 ft)	30 m (98 ft)	120 m (393 ft)	7
90°	80°	48°	6 m (20 ft)	**34 m (111 ft)	12 m (39 ft)	**68 m (223 ft)	7

** Maximum Distances measured for the Center Field of View of the Imager. For more details on distances for the Imager, see the OSID Product Guide.

Emitter / Imager Dimensions



Ordering Codes

OSI-10	Imager - 7° coverage
OSI-45	Imager - 38° coverage
OSI-90	Imager - 80° coverage
OSE-SP	Emitter - Standard Power
OSE-SPW	Emitter - Standard Power, Wired
OSE-HPW	Emitter - High Power, Wired
OSID-INST	OSID Installation Kit

Specifications

Supply Voltage
20 to 30 VDC (24 VDC nominal)

Imager Current Consumption
Nominal (at 24 VDC):
4mA (1 Emitter)
7mA (7 Emitters)
Peak (at 24 VDC) during training mode: 27mA

Emitter Current Consumption
Wired Version (at 24 VDC): 350μA
Battery Version:
Built-in 5 Year Battery

Field Wiring
Cable Guage
0.2 - 4mm² (26-12 AWG)

Alarm Threshold Levels:
Low - Highest sensitivity / earliest alarm: 20% (0.97 dB)
Medium - Medium sensitivity: 35% (1.87 dB)
High - Lowest sensitivity / maximum immunity to nuisance smoke conditions: 50% (3.01 dB)

Adjustment Angle
±60° (horizontal)
±15° (vertical)

Maximum Misalignment Angle
±2°

Dimensions (WHD)
Emitter / Imager:
198 mm x 130 mm x 96 mm
(7.80 in. x 5.12 in. x 3.78 in.)

Operating Conditions*
Temperature:
-10 °C to 55 °C (14 °F to 131 °F)*
Humidity:
10 to 95% RH (non-condensing)
Please consult your Xtralis office for operation outside these parameters.

IP Rating
IP 44 for Electronics
IP 66 for Optics Enclosure

Status LEDs
Fire Alarm (Red)
Trouble / Power (Bi-color Yellow / Green)

Approvals Compliance

Please refer to the Product Guide for details regarding compliant design, installation and commissioning.

* Product UL listed for use from 0°C to 39°C (32°F to 103°F)

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