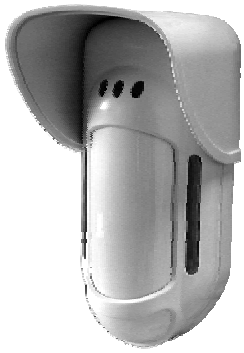
Installation Guide of FT-89 wired PIR & MW Intelligent Intrusion Detector

1. Introduction

FT-89 is virtually the best outdoor/indoor motion detector ever presented, for industrial, commercial and residential secretary urity. FT-85 has a m assive aesthetic design and combines the technologies of passive infrared and Microwave as well It is waterproof and all-weather resistant. FT-85 also alerts in any attempt to damage disable its operation. Ft-89 combines a variety of detection techniques that enable it to work in the most difficult environmental conditions and where high security is required while maintaining unprecedented immunity to false alarms. The two synchronized PIR sensors produce a three-dimensional thermal imaging of the protected area. Combining the fourth dimension ad microwave scanning contributesto an amazing detection capacity and at the same time it also increases the reliability and immunity to false alarms. Using this technique allows high sensitivity level adjustment in both detection technologies without the need of pulse count. In addition to an unprecedented amazing and reliable detection skill, FT-85 is equipped with unique protection mechanisms against any attempt to damage or to disable its operation. These following protecti on mechanisms always work-weather the alarm system is Armed or Disarmed:



Appearance of FT-89

1.Anti-masking by a continuous active infrared scan, against masking the near field-of-view of the detector (Detects even transparent objectssuch as clear glass, plastic bags, etc.)

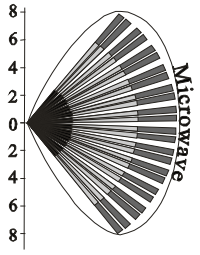
2. Imposes OR mode in distress. If from any reason, the PIR detection channel is neutralized(for example, the detector front was masked) the Microwave detection channel will guard the protected area.

3.Anti-case-shifting, by inertial switch that alerts if someone shifts, moves or turns the detector.

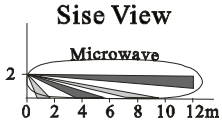
2.Specifications

Model:
FT-89（wired）
Detection range：12m
Input voltage：9-16VDC
Current drain：around 65mA@ 12VDC
PIR section:
optical lens data:
PIR area：(11+11+9)*2=62 （typical）
Max.Coverage：12*12m /90°
Start Indication:3 colour indicators flash alternately for about 180seconds
Alarm , Anti-mask and Tamper
Alarm Output: Solid-state relay, N.C & N.O above 100mA/30V,---10Ω interior resistance
Tamper Contacts: N.C , 50mA /30 VDC
Anti-mask Output: Solid-state relay, N.C above 100mA/30V,---10Ω interior resistance

Top View



Sise View



Alarm indication: yellow indicator and green indicator light 2-3 secretary. (Refer to part 3.6)

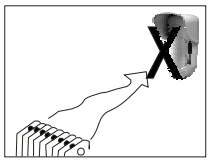
Mounting：
Surface or corner, at the height of 1.8 -- 2.4 m (recommend 2.1m)
Note: Base allows single-sided corner mount at 45 to wall

Accessories:
bracket:Surface mounted swivel bracket, adjustable 90 ° up and 30 ° down and 45 ° left or right.

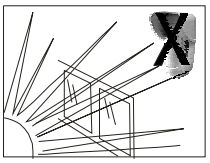
Environment:
Operating Temperature: -10° C to 50° C(14° F to 122° F)
Storage Temperature :-20° C to 60° C (-4° F to 40° F)
Anti white light : ＞15000 LUX

3.Installation

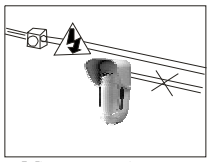
3.1 General Guidelines



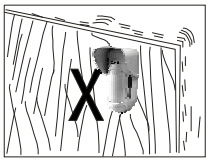
Don't face cold or heat directly



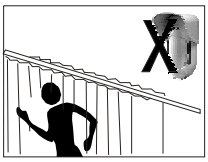
Don't face the sun-shine directly



Wire connection or detector can't be near to high-pressure cable

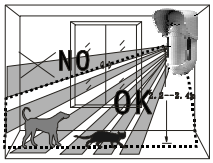


Don't install on a unstable base.

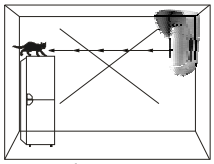


Don't face metal wall

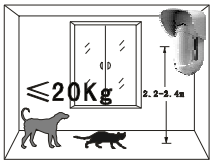
3.2Anti-pets installation



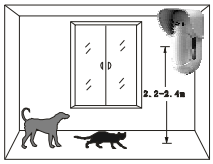
The upper part of the detection area is non anti-pets area



Never face the detector to the place that pests can climb up directly



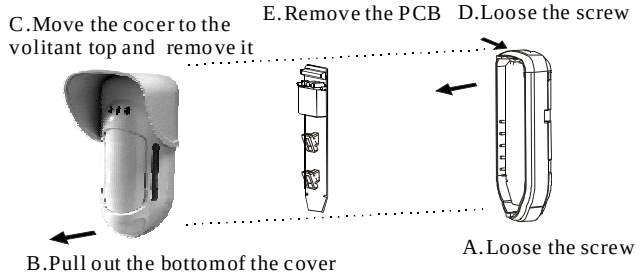
Anti-pests weight＜20Kg



The installation height of the detector is 2.2-2.4 meters can Anti-pets

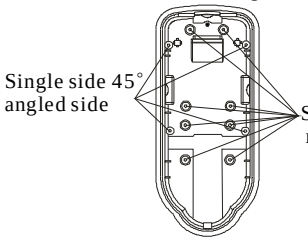
3.3 Illustrated Installation Procedure

1.Disassemble unit



2. Mount base:

1.8-2.4m（6-8ft）above ground



A. Mark the drilling points and drilling the wall

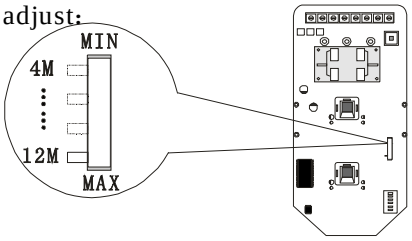
B. Route the wires into the base VIA the rear channel

C. Insert two dowels and attach the base to the wall with two screws

D.Insert the bottom edge of the large PCB under this TAB & Press the top edge in

3.5、MW sensitivity adjust:

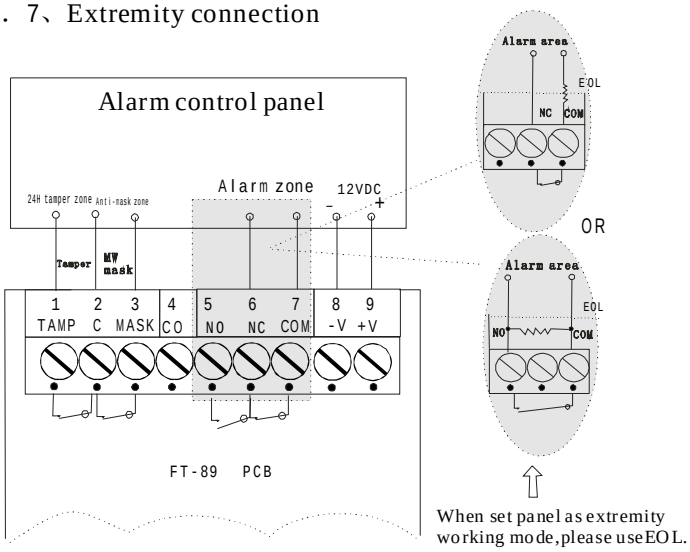
In order to get a better result of detection, less fault alarm, can adjust MW to control detection range.



3.6、LED state table:

Detect type	LED state	Alarm output state
Detector alarm	Yellow,green both flash	ALARM output is triggered 2-3s
PIR detect	Green	No alarm output
MW detect	Yellow flash	No alarm output
	Yellow,green both flash	ALARM output is triggered 2-3s
Anti-mask detect	Red flash	Red one flashes continuously if block occur more than 2 min and keep masking.
Tamper detect	Red flash	MASK alarm output is triggered 2-3s

3. 7、Extremity connection



When set panel as extremity working mode,please use EOL.

3.4、DIP switch instruction:

LED control:

When set DIP1 to On，the indicators of FT-89 are on, when to OFF,the indicators are off.

PIR sensitivity option:

When set DIP2 to On，the two PIR of detector get to high sensitivity,when set to OFF, to low sensitivity.

Infrared anti-mask,tamper adjustment mode:

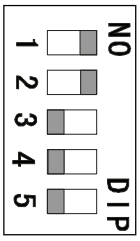
When set DIP3 to ON，this function sensitivity is high, anti-mask distance is long, when set to OFF, function sensitivity is low, anti-mask distance is short.

Working option mode (AND/OR option):

When set DIP4 to ON，the mode is：infrared or MW detects alarm signal,FT-89 will alarm;or if only MW detects alarm signal,FT-89 also will alarm.When set DIP4 to OFF ，FT-89 is dual-tech working mode,infrared and MW both detect alarm signal,FT-89 will alarm.

Tamper function:

When set DIP5 to On，the function is closed；when set to OFF，the function is opened.



#	Function	OFF	ON
1	LED	Non-active	Active
2	PIR sensitivity	LOW	HIGH
3	Anti-mask sensitivity	LOW	HIGH
4	Alarm mode	Dual-tech	Dual-tech alarm mode or signal MW alarm (only used for the situation existing anti-mask signal)
5	Tamper	Active	Non-active

3.8、Wiring terminal specifications

Termindls8+9

Indicated on the circuit as:- +,these are the 12V DC power supply inputs

Terminals 5+6+7

Indicated on the circuit as: COM is public terminal ,N/C is alarm normally close, N/O is alarm normally open.

Terminals 2+3

Indicated on the circuit as: (**MASK)**

Represent the contacts of the (Masking Relay)which normally are in closed state(MASK+C). If an object blocks(masks) the protected area more than 2 minutes, the red LED will glow constantly, and the(**MASK)** relay will operate for at least 2 seconds and all time the masking exists

Terminals 1+2

Indicated on the circuit as (**TAMP)**

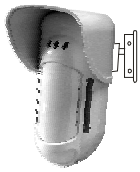
Represent the contacts of the built-in TAMPER switch, which are normally in closed state(N.C.) The contacts will open, upon the detector's case is opened.

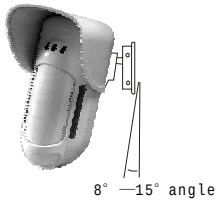
Terminal 4

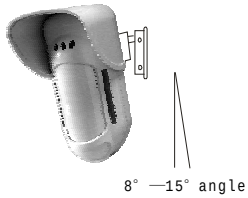
Indicated on the circuit as CO back-up terminal.

3.9、Setting of detection angle:

When multi-function bracket is used (optional), please refer to the right diagram, adjust installation angle to get needed detection scale and function.





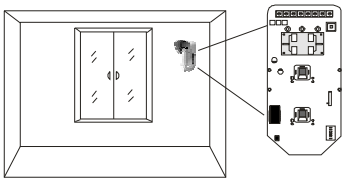


At this angel, sensitivity is in middle. Pet immunity up to 10Kg anima

At this angle, detection angle is largest, Lower section sensitivity is low. Pet immunity up to 20Kg animal .

At this angle, detection angle is smallest, senstivity is highest. no pet immunity function.

3.10、Adjust the PCB:



When detector is installed in different environment and places, you can adjust the position of PCB to meet your requirement, eg.: Set the PCB to higher to get to longer detecting distance; otherwise, shorter distance.

3.11、Perform motion test to the detection area:

1、 Start the test at least 3 minutes after power supply.

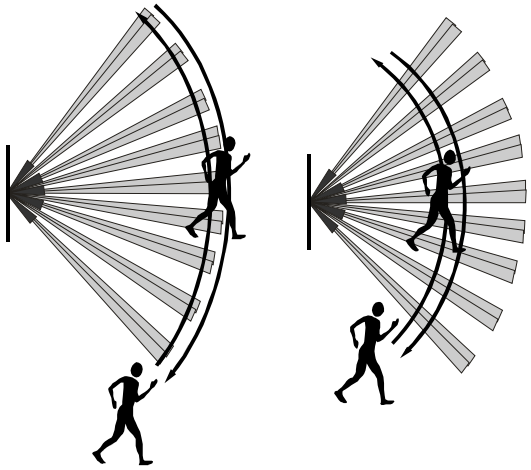
2、Crossing to any direction of the detection area, your walking with 0.75m/s will cause the Yellow&Green indicators to light for 2-3 seconds,that is alarm state (refer to the right diagram).

3、Perform motion test from contrary directions in order to confirm the boundary of two sides. Make confirmed that detection center pointing to the center of protected area.

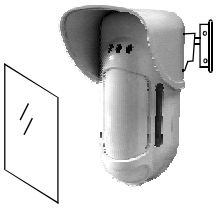
4、Away from the detector 3 to 6 m, raise slowly your arm and reach into the detection zone, mark the lower limit of PIR detection. Do the same step to confirm the upper limit.

5、the center of detection zone should not uphill incline. To obtain a good detection range, please adjust the vertical detection range, ensure the detector is in a correct position.

6、After MW sensitivity or detection angle are adjusted, walking test must be performed according to the above steps.



The test procedure for masking detection (Anti-masking):
In front of the detector with a distance of about 10 cm,,place a white paper (or any other object).
The necessary reaction of the detector: red LED blinks immediately
After 2 minutes the (Masking Relay)will activate.
All time when an object blocks(masks)the protected area, the masking relay and the red LED both will activate



The test procedure for Case-shifting detection:
Shake the detector.
If it is fixed on a wall, knock the detector's case by a screw driver.
The necessary reaction of the detector:
The(Masking Relay)will activate for 2 second.
The red LED will activate, shortly, upon every knocking.