OPTEX
Sensing Innovation

Multi-layered Intrusion and Obstacle Detection Systems

For perimeter, site, people and asset protection

www.optex-europe.com

Multi-layered protection for an earlier alarm and a better response

For critical infrastructure, government facilities and military installations that require the very highest levels of security – as well as industrial sites and commercial premises, product performance and reliability are key, as is a 'strategic' approach to perimeter protection. For more than 30 years, OPTEX has been trusted by thousands of customers worldwide for the accuracy and reliability of its detection systems and its ability to develop new sensing technologies.

Roof protection

Window protection

Interior protection

Remote monitoring centre

Building protection

Security Room

Perimeter protection

Outer perimeter protection

Approach protection

Fence & wall protection
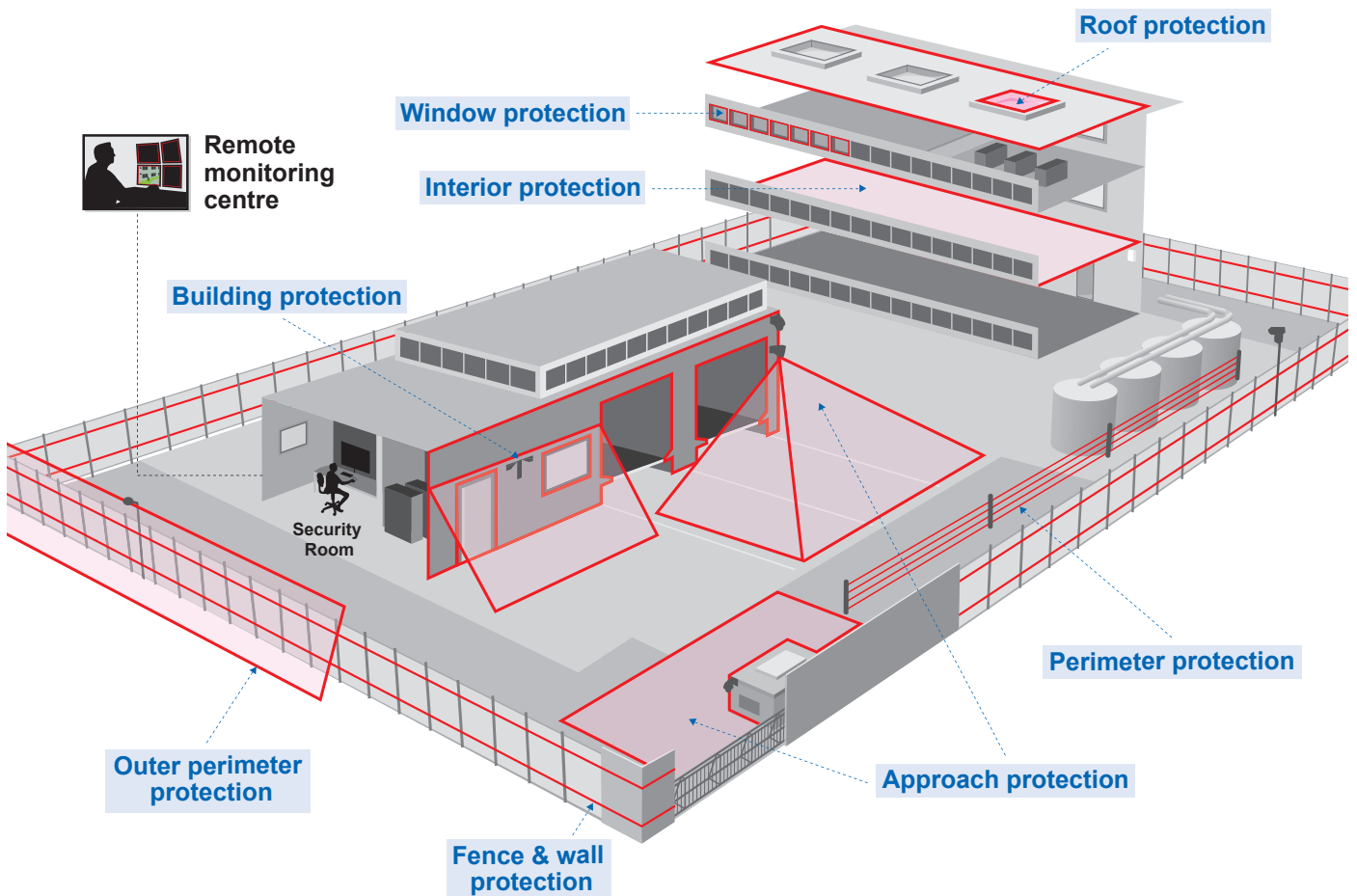
Detection is the corner stone of the security system

Detection is usually the first step in an event driven security system: something or someone is entering a secured area and this will trigger a number of events or responses.

OPTEX has become a leader in its field thanks to its experience in sensing technologies and its multi-layered approach to security. It has developed a wide range of detection systems that can protect any type of perimeters, sites or buildings and integrate easily with the wider security system.

Earlier detection for a better response
Whatever the need and whatever the environment, OPTEX understands that the earlier security personnel are alerted to a threat, the better they can respond and the better the outcome for all concerned.

Accurate detection for a more efficient security system
As its sensors act as a trigger for CCTV or wider security systems, OPTEX understands it is paramount that its solutions give accurate information. OPTEX detectors have been specifically designed to work in conjunction with CCTV systems, and trigger cameras to point where the incidents occur, enabling visual verification and prompt an effective response. They provide the highest performance and can distinguish between a genuine intrusion from an activation triggered by a disturbance created by changes in the environment, small animals or vibration.

Example of event driven IP CCTV system using OPTEX's REDWALL IP sensors

Intruder Detection
DETECT!

Alarm sent to the VMS

Alarm and video trigger
Video Management Software

Light and camera preset position activated

Visual Verification
ZOOM ON TARGET

Layers of detection to suit the site requirement

A number of criteria should be taken into account in order to design the most efficient perimeter protection system, such as environment, lighting conditions, site lay-out, technical requirement, acceptable level of false alarms etc. Different sensing technologies suit different types of applications and environmental conditions and it is quite common to see that a combination of technologies is needed to achieve best results.

OPTEX provides a wide range of sensing technologies designed for perimeter protection, in field detection and critical buildings or assets or areas protection. Ranging from passive infrared to active infra-red, microwave, laser and fibre optics, the choice of technologies gives great flexibility to design a reliable security system matching the customer's requirements.

Perimeter and building protection

The first layer of security usually occurs at the perimeter, whether that is a physical line such as a fence or a wall or a virtual line. A number of options are available to protect the boundaries of a site or building; virtual trip wires or walls can be created or the wall or fence can be protected by a sensing system to detect any attempt to breach through or above it.

Virtual trip wire using active infrared beams
Active infrared beams create a virtual line and trigger the alarm if the line has been breached. This is very well suited for "open" perimeter, without any physical perimeter line, fence or wall, or as an additional level of security if people have climbed over the gate, wall or fence. One set of beams can cover areas as small as 20m up to 200m.

Perimeter Security

Virtual walls using laser technology
OPTEX's Laser Sensor can be mounted vertically to create a curtain detection that can act as a virtual wall or detect objects or people approaching the physical perimeter line by covering 1 or 2m of the perimeter line. For facade protection, the intelligent sensor can detect anyone trying to break in throw windows, or trying to vandalise walls (graffiti) as well as detecting objects being thrown out of windows.

Facade Protection

Sensing intrusion through fence of wall
Fences and walls surrounding a business or safety critical sites are a good deterrent, but they can be easily compromised. OPTEX Fiber SenSys fibre-optic detection systems use sophisticated algorithms to detect intruders who are attempting to climb over or cut through the perimeter line.
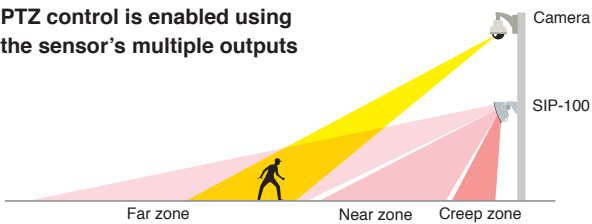
The fibre-optic cable used has been designed to the highest security rating and the system provides a very long lasting performance with low cost of ownership.

Alarm Processing Unit · Camera · Fibre optic cable sensor
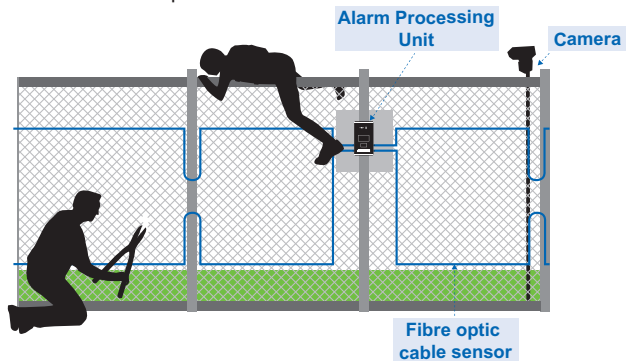
In field intrusion detection

Once an intruder has penetrated an area it is critical to track his whereabouts and follow him using PTZ cameras.

PTZ control is enabled using the sensor's multiple outputs

Camera · SIP-100 · Far zone · Near zone · Creep zone

Top view

Detection area · Non-detection area · Detection area

Volumetric detection
OPTEX's 3D thermal sensors have been designed to work in conjunction with CCTV cameras and triggers preset views to enable an efficient visual verification. In some instances, in order to eliminate risk of false alarms, dual technology sensors providing passive infrared and micro-wave technology, could be recommended.
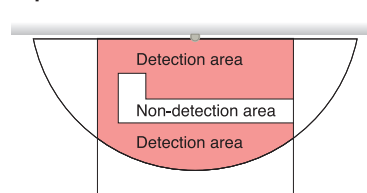
Customised area detection
OPTEX's laser sensor, REDSCAN, when set-up horizontally will scan the detection area for any objects and transmits live X & Y coordinates and the size of the objects detected. The REDSCAN is highly customisable and the specific areas can be masked to avoid triggering false alarms.

Protecting special assets

Being a unique piece of art, tanks of hazardous substance, or areas containing critical information, some assets require protection to the highest level of security. OPTEX Laser sensor, REDSCAN is ideally suited to protect assets indoor or outdoor by providing highly customisable detection area and great detection accuracy.

Detection area

Seamless integration with video surveillance systems to improve security

Easy integration with CCTV systems

REDWALL sensors from OPTEX have been designed for professional video surveillance systems, to make them more efficient and point the cameras where the intrusion or event is occurring.

Integration with analogue CCTV systems
Analogue Redwall sensors can be plugged directly to any analogue cameras or DVR using their relay output.

Integration with Video Management Software platforms
The REDWALL IP range provides a large number of IP motion detectors and intelligent sensors, which can be connected to the network via Power-over-Ethernet (PoE) and exchange alarm signal information via OPTEX unique IP protocol. This protocol has already been integrated with the the major Video Management Software (VMS) manufacturers.*
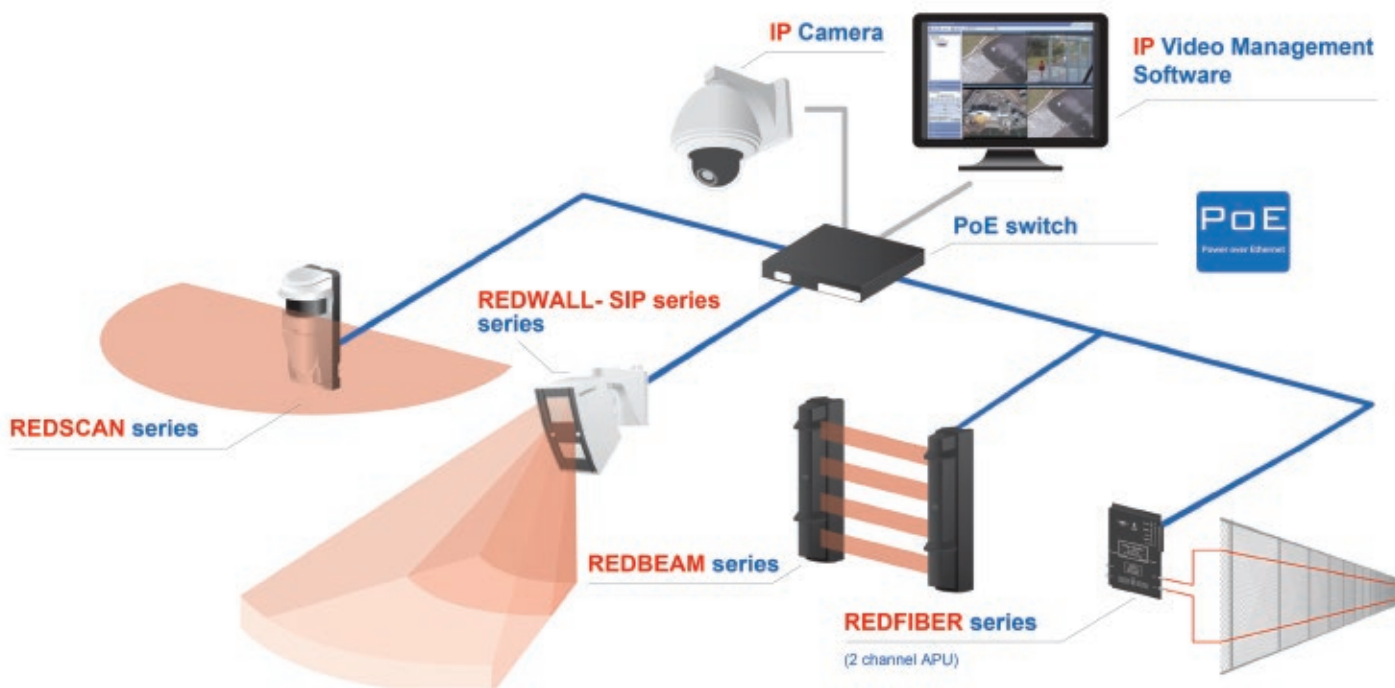
This schematic is a simplified representation of the sensors and their detection areas and not to be used as technical specifications.

Benefits of integrating physical sensors onto a video based security system

Although intrusion detection can be achieved by video based solutions, there are situations where a combination of video analytics and physical sensors improves significantly the reliability of the detection and minimises the problem of false alarms; and other situations where physical sensors are much better suited.

Increased reliability of detection
Insects, spider webs, sudden lights, reflection and shadows can affect video based detection and trigger unwanted alarms. Physical sensors are not affected by low light conditions or shadows; and largely not affected by glare. They can be used as an alternative to video analytics detection or as a double knock system.

Physical sensors help reduce the risk of false alarms affecting video detection systems.

### Applications where video detection is not suited

Vertical detection
There are a number of applications where a virtual wall is required to protect an area: this could be for facade protection or perimeter protection with a very narrow sterile zone etc. For those applications, it is difficult to deploy video based detection systems.

Thrown object detection
It is extremely difficult for video surveillance system to detect objects being thrown into or over a protected area, even more so if the object is small. Now, with the latest in laser sensing technology this requirement can be achieved.
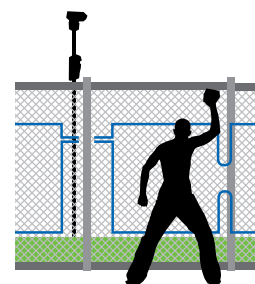
*To learn more about the integration of OPTEX REDWALL IP sensors with VMS platforms, please visit our dedicated website www.optex-vms.com
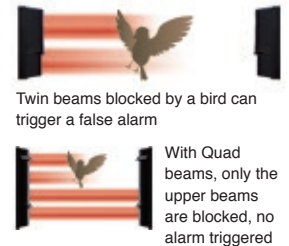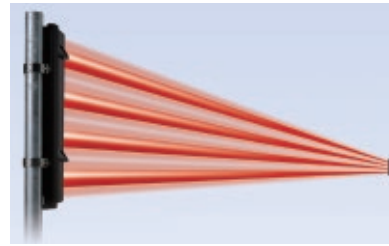
Perimeter protection using active infrared beams

Active infrared beams consist of a pair of transmitter and receiver units to provide a detection line similar to a trip wire or a virtual wall. The transmitter unit constantly emits infrared beams to the receiver and will trigger an alarm if the transmission is broken by an intruder.

OPTEX's Quad beam technology

For industrial or critical infrastructure applications, OPTEX provides its newest QUAD beam active infrared sensors, that are available in wired, wireless or IP version. All models can be stacked in beam towers which offer extra flexibility in terms of system design.

The advantage of using Quad beams is to reduce false alarms caused by flying birds or falling leaves.

Twin beams blocked by a bird can trigger a false alarm

With Quad beams, only the upper beams are blocked, no alarm triggered

Key features for all OPTEX Quad beams

- High quality aspherical lenses
- Easy optical alignment with Sniper viewfinder™ (2 x magnification)
- IP65 water proof housing

Sniper Viewfinder provides a magnifying glass to ease the optical alignment

Wired beams Smart-Line SL-QDM series

The SL-QDM series is a range of high specifications short and long range wired active infrared beams that have been designed to sustain harsh environmental conditions, and ensure optimal communication between transmitter and receiver.

- 60, 100 and 200m detection range
- 4 channel selectable frequency
- Dual modulation
- Dynamic IR communication system between transmitter and receivers to achieve best alignment and signal level.

Wireless Smart Line QFR and QNR series

Ideally suited to protect remote locations or areas difficult to wire, the Smart Line QFR and QNR series provides a 100m perimeter protection that is completely wirefree, reducing the installation time and cost to a minimum. The battery operated sensors can accommodate most wireless transmitters available in the market, or OPTEX can provide beams with pre-fitted wireless transmitters.

- 100m detection range
- Battery operated
- 4 years battery life (with SAFT batteries)
- 4 channel selectable frequency (SL-QFR only)

IP Redbeams

The REDBEAM series is a range of short and long range IP active infrared beams that can be connected via PoE onto the network and transmits alarm events using the REDWALL event code that is integrated with all major VMS platforms (visit www.optex-vms.com for more information).

- 60m, 100m or 200m range
- PoE** (IEEE802.3af/at compliant)
- Redwall event code (UDP/TCP)
- Supported protocols IPv4, ARP, UDP, TCP, ICMP, HTTP

PoE
Power over Ethernet

Beam tower

When there is the need to stack beams to create a virtual wall protection or install them back to back, the sensors will need to be mounted in specially designed tower enclosures. OPTEX can provide a large range of free standing or wall mounted beam towers ranging from 50cm, to 3m high featuring a number of useful options such as light and camera housing on top of the tower.

Perimeter intrusion detection using fibre-optic sensors

Harnessing the latest fibre-optic technology – with the ability to be mounted on fences and on walls – Fiber SenSys systems use advanced signal processing to detect intruders attempting to climb over, crawl under, or cut through a perimeter line.

These intelligent sensors are able to distinguish between genuine intruders and nuisance alarms caused by wind, small animals or environmental conditions. Unlike metallic (coaxial) sensors, the advanced fibre-optic sensing is unaffected by harsh conditions, including EMI and RFI, corrosion and even lightning strikes. With an option to deploy all the electronics far away from the perimeter, it is possible to protect sites with intrinsic requirements as the fibre-optic cable does not contain energy that could cause explosions.

As the electronics can be mounted indoors, even environments with harsh temperatures can be protected.

FD322
### Dual channel Alarm Processing Unit (APU) for fence protection
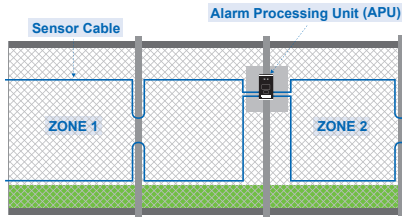
- Dual zone APU for fence protection
- Supports up to 500m sensing cable per zone
- Competitively priced
- Easy to install, free web based training available
- 6+ configuration parameters to ensure high performance
- Ideal for industrial, retail and commercial environments

FD331/FD332
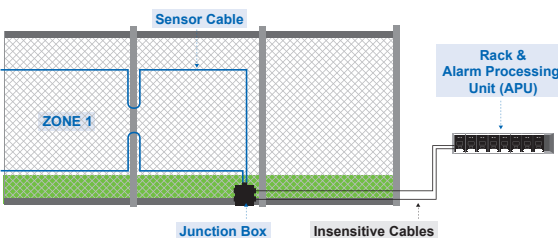### Single or dual channel APU for fence or wall protection
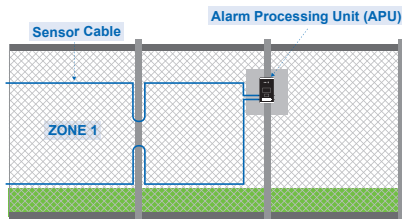
- Single (FD331) or Dual (FD332) zone APU
- For fence and wall applications
- Supports up to 5km sensing cable per zone
- Highly adjustable: 25+ configuration parameters
- Ideal for high-security applications

FD341/FD342
Single or dual channel remote-capable APU for fence and wall protection
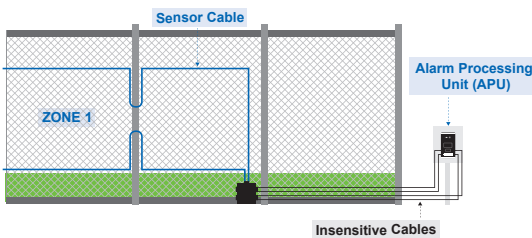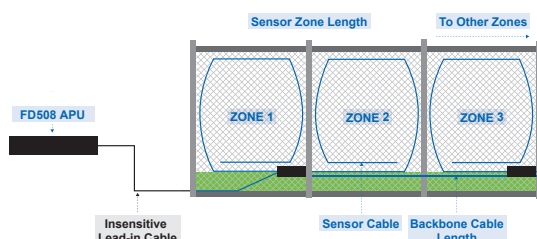
- Single (FD341), Dual zone (FD342) APU
- For fence and wall applications
- The APU can be located remotely from the zone to be protected (up to 20km)
- Supports up to 5km sensing cable per zone
- Sensor cable is unaffected by EMI, RFI, lightning or proximity to electrical cables.
- Highly adjustable: 25+ configuration parameters
- Ideal for high-security applications requiring no electronics in the field

FD348
Single channel remote-capable APU card to insert into a rack for fence and wall protection

- Single zone APU card (FD348R)
- For fence and wall applications
- The APU card fits in a sub-rack (RK-348) that holds a maximum of 8 APUs
- RK-348 takes 4U space in a standard 19 inch rack
- The RK-348 rack is located remotely from the zone to be protected (up to 20km)
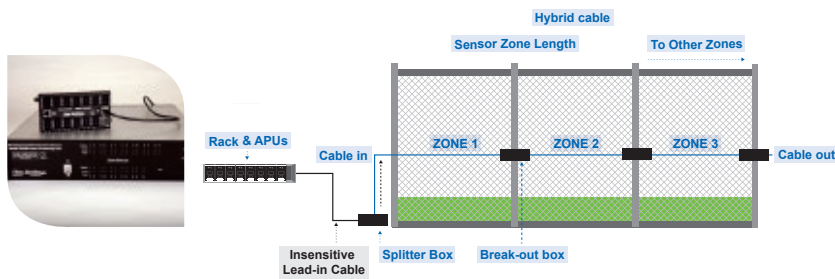- Supports up to 5km sensing cable per zone

FD508
Eight channel remote-capable rack-mounted APU for fence and wall protection

- Up to eight zone rack-mounted APU
- Designed for standard 19 inch equipment racks
- For fence and wall applications
- The APU is located remotely from the zone to be protected (up to 5km)
- Up to 800m sensing cable per zone
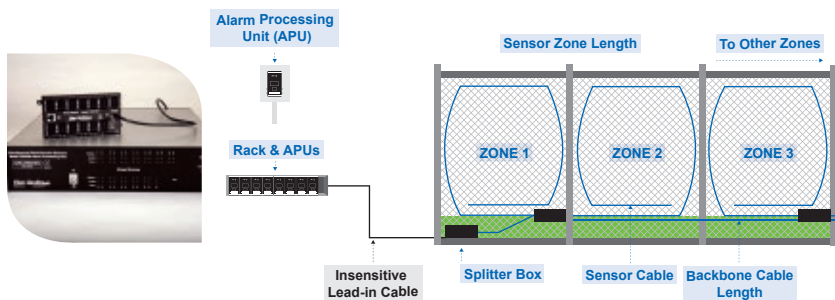- Highly adjustable: 25+ configuration parameters

The schematics above are simplified representations and shouldn't be considered as technical specifications.

FD525 Halo™
25 Channel Remote-capable Rack-mounted APU for fence protection

Hybrid cable
Sensor Zone Length · To Other Zones
Rack & APUs · Cable in · ZONE 1 · ZONE 2 · ZONE 3 · Cable out
Insensitive Lead-in Cable · Splitter Box · Break-out box

- A 25-Zone remote capable APU for fence applications
- 25 zone APU
- Using hybrid cable that can be installed on the fence directly without any conduit
- For fence and wall applications
- All zones are independent; an intrusion attempt on one zone will not affect the other zones
- The rack-mounted (FD525R) APU can be located remotely (from 5 to 12km)
- 500m sensing cable per zone
- 30+ configuration parameters
- Ideal for high-security applications such as refineries, chemical facilities and industrial complexes

FD525 / FD525R
A 25-Zone Stand Alone (Bulk-Head Mount) remote capable APU for fence or wall applications

Alarm Processing Unit (APU)
Sensor Zone Length · To Other Zones
Rack & APUs · ZONE 1 · ZONE 2 · ZONE 3
Insensitive Lead-in Cable · Splitter Box · Sensor Cable · Backbone Cable Length

- Up to 25 zones remote-capable APU
- For fence and wall applications
- All zones are independent; an intrusion attempt on one zone will not affect the other zones
- The stand alone (FD525) or rack-mounted (FD525R)
- APU can be located remotely (from 5 to 12km)
- 500m sensing cable per zone
- 30+ configuration parameters
- Ideal for high-security applications such as nuclear power plants and critical resource area

The schematics above are simplified representations and shouldn't be considered as technical specifications.

Feature Comparison Chart

APU Model Number:	FD322	FD331	FD332	FD341	FD342	FD348R	FD508	FD508	FD525
Fence Applications	●	●	●	●	●	●	●	●	●
Walls		●	●	●	●	●	●		●
Anemoter Device Input		●	●						
Remote Capable (insensitive Lead)				20km	20km	20km	5km	5km	5km
PL-1N Rated		●	●	●	●	●			
Number of SW Tuning Parameters	6	30	30	30	30	30	>30	>30	>30
IP-Enabled	●	Opt.	Opt.	Opt.	Opt.	●	●	●	●
Number of Channels (Zones)	2	1	2	1	2	13	8	25	25
Maximising Sensing Cable per Zone	500m	5km	5km	5km	5km	5km	800m	800m	800m

REDFIBER: fibre-optic fence protection kit for smaller perimeter

The REDFIBER™ series offers cost-effective, packaged two-zone fibre-optic detection solution kits to provide an easy deployment to protect smaller fenced perimeters. The kits include all parts needed for the installation, from the Alarm processing unit, enclosure box, pre-terminated fibre-optic 50 to 200m cables, available in a number of lengths ranging from 50 to 200m.

There is an option to include the REDFIBER IP APU that are PoE compliant; the alarm code is already integrated with all major VMS platforms.

Versatility and Intelligent Object Analysis with REDSCAN Laser Sensors

REDSCAN is an award-winning laser detector that identifies the size, speed and distance of a moving object and can function in effect like an invisible wall. With the ability to be mounted either vertically or horizontally and to be used indoor or outdoor, the REDSCAN can be used for a wide range of security and safety applications. It can be deployed to protect perimeters, skylights, pieces of art or valuable assets as well as to increase safety in public transport by detecting people on railway tracks or crossings.

A variety of detection range

The REDSCAN has a detection area of 30m radius when mounted horizontally and up to 15m high by 59m wide when mounted vertically. It is also easy to customise the detection area using the free configuration software REDSCAN Manager.

52-59 m
(170-193 ft.)   4-15 m (13-50 ft.)

Vertical detection

60 m (200 ft.)

30 m (100 ft.)
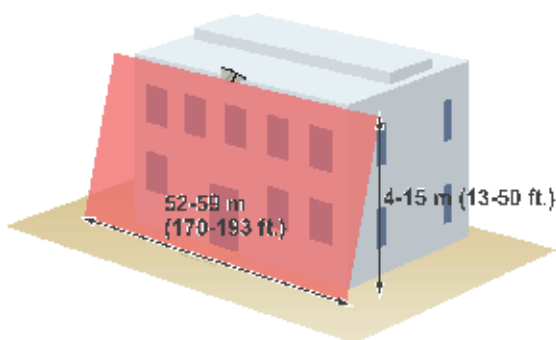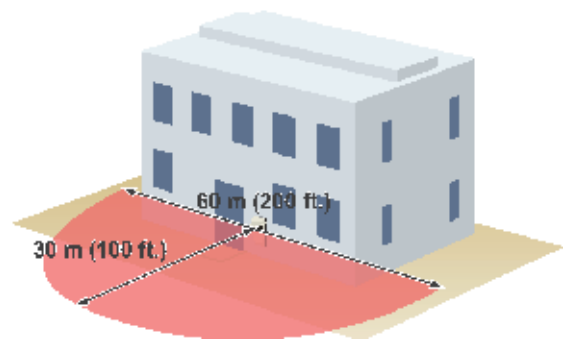
Horizontal detection

Object analysis with size, speed, distance, and loitering information

The REDSCAN sensor constantly scans the detection area and provides live X&Y coordinates and size information for all objects detected. It enables security staff to follow the movement of the objects and know exactly where they are. The sensor can also be set up to detect loitering and send an alarm if someone or something is staying in a specific area for more than the time defined.

Using a third party software application it is possible to stitch the REDSCAN detection areas together and have a live tracking system across the monitored area. Using the size information given by the laser sensor the system can be adjusted to detect only objects smaller or bigger than a defined size.

Depending on the models REDSCAN sensors provide 4 to 8 adjustable detection zones that can be used to generate different triggers. It can be used to trigger PTZ camera pre-set positions and track intruders or targets across zones.

4 zones   **8 zones**
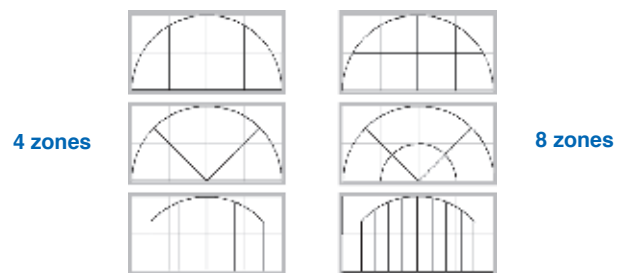
## Easy to configure with REDSCAN Manager Software

Each REDSCAN can be easily configured using the REDSCAN Manager Software; the number of detection zones and the alarm outputs can be set-up quickly.

For the REDSCAN SH version additional features such as day/night settings, customisable masking areas, and area allocation can also be easily set.

Each REDSCAN can be given its own IP address for remote configuration over a LAN.

REDSCAN   **Note PC**
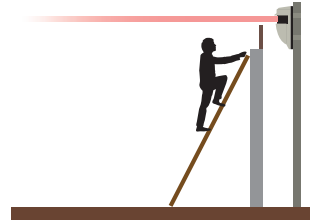

IP connection
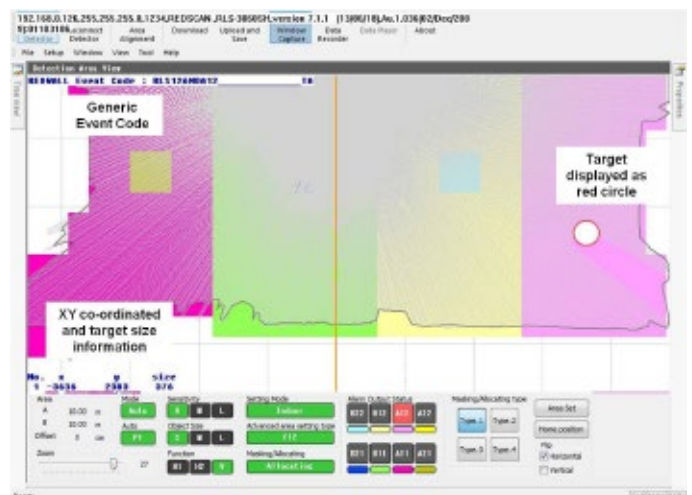
REDSCAN versatility

Detecting people climbing above a fence or wall
The REDSCAN sensors provide a special setting to detect people climbing on top of a fence or wall.

This feature is available for REDSCAN RLS3060L and SH models.

Side view

Day/Night settings
It is possible to set up different detection areas depending on the time of day.

This feature is only available for RLS-3060SH models.

Day time

Night time

Customised area allocation
Within the overall detection area, a number of independent detection zones can be set up.

This feature is only available for RLS 3060 SH models.

Detection area

Detection area

Detection area

Non-detection area
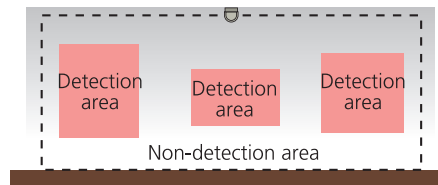
Integrated with VMS platforms

The REDSCAN sensor is a hybrid device that can send alarms using either relay outputs or IP protocol. The IP protocol used has been already integrated with most Video Management Software (VMS). Specified for perimeter protection or indoor applications it is simple to add REDSCANS onto the networked security system. For more information about the VMS integration, visit www.optex-vms.com

REDSCAN models

RLS-3060L/ RLS-3060L PoE

- 30m radius for 190 degrees range
- Vertical and horizontal mounting
- Unique detection algorithm
- Automatic area setting function
- 4 independently adjustable detection areas and 4 linked outputs for PTZ camera control (on analogue connection and IP connection)
- Fog cancellation algorithm (patent listed)
- Scene selection (outdoor and indoor)
- Fence/ wall top detection
- PoE+ (RLS3060-PoE only)

RLS-3060SH/ RLS-3060SH PoE

- Same features as RLS3060L
- Scene selection (outdoor, indoor, indoor ceiling/wall protection and vehicle)
- 8 independently adjustable detection areas and REDWALL event codes for network recorder and video management software (analogue connection and IP connection)
- Built-in heater
- Day/night settings
- A number of area allocation
- Customisable masking areas

If additional features are required for specific applications, please contact our project team.

3D Thermal sensors for in field detection

The REDWALL long range external sensors are intelligent high-mounted detection systems that provide volumetric detection for outdoor applications covering areas as wide as 50m by 30m or as long as 100 by 3m. They analyse subtle temperature differences between a moving object and the background temperature to detect intrusion. They provide a great tool for site security to capture where people are and use the independent detection areas to drive PTZ cameras and provide visual verification. The REDWALL SIP thermal sensors are available as analogue wired, analogue wireless or IP/ PoE-compliant models.

REDWALL SIP series key Features

Customised detection area

The View Finder installation kit helps installers set-up the detection area by cutting out the sensor's obstruction elements, like trees for instance that are likely to generate false alarms. This enables the system to be very reliable.
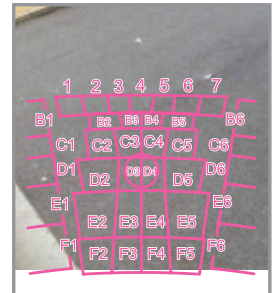
Adjustable and independent sensitivity areas

Outdoor sensors are subject to considerable environment changes that could impact their performance. That's why the REDWALL SIP series have been designed to automatically adjust the sensitivity to the ambient temperature and light.

On these sensors, it is also possible to set up independent sensitivity for the near and far zones to adjust the detection level and type of triggers depending of the level of threat.
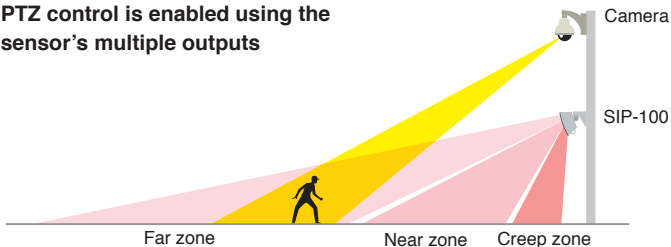
Independent sensitivity selector for NEAR/FAR zones

PTZ control is enabled using the sensor's multiple outputs

Camera

SIP-100

Far zone   Near zone   Creep zone

FAR

NEAR
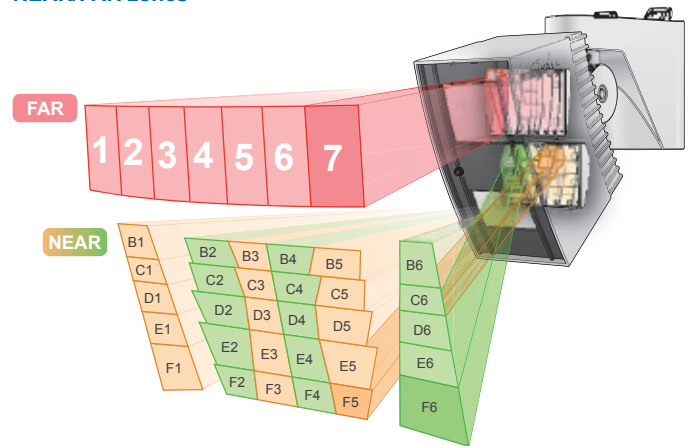
Anti-vandalism features
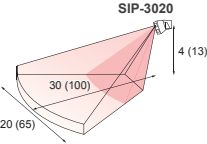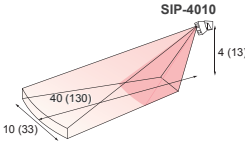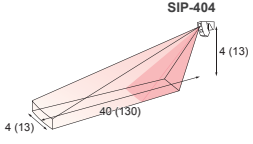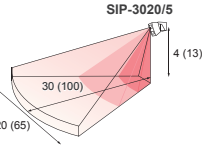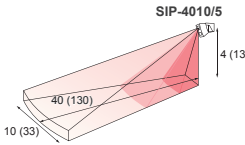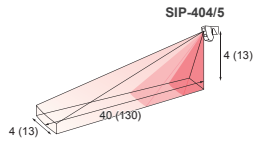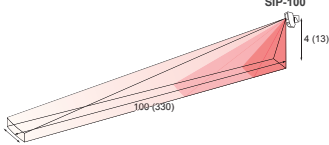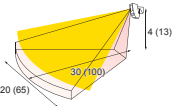
All REDWALL SIP sensors are made of reinforced polycarbonate housing and feature anti-vandalism functions to notify the system if they have been tampered with. This consists of an active infrared anti-masking detection and anti-rotation function with accelerometer.

REDWALL SIP-IP integrated with all major VMS platforms

The REDWALL SIP-IP range are PoE compliant sensors that can be connected directly onto the network and will transmit alarms using the REDWALL Event code, integrated with all major Video Management Software (VMS) platforms. For more details visit our dedicated website www.optex-vms.com
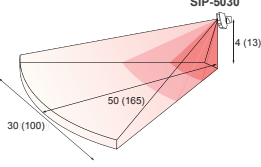
IP Camera

IP Video Management Software

PoE switch

PoE

REDWALL- SiP series series

REDSCAN series

REDBEAM series

REDFIBER series
(2 channel XP(L))

REDWALL SIP models and detection areas

		SIP-3020models detection range in meters or (feet)	SIP-4010 models detection range in meters or (feet)	SIP 404 models detection range in meters or (feet)
SIP-3020_4010_404 Analogue and wireless version available (WF models)	**SIP-3020-IP_4010-IP_404-IP IP/PoE compliant**	SIP-3020 4 (13) 30 (100) 20 (65)	SIP-4010 4 (13) 40 (130) 10 (33)	SIP-404 4 (13) 40 (130) 4 (13)
■ 2 independent sensitivity selectors and alarm output for near and far zones				
SIP-3020/5_4010/5_404/5 Analogue models	**SIP-3020/5-IP_4010/5-IP_ SIP404/5-IP IP / PoE compliant models**	SIP-3020/5 models detection range SIP-3020/5 4 (13) 30 (100) 20 (65)	SIP-4010/5 models detection range SIP-4010/5 4 (13) 40 (130) 10 (33)	SIP-404/5 models detection range SIP-404/5 4 (13) 40 (130) 4 (13)
■ Built in creep zone sensor (6x9m) ■ 3 independent sensitivity selectors and alarm outputs for near/far areas and creep zone				
SIP-5030_SIP-100 Analogue models	**SIP-5030-IP_SIP-100-IP IP / PoE compliant models**	SIP-5030 models detection range SIP-5030 4 (13) 50 (165) 30 (100)	SIP-100 models detection range SIP-100 4 (13) 100 (330)	
■ Long range sensors ■ Build-in creep zone (6x9m) ■ 3 independent sensitivity selectors and alarm outputs for near/far areas and creep zone				
SIP-3020 CAM DN Analogue model	■ Short range sensor with built-in Day/Night camera	SIP-3020 Cam DN detection range 4 (13) 30 (100) 20 (65)		

OPTEX has more sensing technologies up its sleeve

A large range of indoor and outdoor OPTEX sensors are available

In addition to all the sensors presented in this catalogue, OPTEX offers a number of wall and ceiling mounted indoor detectors as well as a series of wired and wireless PIRS, dual tech and active infrared outdoor sensors. More information is available on our website.

People counting and flow analysis systems

OPTEX provides a video based multidirectional people counting and flow analysis system. This solution can be used for business applications to measure footfall or security and safety applications to monitor the level of occupancy or detect people going the wrong direction in controlled areas.

Piggybacking and tailgating detection systems

OPTEX has developed a detection system to increase security in controlled access areas, such as SASS doors by monitoring and/or preventing any piggybacking or tailgating situations. The system uses "time of flight" technology that is unaffected by light and measures the target in 3D to identify how many people are trying to enter the controlled area and compare this with the number of people authorised by the access control system.

OPTEX team is happy to support you

OPTEX has local sales and technical teams that are happy to support you with any design assistance, project support and technical training.

All products featured on this brochure can be submitted to specification changes. Please contact us to get the latest status.

OPTEX®, leading sensor manufacturer for over 30 years, provides high performance detection and video analytics systems for security, safety and business applications.

OPTEX's multi-layered intrusion detection systems help protect perimeters, sites, roofs and buildings and offer a wide range of technologies to suit all types of site configuration and environment including harsh outdoor conditions. Its systems are featured in thousands of installations worldwide, from military and government facilities to transportation and utilities sites and other critical infrastructure.

Founded in Japan, OPTEX is a global company with regional headquarters and a number of local offices.

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