Industrial Laser Monitoring System (ILMS)

The ILMS is designed for profiling focused, high-power industrial lasers. This system combines reimaging/magnification optics, a polarization preserving beam sampler, and a DataRay beam profiler to measure small beam waists which would otherwise damage a traditional profiling system. Magnification of the focused beam allows full pixel-by-pixel 2D measurements of beam spots as small as a few microns.

The ILMS is compatible with most DataRay profilers and supported by the full-featured, highly customizable, and user-centric software (included without licensing fees). The software automatically accounts for the magnification of the system, so results do not require post processing or corrections.

System Features

- UV, Visible, NIR, MWIR, SWIR, eSWIR and FIR options
- High magnification options available (50X and beyond)
- High power beams (handling up to kWs)
- Three swappable filters for flexible, fine attenuation
- Profiler easily removed from system for stand-alone use
- Optional calibrated pinhole apertures
- Integrated power meter and beam dumps available
- Profiling beam waist diameters down to a few µm

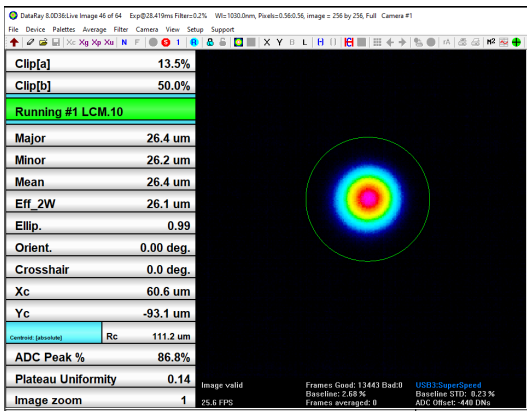
Applications

- Tightly focused beams, fiber ends, edge couplers, laser diodes, and more
- High power laser cutting systems
- Additive manufacturing
- Quality control

Application Examples – Additive and Subtractive Manufacturing

F-theta lenses are useful in additive and subtractive manufacturing for their ability to focus high-power beams over a range of XY locations at the focal plane. It is often useful to observe detailed 2D profiles of these focused beams.

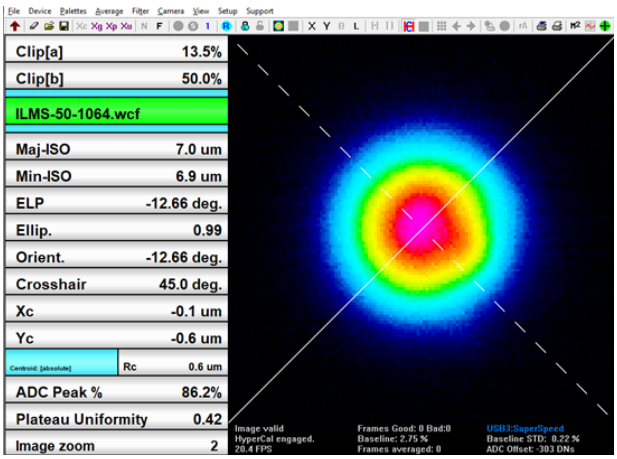
Example: A 160-mm focal length F-theta lens focuses a 3.5-mm diameter collimated 343-nm laser to a minimum beam waist diameter of roughly 26 µm. The pixel size of traditional profiling cameras makes it challenging to accurately profile a waist this small. However, since the ILMS-5-UV utilizes magnification optics, full 2D profiles of tightly focused beams are possible, allowing you to diagnose hard-to-find issues such as hot spots or unexpected beam ellipticity.



Application Examples – Inaccessible Beam Waists

In many applications a beam waist is not accessible for measurements. Examples include the output facet of VCSELs, the end of optical fibers, or short working distance focusing optics. The ILMS easily reimages inaccessible beam waists making it possible to tackle these difficult applications.

Example: We need to profile the end of a 7-µm core diameter, single mode fiber being used with a 1064-nm fiber-coupled source. The optics in our ILMS-50-1064 magnify the fiber end onto a WinCamD-LCM. It is challenging to position a traditional profiler close enough to the fiber for near-field profiling.



Standard Configurations

Custom options available upon request, contact sales@dataray.com.

Model	Magnification	AR Coating Wavelength	Input NA	System Dimensions	Typical Spot Size (1/e²)
ILMS-5-UV	5x	250-425 nm	0.17	70.00 x 133.25 x 176.30 mm	11 µm
ILMS-5-VIS	5x	425-675 nm	0.17	70.00 x 133.25 x 176.30 mm	11 µm
ILMS-5-NIR	5x	750-1550 nm	0.17	70.00 x 133.25 x 176.30 mm	11 µm
ILMS-10-UV	10x	250-425 nm	0.17	70.00 x 133.25 x 252.50 mm	5.5 µm
ILMS-10-VIS	10x	425-675 nm	0.17	70.00 x 133.25 x 252.50 mm	5.5 µm
ILMS-10-NIR	10x	750-1550 nm	0.17	70.00 x 133.25 x 252.50 mm	9 µm
ILMS-50-532	50x	495-570 nm	0.6	70.00 x 133.25 x 328.70 mm	2 µm
ILMS-50-1064	50x	980-1130 nm	0.65	70.00 x 133.25 x 328.70 mm	3 µm