

CAVILUX[®] HF

Laser light for high-speed imaging



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CAVITAR



CAVILUX® HF

- Boost for high-speed imaging

CAVILUX HF is a powerful high-frequency pulsed diode laser light source designed for high-speed applications. It is a state-of-the-art tool for boosting the performance of your high-speed camera system even further! With CAVILUX HF you can open remarkable new possibilities for high-speed imaging.

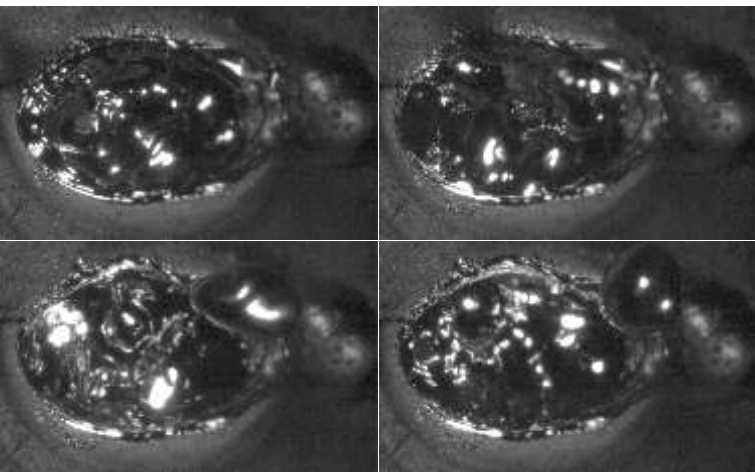
CAVILUX HF is a versatile tool for high-speed and even ultra-high-speed visualization in scientific and industrial R&D. Due to its ability to see through heat and blinding brightness, it is especially suitable for studying high-temperature processes, such as welding and soldering. Also processes involving small and/or fast objects can utilize CAVILUX HF. Such applications include materials testing, ballistics and PIV.

One of the main benefits of CAVILUX HF is its ability to generate pulses or light pulse patterns at high or ultra-high speed. Individual pulses can be repeated up to a rate of 200 kHz. Patterns of five pulses can be generated at up to 40 kHz, while pulse rate inside a pulse pattern can be as high as 5 MHz. Being monochromatic and low in coherence, the output light ensures the best possible image quality. Furthermore, high flexibility is provided by changeable illumination optics that enable successful setups even in limited space and over long working distances.

CAVILUX HF is compatible with a wide range of high-speed cameras. Please contact Cavitar for more information.



Spray generation



Molten metal droplet ejection in laser welding



Thermal coating – particle generation in wire arc coating

Welcome to the
invisible world

CAVILUX® HF

Laser light for high-speed imaging

CAVILUX HF consists of a control unit, laser unit(s), control software and illumination optics.

Laser unit(s)

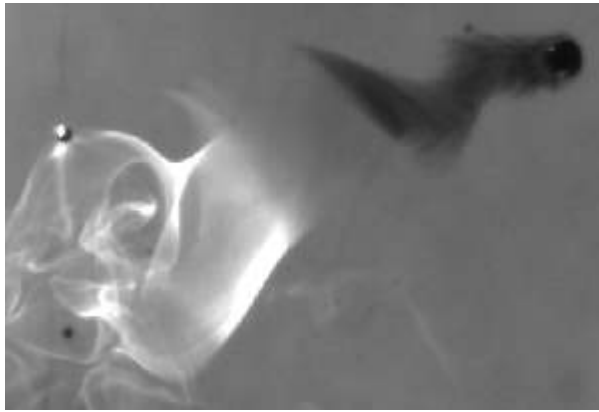
- Output power 500 W in a typical configuration
- wavelength 810 nm (near-IR)
- monochromatic and incoherent light, ideal for high-quality images (no speckle or chromatic aberrations)
- one control unit can drive 1 ... 4 laser units (including CAVILUX Smart and LP units) and synchronize 1 ... 4 cameras

Generation of any pulse pattern within the limits of

- pulse duration 100 ns ... 10 μ s
- duty cycle 2 % for max 10 s
- generation of single pulses or pulse patterns (max 5 pulses / pulse pattern) at high repetition rate
- practical repetition rate up to a few hundred kilohertz
- stand-alone operation

Fiberoptic illumination

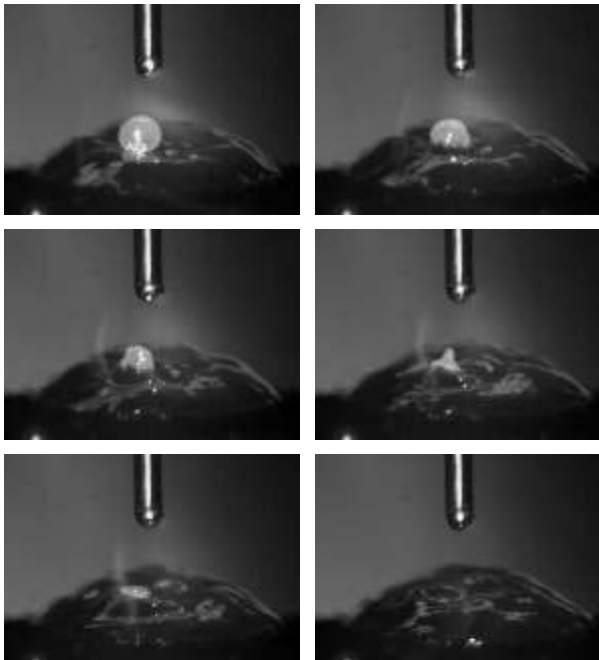
- direct illumination from fiber optics (e.g. Schlieren imaging)
- adjustable illumination with lens (standard solution)
- uniform back illumination (e.g. Shadow imaging)
- line profile illumination (e.g. PIV) coaxial illumination
- (e.g. pressurized processes)



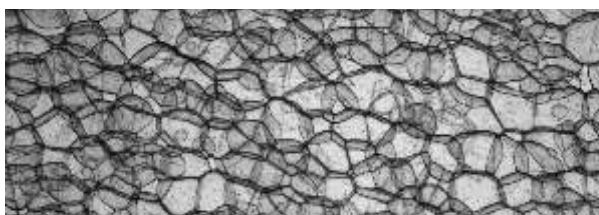
Hybrid welding – detail of flying droplet and its vapor cloud



Exploding black currant berry – back illuminated



MAG welding



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