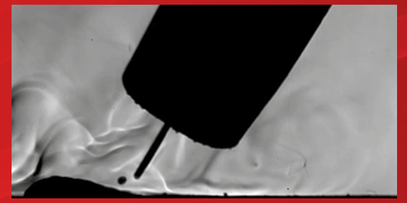
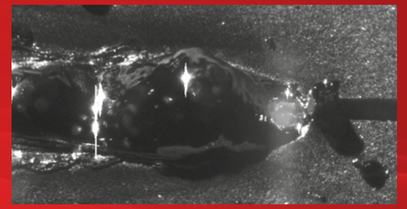
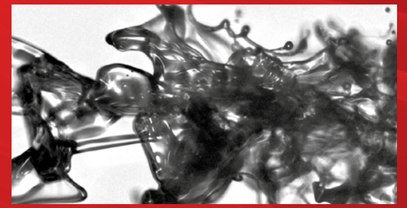


Arc welding using Schlieren imaging – Flow of protection gas

Shockwave formation in gel



Laser welding – Humping effect



Measurement of fluid jets of diesel engine – Douple-pulse
and back-illumination

Laser light

for high-speed imaging and monitoring

Freeze even the fastest terrestrial motion.

Even for ultra-high-speed imaging.

Accurate imaging of small and/or fast objects and processes.

See through heat and blinding brightness.

Powerful and versatile lighting for high-speed imaging and monitoring.

Variability through fiber coupling and pulse generation.

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Laser light for high-speed imaging and monitoring

Welcome to the Invisible World

CAVILUX® Smart System

For high-speed imaging and monitoring

- Powerful and versatile pulsed diode laser light source designed for high-speed imaging and monitoring
- 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
- Possibility to generate up to five pulses per one camera exposure
- 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
- Light is immune to surrounding lighting conditions such as ambient or sunlight, as well as to process vibrations

For visualization of various applications:

- Flows, droplets, sprays and jets
- Shockwave
- Schlieren imaging
- Welding
- Industrial webs
- Ballistics and explosions
- Materials testing

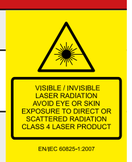
Pulse duration / frequency		
Pulse duration	**Normal mode (1)**	**High-speed mode (2)**
*** 10 ns**	30.000 Hz	100.000 Hz
50 ns	6.000 Hz	20.000 Hz
100 ns	3.000 Hz	10.000 Hz
500 ns	600 Hz	2.000 Hz
1 µs	300 Hz	1.000 Hz
10 µs	30 Hz	100 Hz

*with reduced output power • (1) duty cycle 0,3 ‰ without time limit • (2) duty cycle 1 ‰ for 10 s

CAVILUX® Smart System

Features

CAVILUX Smart 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 HF) 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 › 640 nm: 200 W and 400 W › 810 nm: 300 W and 500 W
Laser class 3B or 4 (depending on output power and wavelength)
Variability through generation of pulses and pulse patterns
Pulse duration 10 ns … 10 µs
Duty cycle 1 ‰ 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
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® Smart 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
- Light is immune to surrounding lighting conditions such as ambient or sunlight, as well as to process vibrations

For visualization of various applications:

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

Pulse duration / frequency		
Pulse duration	**Normal mode (1)**	**Ultra-high-speed mode up to 10 MHz (2)**
*** 10 ns**	30.000 Hz	2.000 pulses
50 ns	6.000 Hz	600 pulses
100 ns	3.000 Hz	300 pulses
500 ns	600 Hz	60 pulses
1 µs	300 Hz	30 pulses
10 µs	30 Hz	3 pulses

* with reduced output power • (1) duty cycle 0,03 ‰ without time limit • (2) duty cycle 99% for 30 µs cumulative laser active time

CAVILUX® Smart UHS System

Features

CAVILUX Smart 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 › 640 nm: 200 W and 400 W › 810 nm: 300 W and 500 W
Laser class 3B or 4 (depending on output power, wavelength)
Variability through generation of pulses and pulse patterns
Pulse duration 10 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