NVS-02T

Outdoor Motion Detector

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 alarmmiss 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.

DISCLAIMER

I. Product limitation

This wireless de tector is a highly qualified product worthy of trust, but below situations might appear in radio transmission and certification limitation (FCC or other principles):

A. Whatever code is selected, control panel may be blocked caused by interference from radio signal or wave in similar frequencies.

B. Control panel can only receive an alarm signal from 1 detector in 1 time.

C. Make regular tests on radio devices in order to confirm interference is not from them and guarantee its stability.

II. Frequencies distribution in Europe

315MHz Limited in all EU members

433.92MHz No limitation in EU members

Introduction on Products

This is a digital wireless motion detector with remarkable functions, it can avoid outdoor interference from sunshine,UV & RF, head light on car etc and is highly effective for water/dust/insects/ wind proof. It is matched with follow advanced technology: direct calculation and analysis technology from intelligent high-speed microchip to intrusion infrared signal,double polarity test technology, automatic temperature compensation technology, direct adjustment technology to sensitivity on digital signal, filtering technology from multi-layer infrared channels to mixed light. Its particular calculation on pets chargeable data can avoid false alarm caused by 20kg small animals effectively. At the same time, it is also outstanding in anti hot air, waving curtains etc, can offer forced test on the base of 2-grade sensitivities.Its unique low-power-consumption solution can offer a guaranty of 24 months' factory battery life expectancy.In a word, this detector is advanced and stable enough to offer best security Protection indoor and outdoor with its IP65 water proof structure.

Main Function

-Super mini power-consumption solution

-2 grade sensitivities for option

-Digital pet immunity up to 20kg

-Bi-directional temperature compensation

-High capacity battery(24 months guaranty)

-EDS/electric shock proof/mobile interference proof

-Anti white light

-Low voltage alarm

-Fully sealed optical parts

-Multi-direction bracket fit for corner/wall/ceiling mount

Technical Parameter

Power	: 3.6V 1/2 AA Lithium battery
Current	: 12uA (stand by) 15mA(alarm)
Mount height	: 1.8m-2.4m
Detection range	:12m*12m 100°
Temperature compensation	: digital
Sensitivity	: 2/3 pulses for optionAnti
EMI	:0.1-500MHz/30V/mAnti
white light	:>10000 LUX
Alarm time	: 2s
Alarm interval	: 4 min (USE mode)
Wireless distance	: 80m (open space)
Frequencies	: 433.92 MHz
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

+6m

Top view
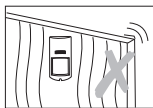
- 6m

2.1m

Side view

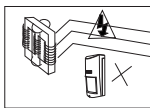3m   6m   12m

Wide angle lens
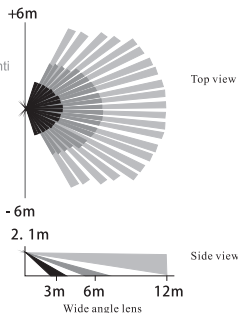
INSTALLATION GUIDE

Select most suitable installation point fit for PIR detection, put detector onto proper position, keep away from door, window, running machine or heat source.
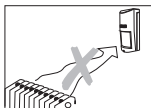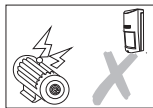
Don't face detector
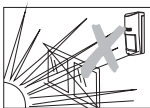tocold/heat source

Installation base
should be stable

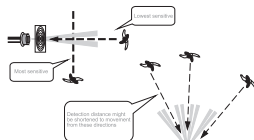Keep awayfrom
high-pressure cable

Attention to car
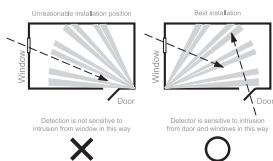interference

Keep away from strong
EMI interference

Don't face
directly to the sun

On installation angle

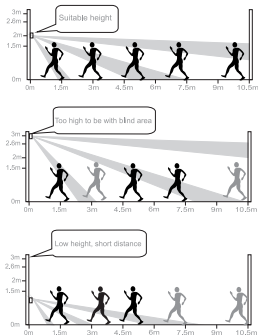Detection is with mechanical difference to intrusion angles

Lowest sensitive

Most sensitive

Detection distance might be shortened to movement from these directions

On installation position

Unreasonable installation position

Window

Door

Detection is not sensitive to intrusion from window in this way

✗

Best installation

Window

Door

Detector is sensitive to intrusion from door and windows in this way

◯

On installation height

Recommended installation height is 1.8-2.4m

Suitable height

3m
2.6m
1.2m
0m

0m 1.2m 3m 4.5m 6m 7.5m 9m 10.5m

Too high to be with blind area

3m
2.6m
2m
1.5m
0m

0m 1.5m 3m 4.5m 6m 7.5m 9m 10.5m

Low height, short distance

3m
2.6m
2m
1.5m
0m
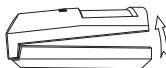
0m 1.5m 3m 4.5m 6m 7.5m 9m 10.5m
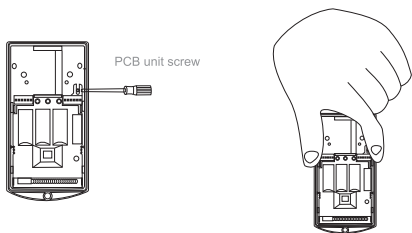
Installation & Bracket

Wall mounting

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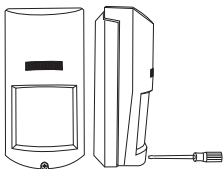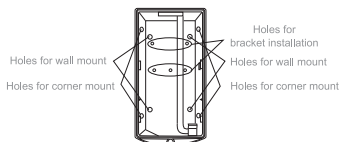

Screw on housing

PCB unit screw

Loose PCB unit screw as figure, press down the buckles with 2 fingers, PCB unit can be taken down.Then detector can be installed according to actual needs.

Holes for bracket installation

Holes for wall mount

Holes for wall mount

Holes for corner mount

Holes for corner mount

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.
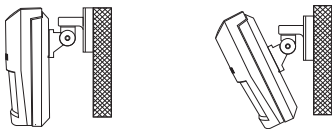
Adopt bracket installation way, detector can get the best detection angle as bracket can be adjusted 180° horizontally and 30° vertically.
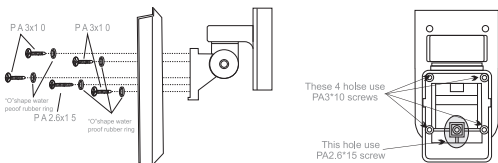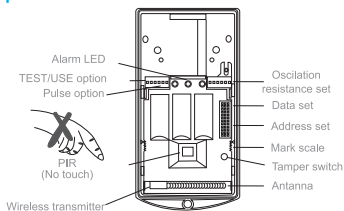

Horizontal-90°
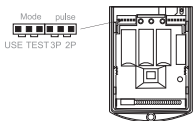
Horizontal -0°

Horizontal+90°

Internal parts

Alarm LED
TEST/USE option
Pulse option
PIR
(No touch)
Wireless transmitter

Oscilation
resistance set
Data set
Address set
Mark scale
Tamper switch
Antanna

P A 3x1 0   P A 3x1 0

"O"shape water
proof rubber ring
P A 2.6x1 5   "O"shape water
proof rubber ring

These 4 holse use
PA3*10 screws

This hole use
PA2.6*15 screw

Different settings & walking test

TEST/USE mode switch   walking test

Mode   pulse
USE TEST 3P 2P

Set detector to TEST mode and turn on LED, close well
the front cover and wait for LED OFF. Make horizontal
movement in detection area and watch the PIR
detection status on LED(when alarm is triggered LED
will flash for 2 times continuously). This is to confirm
that there is no blind angle for PIR in the protection
spot. When intruder makes horizontal movement
towards detector, sensitivity is the highest! When
detector is installed in different environments, please
adjust PIR sensitivity and detection pulse properly.
There are 2 grades for sensitivity: high and low. When
pulse is set to 2, detector is with high sensitivity; when
3 pulse is set, detector is in low sensitivity. Normal
settingg is 2 pulse. Installer can turn off or turn on alarm
LED according to actual needs after the test. Strongly
suggested: please select "USE" mode AND "LED
OFF"set in order to keep battery working longer.

Mode   pulse

USE TEST 3P 2P
USE mode
(economical)

When jumper is set to USEmode , detector can be triggered for 4 minutes interval time for the purpose of battery energy save, this is recommended mode.

Mode   pulse

USE TEST 3P 2P
TEST mode
(costly status)

When jumper is set to TEST mode , detector can betriggered any time.
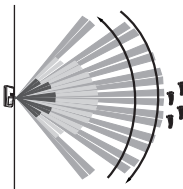
Setting on sensitivity pulse

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't stand exact quantity of pulse during digital signal process.

Mode   pulse
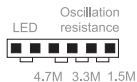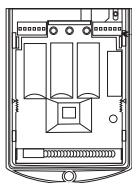
USE TEST 3P 2P
2 pulses
(high sensitivity)

When jumper is set to 2P, detector is set to high sensitivity, alarm will be triggered when 2 pulses are detected

Mode   pulse

USE TEST 3P 2P
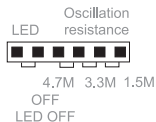3 pulses
(low sensitive)
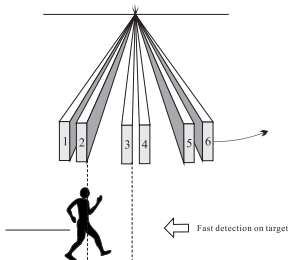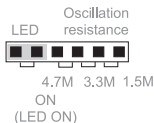
When jumper is set to 3P, detector is set to low sensitivity, alarm will be triggered when more than 3 pulses are detected.

| 1 | 2 | | 3 | 4 | | 5 | 6 |

Fast detection on target

Excellent way to avoid false alarm

LED   Oscillation resistance
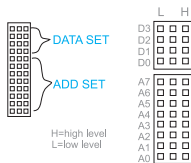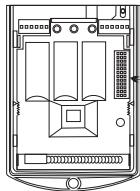
4.7M 3.3M 1.5M

Alarm LED control

When jumper is set to OFF mode, LED will not light even alarm is triggered, it is for the purpose of conceal and energy-save. (Recommended way)

Oscillation
LED   resistance

4.7M 3.3M 1.5M
ON
(LED ON)

Oscillation
LED   resistance

4.7M 3.3M 1.5M
OFF
LED OFF

FROM WIRELESS TO WIRED

DATA SET

ADD SET

H=high level
L=low level

L H
D3
D2
D1
D0

A7
A6
A5
A4
A3
A2
A1
A0

setting of data jumper

Proper coding data for can be obtained by jumper setting on "DATA SET",then control panel can recognize the codes: D3/D2/D1/D0.
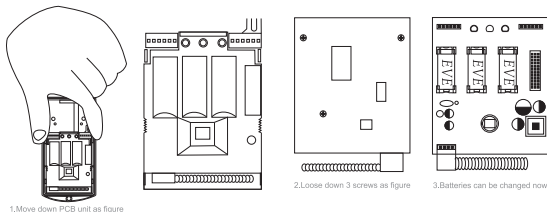
Setting of address codes

Different address ID can be obtained by setting on 8 jumpers on "ADD SET"?for the purpose of recognition by control panel.

Note: some control panel doesn't allow data jumper to be empty, should be set to high or low level, if not, control panel can't distinguish the codes.

Low voltage and battery change

1.Move down PCB unit as figure

2.Loose down 3 screws as figure

3.Batteries can be changed now

When battery voltage is lower than 2.85V, detector will send out low voltage alarm signal, then LED will flash for 5 times continuously. If detector gets continuous signal from battery low voltage, it will send alarm signal to control panel every 60 minutes for purpose of recommendation to user on battery change.

This detector can support 3 of 1/2 AA batteries, if 3 of batteries are used together,detector can work for more than 24 months in USE mode.

⚠ Note: if 2 or 3 batteries have been working together, when need to change batteries, please change them in all and try to avoid mixed operation between new and old batteries.

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.

Mark 2,3,4: when installation height is over 2.4m, in order to get best cover range, please move PCB unit to mark 4 position and make actual walking test to confirm actual detection range till complete protection requirements are reached.
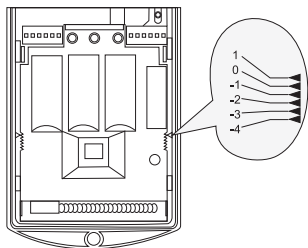
Effect chart on wide angle lens adjustment
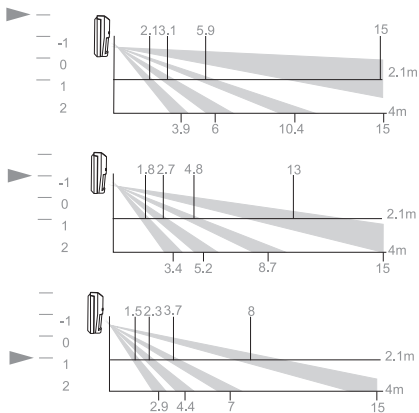
Note: if multi-directional bracket is used, detection range will be different from description above.

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 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.

⚠ 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!

Common touble and solutions

Trouble	Possible reasons	Solution
Power LED doesn't light	1.Battery low voltage(below 3.2V) 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 installtion 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 turn off	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
Not compatible with control panel	1.Different protocol 2.Improper resistance 3.Wrong data set 4.Some address jumpers can't be empty	1.Select proper codes and protocol 2.Select proper resistance 3.Select proper data set 4.Set address pin to H or L
Short wireless distance	Contol panel can't receive alarm signai 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. Sunspot 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 handle, it will resume after sunspot passes 6.Operation in recommended environment 7.Pay attention to water proof, add O shape water proof rubber ring 8.Set sensitivity to 3P