System Guide to
Active Beam design
Active Beam Tower design

updated July 2013

Solar, Battery or wired power, Wireless or hardwired signalling,

Tower or Stand-alone mounting









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Note. Due to product updates in 2013 this document will be revised in November December 2013. Please check our website for any updates

IMPORTANT INFORMATION

This guide is aimed to help installers choose the most suitable IR beams and explore the different configurations possible.
The final design and product selection is at the installer's discretion.

OPTEX reserves the right to change product specification at any time. To access the full specification of the products, please visit our website www.optex-europe.com

Symbols used in this selection guide



= Suitable design



= Use caution in design



= Not recommended design

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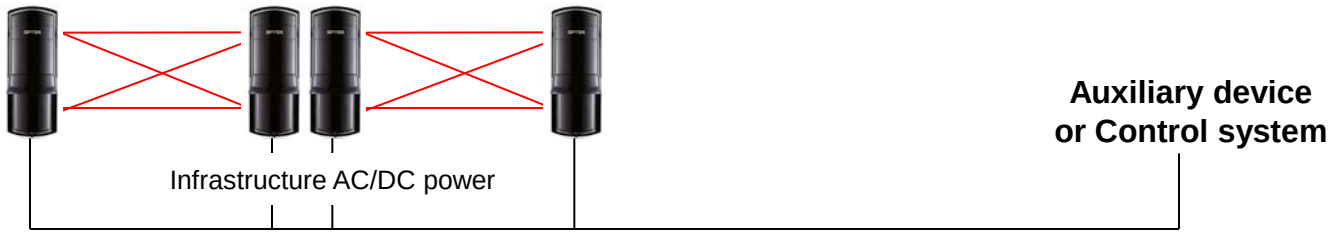
Basic model overview.

There a three basic model variants available. Any site can use one or a combination of models to facilitate a total solution package. These main options are outline below



Model A. Hardwired. Power and signalling infrastructure is cable based

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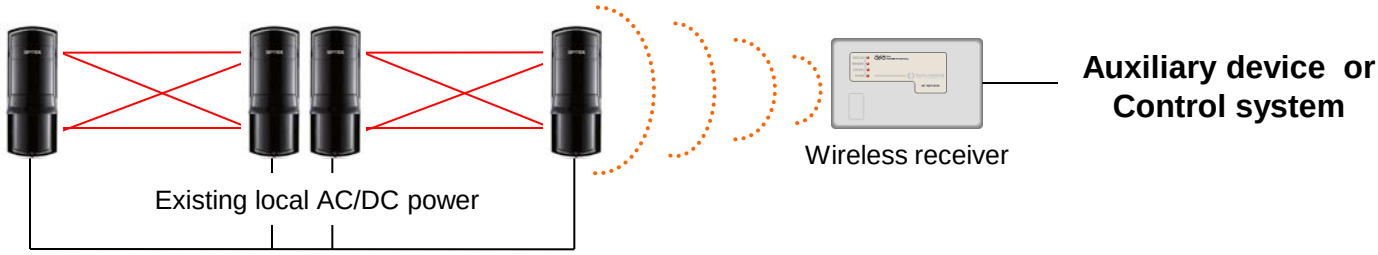


Model B. Hybrid. Power infrastructure is cable based. Signalling is wireless based

Optex iSeries or your choice of wireless protocol



Model C. Battery powered. Battery powered and wireless based signalling

Optex iSeries or your choice of wireless protocol

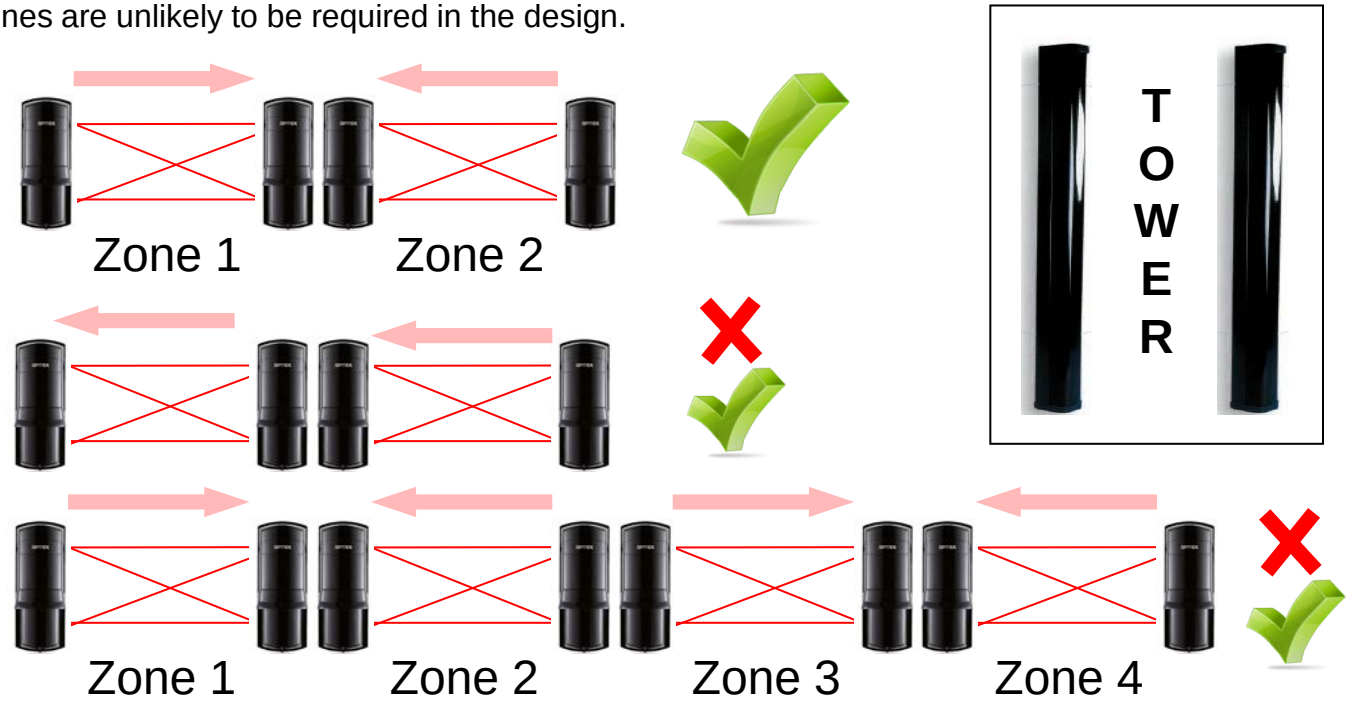
The OPTEX range of Active Infra-red beams are designed to be installed in a range of configuration options on any given site.

OPTEX have a broad range of hardwired, battery powered wireless, battery powered and hardwired wireless hybrid solutions. All solutions can be mounted independently or mounted within the OPTEX range of 1.75m and 3m covert towers.

The following guides are designed only to assist with product understanding and selection and are not to be considered as definitive for all applications.

Basic fixed channel Hardwired devices.

These are Active beams suitable for basic applications where stacking or extended perimeter lines are unlikely to be required in the design.



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Advanced multi-channel Hardwired devices.

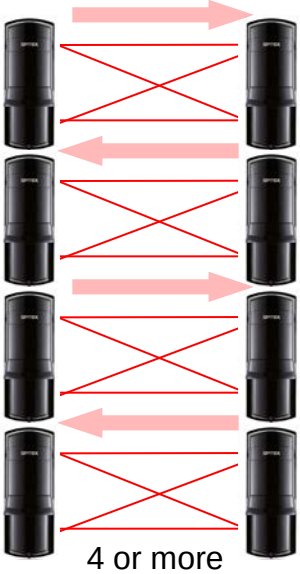
These are Active beams suitable for more advanced applications where stacking or extended perimeter lines are likely to be included in the design.



Zone 1 Zone 2 Zone 3 Zone 4 Etc



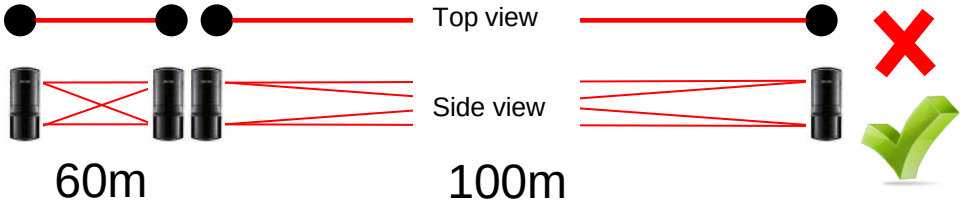
Zone 1 Zone 2 Zone 3 Zone 4 Etc



4 or more beam heads

The stacking of beam heads across an opening or in a simple box format is possible when the affects of cross talk have been managed out in the design process. Beam direction and Channel selection must be considered under these conditions.

Care should also be taken if the design requires different range beams to be installed facing an almost identical direction or in a common area of protection.



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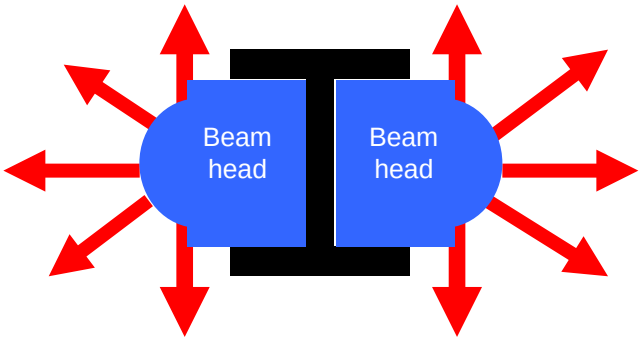
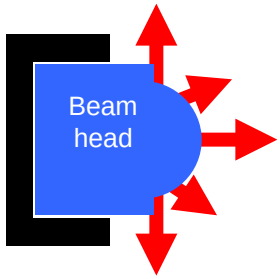
1- Designing an Active Beam system – Limits and expectations.
Firstly consider the sites operational requirement. This includes what function the Active beams will play. E.g. Driving CCTV and the detection capability. E.g. Intruder walking, running, crawling or crouching. These aspects along with budgets should be considered as part of the total design process and will also extend to include immunity to low risk activity.

If towers are to be used to house the beam heads within, then the type of tower (Double sided free standing or single sided wall mount) should be considered and the most suitable option used. Towers are available as standard from 1.75m up to 3m in height.
When mounting within a tower, active beam heads can be rotated through 180° as shown below and will facilitate most alignment requirements.



AX-BT Double sided tower allows for 180° beam head mounting on two sides



AX-WMT Single sided tower allows for 180° beam head mounting on one side

When utilising free standing towers the potential requirement for additional groundwork's to securely mount the tower should be considered. When concrete footings are required the BT-F tower base should be used with the 1.75m AX-BT Towers.

Basic Tower Options



1.75m Free standing tower

1.75m Wall mount tower



All towers include

Perspex covers

Top caps

Base mounting plates

Tower Extrusion

Fixings

All towers exclude

AX Beam heads

Beam heads ts

Base mounting plate for setting into concrete



3m Free standing tower

3m Wall mount tower



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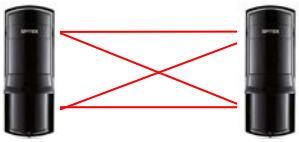
2- Designing an Active Beam system – Configuration options

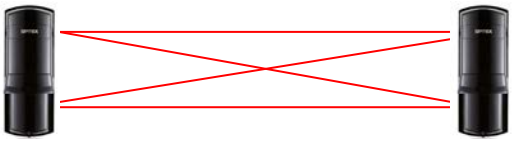
The OPTEX Active beam range provides the market with a wide range of choices for battery powered wireless, conventional powered beams or hybrid combinations of both conventional powered and wireless signalling options.

Your design may include a combination of these options, however many of the design steps are common to all options.

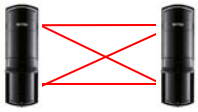
1. Determine the distance for each detection leg. Select beam head type, model and range to suit



Medium range 30-60m

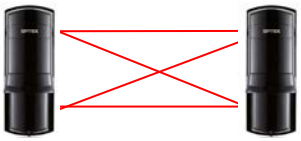


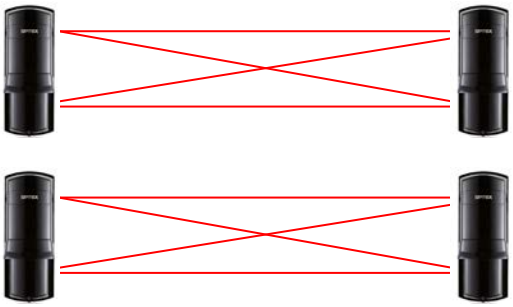
Long range 100-200m

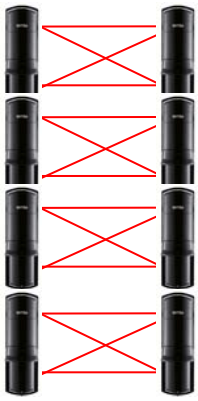


Short range 1-30m

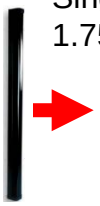
2. Determine performance requirement for each detection leg. Stacked of single beam



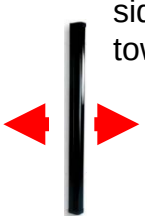




3. If using towers to house beams, determine tower size and type. 1.75m, 3m, AX-WMT or BT etc



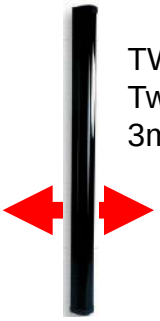
AX-WMT
Single side
1.75m tower



AX-BT Twin
sided 1.75m
tower



TW176W
Single side
3m tower



TW1760
Twin sided
3m tower

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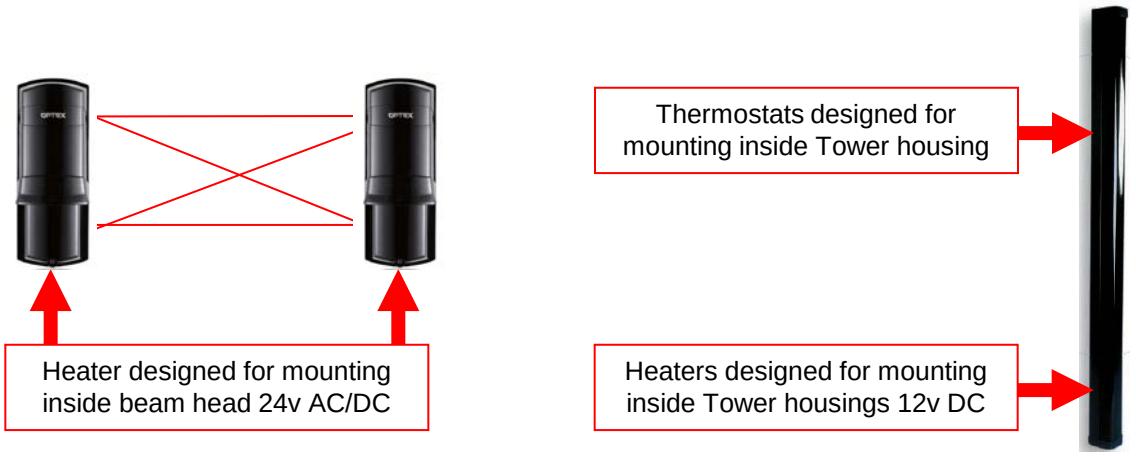
3- Designing an Active Beam system – Heaters (See page 19)

The housing design of the Optex Active beam range provides a physical barrier to the build up of frost etc on the device lens surface. However in some countries where prolonged harsh weather conditions are prevalent, more extreme measures to reduce optical interruption are used. These include heaters and thermostats. These can be located either within the beam head, or if towers are utilised, located separately within the tower housing itself.

See product schedule for more details on power and configuration guides



4- Designing an Active Beam system – Wireless planning

Both the Optex range of Hardwired and battery powered devices can utilise the **iSeries** range of wireless devices for signalling status data around a site to drive CCTV or other auxiliary device. **iSeries** universal transmitters can be connected to the beam outputs for Alarm, tamper Environmental, and trouble signalling

Image left shows battery powered wireless device.



Continued overleaf

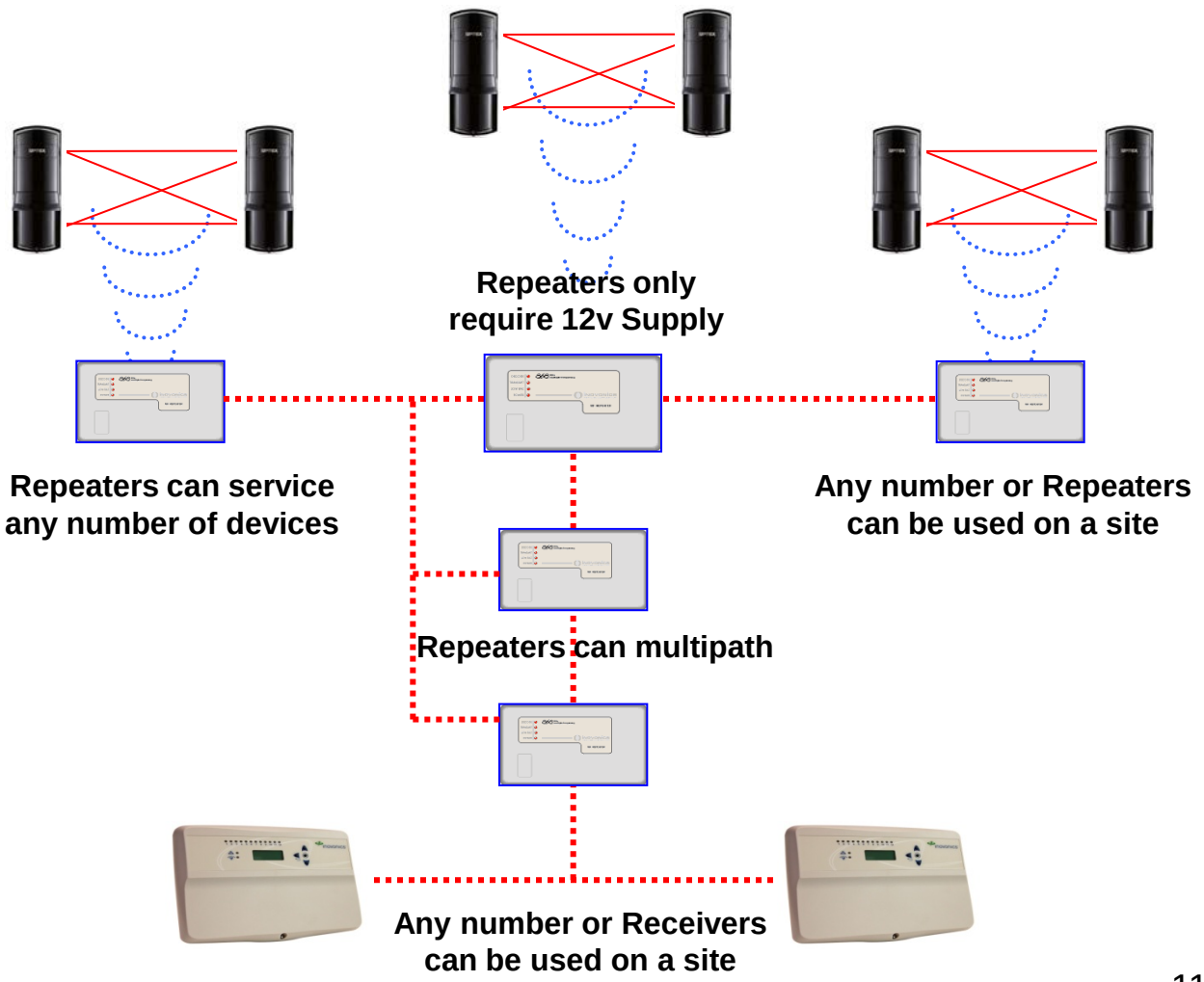
Continued

4- Designing an Active Beam system – Wireless planning

All wireless installations should be accompanied by a site survey for wireless integrity prior to final installation. Where possible a wireless test should be concluded during the design stages or variances allowed for in the specification.

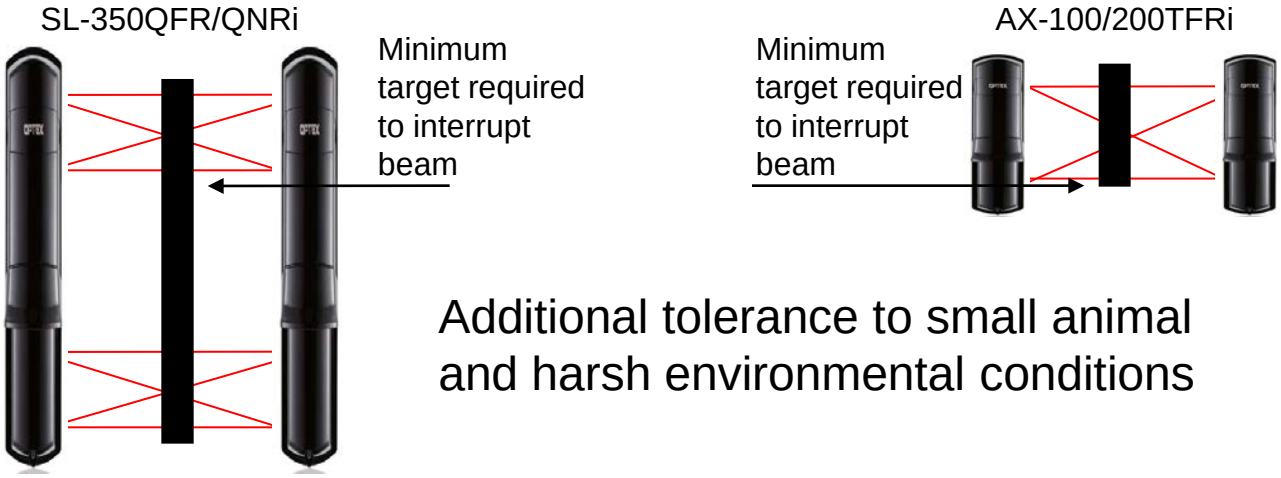
For larger systems the use of repeaters may be required to relay signals around the site. Any number of repeaters, receivers and transmitters can be used on any given site as shown below.

For more details on wireless design see ***iSeries wireless guide***



SL-350QNRi and SL-350QFRi iSeries 100m Active beams

The SL-350 Series comes in two models the QNRi (Fixed channel) and the QFRi (4 Selectable channels). Where the risk of crosstalk exists it is advisable to use only the QFRi model. This usually applies to stacked or extended multi-zone sites. Due to the Quad beam technology and physical gap between the top two heads and bottom two heads the SL range provides improved immunity to small animal activity when compared to other short range devices. Where extreme environmental conditions are present the SL-350 provides an alternative to stacking beams in **AND** configuration.



Additional tolerance to small animal and harsh environmental conditions

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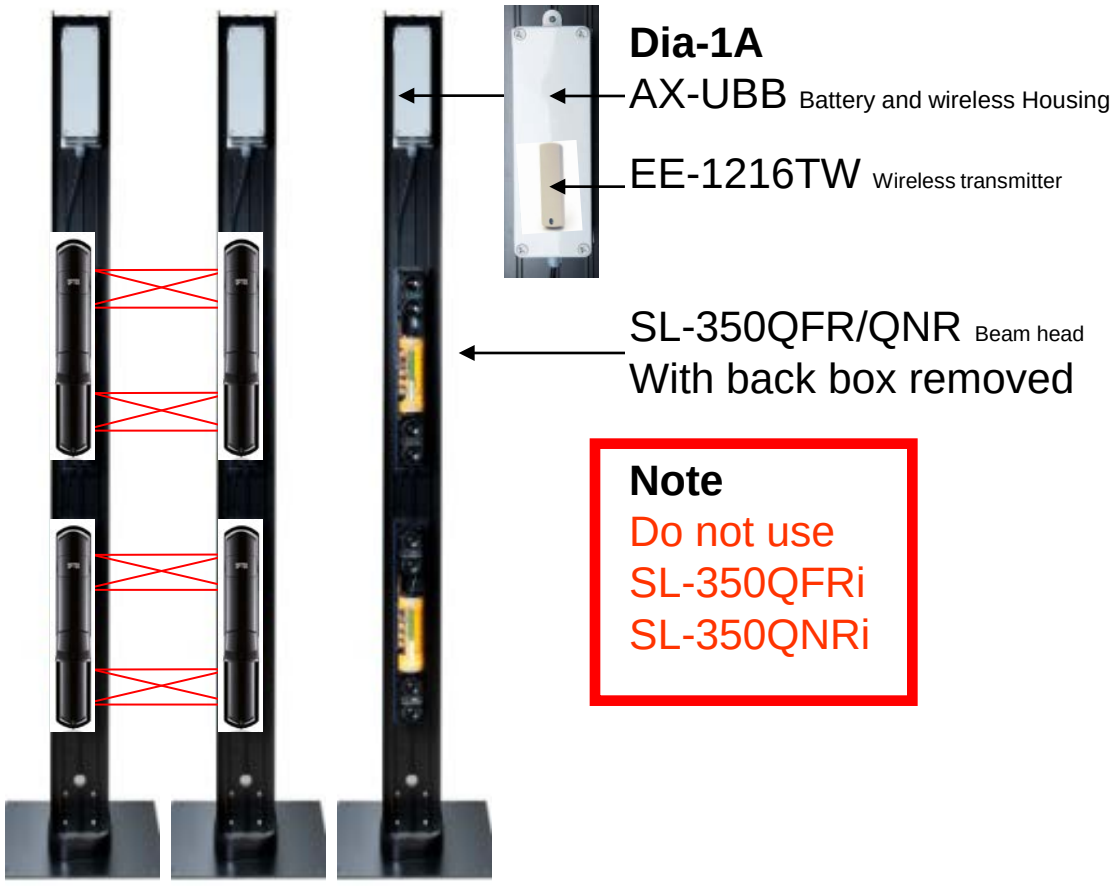
SL350 Series in towers

When mounting the SL350 Series in towers the following guide outlined in the following pages should be applied at all times

SL-350QNR & SL-350QFR
Wireless Tower planning and requirements

Unlike the iSeries AX-100/200TFRi the SL-350QNRi/QFRi products cannot be mounted directly into the Optex towers. When mounting SL-350 devices into towers the wireless devices (EE1216TW) are mounted separately in the (AX-UBB) battery and transmitter box as illustrated in **Dia-1A**

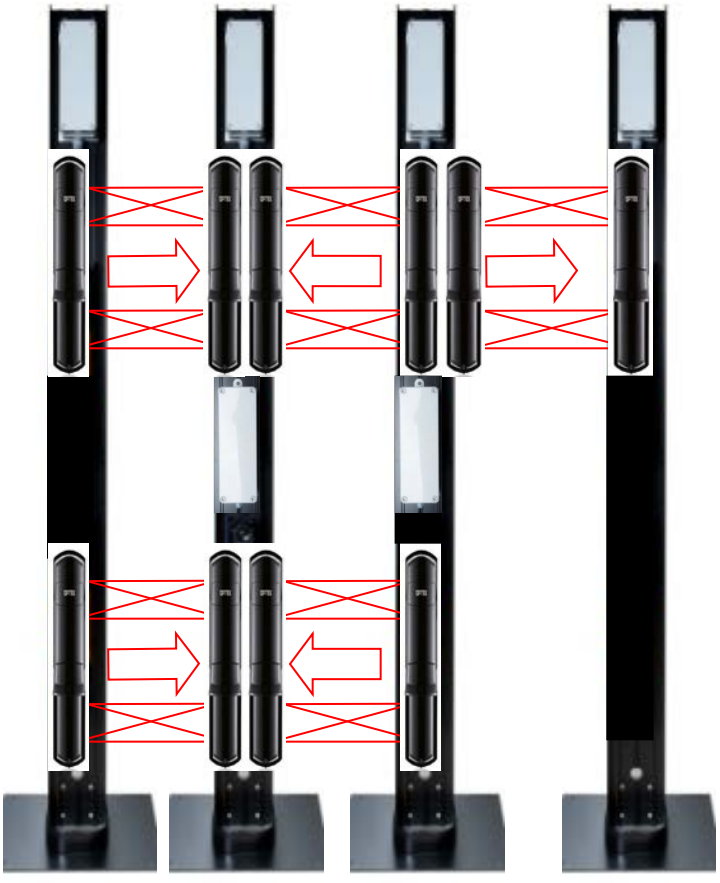
As a result when preparing a design it is important to remember not to cost the pre-fitted wireless model but to cost the standard battery powered device. The wireless and housing requirements are facilitated by the AX-UBB and EE1216TW separately.



Continued

SL-350QNR & SL-350QFR
Wireless Tower planning and requirements

The standard AX-WMT/BT can accommodate 1 set or 2 sets of SL-350QFR beams per side and one to four AX-UBB depending on configuration requirements as shown in **Dia-2A/B**



Dia-2A

Example
4x AX-BT
6x AX-UBB
6x EE1216TW
5x SL-350QFR/QNR
With back box removed



Dia-2B

Example
AX-BT populated
With

4x AX-UBB
4x SL beam heads

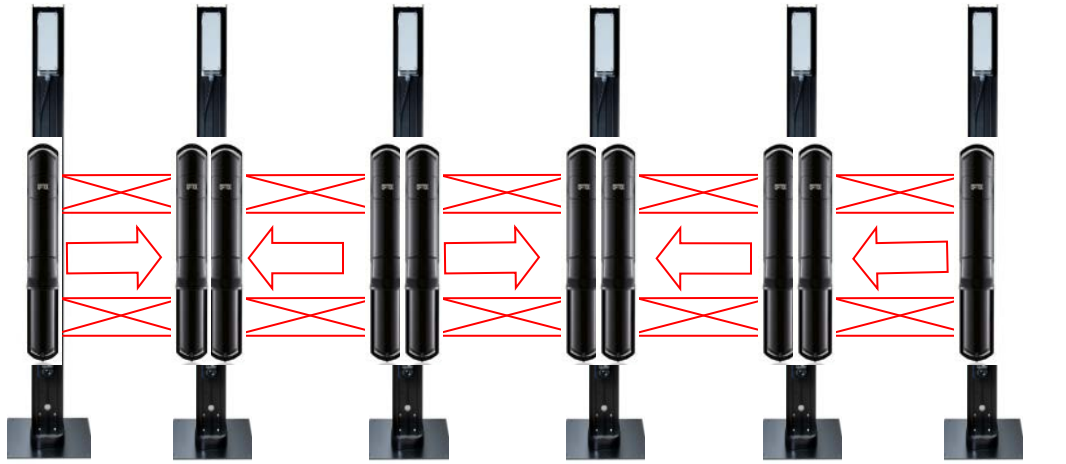
Continued

SL-350QNR & SL-350QFR

Note - Most applications shown will require the use of the SL-350QFR

Wireless Tower planning and requirements

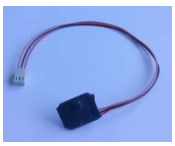
Examples below show the equipment list required for single SL stacking in AX-BT towers.





1x AX-UBB

1x EE1216TW



Optional AX-ACC

Plug on tilt detector for AX-UBB.



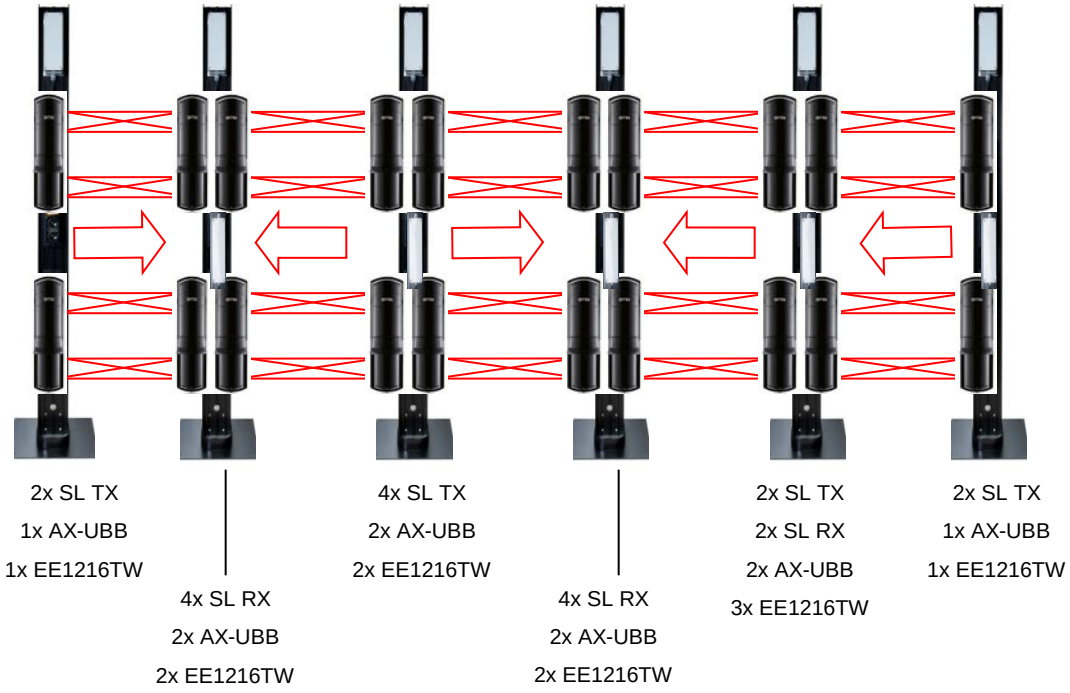
1x AX-UBB

2x EE1216TW

Continued

SL-350QNR & SL-350QFR
Wireless Tower planning and requirements

Examples below show the equipment list required for Double SL stacking in AX-BT towers. Beams are configured at the AX-UBB or AND/OR operation



Note

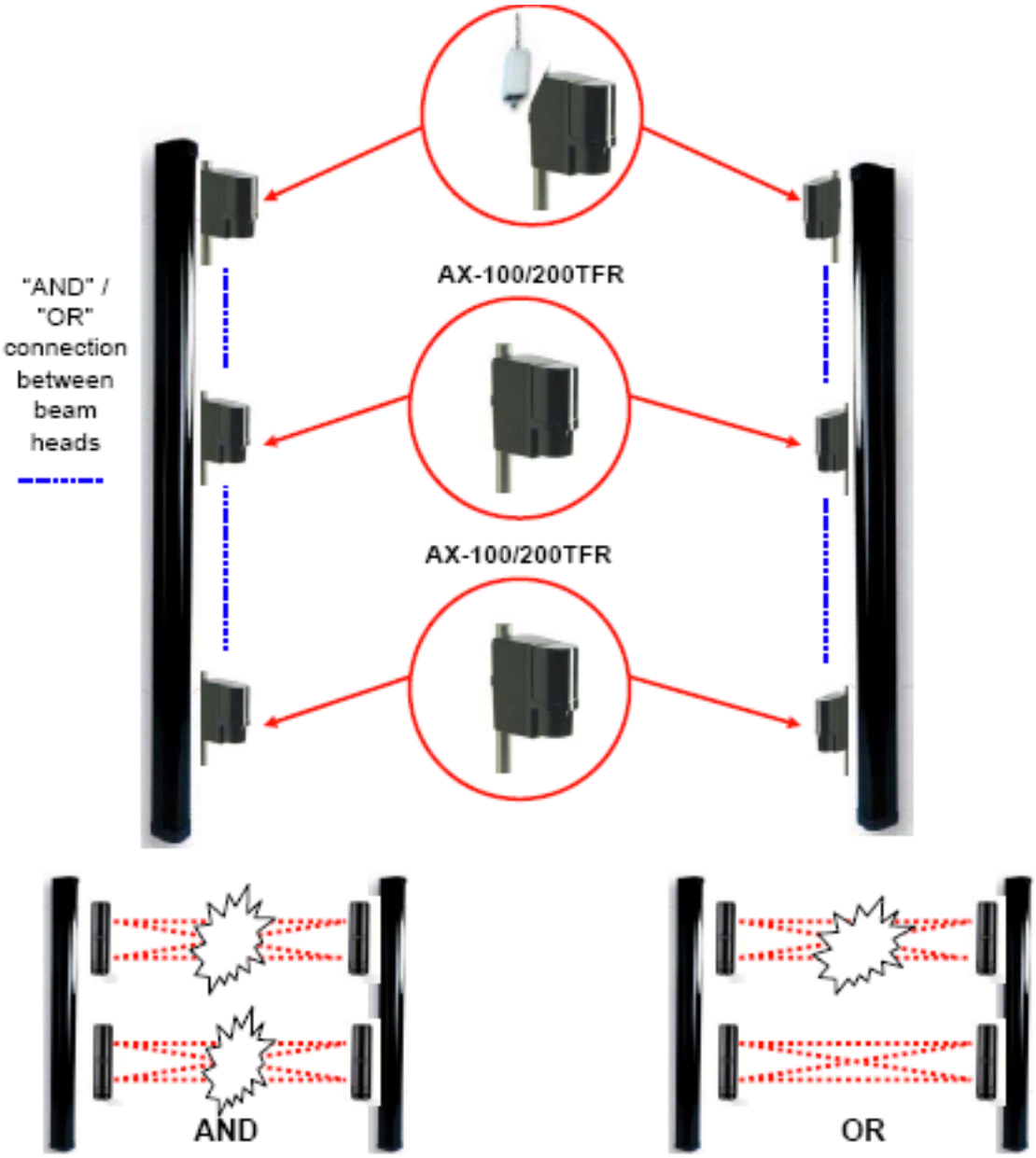
It is recommended that for systems requiring advanced design that you contact your Optex Area Sales Manager to assist with product selection and reporting requirements. Most designs can be clarified by phone and where required site inspections can be conducted.

For additional information on the AX-UBB and configuration options please see the AX-UBB product details on our website.

iSeries Wireless Options

This example shows more than one beam set in towers using a single wireless transmitter

AX-100/200TFRi

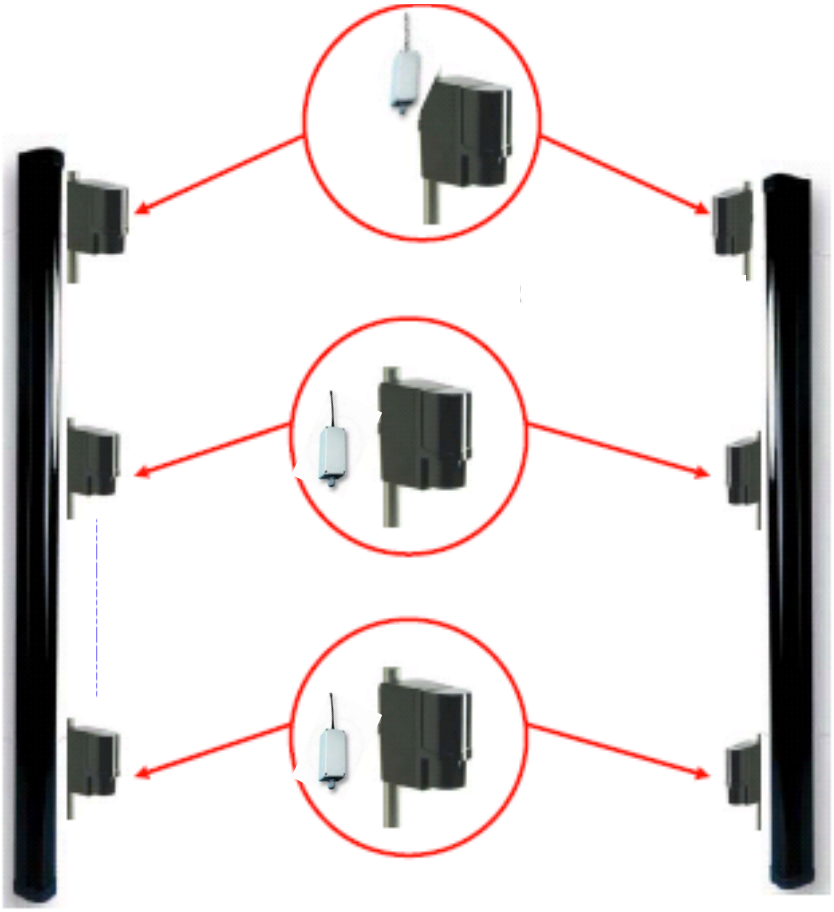


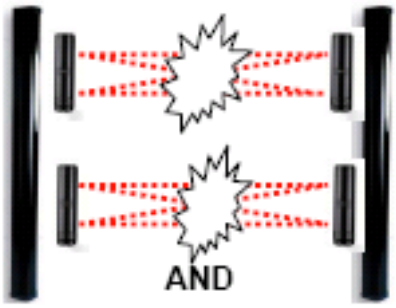
AND/OR operation configured at the Tower

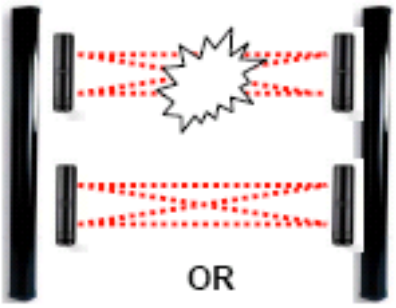
iSeries Wireless Options

This example shows each beam set using a separate wireless transmitter within the tower

AX-100/200TFRi



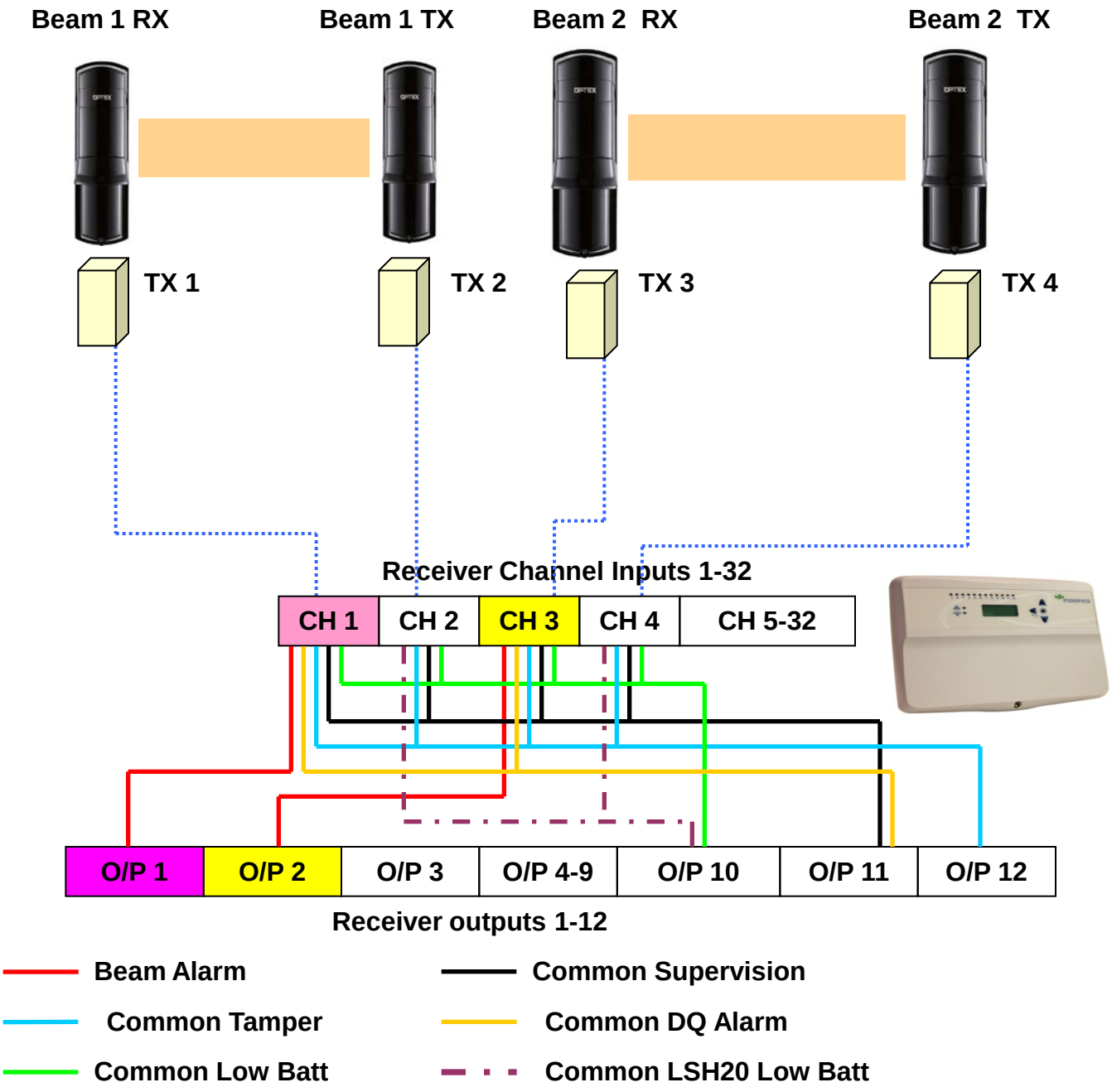




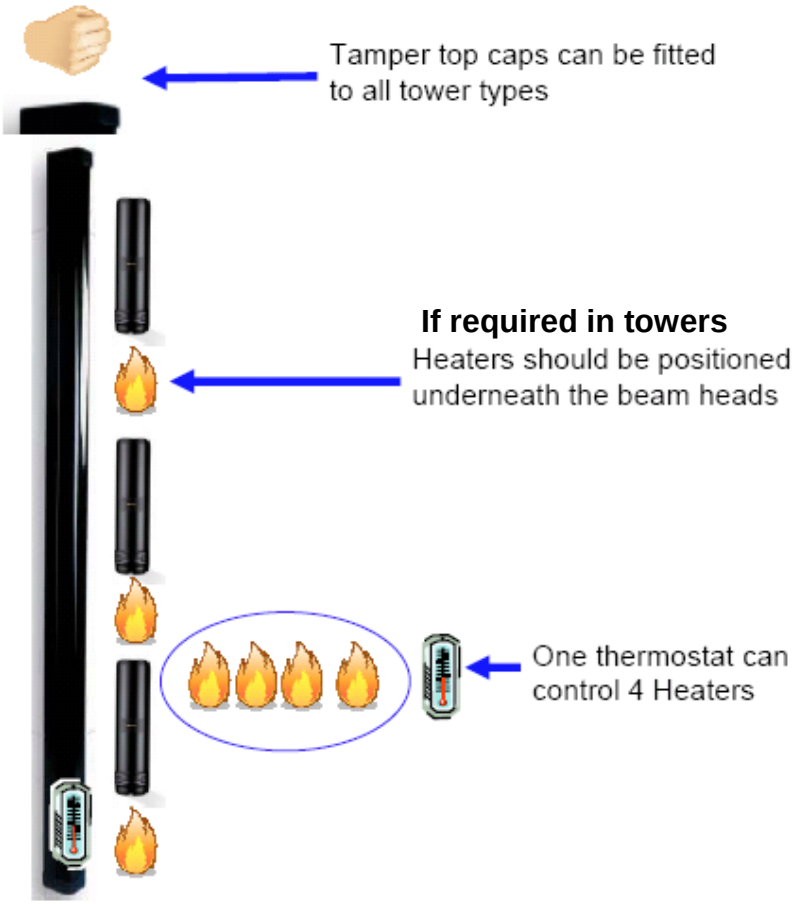
AND/OR operation can be remotely changed if controlled by wireless Receiver or control panel

Receiver – EE4232 Mi. Mapping options

Example – 2 sets of beams (Four wireless transmitters)



Additional Tower components available

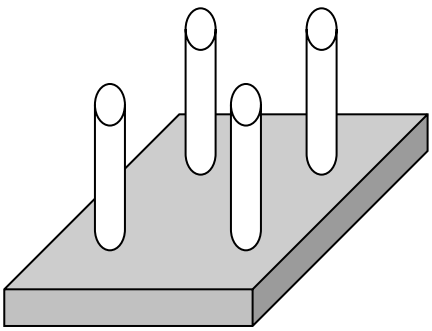




TOWER

If required for towers

The BT-F is used for mounting the AX-BT into a concrete footing. The tower is then place on top



BT- F

Tower sits on top of BT-F and is secured by 4 nuts

Product guide summary

Please refer to individual product data for more detailed specification

Hardwired Active beam sets		
Basic Active beams suitable for basic system designs		
Code	**Description**	**Heater option**
AX-70TN	20m Twin Active Beam	HU-3
AX-70TN(BE)	20m Twin Active Beam	HU-3
AX-130TN	40m Twin Active Beam	HU-3
AX-130TN(BE)	20m Twin Active Beam	HU-3
AX-100PLUS(C)	30m Twin Active Beam	-
AX-200PLUS(BE)	60m Twin Active Beam	-
AX-250PLUS	75m Twin Active Beam	HU-1
AX-500PLUS	150m Twin Active Beam	HU-1
Channel 1-4 Selectable Active beams for advanced system designs		
		Heater option
AX-100TF(BE)	30m Channel selectable Active Beam	HU-3
AX-200TF(BE)	60m Channel selectable Active Beam	HU-3
AX-350TF	100m Channel selectable Active Beam	HU-1
AX-650TF	200m Channel selectable Active Beam	HU-1

Battery Powered Active beam sets		
Channel 1-4 Selectable Active beams for advanced system designs		
Code	**Description**	
Fitted with iSeries wireless		**Wireless fitted**
AX-100TFRi (BE)	30m Channel selectable Active Beam	YES
AX-200TFRi (BE)	60m Channel selectable Active Beam	YES
AX-TFR-TM KIT 2	Bracket for mounting AX100/200TFRi/TFR	
LSH20	3.6v Lithium battery. 4 required for a set of battery powered beams	
Not pre-fitted with any wireless		**Wireless fitted**
AX-100TFR(BE)	30m Channel selectable Active Beam	NO
AX-200TFR(BE)	60m Channel selectable Active Beam	NO

Towers and Tower options	
AX-WMT	1.75m Wall or post mounted Single sided Tower
AX-BT	1.75m Free standing Double sided Tower
BT-F	Additional base plate for AX-BT. Used with concrete footing
TW176W	3.00m Wall or post mounted Single sided Tower
TW1760	3.00m Free standing Double sided Tower
TWH12V	Tower heater
TWT12V	Tower heater thermostat
TWTT	Anti-climb tamper for Freestanding towers - AX-BT+TW1760
TWTTW	Anti-climb tamper for Freestanding towers - AX-WMT+TW176W

SL-350QFR

100m Quad active beam. iSeries wireless not included. Suitable for AX-BT/WMT tower mounting when used with AX-UBB and EE1216TW. Channel selectable suitable for stacking.

SL-350QNR

100m Quad active beam. iSeries wireless not included. Suitable for AX-BT/WMT tower mounting when used with AX-UBB and EE1216TW. Fixed channel not suitable for stacking.

SL-350QFRi

100m Quad active beam. iSeries wireless included. **Not suitable for AX-BT/WMT**. **tower mounting** . Selectable 4 channel suitable for stacking on wooden/metal posts or wall mounting

SL-350QNRi

100m Quad active beam. iSeries wireless included.. Fixed channel not suitable for stacking. **Not suitable for AX-BT/WMT tower mounting**Single mount on wooden/metal posts or wall mounting

AX-UBB

Universal battery box. Required when mounting SL series battery powered beams in towers. Holds 4x LSH20 batteries and maximum of 2x EE1216TW.

AX-ACC

Plug-on tilt detection device for AX-UBB. Provides additional tamper protection to the AX-WMT/BT

EE1216TW

Plug-on iSeries transmitter for use with AX-UBB. Maximum two devices can be used in a single AX-UBB.

60 second check list - Hardwired devices

- Do you need basic or advanced beam heads?
- Are you stacking the beam heads above one another?
- Do you need heaters. Do you have the correct power supply for heaters?
- Should you ask Optex for design assistance?

60 second check list - Wireless

- Do you need a wireless survey?
- If no survey has been undertaken, have you allowed for a final design submission?
- Do you need training on the wireless products before installation?
- Have you allowed for the LSH20 batteries to power the beams
- Should you ask Optex for design assistance?

60 second check list - Towers

- Have you confirmed the ground conditions?
- Do you require additional groundwork's to mount the towers?
- Do you need heaters. Have you specified the correct heater for towers?
- Have you allowed for thermostats to control the heaters?
- Do you require Anti-climb tamper protection?

60 second check list – Hybrid hardwired and wireless

- See above all check list
- Have you allowed for housings for the universal wireless transmitters
- Should you ask Optex for design assistance?

60 second check list – SL wireless

- If using towers have you allowed for the AX-UBB and EE1216TW requirements?
- If standalone mounted do you require channel selectable options?
- Should you ask Optex for design assistance?

New products arriving 2012-13

Arriving in late 2013 will be the SL (Smart line) series of hardwired devices.
The arrival of an extended family of SL active beams and will introduce a new Quad optical system into the market. This document will be updated to accommodate these new product releases

For more product information or design assistance contact

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