

# Measurement & Spectroscopy



## LaserBoxx

One platform for all colors

### SLM CW Monolithic DPSS benefits

- Up to 500 mW
- Exceptional wavelength stability - 1pm
- Lowest power consumption
  - ≤ 12 W for LCX's, any wavelength, less than 200 mW
  - ≤ 15 W for for LCX-532, 500 mW
  - ≤ 20 W for for LCX-561, 500 mW
- Low profile laser head (32 mm)
- Tailored beam diameter capability (0.6 up to 1.4 mm)

### VBG stabilized Laser Diode modules benefits

- Proprietary SLM locking routine
- Enhanced beam quality versions

### Common key features

- Single Longitudinal mode
- TEM<sub>00</sub> Beam
- Beam pointing ≤ 5 μm/°C
- SM/PM/MM fiber coupling options
- USB and RS232 computer interface
- Graphic User Interface with remote diagnostics
- Remote *ControlBoxx* with power display (Plug&Play versions - CDRH)
- Controllers integrated into laser head
- Industry standard footprint (100 x 40 mm<sup>2</sup>)

Raman Spectroscopy  
Brillouin Scattering  
Interferometry  
Photoluminescence  
Holography  
Laser Doppler Velocimetry  
Laser Ultrasonic  
Dynamic Light Scattering

532

553

561

633

785

830

# Specifications

	LCX-532S	LCX-553S	LCX-561S	LBX-633S	LBX-785S	LBX-830S
Technology	DPSS			Stabilized laser diode		
<b>Optical characteristics</b>						
Emission wavelengths	532.3 nm ± 0.3 nm <sup>(1)</sup>	553.0 nm ± 0.4 nm	561.4 nm ± 0.4 nm <sup>(1)</sup>	632.5 nm ± 0.5 nm	785 nm	830 nm
Wavelength Stability over 8 hours and ±3°K	≤ 1 pm			≤ 10 pm		
Linewidth	≤ 1 MHz			≤ 100 MHz typ.		
Coherence Length	≥ 100 m			≥ 1 m typ.		
Nominal output power, continuous wave	50 mW to 500 mW	50 mW to 300 mW	50 mW to 500 mW	40 mW	100 mW	100 mW
Control mode	Automatic power control (APC)			Automatic current control (ACC)		
Power stability over 8 hours and ±3°K	± 1%					
Power Adjustment Option	30-100%	50-100%	30-100%	n/a		
Optical noise % RMS, 10Hz - 20MHz bandwidth	≤ 0.2%					
<b>Transverse singlemode free-space beam (*)</b>						
Beam waist diameter (typ.) at 1/e <sup>2</sup> , 50mm from output aperture	0.7 ± 0.1 mm			0.5 to 1.0 mm		
Beam divergence at 1/e <sup>2</sup> , full angle, in far field	1.0 ± 0.2 mrad			2 to 4 mrad		
Beam quality factor (M <sup>2</sup> )	≤ 1.1			≤ 1.9		
Beam circularity in far field	≥ 90%			≥ 65%		
Beam pointing stability	≤ 5 μrad/°K					
Polarization state	linear, vertical					
Polarization extinction ratio (typ.)	1000:1			100:1		
<b>PM fiber coupling option (*)</b>						
Nominal output power	35 mW to 350 mW	35 mW to 210 mW	35 mW to 350 mW	20 mW	40 mW	40 mW

(1) ± 0.5nm at 500mW

(\*) Specifications at nominal power

Other available wavelengths: 405 nm, 526 nm, 543 nm, 556 nm, 1064 nm

## DPSS Monolithic Resonator

### Technology

The unique feature of the LaserBoxx DPSS is a proprietary, Alignment-free Monolithic Resonator (AMR). The elements of resonator are assembled into a single ultra-low-loss optical subsystem, using a proprietary crystal bonding technique.

A highly transparent compound, deposited on chemically activated end-faces of two crystals, creates a bond that is extremely robust over time, temperature variations, and insensitive to mechanical vibrations. Dielectric mirrors coated at the end-faces of the crystals complete the monolithic assembly with no moving parts.



### Benefits of the AMR

The Oxixus AMR technology offer the highest spectral quality of the market and a high robustness over the time. The LCX lasers are insensitive to temperature variations and mechanical vibrations. High stability and reliability.

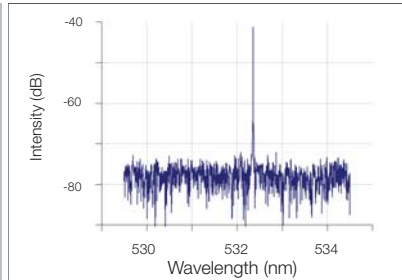
## LBX-S Platform

### Technology

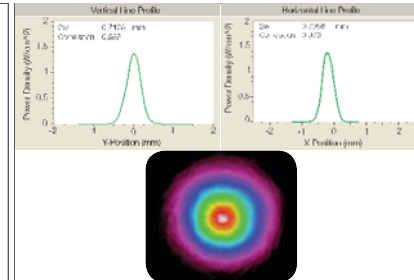
The LBX-S line is a performing driver integrated platform for Volume Bragg Grating stabilized laser diode.

### Benefits

The LBX-S delivers ultra narrow linewidth thanks to its excellent temperature stability and low noise current. The Oxixus proprietary embedded firmware locks the laser on same mode at each start up.

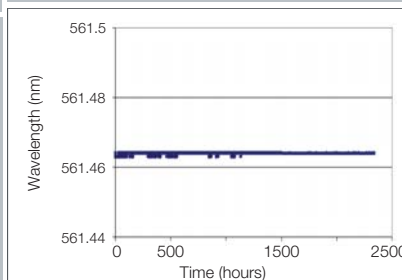


Single Longitudinal Mode  
LCX-532S spectrum

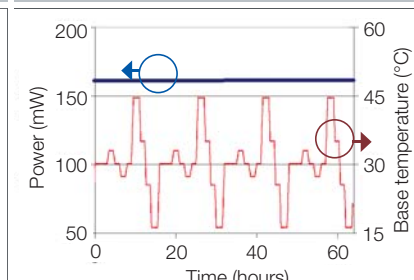


Beam Profile  
LCX-553S-200

Wavelength Stability  
LCX-561S wavelength vs time



Power Stability  
LCX-561S power vs temperature



# Single Frequency Lasers

## System Specifications

Version	LCX-S and LBX-S	LCX-S	LBX-S
	Plug and play	OEM	OEM
CDRH compliance	Yes	No	
Device qualification	CE		
Operating temperature	10 - 38 °C (ambient)	10 - 50 °C (baseplate)	20 - 35 °C (baseplate)
Power Consumption	≤ 25 W	≤ 20 W	≤ 10 W
Storage temperature	0 - 60 °C		
Supply voltage	100 - 240V AC external power supply	5 - 12V DC	
Warm-up time	≤ 10 minutes (LCX) / ≤ 2 minutes (LBX)		
Communication interfaces	USB, RS-232, dedicated I/O interface		
Laser head dimensions	see drawings	100 x 40 x 32 mm <sup>3</sup>	100 x 40 x 40 mm <sup>3</sup>
Laser head weight	≤ 600 g including heatsink	≤ 250 g	≤ 330 g
Electronic	integrated into laser head		

## Controller Plug&Play

Controller (LCX-S) with Power adjustment	ControlBoxx	optional
Controller (LCX-S, LBX-S) fixed power	RemoteBoxx	

## Custom Capabilities

- o Wavelength tunability up to 10 pm
- o Tighter wavelength selection
- o Custom wavelengths (526, 543, 556, 1064 nm)
- o Opto-mechanical Subassemblies including:
  - Wavelengths combiner ( L2C, L4C, L6C)
  - AO modulator and AOTF
  - Specific beam diameter or beam shaping
- o Custom control interface
- o Extended operational temperature range

## Isolator Output option

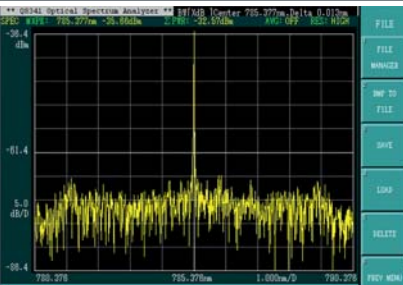
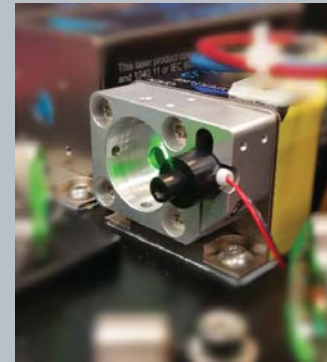


The Isolator Output option offers an efficient, compact and cost effective optical feedback protection to LCX or LBX-S lasers. The isolation is  $\geq 25$ dB and the transmission is  $\geq 85\%$ . The output polarization is vertical.

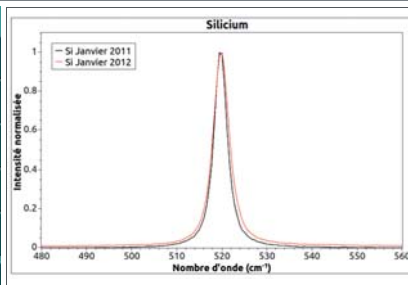
The isolator is shipped aligned and mounted with the laser.

## Electro-Mechanical shutter option

The ACX-SHTE is a compact and affordable electro-mechanical shutter. It is mounted directly on the LCX or LBX in place of the standard manual shutter. The fiber coupling and other options are fully compatible with the electro-mechanical shutter. The ACX-SHTE is actuated via the LCX embedded software or via a standard TTL signal.

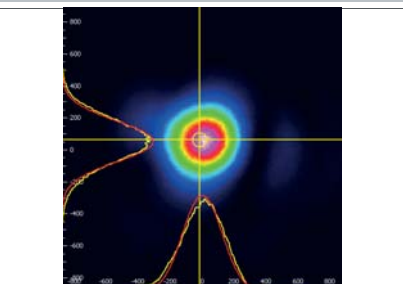


Single Longitudinal Mode LBX-785S spectrum

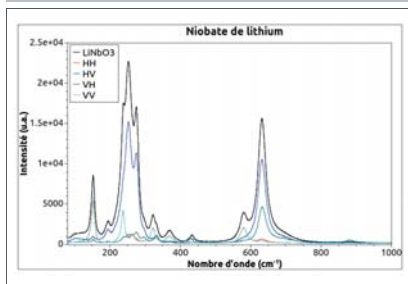


Si Raman Spectrum obtained with LBX-785S

Beam Profile LBX-633S

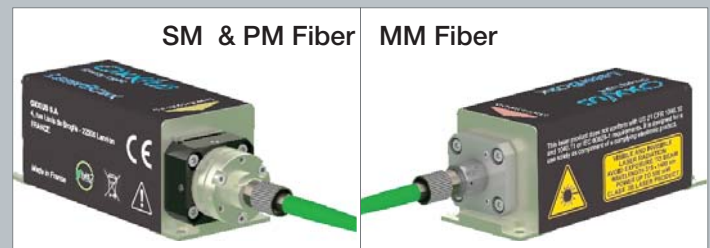


LiNb Raman Spectrum obtained with LBX-785S



## Fiber coupling options

Fiber coupling options offer rugged and compact solutions to couple LaserBoxx into polarization fiber maintaining, standard monomode fiber or multimode fiber.

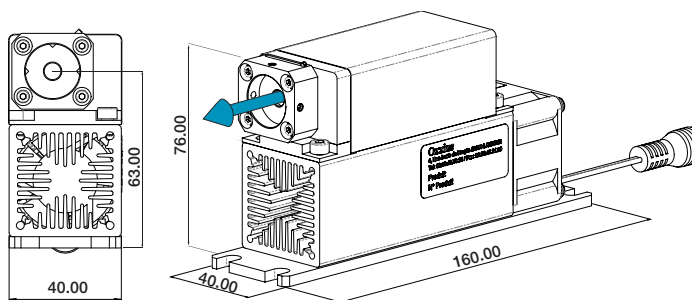


Specifications		
SM and PM Fiber		MM Fiber (50 μm, 0.22 NA)
$\geq 70\%$	Coupling Efficiency (LCX only)	$\geq 80\%$
100:1	Polarization Ratio (PMF only)	n/a
FC-APC FC/PC, FCP8 on demand	Fiber Output Connector	SMA
$\pm 2\%$	Power Stability over 8 hours, $\pm 1.5\text{ }^\circ\text{C}$	$\pm 2\%$
2 m	Fiber length	2 m

# Mechanical Drawings

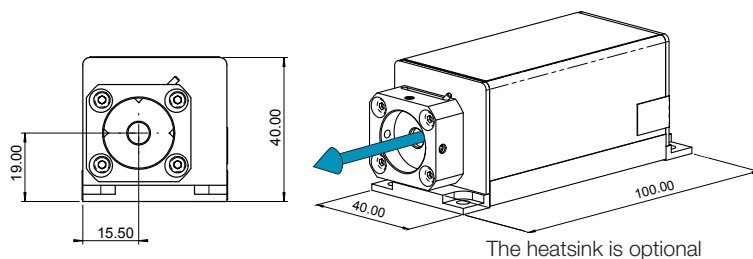
## LCX series, Plug & Play DPSS Laser

CDRH compliant

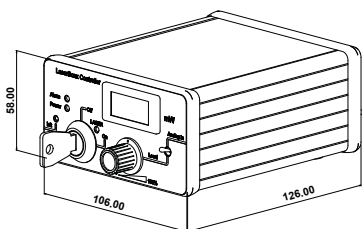


## LBX-S series, Plug & Play Laser Diode

CDRH compliant

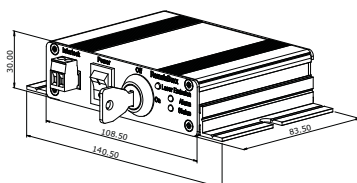


## PPA - ControlBoxx



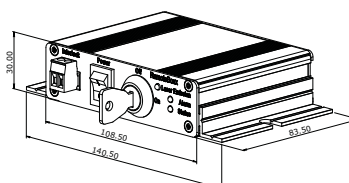
With power adjustable

## PPF - RemoteBoxx

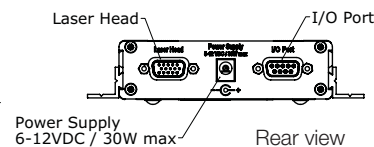


Standard fixed output power

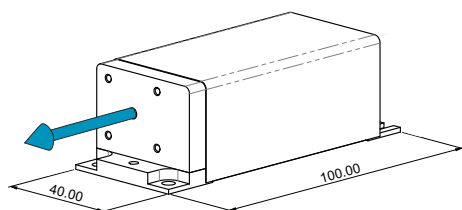
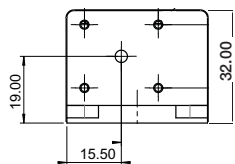
## PP - RemoteBoxx



Standard fixed output power

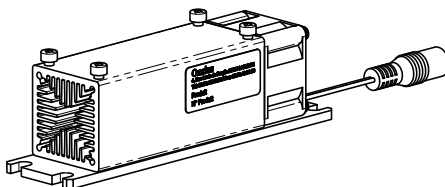
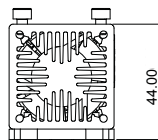


## LCX series, OEM DPSS Laser



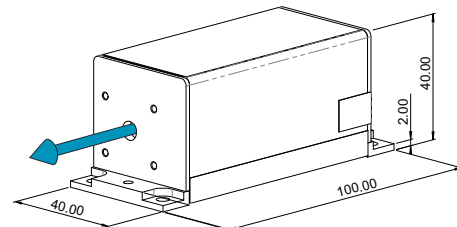
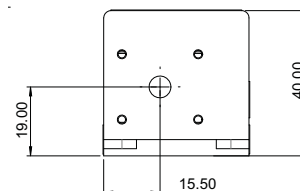
All-In-One laser head with built-in controllers.  
Input voltage range: 5-12 V DC

## Optional heatsink for LCX series & LBX series



Optional air-forced heat sink for maximum  
ambient temperature of 38°C.  
Including power supply.

## LBX series, OEM Laser Diode



All-In-One laser head with built-in controllers.  
Input voltage range: 5-12 V DC

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