# Sensor Finder Program - Instructions and Notes

Finding the proper sensor(s) to meet your measurement needs has never been easier. With our sensor finder program just enter your laser parameters and the proper measuring sensors for your application will be displayed on the screen. The program calculates the power and energy density capabilities of each absorber, based on the laser wavelength, pulse length, repetition rate and other relevant parameters. It also compares all the other requirements such as maximum and minimum power, energy, beam size, etc. In addition to finding the right sensor for your application, the Sensor Finder Program offers the following features:

- Report printing.
- How close the recommended sensors are to the specified damage threshold.

## Order of Selection

The sensors are selected in terms of cost effectiveness and ease of use, i.e. photodiode sensors and thermopiles are selected first and then pyroelectric sensors. If you want to measure only power, pyro sensors will not be selected even if they could operate within all other given laser parameters.

## Aperture

Since it is not practical to allow the beam to fill the entire aperture, the sensors are selected so that the sensor aperture is reasonably larger than the beam. 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 Sensor Finder Program

Sensor Finder Input Screen
1. Go to Step 1 and select the laser type [CW or pulsed], the beam type [circular or
rectangular] and whether you wish to measure both power and energy or just laser power.
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 is not entered, then the program assumes the minimum is ½ the maximum. If desired, enter these optional criteria: exposure time – the maximum time the sensor measures at a time. If you only plan to measure the laser power for short periods at a time, Ophir offers more compact sensors for intermittent use and these will be shown if you show a sufficiently short use time for the sensor.
Sensor size – only sensors smaller than the specified dimensions will be selected. After inputting the above information, the sensor finder will show the power and energy density of your beam.
3. In Step 3 click "Find Sensor".
4. The sensors that meet specified criteria will be listed in the output screen shown below. The sensor type will be shown and how close each sensor is to the damage. The input parameters will be listed on top.
5. In order to find compatible displays or PC interfaces, click "Meter Finder".
6. To save the results, click "Save". To print the results, click "Print".

Sensor Finder Output Screen

## Damage Threshold

Some sensors are closer to the laser damage threshold than others. Since the damage threshold can vary somewhat from case to case and also is cumulative, the Sensor Finder Program mentions how close a particular sensor is to the damage threshold. The displayed percent of damage threshold is the highest of either the power or the energy threshold. It is recommended to select a sensor that is less than 50% of the damage threshold if possible.

## Power/Energy Meters

In order to find power/energy meters or PC interfaces that are compatible with various sensors, click "Meter Finder" on the left hand side of the page. Note that some of the sensors are not compatible with all meters or PC interfaces and in that case there will be a note to that effect at the bottom of the list of sensors.