

# Oxxiús

Simply Light

## LaserBoxx

### Continuous and Modulated Lasers



Fluorescence Excitation  
Confocal Microscopy  
Super Resolution Imaging  
Flow Cytometry  
DNA Sequencing  
Optogenetics  
Polymer Curing  
Material Analysis  
Laser Marking  
Wavelength Combination

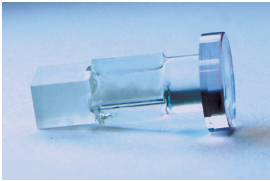
# LaserBoxx

One platform for all colors

## Technology

### DPSS lasers

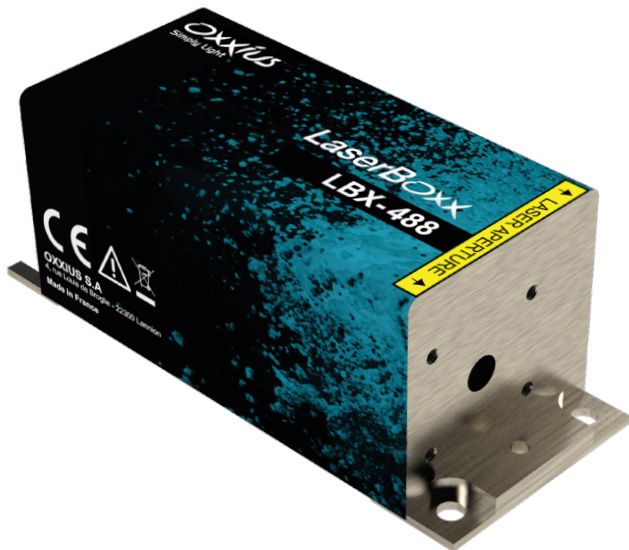
The LCX and LPX *LaserBoxx* are diode-pumped solid-state (DPSS) laser sources. The unique feature of these models is a proprietary, **Alignement-free Monolithic Resonator (AMR)**.



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 ( $\leq 1\text{pm}$ ) on the market, as well as an important robustness over time. The LCX and LPX models are insensitive to temperature variations and to mechanical vibrations.



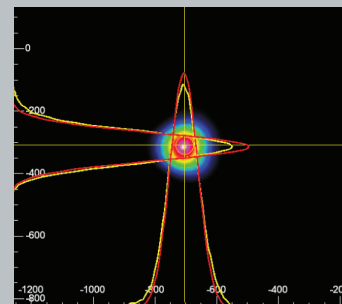
### Diode lasers

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

The LBX *LaserBoxx* consists of a laser diode emitter with integrated control electronics. It provides a superior beam quality, an excellent stability and fast modulation capabilities.

### Common key features

- TEM<sub>00</sub> beam, up to 500 mW
- Ultra-low noise  $\leq 0.2\%$  rms
- 100x40 mm industry standard footprint (LBX and LCX)
- Integrated control electronics
- Low profile laser head
- SM/PM/MM fiber coupling options
- USB and RS-232 interfaces
- Dedicated control software
- External controller with power display (Plug&Play versions, CDRH-compliant)



Beam profile  
LCX-553L-200-CSB

# Optical specifications

|          | Emission wavelength<br>(Tolerance) | Linewidth<br>(FWHM)      | Output power<br>(Continuous wave) | Power stability<br>over 8 h and ±3 K | Optical noise    | Beam waist diameter<br>(at 1/e <sup>2</sup> ) | Beam quality factor<br>(M <sup>2</sup> ) | Polarization extinction ratio <sup>(2)</sup> | Digital modulation<br>Rise/fall time | Analog modulation bandwidth<br>(- 3 dB) |
|----------|------------------------------------|--------------------------|-----------------------------------|--------------------------------------|------------------|-----------------------------------------------|------------------------------------------|----------------------------------------------|--------------------------------------|-----------------------------------------|
| LBX-375  | 375 nm<br>(±5 nm)                  | ≤ 1.5 nm                 | 70 mW                             | ± 0.5 %<br>APC and ACC               | ≤ 0.2 %          | 0.7 mm                                        | ≤1.3                                     | 100:1                                        | ≤ 2 ns                               | ≥ 3 MHz                                 |
| LBX-395  | 395 nm<br>(±5 nm)                  |                          | 120 mW                            |                                      |                  | 0.8 mm                                        | ≤1.25                                    |                                              | ≤ 4 ns                               | ≥ 2.5 MHz                               |
| LBX-405  | 405 nm<br>(±5 nm)                  |                          | 50/100/<br>180/300 mW             |                                      |                  | 0.7 mm                                        | ≤1.25                                    |                                              | ≤ 2 ns                               | ≥ 3 MHz                                 |
| LBX-415  | 415 nm<br>(±5 nm)                  |                          | 120 mW                            |                                      |                  | 0.7 mm                                        |                                          |                                              |                                      |                                         |
| LBX-445  | 445 nm<br>(±5 nm)                  |                          | 100/500 mW                        |                                      |                  | 0.7 mm                                        |                                          |                                              |                                      |                                         |
| LBX-450  | 450 nm<br>(±10 nm)                 |                          | 100 mW                            |                                      |                  | 0.7 mm                                        |                                          |                                              |                                      |                                         |
| LBX-473  | 473 nm<br>(±5 nm)                  | 100/300 mW               | 0.8 mm                            |                                      |                  |                                               |                                          |                                              |                                      |                                         |
| LBX-488  | 488 nm<br>(±5 nm)                  | 40/60/100/<br>200/300 mW | 0.7 mm                            |                                      |                  |                                               |                                          |                                              |                                      |                                         |
| LBX-505  | 505 nm<br>(±5 nm)                  | 70 mW                    | 0.7 mm                            |                                      |                  |                                               |                                          |                                              |                                      |                                         |
| LBX-515  | 515 nm<br>(±2 nm)                  | 150 mW                   | 0.8 mm                            |                                      |                  |                                               |                                          |                                              |                                      |                                         |
| LBX-522  | 522 nm<br>(±2 nm)                  | 70/100 mW                | 0.8 mm                            |                                      |                  |                                               |                                          |                                              |                                      |                                         |
| LCX-532L | 532.3 nm<br>(±0.3 nm)              | ≤ 0.1 nm                 | 50/100/150/<br>200/300 mW         | ± 1 %<br>APC                         | ≤ 0.5 %          | 0.7 mm                                        | ≤1.1                                     | 1000:1                                       | Optional L1C-AOM<br>0 Hz - 3 MHz     |                                         |
| LPX-532L |                                    |                          | 500/800 mW                        |                                      | ≤ 0.2 %          |                                               |                                          |                                              |                                      |                                         |
| LCX-553L | 553 nm<br>(±0.4 nm)                |                          | 50/100/200<br>mW                  |                                      | ≤ 0.5 %          |                                               |                                          |                                              |                                      |                                         |
| LCX-561L | 561.4 nm<br>(±0.4 nm)              |                          | 50/100/<br>150/200 mW             |                                      | ≤ 2 %            |                                               |                                          |                                              |                                      |                                         |
| LPX-561L |                                    |                          | 300/500 mW                        |                                      |                  |                                               |                                          |                                              |                                      |                                         |
| LPX-607L | 607.5 nm<br>(±1 nm)                |                          | 100/200 mW                        |                                      |                  |                                               |                                          |                                              |                                      |                                         |
| LBX-633  | 633 nm<br>(±3 nm)                  | ≤ 1.2 nm                 | 100 mW                            | ± 0.5 %<br>APC and ACC               | ≤ 0.2 %          | 0.8 mm                                        | ≤1.25                                    | 100:1                                        | ≤ 15 ns                              | ≥ 3 MHz                                 |
| LBX-638  | 638 nm<br>(-6/+4 nm)               |                          | 100/150/<br>180 mW                |                                      |                  | 0.9 mm                                        |                                          | 100:1 <sup>(1)</sup>                         | ≤ 2 ns                               |                                         |
| LBX-640L | 639.7 nm<br>(±1 nm)                | ≤ 0.3 nm                 | 300/500/<br>1000 mW               | ± 1 % APC                            | ≤ 2 %            | 0.7 mm                                        | ≤1.1                                     | 100:1                                        | Optional L1C-AOM<br>0 Hz - 3 MHz     |                                         |
| LBX-642  | 642 nm<br>(-7/+5 nm)               | ≤ 1.2 nm                 | 140 mW                            | ± 0.5 %<br>APC and ACC               | ≤ 0.2 %          | 1 mm                                          | ≤1.25                                    | 100:1                                        | ≤ 2 ns                               | ≥ 3 MHz                                 |
| LBX-647  | 647 nm<br>(-1/+4 nm)               | ≤ 1.2 nm                 | 140 mW                            | ± 0.5%<br>APC and ACC                | ≤ 0.2 %          | 1 mm                                          | ≤1.25                                    | 1000:1                                       | ≤ 2 ns                               | ≥ 3 MHz                                 |
| LBX-660  | 660 nm<br>(-8/+5 nm)               |                          | 100 mW                            |                                      |                  | 1 mm                                          |                                          |                                              |                                      |                                         |
| LBX-690  | 690 nm<br>(±5 nm)                  |                          | 180 mW                            |                                      |                  | 1 mm                                          |                                          | 100:1                                        | ≤ 4 ns                               | ≥ 2.4 MHz                               |
| LBX-730  | 730 nm<br>(±10 nm)                 |                          | 40 mW                             | ± 1 %<br>ACC                         | ≤ 1 %            | 0.8 mm                                        |                                          | ≤1.25                                        | 100:1 <sup>(1)</sup>                 | ≤ 2 ns                                  |
| LBX-785  | 785 nm<br>(±10 nm)                 | 100/250/<br>350 mW       | ≤ 0.2 %                           |                                      | 0.7 mm<br>0.5 mm |                                               |                                          |                                              |                                      |                                         |
| LBX-808  | 808 nm<br>(±10 nm)                 | 200 mW                   |                                   |                                      | 0.7 mm           | 100:1                                         |                                          |                                              |                                      |                                         |
| LBX-830  | 830 nm<br>(±10 nm)                 | 100 mW                   | ≤ 0.8 %                           |                                      | 0.9 mm           |                                               |                                          |                                              |                                      |                                         |
| LBX-915  | 915 nm<br>(+/- 10nm)               | 200 mW                   |                                   | ± 2 %<br>ACC                         |                  |                                               |                                          |                                              |                                      |                                         |
| LBX-980  | 980 nm<br>(±10 nm)                 |                          |                                   |                                      |                  |                                               |                                          |                                              |                                      |                                         |
| LBX-1064 | 1064 nm<br>(±10 nm)                |                          |                                   |                                      |                  |                                               |                                          |                                              |                                      |                                         |

<sup>(1)</sup> Polarization ratio is not specified on LBX-638-180 and LBX-785-250/350 models

<sup>(2)</sup> The polarization state is linear, vertical ( $\pm 5^\circ$ )

Power adjustment range: - Diode lasers: 0 - 100 %

- DPSS lasers: 0 to 100 % when mounted in a L1C-MPA platform.



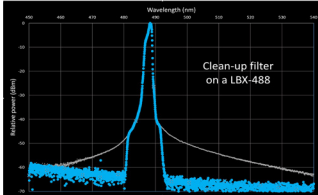
## Options

### Electro-mechanical shutter



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

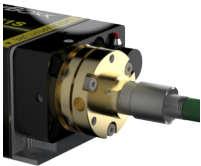
### Clean-up filter



Fluorescence-based applications require to filter out the undesired optical power in order to improve the signal-to-noise ratio on the detection.

Oxxius' clean-up filters attenuate the background spontaneous emission (and other secondary peaks) 10 nm or 20 nm around the main emission peak.

### 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<br>(50 $\mu$ m, 0.22 NA) |
|---------------------------------------------------------|---------------------------|-----------------------------------|
| Coupling Efficiency                                     | $\geq 70\%$ , 80% typical | $\geq 80\%$ , 90% typical         |
| Power Stability over 8 hours, $\pm 1.5$ K               | $\pm 2\%$                 | $\pm 2\%$                         |
| Polarization extinction ratio <sup>(1)</sup> (PMF only) | $\geq 50:1$               | n/a                               |
| Available optical connectors                            | FC-APC<br>FC-PC, FCP8     | AR-coated SMA<br>FC-APC           |
| Fiber length                                            | 2.0 m                     | 2.0 m                             |

<sup>(1)</sup> Polarization ratio is not specified on LBX-638-180 and LBX-785-250/350

### Customization and other options

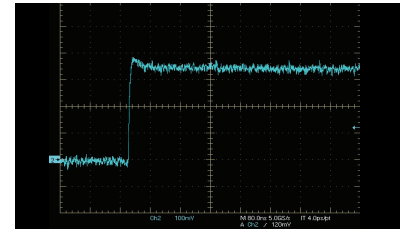
- Specific wavelength selection
- Wavelength stabilization (infrared LBX)
- Wavelength combiners (L4Cc, L6Cc)
- Specific beam diameter or beam shaping
- Optical isolator



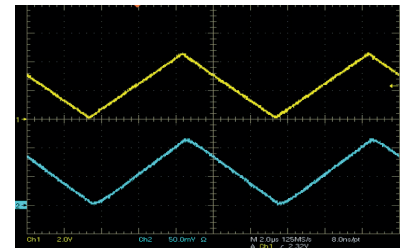
## Performances

Diode Lasers

Digital modulation rise/fall times  $\leq 2$  ns  
(LBX-488-100-CSB)

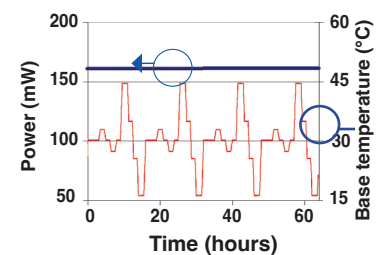


Analog modulation up to 3 MHz  
(LBX-405-100-CSB)

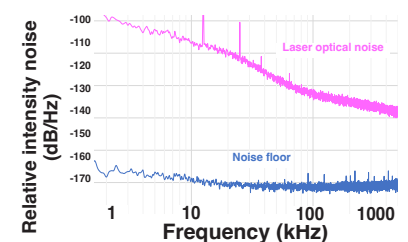


DPSS Lasers

Power stability versus temperature  
(LCX-561)



Relative intensity noise  
(LCX-561L-200)

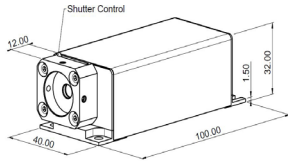


# Environmental Specifications

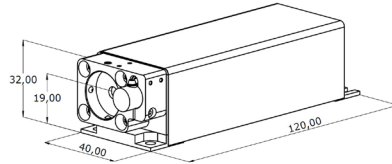
## Plug and Play, CDRH-compliant versions

Dimensions in mm

**LCX series**  
DPSS laser

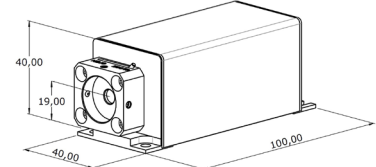


**LPX series**  
DPSS laser



The electro-mechanical shutter is standard on LPX models

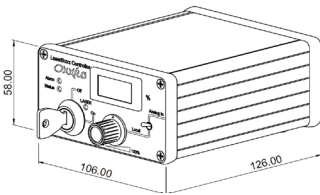
**LBX series**  
Laser diode



Optional heatsink available

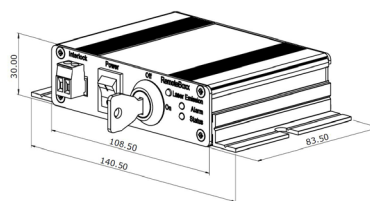
### Power-adjustable versions (PPA)

**PPA - ControlBoxx**



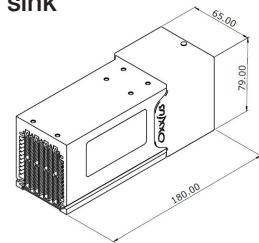
### Fixed power versions (PPF)

**PPF - RemoteBoxx**



### For improved stability

**Heat sink**



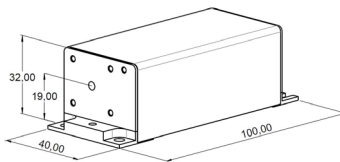
|                              |                                     |
|------------------------------|-------------------------------------|
| <b>Compliance</b>            | CE and FDA 21 CFR 1040.10 / 1040.11 |
| <b>Operating temperature</b> | 10 to 38 °C (ambient air)           |
| <b>Power consumption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

|                       |                                            |
|-----------------------|--------------------------------------------|
| <b>Supply voltage</b> | 100 to 240 VAC<br>Power supply provided    |
| <b>Warm-up time</b>   | LCX, LPX: ≤ 10 minutes<br>LBX: ≤ 2 minutes |
| <b>Interfaces</b>     | Dedicated controller, USB, RS-232          |

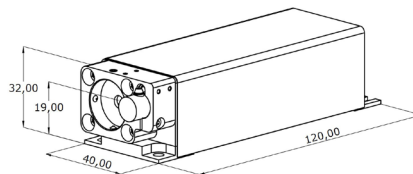
## Stand-alone version for integrators

The control electronics are integrated into the laser head.

**LCX series**  
DPSS Laser

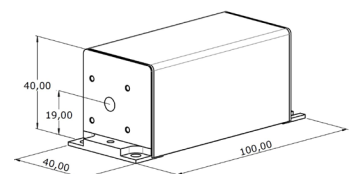


**LPX series**  
DPSS Laser



The electro-mechanical shutter is standard on LPX

**LBX series**  
Laser diode



|                                          | LCX and LPX                                 | LBX         |
|------------------------------------------|---------------------------------------------|-------------|
| <b>Compliance</b>                        | FDA 21 CFR 1040.10 / 1040.11                |             |
| <b>Operating temperature (baseplate)</b> | 10 to 50 °C                                 |             |
| <b>Power consumption</b>                 | ≤ 25 W                                      | ≤ 10 W      |
| <b>Storage temperature</b>               | 0 to 60 °C                                  |             |
| <b>Supply voltage</b>                    | 5 to 12 VDC                                 |             |
| <b>Warm-up time</b>                      | ≤ 10 minutes                                | ≤ 2 minutes |
| <b>Communication interfaces</b>          | USB, RS-232, dedicated electronic interface |             |



## Our sales network

Our distributors are present all over the world, making our products easily accessible wherever you are. To find the full list of our partners and their locations, visit our website: [www.oxxius.com/contact-us](http://www.oxxius.com/contact-us).



## About Oxxius

Founded in 2002, Oxxius develops, manufactures and sells advanced DPSS and laser diode modules across the ultraviolet, visible, and near-infrared spectra.

Our solutions deliver exceptional optical performance in an ultra-compact design, making them easy to integrate into instruments for life science, metrology, and manufacturing applications.

Oxxius also offers compact and versatile multicolor laser sources wavelength combiners, with up to 7 laser lines.



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