

Beam Profile Finder Program

Instructions and Notes

Finding the proper beam profiling components to meet your measurement needs has never been easier. With our Beam Profile Finder program, just enter your laser parameters and the proper beam profilers and accessories for your application will be displayed on the screen. The program calculates the power and energy density capabilities of each device as well as beam size capability based on the laser wavelength, pulse length, repetition rate, beam size and other relevant parameters. It also compares all the other requirements such as maximum and minimum power, energy, etc. In addition to finding the right combination of profiler and accessories for your application, the Beam Profiler Finder Program can send out a report.

Order of Selection

The profilers and accessories are selected in terms of cost effectiveness and ease of use, i.e. silicon cameras are selected first and then Nanoscan, then more sophisticated and expensive profilers. Sometimes a more sophisticated profiler will be selected if it needs fewer accessories.

Aperture

Since it is not practical to allow the beam to fill the entire aperture, the profilers and accessories are selected so that the size of the beam is reasonably smaller than the aperture of the device it is passing through. For a circular flat top beam, the aperture must be at least 3mm or 10% larger than the beam whichever is smaller. If the beam is rectangular its corners can touch the aperture. For a Gaussian beam, the aperture must be at least 1.5 times the $1/e^2$ beam diameter to insure that 99% of the beam is inside the aperture.

Using the Beam Profile Finder Program

Sensor Finder Input Screen

1. Go to Step 1 and select the laser type [CW or pulsed], the beam type [Gaussian or flat top] and whether the beam is parallel, converging or diverging. A beam with slight divergence is considered parallel and beam convergence is marked "No". Divergent is for widely divergent beams such as VECSELS, LED sources, IPL sources etc.

2. In Step 2, enter the required laser parameters: beam diameter, wavelength, max/min power or max/min energy, rep rate and pulse width. If minimum power or energy is not entered, then the program assumes the minimum is $\frac{1}{2}$ the maximum.

If your beam is converging, you will see two additional boxes to fill:

"Distance From Lens to Focal Spot mm" and "Focal Spot Diameter um". The beam diameter required will then be the "Diameter at focusing lens (mm)". Enter the beam diameter at the focusing lens and the estimated focal spot diameter **in micrometers**. If the focusing lens is not accessible, then enter the distance from the closest approach to the lens to the focal spot and the beam diameter at the point of closest approach.

Results

After inputting the above information, the beam profile finder will show the power and energy density of your beam.

3. In Step 3 click "Find Beam Profiler Solution".

The combinations of profilers and accessories that meet specified criteria will be listed in the output screen, the profiler type under "Model" and the required accessories under "Accessories Needed". The input parameters will be listed on top.

Click on each profiler or accessory to link to the relevant specification of that device.

The results can also be sent to a chosen email if desired.