APPLIED PHOTONICS
LASER SPECTROSCOPY SOLUTIONS

LIBSCANEDU-50™

Laser-Induced Breakdown Spectroscopy (LIBS)

Modular LIBS System

Versatile, adaptable, upgradeable – for laboratory and field use



LIBSCAN EDU-50 is a modular LIBS instrument. It adopts the same modular design principles used in our LIBSCAN range of products and so is compatible with our comprehensive range of sample chambers. Suitable for laboratory or field applications, LIBSCAN EDU-50 operates from a 12 VDC supply (battery or plug-in mains adaptor) and is available with up to 6 spectrometer channels, although it can be ordered with fewer spectrometers to suit the customer's application and budget. LIBSCAN EDU-50 can be supplied with an optional integrated imaging camera for close-up colour video / still images of the sample, allowing precise targeting of the laser beam. LIBSCAN EDU-50 may be used without a sample chamber as a Class 4 laser product but is fully compatible with our range of modular sample chambers for operation as a Class 1 laser product.

Features

- Modular and versatile design, suitable for laboratory and field applications
- Compact and transportable design
- High efficiency plasma light collection optics (1 DUV, 2 UV-VIS channels and 3 VIS-NIR channels)
- Integral laser: 40 – 50 mJ, 1064 nm, pulse length 4 – 6 ns, max. repetition rate approx. 1 Hz. No separate power supply. Energy stability: <10%, Divergence: <2.0 mrad, Beam diameter: 5 mm
- Optional fully integrated 2.5 MP imaging camera (IMG-HR) and sample illumination for close-up colour images of the sample surface – miniature 1/3-inch CMOS sensor, 16:9, 1920 × 1080 pixels, located within the optics array of the LIBSCAN head
- An array of high-brightness white LEDs fitted inside the front of the LIBS-6 module / LIBSCAN head is used to illuminate the sample surface.

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- A dimmer switch located at the side of the LIBS-6 module (or rear of the LIBSCAN head) allows the user to adjust the brightness continuously from zero to full brightness as required to achieve a satisfactory image.
- Adjustable focus laser beam expander capable of producing a minimum spot size of less than 50 microns
- Gas purge feature (for connection to external inert gas supply – argon, nitrogen, helium, air)
- Can be supplied with up to six spectrometer channels
- Designed to meet international standards on laser safety (Class 1 laser product when used with our modular sample chambers)
- **LIBSoft™ 2020 Lite** data acquisition and control software with free upgrades for 2 years – provides configuration and control of all system components and the acquisition, display and manipulation of both acquired and saved spectra; supported on Microsoft® Windows® 10 and Windows® 11 (32/64 bit)
- Requires a separate laptop or other suitable computer (contact us for minimum specification information)
- Optional service power: Integrated 12 VDC, 8 Ah Li-Ion battery pack (supplied with a 100 – 240 VAC plug-in Li-Ion charger)
- If the system supplied without a sample chamber, it becomes a Class 4 laser system requiring additional safety precautions and training (safety eyewear, use of equipment in a controlled area such as a laser laboratory, etc).

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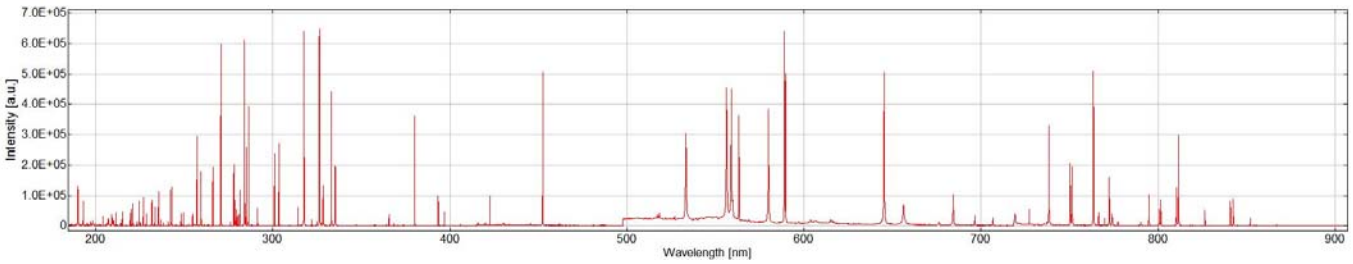
Laser-Induced Breakdown Spectroscopy (LIBS)

General Specifications

Technology:	Laser-Induced Breakdown Spectroscopy
Laser source:	Q-switched Nd:YAG operating at 1064 nm
Laser pulse energy:	Nominally 40 – 50 mJ
Laser pulse duration:	Nominally 4 – 6 nanoseconds
Laser PRF:	Approx. 1 Hz max.
Energy stability:	<10%
Beam divergence:	<2.0 mrad
Beam diameter:	5 mm
Optical spectrograph:	Up to 6 spectrometer channels may be installed.
Spectrometer channel 1:	190 nm – 261 nm, DUV detector coating, FWHM = approx. 0.05 nm
Spectrometer channel 2:	260 nm – 320 nm, DUV detector coating, FWHM = approx. 0.05 nm
Spectrometer channel 3:	319 nm – 421 nm, DUV detector coating, FWHM = approx. 0.07 nm
Spectrometer channel 4:	420 nm – 503 nm, FWHM = approx. 0.07 nm
Spectrometer channel 5:	502 nm – 721 nm, FWHM = approx. 0.14 nm
Spectrometer channel 6:	720 nm – 910 nm, FWHM = approx. 0.14 nm

Each spectrometer channel is equipped with a linear CMOS array detector of 2048 pixels. Spectrometers may be externally triggered (by Q-switch TTL pulse from laser power supply). Trigger jitter is 21 ns (typical). Integration time is 9 µs – 59 s. Minimum delay time (with respect to laser Q-switch pulse) is 0.9 microseconds . Slit width 10 microns. Spectrometer sensitivity (quoted by the manufacturer Avantes) is 375,000 counts/µW per ms integration time. Signal/Noise is 300:1. 16 BIT, 6 MHz A/D converter. Stray light is 0.19% to 1.0% depending on grating. Specifications quoted by the manufacturer Avantes BV www.avantes.com

Approx. dimensions:	LIBSCAN EDU-50 head: 350 × 160 × 120, weight: ~4 kg Instrument console: 500 × 330 × 165, weight: ~13 kg
Umbilical:	Approximately 1.7 m between LIBSCAN EDU-50 head and instrument console
Sample interface:	Via use of modular sample chamber or “open beam” when used in Class 4 configuration
Optional sample chambers:	See our website for details of range of modular sample chambers
System software:	Data acquisition, processing and recording via user-friendly LIBSoft™ 2020 Lite software; supported on Microsoft® Windows® 10 and Windows® 11 (32/64 bit)
Data connectivity:	USB 3.0
Power requirements:	12 VDC, 3.0 Amp max. – LIBSCAN EDU-50 is supplied with an international mains plug-in adaptor Optional: Integrated 12 VDC, 8 Ah Li-Ion battery pack (supplied with a 100 – 240 VAC plug-in Li-Ion charger)
Product classification:	Class 1 laser product when used with any of our modular sample chambers



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Specifications subject to change without notice

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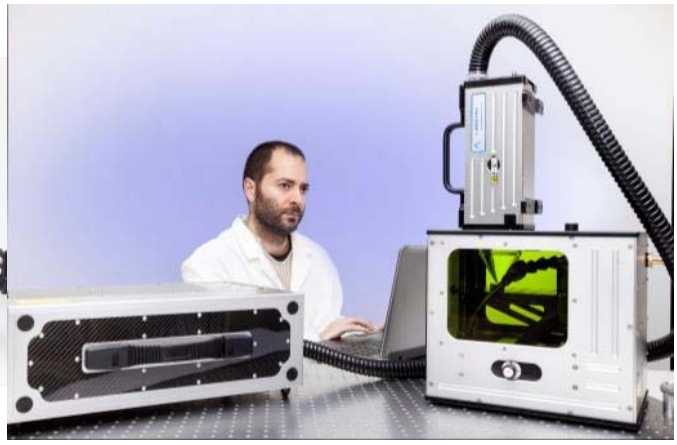
Example spectrum of high-purity tin with argon purge gas (10-shot accumulation, 3.0 µs delay)

Example configurations









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