SOLAR-POWERED WIRELESS OUTDOOR PIR & MW DETECTOR
Installation instructions

1.General Introduction On Outdoor Application

This detector is remarkable in function, but the following notices can make it more stable if installer can pay attention to them:

WEEDS
High weeds and shrubbery in detection range may wave in wind and cause false alarm, especially for those detectors operating in horizontal fan area, so keep cutting on weeds and shrubbery.

RAIN
Sudden rainstorm can cool the hot pitch road or surface of other roads quickly. And all detectors can detect rain in the sky, but detector with down view window can even detect water on ground, which will bring much more interference to detectors outdoor than that mounted on wall, so everything will lower its temperature similar to water, human body or cars after pouring from rain can offer very little temperature gap for detection, so sensitivity will be lowered a lot.

INSECTS
Insects will trigger false alarm when they climb into detector or stay on lens, while those staying away from detectors can't trigger alarm. If there is interference from insects, please re-install detector or use insecticide. And please adopts strictly sealed components on those drilled holes or glass glue around detector.

CAR
Moving car in detection range may trigger false alarm to detector.

INSUFFICENT TEMPERATURE DIFFERENCE
Detector is sensitive to change from temperature difference in detection area, if target temperature is very close to previous environment temperature, there will be no temperature change, detector sensitivity will be lowered and will not be triggered sometimes when there is intrusion.

DIRT ON LENS
Lens becomes easily dirty when used outdoor, so please check the lens from time to time in order to avoid alarm miss caused by low sensitivity from dirty lens.

UNSTABLE INSTALLATION BASE
Detector will trigger false alarm easily if installation base can be interfered by vibration, this is the reason why some detectors installed near to street can cause false alarm easily.

TYPHOON
If a strong typhoon blows, it may also produce factors that make the detector false positives, such as strong swaying of branches brought by the typhoon, a large number of water droplets directly spraying the front end of the lens, and various large objects blown up may cause the detector false positives.

2.Introduction on Products

This is a superior performance of wireless transmission, outdoor use, solar charging passive infrared and Microwave detector , using monocrystal silicon solar panel charging technology, with lithium battery intelligent charge and discharge protection chip, high charging efficiency, large charging current, no direct sunlight can be charged; Outdoor anti-interference ability is strong, can avoid outdoor sunlight, ultraviolet and radio frequency, car headlights and other interference, Ip65 waterproof structure design: waterproof, dustproof, insect, wind effect is remarkable; The advanced detection technology is: from the intelligent high-speed microchip to the direct calculation and analysis of the intrusion infrared signal technology, bipolar detection technology, automatic temperature compensation technology, direct regulation of the sensitivity of the digital signal technology, from multiple infrared channel shielding to mixed light filtering technology, microwave anti-swing technology and so on. Its special analysis and calculation after collecting data on various movement tracks of pets can effectively avoid interference false alarms caused by small animals of about 25 kilograms, and it is also excellent in preventing thermal airflow, swaying branches, etc., and 2 sensitivity levels are adjusted to adapt to various outdoor installation occasions. Builtin high performance lithium-ion rechargeable battery. In short, this detector has a variety of advanced technology and good stability, can give you the best outdoor safety protection.
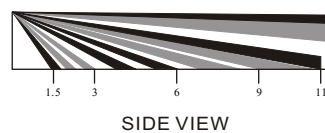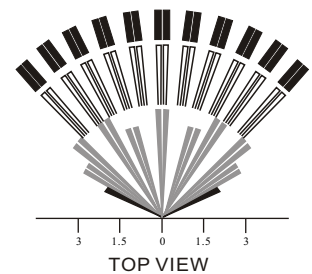
3.Main Function

- Ultra-low power design
- Polysilicon solar charging technology
- High quality large capacity lithium battery
- 2 sensitivity options
- Super body temperature compensation detection technology
- Digital pet proof up to 25kg
- Bidirectional temperature compensation
- EDS/ Anti-shock/anti-mobile signal interference
- Fully sealed optical components resistant to white light
- Passive infrared and microwave mutual detection technology
- Matching universal bracket suitable for installation everywhere
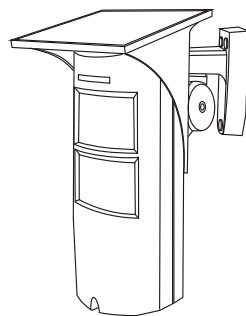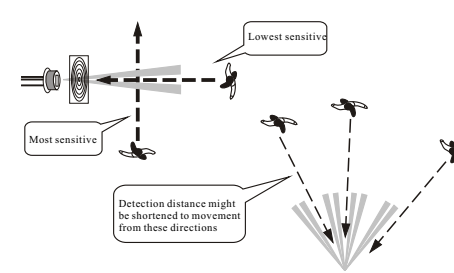

4.Technical Parameter

Solar cell nominal voltage : 6V
Solar cell rated power   : 1.32W
Solar chip type   : single crystalline silicon
Battery   : 4.2V Lithium battery
Operating current   : 3mA (stand by) 22mA(alarm)
Mount height   : 1.8m-2.4m
Detection range   : 12m×12m   108° (wide lens)
Temperature compensation: digital
Microwave   : 10.525GHz
Sensitivity   : 2 grade for option
Anti EMI   : 0.1-1000MHz/30V/m
Anti white light   : >10000 Lux
Anti RFI   : 50000V
Alarm output   : Ev1527
Alarm time   : 2s
Alarm interval   : 4 min (USE mode)
Wireless distance   : ≥200m (open space)
Frequencies   : 315/433/868MHz
Operation temperature   : -25℃/+55℃
Operation humidity   : 95% RH
Detection speed   : 0.2-3.5 m/s
Fire proof   : ABS plastic
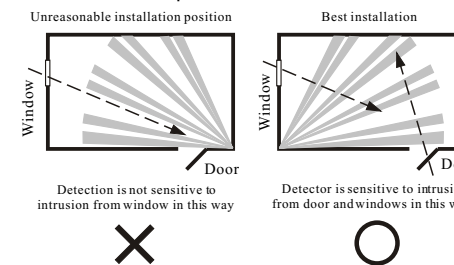Pet immunity   : 25kg
Size   : 170mm×145mm×110mm

TOP VIEW

SIDE VIEW

5. Installation guide

Select most suitable installation point fit for PIR detection, put detector onto proper position, keep away from door, window, running machine or heat source.

Note the following scenarios

Don't face detector to cold/heat source

Installation base should be stable

Keep away from high-pressure cable

Attention to car interference

Keep away from strong EMI interference

Unable to charge rence

On installation angle
Detection is with mechanical difference to intrusion angles

Lowest sensitive

Most sensitive

Detection distance might be shortened to movement from these directions

On installation height
Recommended installation height is 1.8-2.4m

Suitable height

Too high to be with blind area

Low heights hortd istance

On installation position

Unreasonable installation position

Best installation

Detection is not sensitive to intrusion from window in this way

Detector is sensitive to intrusion from door and windows in this way
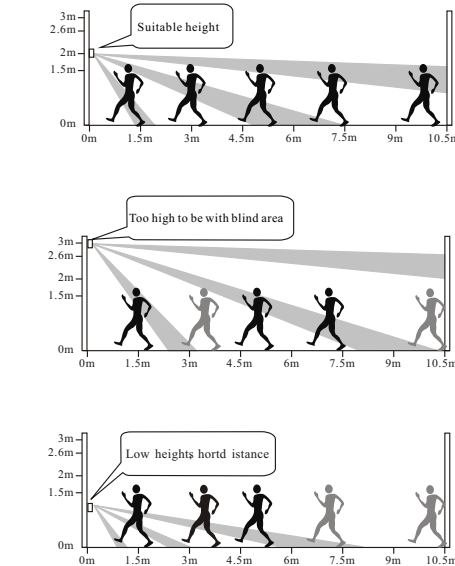
6.Installation & Bracket

In order to optimize the signal coverage, the detector should be mounted at 2.1 m height and vertically adjusted to zero point. Make sure there are no interference sources working near the detector and that there is a wide field of view in front of the detector. Unscrew, remove the front cover, and pull out the circuit board. Drill through the mounting blind hole, make a mark on the wall, drill a 40mm deep hole with a 6mm diameter drill bit, then punch the rubber plug into the hole, let the screw into the 5-6 mm, the bottom cover to the wall, finally tighten the screw.

Internal parts

Charge LED
Micro USB
Power switch
Microwave
TX Module
Antanna
Solar panel
Alarm LED
DIP switch
PIR1
(No touch)
PIR2
MW range
Tamp switch

Shell disassembly

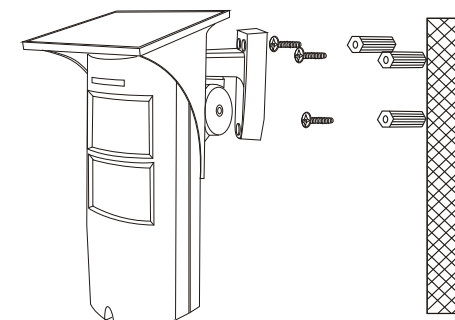Open the process

Close the process
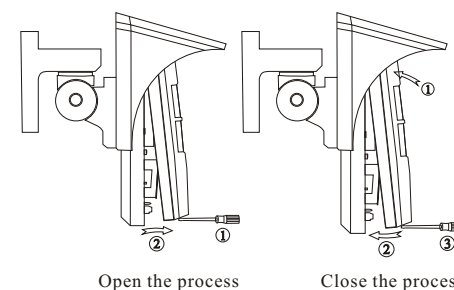
Wall installation

⚠ Note: The detector must be installed in a position that can be exposed to sunlight for more than 3 hours per day to ensure normal battery charging.
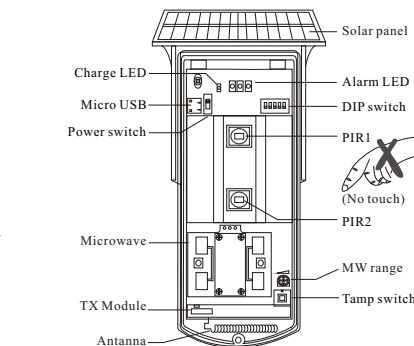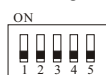
7. Walking Test & Setting

Setting

ON
□□□□□
1 2 3 4 5

DIP 1 is the alarm LED control switch
DIP 2 is alarm mode control switch
DIP 3 is sensitivity control switch
DIP 4 is PIR and microwave check each other
DIP 5 is Super body temperature compensation detec-tion technology

When DIP 1 is placed ON, the detector alarm LED lights up. At this point, the walking test can be carried out. After the test is completed, it is recommended to turn off the LED to save more power.

When DIP 2 is OFF, set to use mode, in order to save battery energy, the detector can be triggered at 4 minute intervals, which is the recommended operating mode. When DIP 2 is ON, it is set to test mode and the detector can be triggered at any time.

When DIP 3 is placed in the ON position, the detector is in a high sensitivity state, and when it is placed in the OFF position, the detector is in a low sensitivity state, which is easy to work stably in different environments.

Signal process statement: this detector adopts direct analysis technology on digital signal, microchip will make analysis on frequency、range、polarity etc of detected signals and make comparison with frequent pets data in data base, after that, it will draw a real intrusion analysis and judgment. Here, pulse set is a general index for reference, it doesn't stand exact quantity of pulse during digital signal process.

When DIP 4 is ON, the detector starts the microwave and infrared fault pulse detection, and determines whether the microwave and passive infrared work normally by calculating the mutual pulse detection ratio. Infrared fault detection is activated when the microwave detects 100 alarms and the passive infrared detects no pulse count. Microwave fault detection is activated when the passive infrared detects 100 alarms and the microwave detects no pulse count. When the microwave detection fault occurs, the red and green led will alternately flash. When a passive infrared fault occurs, the red and yellow led will alternately flash. And send a fault code to the alarm host. When in the fault alarm state, if there is an AND detection, the fault will be immediately removed.

When DIP 5 is placed in the ON, the detector is in the super human body temperature compensation detection mode. When the ambient temperature is close to the human body radiation body temperature, the detector will automatically detect more microwave signals. At this time, if the number of microwave signals meets the set conditions, the detector will generate a qualified intrusion alarm to eliminate the influence of the weak passive infrared signal.

Microwave range

| Time	9	10	11	12	1	2	3
Range	2m	4m	6m	8m	9m	12m	15m

Gain MW

Walking test
Microwave
Microwave(MW) protection range is up to 2-15 m; When the self-test is complete, view the MW detection through the green LED light. If the green LED does not light, turn the MW regulator clockwise to increase the intensity of the MW, and repeat this test several times until you reach the desired distance. MW regulation: To the minimum point, because the MW can penetrate the wall, when the MW exceeds a certain intensity, the movement outside the detection range may cause a false positive of the MW. The most sensitive state at the Microwave is the radial movement towards the detector.

PIR
A serpentine movement is performed in the detection area and the PIR detection status is checked by a yellow LED. This step checks for dead spots in the detection area. Infrared detection is most sensitive when the detector is moving sideways.

Test path
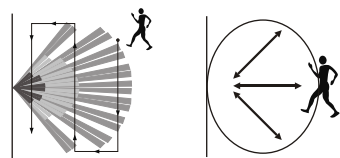
LED Display

Type	Green	Red	Yellow
Alarm	On	On	On
PIR	On	Off	Off
Microwave	Off	Off	On
Mw trouble	Flash	Flash	
PIR trouble		Flash	Flash
Low voltage		Flash 3 times slow	

Low voltage warning
As long as the product is installed in can maintain the position of the sun light more than 3 hours a day, can be normal use, if the product the battery voltage is lower than 3.3 V, the system sends out of "low voltage code" prompt, at this time, it is necessary to put the product to be removed, USB charging line, mobile phone charging extra for products, charging time about 3 hours.

Using USB charging mode

Mobile phone charger

5V/1A
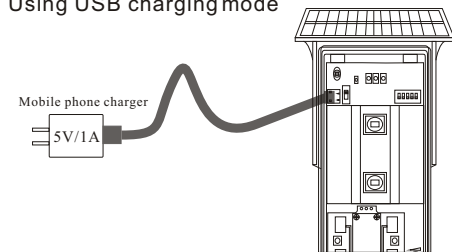
When charging, there is no need to turn on the power switch on the PCB. When the green LED light is on, it means that it is charging. When the battery is full, the reen LED light will go out.

8. Vertical adjustment

Detector can get its best detection by setting of PCB vertical height, strongly suggest installer should make optimum setting to PCB vertical height according to actual environment.
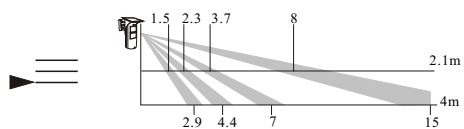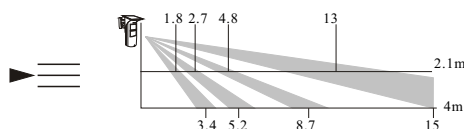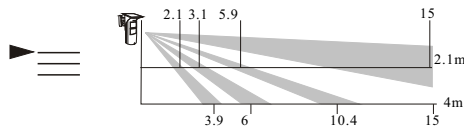
Mark-1: when PCB is set to this position, detector is with best pet immunity.

Mark 0: when PCB is set to this position, detector is at most standard status.

Mark 1: when PCB is set to this position, detector can avoid ambitious crawl intrusion; mean while, pet immunity function will be lowered.

-1
0
+1
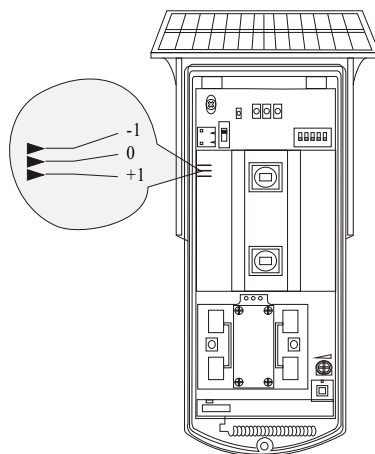
Effect chart on wide angle lens adjustment

⚠ Note: if multi-directional bracket is used, detection range will be different from description above.

9. Encoded information type

Coding format

The wireless coding format of this product is as follows:

synchronous code	16Bit ID	D1	D2	D3	D4

Synchronous

4 LCK   124 LCK

DATA(H)   12 LCK   4 LCK

DATA(L)   4 LCK   12 LCK

Definition:1 LCK=8 pcs OSC CLOCK

Transmit mode
3 group of data to be sent in 2 seconds in a variable area.

Coding specification
Low voltage : D (1101)
Tamper: 7 (0111)
Alarm: B (1011)
Self-check report : 6 (0110)

Rule
Low voltage detection is 3.3V, one scan per minute.

The highest level of tamper switch, alarm priority; Passive infrared intrusion ranked second, and tamper switch was not detected within 10 minutes of power-on.

How can wireless detectors be connected to wired control panel?
It is recommended to power up before installation, so that the alarm host can "learn" the identity ID of the detector: turn on the power switch, after the self-test is completed, operate the relevant Settings of the control panel, gently shake in front of the detector, let the detector alarm, you can send the identity ID to the control panel.

10. PET immunity

Pet immunity is a high index for judgment of PIR detector function, we adopt 2 methods on pet Immunity process at the same time:
1. Physical method: special process of Fresnel lens detection area to lower false alarm rate caused by small animals
2. Software analysis method: analysis on technical data on detector signal and make comparison with data base in the microchip in detector, then draw a conclusion on moving object to verify it is human being or pets.
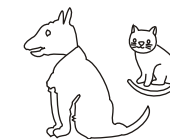
From above we can know that function of pet immunity is relevant, this relativity includes 2 parts: firstly, pet immunity is relevant, but its false alarm rate is greatly lowered comparing detectors without pet immunity function, at the same time, there is limitation on pets' quantity and size. Secondly, installation is very important to pet immunity, it is with some requirements, not a random installation can reach a good result, so please read details in the manual before installation.

⚠ Note: we can omit those animals below 1m or 15kg on ground, but as pets approaching detector, its moving frequency will change, and pet immune function will be weakened, so a reasonable position is strongly suggested to be selected to avoid pets' approaching.

⚠ Note: when pet immunity function is required while multi-directional bracket is used, detector should be vertical to wall, no leaning. And bracket adjustment is allowed in horizontal direction, detector should be installed vertically to ground!

11. Common trouble and solutions

Trouble	Possible reasons	Solution
Power LED doesn't light	1.Battery low voltage(below3.3V) 2.Poor contact between battery clip and battery 3.Reversed battery installation 4.Don't switch on LED control 5.May in USE mode	1.Check battery voltage and change new battery 2.Re-install battery or polish contact 3.Make correct installation 4.Turn on LED during test 5.Select TEST mode
Detection distance less than 12m	1.Improper installation height 2.Improper installation angle 3.PCB not in best position	1.Re-adjust installation height (1.8-2.4m) 2.Adjust installation angle 3.Adjust PCB unit vertical position
Short battery life	1.Poor battery quality 2.Detector not in USE mode 3.Alarm LED not turnoff 4.The installation point lacks sunlight	1.Change high quality battery(Use factory battery or brand-named battery 2.Set jumper to USE mode 3.Turn off alarm LED to save energy 4.Choose a place with plenty of sunlight to install the detector
Not compatible with control panel	1.Different protocol 2.Improper frequency 3.Wrong data set	1.Select proper codes and protocol 2.Select proper frequency 3.Select proper data set
Short wireless distance	Control panel can not receive alarm signal from detector after alarm is triggered.	1.Change detector position 2.Pull out antenna on contorl panel to longest position 3.Select high sensitivity control panel 4.Add a repeater 5.Environment is not suitable for wireless control panel installation
False alarm	1.Periodical alarm, 1 alarm each 60 minutes 2.Tamper switch alarm 3.Strong interference nearby 4.Pets' height and weight more than detection limitation 5.Sun sport activity period 6.Operation temperature over limitation 7.Water goes into detector 8.Strong environment interference	1.Low batter voltage, change it 2.Reset tamper switch 3.Keep detector away from strong interference 4.Pay attention to big animal's intrusion 5.No need to wait, it will resume after sunspot passes 6.Operation in recommended environment 7.Pay attention to water proof, add O shape water proof rubbering 8.Set sensitivity to 3P

Notice: In case of product upgrade, parameters and specifications change without prior notice.

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