

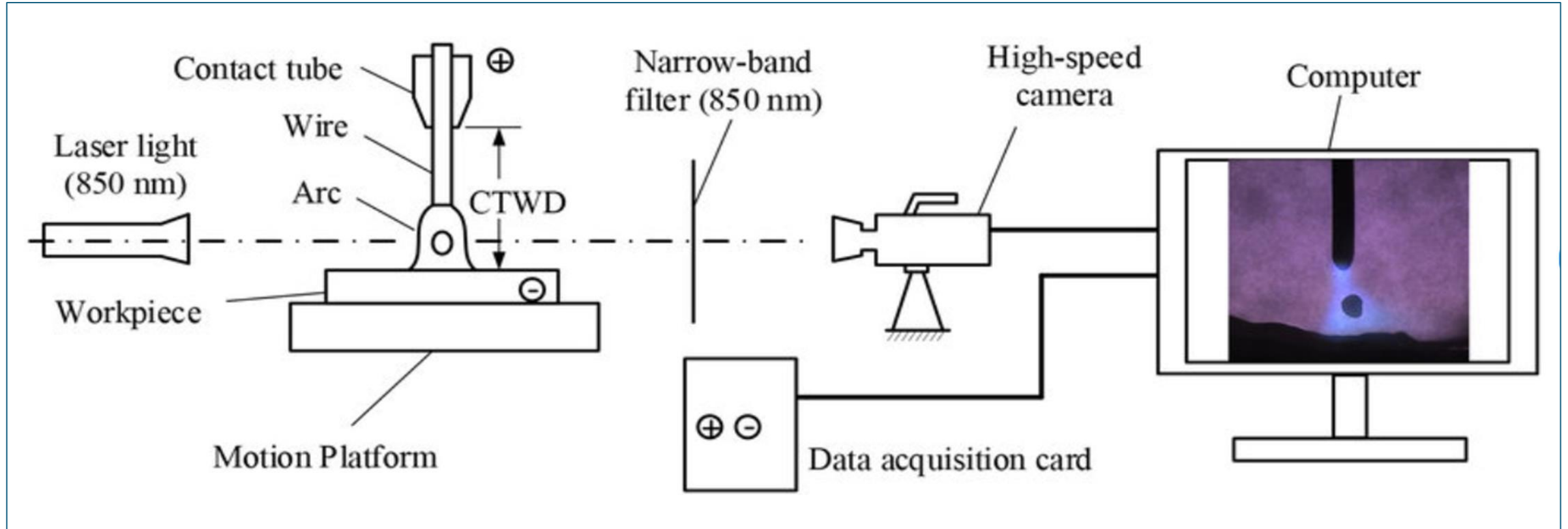
# DVPRO

STREAM . SLOW . CINEMA . TV

Laser light and  
High speed camera



## Welding evaluation, using a laser light and a high speed camera



## CAVILUX Laser Illumination Systems



**CAVILUX HF**



**CAVILUX Smart**



**CAVILUX HF UHS**



**CAVILUX Smart UHS**

# CAVILUX Laser Illumination Systems

	CAVILUX HF	CAVILUX Smart	CAVILUX HF UHS	CAVILUX Smart UHS
	<b>Components and camera synchronization</b>	<b>Components and camera synchronization</b>	<b>Components and camera synchronization</b>	<b>Components and camera synchronization</b>
System content	Laser unit, control unit, illumination optics	Laser unit, control unit, illumination optics	Laser unit, control unit, illumination optics	Laser unit, control unit, illumination optics
Software interface	CAVILUX Control Software	CAVILUX Control Software	No software	No software
Laser units	1 to 4	1 to 4	1	1
Sync signal	5 V TTL	5 V TTL	5 V TTL	5 V TTL
	<b>Laser unit</b>	<b>Laser unit</b>	<b>Laser unit</b>	<b>Laser unit</b>
Wavelength options	640 nm (visible), 810 nm (invisible)	640 nm (visible), 810 nm (invisible)	640 nm (visible), 810 nm (invisible)	640 nm (visible), 810 nm (invisible)
Power options	280 W @ 640 nm, 500 W @ 810 nm	200/400 W @ 640 nm, 300/500 W @ 810 nm	280 W @ 640 nm, 500 W @ 810 nm	200/400 W @ 640 nm, 300/500 W @ 810 nm
Laser class	Laser class 4	Laser class 3B or 4 (based on power and wavelength)	Laser class 4	Laser class 3B or 4 (based on power and wavelength)
Min pulse duration (limited power)	50 ns	10 ns	50 ns	10 ns
Min pulse duration (full power)	100 ns	30 ns	100 ns	30 ns
Pulses per frame	up to 5	up to 5	1	1
Continuous duty cycle	0.03%	0.03%	0.03%	0.03%
High-speed duty cycle	2%	0.1%	100%	100%
Max high-speed duration	10 seconds (optional 30 seconds for 810 nm)	10 seconds	30 µs total laser time	30 µs total laser time
	<b>Versatility (changeable fiber optics)</b>	<b>Versatility (changeable fiber optics)</b>	<b>Versatility (changeable fiber optics)</b>	<b>Versatility (changeable fiber optics)</b>
Fiber-coupled	Yes	Yes	Yes	Yes
Adjustable illumination	Yes	Yes	Yes	Yes
Light sheet illumination	Yes	Yes	Yes	Yes
	<b>Pulse duration / frequency examples</b>	<b>Pulse duration / frequency examples</b>	<b>Pulse duration / frequency examples</b>	<b>Pulse duration / frequency examples</b>
10 ns	Not applicable	100,000 Hz (@ 0.1% DC)	Not applicable	Up to 10,000,000 Hz
50 ns	400,000 Hz (@ 2% DC)	20,000 Hz (@ 0.1% DC)	Up to 10,000,000 Hz	Up to 10,000,000 Hz
100 ns	200,000 Hz (@ 2% DC)	10,000 Hz (@ 0.1% DC)	Up to 10,000,000 Hz	Up to 10,000,000 Hz
1 µs	20,000 Hz (@ 2% DC)	1,000 Hz (@ 0.1% DC)	Up to 1,000,000 Hz	Up to 1,000,000 Hz
10 µs	2,000 Hz (@ 2% DC)	100 Hz (@ 0.1% DC)	Up to 100,000 Hz	Up to 100,000 Hz
	<b>Example applications</b>	<b>Example applications</b>	<b>Example applications</b>	<b>Example applications</b>
	Welding	Welding	Shockwaves	Shockwaves
	Flows/droplets/sprays/jets	Shockwaves	Schlieren imaging	Schlieren / Shadowgraphy
	Additive manufacturing	Schlieren / Shadowgraphy	Flows/droplets/sprays/jets	Flows/droplets/sprays/jets
	Materials testing	Flows/droplets/sprays/jets	Materials testing	Materials testing
	Ballistics/explosions	Industrial webs	Ballistics/explosions	Ballistics/explosions



For visualization of various applications:

## CAVILUX® Smart System

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

CAVILUX Smart is ideal for flows and Schlieren imaging where very high frame rates and very short pulse durations are required. Example applications are shockwaves in combustion and aerospace and drops such as ink jet and sprays. CAVILUX Smart can be also used for welding and explosion applications when frame rates of 1.000 fps are sufficient.

## CAVILUX® HF System

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

CAVILUX HF is ideal for processes that emit thermal radiation such as welding and explosions and require frame rates about 20.000 fps. CAVILUX HF is also efficient for ballistic applications.

## High speed camera



### TE2010

The Phantom TE2010 is a compact, easy to configure camera capable of capturing 19,960 fps at 1 Mpx and over 1M fps at reduced resolution and FAST option. BSI sensor technology ensures premium image performance.

- 19,180 fps at 1280 x 832
- Sensitivity: Quantum Efficiency\*
  - 59.9% mono
  - 53.6% color
- 32, 64, 128GB RAM
- Add FAST option for 1M fps and 190ns exposure

\*QExFF at 532nm

## For additional information

### **Contact our technical team**

Dvpro.com.br

dvpro@dvpro.com.br

Tel. 31 98476 1335, 62 99662 4369

### **See the sites:**

<https://www.phantomhighspeed.com/products/cameras/tseries/te2010>

<https://www.cavitar.com/product/cavilux-hf-for-high-speed-illumination/>

Thank you

Sep. 2024