



Work Smart,  
"ENJOY WIRELESS"

- Long distance : 100m/350ft
- Long battery life : Up to 8 years
- Long term durability : IP65



## Smart Line series

Battery operated photoelectric detector

# SL-350QFR

4ch. beam frequencies selectable model

# SL-350QNR

Standard model

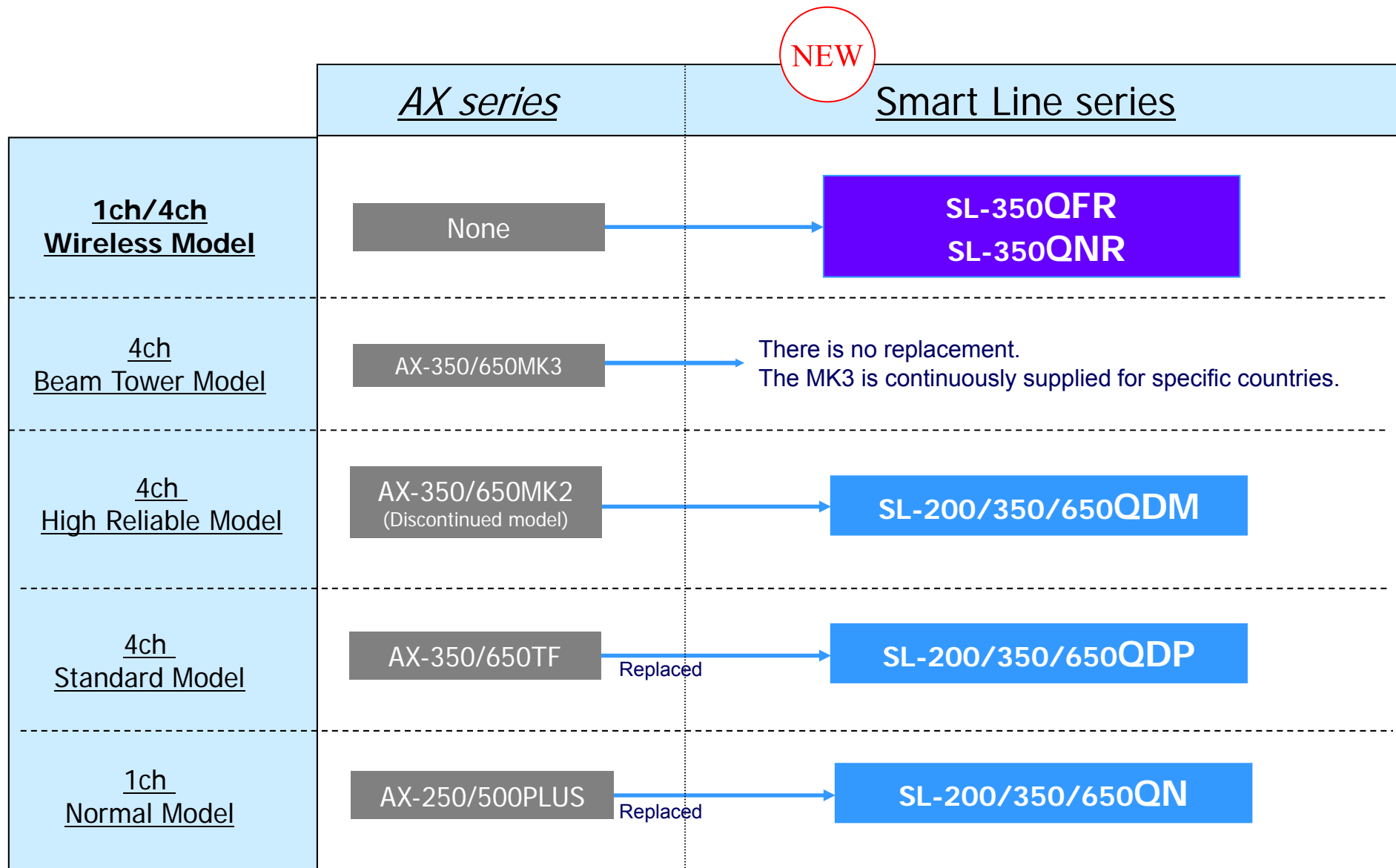


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# 1. Upcoming line of products

- Smart Line series



**Adding more “Longer-range” Products in 2012**

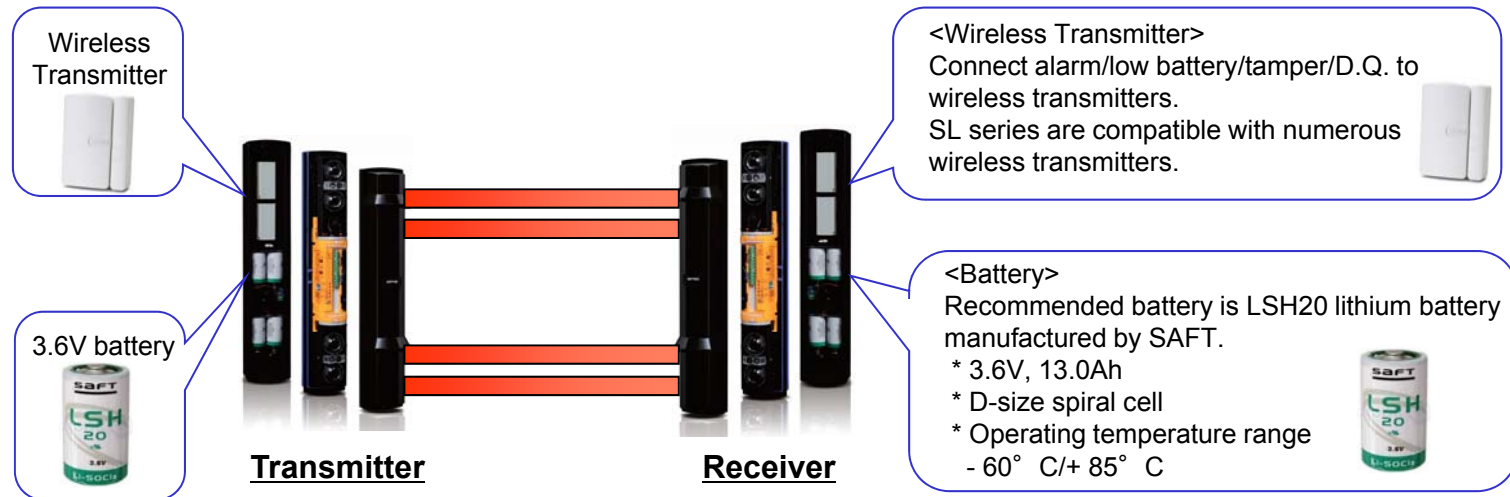
## 2. Product concept & outline

- What is the battery operated photoelectric detector?

### Wireless-Ready

To use the battery operated photoelectric detector, the battery and the wireless transmitter should be prepared. The SL series is designed to work with most manufacturer's wireless transmitters, and the back box has enough space to accommodate them.

SL series are easy deployable and adaptable to any control systems currently installed.



### System configuration example



2. Product concept & outline  
- Case study (iSeries)

**OPTEX & INOVONICS Collaboration “iSeries” (Case study in U.S. and Europe)**

“iSeries” matches the strengths of two security leaders to give you the perfect solution for a wireless alarm system. This solution fills an ever- growing need for commercial security applications. Together, OPTEX and INOVONICS bring you this complete wireless solution for any sized installation including virtually any building, campus, utility, shopping mall, school and a host of other large-scale security installations.



The banner features the **iSeries wireless** logo on the left, a photograph of a circuit board in the center, and the **powered by INOVONICS** logo on the right. Below the circuit board, the text reads: **EN1941 ( 900MHz: North America, New Zealand and Australia )** and **EE1941 ( 868MHz: Europe )**. On the far right, a stylized graphic indicates a range of **1,000m LONG DISTANCE WIRELESS ALARM SYSTEMS**.



## 2. Product concept & outline

- Advantages

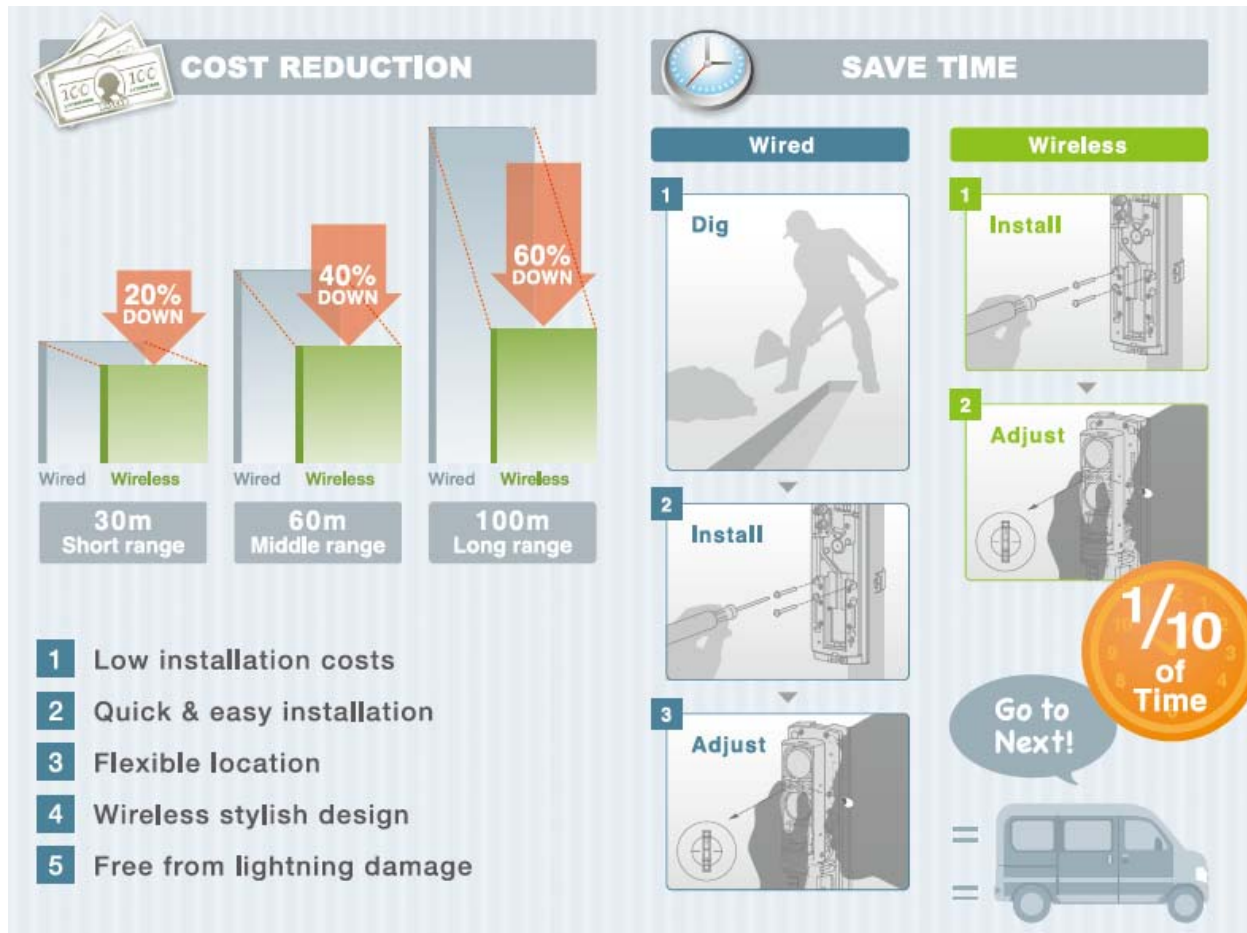
### Revolution in the perimeter security industry

In residential, commercial and industrial setting, SL series offer the reliability and flexibility needed in ever-changing and unstable environments.

The SL series also offers a less expensive and more efficient solution.

Typical perimeter systems require expensive trenching and lengthy installation time.

With the SL, expensive wire conduit runs and concrete work is unnecessary, allowing installers to save time and money.



## 2. Product concept & outline

### - Basic specifications



#### SL-350QFR

**Q : Quad beam**  
**F : Frequency (4ch. selectable switch)**  
**R : Ready for wireless**

#### SL-350QNR

**Q : Quad beam**  
**N : Normal (No selectable switch)**  
**R : Ready for wireless**

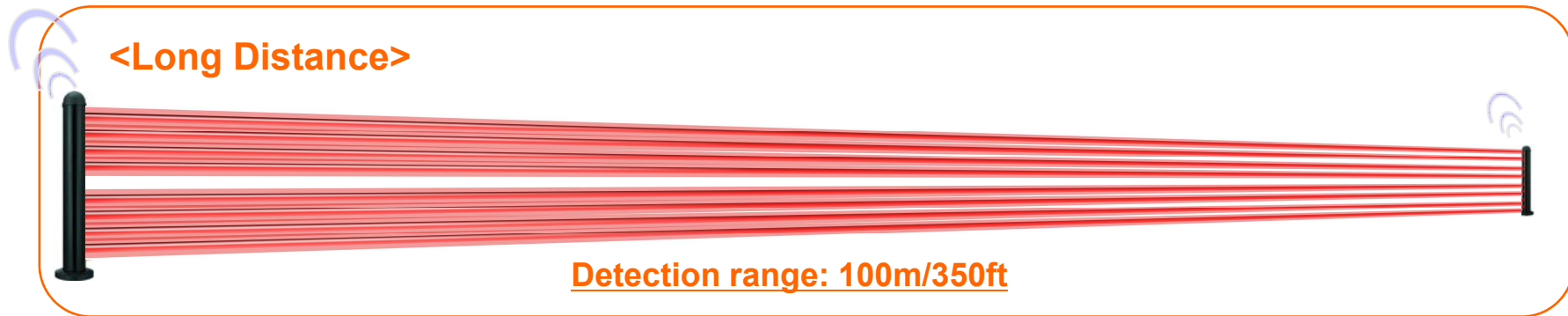
#### Basic performance

- 99% Beam blocking stability
- 4 Selectable beam frequencies
- Beam interruption adjustment function
- Triple tamper function
- D.Q.circuit (environment disqualification)
- High grade spherical lens
- Form C(N.C./N.O.) output
- Battery saving function
- Intermittent output function
- A.G.C. (Automatic Gain Control) circuit

Model	SL-350QFR	SL-350QNR
Maximum detection range	100 m/350 ft.	
Maximum arrival distance	1000 m/3500 ft.	
Detection method	Quad infrared beam interruption detection	
Selectable beam frequency	4 channels	—
Interruption time	Variable between 50/100/250/500 ms (4 steps)	
Power source	Recommend: 3.6 V, 13.0Ah LSH20 lithium batteries manufactured by SAFT Operating range: 3.2 V - 4.0 V lithium batteries Transmitter: 2 or 4 units, Receiver: 2 or 4 units	
Current draw	745µA Transmitter: 420 µA + Receiver: 325 µA (at 25°C, 3.6 VDC)	
Battery life **	Transmitter: Approx. 4 years Receiver: Approx. 5 years	
Output	Alarm output	From C-Solid State Switch: 3.6 VDC, 0.01 A
	Alarm period	2 sec (±1) (Nominal)
	D,Q output	From C-Solid State Switch: 3.6 VDC, 0.01 A
	Low battery	(Receiver only)
	output	N.C. (mechanical switch): 3.6 VDC, 0.01 A (Transmitter and Receiver)
	Tamper output cover, back box, (main unit)	N.C. (contact output): 3.6 VDC, 0.01 A Opens when cover, main unit or back box is removed. (Receiver only)
Indicator	Alarm indicator (Receiver)	Alarm: ON Light receiving: OFF
	Level indicator (Receiver)	Not Light receiving: OFF Light receiving: Flickering or OFF
	Power indicator (Transmitter)	Power ON: ON Power OFF: OFF
	Low battery indicator	Voltage reduction: Flickering
Operating temperature	-20°C - +60°C (-40°F - 140°F)	
Operating humidity	95 % (max.)	
Alignment angle	±90° Horizontal, ±10° Vertical	
Dimension	H x W x D mm(inch): 452 (17.9) x 83 (3.3) x 138 (5.4)	
Weight	3300 g (Total weight of Transmitter + Receiver, excluding accessories)	
International protection	IP65	

### 3. Features

- Long distance/ Long battery life/ long-distance viewfinder



#### <Long Battery Life>

Model number	AX-100TFR	AX-200TFR	SL-350QFR/QNR
Detection Range	30m (100ft)	60m (200ft)	100m (350ft)
Current draw	TX	300 $\mu$ A	490 $\mu$ A
	RX	320 $\mu$ A	420 $\mu$ A
Battery Life	TX	5 years	3 years
	RX	5 years	5 years

\* When using LSH20(3.6V, 13Ah) batteries manufactured by SAFT.

\* Use of batteries other than LSH20 may shorten the battery life.

	Transmitter	Receiver
4 pcs	Approx 8 years	Approx 10 years
2 pcs	Approx 4 years	Approx 5 years

#### <Long Distance Viewfinder>



#### Sniper viewfinder with 2X magnification

The new telescopic lens has a high level of visibility for optical alignment work. Even with the long distance, perfect alignment is achievable quickly while still allowing stable performance.

### 3. Features

- New Mechanical Design

**Quad beam with Aspherical Lens**  
The high-grade aspherical lens creates more sharply defined and precise active infrared beams compared to ordinary fennel lenses.

**Sniper Viewfinder with 2X magnification**  
The new telescopic lens has a high level of visibility for optical alignment work.

**Wireless transmitter storage space**

**Anti-frost hood cover**  
The hoods prevent frost forming on both upper and lower beams.

**Alignment dial**  
The alignment is easily adjusted by dial.

**Triple Tamper Function**  
Front cover, back box and wall tamper

**Vivid interior color**  
Easy-to-see vivid interior color for optical alignment.

**Beam blocking plate**  
The plate is fixed firmly on the lens unit without fear to be blown off by wind. There is room for storage in the back of the front cover.

**Battery case**  
Maximum 4 batteries can be put in the battery case.



**Slim body & Lightweight**  
20% reduction of the body side and 15% reduction of the weight come together in the SL series.



**Weather protection IP65**  
Rubber packing is used for all conceivable points where water or dust may penetrate, such as wiring holes, wire ports and the outer chassis.



## 4. Various optional products - Accessories

### Mounting patterns



#### Anti Bird Cap ABC-4

Keep birds and small animals off the detector to reduce false alarms. Stop rain and snow streaming in front of the detector to keep the sensitivity.



#### Back Cover BC-4

Conceal the back side of pole mounted detector.



#### Pole Side Cover PSC-4

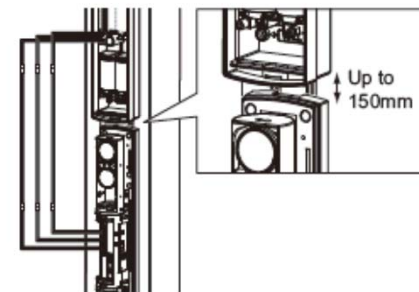
Conceal the gap between detectors mounted back to back.



Patent pending

#### Extension Cable with Connector EC-4

Extension cables between the back box and the main unit when installing to the beam tower.



Cable length: 500 mm (19.7 inch)

4. Various optional products  
 - Beam alignment unit (BAU-4)



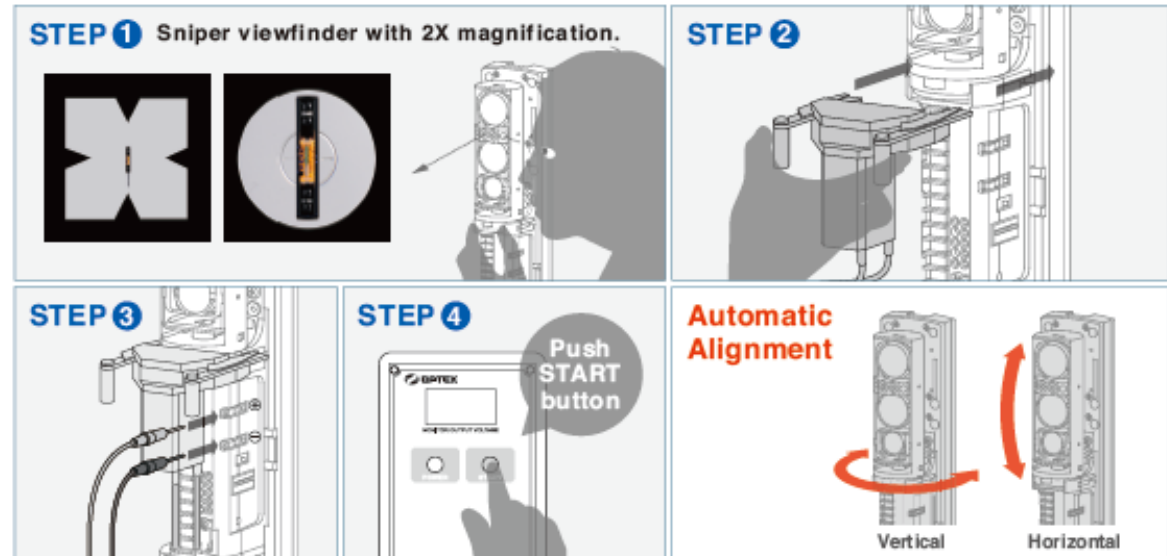
Total performance of product is highly dependent on not only product quality but also installation quality!

First In The world

**Automatic Beam Adjustment unit BAU-4** (Option)

BAU-4 automatically performs to perfect optical alignment.

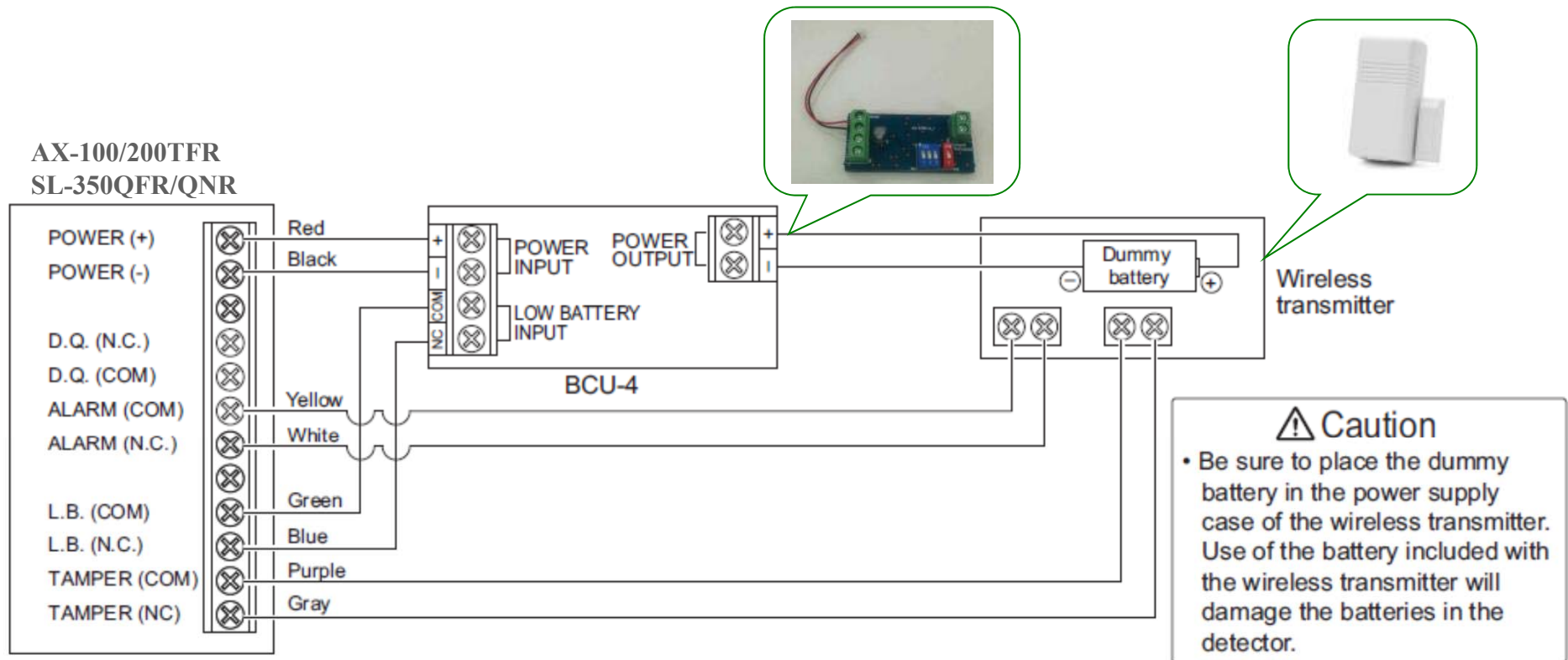
The BAU-4 beam alignment tool automatically and accurately aligns the beams by adjusting the optical axis. This allows peak performance and gives one technician the ability to install the 100m(350 ft.) SL unit by himself.



#### 4. Various optional products

- Battery common use unit (BCU-4)

#### How to use “Battery Common Use Unit (BCU-4)”



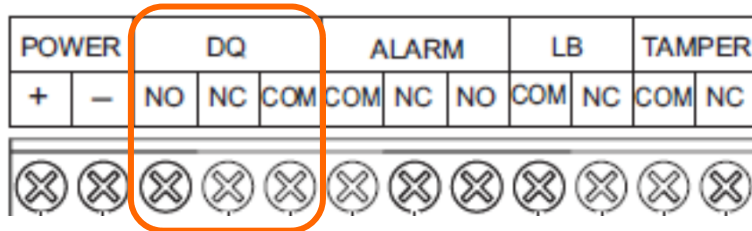
#### SPECIFICATIONS

Input voltage	3.2 - 4.0 VDC	
Current draw	Approx. 5 $\mu$ A at 3.6 VDC (no load)	
Output voltage	Normal	Approx. 3.0 - 3.6 VDC
	Low battery	Approx. 2.0 - 2.6 VDC
Output current	100 mA (max.)	
Operating temperature	-20°C - +60°C (-40°F - +140°F)	
Operating humidity	95% (max.)	

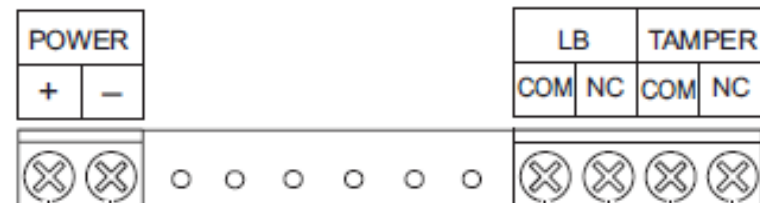
**BCU-4 allows the SL-QFR/QNR and the wireless transmitter to share power source and monitor low battery signals. There is no need for another wireless transmitter to monitor low battery signal.**

5. Output terminal  
- "D.Q. output"

**Receiver**



**Transmitter**

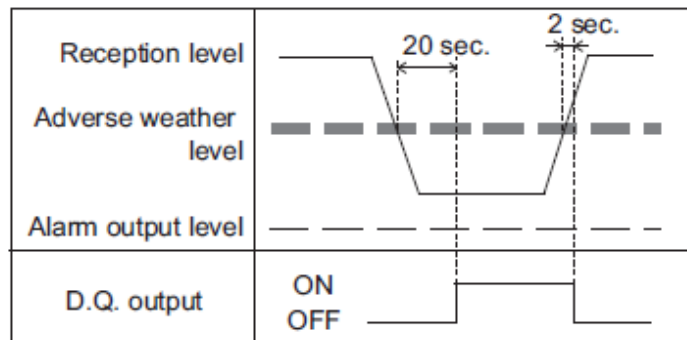


**D.Q. circuit (Environmental Disqualification)**

D.Q. output will send a trouble signal when the beam strength reaches below adverse weather levels for more than 20 seconds, due to rain, snow, or heavy fog.

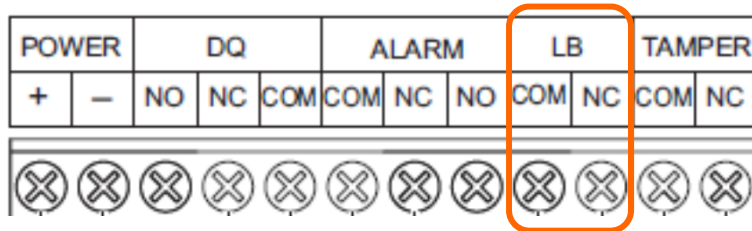
D.Q. output will return to "OFF" if reception is regained for more than two seconds.

< Operating Time Chart >



5. Output terminal  
 - "Low battery output" and "LED indication"

**Receiver**

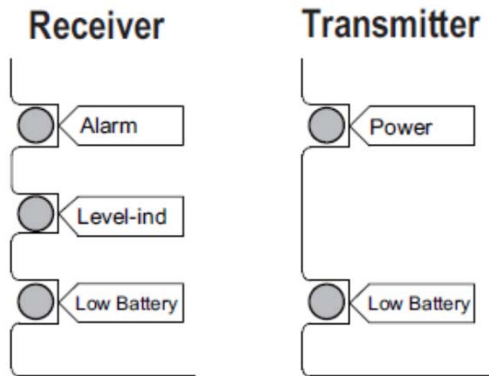


**Transmitter**



**Low battery output and LED indication**

When battery power voltage will drop to 3.0VDC, Low battery output and LED Indicator will be turned on.



	Detection (beam interruption)	Normal	Low battery power
ALARM (Receiver)	ON	OFF	—
POWER (Transmitter)	ON	ON	—
LOW BATTERY (Receiver&Transmitter)	—	—	Blink

**⚠ Caution**

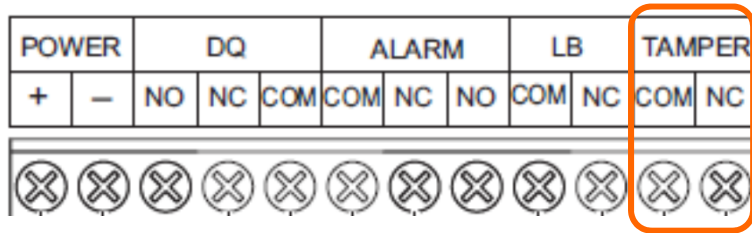
- Remove all batteries prior to replacing with new ones. If this is not followed, the low battery indicator LED will not reset and continue to blink.

**⚠ Warning**

- Do not mix batteries that have different levels of power remaining (i.e., new and used batteries or batteries of different manufacturers). Not observing the above may result in an explosion, leakage of electrolyte, emission of toxic gases or other outcomes that may be harmful to people and property.

5. Output terminal  
 - "Tamper output" for the front cover

**Receiver**

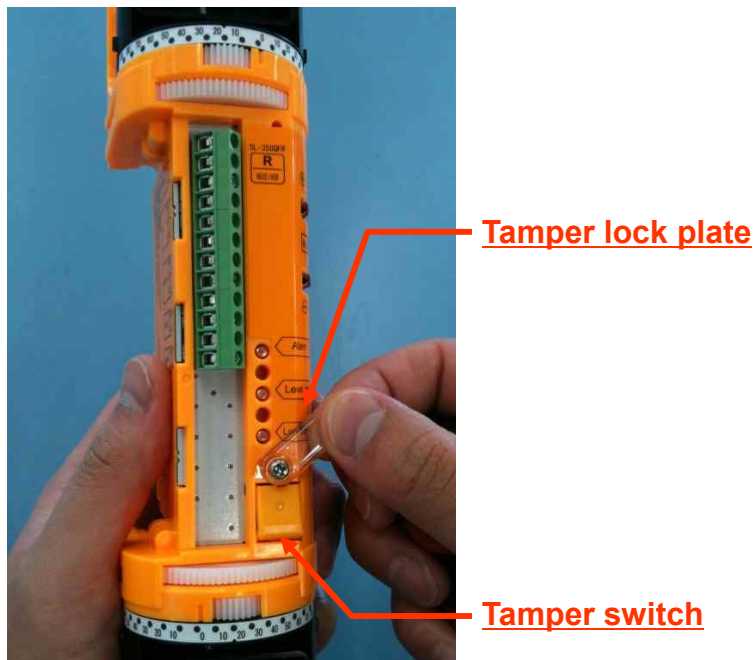


**Transmitter**



**Tamper lock plate**

When installing the detector without the front cover(e.g. beam tower mounting), be sure to lock the tamper switch with the tamper lock plate on both the transmitter and receiver.



**⚠ Caution**

- The switch selection is not recognized when locking the tamper button. Release the tamper button before selecting a function using the switch. **!**
- After completing the settings, be sure to lock the tamper button to check that all LEDs are OFF. If the tamper button is not locked, the LEDs are kept ON, which consumes more battery power. **!**
- The monitor jack output is disabled when the tamper button is locked. **!**
- When locking the tamper button, the beam alignment test point will be disabled. Complete the alignment procedure before locking the tamper button. **!**

## 5. Output terminal

- "Tamper output" for the front cover

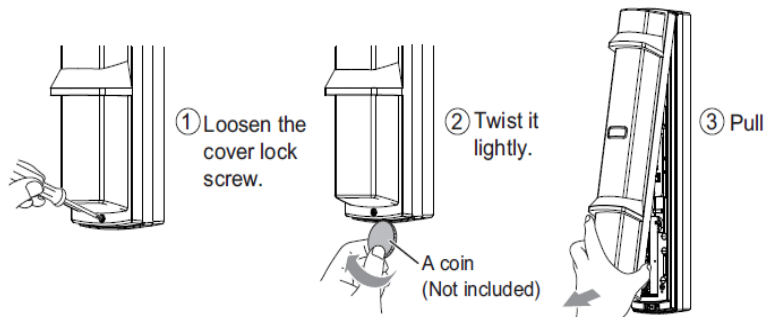
### Receiver

POWER		DQ			ALARM			LB		TAMPER	
+	-	NO	NC	COM	COM	NC	NO	COM	NC	COM	NC

### Transmitter

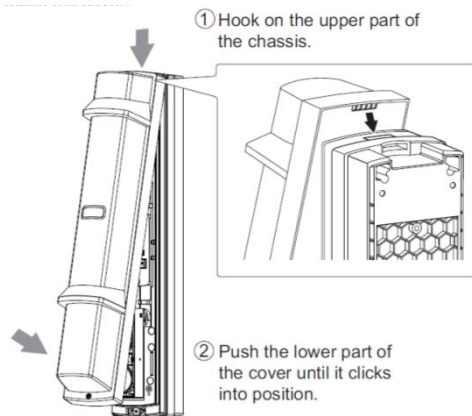
POWER		LB				TAMPER	
+	-	COM	NC	COM	NC	COM	NC

### How to open the front cover



Insert coin in the slot on the bottom of the unit.

### How to close the front cover

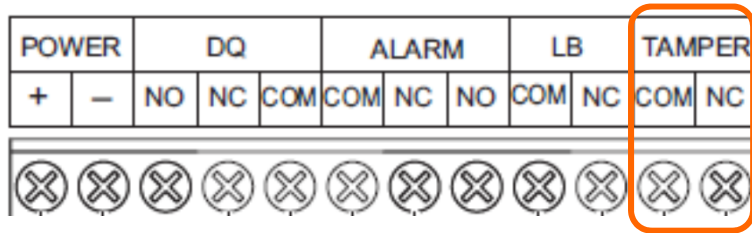


Press the front cover firmly over this orange label completely to secure the tamper function as well as IP65.



5. Output terminal  
 - "Tamper output" for the wall tamper

**Receiver**

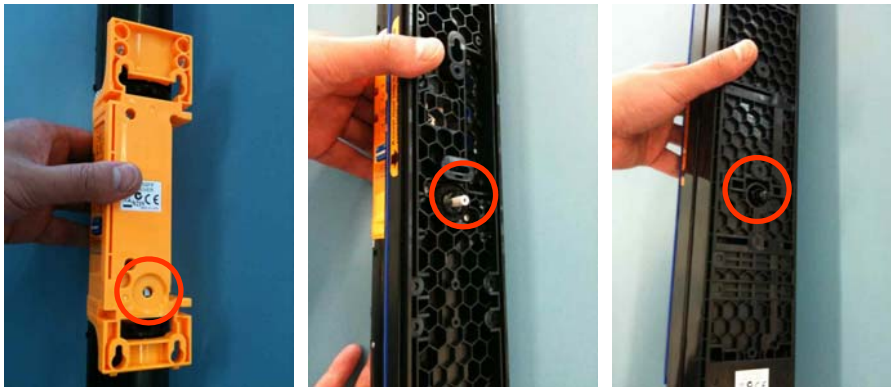


**Transmitter**



**Wall tamper switch**

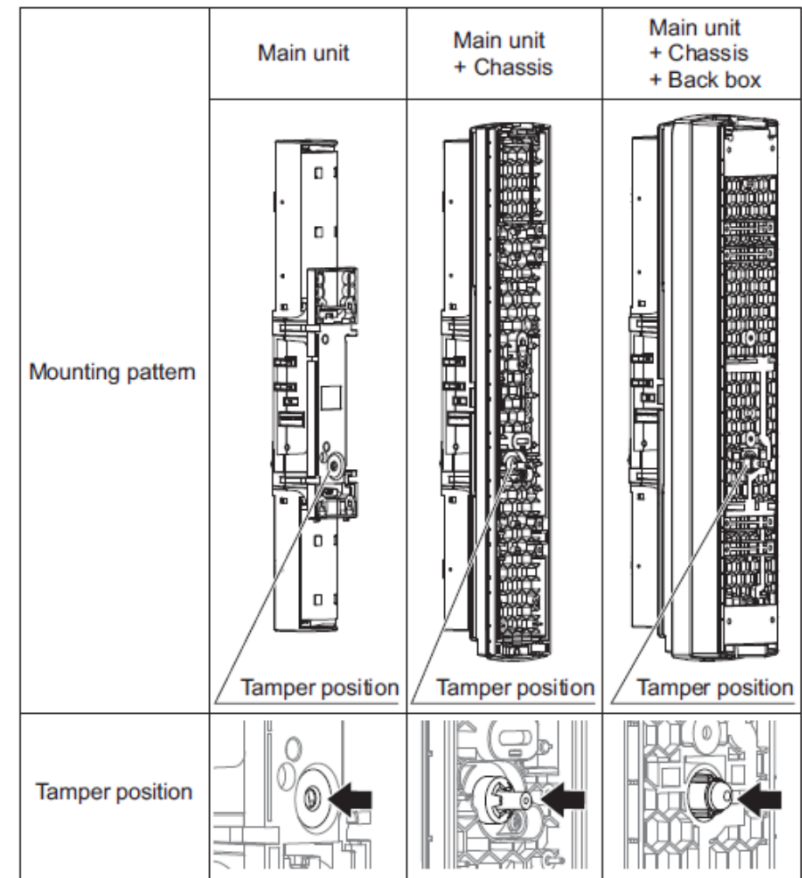
When using the tamper output, install the detector with the tamper switch being pressed.  
 Not doing so may cause malfunction of wall tamper.



<Main unit>

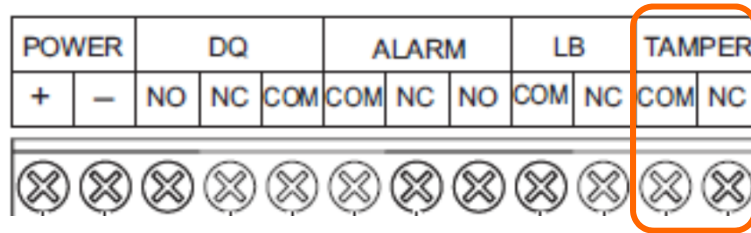
<Chassis>

<Back box>



- Output terminal
  - "Tamper output" for the wall tamper

**Receiver**

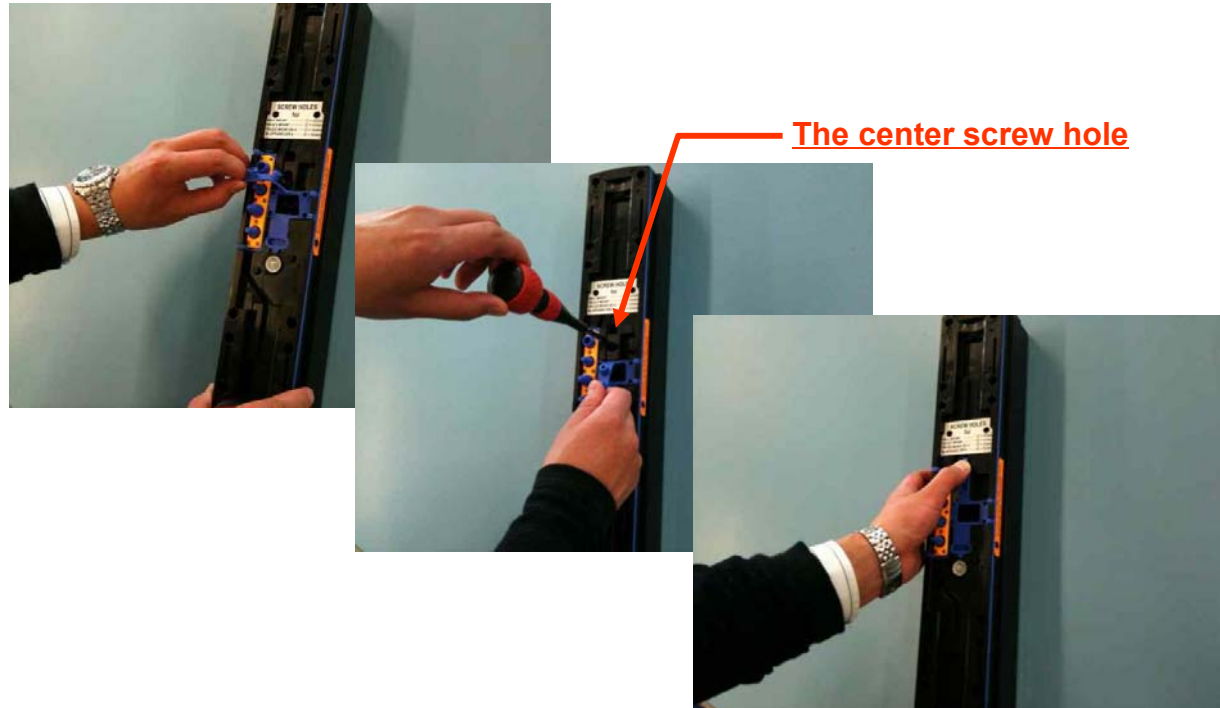
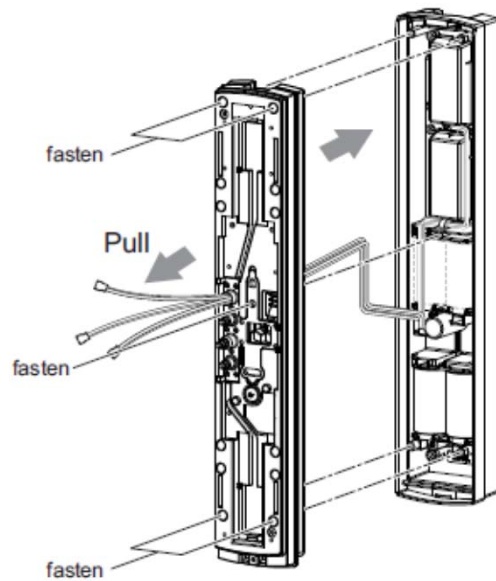


**Transmitter**



**How to mount the chassis to the back box**

**Tighten the 5 screws completely. Not doing so may cause malfunction of wall tamper. Most importantly, make sure to fasten the screw to the center screw hole.**



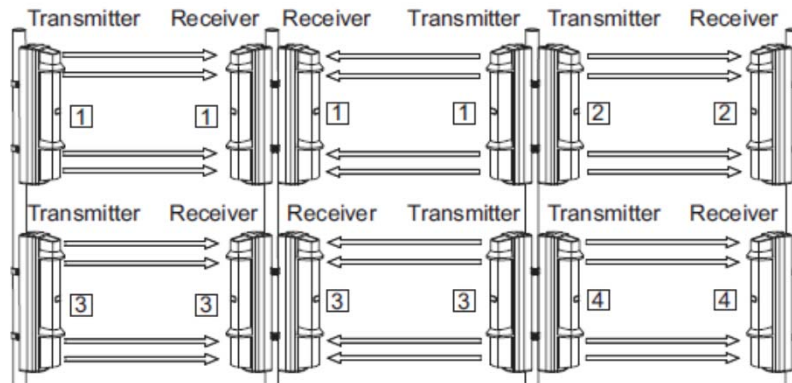
6. Dip switch setting  
 - 4 channel beam frequency selector

**Selectable beam frequency**

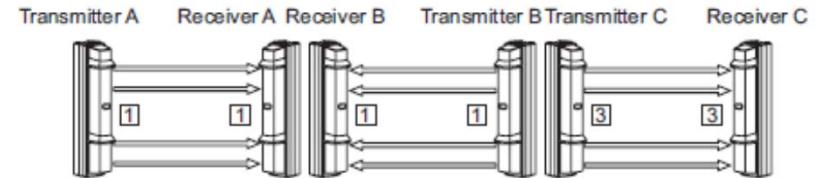
Necessary to avoid cross-talk in multi-set and/or stacking applications.

See below illustration for double stacking and/or straight in-line installation.

**Double stacking installation**

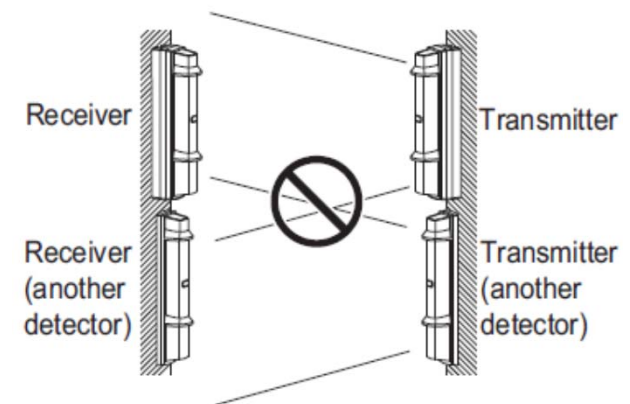


**Straight in-line installation**



**Warning**

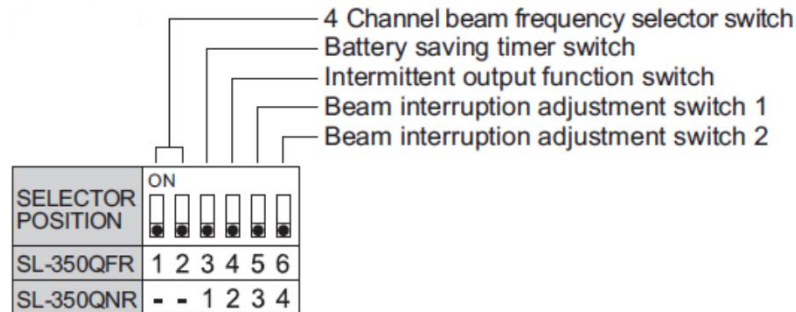
- Do not attempt to install this product with any other photoelectric detector. It may cause the detector to fail or not respond to movements. If the receiver of this product receives the beam from the wired photoelectric detector, it may cause false alarms.
- In case that you install the battery operated photoelectric detector with Optex hard-wired photoelectric detector at the same site, ensure that the hard-wired transmitter cannot affect any other battery operated receivers for avoiding cross talk between photoelectric detector.



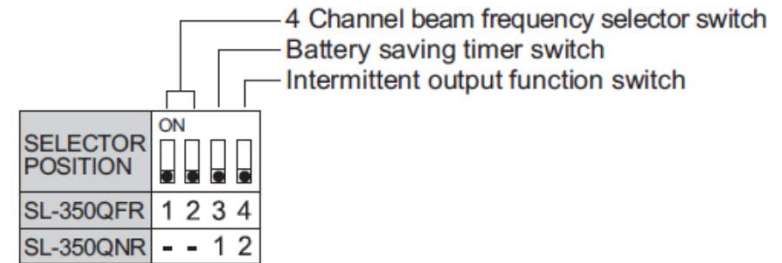
## 6. Dip switch setting

- "Battery saving timer" and "Intermittent output function"

### Receiver



### Transmitter

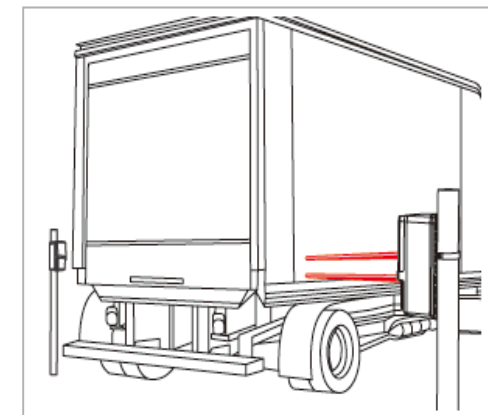


### Battery saving timer

Alarm output activation is limited to 2 minutes by a timer. Even if there are continuous alarm events, the alarm output operates only once in the timer period.

### Intermittent output function

Intermittent output function enforces outputs to reset while photoelectric detector continues to be interrupted. This function is effective if your wireless transmitters do not have supervised features to monitor relay status. For example, with such transmitters, security system can be armed while beams are interrupted by an accident. Intermittent output function repeats alarms with intervals to let the system be aware of interrupted status.

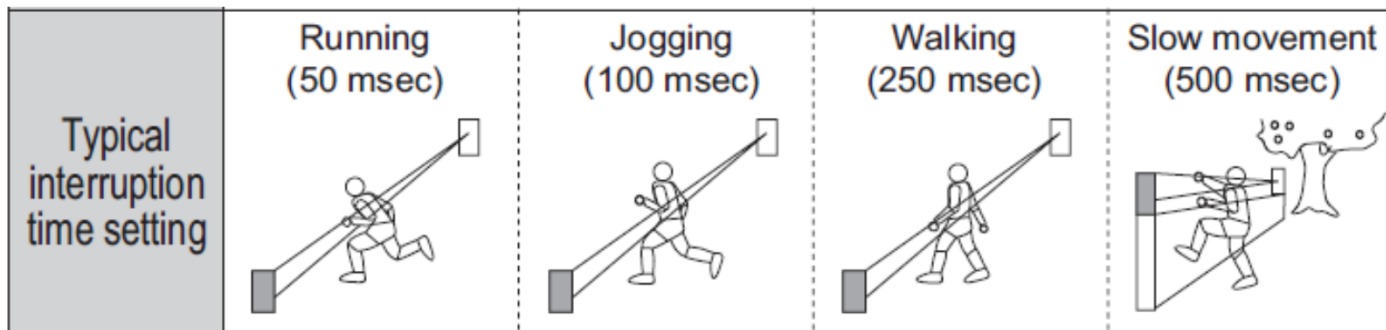


6. Dip switch setting  
- Beam interruption adjustment switch

### Adjustable interruption time

Set the beam interruption adjustment switch of the Receiver according to the speed of the human object to detect. (Initial setting is at 50 msec for normal work. )

It also allows for longer delay time to avoid false triggers by large birds, etc.



<Note>

\* msec = 1/1,000 sec.

50msec = 0.05 sec.  
100msec = 0.10 sec.  
200msec = 0.20 sec.  
350msec = 0.35 sec.  
500msec = 0.50 sec.



**Sensing Innovation**