OXXIUS

Simply Light

Single Longitudinal Mode Lasers

2022

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

LaserBoxx

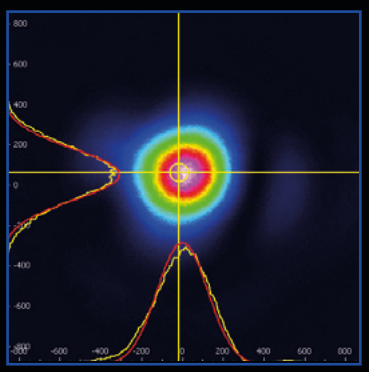
One platform for all colors

Monolithic DPSS lasers

- Up to 500 mW continuous wave
- Wavelength stability ≤ 1pm
- Lowest power consumption on the market
  - ≤ 12 W for LCX's, any wavelength, less than 200 mW
  - ≤ 20 W for LPX-532S, 500 mW
  - ≤ 15 W for LPX-561, 300 mW
- Low profile laser head (32 mm)
- Tailored beam diameter option (0.6 to 1.4 mm)

Benefits of VGB stabilized Lasers

- Proprietary SLM locking routine
- Enhanced beam quality versions



Beam Profile LBX-633

Common key features

- Single longitudinal mode
- TEM_{00} Beam
- Integrated control electronics
- SM/PM/MM fiber coupling options
- USB and RS232 interfaces
- Dedicated control software
- LBX and LCX - Industry standard footprint (100 x 40 mm^2)
  LPX and LSX - 120 x 40 mm2 footprint

Technology

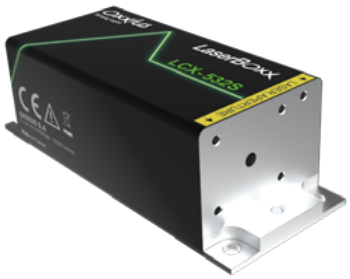
DPSS lasers

The LCX and LPX LaserBoxx are diode-pumped solid-state (DPSS) laser sources. The unique feature of these models is a proprietary, Alignement-free Monolithic Resonator (AMR).

The elements of resonator are assembled into a single ultra-low-loss optical subsystem, using a proprietary crystal bonding technique.

Benefits of the AMR

This technology yields to highly efficient pump schemes and allows for the highest spectral quality on the market, as well as an important robustness over time. The LCX and LPX models are insentive to temperature variations and to mechanical vibrations.



Diode lasers

The LBX and LSX models are based on integrating a temperature-stabilized laser diode.

Benefits

These models deliver an ultra-narrow linewidth emission due to their stable design and low noise current.

Optical Specifications

DPSS lasers

	Emission wavelength	Nominal output power continous wave	Wavelenght Stability over 8h and ±3K	Linewidth	Coherence length	Polarization state	Beam waist diameter* (typ.)	Beam divergence**	Beam quality factor (M^2)	Beam circularity in far field
LCX-532S	532.3 nm (±0.3 nm)	50 / 100 / 150 200 / 300 mW	≤ 1pm	≤ 1MHz	≥ 100 m	linear, vertical 1000 :1 extinction ratio	0.7 mm (± 0.1 mm)	≤ 1.0 mrad (± 0.2)	≤ 1.1	≥ 90%
LPX-532S		500 mW								
LCX-553S	553.0 nm (±0.4 nm)	50 / 100 / 200 mW								
LCX-561S	561.4 nm (±0.4 nm)	50 / 100 150 / 200 mW								
LPX-561S		300 mW								
LCX-946S	946.0 nm (±0.3 nm)	50 mW						1.9 mrad (± 0.2)		
LCX-1064S	1064.6 nm*** (±0.6 nm)	100 / 200 / 300 500 mW						2.0 mrad (± 0.4)		

*at $1/e^2$, 50 mm at output aperture ** at $1/e^2$, full angle, in a far field *** The LCX-1064S emits 532nm aiming beam

Common specifications

- **Control mode** Automatic Power Control (APC)
- **Power stability** (over 8h and ±3K) ± 1%
- **Power adjustment** optional with L1C-MPA/AOM
- **Optical noise** (%RMS, 10Hz - 20MHz bandwidth) ≤0.2%
- **Beam pointing stability** ≤ 5 µrad/K
- **Polarization state** linear, vertical
- **Polarization extinction ratio (typ.)** 1000:1

Diode lasers

	Emission wavelength	Nominal output power continous wave	Wavelenght Stability over 8h and ±3K	Linewidth	Coherence length	Polarization state	Beam waist diameter* (typ.)	Beam divergence**	Beam quality factor (M^2)	Beam circularity in far fiel
LBX-633S	632.5 nm (±0.5 nm)	40 mW	≤ 10 pm	≤ 100MHz	≥ 1 m typ.	linear, vertical 100 :1 extinction ratio	0.5 to 1.0 mm	2 to 4 mrad	≤1.9	≥ 65%
LSX-785S-ISO	785 nm (±0.5 nm)	150 mW with isolator					0.5 mm (± 0.1mm)	≤ 1.7 mrad	≤1.25	≥ 90%
LBX-830S	830 nm (±0.5 nm)	100 mW					0.5 to 1.0 mm	2 to 4 mrad	≤1.9	≥ 65%
LBX-785S-MM	785 nm (±0.5 nm)	500 mW	≤ 10 pm	0.07 nm	n/a					

*at $1/e^2$, 50 mm at output aperture ** at $1/e^2$, full angle, in a far field

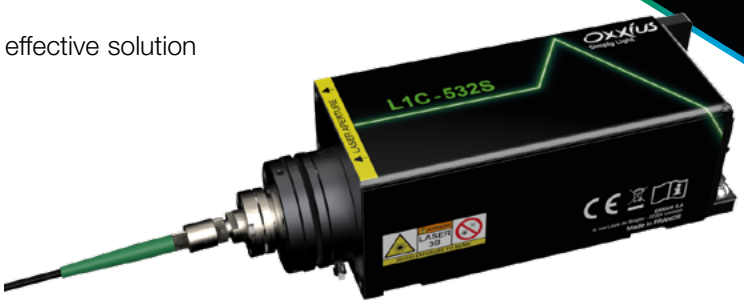
Common specifications

- **Control mode** Automatic current Control (ACC)
- **Power stability** (over 8h and ±3K) ± 1%
- **Power adjustment** optional with L1C-MPA/AOM
- **Optical noise** (%RMS, 10Hz - 20MHz bandwidth) ≤0.2%
- **Beam pointing stability** ≤ 5 µrad/K
- **Polarization state** linear, vertical
- **Polarization extinction ratio (typ.)** 100:1

Options

L1C

The L1C platform offers an efficient, compact and cost effective solution to add advanced features to the LaserBoxx lasers :



Motorized Power Attenuator (MPA)

- 0 to 100% dynamic range
- Stable spectral proprieties and beam quality
- Analog input control
- USB and RS-232 interfaces

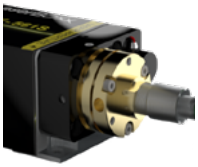
Accousto-Optic Modulator (AOM)

- 3 MHz bandwidth (-3 dB)
- Transmission ratio over 85%
- Analog and digital modulations
- USB and Etherner interfaces

Isolators (ISO)

- Can be installed along with MPA
- Low insertion losses

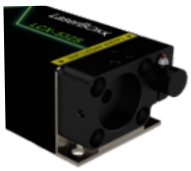
Fiber coupling



A rugged and compact accessory that injects the laser beam into a single mode (SM) fiber, a polarization maintaining (PM) fiber, or a multimode (MM) fiber.

	SM and PM Fiber	MM Fiber (50 µm, 0.22 NA)
Coupling Efficiency	LCX LPX LSX ≥ 70 % LBX-S ≥ 50 %	≥ 80 %
Power Stability over 8 hours, ± 1.5 K	± 2 %	± 2 %
Polarization extinction ratio (PMF only)	100 :1	n/a
Available optical connectors	FC-APC FC-PC, FCP8	AR-coated SMA FC-APC
Fiber length	2.0 m	2.0 m

Electro-mechanical shutter



The ACX-SHTE is a compact and affordable electro-mechanical shutter. It is mounted directly on the LCX or LPX in place of the standard manual shutter.

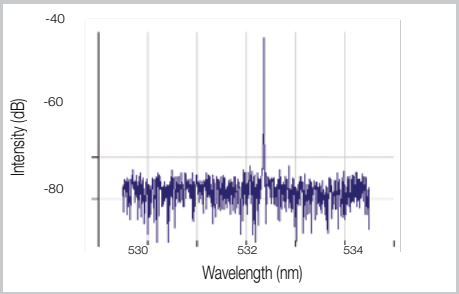
Customization

- Wavelength tunability up to 10 pm
- Custom wavelength selection
- Opto-mechanical Subassemblies including :
  - Wavelengths combiner (L4Cc, L6Cc)
  - AO modulator (see L1C datasheet)
  - Specific beam diameter or beam shaping

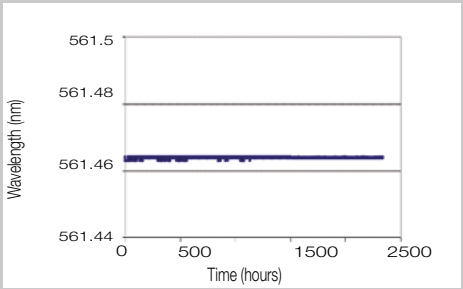
Performances

DPSS Lasers

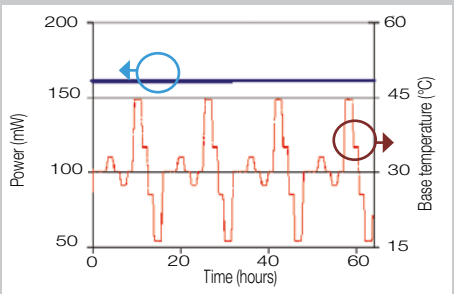
Single longitudinal mode
(LCX-532S-spectrum)



Wavelength stability
(LCX-561S-wavelength vs time)

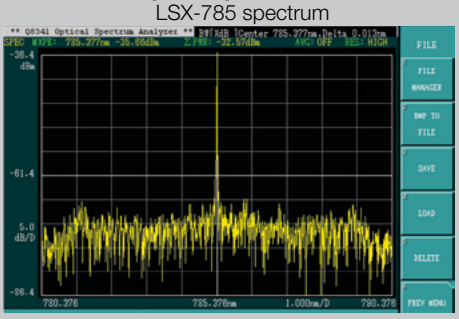


Power stability
(LCX-561S-power vs temperature)



Diode Lasers

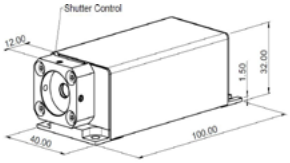
Single Longitudinal Mode
LSX-785 spectrum



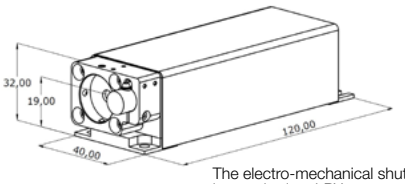
System Specifications

Plug & Play, CDRH-compliant versions

LCX series
DPSS laser

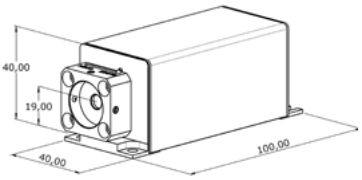


LPX series
DPSS laser



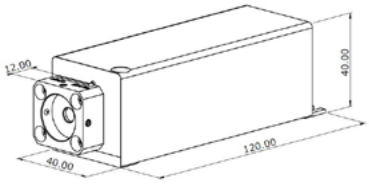
The electro-mechanical shutter is standard on LPX

LBX series
Stabilized laser diode



Optional heatsink available

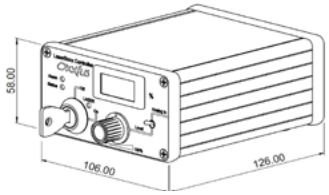
LSX series
Stabilized laser diode



Optional heatsink available

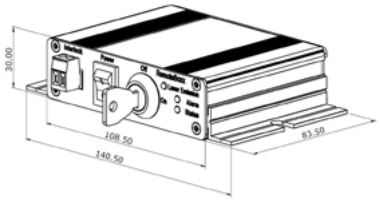
Power-adjustable versions (PPA)

PPA - ControlBoxx



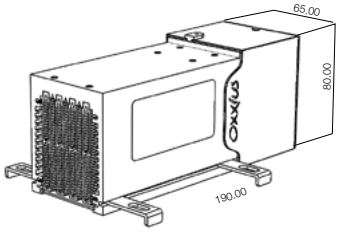
Fixed power versions (PPF)

PPF - RemoteBoxx



For improved stability (ACX)

Heat sink



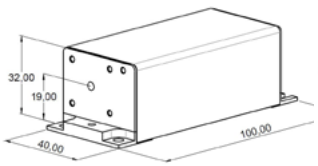
Compliance	CE and FDA 21 CFR 1040.10 / 1040.11
Operating temperature	10 to 38 °C (ambient air)
Power consumption	≤ 25 W
Storage temperature	0 to 60 °C

Supply voltage	100 to 240 VAC external power supply
Warm-up time	LCX, LPX : ≤ 10 minutes LBX, LSX : ≤ 2 minutes
Communication interfaces	USB, RS-232, dedicated interface

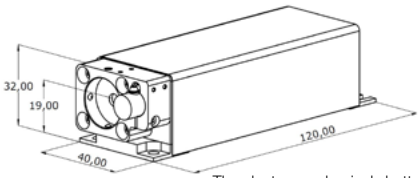
OEM - dedicated versions

Control electronics is integrated into the laser head

LCX series
DPSS Laser

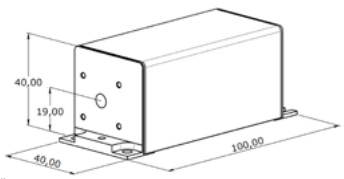


LPX series
DPSS Laser

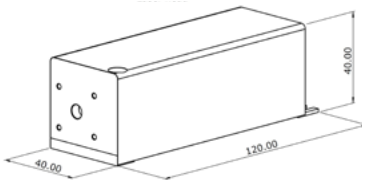


The electro-mechanical shutter is standard on LPX

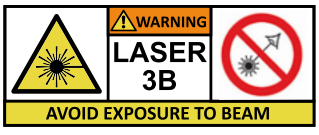
LBX series
Stabilized laser diode

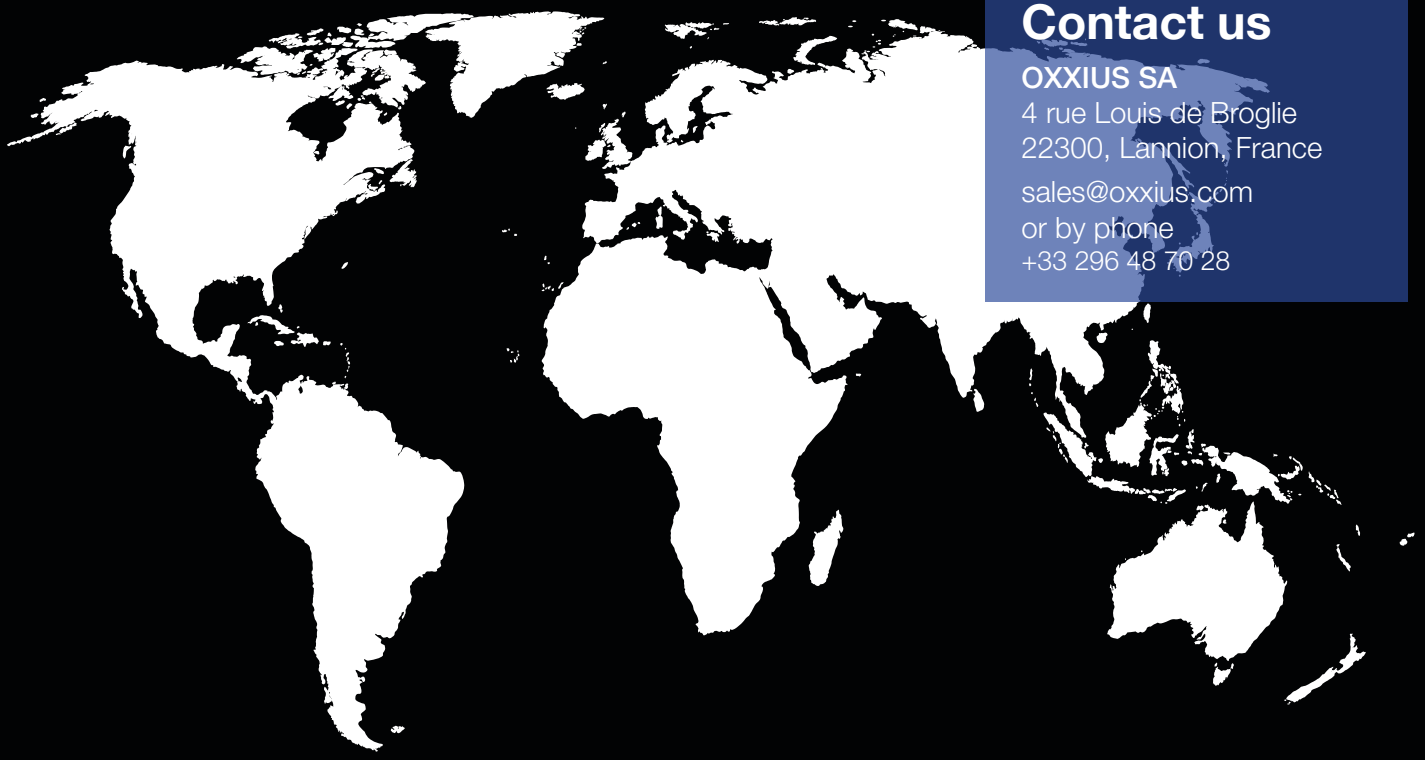


LSX series
Stabilized laser diode
Integrated isolator



	LCX and LPX	LBX and LSX
Compliance	FDA 21 CFR 1040.10 / 1040.11	
Operating temperature	10 to 50 °C (baseplate)	
Power consumption	≤ 20 W	≤ 10 W
Storage temperature	0 to 60 °C	
Supply voltage	5 to 12 VDC	
Warm-up time	≤ 10 minutes	≤ 2 minutes
Communication interfaces	USB, RS-232, dedicated electronical interface	





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