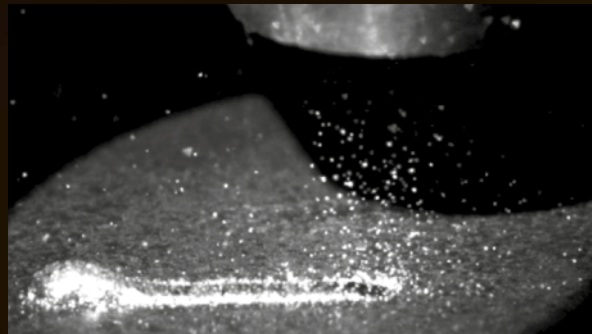
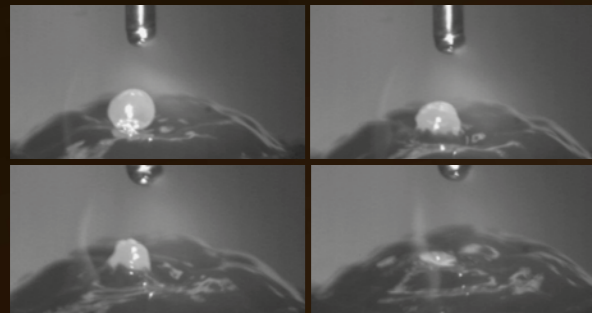




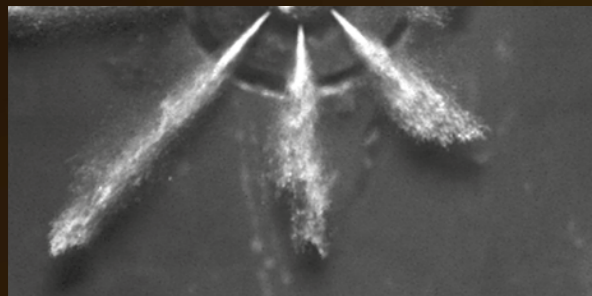
Schlieren imaging of arc welding – With front-illumination



Additive manufacturing – Laser welding



MAG welding



Fuel injection

## Laser light for high-speed imaging

**Boost your imaging** and monitoring system with high intensity laser light.

**See through heat and blinding brightness** straight to the core of your process.

**Freeze the motion** even in the most demanding applications.

**High quality imaging** in high-speed and even in ultra-high-speed.

**Versatile** light source for various applications.

**Variability** through fiber coupling and pulse generation.



**Want to see what you have missed?**  
Cavitar Ltd. is an expert in illumination lasers based on diode laser technology. We offer versatile products, systems and solutions for end-users of R&D applications and integrators of industrial monitoring systems.

[www.cavitar.com](http://www.cavitar.com)

**CAVILUX<sup>®</sup> HF**  
Laser light for high-speed imaging

See what you  
have missed



# CAVILUX® HF System

## Boost for high-speed imaging

- › Powerful high-frequency pulsed diode laser light source for visualization of demanding applications
- › For high-temperature processes – see through heat and blinding brightness
- › Accurate imaging of processes involving even extremely small and/or fast objects
- › Ability to generate pulses at high speed
- › Versatility by varying pulse duration and repetition rate
- › Shortness of pulses eliminates motion blur – better and more accurate images for analyzing
- › Possibility to generate up to five pulses per one camera exposure
- › Monochromatic and low-coherence light ensures the best possible image quality – without chromatic aberrations or speckle
- › High flexibility through changeable illumination optics that enable setups even in limited space and with long working distances



## For visualization of various applications:

- › Welding
- › Additive manufacturing
- › Ballistics and explosions
- › Materials testing
- › Flows, droplets, sprays and jets

Pulse duration / frequency		
Pulse duration	Normal mode (1)	High-speed mode (2)
<b>* 50 ns</b>	6.000 Hz	400.000 Hz
<b>100 ns</b>	3.000 Hz	200.000 Hz
<b>500 ns</b>	600 Hz	40.000 Hz
<b>1 µs</b>	300 Hz	20.000 Hz
<b>10 µs</b>	30 Hz	2.000 Hz
With long pulse (LP) extension (only for 810 nm)		
<b>200 µs</b>	1,5 Hz	100 Hz

\*with reduced output power • (1) duty cycle 0,03 ‰ without time limit • (2) duty cycle 1 ‰ for 2 % for 10 s.

# CAVILUX® HF System

## Features

CAVILUX HF System	
Consists of a control unit, laser unit(s), control software and illumination optics	
One control unit can drive 1...4 laser units (including CAVILUX Smart) and synchronize 1...4 cameras	
Can receive or provide 5 V TTL signal for camera synchronization	
Laser unit(s)	
Wavelength options 640 nm (visible) and 810 nm (invisible)	
Output power options for <ul style="list-style-type: none"> <li>› 640 nm: 280 W</li> <li>› 810 nm: 500 W</li> </ul>	
Laser class 4	
Green laser pointer for easier alignment	
Variability through generation of pulses and pulse patterns	
Pulse duration 50 ns ... 10 µs (also 200 µs for 810 nm on request)	
Duty cycle 2 % for max 10 s (also ultra-high-speed mode available)	
Continuous mode with 0,3 ‰ duty cycle	
Generation of single pulses or bursts of pulses (max 5 pulses / bursts) at high repetition rate	
Practical repetition rates up to a few hundred kilohertz	
Stand-alone operation	
Versatility through changeable fiber optic illumination	
Adjustable illumination with lens (standard solution)	
Direct illumination from fiber optics	
Uniform back-illumination (e.g. shadow imaging)	
Line profile illumination (e.g. flow, welding)	
Light sheet illumination	

# CAVILUX® HF UHS System

## For ultra-high-speed imaging

- › Excellent for ultra-high-speed imaging
- › Accurate imaging of processes involving extremely small and/or fast objects – without motion blur
- › Visualization of hot and bright objects – without blinding brightness
- › Versatility by varying pulse duration and repetition rate
- › Changeable illumination optics provides flexibility
- › Efficient lighting of processes even in limited space and hard-to-reach places
- › Monochromatic and low-coherence light ensures the best possible image quality – without chromatic aberrations or speckle



## For visualization of various applications:

- › Shockwave
- › Materials testing
- › Schlieren imaging
- › Ballistics and explosions
- › Flows, droplets, sprays and jets

Pulse duration / frequency		
Pulse duration	Normal mode (1)	Ultra-high-speed mode up to 5 MHz (2)
<b>50* ns</b>	6.000 Hz	600 pulses
<b>100 ns</b>	3.000 Hz	300 pulses
<b>500 ns</b>	600 Hz	60 pulses
<b>1 µs</b>	300 Hz	30 pulses
<b>10 µs</b>	30 Hz	3 pulses

\* with reduced output power • (1) duty cycle 0,03 ‰ without time limit • duty cycle 99% for 30 µs cumulative laser active time

# CAVILUX® HF UHS System

## Features

CAVILUX HF UHS System	
Consists of a control unit, laser unit and illumination optics	
One control unit can drive 1 laser unit	
Camera synchronization with 5 V TTL signals	
Laser unit	
Wavelength options 640 nm (visible) and 810 nm (invisible)	
Output power options for <ul style="list-style-type: none"> <li>› 640 nm: 280 W</li> <li>› 810 nm: 500 W</li> </ul>	
Laser class 4	
Green laser pointer for easier alignment	
Variability through generation of pulses and pulse patterns	
Pulse duration 50 ns ... 150 ns with 10 ns steps or up to 30 µs following sync pulse duration	
Duty cycle 99 % for max 30 µs cumulative laser active time	
Continuous mode with 0,3 ‰ duty cycle	
Stand-alone operation	
Versatility through changeable fiber optic illumination	
Adjustable illumination with lens (standard solution)	
Direct illumination from fiber optics	
Uniform back-illumination (e.g. shadow imaging)	
Line profile illumination (e.g. flow, welding)	
Light sheet illumination	