

LIBS2500plus System

Qualitative Measurements in Real-Time



Software

OOILIBS Application Software operates the LIBS2500plus as well as its firing laser. With OOILIBS, you have spectral saving and data-logging capabilities as well as material identification.

OOILIBSPPLUS LIBS2500 Plus Windows-based Software

Specifications

Spectrometer range:	200-980 nm
Resolution:	0.1 nm (FWHM)
Detection:	CCDs with a combined 14,336 pixels
Frame rate:	500 Hz capability, computer-controlled
Integration time:	1 ms; variable in free-run mode
Trigger delay:	-121 μ s to +135 μ s in 500 ns steps, user-configured
Trigger jitter:	~20 ns
Trigger level:	TTL not to exceed 5.5 V
Computer connection:	USB 1.1 or USB 2.0
Operating systems:	Windows 98/Me/2000 XP on desktop or notebook PCs
Software:	OOILIBS and OOICOR
Power requirement:	5 volts @ <1 amp, power supply included
Input optical fiber:	sampling probe containing 7 fibers, 2 meters long (other lengths available) with 74-UV collimating lens and a sampling lens
Dimensions:	334 mm x 150 mm x 140 mm (spectrometer system only)
Weight/Mass:	6.36 kg (14 lb.)

The small-footprint LIBS2500plus system is a more modular approach to Laser Induced Breakdown Spectroscopy. Built around our popular HR2000+ optical bench and electronics, the LIBS2500plus delivers superior functionality in a completely enclosed system.

While traditional LIBS detection systems have a small spectral range, the LIBS2500plus provides broadband spectral analysis and – because of its noninvasive performance – it allows you to perform real-time in situ measurements within hostile industrial, chemical and biochemical environments. The LIBS2500plus has the equivalent of seven HR2000+ spectrometers combined and can be configured in various setups rather easily.

The LIBS2500plus is easily interfaced to your PC or notebook computer via USB and is compatible with Windows operating systems.

Applications

- Environmental monitoring (soil contamination, particulates)
- Materials analysis (metals, plastics)
- Forensics and biomedical studies (teeth, bones)
- Military and safety applications (explosive particles, chemical and biological agents)
- Art restoration and conservation (pigments, precious metals)

LIBS Spectrometer Channels

LIBS-CH-A	200-305 nm wavelength range
LIBS-CH-B	295-400 nm wavelength range
LIBS-CH-C	390-525 nm wavelength range
LIBS-CH-D	520-635 nm wavelength range
LIBS-CH-E	625-735 nm wavelength range
LIBS-CH-F	725-820 nm wavelength range
LIBS-CH-G	800-980 nm wavelength range

Systems

Item	Description	Fiber Bundle
LIBS2500-7PLUS	7-channel spectrometer system, includes channels A-G	LIBS-BUN-7
LIBS2500-6PLUS	6-channel spectrometer system, choose 6 channels from A-G	LIBS-BUN-6
LIBS2500-5PLUS	5-channel spectrometer system, choose 5 channels from A-G	LIBS-BUN-5
LIBS2500-4PLUS	4-channel spectrometer system, choose 4 channels from A-G	LIBS-BUN-4
LIBS2500-3PLUS	3-channel spectrometer system, choose 3 channels from A-G	LIBS-BUN-3
LIBS2500-2PLUS	2-channel spectrometer system, choose 2 channels from A-G	BIF600-2-UV/VIS
LIBS2500-1PLUS	1-channel spectrometer system, choose 1 channel from A-G	P600-2-UV/VIS
LIBS2500-1+UPG	1-channel HR2000+ upgrade	LIBS Controller Cables

LIBS2500plus System

The Modular Solution



Spectrometer

The LIBS2500plus is built around our HR2000+ high-resolution miniature spectrometer. This small-footprint spectrometer delivers optical resolution to 0.035 nm (FWHM) and a detector range of 200-1100 nm. The HR2000+ boasts an impressive data transfer rate of a full scan to memory every 1-2 ms and an integration time of 1 ms to 65 seconds. For more information on the performance of the HR2000+, see page 31.

Laser

Because power requirements vary by sample type, we offer two laser power options from laser industry leader, Big Sky Laser Technologies. For most applications we employ a Q-switched 1064 nm Nd:YAG laser, and for maximum versatility, we recommend a 200 mJ laser with attenuator to adjust the laser power according to the sample matrix.

Item Code	Description	Best Use
LIBS-LAS200ICE-450-20HZ	LIBS Laser, 200 mJ Ultra Laser CFRB66101B1-072	Glass and high OH content materials
LIBS-LASER	LIBS Laser, 50 mJ Ultra Laser ul130C11, 20 Hz	Metal and thin film samples

Sample Chamber

Our LIBS-SC Sample Chamber is designed to function safely and provides clear view of the sample. The LIBS-SC features an eyewear-safe enclosure and a safety-interlock that prevents the laser from firing when the door is ajar. It houses a manually controlled x-y stage and provides illumination for the optional LIBS-IM-USB Imaging Module.

LIBS-SC	LIBS-SC-050	LIBS-SC-200
LIBS Sample Chamber utilized when Imaging Module is ordered	LIBS Sample Chamber utilized when 50 mJ laser is ordered - no Imaging Module	LIBS Sample Chamber utilized when 200 mJ laser is ordered - no Imaging Module

Imaging Module

Our LIBS-IM-USB Imaging Module attaches directly to the LIBS-SC Sample Chamber and enables you to magnify a sample image and establish your precise laser ablation target. The imaging module is an ideal option for forensic applications, semiconductor analysis, gemology, metallurgy and more. The LIBS-IM-USB requires no external power supply when PC-powered over USB.

LIBS-IM-USB	LIBS-IM-USB-050	LIBS-IM-USB-200
LIBS Imaging Module, color, USB connection	LIBS Color Imaging Module for use when LIBS-LASER is incorporated	LIBS Color Imaging Module for use when LIBS-LAS-200ICE-450-20HZ is incorporated



Fiber Bundles

LIBS-BUN-3	Fiber Bundle for 3-Channel LIBS2500plus
LIBS-BUN-4	Fiber Bundle for 4-Channel LIBS2500plus
LIBS-BUN-5	Fiber Bundle for 5-Channel LIBS2500plus
LIBS-BUN-6	Fiber Bundle for 6-Channel LIBS2500plus
LIBS-BUN-7	Fiber Bundle for 7-Channel LIBS2500plus
LIBS-BUN-8	Fiber Bundle for 8-Channel LIBS2500plus
LIBS-COLL	LIBS Collimator