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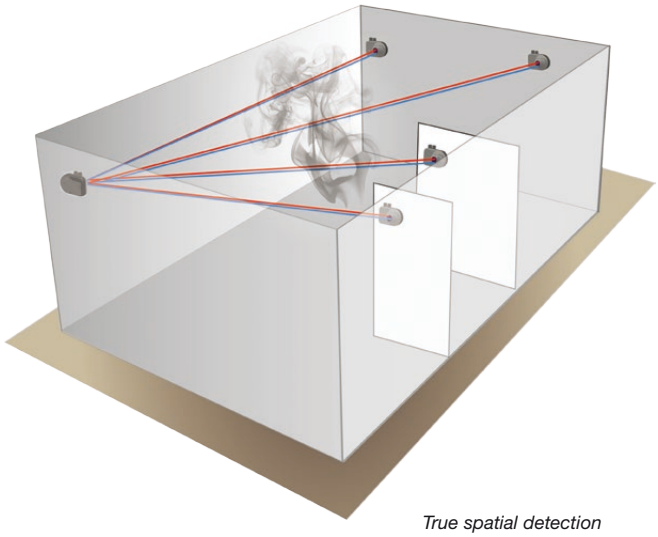
by Honeywell

Linear Smoke Detector OSID

- ✓ **Patented dual wavelength, UV & IR, particle detection**
- ✓ **High immunity to dust, fogging, steam, reflections and object intrusion**
- ✓ **High tolerance to vibration and structural movement**
- ✓ **Easy alignment with large adjustment and viewing angles**
- ✓ **Simple installation, commissioning and maintenance**
- ✓ **Simple DIP switch configuration**
- ✓ **3D volumetric coverage**
- ✓ **Maximum detection range up to 150 meters**

Application

Open-area Smoke Imaging Detection (OSID) is a new technology designed specifically for large and open spaces, enabling early detection and response to save lives and prevent service disruptions. Large, open spaces such as airports, train stations, stadiums, shopping malls, warehouses and production floors present many challenges for smoke detection. Many of these facilities are tall, operate 24 hours a day and seven days a week, making traditional spot or point smoke detection installation and maintenance difficult. It is commonly believed that beam detectors provide an „acceptable compromise" for smoke detection in these spaces. Unfortunately, the walls of large structures flex under such environmental conditions as cold and heat, heavy wind, rain, etc. causing traditional beam detection to experiene false alarms due to misalignment.
Partially open facilities are exposed to insects, birds, rolling fog, etc., again risking traditional, simpler beam detectors to have false alarms or excessive faults.
In production floors and warehouses where the fire load is high, a fire will result in much more damage than just the cost of lost goods. Environmental damage must also be considered, as well as the cost of business interruption that could result in loss of business reputation and customer base.



True spatial detection

IP 66 **Max. detection range up to 150 meters**

Technology

Linear smoke detector OSID uses a sophisticated algorithm to map and compare the strength of infrared (IR) and ultraviolet (UV) light signals from detectors configured in the space, regardless of cavernous or odd shapes. OSID innovatively combines two technologies to reliably detect smoke in large, open spaces.

Dual Wavelength Particle Detection

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 absolute smoke obscuration values, while rejecting the presence of dust particles or solid intruding objects.

Optical Imaging with CMOS Imager Arrays

An optical imaging array in the OSID detector provides a wider viewing angle to locate and capture images. Consequently, the system is easier to install and align and can compensate for drift caused by natural shifts in building structures, due to the CMOS imaging chip with many pixels rather than a single photo-diode. Optical filtering, high-speed image acquisition, and intelligent software algorithms also enable the OSID detector to process images and provide new levels of stability and sensitivity while providing greater immunity to high-level lighting variability.

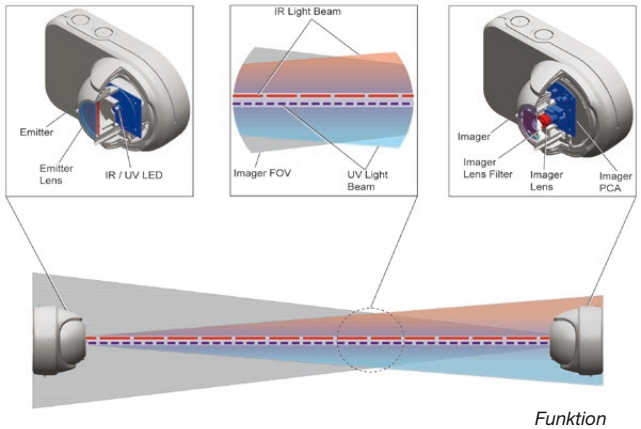
Working principle

Building movement is the primary cause of false alarms for traditional, simple beam detectors used in large structures. Temperature changes and heavy winds cause building structures to flex. Because OSID uses an optical imaging chip with a wide-angle view, its software can compensate for vibrations and building movement. With this unique feature, the OSID Imager is able to track the signal from an Emitter even when the wall to which it is fixed flexes by up to 2 degrees in any direction, without generating a fault or false alarm. Further, even movements beyond this range will not normally generate false Fire alarms, but will merely indicate a fault.

If the light path is interrupted due to the presence of genuine smoke particles, the Imager will go into alarm. The novel use of dual light frequencies enables OSID to discriminate between real smoke and intruding objects, thus drastically reducing false alarms. That's because smoke reduces UV light more than IR light, whereas dust and solid objects affect both frequencies equally.

OSID also has a high resistance to steam and water droplets. Steam will not generally cause false alarms. If water concentration in the air becomes excessive, a fault will be raised but false alarms are very unlikely.

In addition, OSID requires only limited space (15 - 20 cm) in its line of view. Therefore, the solution can be deployed safely between ceilings and supporting structures, moving cranes, etc.



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3D volumetric coverage

In Imagers with viewing angles of 80 and 38 degrees, the imaging chip also allows for the deployment of up to seven Emitters per Imager. Only the Imager has to be wired versus every receiver as is the case with traditional beam detectors. Various Emitters also can be placed at different heights for optimum coverage and easy adaption to obstacles along walls.

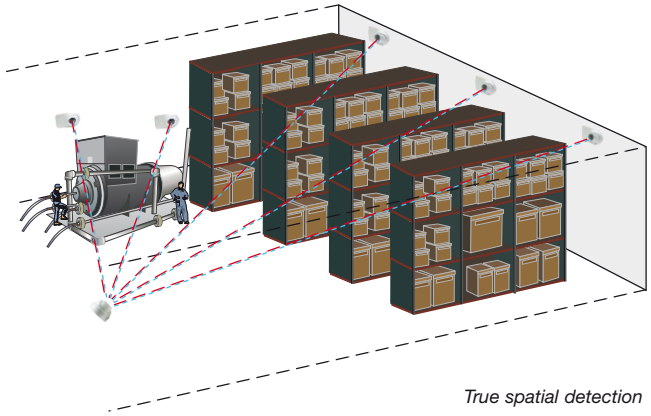
The beam lengths for the 80 and 38 degree Imagers range from 8 to 120 meters. The Imagers' large viewing angles, both horizontal and vertical,enable three-dimensional area coverage.

Configuration

OSID systems may be configured to protect a range of spaces, regardless of shape. The protection zone or "fire web" is determined by the placement of OSID detectors.

In its simplest configuration, detector uses one imager, a camera-like device with a wide field of view, and a wired or battery-powered emitter roughly aligned on the opposite wall within the protected area. The emitter sends both infrared and ultraviolet coded light signals to the imager. If the light reception is altered due to the presence of genuine smoke particles, the imager will go into alarm. The novel use of dual light frequencies in an open-path device enables OSID to discriminate between real smoke and other objects, including insects, steam, condensation and dust, thus drastically reducing false alarms.

Alignment of the Emitter is simple, achieved by using a low-cost laser alignment tool to rotate the optical spheres until the laser beam from the alignment tool is within proximity to the Imager. No further alignment is required, resulting in extremely fast installation and set-up, which is a major benefit in large, open spaces where access for installation is often limited because of space and time.



True spatial detection

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

Imager		**Emitters**	
Field of View		Maximum Detection Range	
Horizontal	Vertical	Standard Power	High Power
7°	4°	150 m	-
38°	19°	60 m	120 m
80°	48°	34 m	66 m

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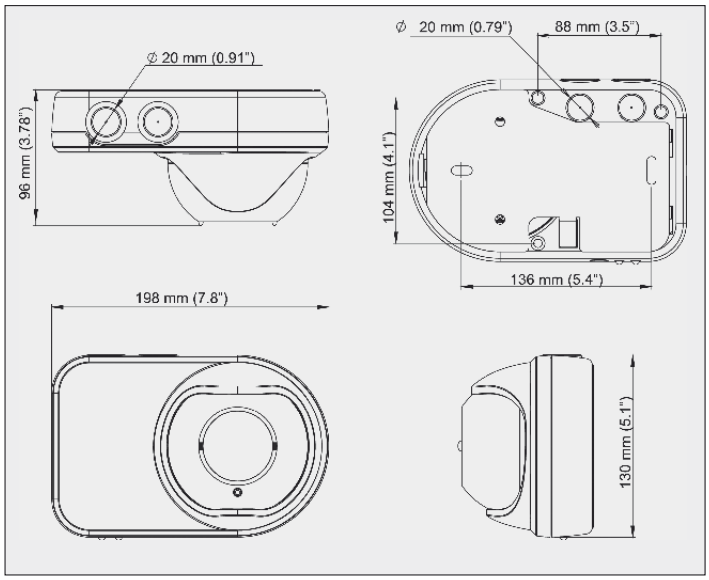

Dimensions

Specifications

Detection rage	up to 150 m
Operating voltage	20 ... 30 V DC (24 V DC nominal)
Operating temperature	-10°C ... +55°C
Humidity range	10% ... 95% RH (non-condensing)
Maximum alignment angle	-2° ... +2°
Adjustment angle	-60° ... +60° (horizontal)
	-15° ... +15° (vertical)
Type of protection	IP44 (electronics)
	IP66 (optics enclosure)
Dimentions (H x W x D)	130 x 198 x 96 mm (emitter/imager)
Weight	651 g (imager)
Image Current Consumption	8 mA (1 emitter), 10 mA (7 emitters)
Emitter Current Consumption	
Wired version (24 VDC)	350 µA
Battery version	built-in 5 year battery
Field Wiring Cable Ø	0.2 ... 4 mm^2

Order information	**Part No.**
Imager - 7° coverage, 24V DC	761300
Imager - 38° coverage, 24V DC	761301
Imager - 80° coverage, 24V DC	761302
Emitter - Standard Power, battery version	761303
Emitter - Standard Power, Wired at 24 V DC	761304
Emitter - High Power, Wired at 24 V DC	761305
OSID Installation Kit.	761310

Incl: Laser alignment tool, test filter, PC cable, cleaning cloth, manual

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