Oxxius
Simply Light

LaserBoxx

Single Frequency Lasers

Raman Spectroscopy
Brillouin Scattering
Interferometry
Dynamic Light Scattering
Holography
Laser Doppler Velocimetry
Shearography

LaserBoxx

One platform for all colors

The single frequency lasers from Oxxius have been designed with versatility in mind. They utilize advanced technologies such as DPSS lasers and stabilized laser diode.

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 the 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 and wavelength stability (≤ 1pm) 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 of VBG stabilized lasers

These models deliver an ultra-narrow linewidth emission due to their stable design and their proprietary wavelength-locking routine.

Common key features

- Single frequency
- Narrow linewidth
- Up to 500 mW continuous wave
- Integrated control electronics
- Low profile laser head
- SM/PM/MM fiber coupling options
- USB and RS-232 interfaces
- 100 x 40 mm² Industry standard footprint (LBX and LCX)

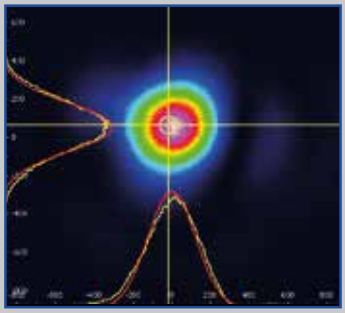
Common specifications

- Power stability (over 8 h and ±3 K) ±1 %
- Power adjustment optional with L1C-MPA/AOM
- Optical noise (10 Hz - 20 MHz bandwidth) ≤0.2 %, 2 rm

Performances

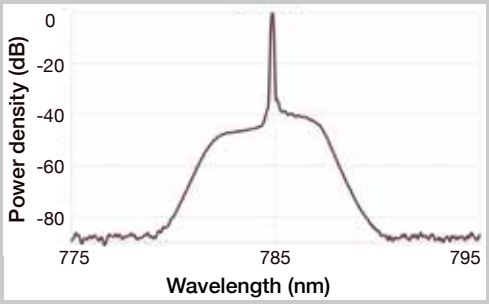
Beam profile

LBX-633



Narrow linewidth spectrum

LSX-785S-ISO



Diode Lasers

Optical specifications

DPSS lasers

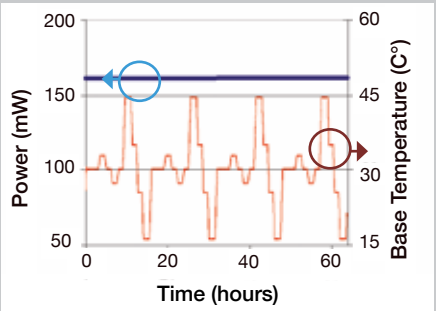
	Emission wavelength (Tolerance)	Optical power (Continous wave)	Wavelength stability over 8 h and ±3 K	Linewidth	Side mode suppression ratio	Polarization state	Beam waist diameter (at 1/e²)	Beam quality factor (M^2)	Beam circularity in far field	Coupling efficiency Into a single mode fiber
LCX-532S	532.3 nm (±0.5 nm)	50 / 100 / 150 200 / 300 mW	≤ 1pm	≤ 1MHz	≥ 30 dB	linear, vertical 100:1 extinction ratio	0.7 mm (± 0.1mm)	≤ 1.1	≥ 90%	≥ 70%
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				linear, vertical 300:1 extinction ratio				
LCX-1064S	1064.6 nm[1] (±0.6 nm)	100 / 200 / 300 500 mW								

[1] The LCX-1064S also emits a class 1 visible aiming beam.

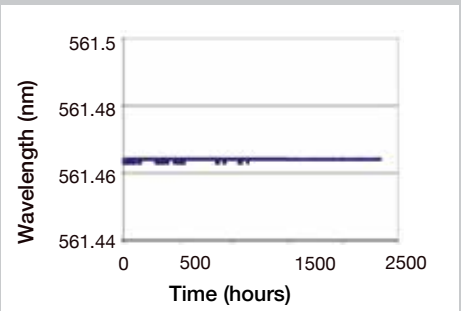
Diode lasers

	Emission wavelength (Tolerance)	Optical power (Continous wave)	Wavelength stability over 8 h and ±3 K	Linewidth	Side mode suppression ratio	Linear polarization extinction ratio	Beam waist diameter (at 1/e²)	Beam quality factor (M^2)	Beam circularity in far field	Coupling efficiency into a single mode fiber
LBX-633S	633 nm (±0.5 nm)	40 mW	≤ 10 pm	≤ 100MHz	≥ 35 dB	50:1	0.2 to 0.6 mm	≤1.9	≥ 65%	≥ 50%
LSX-785S-ISO	785 nm (±0.5 nm)	150 mW with isolator			≥ 25 dB	100:1	0.4 to 0.6 mm	≤1.25	≥ 90%	
LBX-830S	830 nm (±0.5 nm)	150 mW			≥ 35 dB	50:1	0.5 to 1.0 mm	≤1.9	≥ 65%	
LBX-785S-MM	785 nm (±0.5 nm)	450 / 600 mW	≤ 10 pm	100 pm 60 pm typ.	≥ 35 dB	Delivery on a multimode fiber 100 µm-core diameter 0.22 numerical aperture				
LBX-830S-MM	830 nm (±0.5 nm)									
LBX-976S-MM	976 nm (±0.5 nm)									
LBX-1064S-MM	1064 nm (±0.5 nm)									

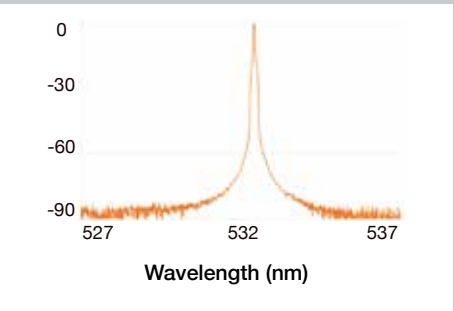
Power stability versus temperature
LCX-561S



Wavelength stability versus time
LCX-561S



Narrow linewidth spectrum
LCX-532S



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)

Power adjustment; the MPA is a continuous control of the optical power. It is ideal to ensure wavelength stability.

- 0-100 % power range (full contrast with e-m shutter)
- Analog voltage or software command inputs
- Transmission ratio : ≥ 85 %
- Response time: <1 s
- Dynamic range ≥ 30 dB
- Digital modulation up to-5Hz with e-m shutter
- Compatible with an isolator

Accousto-Optic Modulator (AOM)

Modulated output; analog or digital modulation up to 3 MHz.

- Transmission ratio: ≥ 85 %
- Response time: 100 ns typical
- Dynamic range ≥ 40 dB
- Electro-mechanical shutter for a complete extinction
- Plug & play version with BTC-AOM driver
- USB and Ethernet interfaces

Isolator (ISO)

An optical isolator protects the laser source in reflective environments.

- Degree of isolation ≥ 20 dB typ.
- Transmission ratio ≥ 70 % typ. (wavelength-dependent)
- Compatible with the MPA

L1C-532S

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.

Fiber coupling

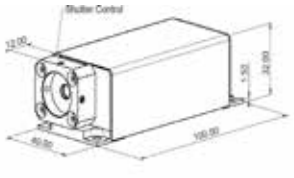
	SM and PM Fiber	MM Fiber (50 µm, 0.22 NA)
Coupling efficiency	LCX LPX LSX ≥ 70 % LBX-S ≥ 50 %	≥ 80 %
Power stability over 8 h, ± 1.5 K	± 2 %	± 2 %
Polarization extinction ratio (PMF only)	≥ 50:1	n/a
Available optical connectors	FC-APC	AR-coated SMA FC-APC
Fiber length	2.0 m	2.0 m

System specifications

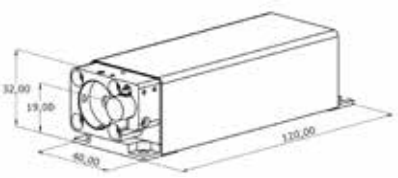
Plug and Play, CDRH-compliant versions

Dimensions in mm

LCX series
DPSS laser

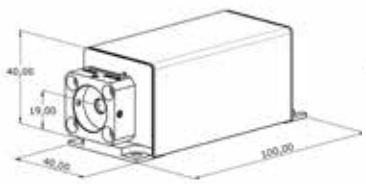


LPX series
DPSS laser



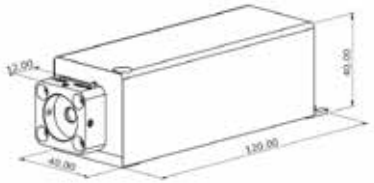
The electro-mechanical shutter is standard on LPX models

LBX series
Stabilized laser diode



Optional heatsink available

LSX series
Stabilized laser diode



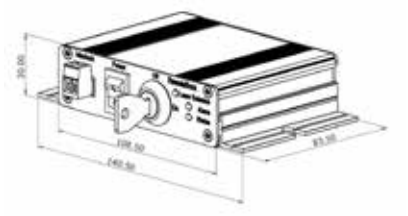
Optional heatsink available

Power-adjustable versions (PPA)

PPA - ControlBoxx

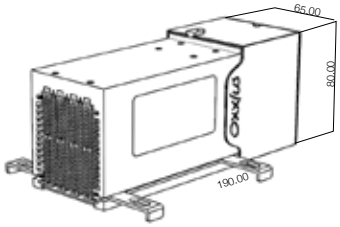
Fixed power versions (PPF)

PPF - RemoteBoxx



For improved stability

Heat sink



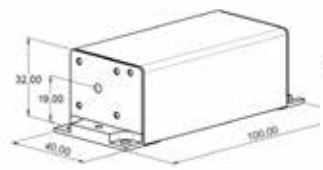
Compliance	CE and FDA 21 CFR 1040.10 / 1040.11
Operating temperature	10 to 38 °C (ambient air)
Power consumption	≤ 25 W
Storage temperature	0 to 60 °C

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

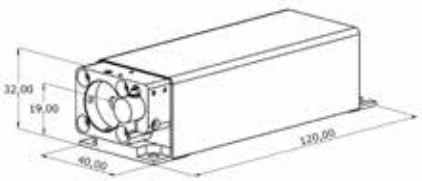
OEM - dedicated versions

Control electronics is integrated into the laser head

LCX series
DPSS Laser

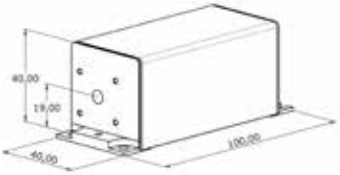


LPX series
DPSS Laser

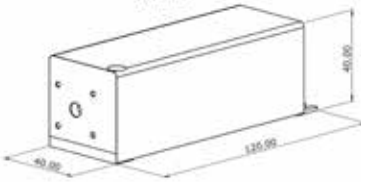


The electro-mechanical shutter is standard on LPX

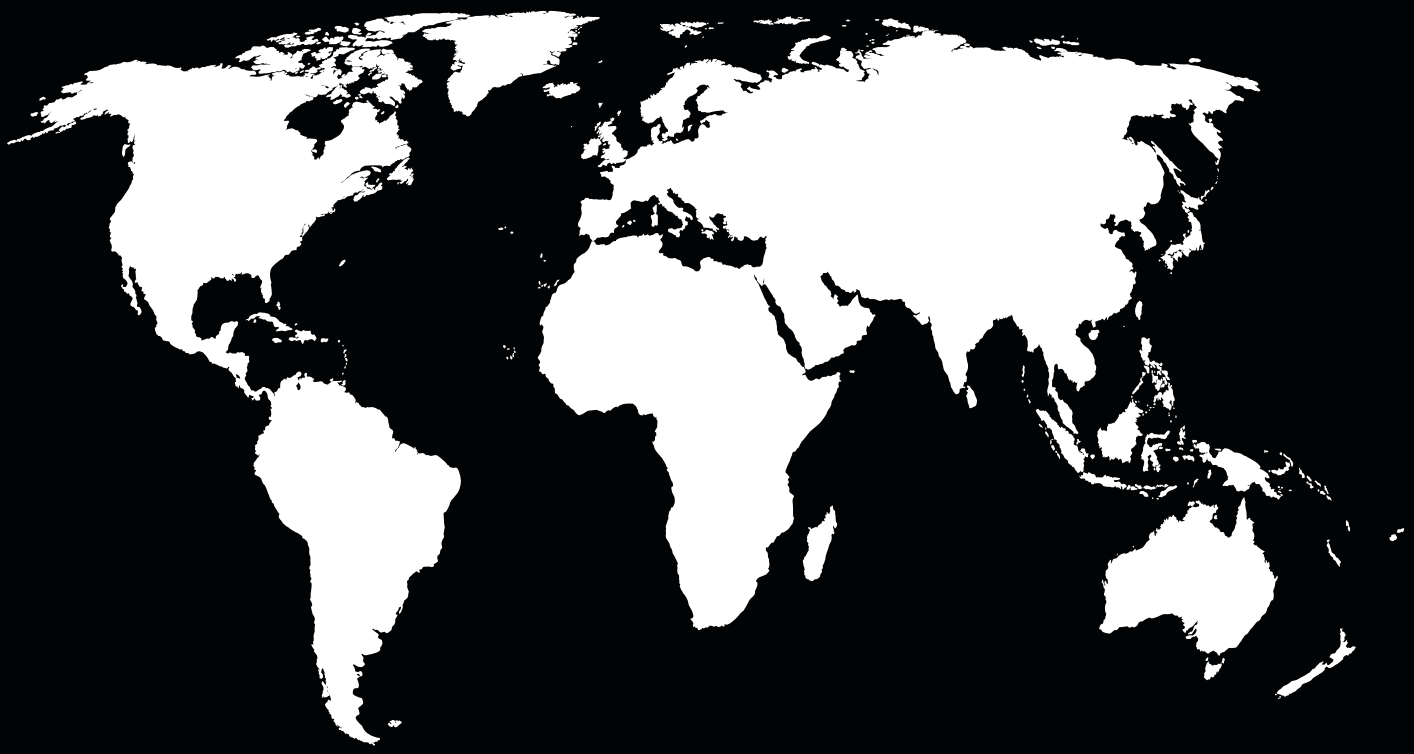
LBX series
Stabilized laser diode



LSX series
Stabilized laser diode
Integrated isolator



	LCX and LPX	LBX and LSX
Compliance	FDA 21 CFR 1040.10 / 1040.11	
Operating temperature baseplate	10 to 50 °C	20 to 35 °C
Power consumption	≤ 25 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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