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, 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.

Features
- Maximum detection range of 150 m (500 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 approved
- Major Agency Approvals pending
Simple Installation and Maintenance

The OSID detector system consists of up to seven Emitters, for the 45° and 90° 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.

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.

Configuration Options

<table>
<thead>
<tr>
<th>Imager</th>
<th>Field of View</th>
<th>Detection Range</th>
<th>Max. Number of Emitters</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Horizontal</td>
<td>Vertical</td>
<td>Standard Power</td>
</tr>
<tr>
<td>10°</td>
<td>7°</td>
<td>4°</td>
<td>30 m (98 ft)</td>
</tr>
<tr>
<td>45°</td>
<td>38°</td>
<td>19°</td>
<td>11 m (36 ft)</td>
</tr>
<tr>
<td>90°</td>
<td>80°</td>
<td>48°</td>
<td>6 m (20 ft)</td>
</tr>
</tbody>
</table>

Emitter / Imager Dimensions

Ordering Codes

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OSI-10-K</td>
<td>Kit, Imager - 10° coverage with Emitter - Standard Power</td>
</tr>
<tr>
<td>OSI-45</td>
<td>Imager - 38° coverage</td>
</tr>
<tr>
<td>OSE-SP</td>
<td>Emitter - Standard Power</td>
</tr>
<tr>
<td>OSE-HP</td>
<td>Emitter - High Power</td>
</tr>
<tr>
<td>OAT-10</td>
<td>OSID Alignment Tool</td>
</tr>
<tr>
<td>OSI-10KW</td>
<td>Kit, Imager - 10° coverage with Emitter - Standard Power Wired</td>
</tr>
<tr>
<td>OSI-90</td>
<td>Imager - 80° coverage</td>
</tr>
<tr>
<td>OSE-SPW</td>
<td>Emitter - Standard Power, Wired</td>
</tr>
<tr>
<td>OSE-HPW</td>
<td>Emitter - High Power, Wired</td>
</tr>
<tr>
<td>OTF-60</td>
<td>Test Filter</td>
</tr>
</tbody>
</table>

Specifications

Supply Voltage

20 to 30 VDC (24 VDC nominal)

Imager Current Consumption

Nominal (at 24 VDC):
- 4 mA (1 Emitter)
- 7 mA (7 Emitters)

Peak (at 24 VDC) during training mode: 27 mA

Emitter Current Consumption

Wired Version (at 24 VDC): 200 μA

Battery Version: Built-in 5 Year Battery

Field Wiring

Cable Guage
- 0.2 - 4 mm² (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

4°

Dimensions (WHD)

Emitter / Imager:
- 198 mm x 130 mm x 94 mm
  (7.80 in. x 5.12 in. x 3.74 in.)

Operating Conditions

Temperature:
- 0 °C to 39 °C (32 °F to 103 °F)
- Tested to:
  - -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)

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