ENGLISH

# OUTDOOR PIR/MICROWAVE 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:

### SUNSHINE

Direct or reflective sun light is no good for detector operation, try to avoid them during installation. Our outdoor PIR adopts double-layered screen light sensing system, which is very effective for screeing of interfering light.

### 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.

### INSUFFICUENT 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

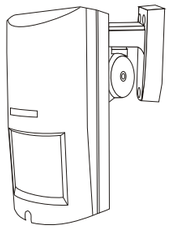
Detector will trigger false alarm easily if installation base can be interfered by vibration, this is the reason why some detectors installed near to street can cause false alarm easily.

## 2.Introduction on Products

This is a remarkable outdoor digital dual-tech detector with PIR+MW. It can avoid external interference from sunghine, UV, RF, truck headlight etc., and it is highly effective in proof of water, dust, insects and wind. The option of 2-grades sensitivity is suitable for choice of proper detection way in target protecting space, this helps to reach best ration between maximum detection ability and minimum false alarm. This detector combined with below advanced technology: direct calculation and analysis technology to intrusion signal by intelligent high-speed micro-processor; dual-polarities detection etc. The typical calculation technology to pets uncertainty can avoid false alarm caused by pets up to 20kg effectively. And also it is functioning very well in avoid flowing hot air and swinging window curtains and offer stable detection base on two sensitivities. In a word, the advantage and stability and IP-65 water proof design can offer the best protection for the user indoor and outdoor!

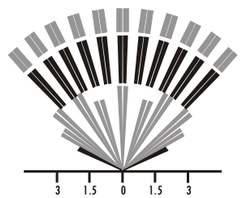
## 3.Main Function

-Super mini power-consumption solution
-2 grade sensitivities for option
-Wide voltage input
-Digital pet immunity up to 20kg
-Bi-directional temperature compensation
-EDS/electric shock proof/mobile interference proof
-Anti white light
-Fully sealed optical parts
-Multi-direction bracket fit for corner/wall/ceiling mount



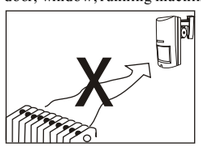
## 4.Technical Parameter

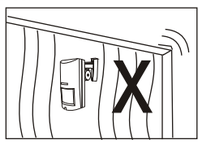
| | |
|---|---|
| Power | : *12-26VDC* |
| Current | : *45mA@26V; 30mA@12V* |
| Mount height | : *1.8m-2.4m* |
| Detection range | :*12m*12m 100°* |
| MW frequency: | *10.525GHz* |
| Sensitivity | : *H / L Select* |
| Anti EMI | :*0.1-500MHz/30V/m* |
| Anti white light | :*>10000 LUX* |
| Alarm time | : *3s* |
| Operation temperature | :*-10℃/+55℃* |
| Operation humidity | :*95% RH* |
| Detection speed | :*0.2-3.5 m/s* |
| Fire proof | : *ABS plastic* |
| Pet immunity | : *20kg* |
| Size | :*148*75*54mm* |

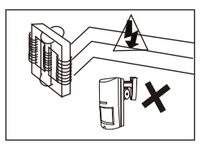


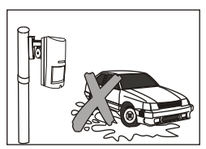

## 5. Installation guide

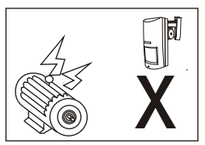
Select most suitable installation point fit for PIR&MW detection, put detector onto proper position keep away from door, window, running machine or heat source.

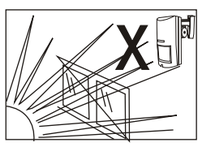

Don't face detector tocold/heat source


Installation base should be stable


Keep away from high-pressure cable

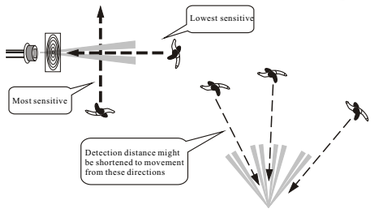

Attention to car interference


Keep away from strong EMI interference

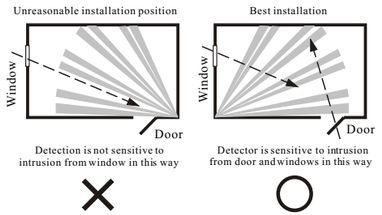

Don't face directly to the sun

### On installation angle

Detection is with mechanical difference to intrusion angles

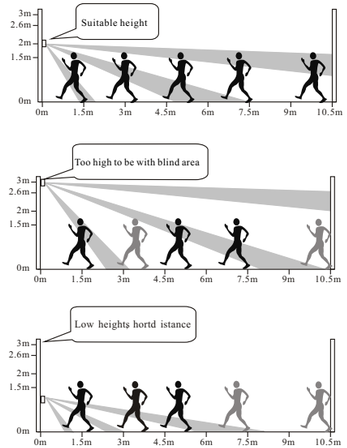



### On installation position




### On installation height

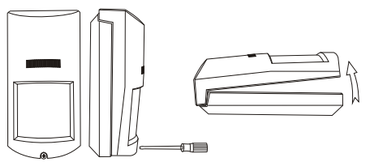
Recommended installation height is 1.8-2.4m

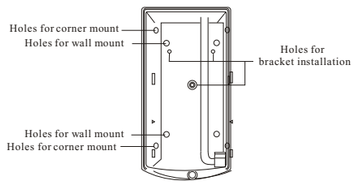



## 6.Installation & Bracket

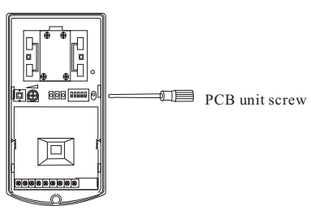
### Wall mounting

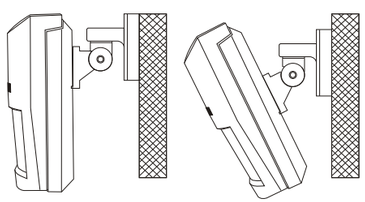
Use a cross-type screw driver to loose screw at bottom of housing and open covers as figure, and then move down PCB unit, then installation can be ready to start.


Screw on housing

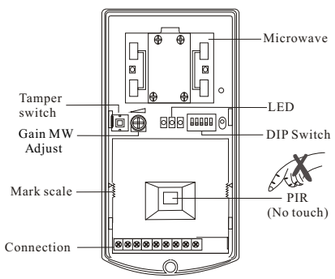



In order to get best signal coverage, detector must be installed at the height of 2.1m vertically. Make sure that there is no obstacle in front of detector, detection angle is wide. Make decision on which installation way according to actual needs, and then make a mark on needed holes on wall, drill 4 holes with 6mm diameter, insert relevant 4 rubber stoppers into the holes, then detector can be fasten onto the wall by screws.



## 7.Internal parts




## 8. Wire up the terminal


| | |
|---|---|
| NO NC COM | Alarm output , with normallyclosed normallyopen optional, selectnormally closed: normally closedunder normal conditions,open when alarmNormally open: Normally open and closed when alarming(can directly trigger access control system and CCTVsystem) |
| TAMPER | The contactis closednormally, if removethe front small cover or the wholedetector from the wall,contact will open. (sensor connects withwall in lay stylemonitor) |
| MASK | Anti masking cover output, contact is closed whenit is normal. |
| - + 12V | Power supply 12-24VDC input,power flow minimum 50 mA |

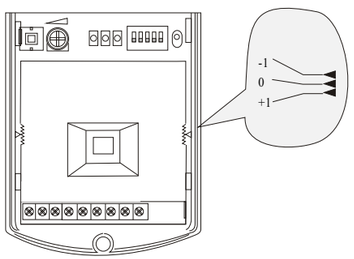
## 9.Vertical adjustment

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.

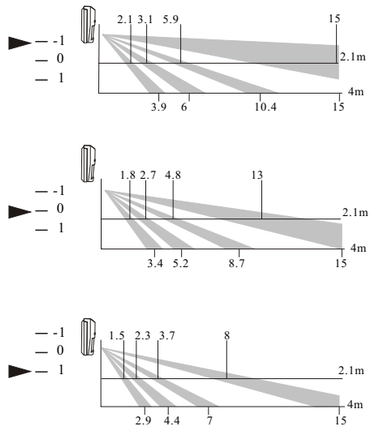
Mark-1: when PCB is set to this position, detector is with best pet immunity.

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.




Effect chart on wide angle lens adjustment




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

## 10. Walking Test & Setting

DIP 1 switchon “OFF”（anti masking cover“OFF”）
DIP 5 switchon “OFF”（LED actives）

Note:
During this mode,anti-masking is limited.

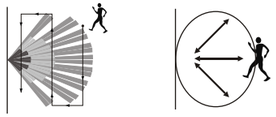

MW GANGE

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

### MW

Tune microwave tuner to minimum, （capacity can be adjusted from 2-15m）; to the extremity of protection area; when LED indicator turns off, operation radial movement to the detector ,check MW detection by green LED. If green LED doesn't light, turn the MW tuner in clock wise to increase its capacity; repeat this tests for several times till you get the required distance.
Remarks: MW adjustment：turn the capacity to the minimum, for MW can penetrate wall while over high capacity is not helpful for detector function in its protection area.（MW gets highest sensitivity when it performs radial movement to detectors）

### TEST PATH



### PIR

Close the front cover, when LED indicator turns off, perform horizontal movement in the detection area, check the detection status of PIR through the yellow LED. This step can check whether there is deal corner in the detection area; when PIR gets highest sensitivity when horizontal movement to detector.
When all DIP switches are in “OFF” status, monitor is in standard operation.
If want to get max. monitoring, please refer to “monitoring mode” section.

**Anti-mask cover control /AND / high sensitivity / LED**

Note：When there is interference to the monitor, anti-masking cover function will be limited.

### LED DISPLAY


## 11. Monitoring mode

**AND**

DIP 2 switch on “OFF” status
If three sensors （2*PIR&MW）get the detection signal at the same time, alarm will be trigger.
This mode is fit for installation with unstable factors.

**OR**

DIP 2 switch in “ON” position
Any of the sensors gets detection signal, alarm will be triggered.
This mode is fit for high stable environment and inquires the detector with very high detection ability.

**5P（MODE）**

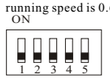
DIP 3 switch is in “ON” position
During the status，DIP 2 switch is useless.
If three sensors get the detection signal at the same time,（such as AND mode）, or if it they gets more MW signal while there isn't any 2*PIR signal, alarm conditions are provided.
Fit for the installation which needs “AND” detection mode, but it may exist PIR shadow area, or somebody spray the dope onto the PIR lens willfully to damage the PIR detection.

**SENS L**

DIP 4 switch is in “ON” position
Detection sensitivity of both sensors are reduced.

PIR：During the time, signals detected by both negative and positive period of PIR are limited.

Mw：the detection response speed of MW is 0.5 seconds，running speed is 0.6m/second.




| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| ON | MASK | OR | 5P | SEN L | |
| OFF | | AND | | SEN H | LED |

## 12. Function

**Anti-masking function**

Anti object block the MW may cause alarm by the twinkle of LED indicator, and the signal is transported to monitoringcenter by MASK connector. Alarm status will last till the causes of formation are cleared away.

**Activation of anti-masking function**

DIP 1 switch is in “ON” position
The activation of anti-masking function is the final operation. After activation, detector enters self-check status; during the time, LED indicator will twinkle for 100 seconds. During the time, close the front cover and keep away from the detector, detector will enter automatic setting status and perform automatic additionustment of anti-masking height. The most important point is, during the time, there isn't anything approaching the detector to avoid its automatic setting.

**LED OFF**

DIP 5 switch
In “ON” position, it will limit detection display.

**MW OFF**

DIP 1 switch is in “OFF” position
DIP 5 switch is in “ON” position

Note:
During this mode, anti-masking is limited.

**LED DISPLAY**

| ALARM | Green Led | Red /Blue Led | Yellow Led |
|---|---|---|---|
| PIR+MW | OFF | ON | OFF |
| PIR | OFF | ON | ON |
| MW | ON | ON | OFF |
| MASK | FLASH | FLASH | FLASH |

## 13.Pet immunity

Note: we can omit those animals below 1m or 20kg 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.

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: 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!