OSID Beam Detector for FX 3NET Fire Detection system

The OSID detector 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 reliable and easy-to-install solution that overcomes typical beam detection issues such as false alarm incidents and alignment difficulties.

OSID Imager

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.

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.

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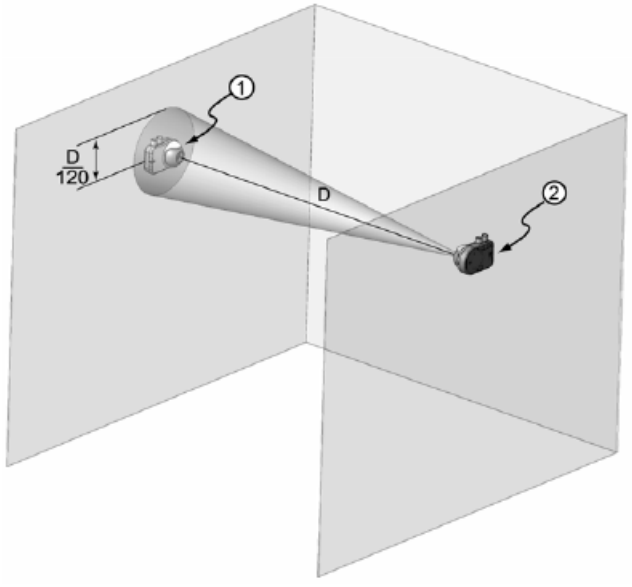
Configuration options

Imager	Field of View		Detection Range				Max. No, of Emitters
	Horizontal	Vertical	Standard Power		High Power		
			Min	Max	Min	Max	
10	7°	4°	30m	150m	-	-	1
45	38°	19°	15m	60m	30m	120m	7
90	80°	48°	6m	**34m	12m	**68m	7

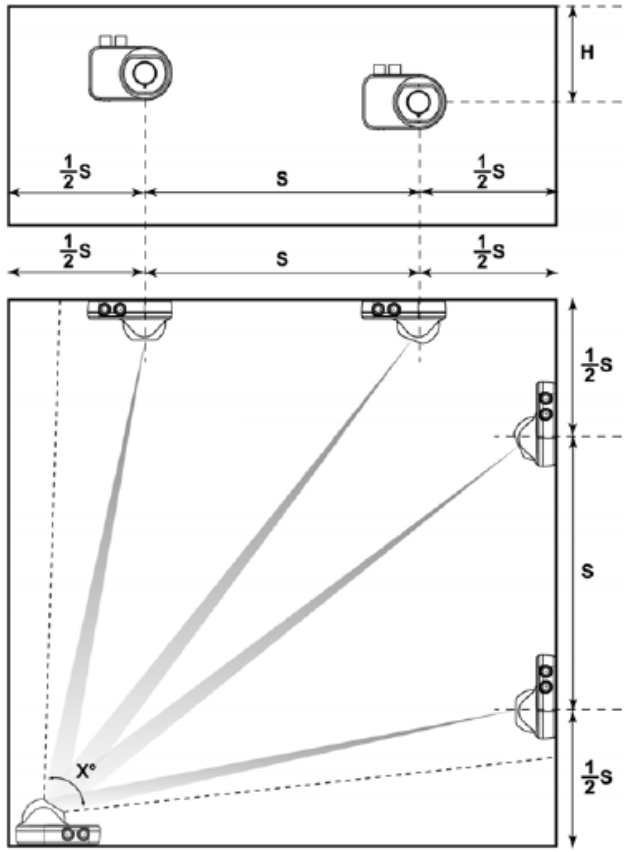
**Maximum Distances measured for the Center Field of View of the Imager. For more details on distances for the Imager, see the OSID Product Guide.

Spacing requirements

The location and spacing of components of the detector system should comply with national and regional installation codes. In any OSID system, the line of protection between the Imager and an Emitter is recognized by many standards to be equivalent to a traditional beam detector. For areas that require multiple lines of protection, the Emitters should be located and spaced according to the following recommendations to provide full coverage of the protected space.



Coarse alignment between Emitter (1) and Imager (2)



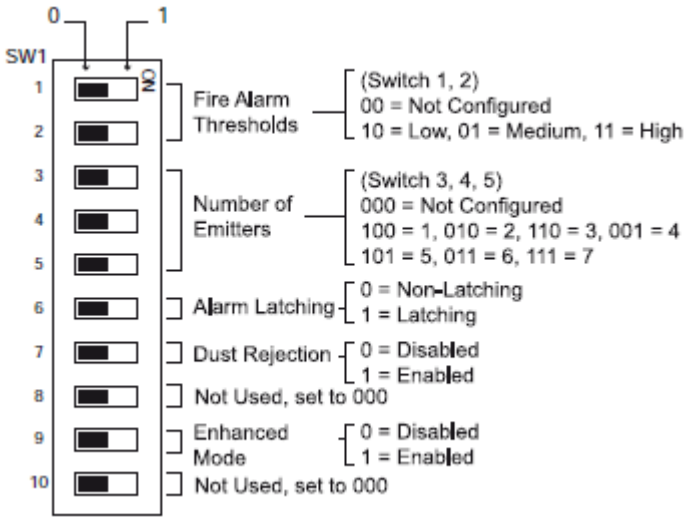
Horizontal alignment

Note: Please refer to your local codes and standards for specific spacing requirements for your region.

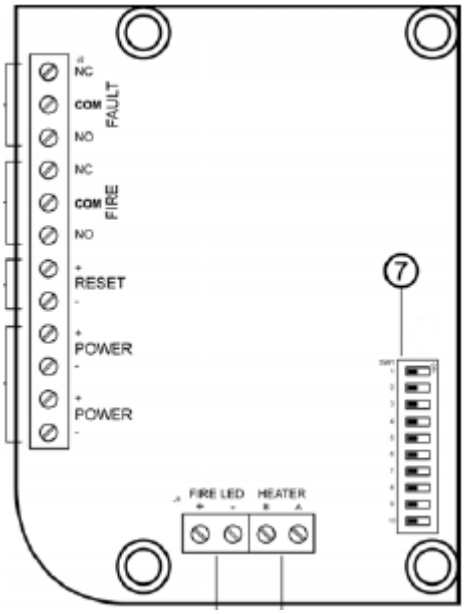
Installation and Commissioning

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.
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.

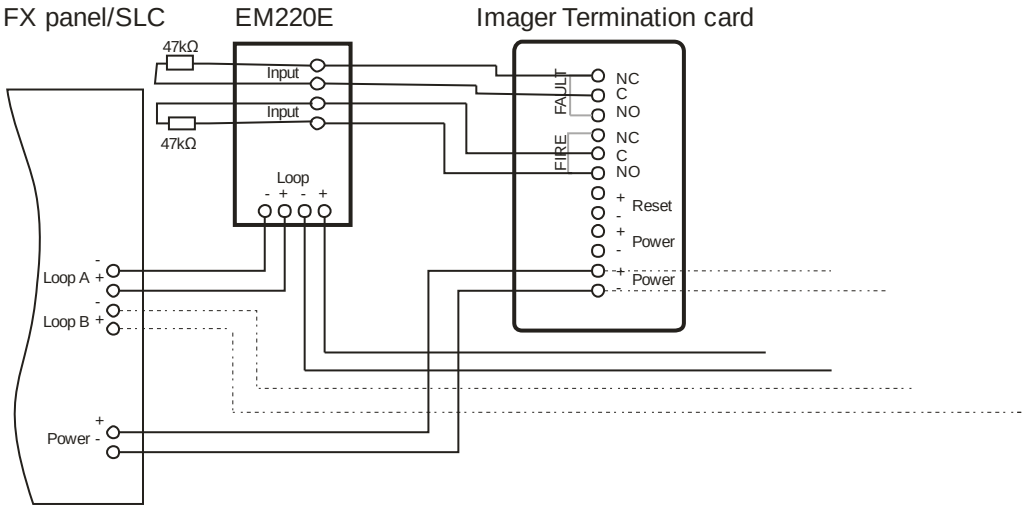


DIP Switch settings

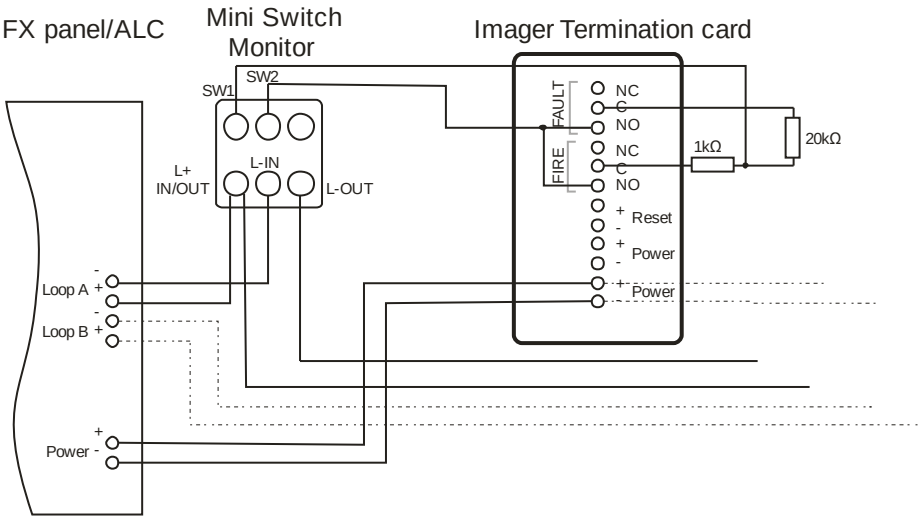


Imager Termination Card

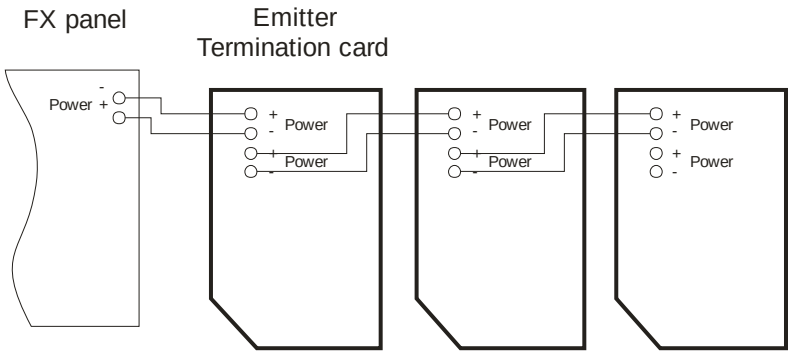
Wiring diagram examples



Connection to FX / SLC loop via EM220E input module.

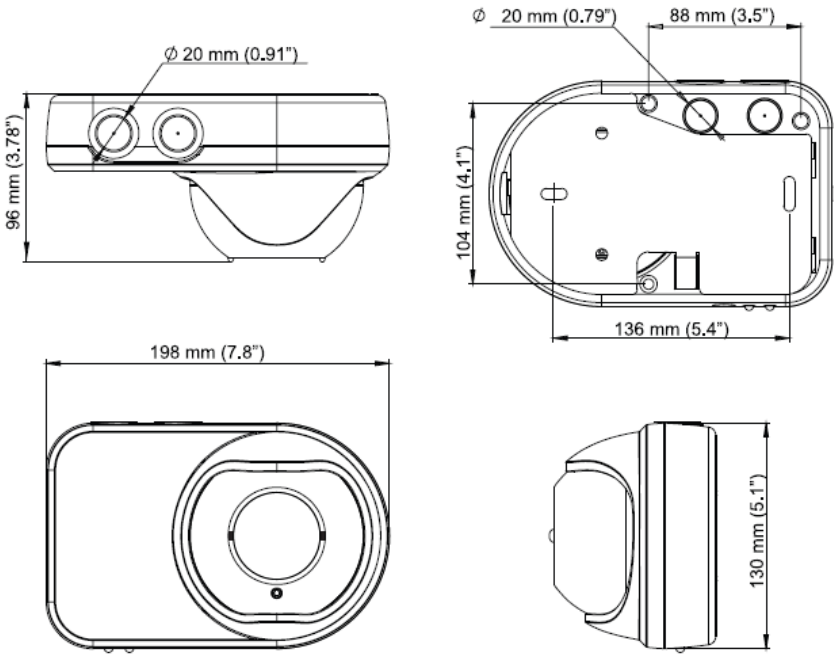


Connection to FX / ALC loop via Mini Switch Monitor.



Wired Emitters connected to external power supply (FX Panel). Other option is to use battery powered emitters.

Dimensions



Emitter / Imager Dimensions

Technical data

Supply Voltage	20 to 30 VDC (24 VDC nominal)
Imager Current Consumption	Nominal (at 24 VDC): 8mA (1 Emitter) 10mA (7 Emitters) Peak (at 24 VDC) during training mode: 31mA
Emitter Current Consumption	Wired Version (at 24 VDC): 350µA Std Power, 800µA High Power 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°
Operating Conditions*	Temperature: -10 °C to 55 °C (14 °F to 131 °F)* Humidity: 10 to 95% RH (non-condensing)
IP Rating	IP 44 for Electronics IP 66 for Optics Enclosure

Product codes

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Type	Description	Code
OSI-10	Imager - 7° coverage	06432701
OSI-45	Imager - 38° coverage	06432702
OSI-90	Imager - 80° coverage	06432703
OSE-SP	Emitter - Standard Power	06432704
OSE-SPW	Emitter - Standard Power, Wired	06432705
OSE-HPW	Emitter - High Power, Wired	06432706
OSID-INST	OSID Installation Kit: OSID commissioning aid (reflector) Blu-Tack adhesive OSID smoke simulating test filter OSID cleaning cloth OSID serial PC interface cable OSID laser alignment tool (incl. 3*LR44 batteries)	06432707
VKT-301	OSID Demo Kit: 2 x OSE-SPW (fitted with Alkaline batteries) 1 x OSI-90 1 x OSID-INST Fitted in a robust carry case with demo brackets	06432710
OSP-001	FTDI Cable 1.5m	06432708
OSP-002	Laser Alignment tool	06432709