



PIRAMID XL3



PIRAMID XL3 DUAL-TECHNOLOGY SENSOR Installation instructions - [Pages 1-28](#)

529 VISTA BLVD 89434 SPARKS, NV - USA

Toll Free: 1-800-498-9662 / Phone: (775) 856-7333 / Fax: (775) 856-7658

Website: www.protechusa.com

E-mail: sales@protechusa.com

NT412 / V1.2 / 09.18

CONTENTS

1	GENERAL	2
2	DESCRIPTION	3
3	OPERATION	4
4	INSTALLATION PRECAUTIONS.....	6
5	INSTALLATION	10
6	WIRING	11
6.1	Wiring PIRAMID XL3	11
6.2	Maximum length of 12VDC power supply cables.....	12
7	SET-UP	12
7.1	Settings PIRAMID XL3.....	12
7.2	Anti-masking alarm	15
7.3	Reading the parameters of the PIRAMID XL3: "READ" Mode.....	16
8	SMARTPHONE APPLICATION	17
8.1	Managing settings.....	19
8.2	PIRAMID XL3 settings	19
8.3	Real-time Information.....	21
8.4	Event log.....	22
9	PERIODIC MAINTENANCE	24
10	MAINTENANCE	24
11	TECHNICAL SPECIFICATIONS	25
12	PRODUCT REFERENCES.....	26

1 GENERAL

PIRAMID XL3 is a dual-technology sensor:

- A **passive infrared** unit composed of a **pyroelectric infrared (PIR)** sensor that detects radiation emitted by the human body in the infrared spectrum.
- A **Microwave antenna** using a 10,510 GHz frequency transmitter and a Doppler Effect receiver detect changes in the state of the radiation field caused by passage of an object or body in the lobe created by the antenna.

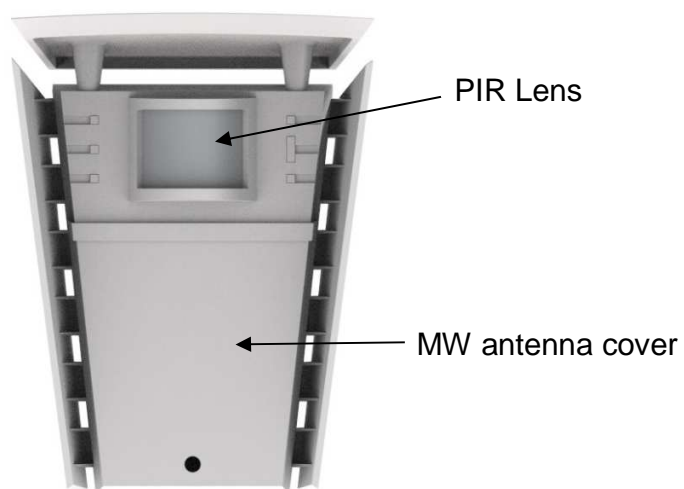
The detection zone formed by the lobe of the microwave antenna and the beams from the mirror of the PIR create an invisible detection zone. To trigger an alarm, it is necessary that the object or intruder pass through the detection zone.

MAIN FEATURES:

- Maximum outdoor range:

SDI-78XL3-A:	98ft x 98ft	/ 30m x 30m
SDI-78XL3-B:	98ft x 33ft	/ 30m x 10m
SDI-78XL3-C:	131ft x 19.7ft	/ 40m x 6m
SDI-78XL3-D:	131ft x 9.8ft	/ 40m x 3m
SDI-78XL3-H:	98ft x 85ft	/ 30m x 26m
SDI-78XL3-H60:	98ft x 46ft	/ 30m x 14m
SDI-78XL3-H40:	98ft x 23ft	/ 30m x 7m
SDI-78XL3-H20:	98ft x 9.8ft	/ 30m x 3m
- Horizontal orientation +/- 90° in 10° increments. Vertical orientation from 0° to -10° maximum.
- Anti-masking function by infrared Led.

2 DESCRIPTION



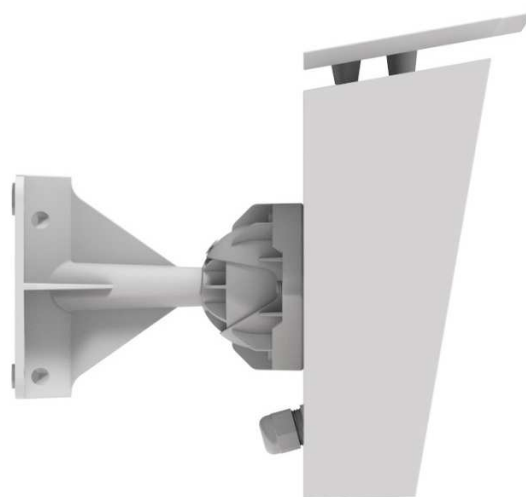
Front view



Back view



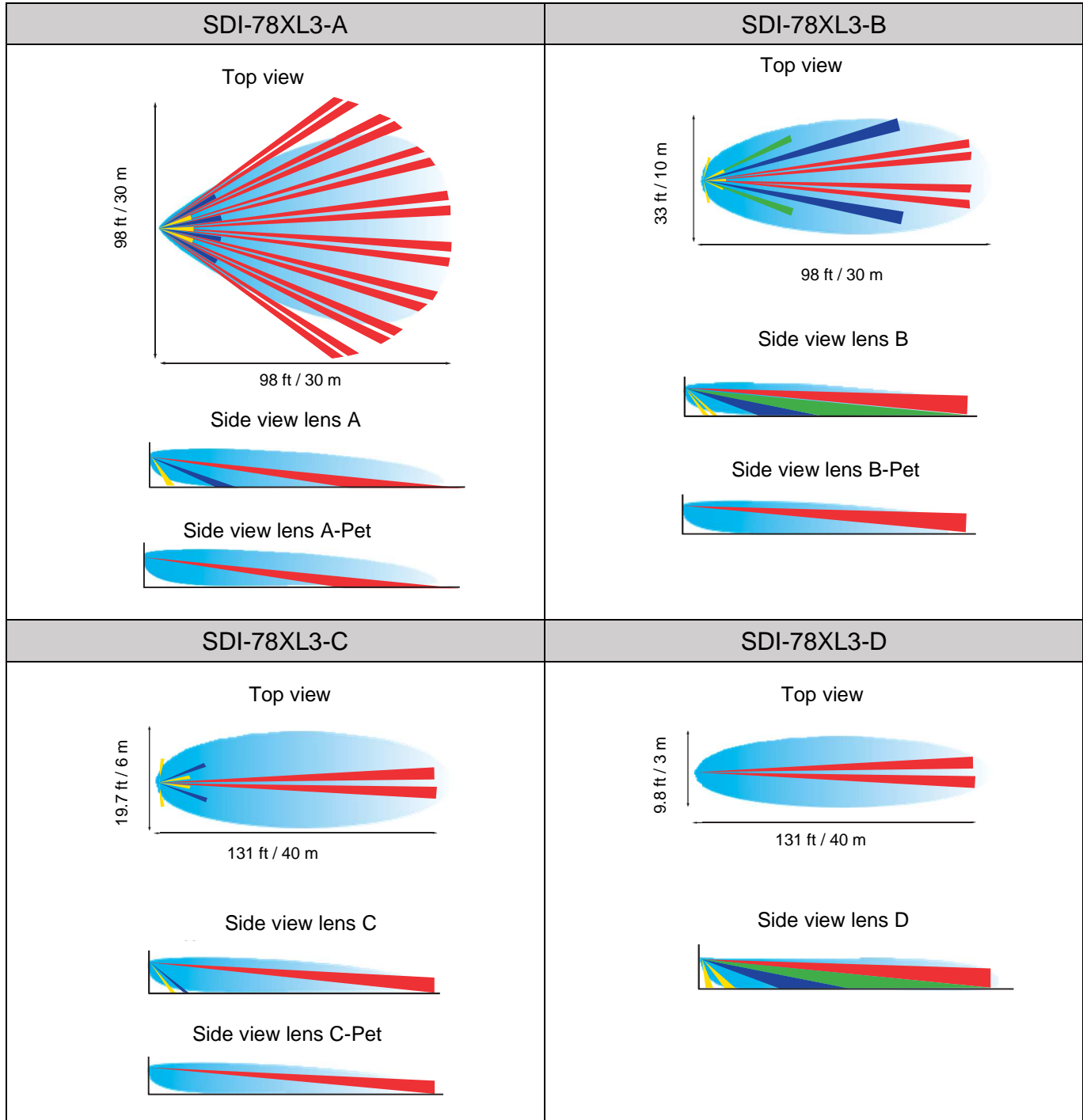
Top view



Side view

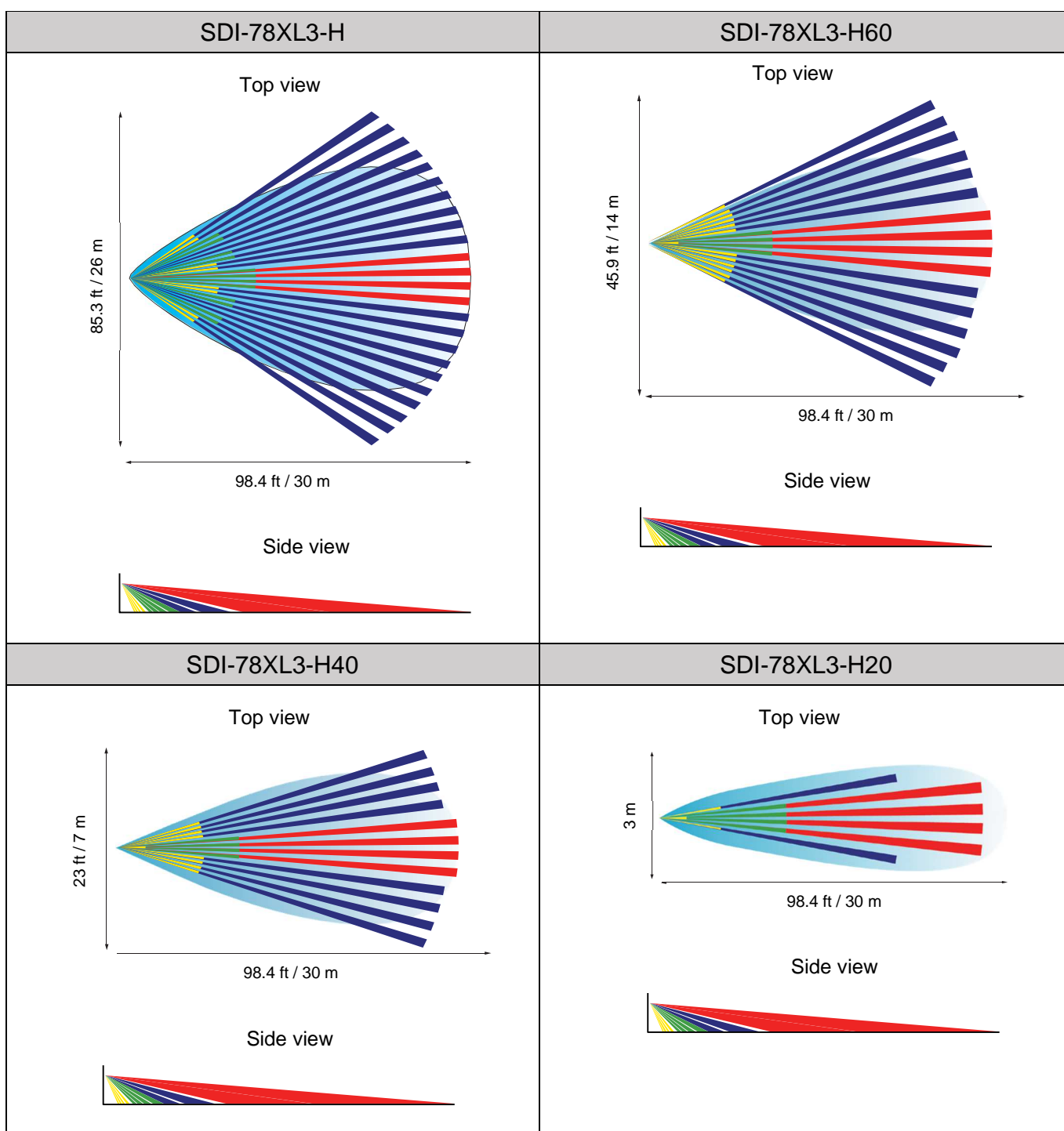
3 OPERATION

Characteristics of detection zone:



Legend:





Legend:



4 INSTALLATION PRECAUTIONS

It is important to follow certain rules to ensure proper installation of the detector:

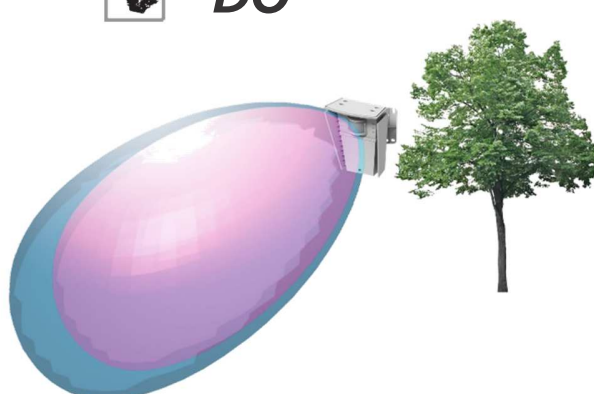
- ENSURE THAT NO VEGETATION IS FOUND IN THE DETECTION ZONE. CHECK THAT THE CLOSEST VEGETATION DOES NOT OBSTRUCT THE DETECTION ZONE IN CASE OF WIND.



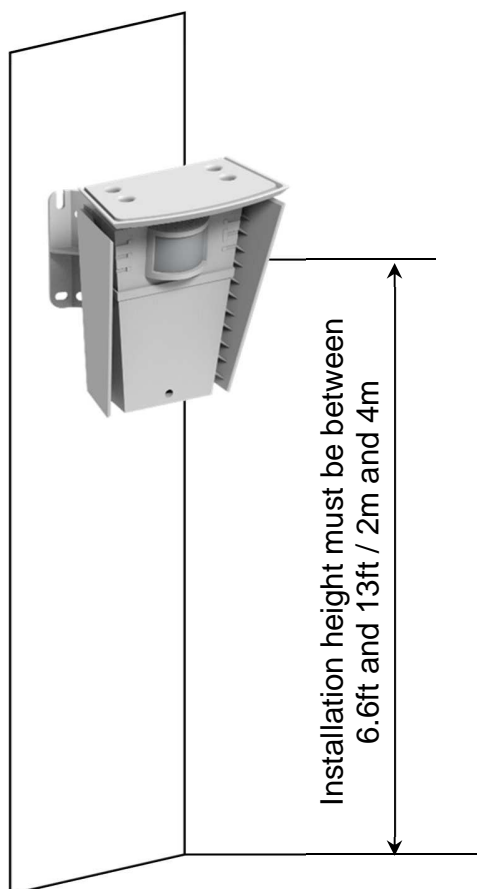
DON'T



DO

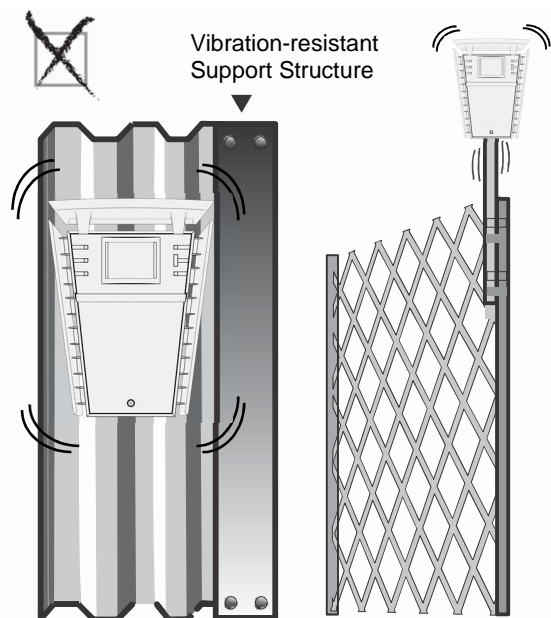


- RESPECT THE RECOMMENDED INSTALLATION HEIGHT.

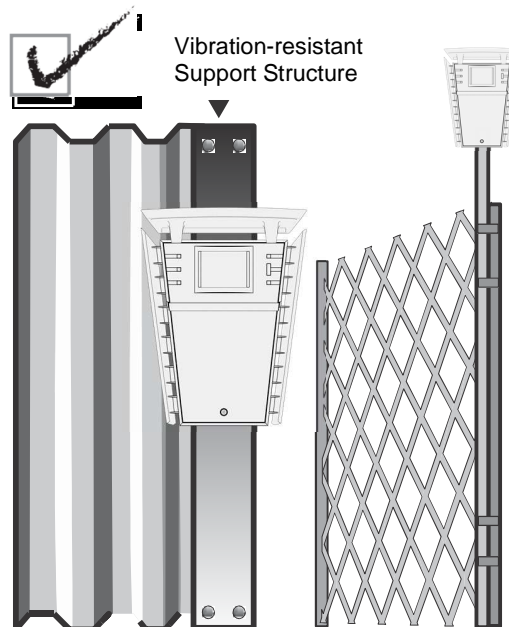


- INSTALL THE DETECTOR ON A STABLE MOUNTING SURFACE

DON'T mount the detector on a surface exposed to strong vibrations, such as a fence with no support or a flimsy metal surface.



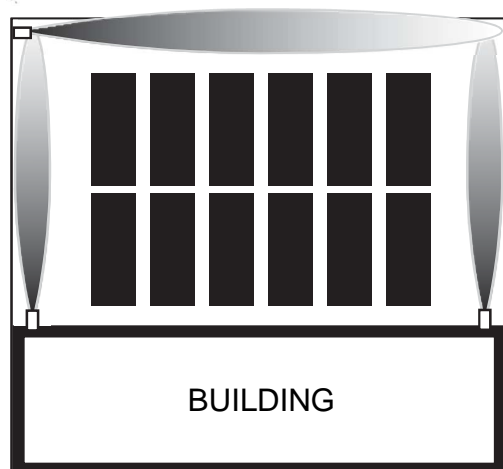
DO: Mount the detector on a wall or solid post. If it is installed on a building with a metal surface, the support must be vibration-resistant.



- USE AS A MOTION DETECTOR AND NOT AS A PERIMETER DETECTOR

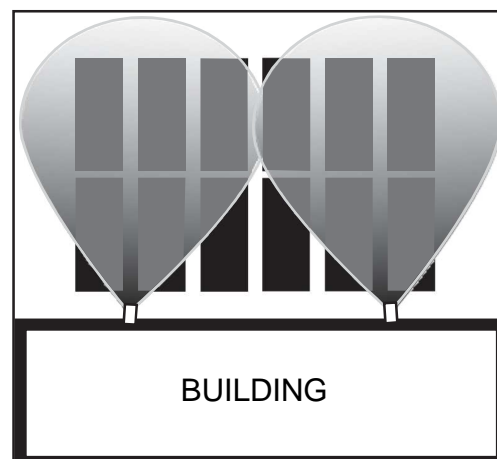
DON'T use the PIRAMID XL3 as a perimeter detector. For good transverse detection, the sensitivity must be set to maximum, which risks increasing the number of unwanted alarms triggered.

DON'T



DO: Use the PIRAMID XL3 as an approach detector (use of A, B or C lenses possible). A low sensitivity setting enables a reduction of the number of unwanted alarms triggered.

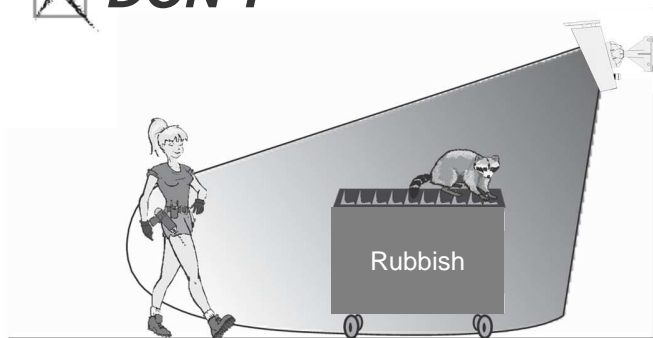
DO



- BE CAREFUL OF WASTE WHICH COULD ATTRACT SMALL ANIMALS AND BIRDS

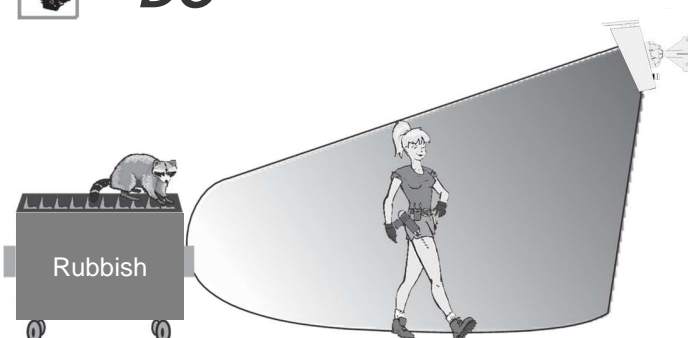
DON'T leave any bin in the range of the detector which could attract small animals and birds. When they are near to the detector, they may be identified as larger targets by the detector.

 **DON'T**



DO: Place bins away from the range of the detector.

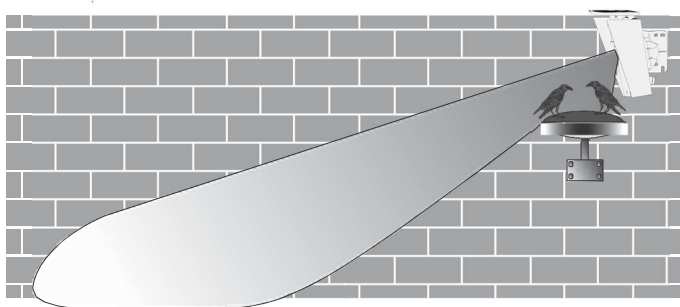
 **DO**



- BE CAREFUL OF BIRDS WHICH COULD PERCH IN THE RANGE OF THE DETECTOR

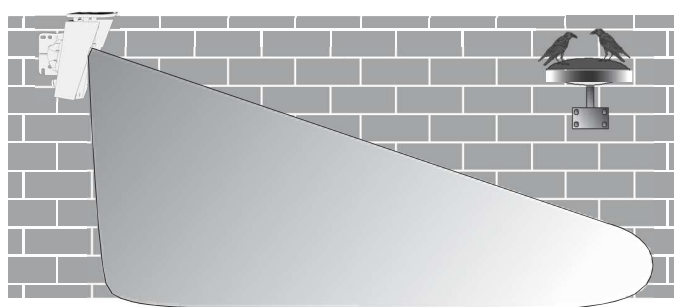
DON'T install the detector near to lighting fixtures or signage. They can be used as perches by birds and trigger false alarms.

 **DON'T**



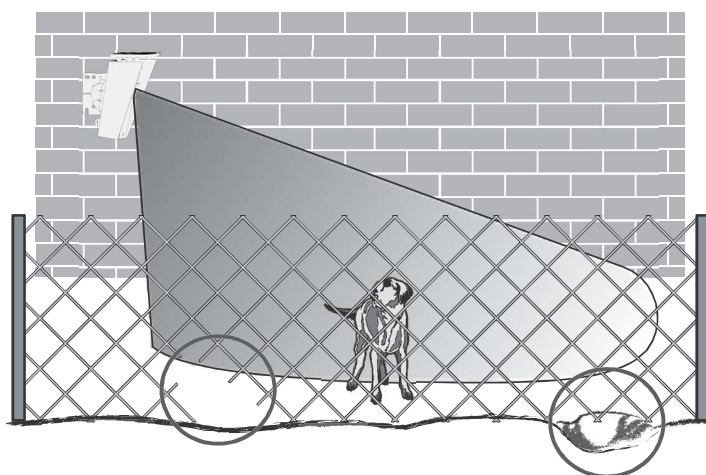
DO: Select a location which provides the detector with a range which is free of any obstacles.

 **DO**

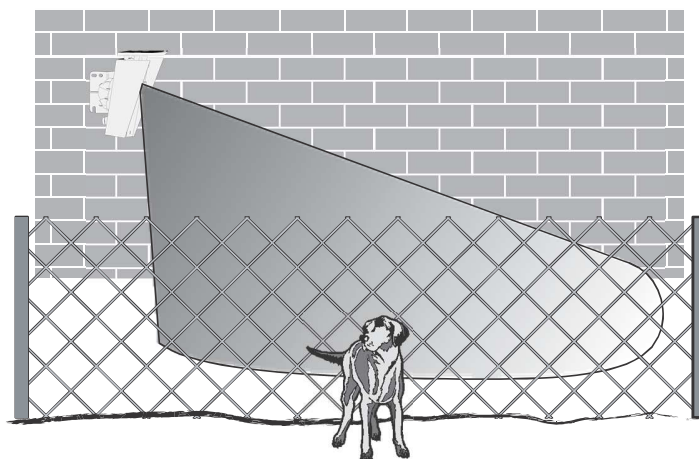


- BE CAREFUL OF ANIMALS PASSING THROUGH HOLES IN OR DUG UNDER A FENCE

DON'T ignore openings which have been made in a fence and may provide an easy passage for small animals (dogs, cats, raccoons, etc.) in the protected area.

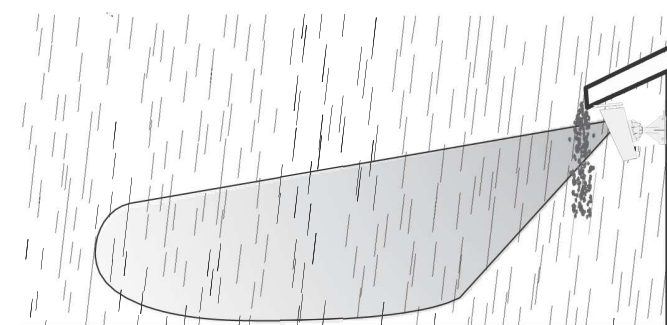


DO: Repair holes in the fence (or fill in holes dug underneath) to block access to the protected area.

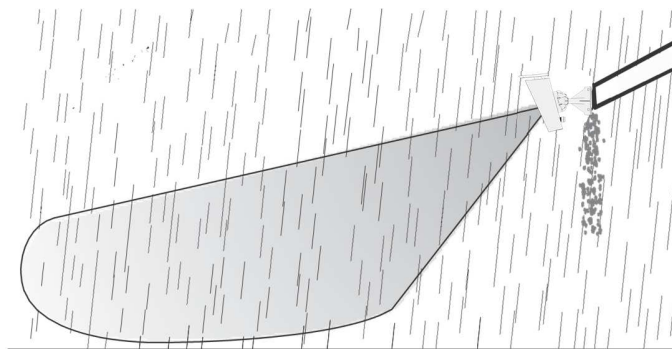


- WARNING IF INSTALLING THE SENSOR UNDER EAVES

DON'T mount the detector under eaves which are not equipped with a gutter. In the event of heavy rainfall, the flow of water directly in front of the sensor may trigger false alarms.



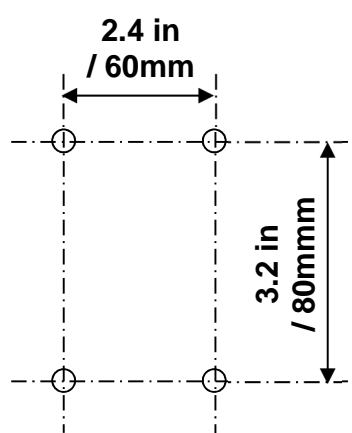
DO: mount the detector under eaves provided that they are equipped with a gutter.



5 INSTALLATION

For optimum performance, the PIRAMID XL3 detector must be installed at a height between 6.6ft / 2m and 13ft / 4m.

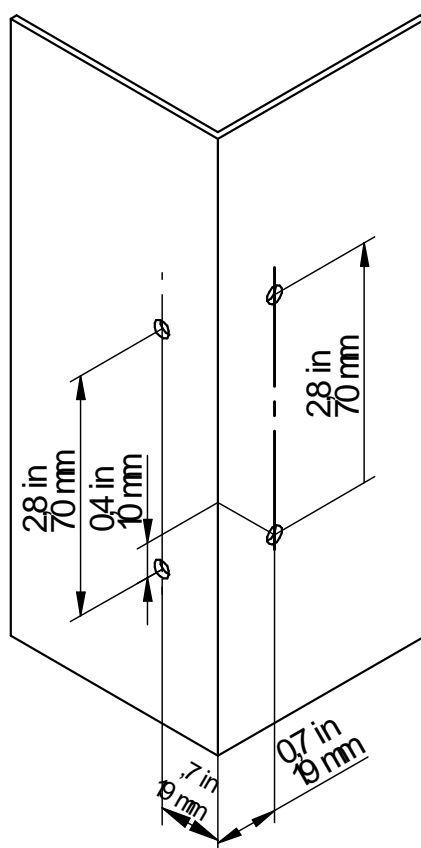
Drilling template for wall mounting:



REQUIRED ACCESSORIES TO MOUNT PIRAMID XL3:

- 4 Screws 4.8x60
- 4 Screw anchors
- 4 Washer Ø5
- 1 Hex key size 6mm

Drilling template for corner mounting:



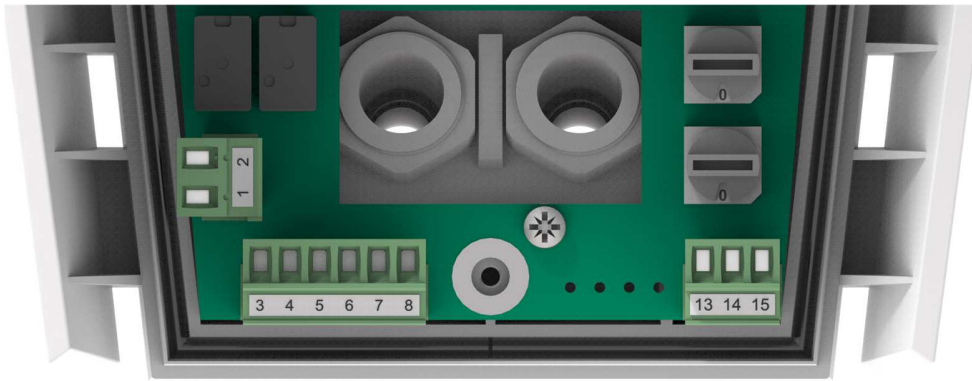
Opening the cover

Loosen the screw, raise, and then pull the cover up.



6 WIRING

6.1 Wiring PIRAMID XL3



- 1: 12V DC power supply
- 2: 0V DC power supply
- 3: Intrusion alarm contact NC
- 4: Intrusion alarm contact NO
- 5: Intrusion alarm contact COM
- 6: Anti-masking alarm contact NC
- 7: Anti-masking alarm contact NO
- 8: Anti-masking alarm contact COM

- 13: Tamper Contact NC *
- 14: Tamper Contact NO *
- 15: Tamper Contact COM *

6.2 Maximum length of 12VDC power supply cables

(Wire type SYT1 shielded)

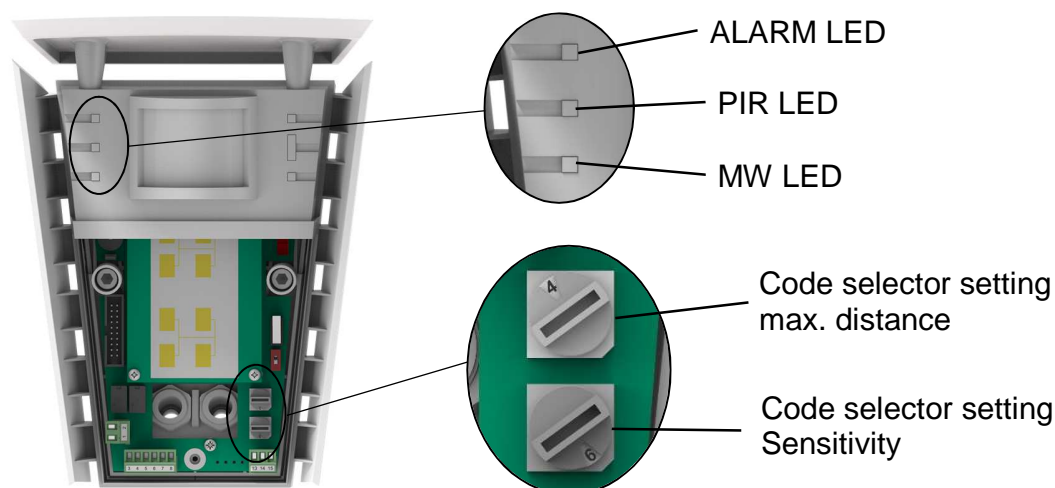
Ø Wire		Wire section		Maximum length of cables	
0.02 in	0.6 mm	23 AWG	0.3 mm ²	0.06 mi	94 m
0.04 in	0.9 mm	20 AWG	0.6 mm ²	0.13 mi	211 m
0.06 in	1.4 mm	16 AWG	1.5 mm ²	0.29 mi	470 m

Note: When using the same cable to supply power to several components, the indicated distances should be divided by the number of connected components. When using several wires with the same section in parallel by polarity, the indicated distances should be multiplied by the number of connected wires.

7 SET-UP

7.1 Settings PIRAMID XL3

Using the setting mode:



ALARM LED: lights up when the PIR and MW are in alarm.

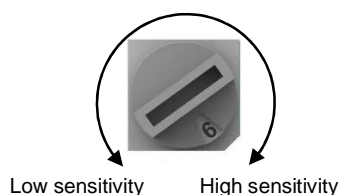
PIR LED: lights up when the PIR is in alarm.

MW LED: lights up when the MW is in alarm.

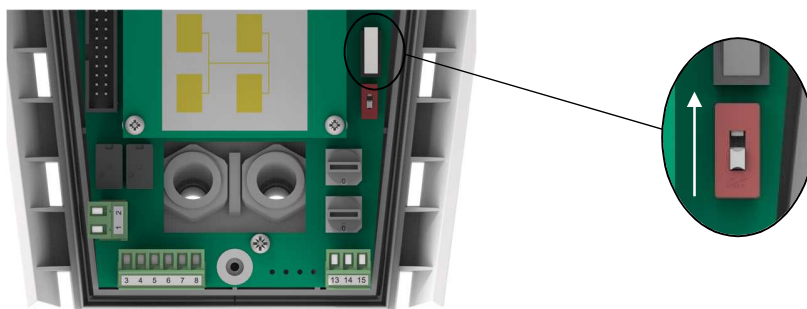
Code selector max. distance: setting the maximum distance of detection. The detector is insensitive to moving objects beyond this distance.

Code selector value	1	2	3	4	5	6	7	8	9
Distance	16.4 ft / 5 m	33 ft / 10 m	49 ft / 15 m	66 ft / 20 m	82 ft / 25 m	98 ft / 30 m	115 ft / 35 m	131 ft / 40 m	147 ft / 45 m

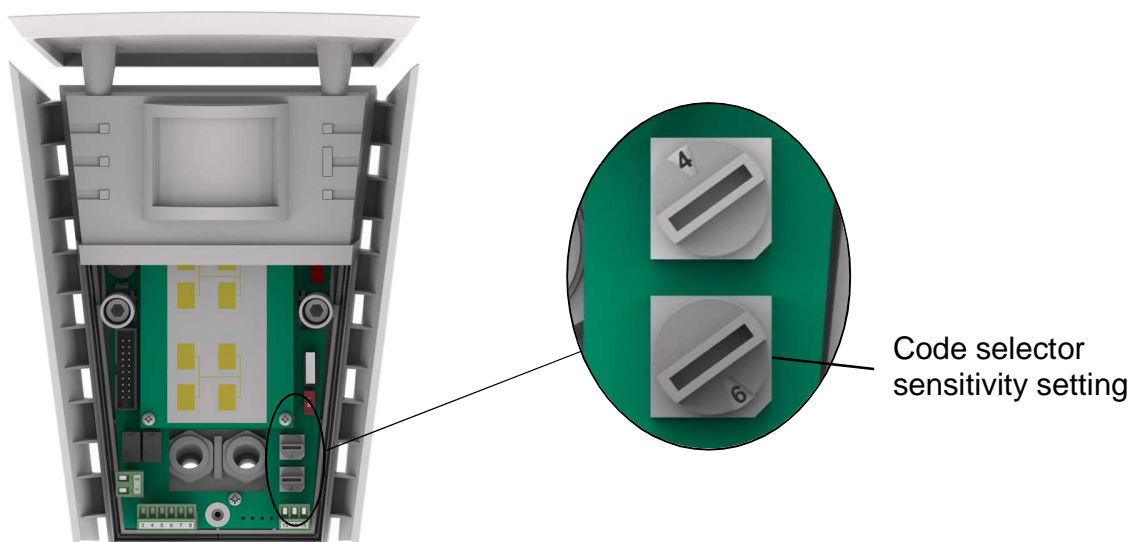
Code selector sensitivity: setting the sensitivity of the MW.



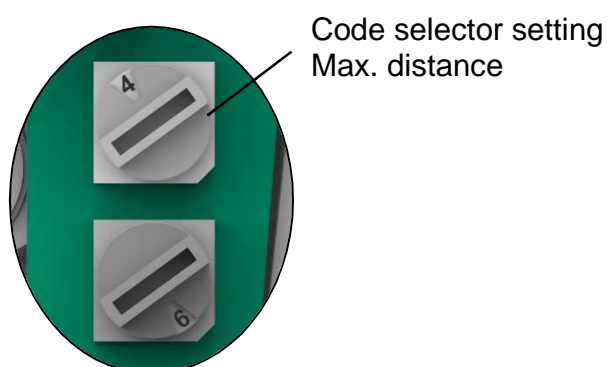
1. Turn the "Test Mode" switch to the ON position to change to Settings mode.



2. Set the sensitivity to maximum (code selector set to 9).



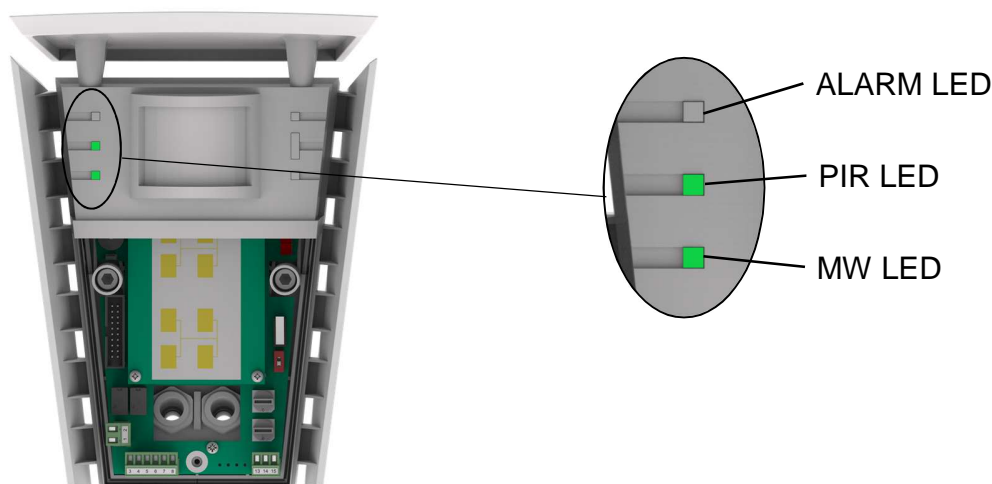
3. Set the maximum distance beyond which the PIRAMID XL3 should not detect.



Code selector value	Distance
1	16.4 ft / 5 m
2	33 ft / 10 m
3	49 ft / 15 m
4	66 ft / 20 m
5	82 ft / 25 m
6	98 ft / 30 m
7	115 ft / 35 m
8	131 ft / 40 m
9	147 ft / 45 m

Note: On the two code selectors, setting 0 is reserved for rereading the value memorized in the detector. (See §7.3 Reading the parameters of the PIRAMID XL3: "READ" Mode)

- Turn the product on, the PIR and MW LEDs will light up when the initiation phase has ended (5s).



- Determine the desired PIRAMID XL3 detection range by performing walk test in this area. Adjust detector orientation and sensitivity to the required settings.

When one of the technologies, PIR or MW, switches to alarm status, the associated LED will light up red.

When both PIR + MW technologies are in alarm status, the ALARM LED will light up red.

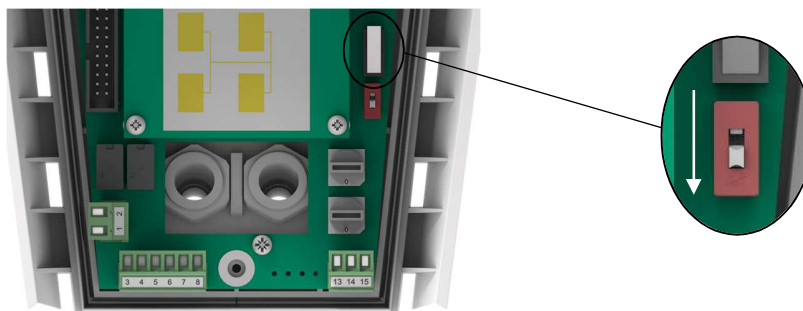
Detector status	ALARM LED	MW LED	PIR LED	Buzzer *
NO alarm	LO	GL	GL	Off
Alarm PIR	LO	GL	RL	Slow beeps
Alarm MW	LO	RL	GL	Rapid beeps
Alarm intrusion (PIR + MW)	RL	RL	RL	Continuous

Legend:

LO : LED off	RL : Red LED on	GL : Green Led on
--------------	-----------------	-------------------

* If buzzer is enabled in the hub

6. Turn the "Test Mode" to the OFF position to switch to detection mode.

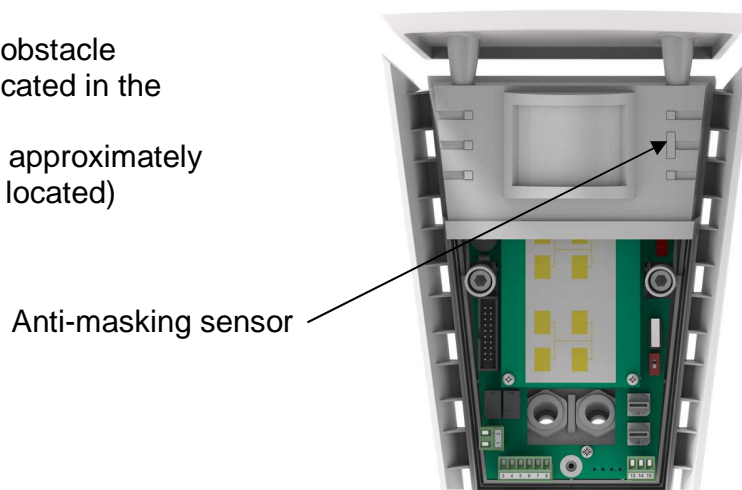


7. Close the cover.
8. In normal operation, the LEDs are off.
It is possible to activate them via smartphone application (see §8.2).

Note: "INTRUSION" and "MASKING" relays remain in alarm status when the "Test Mode" switch is in the ON position.

7.2 Anti-masking alarm

The alarm is triggered when an obstacle obstructs the masking sensor located in the upper cover.
(The masking alarm is triggered approximately 15s after the obstacle has been located)



7.3 Reading the parameters of the PIRAMID XL3: "READ" Mode

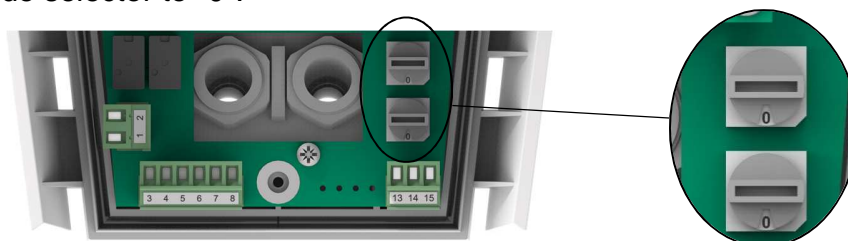
Sensitivity and distance settings max. can be modified:

- Either via the code selectors on the detector
- Or via the smartphone application

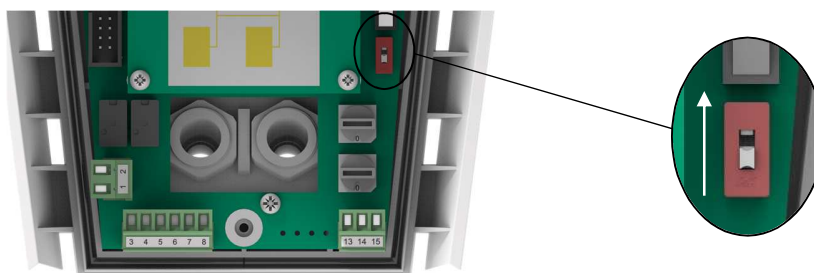
Note: In Settings mode, sensitivity and distance settings are stored in memory by the code selectors.
In Detection mode, sensitivity and distance settings are stored in memory either by the application: last backup performed.

To find out the values of stored settings, switch the detector to "READ" mode:

1. Set the code selector to "0".

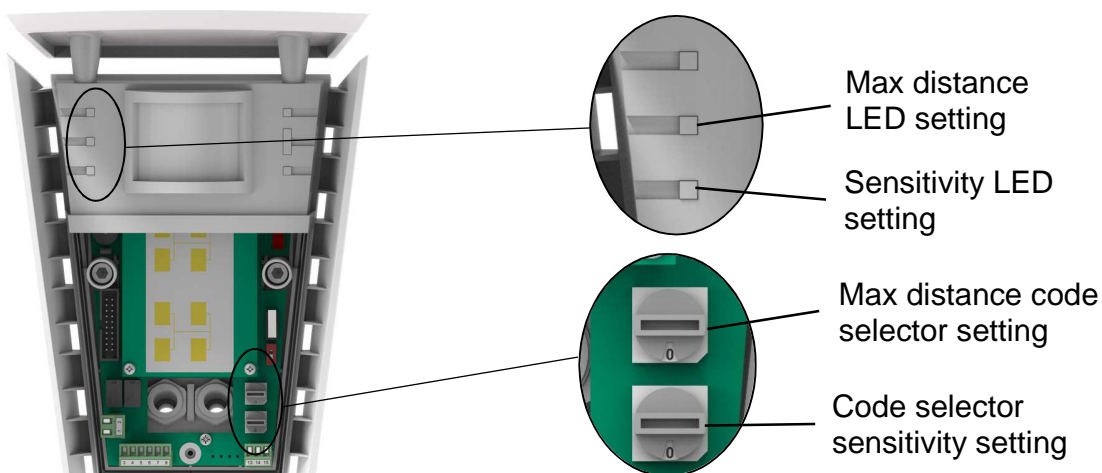


2. Turn the "Test Mode" switch to ON.

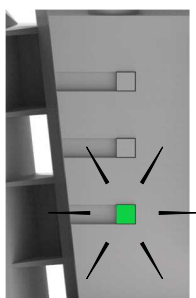
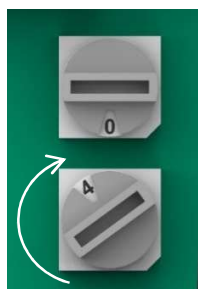


3. The detector LED(s) will blink.

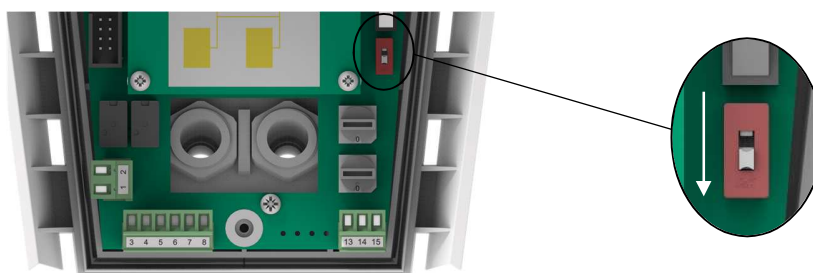
Note: only the LED linked to the code selector set to 0 will blink.



- Turn the code selector until the LED is permanently lit.
The value displayed on the code selector corresponds to the stored setting.



- Turn the "Test Mode" switch OFF to exit "Read" mode.



8 SMARTPHONE APPLICATION

Note: The smartphone application is compatible from Android 4.1 or higher.

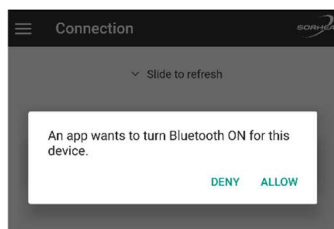
- Download the "Sorhea Connect" smartphone application.



Sorhea Connect



- Launch the "Sorhea Connect" application.
Authorize activation of Bluetooth if requested to do so by the application.



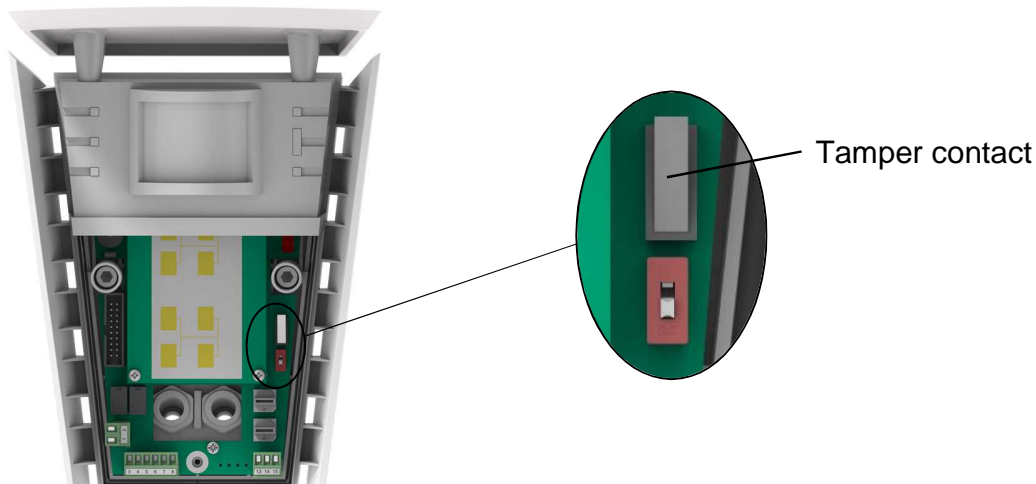
- Check that the tamper switches are turned downwards.

Switches down

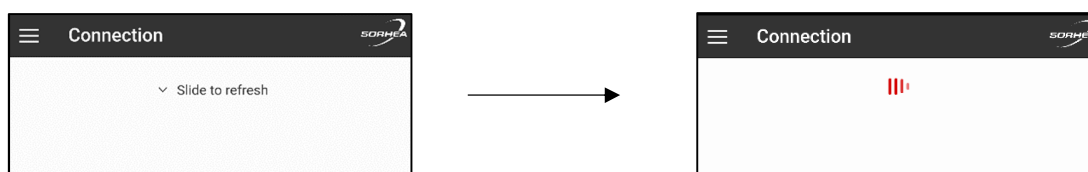


- Set a tamper alarm to activate the BLE connection with the smartphone application: leave the tamper contact pressed down for 2 seconds, then release.

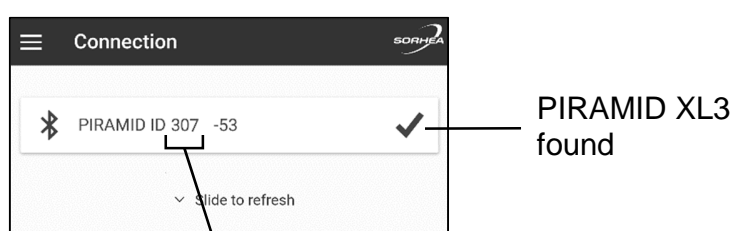
Note: the connection remains active for as long as the PIRAMID XL3 is connected to the smartphone application. It is disconnected when the cover is shut (tamper contact closed) or after 1 minute of inactivity (application closed).



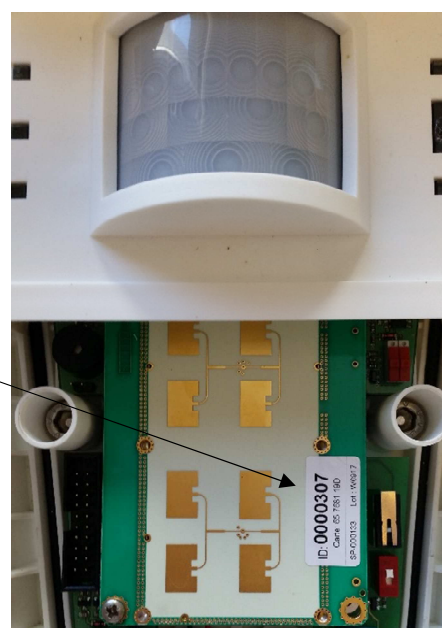
- Launch the search.



- Click on the product found.



PIRAMID XL3 Radio ID found is identical to the sticker on the card



8.1 Managing settings

Parameters

SYSTEM PARAMETERS

Product type **PIRAMID CONNECT**

Software version **1.6 8/8/17**

DATE AND TIME

Date **01/09/17**

Time **10:08:46**

Set date and time

Board name **PIRAMID CONNECT**

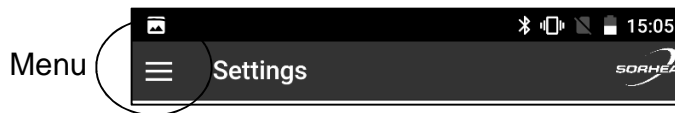
Save

Setting the time on the PIRAMID XL3

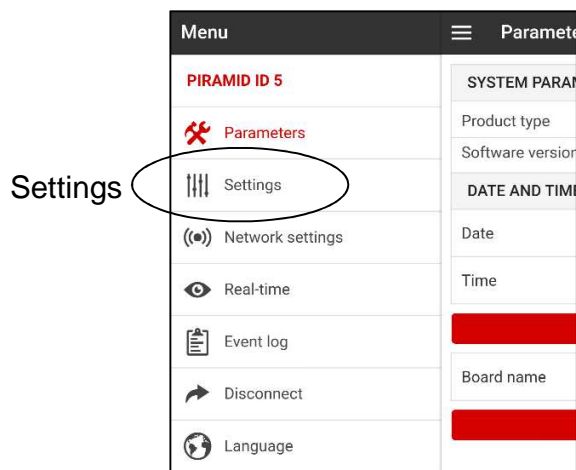
Name of PIRAMID XL3:
Click on the name to change it then click on Save.

8.2 PIRAMID XL3 settings

1. Click on Menu



2. Click on Settings



3. PIRAMID XL3 settings

Legend:

<input checked="" type="checkbox"/> Enable	<input type="checkbox"/> Disable
<input checked="" type="checkbox"/> Sensor ejected	<input type="checkbox"/> Sensor not ejected

LEDS enabled / disabled

Buzzer enabled / disabled

Relay outputs enabled / disabled

Antimask enabled / disabled

MW ejection

PIR ejection

Moving direction:

Settings save above

MW Range settings

1 : 16 ft / 5 m 9 : 148 ft / 45 m

MW Sensitivity settings

1 : Not very sensitive 9 : Very sensitive

Max. speed settings:

0.62 to 31 mph / 1 to 50 km/h

Distance to be covered settings:

0.33 to 16 ft / 0.1 to 5m

PIR Sensitivity settings:

1 : Not very sensitive 81 : Very sensitive

MW and PIR settings save

MW range: Modification of the maximum detection range of the MW.

MW sensitivity: Modification of the detection sensitivity of the MW.

Max. speed: Modification of the maximum speed to detect of the MW.

Makes it possible to filter objects for which the speed is superior to the "Speed max.".

Distance of movement: Modification of the maximum distance an object has to move before the MW detects it.

Minimum distance of movement that an object has to move in the same direction before triggering an alarm.

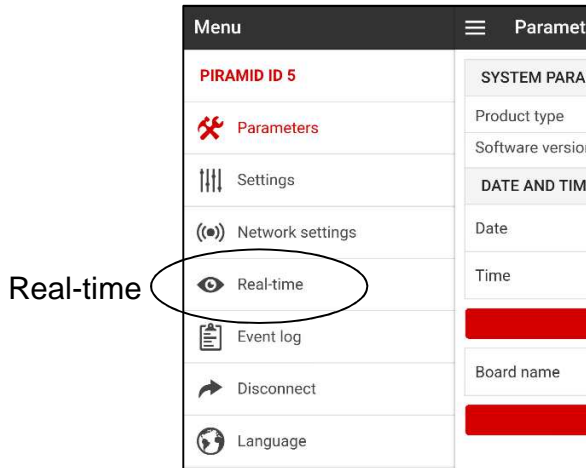
PIR sensitivity: Modification of the detection sensitivity of the PIR.

8.3 Real-time Information

1. Click on Menu



2. Click on Real-time



3. Viewing PIRAMID XL3 real-time information

SENSORS STATUS	
PIR	●
MW	●

RELAYS STATUS	
Intrusion	●
Anti mask	●

INPUTS	
Tamper	●
Test mode	×

INFOS	
Internal temperature	29 °C
Supply voltage	13.2 VDC

LEGEND	
Alarm off	●
Alarm on	●

Legend:

- No Alarm
- Alarm

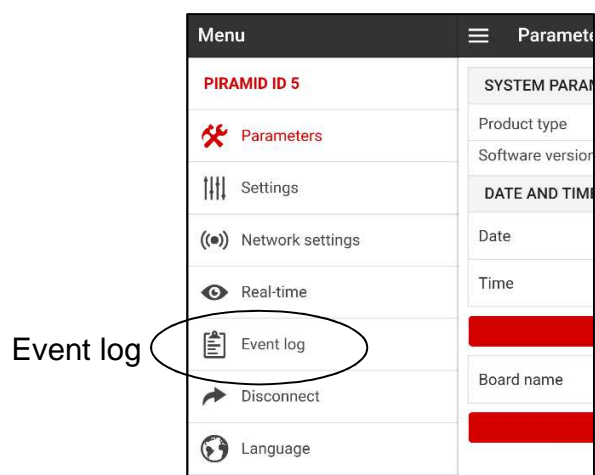
✓ : Setting mode × : Detection mode

8.4 Event log

1. Click on Menu



2. Click on Event log



3. View event log

Event log		
Refresh event log		
1/9/17 10:15:10	Alarm intrusion	1
SENS		5
DIST		9
Radio ID		5
1/9/17 10:14:47	Configuration changes	2
1/9/17 10:14:30	Alarm intrusion	3
1/9/17 10:13:42	BLE connection	4
1/9/17 10:13:40	End BLE connection	5
1/9/17 10:13:29	Alarm intrusion	6
1/9/17 10:11:29	BLE connection	7

Date/Time of the event

Type of events

PIRAMID XL3 setting

List of events:

- Alarm intrusion
- Alarm mask
- End alarm mask
- Alarm tamper
- End alarm tamper
- Time setting
- Configuration
- Power on
- Raz event log
- Blocking event log
- Unblock event log
- Default 12V
- End default 12V
- Default MW
- End default MW
- Default radio card
- End default radio card
- MW ejected
- End MW ejected
- PIR ejected
- End PIR ejected
- BLE Connection
- End BLE Connection

9 PERIODIC MAINTENANCE

To guarantee performance over time, basic maintenance operations should be performed to confirm the status of the PIR filter. If necessary, clean the filter with a soft, moist cloth.

10 MAINTENANCE

Default settings:

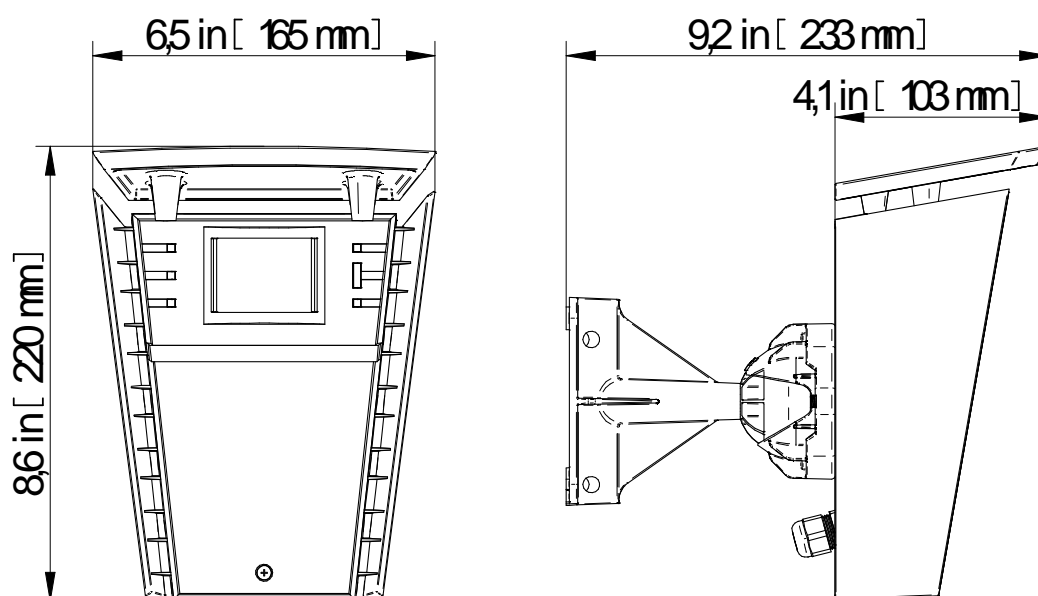
- LEDs status : disable (see §8.2 for led settings)
- Buzzer status : enable (see §8.2 for buzzer settings)

Failure	Probable causes	Solutions
Permanent alarm	<ul style="list-style-type: none"> - "Test Mode" switch in the ON position. - Incorrect voltage (<10V) - The relays are disabled. 	<ul style="list-style-type: none"> - Turn the "Test Mode" switch to the OFF position. - Check the power supply. - Enable relays via the application (see §8.2)
No triggering of the intrusion alarm	<ul style="list-style-type: none"> - Passage beyond the distance set on the code selector. 	<ul style="list-style-type: none"> - Change the distance set on the code selector.
Anti-masking alarm in permanent alarm	<ul style="list-style-type: none"> - The relays are disabled. - The anti-masking alarm is disabled. 	<ul style="list-style-type: none"> - Enable relays via application (see §8.2) - Enable the anti-masking alarm (see §8.2)
Permanente tamper alarm	<ul style="list-style-type: none"> - Tamper switches are in up. 	<ul style="list-style-type: none"> - If the tamper is to be used in a local connection, wire the terminals 13,14,15. - If the tamper is to be used in a network connection, turn the switches to the bottom.
The smartphone application cannot detect the PIRAMID XL3.	<ul style="list-style-type: none"> - The PIRAMID XL3 BLE connection is not activated. 	<ul style="list-style-type: none"> - Press on the tamper switch for at least 2 seconds, then release. (see §8) - Check that the tamper switches are towards the bottom. (see §8)

11 TECHNICAL SPECIFICATIONS

Maximum outdoor range	SDI-78XL3-A: 98ftx98ft / 30mx30m SDI-78XL3-B: 98ftx33ft / 30mx10m SDI-78XL3-C: 131ftx19.7ft / 40mx6m SDI-78XL3-D: 131ftx9.8ft / 40mx3m SDI-78XL3-H: 98ftx85ft / 30mx26m SDI-78XL3-H60: 98ftx46ft / 30mx14m SDI-78XL3-H40: 98ftx23ft / 30mx7m SDI-78XL3-H20: 98ftx9.8ft / 30mx3m
Detection mode	PIR sensor and MicroWave antenna
Antenna MW frequency	10.510 GHz
Power supply voltage	10 to 20V DC
Power supply current	80 mA
Typical intrusion alarm duration	5 seconds
Typical anti-masking alarm duration	Duration the sensor is masked
NC Tamper relay rating	24VDC – 1A
NC Intrusion relay rating	24VDC – 1A
NC Anti-masking relay rating	24VDC – 1A
Operating temperature	-31°F to 158°F / -35°C to +70°C
Relative humidity	95% max without condensation
Protection Index	IP55
Weight	1.98 lb / 0,9 Kg
Electromagnetic compatibility	Compliance with European standards (label CE)
Detector orientation	Horizontal: +/- 90° in increments of 10° Vertical from 0° to -10°

External dimensions:



12 PRODUCT REFERENCES

• SDI-78XL3-A range 98x98ft / 30x30m white	ref: 60760301
• SDI-78XL3-B range 98x33ft / 30x10m white	ref: 60760302
• SDI-78XL3-C range 131x19.7ft / 40x6m white	ref: 60760303
• SDI-78XL3-D range 131x9.8ft / 40x3m white	ref: 60760304
• SDI-78XL3-A PET range 98x98ft / 30x30m white	ref: 60760305
• SDI-78XL3-B PET range 98x33ft / 30x10m white	ref: 60760306
• SDI-78XL3-C PET range 131x19.7ft / 40x6m white	ref: 60760307
• SDI-78XL3-A range 98x98ft / 30x30m gray anthracite	ref: 60760401
• SDI-78XL3-B range 98x33ft / 30x10m gray anthracite	ref: 60760402
• SDI-78XL3-C range 131x19.7ft / 40x6m gray anthracite	ref: 60760403
• SDI-78XL3-D range 131x9.8ft / 40x3m gray anthracite	ref: 60760404
• SDI-78XL3-A PET range 98x98ft / 30x30m gray anthracite	ref: 60760405
• SDI-78XL3-B PET range 98x33ft / 30x10m gray anthracite	ref: 60760406
• SDI-78XL3-C PET range 131x19.7ft / 40x6m gray anthracite	ref: 60760407
• SDI-78XL3-H range 98ft x 85ft / 30x26m white	ref: 60760308
• SDI-78XL3-H20 range 98ft x 9.8ft / 30x3m white	ref: 60760309
• SDI-78XL3-H40 range 98ft x 23ft / 30x7m white	ref: 60760310
• SDI-78XL3-H60 range 98ft x 46ft / 30x14m white	ref: 60760311
• SDI-78XL3-H range 98ft x 85ft / 30x26m gray anthracite	ref: 60760408
• SDI-78XL3-H20 range 98ft x 9.8ft / 30x3m gray anthracite	ref: 60760409
• SDI-78XL3-H40 range 98ft x 23ft / 30x7m gray anthracite	ref: 60760410
• SDI-78XL3-H60 range 98ft x 46ft / 30x14m gray anthracite	ref: 60760411

Changes or modifications not expressly approved by PROTECH could void the user's authority to operate the equipment.

FCC Part 15 compliance statement

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception which can be determined by turning the equipment off and on, the user is encouraged to try to correct interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

ISED Licence-Exempt Radio Apparatus

This device contains license-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's license-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

Appareils radio exempts de licence ISDE

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

1. L'appareil ne doit pas produire de brouillage ;
2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus

To satisfy FCC and IC RF Exposure requirements for mobile devices, a separation distance of 20 cm or more should be maintained between the antenna of this device and persons during operation. To ensure compliance, operation at closer than this distance is not recommended. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Pour satisfaire aux exigences FCC et IC concernant l'exposition aux champs RF pour les appareils mobile, une distance de séparation de 20 cm ou plus doit être maintenu entre l'antenne de ce dispositif et les personnes pendant le fonctionnement. Pour assurer la conformité, il est déconseillé d'utiliser cet équipement à une distance inférieure. Cet émetteur ne doit pas être co-situé ou fonctionner conjointement avec une autre antenne ou un autre émetteur

PROTECH hereby declares that the device PIRAMID XL3 is in conformity with the essential requirements of Directive 2014/53/EU. The declaration of conformity can be found at:

www.protechusa.com

- Frequency Band: 2400-2483.5MHz / Maximum Transmitting Power: 10mW (EIRP)
- Frequency band: 10.5-10.6GHz / Maximum Transmitting Power: 13mW (EIRP)



In compliance with the European environmental directives, this product must not be thrown away but recycled through an appropriate subsidiary.