The lens arrays of Fresnel Technologies’ XX 0.25 GI VX series shown in the accompanying data sheets are intended to be used in passive infrared motion detector devices. They are optimized for dual-element pyroelectric detectors; the CM types are also optimized for quad-element pyroelectric detectors with this arrangement:

The other members of the series are also optimal for quad-element pyroelectric detectors of the type:

The flanged and -NF packages are suitable for both TO-5 (tall) and TO-39 (short) pyroelectric detector cans; they must be pushed onto the pyroelectric detector far enough for the face of the detector to seat on the surface indicated in Figures 2 and 4, and the spacers shown in Figures 2 and 4 are recommended to be placed between the pyroelectric detector and the circuit board. The -SMD package variant is intended for use with surface mounted pyroelectric detectors, which need no spacer; its mounting geometry is shown in Figures 5 and 6. Please be sure to note the position within the package of the surface mounted detector you are using, as different manufacturers place the elements differently relative to the package.

Figures 9 to 23 illustrate the beam patterns for the arrays. Each lens array’s beam pattern is dependent on the alignment of the 3 Roman numerals on the lens array to the pyroelectric detector’s tab or the corresponding orientation of the surface mounted pyroelectric detector, as shown in Figures 1, 3, 7, and 8. Each data sheet indicates our suggested mounting alignment for each different beam pattern.

The figures postulate a dual-element or quad-element detector with a 110° acceptance angle and a mounting height of 1 meter (3 feet) for the types designed AA (Animal Alley), 1.3 meters (4 feet) for the WS (Wall Switch) types, 1 or 1.3 meters for the VB (Vertical Barrier) types, and 2.5 meters (8 feet) for the CM (Ceiling Mount) types.

It is reasonable to expect CM detection of full body motion over a diameter of 8 meters (26 feet), small hand motion over a diameter of 6.5 meters (22 feet) from a mounting height of 3 meters (10 feet); a diameter of 11 meters (36 feet) for full body motion, and 5 meters (16 feet) for small hand motion from a mounting height of 5.2 meters (17 feet), using a quad-element pyroelectric detector.

Similarly, AWV3 can be expected to cover an aisle 15 meters (45 feet) long x 1.7 meters (5.5 feet) wide from a mounting height of 5.2 meters (17 feet), 15 meters (44 feet) long from a mounting height of 6.7 meters (22 feet), 11 meters (36 feet) long from a mounting height of 8 meters (26 feet), and 10 meters (32 feet) long from a mounting height of 10 meters (32 feet), with a good-quality dual-element pyroelectric detector.

VB V4 can be expected to cover up to a distance of 4.6 meters (15 feet) from the unit for full-body motion, 2.7 meters (9 feet) for small hand motion with a dual-element pyroelectric detector. WS V4 will cover an area 7 meters (23 feet) deep by 8 meters (26 feet) wide for full-body motion, 3.7 meters (12 feet) deep by 5 meters (16 feet) wide for small hand motion with a dual-element pyroelectric detector.
XX 0.25 GI VX
Mounting Geometry
(Spacers are required - see Figure 2)

Lens slots that fit onto a pyroelectric detector's tab are labeled I, II and III

Runner - next to symbol II

Slots labeled I, II and III

Ribs hold lens in place on pyroelectric detector can

Figure 1
XX 0.25 GI VX
TO-39 (short) and TO-05 (tall) Pyroelectric Mounting Geometry
XX 0.25 GI VX-NF
Mounting Geometry
(Spacers are required - see Figure 4)

Ribs hold lens in place on pyroelectric detector can

Identifying Marks Labeled 1, ll and lll

Slots
XX 0.25 GI VX-NF
TO-39 (short) and TO-05 (tall) Pyroelectric Mounting Geometry

SECTION A-A

TO-39 CAN

SECTION A-A

TO-5 CAN

Section A-A
XX 0.25 GI VX-SMD
Mounting Geometry

Sensitive elements are not in the center of the package on all Surface Mounted Detectors.

Crush ribs hold lens in place.
XX 0.25 GI VX-SMD
Mounting Geometry

TOP VIEW

SECTION A-A

Plane of the pyroelectric detector's sensitive elements
XX 0.25 GI VX-SMD
Mounting Geometry - Circuit Board

Orientation-1

8.6 mm diameter 0.1 mm offset from pins

Lens outline for reference only

1.2 mm wide (2x circuit board cutouts for pins)

9.9 mm diameter 0.1 mm offset from pins

Floor

Ceiling

Orientation-2

8.6 mm diameter 0.1 mm offset from pins

Lens outline for reference only

1.2 mm wide (2x circuit board cutouts for pins)

9.9 mm diameter offset 0.1 mm from pins

Floor

Ceiling
XX 0.25 GI VX-SMD
Mounting Geometry - Circuit Board

Orientation-3

8.6 mm diameter
0.1 mm offset
from pins

9.9 mm diameter
0.1 mm offset
from pins

1.2 mm wide
(2x circuit board cutouts for pins)

Lens outline for reference only

Orientation-4

8.6 mm diameter
0.1 mm offset
from pins

9.9 mm diameter
0.1 mm offset
from pins

1.2 mm wide
(2x circuit board cutouts for pins)

Lens outline for reference only
CM 0.25 GI V1

TOP VIEW:

CM 0.25 GI V1
With Flange

Lens Array detail

CM 0.25 GI V1-NF:
No Flange

Lens Array detail

CM 0.25 GI V1-SMD:
Surface Mounted Detector

Lens Array detail: See Figure 7, Orientation 1

SIDE VIEW:

Figure 9
CM 0.25 GI V2

TOP VIEW:

<table>
<thead>
<tr>
<th>4.5m</th>
<th>2.0m</th>
<th>0m</th>
<th>2.0m</th>
<th>4.5m</th>
</tr>
</thead>
<tbody>
<tr>
<td>(15ft)</td>
<td>(6.5ft)</td>
<td>(0ft)</td>
<td>(6.5ft)</td>
<td>(15ft)</td>
</tr>
</tbody>
</table>

CM 0.25 GI V2:
With Flange
Lens Array detail

CM 0.25 GI V2-NF:
No Flange
Lens Array detail

SIDE VIEW:

<table>
<thead>
<tr>
<th>2.4m</th>
<th>0m</th>
<th>2.4m</th>
</tr>
</thead>
<tbody>
<tr>
<td>(8ft)</td>
<td>(0ft)</td>
<td>(8ft)</td>
</tr>
</tbody>
</table>

CM 0.25 GI V2-SMD:
Surface Mounted Detector
Lens Array detail: See Figure 7, Orientation 1
CM 0.25 GI V3

TOP VIEW:

CM 0.25 GI V3:
With Flange

CM 0.25 GI V3-NF:
No Flange

CM 0.25 GI V3-SMD:
Surface Mounted Detector

Figures 11

Lens Array detail: See Figure 7, Orientation 1
CM 0.25 GI V4

TOP VIEW:

CM 0.25 GI V4:
With Flange

Lens Array detail

CM 0.25 GI V4-NF:
No Flange

Lens Array detail

CM 0.25 GI V4-SMD:
Surface Mounted Detector

Lens Array detail: See Figure 7, Orientation 1
CM 0.25 GI V5

TOP VIEW:

```
+-+---+---+---+---+---+---+
| C |   |   |   |   |   |   |
+-+---+---+---+---+---+---+
```

SIDE VIEW:

```
+-+---+---+---+---+---+---+
|       | 2.4m (8ft) |       |
| 0m (0ft) | 4.5m (15ft) | 0m (0ft) |
| 5.8m (19ft) | 2.25m (7.5ft) | 2.25m (7.5ft) |
+-+---+---+---+---+---+---+
```

CM 0.25 GI V5
With Flange

CM 0.25 GI V5-NF:
No Flange

CM 0.25 GI V5-SMD:
Surface Mounted Detector

Lens Array detail: See Figure 7, Orientation 1
**WS AA 0.25 GI V1**

For WS (wall switch) pattern, put pyroelectric detector's tab in slot I.

**TOP VIEW:**

**WS AA 0.25 GI V1:**
With Flange

Lens Array detail

**WS AA 0.25 GI V1-NF:**
No Flange

Lens Array detail

**WS AA 0.25 GI V1-SMD:**
Surface Mounted Detector

Lens Array detail: See Figure 7, Orientation 1

**SIDE VIEW:**

Figure 14
WS AA 0.25 GI V1
For AA (animal alley) pattern, put pyroelectric detector's tab in slot III.

TOP VIEW:

WS AA 0.25 GI V1:
With Flange
Lens Array detail

WS AA 0.25 GI V1-NF:
No Flange
Lens Array detail

WS AA 0.25 GI V1-SMD:
Surface Mounted Detector
Lens Array detail: See Figure 8, Orientation 3
**WS AA 0.25 GI V2**

For WS (wall switch) pattern, put pyroelectric detector's tab in slot III.

**TOP VIEW:**

WS AA 0.25 GI V2:
With Flange

Lens Array detail

WS AA 0.25 GI V2-NF:
No Flange

Lens Array detail

WS AA 0.25 GI V2-SMD:
Surface Mounted Detector

Lens Array detail: See Figure 7, Orientation 1

**SIDE VIEW:**

Lens Array detail: See Figure 7, Orientation 1
WS AA 0.25 GI V2

For AA (animal alley) pattern, put pyroelectric detector's tab in slot III.

TOP VIEW:

WS AA 0.25 GI V2:
With Flange

Lens Array detail

WS AA 0.25 GI V2-NF:
No Flange

Lens Array detail

WS AA 0.25 GI V2-SMD:
Surface Mounted Detector

Lens Array detail: See Figure 8, Orientation 3
**WS VB AW 0.25 GI V3**

For WS (wall switch) pattern, put pyroelectric detector's tab in slot I or III.

**TOP VIEW:**

- WS VB AW 0.25 GI V3:
  - With Flange
  - Lens Array detail

- WS VB AW 0.25 GI V3-NF:
  - No Flange
  - Lens Array detail

- WS VB AW 0.25 GI V3-SMD:
  - Surface Mounted Detector
  - Lens Array detail: See Figure 7, Orientation 1

**SIDE VIEW:**

- 1.2m (4ft) 18°
- 0m (0ft) 9.1m (30ft)
WS **VB** AW 0.25 GI V3
For VB (vertical barrier) pattern, put pyroelectric detector's tab in slot II.

**TOP VIEW:**

WS VB AW 0.25 GI V3:
With Flange

Lens Array detail

**SIDE VIEW:**

WS VB AW 0.25 GI V3-NF:
No Flange

Lens Array detail

WS VB AW 0.25 GI V3-SMD:
Surface Mounted Detector

Lens Array detail: See Figure 7, Orientation 2
WS VB AW 0.25 GI V3

For AW (aisleway) pattern, put pyroelectric detector's tab in slot I or III.

WS VB AW 0.25 GI V3:
With Flange

Lens Array detail

WS VB AW 0.25 GI V3-NF:
No Flange

Lens Array detail

WS VB AW 0.25 GI V3-SMD:
Surface Mounted Detector

Lens Array detail: See Figure 8, Orientation 4

Figure 20
**WS VB AW 0.25 GI V4**

For WS (wall switch) pattern, put pyroelectric detector's tab in slot I or III.

**TOP VIEW:**

![Diagram of WS VB AW 0.25 GI V4: With Flange]

**WS VB AW 0.25 GI V4:**
With Flange

Lens Array detail

![Diagram of WS VB AW 0.25 GI V4-NF: No Flange]

**WS VB AW 0.25 GI V4-NF:**
No Flange

Lens Array detail

![Diagram of WS VB AW 0.25 GI V4-SMD: Surface Mounted Detector]

**WS VB AW 0.25 GI V4-SMD:**
Surface Mounted Detector

Lens Array detail: See Figure 7, Orientation 1

**SIDE VIEW:**
**TOP VIEW:**

**WS VB AW 0.25 GI V4:**

With Flange

With Flange

Lens Array detail

**SIDE VIEW:**

**WS VB AW 0.25 GI V4-NF:**

No Flange

No Flange

Lens Array detail

**WS VB AW 0.25 GI V4-SMD:**

Surface Mounted Detector

Surface Mounted Detector

Lens Array detail: See Figure 7, Orientation 2

For VB (vertical barrier) pattern, put pyroelectric detector's tab in slot II.
WS VB AW 0.25 GI V4
For AW (aisleway) pattern, put pyroelectric detector's tab in slot I or III.

WS VB AW 0.25 GI V4:
With Flange

WS VB AW 0.25 GI V4-NF:
No Flange

WS VB AW 0.25 GI V4-SMD:
Surface Mounted Detector

Lens Array detail: See Figure 8, Orientation 4