## GENERAL INFORMATION

| | |
|---|---|
| Customer | - |
| Customer reference | - |
| Sivisti reference | PIR Lensmeter example report #7 |
| Device description | Panasonic EKMC1604112, VZ series, Wall installation type |
| Pyroelectric sensor | Panasonic (marking 016/210127) |
| Lens | Panasonic (marking PaPIRs J106) |
| Lens Dimensions | 20.2 x 22.0 mm |
| Distance sensor-lens | As supplied (pyro-electric sensor with attached lens) |
| Measurement date | 2021-11-15 |
| Comments | This pyro-electric sensor has four sensitive areas and a digital output. The electronic circuit inside the sensor was bypassed to make the beam pattern measurement possible. |

*Photo of sample:*


## MEASUREMENT DETAILS

| | |
|---|---|
| Measurement type | Normalized front side hemisphere measurement |
| Level of Detail | 8 (resolution 0.59°, 82241 measurement points) |
| Signal output(s) | 1 (single digital output) |
| PIR supply voltage | +5.0 V |
| PIR output load resistor | N/A |
| Idle output voltage | N/A |

## CUSTOMER CHOICE OF FILES IN THIS REPORT (.PDF)

| | | color scale | | | | |
|---|---|---|---|---|---|---|
| | | *hot steel* | *brewer* | *cube helix* | *bipolar* | *monochrome* |
| *x* | 2D Front View (azimuthal equidistant projection) | | *x* | | *x* | |
| | 3D Hemisphere plot - interactive* | | | | | |
| | 3D Beam Pattern - interactive* | | | | | |
| *x* | 3D Beam Pattern standard views (not interactive) | *x* | | | | |
| *x* | Cross sections at distance(s) | *20% of maximum* | | | | |

** = 3D interactive models when opened in Adobe PDF Reader*

## CUSTOMER CHOICE OF FILES

| | | color scale | | | | |
|---|---|---|---|---|---|---|
| | | *hot steel* | *brewer* | *cube helix* | *bipolar* | *monochrome* |
| *x* | 2D Front view / azimuthal equidistant projection (.png) | | *x* | | *x* | |
| *x* | 3D Hemisphere plot (.obj + .mtl + .bmp)** | | *x* | | | |
| *x* | 3D Beam Pattern (.obj + .mtl + .bmp)** | *x* | | | *x* | |
| *x* | Cross sections as defined above in drawing exchange format (.dxf) | | | | | |
| *x* | Cross sections as defined above in scalable vector graphics format (.svg) | | | | | |
| *x* | 3D Beam Pattern CAD File in stereolithography/standard tessellation language format (.stl)** - note: this file has no colours | | | | | |
| *x* | Tab separated data file (.csv) | | | | | |

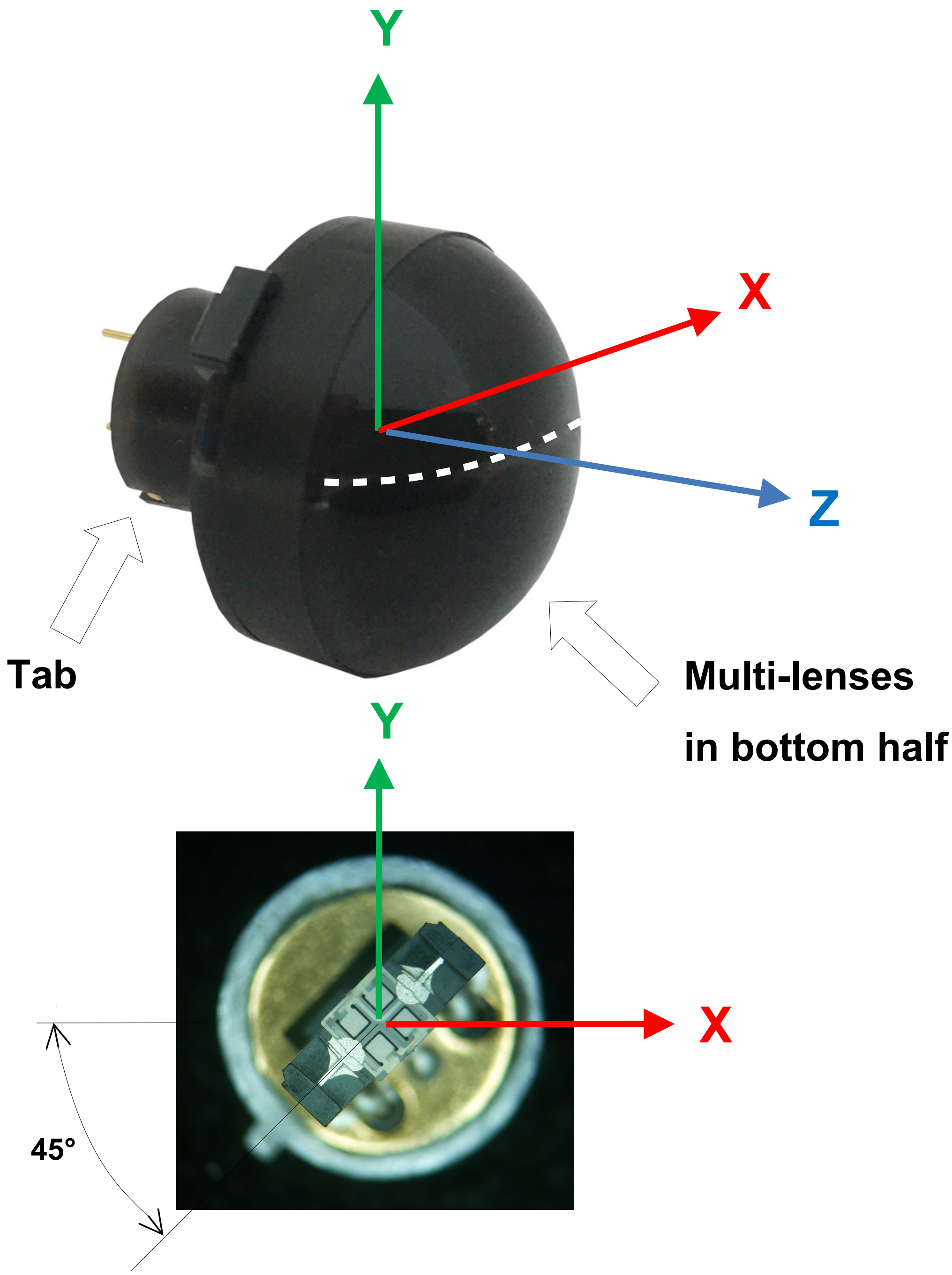
*** = these 3D models can be opened in many available viewers, for example in Meshlab (www.meshlab.net)*

**Standard color scales**

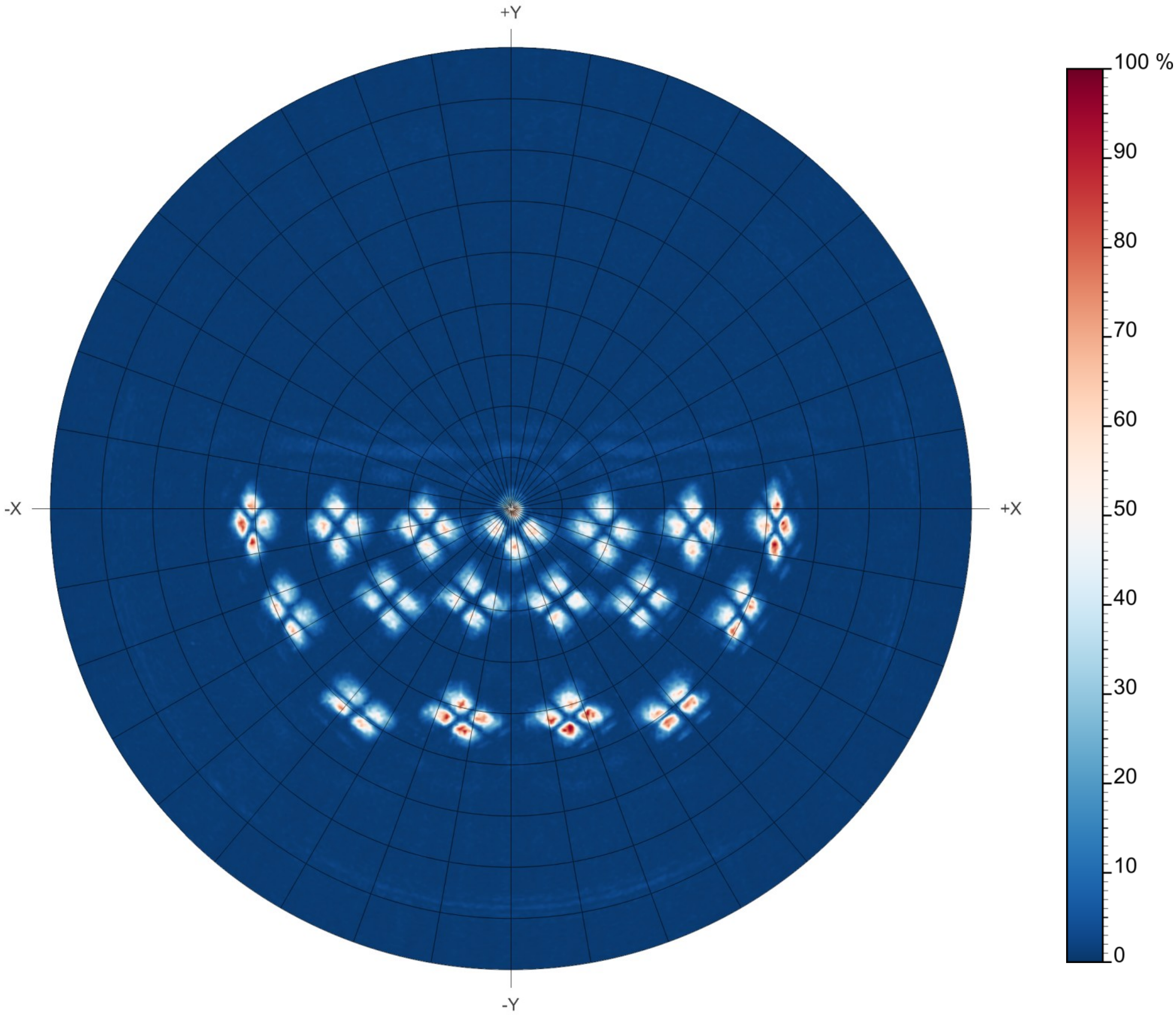
Hot Steel | Brewer | Cube Helix | Bipolar | Monochrome

## Measurement orientation of the device

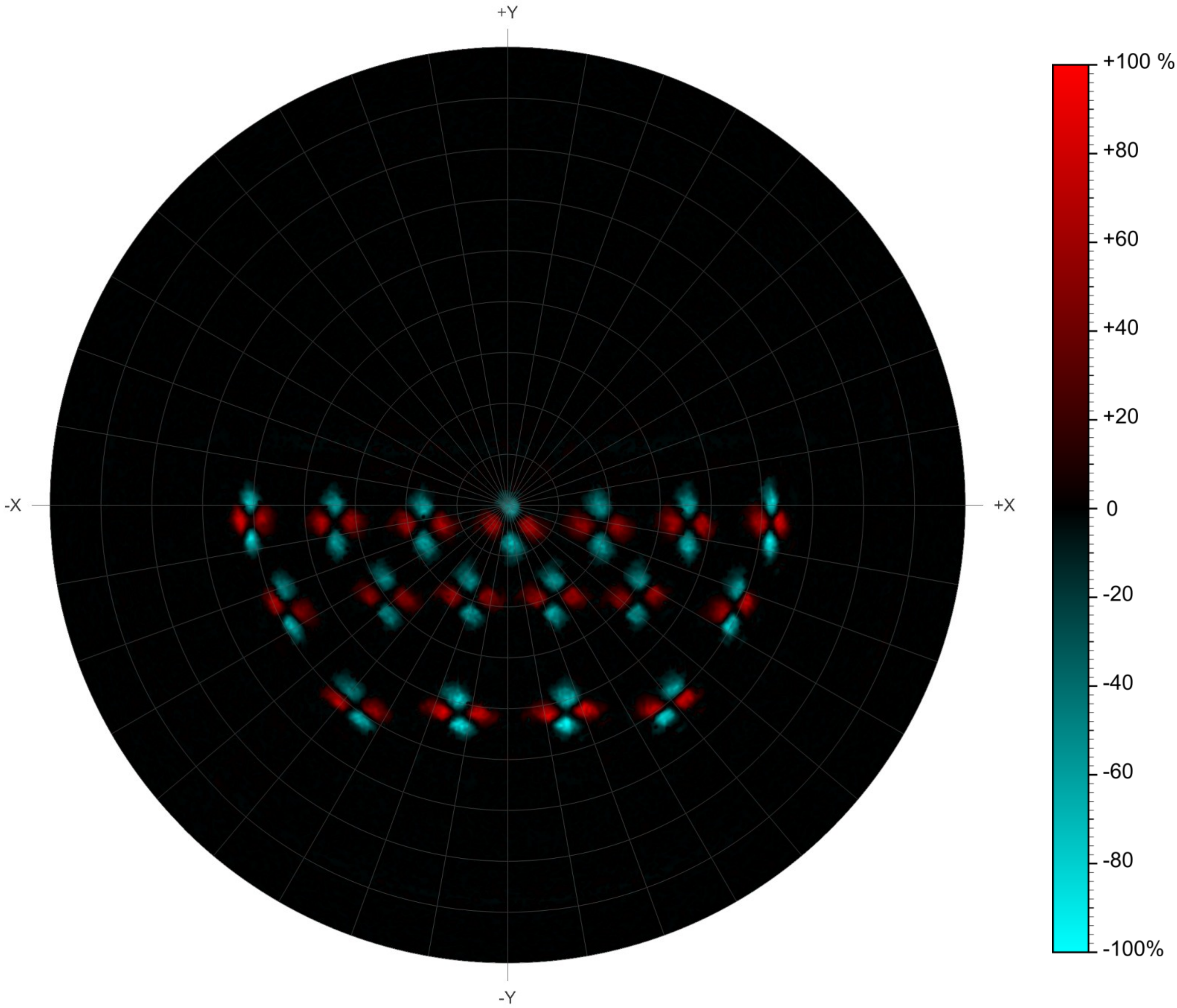
*The origin of the three-dimensional Cartesian coordinate system is in the center of the PIR sensor pyroelectric element. The Z-axis is pointing outwards from the device.*

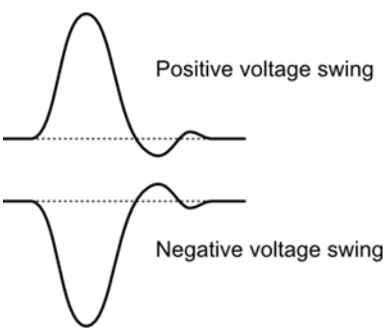


## 2D Front View (azimuthal equidistant projection)



## 2D Front View (azimuthal equidistant projection)

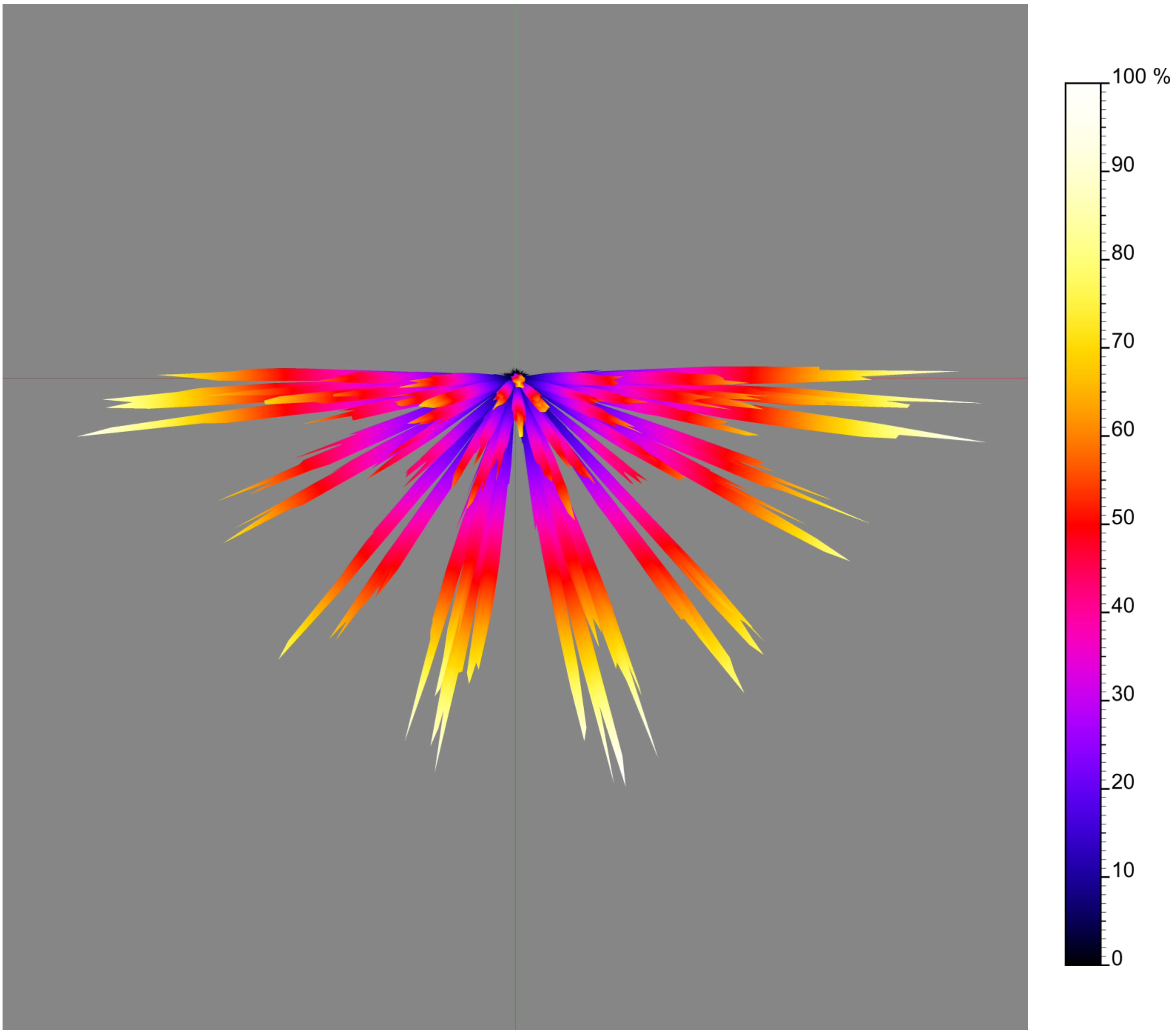


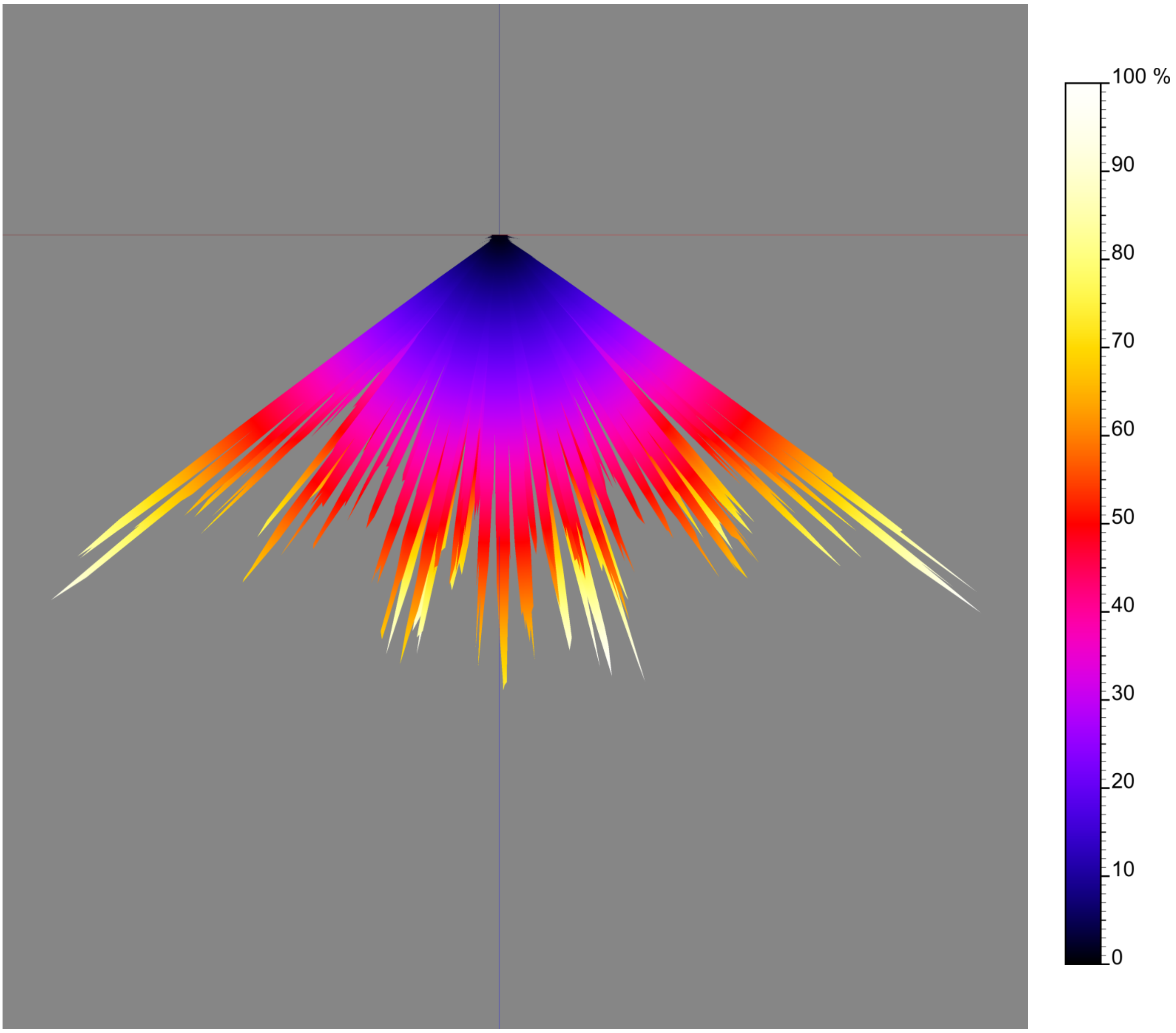

*This image shows the projection of the four active areas in the series opposed type (double dual element type) pyroelectric sensor.*

*The colors show the direction of the first (and largest) PIR output voltage change as response to the appearance of a hot object. Red corresponds to a PIR sensor output voltage rise and blue corresponds to a voltage drop.*

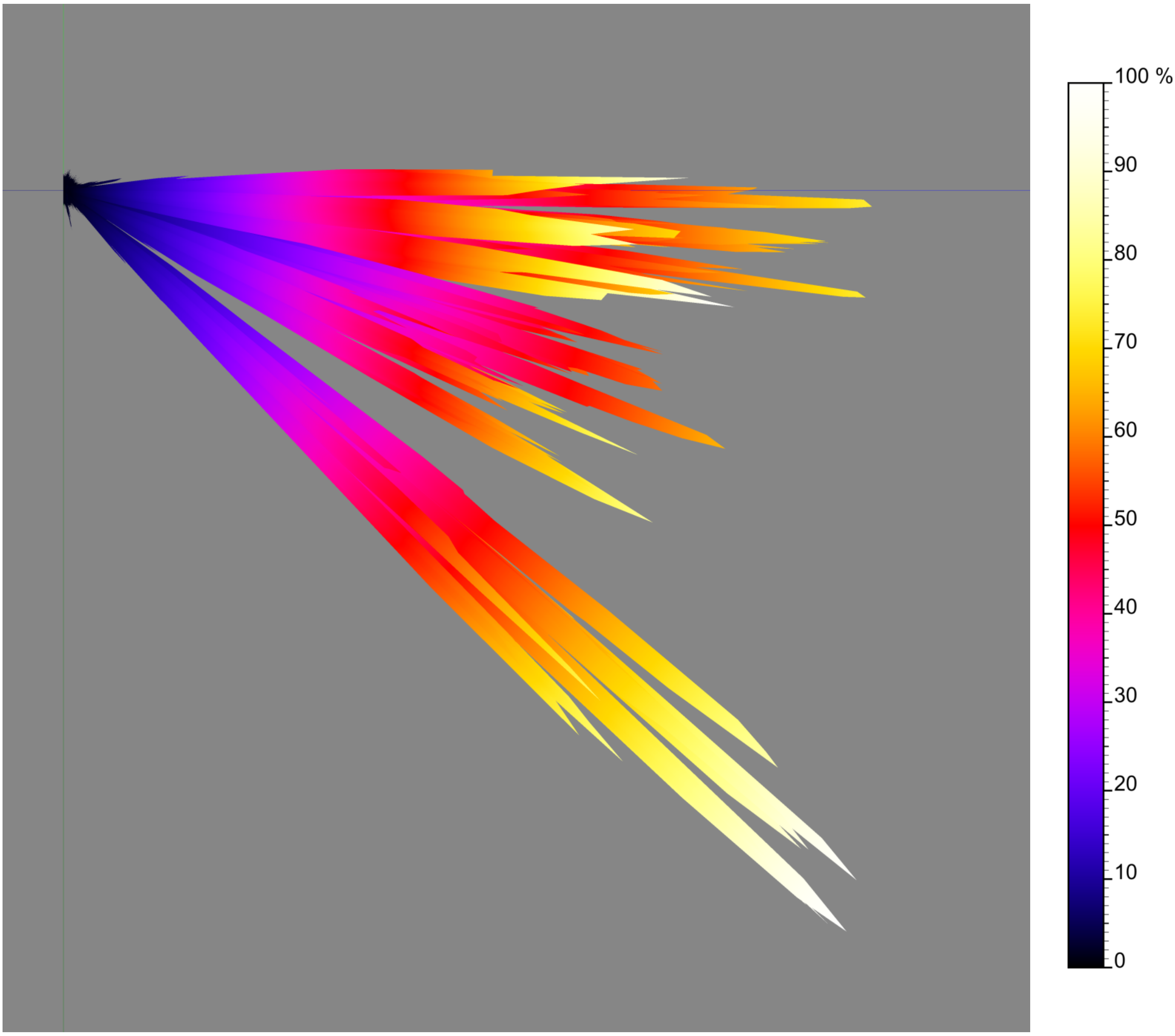
## 3D Beam Pattern (front view)



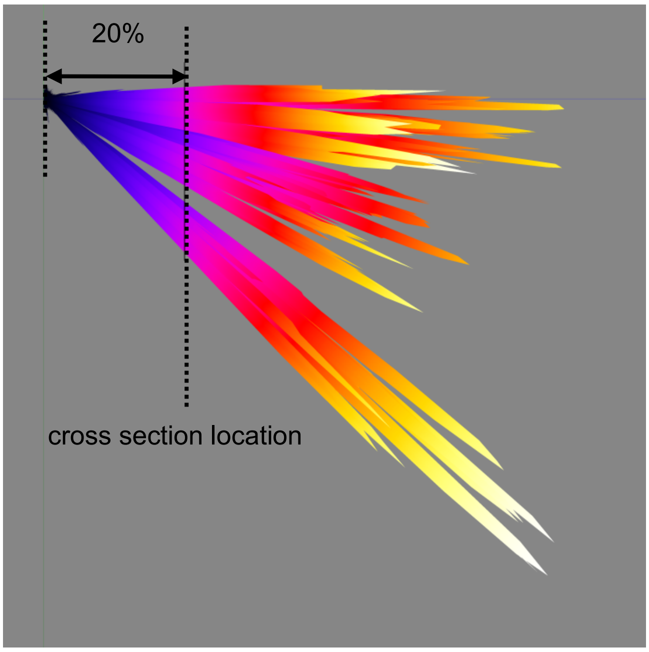
## 3D Beam Pattern (top view)



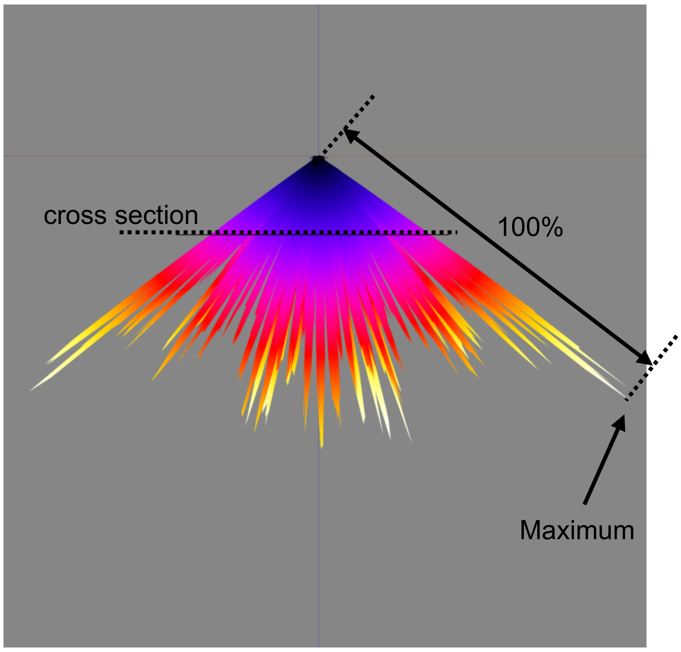
## 3D Beam Pattern (left side view)



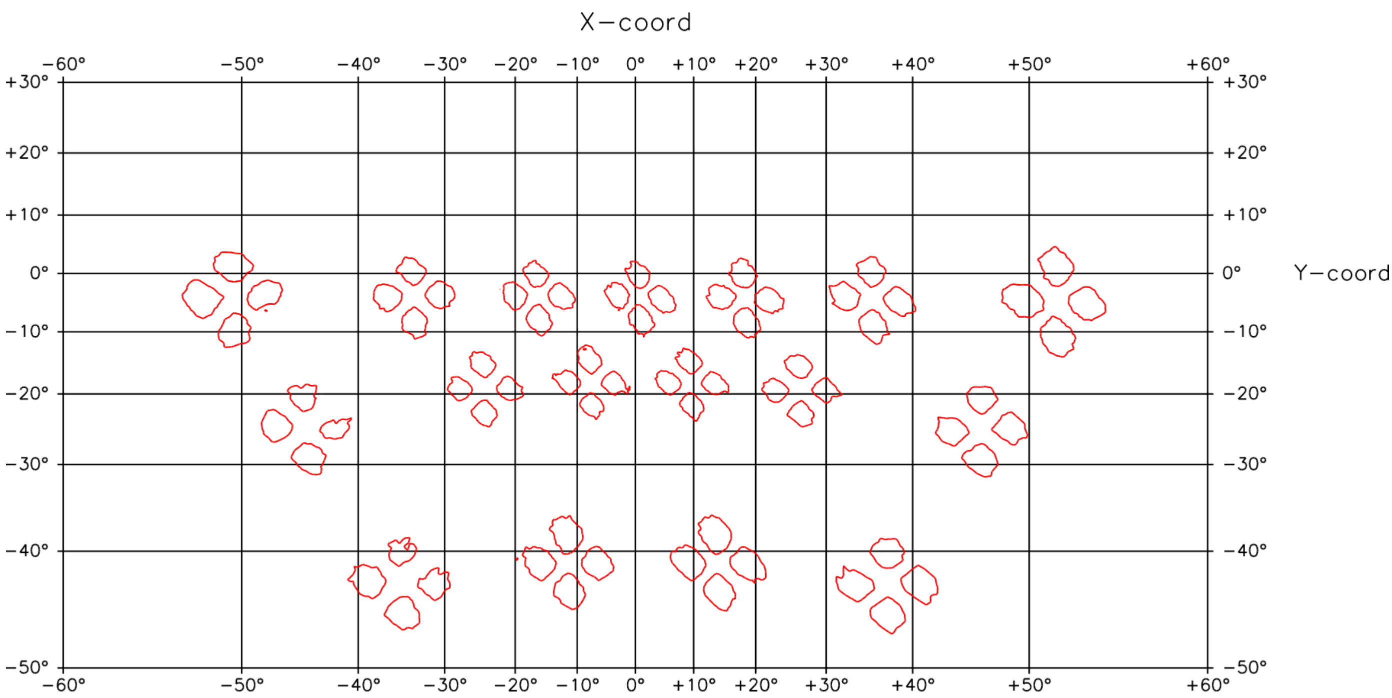
## Cross Section for Z = 20% (20% of maximum beam length)




*Left view*




*Top view*



## About the datafile

The datafile for this measurement contains the result values in spherical coordinates ρ, Θ and φ for every measured angle.

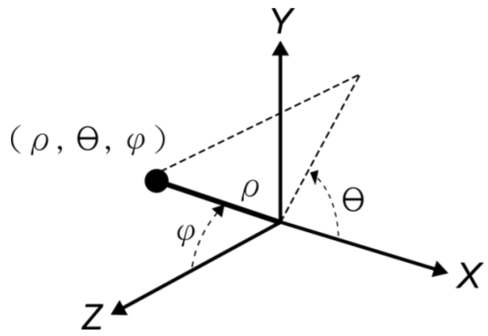
The following definition is used for the spherical coordinates:

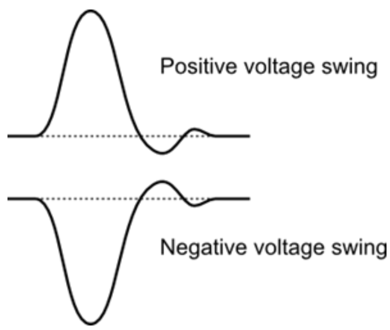
- response ρ (rho)
- XY-plane angle Θ (theta)
- angle from Z-axis φ (phi)

Where ρ is the normalized relative response value [0..1] for 0 to100% response for the given angle Θ, φ.

The value of ρ is negative when the primary output voltage swing of the PIR output is negative as response to the appearance of a hot object.

The value of ρ is positive for a positive primary voltage swing.




# DISCLAIMER:

The Sivisti passive infrared motion detector characterization involves the measurement of the response of a pyroelectric sensor to long-wave infrared radiation from a warm object. It will give you normalized relative response value of one spatial angle compared to another under laboratory conditions.

The measurement data is only meant as an aid in optimizing your detector, detector parts, detector materials, electronics and software and to allow you to verify the properties of your materials. Because we do not include your signal processing electronics or data processing, the actual detection properties of your device cannot be taken from our data alone. The measurement result does NOT warrant an exact detection range or detection certainty. You will always need to perform such tests yourself to determine your device's range and other properties.

Environment, object speed, object size, object shape, object temperature, object radiation properties, number of objects, light levels, electrical noise, vibration, RFI, electronic circuit design, electronic circuit quality, internal heat generation, material quality, signal processing and (digital) filtering all influence the detection of properties of a pyroelectric passive infrared motion detector. Because of this enormous range of influences, Sivisti cannot guarantee the detection range or the detection capabilities of your or of any other detector. We do not accept any responsibility for lack of detection or for false detections.

We will not be responsible or liable, directly or indirectly, for any damages or financial losses caused by the use of our measurement data.