ELVEY Security Technologies

Intelligent security decisions

OPTEX Sensing Innovation

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Basics of Infrared

What will be covered

Basics of Infrared

Detection patterns

Indoor detection

Dual Technology Detectors

360° Detectors

Accessories

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What is Infrared?

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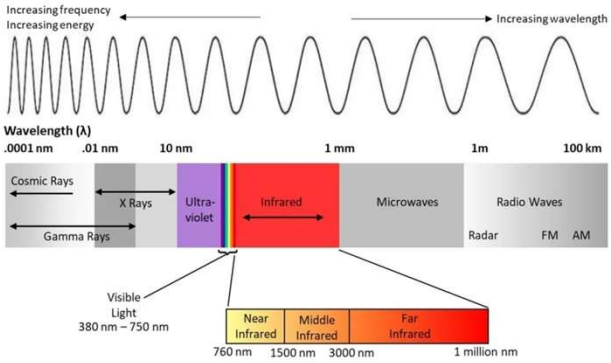
- Infrared Energy
  - Infrared energy is found in all things, most common source of infrared energy is the sun.
  - Objects don't need to be bright or warm to emit infrared energy
  - Warmer objects will emit more infrared energy.

- Only objects at less than 0° Kelvin, (-273°C) do not emit Infrared Energy.
  - At absolute zero all molecular motion does not cease but does not have enough energy for transference to other systems
  - At 0 Kelvin, molecular energy is minimal.

What is Infrared?

INFRA – Below our ability to visually detect it
RED – lowest visible colour that our eyes can see



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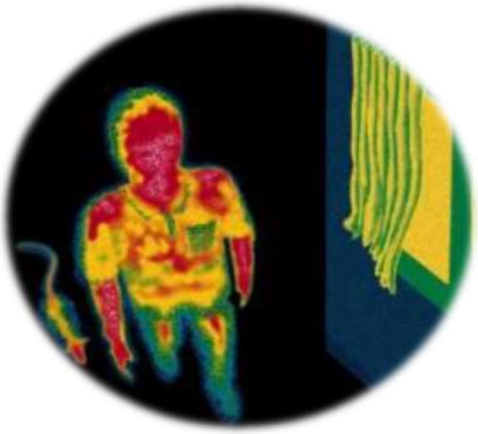
- There are three Infrared Categories
  - Near Infrared (Short Wave) – CCTV use
  - Middle Infrared (Medium Wave)
  - Far Infrared (Longwave) – PIR or Passive Infrared Detectors

What is Infrared?



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An illustration of Infrared energy being emitted

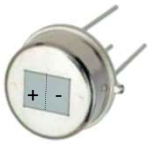
- The human body emits more energy than its surroundings
    - This is due to the temperature difference between a human/animal vs its surroundings

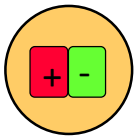
How does it work?

Pyroelectric Sensor

Consists of certain Crystal elements

Converts IR energy to electrical energy





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- Single Element Pyroelectric (Pyro) Sensor
  - Stable in certain environments
- Dual Element Pyroelectric (Pyro) Sensor
  - Pyro element is split in two halves
  - More stable and reliable detection patterns
    - One side will create a positive signal
    - One side will create a negative signal
- Most modern PIR detectors use dual element Pyro sensors

How does it work?

Lenses

Lens – Used to focus IR energy onto the Pyro sensor

Fresnel Lens

Use refractive properties to refract or focus the IR energy onto the Pyro sensor

Mirror Lens

Straight non refractive outside lens
IR energy is reflecting from inside mirror lens onto the Pyro element
The Pyro element is facing away from the detection area

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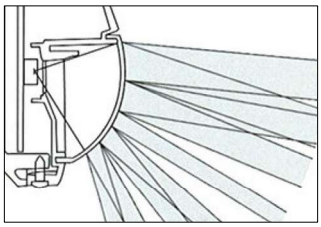
- Fresnel Lens
  - Curved – Refractive properties refract/ focus IR energy onto the Pyro element.
- Mirror Optic Lens
  - Chrome plated plastic moulding. Located inside the PIR behind a non-reflective lens

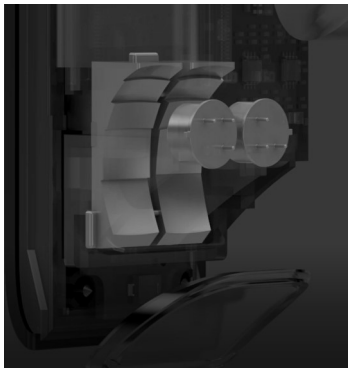
How does it work?

Lenses

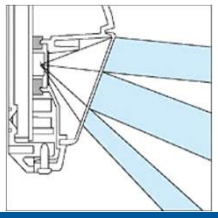
Curved Fresnel Lens



Mirror Optic Lens



Horizontally Curved Fresnel Lens



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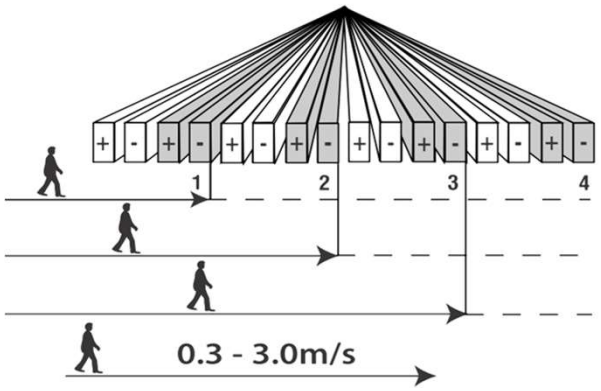
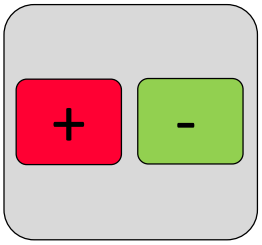
- Curved Fresnel Lens
  - Better light refraction on the Pyro element
  - Detection zones can be spaced closer – eliminating blind spots
- Horizontally Curved Fresnel Lens
  - Wider spacing between detection patterns
  - More blind spots between detection patterns
- Mirror Optic Lens
  - Similar detection patterns than a Curved Fresnel Lens but a much sharper/ clear focus point

How does it work?

Signal Processing





Dual Element Pyro

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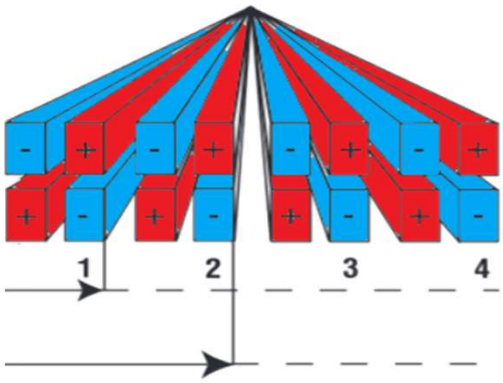
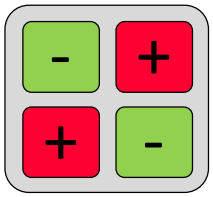
- Pulse count
  - The detector counts how many times an intruder crosses the +(pos) or –(neg) field of view or thresholds
- Pulse count – Done at 2 or 4 pulse count
  - The nr of pulses required to trigger the alarm
  - 1 Pulse – 2 fields of view must be triggered for an alarm in 0,3 – 3,0m/s
  - 2 Pulse – 4 fields of view must be triggered for an alarm in 0,3 – 3,0m/s

How does it work?

Signal Processing





Quad Element Pyro

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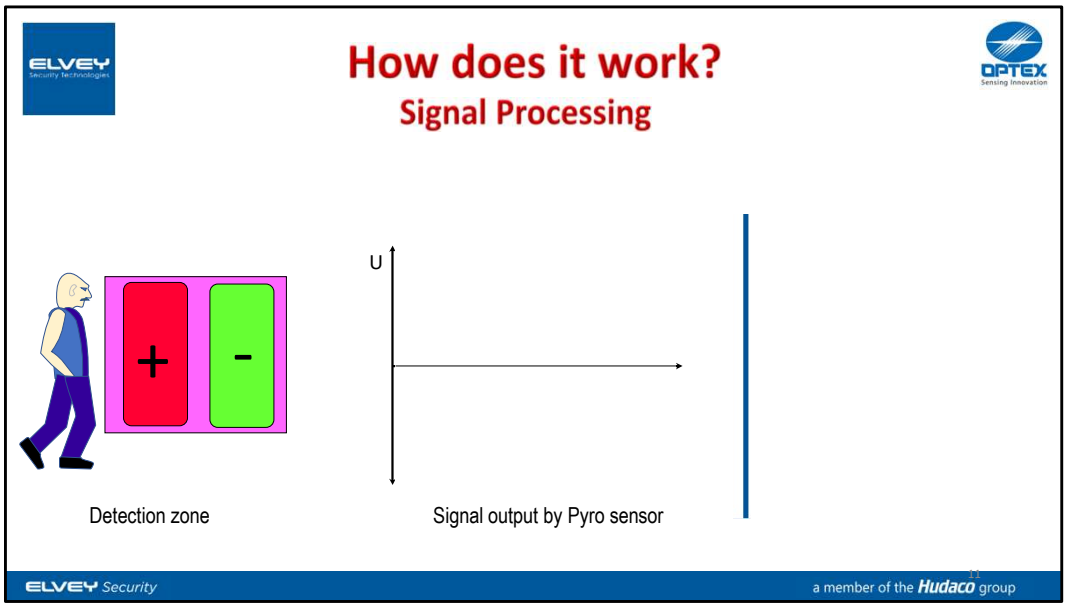
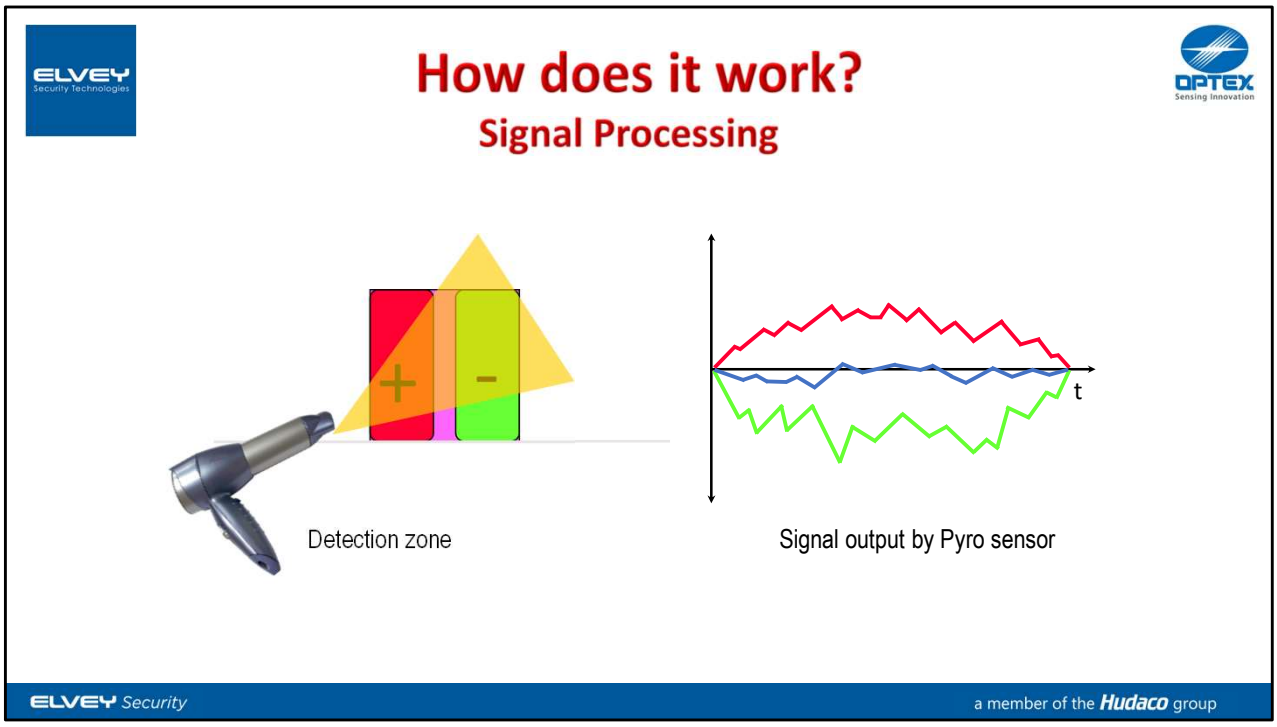
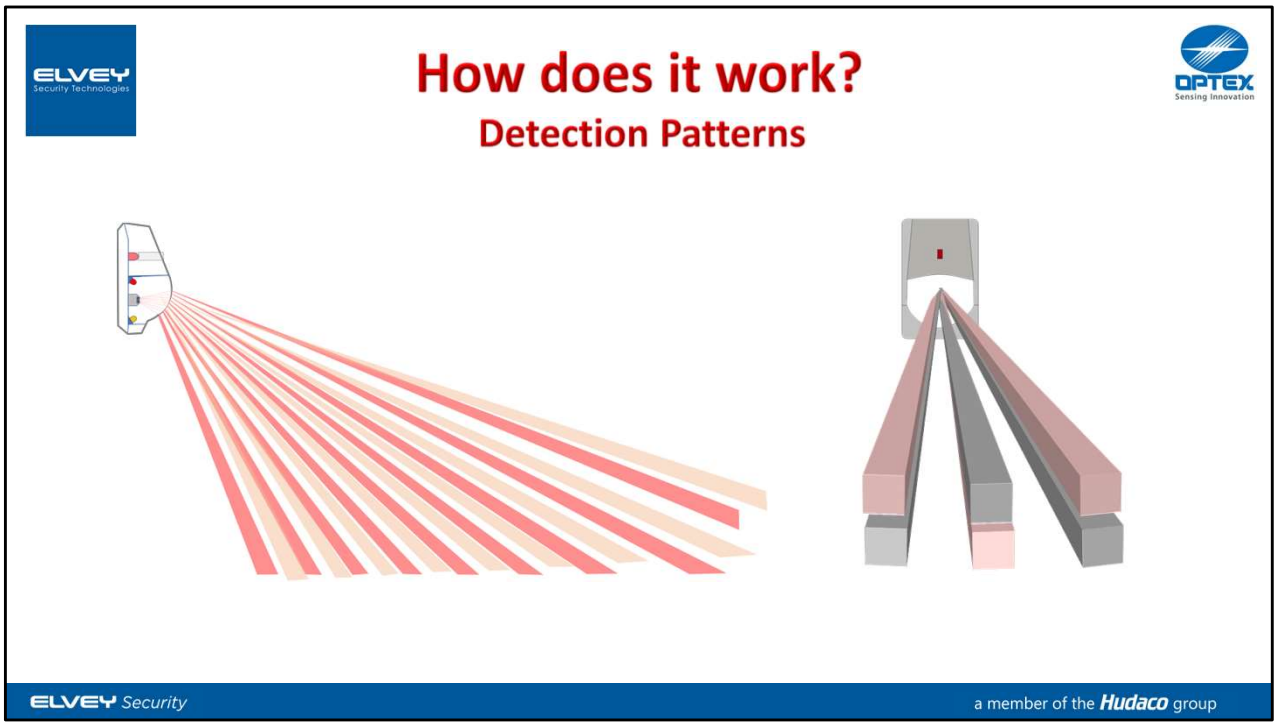
- Pulse count
  - The detector counts how many times an intruder crosses the + (pos) or – (neg) field of view or thresholds
- Pulse count – Done at 2 or 4 pulse count
  - The nr of pulses required to trigger the alarm
  - 1 Pulse – 2 fields of view must be triggered for an alarm in 0,3 ~ 3,0m/s
  - 2 Pulse – 4 fields of view must be triggered for an alarm in 0,3 ~ 3,0m/s



- Pyro Signal Processing
    - Signals from the + (pos) & - (neg) element will trigger in sequence, creating a positive detection signal



- Environmental source creating the same reaction on both the +(pos) & - (neg) elements
    - This will cancel each other out and not create an alarm as the Pos & Neg signals are similar at the same time

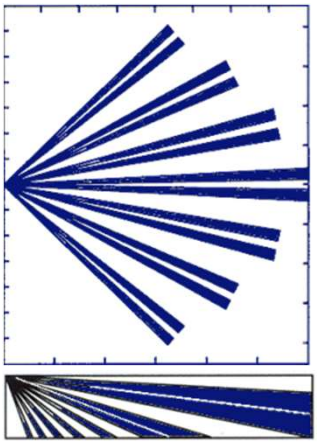


- The PIR detects changes in infrared energy levels emitted from objects
    - It does not emit “beams” out of the PIR

How does it work?

Detection Patterns

Wide Angle Detection



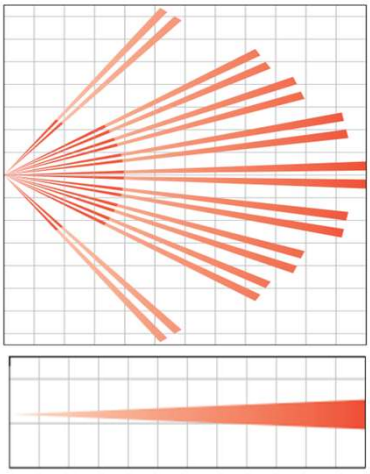
Top View

Side View

How does it work?

Detection Patterns

Pet Alley Detector



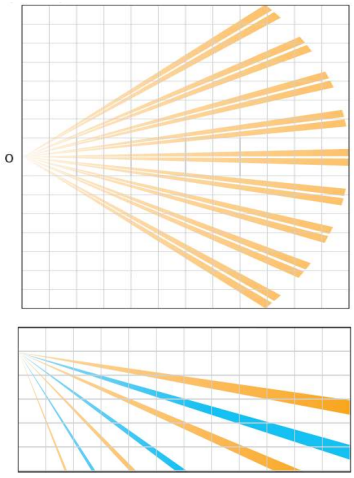
Top View

Side View

How does it work?

Detection Patterns

Wide Angle – Dual Pyro



Top View

Side View

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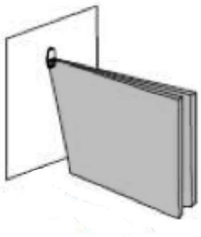
- Dual Pyro sensors
  - Detector has two pyro element detectors
- Dual element Pyro
  - Pyro element is split in two halves
  - More stable and reliable detection patterns
    - One side will create a positive signal
    - One side will create a negative signal

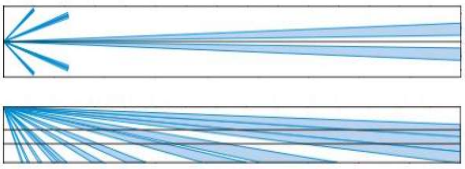
How does it work?

Detection Patterns

Curtain



Narrow Angle/ Long Range



Top View

Side View

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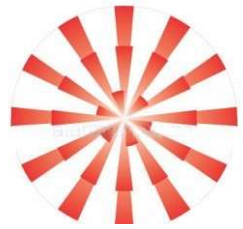
- Curtain
  - Detection patterns overlap, creating a barrier
- Narrow Angle
  - Narrow Angle is sometimes also referred to as long range

How does it work?

Detection Patterns

Ceiling mount/ 360°



Top view

Side view

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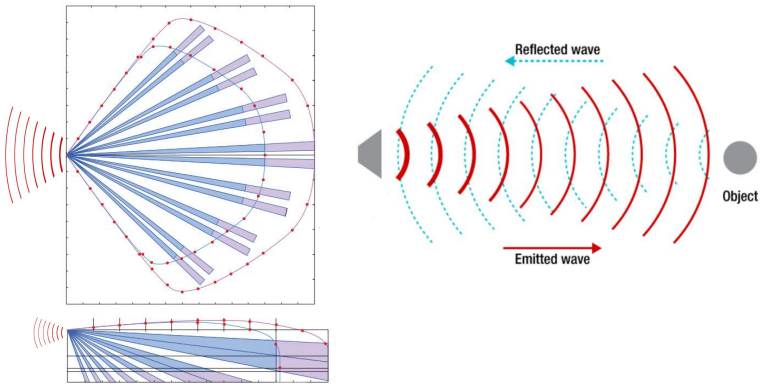
- Multi Pyro 360° detectors have a much smaller gap between detection patterns
  - More stable
  - Larger area that can be covered
  - Higher mounting height

How does it work?

Detection Patterns

Microwave Detection



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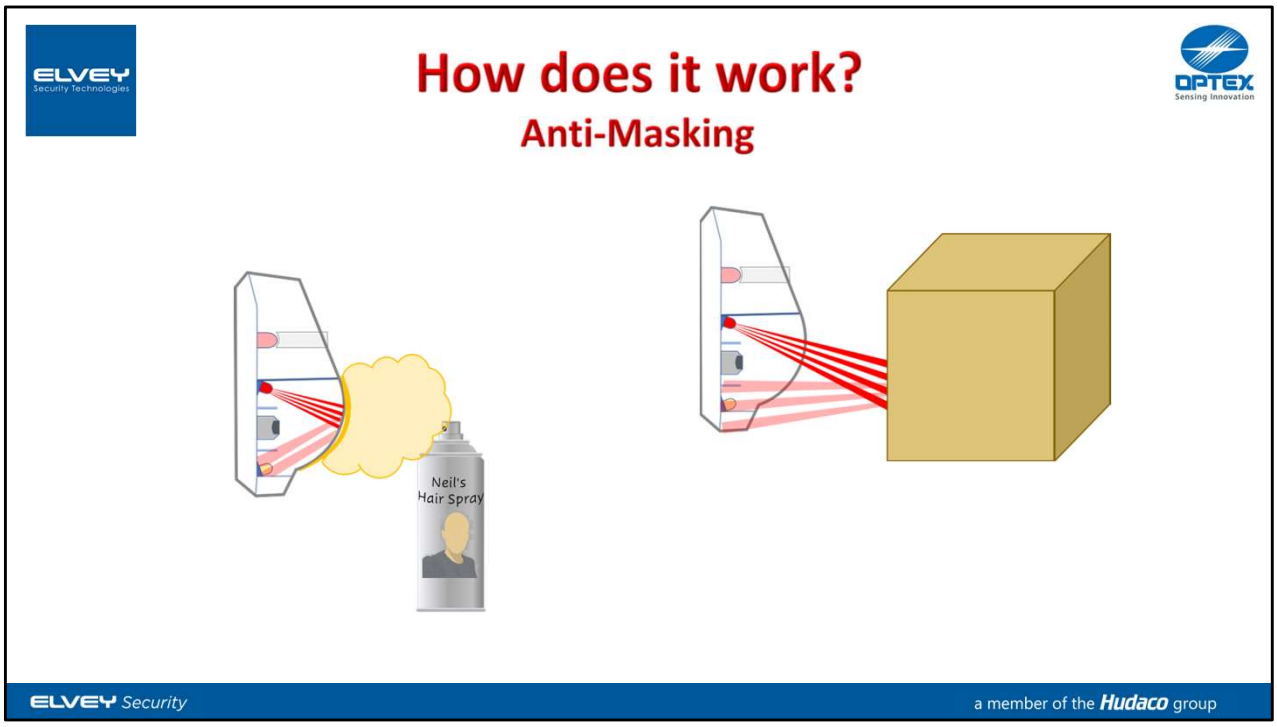
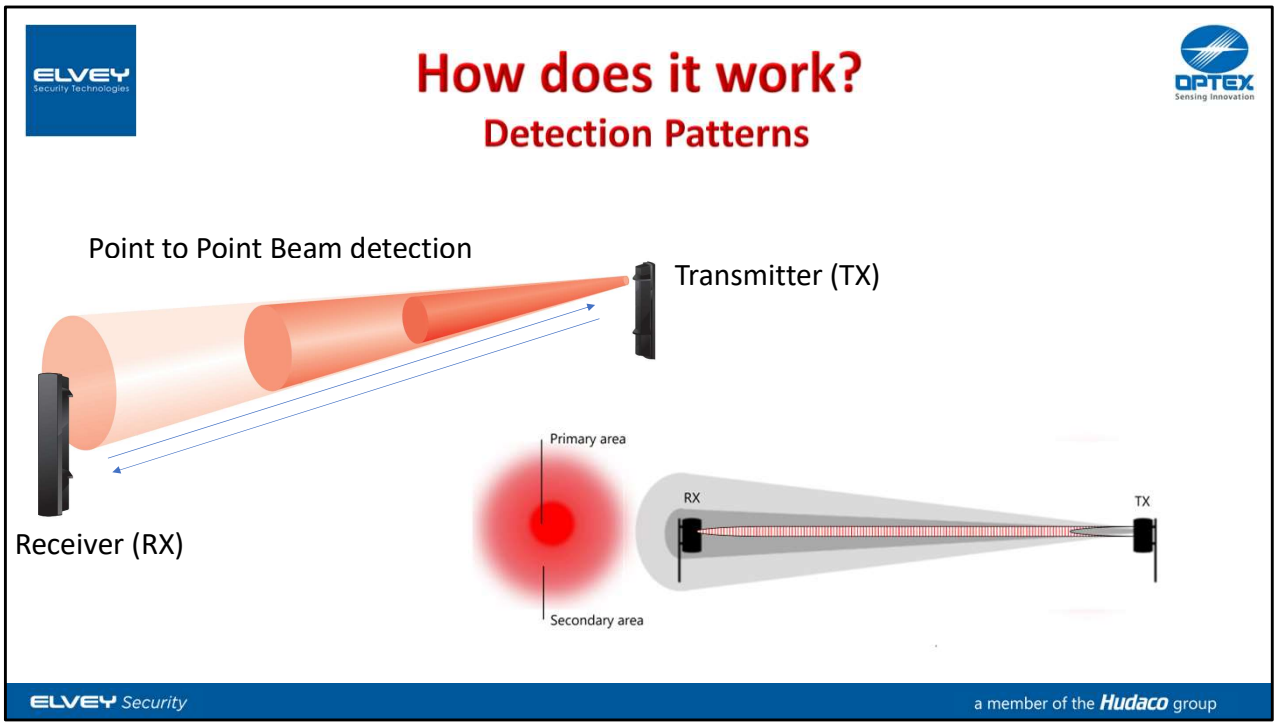
- Works on the doppler effect, similar to a radar

- Microwave patterns indicated in red dots. – Patterns are from two different models
- AND/OR function
    - OR – The main detector (PIR) section OR the Microwave section must be activated to create an alarm
    - AND – The main detector (PIR) section AND the Microwave section must be activated to create an alarm
- All Microwave detectors have an area behind it that could cause false detection depending on the site and surroundings behind the detector
- “Anti-Blocking” & Anti-Cloaking” features are utilized with some newer Microwave detectors
    - Anti-Cloaking – When an intruder tries to mask himself with the ambient infrared background energy
    - Anti-blocking – Similar to anti-masking, when trying to mask a detector.



- Anti-Masking
  - An additional IR LED emits IR light
  - When the IR light is reflected back to the IR photo sensor, a trouble condition relay/output is triggered



- Available in Single, Dual & Quad beam detectors
- Point to Point Beam
  - TX transmit the signal (IR pattern) in the direction of the RX
  - RX receives the IR signal sent by TX
- Cone shaped detection pattern created by the transmitter
  - Alignment is fine tuned in order to get the strongest point of the pattern (Primary area)
  - "Spillage"/ secondary area can cause the following problems
    - False activations
    - Cross talk
    - Missed activations
- Two-way communication (only on certain models)
  - The RX will send information back to the TX regarding signal strength
  - The TX will adjust the signal strength accordingly

Outdoor protection acts as a Deterrent, limits the time a thief has to disable physical barriers and speeds up response time as they alarm will sound before they can enter the building?

Optex Terminology

ST – Standard model

AM – Anti Masking

DAM – (D) Dual tech (Microwave) & PIR
Normally with Ant Masking

RDAM – (R) Wireless devices

WXI – (I) Infinity range

WXS – (S) Shield series, latest technology, Blue touch

BXS – (B) Both sides

VXI – (V) V = 90 °

WXS – (W) W is 2 x 90 ° → 180 °

Optex Line-up

Wide Angle/ Pet Friendly

RXC-ST - Optex RX Indoor Digital PIR
EOL

RX40SAC-BKT - Optex RX Indoor Quad PIR Detector with Bracket
EOL

RX40PT - Optex RX Indoor Quad PIR Detector
EOL

FMX-ST - Optex Quad Zone PIR Detector
EOL

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- RXC-ST (Includes mounting bracket) (EOL – Replacement covered in the following slides)
  - 12m x 12m detection range (Adjustable to 18m x 2,4m with the FL-60N lens)
  - LED switchable On/Off
  - Not rated as pet friendly
  - Mounting height. 1,5m – 2,4m
- RX40SAC-BKT (Includes mounting bracket) (EOL – Replacement covered in the following slides)
  - 12m x 12m detection range (Adjustable to 18m x 2,4m with the FL-60N lens)
  - Mounting height. 1,5m – 2,4m
- RX40PT (Pet Friendly) (EOL – Replacement covered in the following slides)
  - 12m x 12m detection range (Adjustable to 18m x 2,4m with the FL-60N lens)
  - Pet friendly up to 40cm
  - Mounting height. 1,5m – 2,4m
- FMX-ST (EOL – Replacement covered in the following slides)
  - 15m x 15m detection range
  - Only states Pet Tolerance
  - Mounting height. 2,2m – 3m

Optex Line-up

Dual Tech Detectors

MX40QZ - Dual Technology, PIR & Microwave Detection

EOL

RXC-DT-X5 - RX Core Microwave PIR Combined Technology

EOL

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- MX40QZ (EOL – Replacement covered in the following slides)
  - 12m x 12m detection range
  - Microwave – 7m short range & 12m long range
  - Mounting height. 1,5m ~ 2,4m
- RXC-DT-X5 (EOL – Replacement covered in the following slides)
  - 12m x 12m detection range
  - LED Switchable On/Off
  - Microwave – 7m short range & 12m long range
  - Mounting height. 1,5m ~ 2,4m

Optex Line-up

Wide Angle/ Anti-Masking

CX702C - Optex Dual Purpose Optics PIR Detector

CDX-AM - Optex Quad Zone PIR Detector, AM (Ant-Masking)
EOL

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- CX702
  - 21m x 21m detection range (Wide Angle) or 45m x 10m detection range (Long Range)
  - Mounting height. 1,5m ~ 3,6m
  - Twin Pyro
- CDX-AM (EOL – Replacement covered in the following slides)
  - 15m x 15m detection range
  - Mounting height. 1,8m ~ 2,4m
  - Anti-Masking function

New Optex Line-up

Wide/Narrow Angle/Pet Friendly

FLX-S-ST - Optex Standard Indoor Digital PIR
NEW

FLX-S-DT-X5 - Optex Standard Indoor Digital PIR with Microwave detection
NEW

FLX-ST – Optex FLX bracket for all FLX detectors
NEW (TBA)

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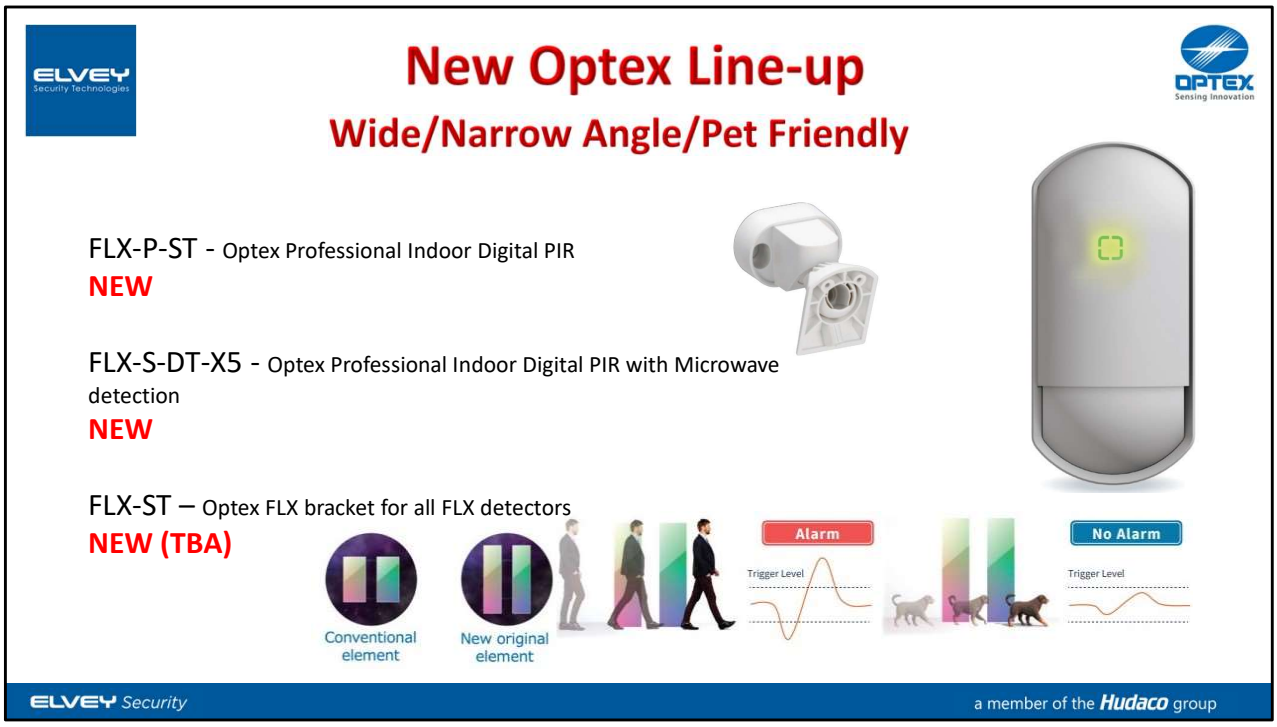
- RXC-ST, RX40SAC-BKT & RX40PT → FLX-S-ST (-S → Standard Range)
- FLX-S-ST (Excludes bracket)
  - 12m x 12m detection range (Wide angle)
  - 18m x 6m detection range (Narrow angle – flipped lens)
  - Pet friendly (weight not specified)
  - Mounting height. 2m – 3m (2,4m recommended)
- MX40QZ, RXC-DT-X5 → FLX-S-DT-X5 (-S → Standard Range)(-DT → Microwave)
- FLX-S-DT-X5 (Excludes bracket)
  - 12m x 12m detection range (Wide angle)
  - 18m x 6m detection range (Narrow angle – Flipped lens)
  - No microwave detection on flipped lens
  - Pet friendly (weight not specified)
  - Mounting height. 2m – 3m (2,4m recommended)
- FLX-ST (TBA)
  - Bracket for all FLX detectors



- FMX-ST → FLX-P-ST (-P → Professional Range, Grade II)
- FLX-P-ST (Excludes bracket)
  - 15m x 15m detection range (Wide angle)
  - 24m x 6m detection range (Narrow angle – flipped lens)
  - Pet friendly (weight not specified)
  - Mounting height. 2m – 3m (2,4m recommended)
- FLX-P-DT-X5 (Excludes bracket)
  - 15m x 15m detection range (Wide angle)
  - 24m x 6m detection range (Narrow angle – Flipped lens)
  - No microwave detection on flipped lens
  - Pet friendly (weight not specified)
  - Mounting height. 2m – 3m (2,4m recommended)
- FLX-ST (TBA)
  - Bracket for all FLX detectors

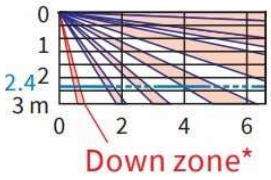
New Optex Line-up

Wide/Narrow Angle/Pet Friendly

FLX-A-AM - Optex Advanced FLX Indoor Digital PIR
NEW

FLX-S-DT-X5 - Optex Advanced Indoor Digital PIR with Microwave detection
NEW

FLX-ST – Optex FLX bracket for all FLX detectors
NEW (TBA)



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- CDX-AM → FLX-A-AM (-A → Advanced Range, Grade III)
- FLX-A-AM (Anti-Masking) (Excludes bracket)
  - 15m x 15m detection range (Wide angle)
  - 24m x 6m detection range (Narrow angle – flipped lens)
  - Pet friendly (weight not specified)
  - Down Zone – Enabled/ Disabled in settings
  - Mounting height. 2m – 3m (2,4m recommended)
- FLX-A-DAM-X5 (Anti-Masking with Microwave) (Excludes bracket)
  - 12m x 12m detection range (Wide angle)
  - Short & Long range Microwave lengths
  - 24m x 6m detection range (Narrow angle – Flipped lens)
  - No microwave detection on flipped lens
  - Pet friendly (weight not specified)
  - Down Zone – Enabled/ Disabled in settings
  - Mounting height. 2m – 3m (2,4m recommended)
- FLX-ST (TBA)
  - Bracket for all FLX detectors

Optex Line-up

360°/ Ceiling mount

FX360 - Optex 360° Ceiling Mount Detector

SX360Z - Optex 360° High Mount Ceiling Detector

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- FX360
  - Ø8m/360° at 2,4m. Ø10m/360° at 3m. Ø12m/360° at 3,6m (Max height)
- SX360
  - SX360 has 3 Pyro sensors
  - Zoom capabilities to fine adjust the area of detection at any height
  - Ø9m/360° at 2,4m~ Ø18m/360° at 4,8m

Optex line-up

Low Mount or High Mount

LX402C

LX802N

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- LX402C
  - 12m x 15m detection range (can swivel with optional wall or ceiling bracket)
  - Mounting height. 1,2 – 1.5m Low mount. 2.5m High mount
  - Pet Alley mirror lens on low mount – Only on low mount
  - 3 Sensitivity settings
  - IP54
  - 10,8 – 13,2VDC
- LX802N
  - 24m x 2m detection range (can swivel with optional wall or ceiling bracket)
  - Mounting height. 1,2 – 1.5m Low mount. 2.5m High mount
  - Pet Alley mirror lens on low mount – Only on low mount
  - 3 Sensitivity settings
  - IP54
  - 10,8 – 13,2VDC

- QXI-ST (-ST Standard) (-DT-X5 Microwave Anti-Blocking)
  - SMDA – Super Multidimensional Analysis logic- Advance environment analysis & filtering
  - 12m x 12m detection range (can swivel with optional wall or ceiling bracket)
  - Mounting height. 0,8 – 1,2m Low mount. 2,2 – 2.7m High mount
  - Pet Alley mirror lens on low mount
  - Anti-Blocking (-DT-X5 model only)
  - 9,5 – 16VDC
- QXI-R (-R Wireless model) (-RDT-X5 Wireless Microwave Anti-Masking)
  - Specifications and functions are the same between wired and wireless models
  - 3VDC

Optex line-up

Low Mount

CA1W-QXI

CA2C-QXI

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- CA1W-QXI
  - White Ceiling mount bracket for QXI range
- CA2C-QXI
  - White Ceiling mount bracket for QXI range

Optex line-up

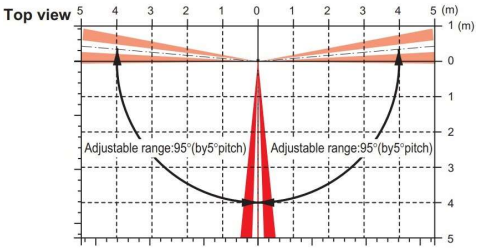
Curtain/ Side Angle

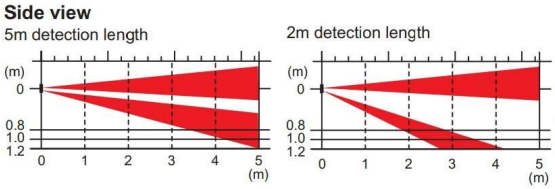
FTN-ST

FTN-AM

FTN-R

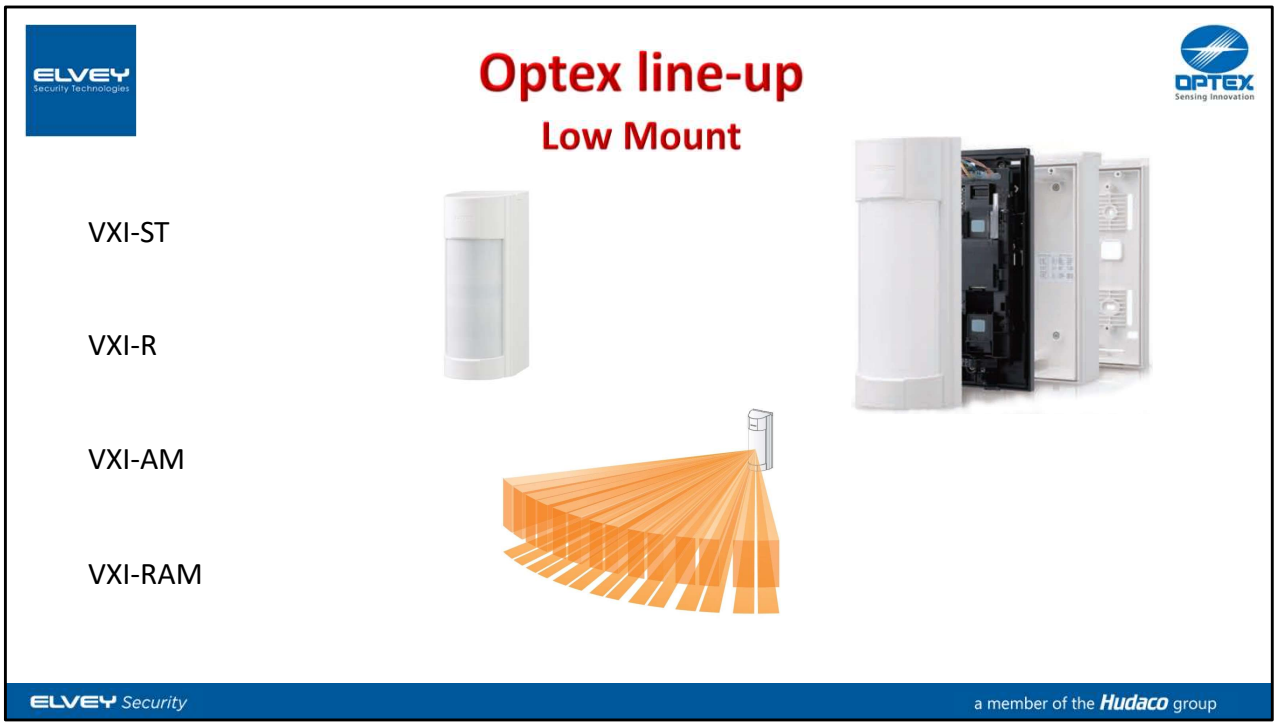
FTN-RAM





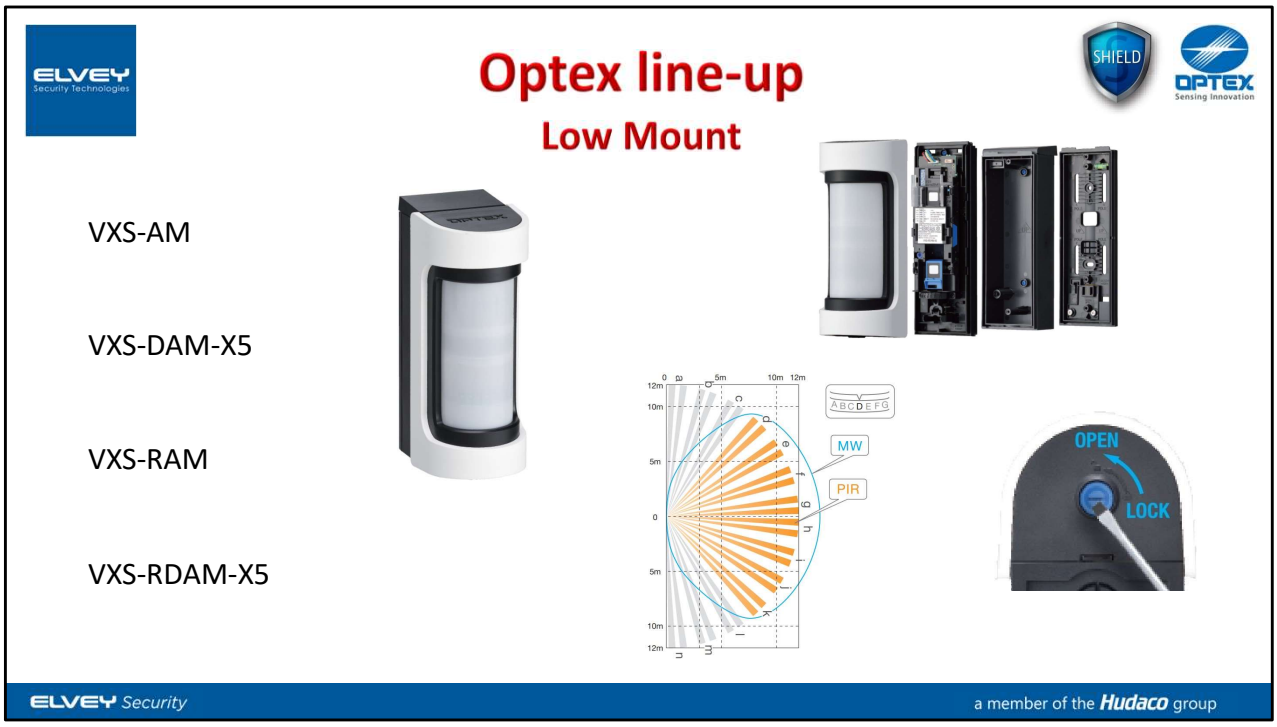
ELVEY Security — a member of the Hudaco group

- FTN-ST (-ST Dual Pyro Detector) (-AM Anti-Masking)
  - 5m x 1m detection range (Curtain)
  - Adjustable wall mount bracket
  - 2 detection lengths (PIR Adjusted – 2 & 5m)
  - Anti-Masking (-AM & -RAM models only)
  - Mounting height. Low Mount – 0,8 – 1,2m
  - 9,5 – 18VDC
  - IP55
- FTN-R/RAM(-R Wireless) (-RAM Wireless & Anti-Masking)
  - Specifications and functions are the same between wired and wireless models
  - 2,5 – 10VDC lithium or Alkaline

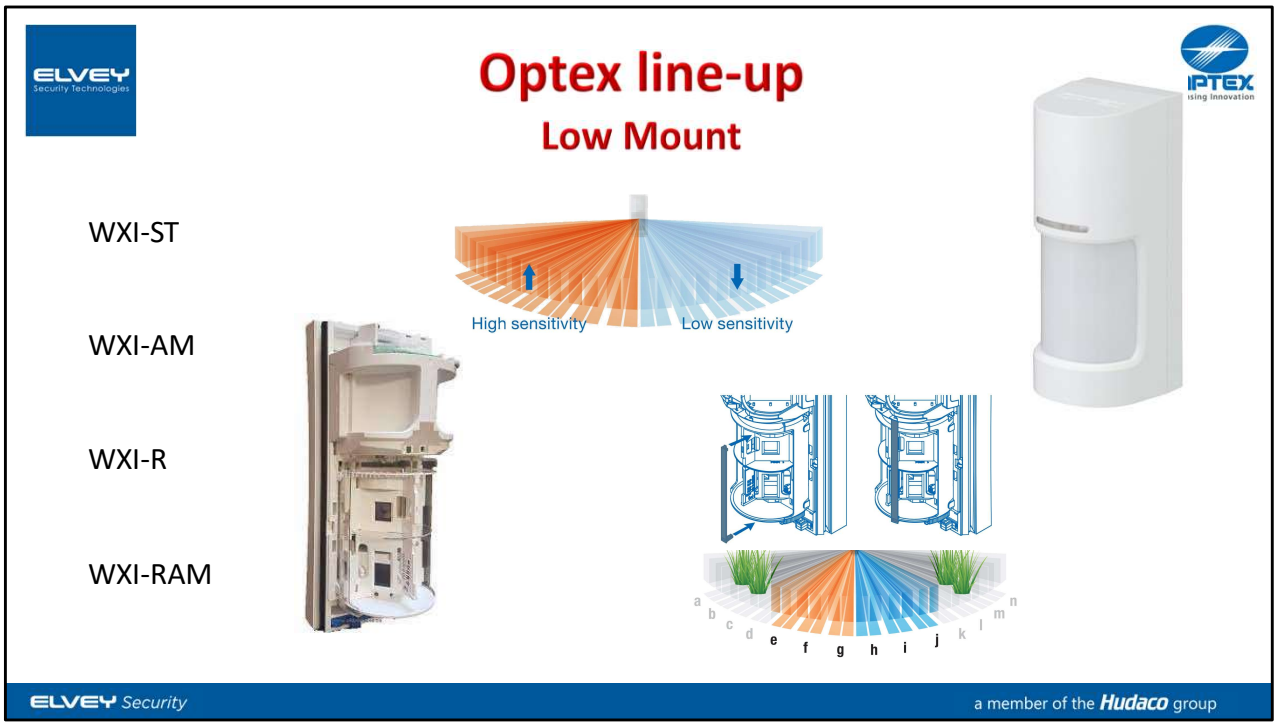


- Low-mount detectors should never be tilted to increase its coverage pattern

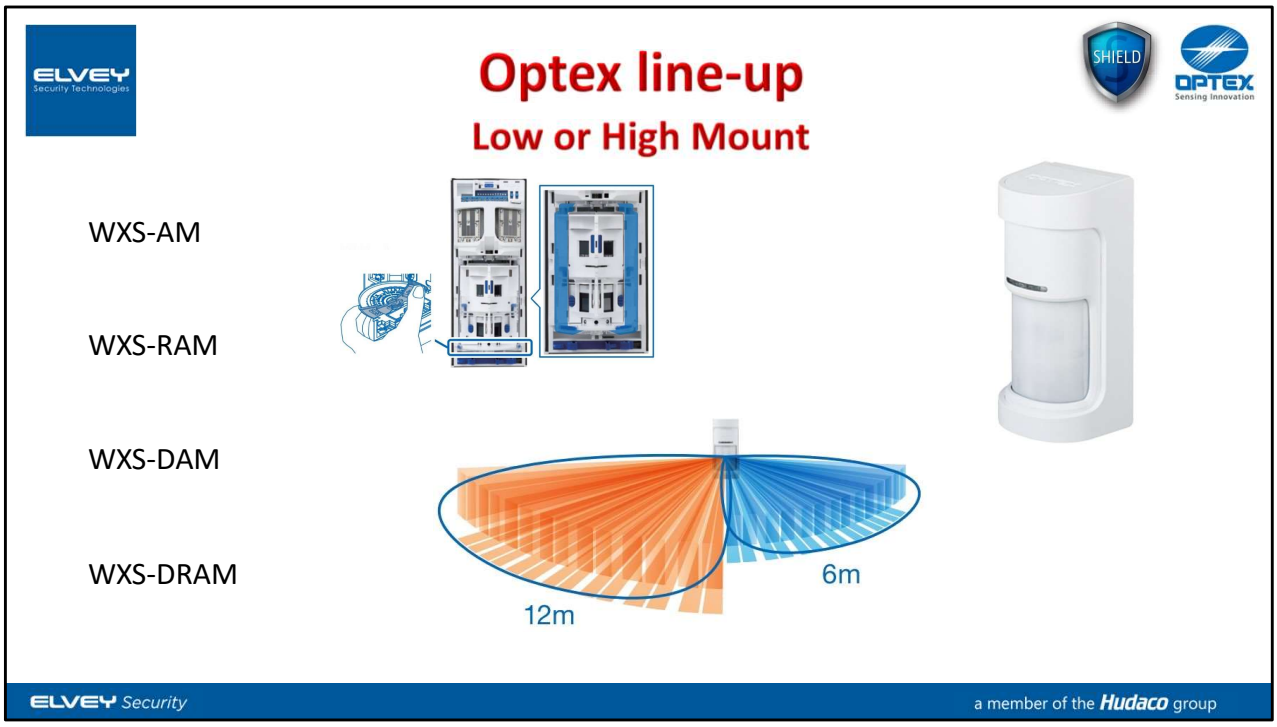
- VXI-ST (-ST Standard) (-AM Anti-Masking)
    - 12m x 12m detection range (can swivel)
    - 5 Detection lengths (2,5 – 12m)
    - No detection if only the lower detection area is triggered
    - Mounting height. 0,8 – 1,2m (Indoor or Outdoor)
    - Anti-Masking (-AM model only)
    - 9,5 – 18VDC
- VXI-R (-R Wireless model) (-RAM (Wireless Anti-Masking)
    - LED disabled during normal operation
    - Anti-Masking (-RAM model only)
    - 3VDC



- VXS-AM (-AM Anti-Masking) (-DAM-X5 Microwave & Anti-Masking)
  - SMDA – Super Multidimensional Analysis logic- Advance environment analysis & filtering
  - 12m x 12m detection range (can swivel)
  - 5 Detection lengths (2,5 – 12m)
  - No detection if only the lower PIR detection area is triggered
  - Mounting height. 0,8 – 1,2m (Indoor or Outdoor)
  - 9,5 – 18VDC
  - Interchangeable cover and back bodies (Black & White)
    - Check stock holding with your account representative
  - Advanced UV resistant Shielding
  - Automatic Walk test function when lid is closed
  - Blue identification components for easy setting adjustments & opening or closing devices
  - IP55
- VXS-RAM (-RAM Wireless Anti-Masking) (-RDAM Wireless Microwave & Anti-Masking)
  - Specifications and functions are the same between wired and wireless models
  - 3 – 9VDC

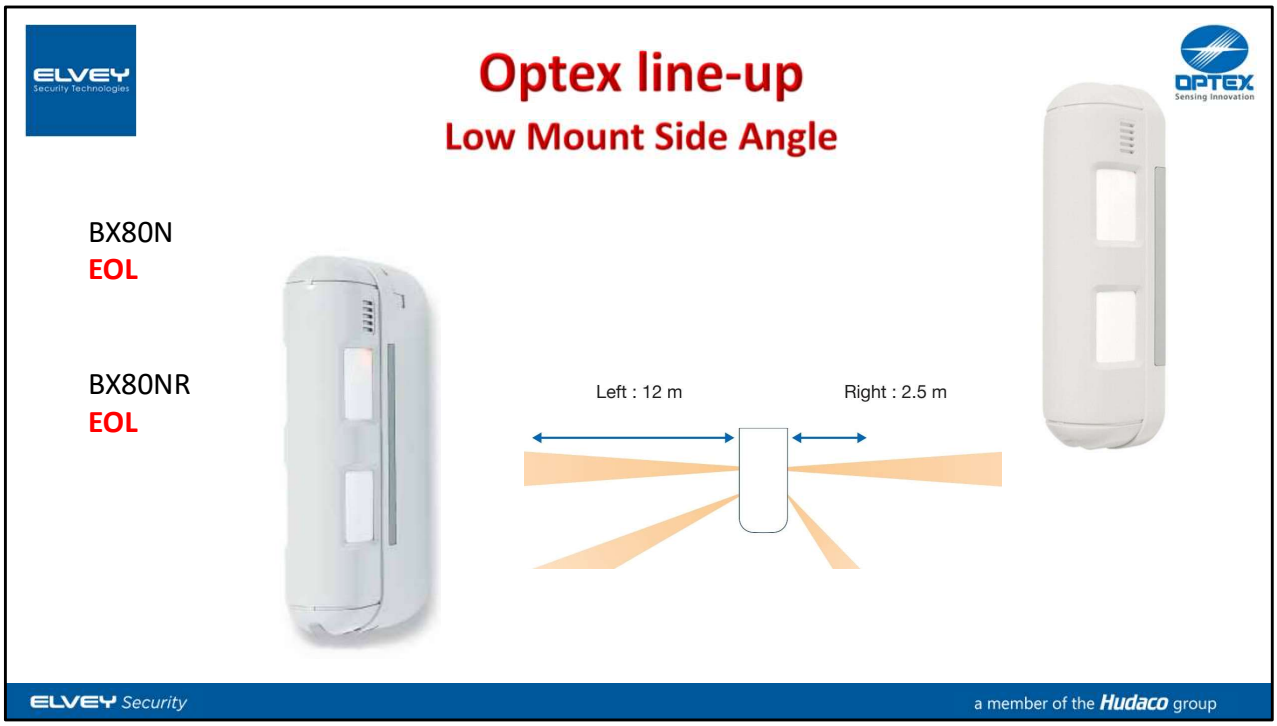


- WXI-ST (-ST Standard 180°) (-AM Anti-Masking 180°)
  - 12m x 12m detection range (Left & Right sides)
    - Combined detection of left & right sides – 12m x 24m
  - Individually adjustable detection lengths and sensitivity
  - Individual left & right alarm outputs (Can be combined as one output)
  - Use masking plates or Masking Shutter & not masking strips
  - 5 Detection lengths (2,5 – 12m)
  - No detection if only the lower PIR detection area is triggered
  - Mounting height. 0,8 – 1,2m (Indoor or Outdoor)
  - 9,5 – 18VDC
  - Blue identification components for easy setting adjustments & opening or closing devices
  - IP55
- WXI-R (-R Wireless 180°) (-RAM Wireless Anti-Masking 180°)
  - Specifications and functions are the same between wired and wireless models
  - 3 – 3,6VDC



- WXS-AM (-AM Anti-Masking 180°) (-DAM Microwave with Anti-Masking 180°)
  - SMDA – Super Multidimensional Analysis logic- Advance environment analysis & filtering
  - Low Mount - 12m x 12m detection range (Left & Right sides)
    - Combined detection of left & right sides – 12m x 24m
  - High Mount - 9m x 9m detection range (Left & Right sides)
    - Combined detection of left & right sides – 9m x 18m
  - Individually adjustable detection lengths and sensitivity
  - Individual left & right alarm outputs (Can be combined as one output)
  - Use masking plates or Masking Shutter & not masking strips
  - 5 Detection lengths
  - No detection if only the lower PIR detection area is triggered
  - Mounting height. Low Mount - 0,8 – 1,2m. High Mount – 2m
  - Day/ night mode selectable
  - 9,5 – 18VDC
  - Blue identification components for easy setting adjustments & opening or closing devices
  - IP55
- WXS-RAM (-RAM Wireless Anti-Masking 180°) (-DRAM Wireless Microwave with Anti-Masking 180°)

- Specifications and functions are the same between wired and wireless models
- 3 – 3,6VDC



- BX80N (N Standard 2 Sided) (EOL)
  - Low Mount - 12m x Each side
  - 0° - 3° Adjustable detection angle from wall
  - Individually adjustable detection lengths
  - 4 Detection lengths (2m, 5m, 8m & 12m)
  - No detection if only the lower PIR detection area is triggered
  - Mounting height. 0,8 – 1,2m
  - 10 – 28VDC
  - IP55
- BX80NR (NR Wireless 2 Sided) (EOL)
  - Specifications and functions are the same between wired and wireless models
  - 3 – 9VDC

Optex line-up

Accessories

SP-2

BA-1W

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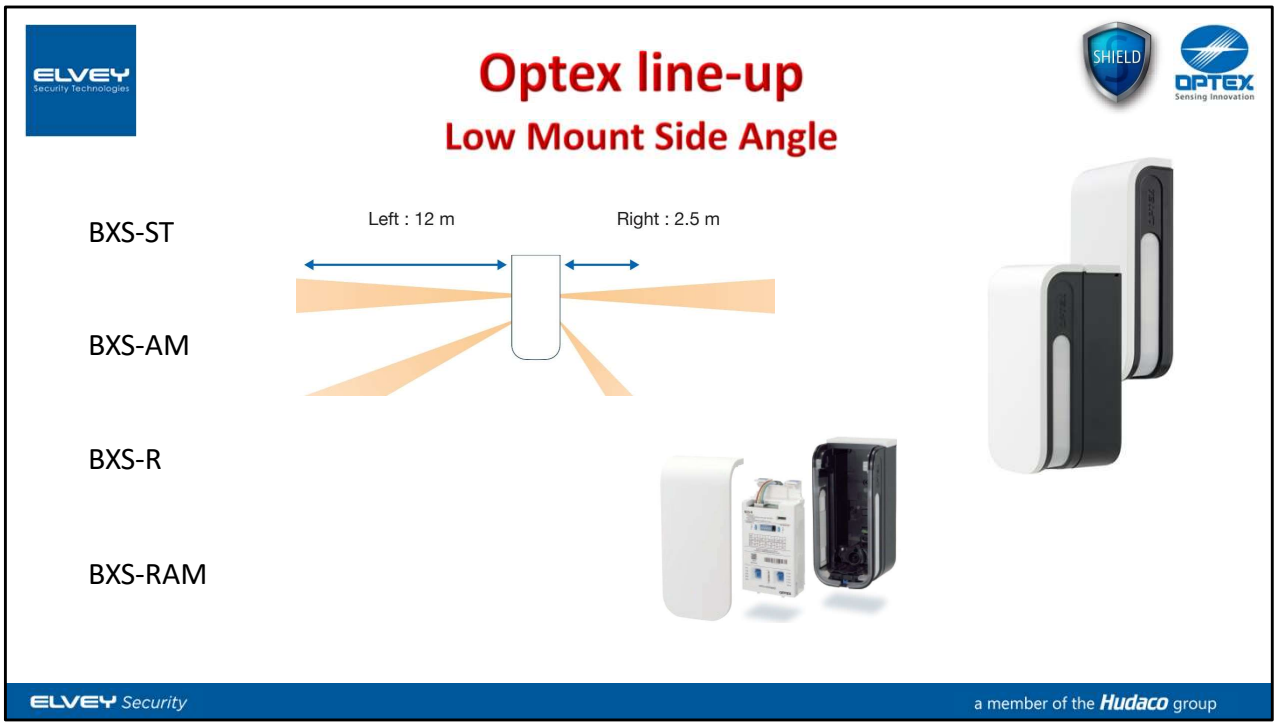
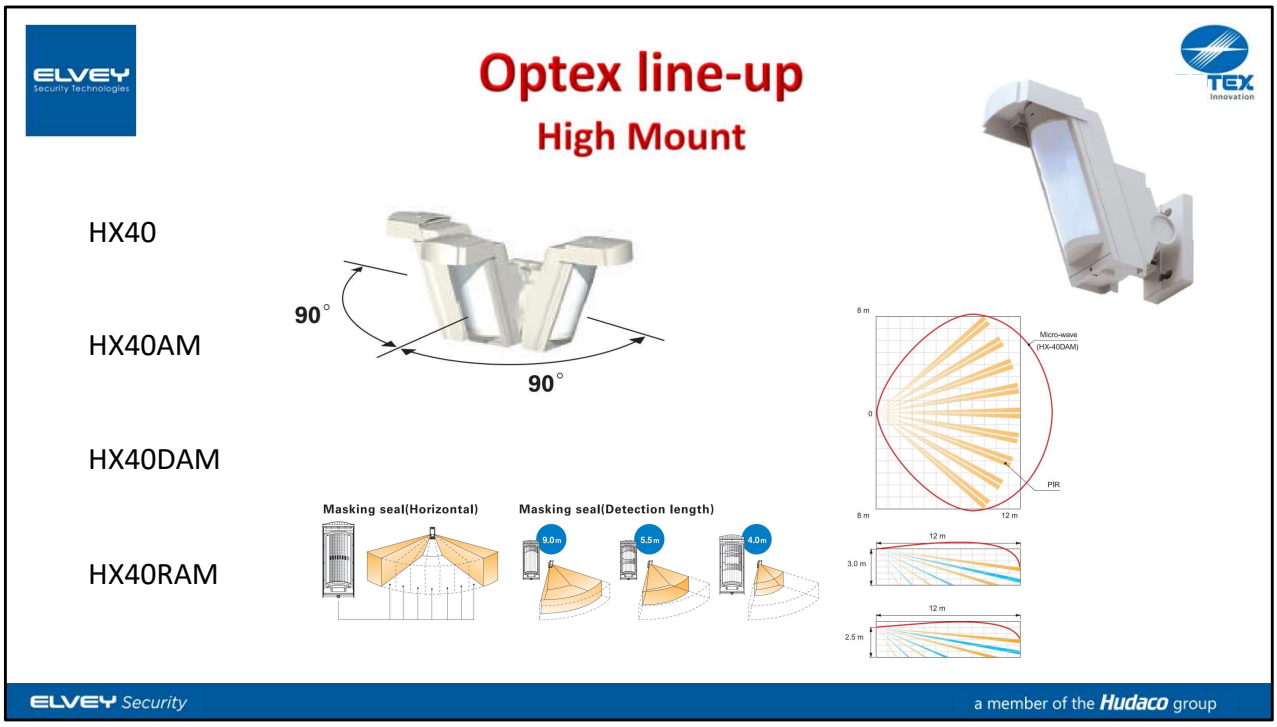
- SP-2
  - Spacer unit for the BX80N
  - Spacer unit comes with the BX80NR
- BA-1W
  - Swivel bracket for the BX80N/NR
  - Used with the SP-2



- BXS-ST (-ST Standard 2 Sided) (-AM Anti-Masking 2 Sided)
  - SMDA – Super Multidimensional Analysis logic- Advance environment analysis & filtering
  - Low Mount - 12m x Each side
  - 0° - 3° Adjustable detection angle from wall
  - Individually adjustable detection lengths and sensitivity
  - 5 Detection lengths
  - No detection if only the lower PIR detection area is triggered
  - Mounting height. 0,8 – 1,2m
  - 9,5 – 18VDC
  - Blue identification components for easy setting adjustments & opening or closing devices
  - IP55
- BXS-R (-R Standard Wireless 2 Sided) (-RAM Wireless Anti-Masking 2 Sided)
  - Specifications and functions are the same between wired and wireless models
  - 3 – 9VDC



- High mount detectors are not designed to work in an environment where there are pets

- HX40 (Dual Pyro Detector) (AM Anti-Masking) (DAM Microwave & Ant-Masking)
    - 12m x 12m detection range
    - Adjustable wall mount bracket (Horizontal 90° adjustment & Vertical 20° adjustment)
    - Masking seals for range adjustment & area blanking
    - 3 detection lengths (Masking seals)
    - Mounting height. Low Mount – 2,5 - 3m
    - 9,5 – 18VDC
    - IP55
- HX40 (RAM Wireless & Anti-Masking)
    - Specifications and functions are the same between wired and wireless models
    - 3 – 7.2VDC lithium or 2.5VDC – 7.4VDC

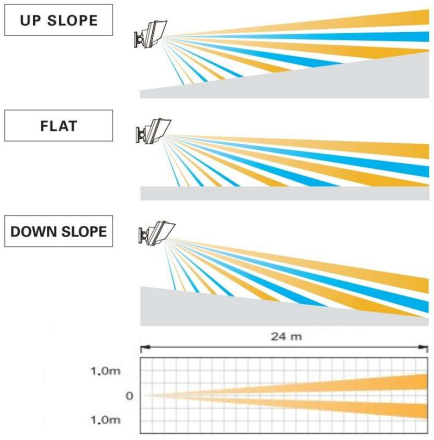
Optex line-up

High Mount

HX80N

HX80NAM

HX80NRAM



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- HX80N (Dual Pyro Detector) (NAM Ant-Masking) (NRAM Wireless & Anti-Masking)
  - 24m x 2m detection range (Narrow Angle)
  - Adjustable wall mount bracket (Horizontal 90° adjustment & Vertical 20° adjustment)
  - Masking seals for range adjustment & area blanking
  - 3 detection lengths (Masking seals)
  - Mounting height. Low Mount – 2,5 – 3m
  - 9,5 – 18VDC
  - IP55
- HX80NRAM (NRAM Wireless & Anti-Masking)
  - Specifications and functions are the same between wired and wireless models
  - 3 – 7.2VDC lithium (With various battery sizes)

Optex

Point to Point Infrared Beam Detection

OPTEX
Sensing Innovation

ELVEY Security

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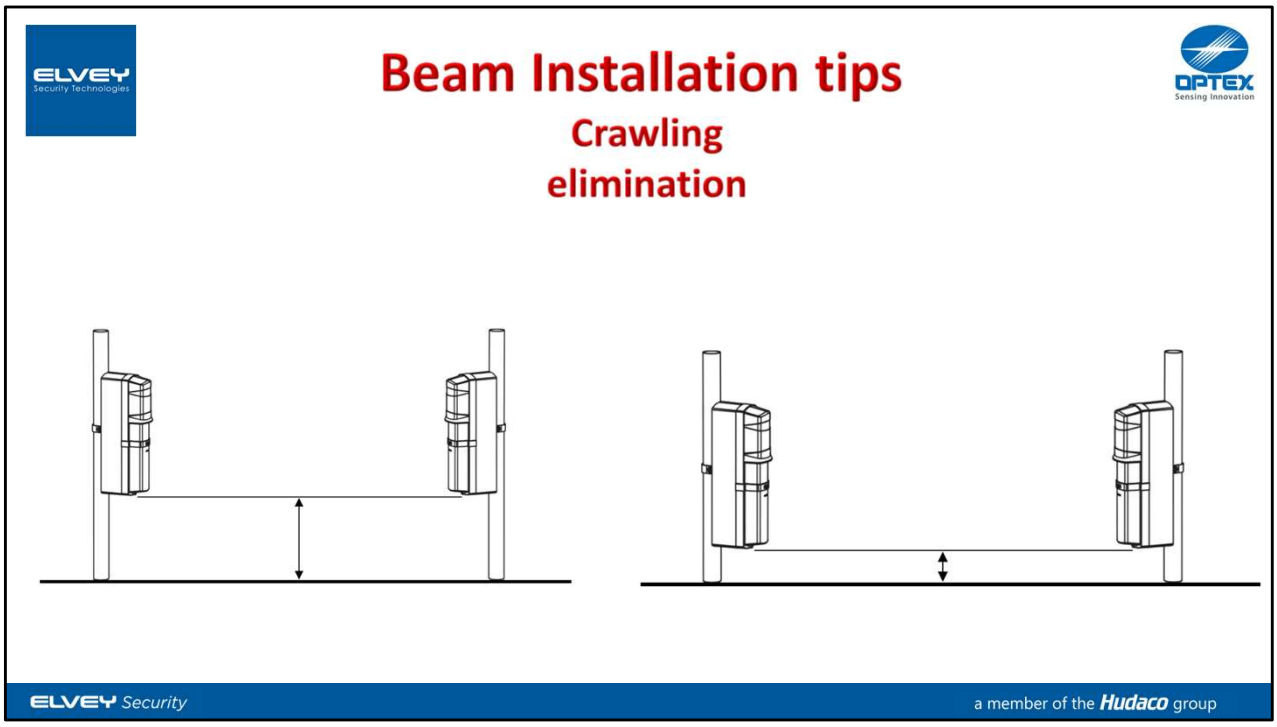
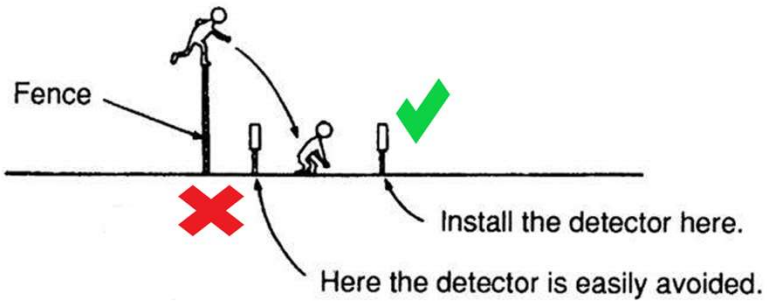


- Point to Point Beam Pro's & Con's
  - Crawling underneath the detection pattern
  - Climbing over the detection pattern

Beam Installation tips

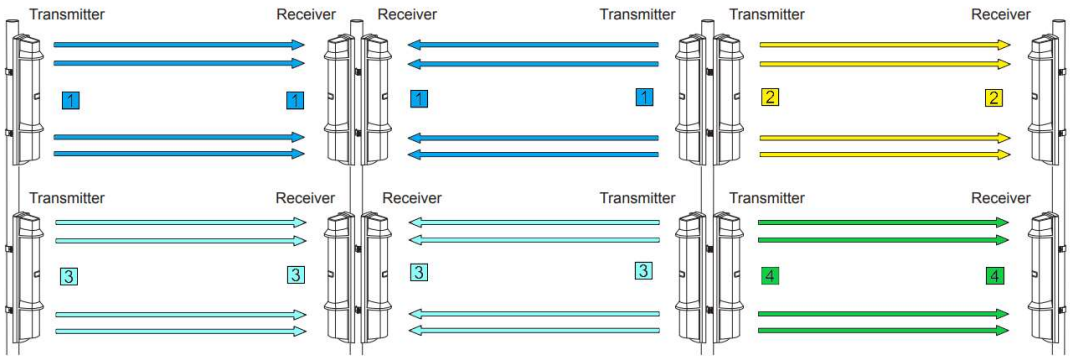


ELVEY Security a member of the Hudaco group

- Beam Placement
  - Beams closer to the fence can by jumped over and avoided
  - If possible, move the beams further away from the fence to avoid it being jumped over

Beam Installation tips

Stacking & Channel selection

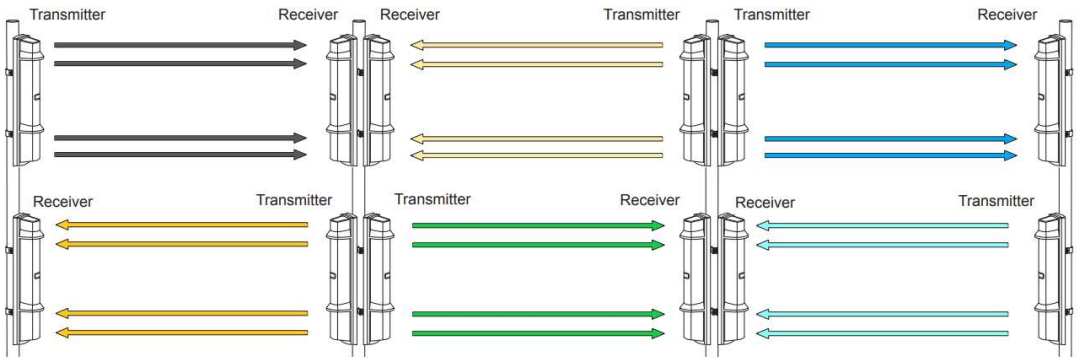


ELVEY Security — a member of the Hudaco group

- Channel/ Frequency selection
  - Avoid unwanted crosstalk close or long-distance installations

Beam Installation tips

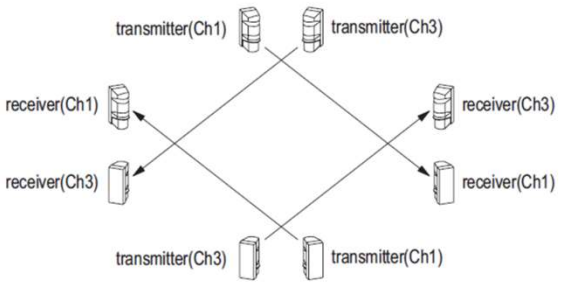
Stacking & no Channel selection

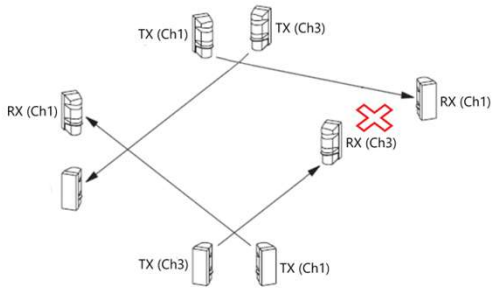


ELVEY Security — a member of the Hudaco group

- Channel/ Frequency selection
  - Avoid unwanted crosstalk close distance installations

Beam Installation tips





Optex line-up

AX70TN

20m Dual infrared beam
38mA (Max – TX & RX combined)

AX130TN

40m Dual Infrared beam
41mA (Max – TX & RX combined)

AX200TN

60m Dual infrared beam
45mA (Max – TX & RX combined)

ELVEY Security a member of the Hudaco group

- IP 65
  - Dust proof & can withstand high pressure water jets from any direction for short periods
- A.G.C (Not the same as two communication between RX & TX)
  - Monitors for gradual changes in the signal strength due to weather changes. It adjusts the sensitivity accordingly to maintain the proper signal level for the current environmental conditions
- Adjustable beam interruption time
  - The beam interruption time can be adjusted to fit any application – When protecting a wall or fence
- Power Input:
  - 10,5 – 28VDC
  - Ideal when voltage drops in long cable runs occurs or to compensate for voltage drop by increasing the power supply voltage

Optex line-up

Basic Model

SL-200QN
60m Quad beam
40mA (Max)

SL-350QN
100m Quad beam
40mA (Max)

SL-650QN
200m Quad beam
40mA (Max)

ELVEY Security — a member of the Hudaco group

- Single Channel
- IP 65
  - Dust proof & can withstand high pressure water jets from any direction for short periods
- Adjustable beam interruption time
  - The beam interruption time can be adjusted to fit any application – When protecting a wall or fence
- Power Input:
  - 10,5 – 30VDC
  - Ideal when voltage drops in long cable runs occurs or to compensate for voltage drop by increasing the power supply voltage

Optex line-up

Standard Model

SL-200QDP
60m Quad beam
24mA (Max)

SL-350QDP
100m Quad beam
24mA (Max)

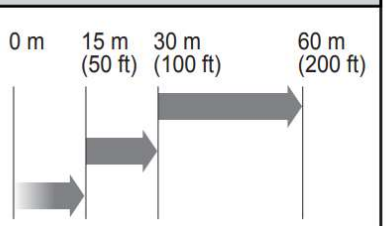
SL-650QDP
200m Quad beam
24mA (Max)

ELVEY Security — a member of the Hudaco group

- 4 Channel frequency selector – SL-QDP & SL-QDM model only (See next slide for explanation)
- IP 65
  - Dust proof & can withstand high pressure water jets from any direction for short periods
- Adjustable beam interruption time
  - The beam interruption time can be adjusted to fit any application – When protecting a wall or fence
- Power Input:
  - 10,5 – 30VDC
  - Ideal when voltage drops in long cable runs occurs or to compensate for voltage drop by increasing the power supply voltage
- Upper/Lower beam selector
  - Upper & lower beam can be individually trigger to generate an alarm
- Beam Power Control selector (Explained in upcoming slides)

Beam Installation tips

Beam Power Control

NORMAL	60 - 30 m (200 - 100 ft)	
LOW	30 - 15 m (100 - 50 ft)	
VERY LOW	Within 15 m (Within 50 ft)	

*SL-QDM & SL-QDP models only

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- Beam Power Control (SL-QDM & SL-QDP models only)
  - (Over specified beam used for a smaller distance) e.g. 200m beam installed in a 60m environment
    - Power control must be adjusted accordingly (if available on the product)
    - A.T.P.C (Automatic Transmit Power Control) will still function under the new Beam Power Control settings (explained in upcoming slides)

Optex line-up
Standard Model

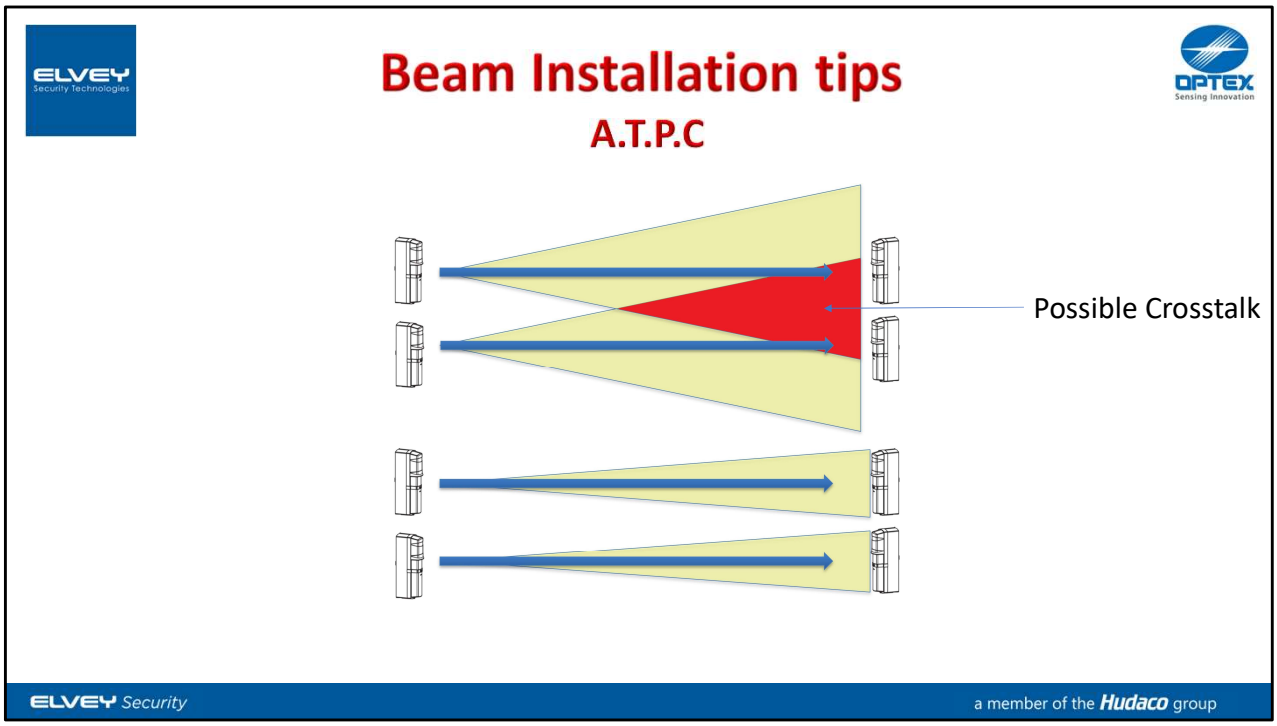
SL-200QDM
60m Quad beam
60mA (Max)

SL-350QDM
100m Quad beam
60mA (Max)

SL-650QDM
200m Quad beam
60mA (Max)

ELVEY Security — a member of the Hudaco group

- 4 Channel frequency selector – SL-QDP & SL-QDM model only
- IP 65
  - Dust proof & can withstand high pressure water jets from any direction for short periods
- Adjustable beam interruption time
  - The beam interruption time can be adjusted to fit any application – When protecting a wall or fence
- Power Input:
  - 10,5 – 30VDC
  - Ideal when voltage drops in long cable runs occurs or to compensate for voltage drop by increasing the power supply voltage
- Upper/Lower beam selector
  - Upper & lower beam can be turned on & off alternatively in installation mode to enable fine adjustments
- Beam Power Control selector
- A.T.P.C – Automatic Transmit Power Control (See next slide)



- A.T.P.C – Automatic Transmit Power Control (SL-QDM models only)
  - SL-QDM models can reduce or increase the IR power needed to reach the RX. (Two way comms between RX & TX)
  - Used to automatically reduce possible signal loss or cross talk due to environmental changes

Optex line-up

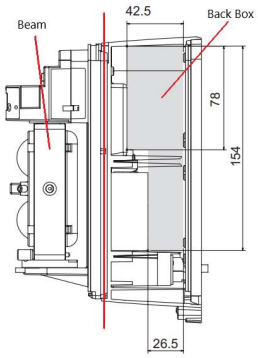
Wireless Beams

AX100TFR

30m Dual infrared beam
620µA (Max)
4 Ch frequency selector

AX200TFR

60m Dual Infrared beam
810µA (Max)
4 Ch frequency selector



ELVEY Security — a member of the Hudaco group

- 4 Channel frequency selector – AX100TFR & AX200TFR model only

- IP 55
  - Dust proof with limited dust that can still enter, will not interfere with the unit & can withstand moderate pressure water jets from any direction for short periods
- Adjustable beam interruption time
  - The beam interruption time can be adjusted to fit any application
- Power Source:
  - 4 x 3,6V LSH20 Lithium Batteries (13Ah total)
    - Transmitter & Receiver takes 2 each (4 batteries in total)
- Battery life:
  - AX100TFR
    - Up to 5 years
  - AX200TFR
    - TX – Up to 3 years (Power consumption of the TX is higher than the RX)
    - RX – Up to 5 years

Optex line-up

Wireless Hybrid Beams

SL-100TNR

30m Dual infrared beam
500µA using D-cell lithium (Max – TX & RX combined)

SL-200TNR

60m Dual Infrared beam
600µA using D-cell lithium (Max – TX & RX combined)

ELVEY Security — a member of the Hudaco group

- Hybrid – Can provide 10,5 to 30VDC to the RX with the PCU-5 unit (See next slide)
- Dual beam set
- IR Communication
  - Low battery signals will be sent from TX to RX – No need for additional 3rd party transmitters to control panels
  - Separate monitoring can still be done for low battery via an output on the TX
- IP 65
  - Dust proof & can withstand high pressure water jets from any direction for short periods
- Adjustable beam interruption time
  - The beam interruption time can be adjusted to fit any application
- Power Source:
  - 3,6 – 3,9VDC using 4 x 3,6V LSH20 Lithium Batteries (13Ah total)
    - Transmitter & Receiver takes 2 each (4 batteries in total)
  - 3,0VDC using 16 x 3,0V CR123A batteries
  - 4 x CRH-5 per set (2 CR123A per TX & RX)
- Battery life with LSH20 batteries
  - SL-100TNR
    - TX – Up to 6 years (Power consumption of the RX is higher than the TX)
    - RX – Up to 5 years
  - SL-200TNR
    - TX & RX Combined – Up to 5 years
- Battery life with CR123A batteries
  - SL-100TNR
    - TX – Up to 1,5 years (Power consumption of the RX is higher than the TX)
    - RX – Up to 1 year
  - SL-200TNR
    - TX & RX Combined – Up to 1 year

Optex line-up

Wireless Beams

SL-350QNR Basic Model

100m Dual infrared beam

745µA using D-cell lithium (Max – TX & RX combined)

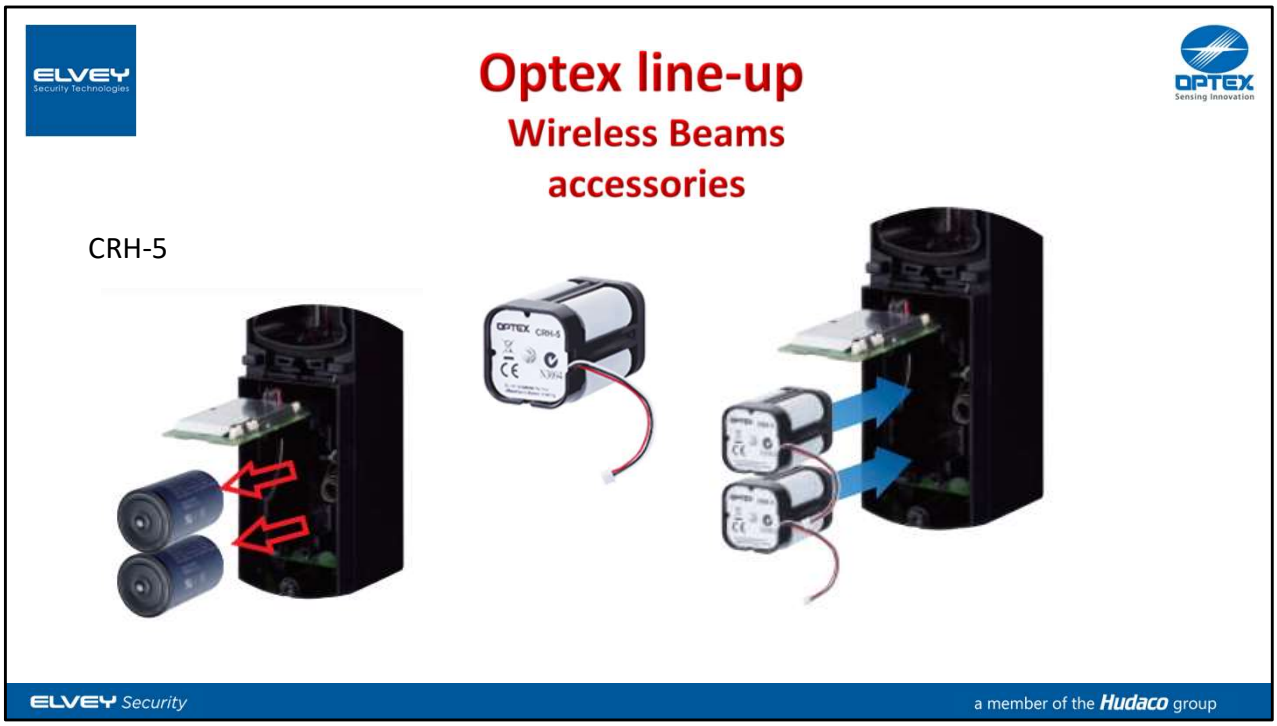
SL-350QFR Standard Model (4ch selectable)

100m Dual Infrared beam

745µA using D-cell lithium (Max – TX & RX combined)

ELVEY Security — a member of the Hudaco group

- Quad beam set
- 4 Channel frequency selector – SL-350QFR model only
- IP 65
  - Dust proof & can withstand high pressure water jets from any direction for short periods
- Adjustable beam interruption time
  - The beam interruption time can be adjusted to fit any application
- Power Source:
  - 3,2 – 4,0VDC using 4 x 3,6V LSH20 Lithium Batteries (13Ah total)
    - Transmitter & Receiver takes 2 or 4 each
- Battery life with LSH20 batteries
  - 4 x LSH20 batteries – Up to 4 years
  - 8 x LSH20 – Up to 8 years

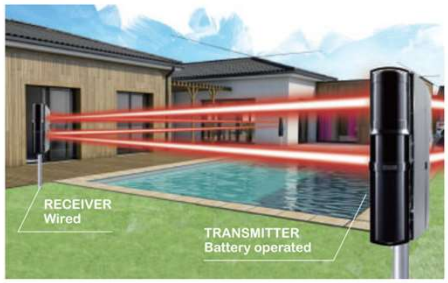


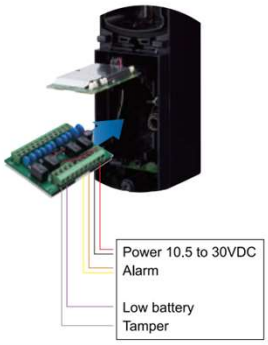
- CRH-5
  - Can only be used in SL-TNR models
  - Replaces the LSH20 batteries
  - SL-TNR set will need 4 CHR-5 battery holders (16 x CR123A batteries in total)
    - CHR-5 can take 4 x CR123A batteries
  - Note that battery life is reduced when using the CRH-5 & CR123A setup

Optex line-up

Wireless Beams accessories

PCU-5





ELVEY Security — a member of the Hudaco group

- PCU-5
  - Provides connections to power the RX unit of the SL-100TNR & SL-200TNR
  - TX cannot be converted