

# Motion Detector HSP01-0

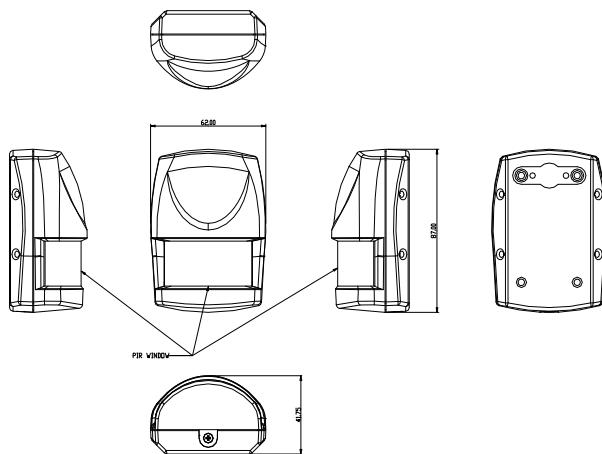
## Installation and Operating Instructions

### INTRODUCTION

The Motion Detector is designed with two detecting sensors, Passive Infra-Red (PIR) sensor and light sensor, in order to fulfill the purpose of security and home automation. When the detector is cooperated with security appliances, it is acting as a security device by detecting changes in infra-red radiation levels. If a person moves within or across the device field of vision, a trigger radio signal will be transmitted to cause full alarm condition in order to frighten intruders away. Alternatively, when the detector is worked with home automation appliances, the detector can be set to perform the role of home automation device by detecting both changes in infra-red radiation levels and percentage of lux levels. Once night falls, the percentage of ambient illumination is lower than preset value. If a person moves within or across the device field of vision, a trigger radio signal will be transmitted so as to turn on the connected lightings for better illumination.

The PIR Detector adopts a CR2 3.0V Lithium battery which under normal conditions will have typical life in excess of 1 year. When the battery level drops to an unacceptable level, the LED behind the detection window will flash once every 30 seconds. When this occurs the batteries should be replaced as soon as possible.

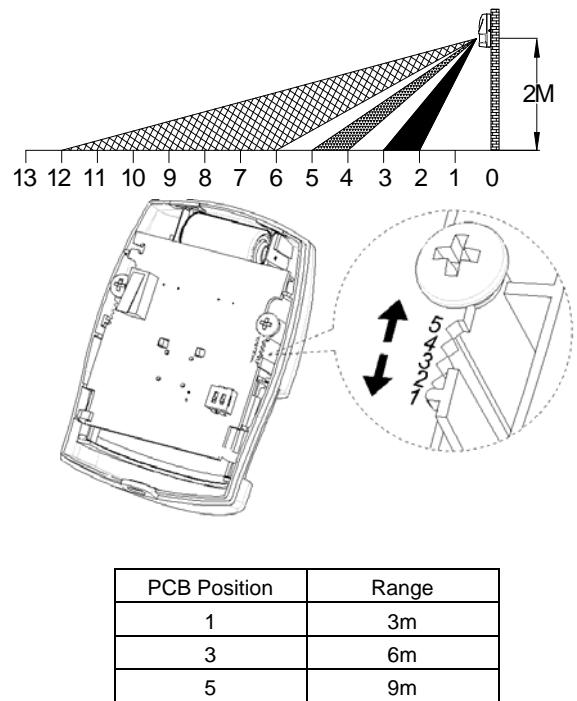
### Product Overview



### Choosing a Mounting Location

The PIR Detector is suitable for mounting in dry interior locations only.

The recommended position for a PIR Detector is in the corner of a room mounted at a height between 1.8 and 2m. At this height, the detector will have a maximum range of up to 9m with a field of view of 110°, subject to the position for the PCB being set in 5. (FIGURE 1& 2) The position of the PCB inside the PIR can be set to 5 different positions to adjust the range of the detector. Setting the PCB in position 3 will reduce the range to 6m approximately, with position 1 providing a range of 3m approximately. The recommended position setting for the PCB is in position 5.

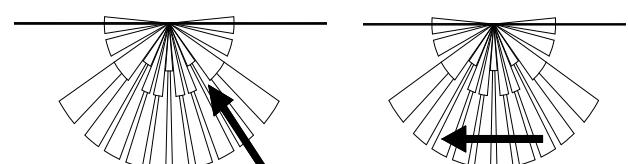


PCB Position	Range
1	3m
3	6m
5	9m

FIGURE 1& 2

When considering and deciding upon the mounting position for the detector the following points should be considered to ensure trouble free operation:

1. Do not locate the detector facing a window or where it is exposed to or facing direct sunlight. PIR Detectors are not suitable for use in conservatories.
2. Do not locate the detector where it is exposed to ventilators.
3. Do not locate the detector directly above a heat source, (e.g. fire, radiator, boiler, etc).
4. Where possible, mount the detector in the corner of the room so that the logical path of an intruder would cut across the fan detection pattern. PIR detectors respond more effectively to movement across the device than to movement directly towards it. (FIGURE 3)



Less Sensitive

More Sensitive

FIGURE 3

5. Do not locate the detector in a position where it is subject to excessive vibration.
6. Ensure that the position selected for the PIR detector is within effective range of the system, (refer to System Installation and Operating Manual).

**Note:** When the system is armed, household pets should not be allowed into an area protected by a PIR detector as their movement would trigger the PIR and generate an alarm.

## Installation

### Ensure that the system is in Test Mode.

1. Undo and remove the fixing screw from the bottom edge of the detector. Carefully pull the bottom edge of the detector away from the rear cover and then slide down to release the top clips. (FIGURE 2)

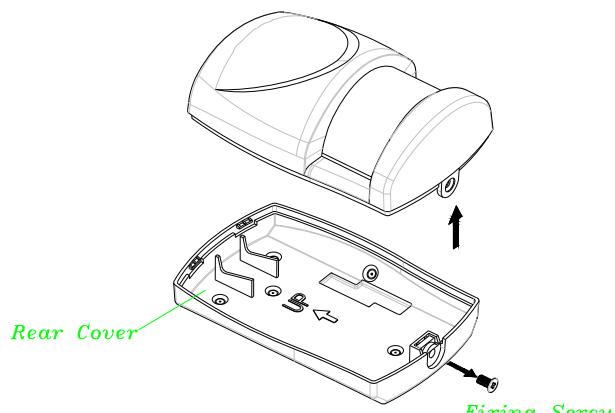


FIGURE 2

2. Carefully drill out the required mounting holes in the rear cover using 3mm drill according to whether the unit is being mounted in a corner or against a flat wall.

**Note:** Using 1<sup>st</sup> mounting hole to fulfill corner mounting installation, while 2<sup>nd</sup> mounting hole for flat wall installation. (FIGURE 3a & 3b)

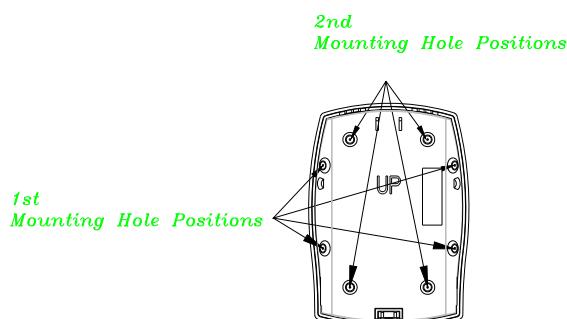
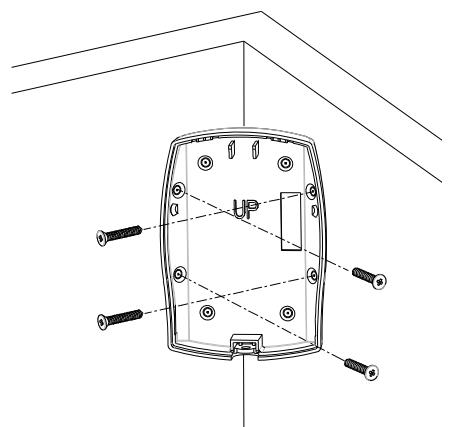


FIGURE 3

FIGURE 3a



Corner mounting

FIGURE 3b

3. Using the rear cover as a template, mark the positions of the fixing holes on the wall.
4. Fix the rear cover to the wall using the two 18mm No.4 screws and 25mm wall plugs, (a 5mm hole will be required for the wall plugs). Do not over-tighten the fixing screws as this may distort or damage the cover.
5. Configure the detector as described below. Remember that on initial installation that the device needs to be tested.
6. Check that the detector PCB is located and set in the correct position to provide the required detection range. To adjust the PCB position, simply slide it up or down ensuring that the location legs are aligned with the required position number marked on the board.
7. To refit the detector to the rear cover and locate the clips in the top edge into the rear cover. Push the lower edge of the detector into place and refit the fixing screw in the bottom edge of the detector to secure in position. Do not over-tighten the fixing screws as this may damage the casing.

## Warm-Up

It will take approximately 2 minutes to warm up after battery has been connected. During this time, LED will flash red once every 3 seconds. When a long beep is sounded with red LED turns on steadily for 5 seconds, it implies warm-up procedure is completed and the detector is ready for detection.

## Learning & Clearing the ID Code

The Motion Detector has its unique code. In order to prevent any unauthorized attempt to operate or disarm your system, you must let your control panel (e.g. SA804) or connected appliances learning its code for the system to operate correctly and vice versa.

To learn ID code, press and hold the learning key more than 3 seconds and then release immediately so as to enter ID code learning mode. 30-second countdown will

start, enabling the control panel to learn the code. If code learning is successful, the detector will beep once and the green LED will be on shortly then off. If failure, three rapid beeps can be heard and green LED will flash rapidly three times.

To clear ID code, simply press and hold the learning key more than 3 seconds to enter ID code learning mode. Press learning key again for at least 6 seconds within 30-second countdown. Please refer to the table below to verify what kind of status the detector is in:

## LED Indication

Event	Status of Learning Key	LED Status	
Press learning key to enter learning mode	Keep pressing the learning key more than 3 seconds	Within 3 seconds, green LED will illuminate steadily.	
Under learning mode		Green LED flashes repeatedly	
Successful learning		Green LED on then off	
Failed learning		Green LED flashes rapidly 3 times	
Press learning key to clear ID code	Keep pressing the learning key for more than 3 seconds. Within 30-second countdown, press learning key again for at least 6 seconds, all ID codes will be cleared.	Repress the learning key during 6 seconds, green LED will illuminate steadily.	
Successful clearance the ID code			
Failed clearance the ID code	The learning key has been pressing for more than 3 seconds. However, failed to press learning key for at least 6 seconds within 30-second countdown.	Green LED flashes rapidly 3 times	
No ID code		Orange LED flashes repeatedly	

### Note:

1. Green LED represents learning & clearing the ID code status and indications of RF signal emitting and receiving.
2. Red LED represents low battery and warm-up status.
3. Orange LED represents no ID code status and motion event triggers.
4. The detector can store up to 11 sets of appliance ID codes (e.g. SE802) and one control panel ID code (e.g. SA804). If 12th appliance ID code needs to be learned, the green LED will flash rapidly which implies ID code learning is failed.

appliances will be activated. For example, siren will be sounded or indication of movement detection will be shown on the controller. It implies that the unit is working properly.

## Operation Wall Mounting

1. After power on, PIR will warm-up for about 2 mins, if the unit is with no node ID then the LED will continuously twinkle to lead the user for inclusion. Distance test for PIR can only be done after inclusion.
2. Test mode:  
After inclusion, if Tamper switch is not pressed, the unit will enter test mode. When PIR is triggered, the red LED will light up once and retrigger time is about 5 sec. However, if Tamper switch is pressed, the unit will enter normal mode. When PIR is triggered, the red LED will not light up and retrigger time is based on set up value.
3. By walking into a protected area within coverage of 110 degrees, the detector will now be triggered each time the detector senses movement. The associated

## ADVANCED OPERATION

The following information is provided for setting the functions of the detector via SA804 by using UnetSystem program. Please get familiar with the software of UnetSystem before getting starts.

### Enabling/Disabling Sensor Detecting Function

This function is applied when users wish to enable/disable

the detecting functions of the detector. To enable/disable the PIR/light sensors, users can send system On/Off command via UnetSystem. System On is for enabling the detecting function; whereas System Off is for disabling the detecting function. Please refer to the user manual of UnetSystem for more operating instructions.

**Note:** The default value is enabled. Reconnection of power supply will enable the sensor detecting function automatically.

#### Sensitivity Level (PIR sensor only)

In order to provide a best efficiency of the detector, it is recommended to test the detector with movements from a farthest end of the coverage area at the first time of use. If movements cannot be detected sensitively, simply adjust the sensitivity level. The sensitivity level can be set from 1 to 10; the larger the number, the higher the sensitivity.

**Note:** The default value is set in 6, which implies medium sensitivity.

#### Re-trigger Interval Setting (PIR sensor only)

This function is designed for setting the interval which allows PIR sensor to be re-triggered after the detector has been triggered. For example, the interval is set for 20 seconds. If a movement is detected, only wait after 20 seconds the detector can be triggered again if it detects another movement. No response will be made if the detector detects a movement in the meantime (FIGURE 7). The time interval can be set from 5 seconds to 3600 seconds; the larger the number, the longer the interval.

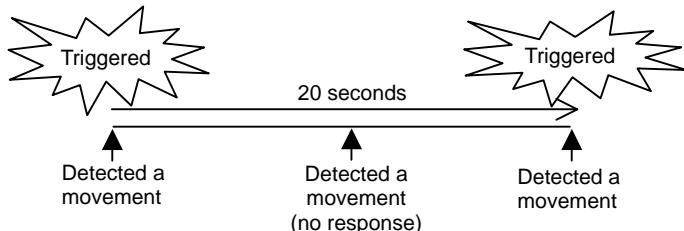


FIGURE 7

## TROUBLESHOOTING

Symptom	Possible Cause	Recommendation
LED cannot be displayed	Run out of battery power	Check if the battery is fitted or replace a new battery.
	Check if reverse battery polarity	Refit the battery with correct polarity
LED displayed, but the detector cannot learn ID code or cannot be controlled	Check if ID code learning is successful with connected appliances	Follow the instructions on page 3 under setting section. Make sure the ID code of connected appliances is clear.
	Radio frequency interferences (868.30/923 MHz is emitted nearby)	Wait for a while and re-try
The detector not working	Check if the detector is out of order	Do not open up the detector and send it for repair
The detector working, but the connected appliances (or	Check if ID code learning is successful	Follow the instructions on page 3 under setting section.

**Note:** The default value is set in 5, which implies that the detector can only be re-triggered after 5 seconds of interval.

#### On-Off Duration Setting

The function of on-off duration setting will be useful if the detector is connected with a module or lighting. Once the associated appliances are activated (turn to "On" status) after the detector has been triggered, they can be set to turn off after 5 to 3600 seconds of duration which is set by users beforehand. The larger the number it is, the longer the duration it will be.

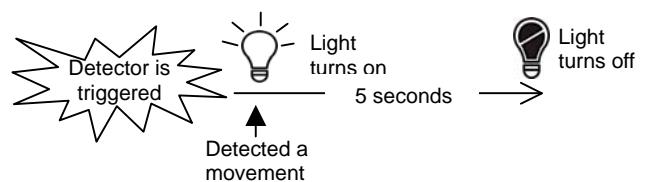


FIGURE 8

**Note:** The default value is set in 15, which implies that the detector will send a trigger-off command to associated appliances 15 seconds after been triggered.

#### Percentage of Lux Level Setting

The user can set a detecting percentage of lux level for triggering light sensor when a movement is detected. If the percentage of lux level of ambient illumination falls below this percentage, and a person moves across or within the protected area, the detector will emit RF signal to control panel or connected modules and lightings. Percentage can be set from 1% to 100%; the larger the percentage, the higher the detecting lux level (the higher the brightness).

**Note:** The default value is set in 10, which implies 10% of lux level. You can check the percentage of current ambient illumination via UnetSystem before setting the percentage of lux level.

control panel) not working	Distance is out of operating range	Reposition the mounting location of the detector and connected appliances (or control panel). Make sure the distance is within 200 meters.
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## Specifications

Battery	CR2 3.0V 800mAh Lithium Battery
Operating Range	Minimum 200 m line of sight
Warm Up Time	About 2 minutes
PIR Detection Coverage	<b>Wall-Mounted:</b> Up to 10m x 110° (at 1.8m mounting height & 25°C)
Operating Frequency	868.30 (EU)/ 923.00 MHz (US)

*\*Specifications are subject to change without notice*



## FEDERAL COMMUNICATIONS COMMISSION

### INTERFERENCE STATEMENT

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 instructions, 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 the 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 a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/ TV technician for help.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

### WARNING:

Do not dispose of electrical appliances as unsorted municipal waste, use separate collection facilities.

Contact your local government for information regarding the collection systems available.

If electrical appliances are disposed of in landfills or dumps, hazardous substances can leak into the groundwater and get into the food chain, damaging your health and well-being.

When replacing old appliances with new ones, the retailer is legally obligated to take back your old appliance for disposal at least for free of charge.