



## 4195-GB & 4695-GB DUAL EXTERNAL PIR

This detector is designed for outside use and employs two narrow angle PIR detectors one above the other.

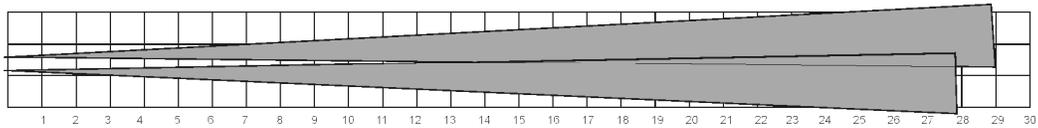
Both beams must be triggered to generate an alarm. Small animals may trigger the lower beam, but will not cause an alarm. Like wise the detector is unlikely to be triggered by Birds, insects or small wind blown objects..

### DETECTION RANGE

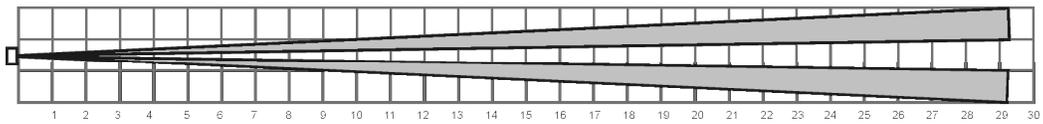
A PIR's detection range depends upon the size and temperature of a moving object. A large and very hot object can be detected at very long distances. The external PIR is also subject to Extremes of Heat, Cold, Bright sunlight etc. So the detection range will be greater when the background is cold and less with Bright sunlight reflecting off background objects.

The 4095 has a nominal detection range of 30 metres. This can reduce to 20 metres with a bright sun lit background and extend to 40 metres with a dark background. Vehicles may be detected at a distance of greater than 50 metres.

Side view



Plan view

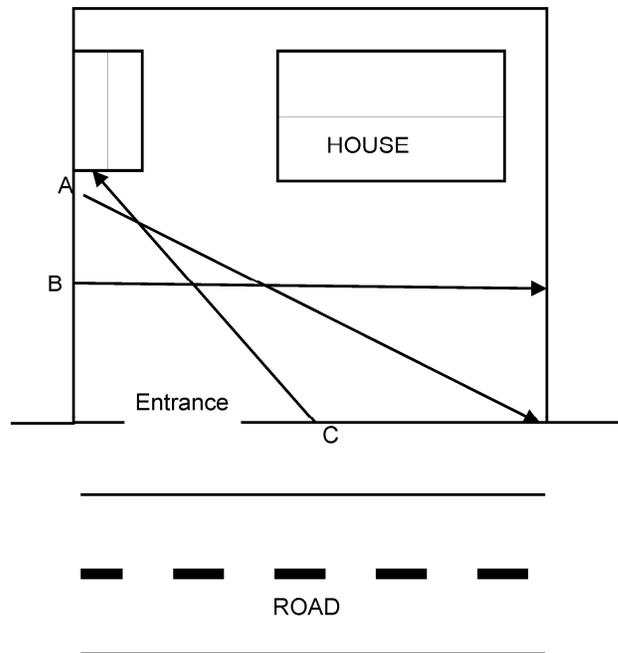


## LOCATING THE PIR

Ensure that the PIR does not look out over neighbouring property or onto the Highway. Vehicles at a considerable distance can trigger the PIR.

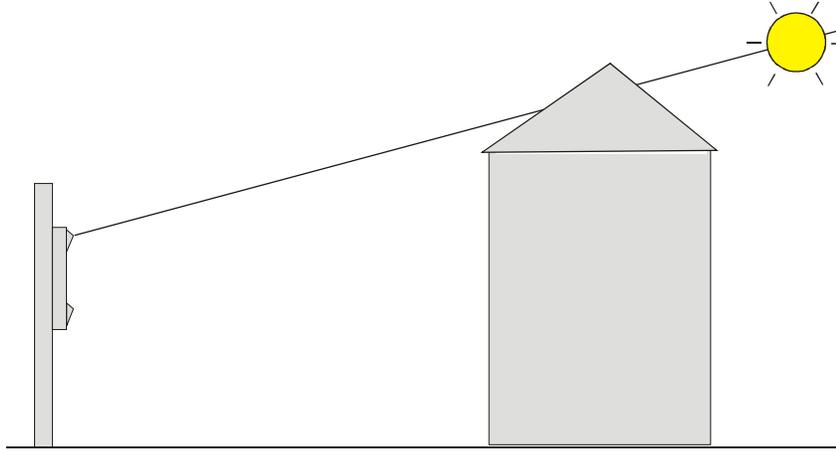
In this example there are three locations shown to detect someone entering the property and approaching the House.

- A PIR is mounted on a fence post looking towards the road. A fence must block the PIR off to prevent it detecting passers-by or vehicles driving along the road.
- B. The PIR is looking directly across the frontage. This must be blocked by a solid fence to prevent detecting the neighbour.
- C. The PIR is mounted on a front fence post and is blocked off by the Garage or other building.



## ORIENTATION

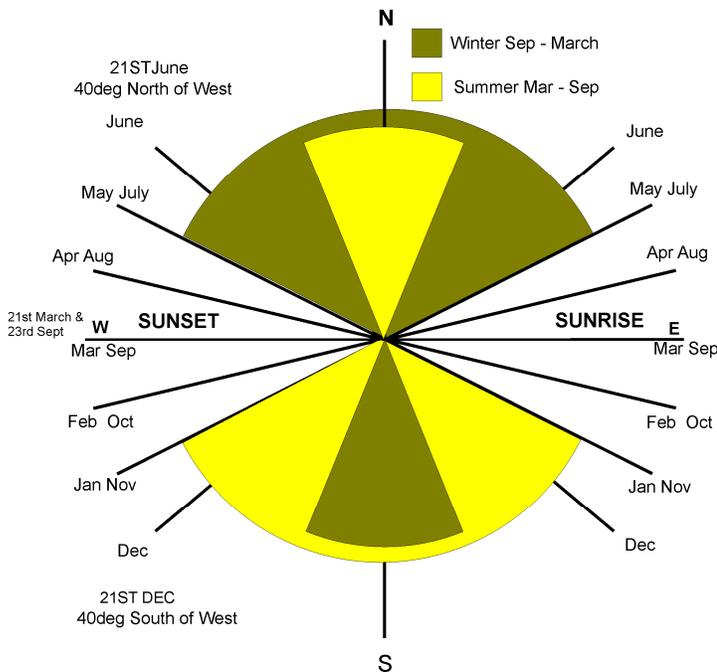
The PIR should not point directly East or West if the rising or setting sun will be seen by the PIR. North South orientation is the only all year round safe direction. If there is a nearby building or object which shades the setting sun it is O.K. provided the PIR is shaded before the sun gets below 15 degrees.



If the detector must point East West, then special techniques are required employing an extended sun shade and tilting the detector downwards, to prevent the PIR looking directly at the rising or setting sun. (See following section)

## SUNRISE & SUNSET

When the rising or setting sun could shine directly into the detector, an extension shade must be fitted and the detector should be tilted downwards by 6 degrees.

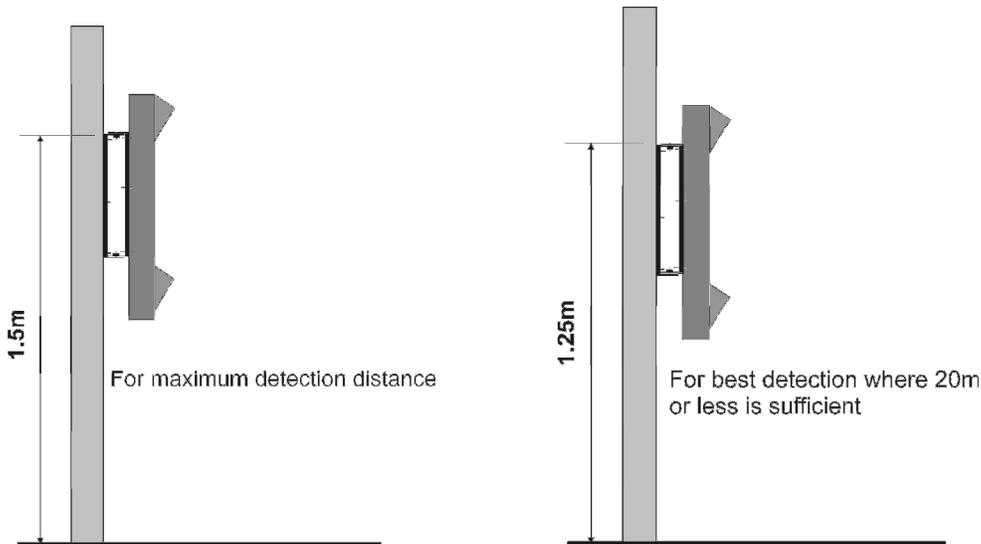


## MOUNTING HEIGHT

Fix the wall bracket at a height of 1.5 metres for maximum detection range, 1.25m for optimum detection, where 20m or less is required.

(Threaded hole in bracket at the top)

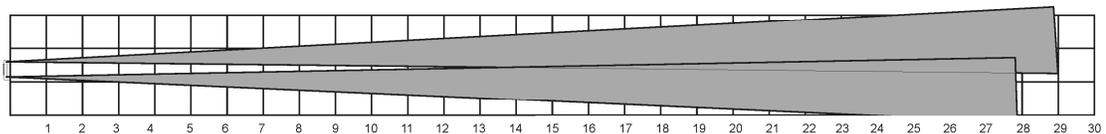
The mounting surface must be rigid and free from vibration. The minimum dimensions for a wooden support is a 3" x 3" fence post.



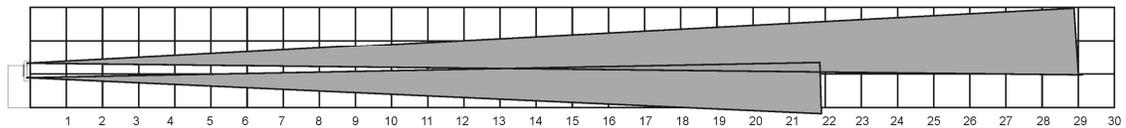
## Detection patterns at 1.25m & 1.5m mounting height

For Max Detection range. Top of bracket 1.5m above ground level

Top lens Lens 2mm up = +1.2 deg up    Botton lens 1mm up = -0.75 degrees    (As supplied from Factory)



For Best detection of smaller people. Top of bracket 1.25m above ground level

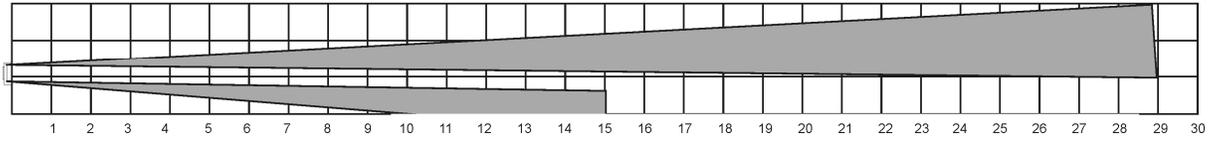


## LIMITING THE DETECTION RANGE

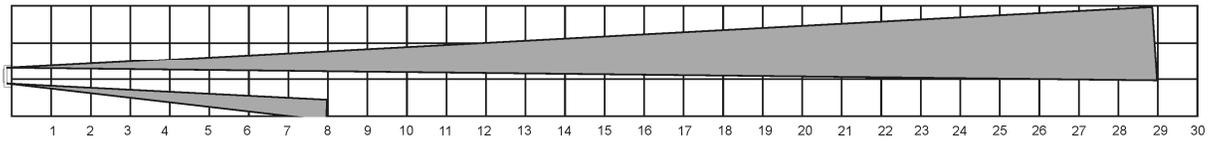
One method to limit the range is to tilt the beam down towards the ground. This is done by fitting packing behind the top fixings of the mounting bracket. However the top beam might pick up small animals.

Another method is to slide the bottom lens down to tilt the lower beam downwards. (The bottom lens normal position is 1.0 mm up from centre.)

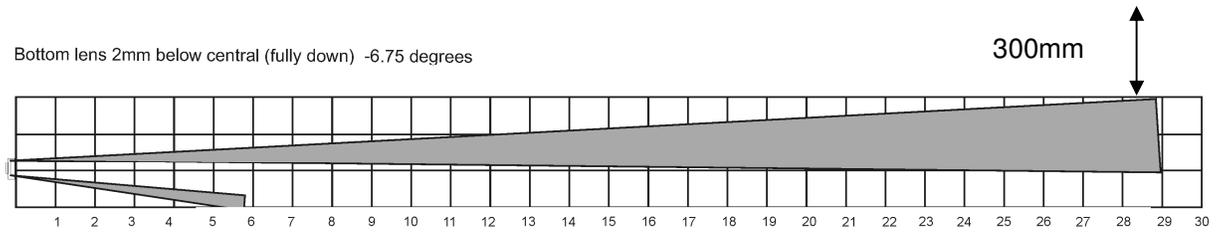
Bottom lens central -2.75 degrees



Bottom lens 1mm below central -4.75 degrees



Bottom lens 2mm below central (fully down) -6.75 degrees



### COMPENSATING FOR SLOPING GROUND

If the ground is sloping, the PIR must be tilted accordingly by fitting packing pieces at the top or bottom edge of the mounting bracket.

#### Example:

The ground falls away 300mm at a distance of 10m.



The following chart shows that 300mm at 10m represents a slope angle of approx. 1.7 degrees which requires 10mm of packing at the top of the mounting bracket.

Rise / Fall Distance mm at 10m	Packing mm at end of bracket	Angle degrees
61	2	0.3
91	3	0.5
122	4	0.7
152	5	0.9
183	6	1.0
213	7	1.2
244	8	1.4
274	9	1.6
305	10	1.7
366	12	2.1
427	14	2.4
488	16	2.8
549	18	3.1
610	20	3.5
671	22	3.8
1,067	35	6.1

Rise / Fall at 30 metres

Rise / Fall Distance mm at 30m	Packing mm at end of bracket	Angle degrees
183	2	0.3
274	3	0.5
366	4	0.7
457	5	0.9
549	6	1.0
640	7	1.2
732	8	1.4
823	9	1.6
915	10	1.7
1,098	12	2.1
1,280	14	2.4
1,463	16	2.8
1,646	18	3.1
1,829	20	3.5
2,012	22	3.8
3,201	35	6.1

### **FIXING AT A GROUND SLOPE ANGLE WHEN THE DETECTOR WILL ALSO BE ROTATED SIDEWAYS**

This will result in the detector ending up tilted to one side. To overcome this, loosely fix the detector with one central fixing, rotate the detector to the desired direction. Now rotate the bracket until the PIR is upright. Now mark other fixing positions and secure the mounting bracket.

### **SINGLE POINT FIXING TO A MORTAR JOINT**

In some applications, drilling into the Brickwork or Stonework is forbidden. If the detector needs to be tilted for Sun shade or ground slope, one or two strong fixings into the mortar may be required. Ensure that the fixing is strong enough to support the PIR adequately.

### **FIXING AT A PRESET ANGLE WITH TILT**

1. Set tilt using M6 threaded rod, washers & nuts  
Open up top two holes with 6mm drill.

2. Mark central fixing position  
to give correct height

3. Drill out central hole to size of fixing

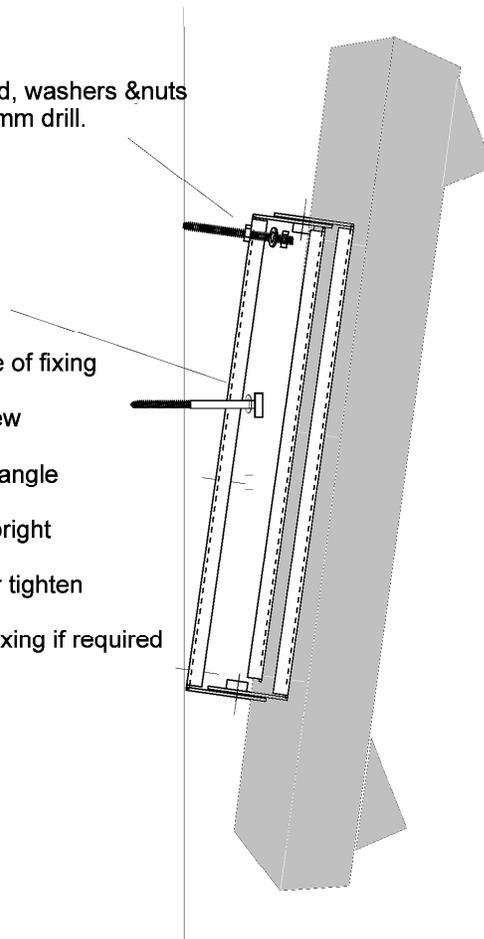
4. Fix loosely using coach screw

5. Fit PIR and turn to correct angle

6. Twist bracket to get PIR upright

7. Tighten fixing. Do not over tighten

8. Drill bracket for a second fixing if required



## LEARNING THE DEVICE

Put the control panel or interface into Learn mode (see unit instructions) loosen the cover screw until the tamper switch clicks and the tamper operates. The detector will then send a learn signal to control panel or interface.

## WALK TESTING

### To select walk test

Loosen the cover screw to operate the tamper switch, a tamper alarm will be signalled.

Whilst in walk test the two red walk test LED's are enabled. (Top LED illuminates when the top sensor is activated and the bottom LED for the bottom sensor.

### To come out of walk test

Tighten the cover screw, the tamper restore will be signalled.

The LED's are now disabled, but the sensor remains in walk test for up to 5 more minutes.

## Normal operation

The detector will have a two minute inhibit after an alarm activation. The detector will only activate when 2 minutes or more has elapsed without activation.

## BATTERY REPLACEMENT

Two AA Alkaline batteries are located inside the top sensor housing. The battery will normally last for a minimum of two years. If the battery needs replacing the detector will signal a low battery to the alarm control unit.

The unique features of FM Detectors ensure:

- a) A constant 5v is maintained to the radio transmitter, ensuring consistent RF transmission power regardless of battery voltage.
- b) The detector will continue to work at 100% performance for two months after a low battery is indicated.



South Walk, Vantage Point Business Village, Mitcheldean, Gloucestershire,  
GL17 0DD Tel. 01594 827070 email. [sales@fmelectronics.co.uk](mailto:sales@fmelectronics.co.uk) [www.fmelectronics.co.uk](http://www.fmelectronics.co.uk)

FM Electronics is the Manufacturing division of **FM Security Ltd**