

Imager Formats

The pixel format of an imager defines the number of pixels in the x- and y- dimensions of the sensor array. For a fixed field of view, increasing the number of pixels in the x-direction will allow the user to differentiate finer detail along the image horizontal axis, while increasing the y- pixel count gives increased detail vertically. A simple example of imager format is given below.

Consider the case where you have walked into a barnyard setting and you wish to capture an image. If you had only a single pixel device (a photodiode), you would probably capture a picture similar to that shown in Figure 1. This image shows essentially no spatial detail, but gives an average measure of the light in the scene of interest.



Figure 1. Single pixel "image" of barnyard scene.

Now, consider the same image but this time you have invested in a slightly better camera containing a 4 x 4 array of pixels. This image is shown in Figure 2. In this figure, you can begin to see that there is probably something of interest in the center of the image which is slightly darker than the surroundings. The image is more useful than Figure 1, but still lacks sufficient detail to tell what the picture is.

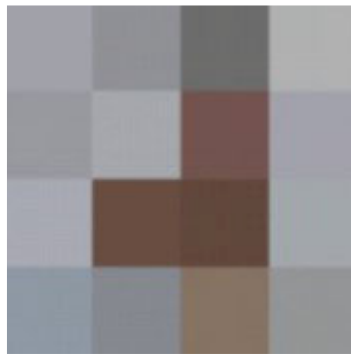


Figure 2. 4 x 4 array where each of the pixels is visible.

If we continue to increase the imager format to 16 x 16,, 64 x 64 and finally 512 x 512 the spatial detail is gradually increased until the full beauty of the barnyard scene is available. This is shown in Figure 3.



Figure 3. Barnyard scene at 16x16, 64x64 and 512x512 image formats.

Note that as the pixel count increases, the amount of spatial detail in the image also increases. Imager formats ranging from 64x64 to 9,000x9,000 are used in high-performance imaging applications.