

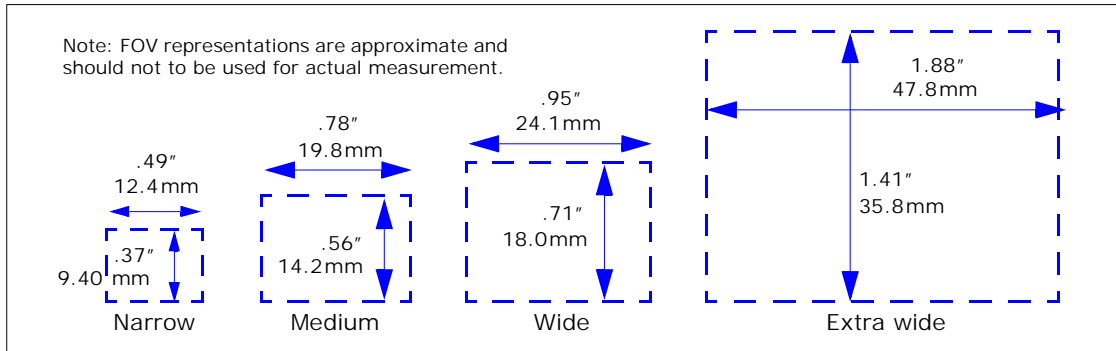
# About FOVs and Lens Types

There are four lens options for the Quadrus EZ: **Narrow, Medium, Wide, and Extra Wide.**

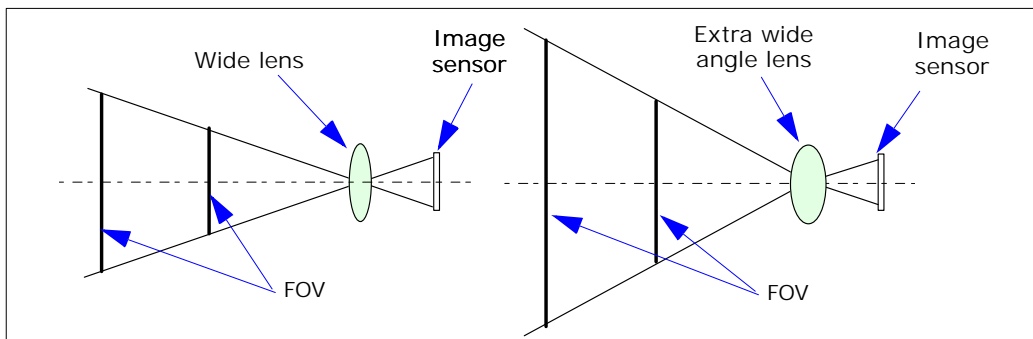
## FOV (Field of view)

The primary difference in lens types is the field of view (FOV), the image size as viewed by the reader.<sup>1</sup>

The FOVs for the four lens types are shown here at a distance of **four** inches from the reader. Note that the 3 to 4 aspect ratio is the same for all.

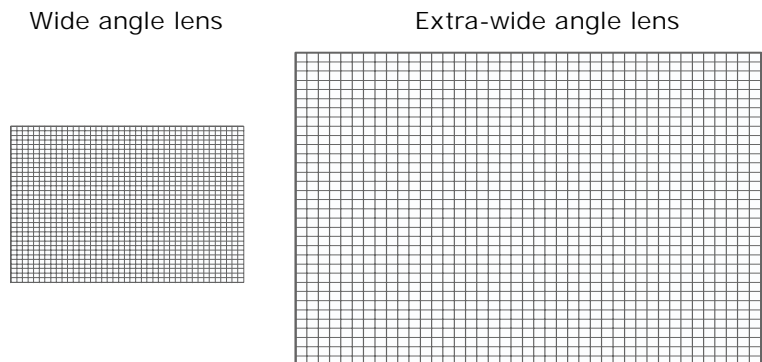


Representations of two lens type views are shown in the drawing below. Notice that while FOVs vary considerably by lens type and focal distance (the distance from the front of the reader—also called “object distance”), the image sensor sizes are fixed. This is the case with the both the CMOS and CCD which use the same sensor size for all lens types.



## Pixels and Resolution

Wider lenses mean a wider FOV, but lower resolutions. This is because the number of pixels on the image sensor, whether CCD or CMOS, is the same for all lens types. So if you increase the FOV—by going to a larger lens type or a longer focal distance—the resolution (the number of pixels available for a given area) diminishes. In the representations to the right, the extra-wide lens has the same number of pixels available as the wide angle at similar distances, but since the wide angle’s FOV is about half that of the extra-wide’s FOV, its resolution is therefore double.



This can be stated in two rules:

1. At any given focal distance, the smaller the lens type, the higher the resolution, and
2. For any given lens type, the shorter the focal distance, the higher the resolution.

1. **Note:** By convention, whenever a single measurement is given as the FOV, this refers to the longer X dimension.