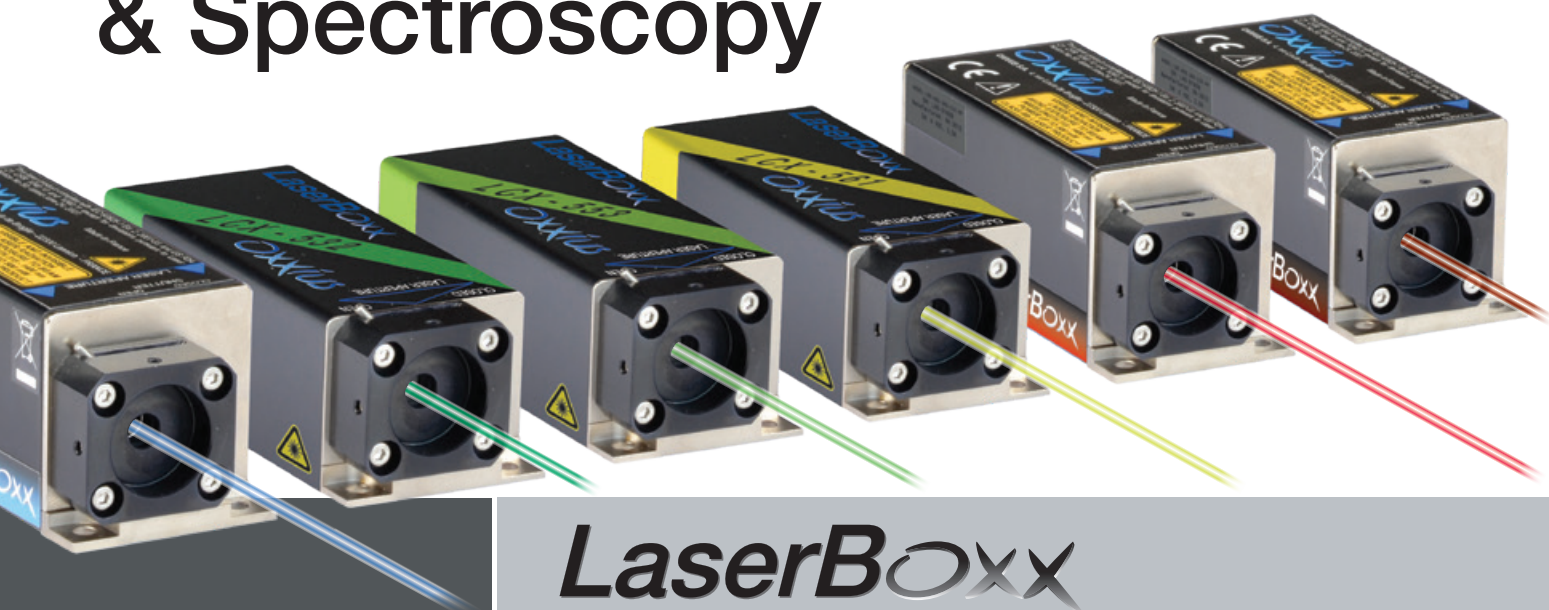


Measurement & Spectroscopy



All-in-One laser

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

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 LCX-532 & LCX-1064, 500 mW
 - ≤ 15 W for LCX-561 300 mW
 - ≤ 15 W LCX-639, 250 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
- TEM₀₀ Beam
- Beam pointing $\leq 5 \mu\text{m}/^\circ\text{C}$
- 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 mm²)

532

553

561

633

639

785

830

1064

Specifications

| | LCX-532S | LCX-553S | LCX-561S | LCX-639S | LCX-1064S | LBX-633S | LBX-785S-ISO | LBX-830S |
|---|-------------------------------------|----------------------|-------------------------------------|----------------------|-----------------------|---------------------------------|-------------------------|---------------|
| Technology | DPSS | | | | | Stabilized laser diode | | |
| Optical characteristics | | | | | | | | |
| Emission wavelengths | 532.3 nm ± 0.3 nm ⁽¹⁾ | 553.0 nm ± 0.4 nm | 561.4 nm ± 0.4 nm ⁽¹⁾ | 639.0 nm ± 0.4 nm | 1064.6 nm ± 0.5 nm | 632.5 nm ± 0.5 nm | 785 nm ± 0.5 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 200 mW | 100 mW to 300 mW | 100 mW to 250 mW | 100 mW to 500 mW | 40 mW | 170 mW with isolator | 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% | 30-100% | 30-100% | contact Oxixus | | |
| Optical noise % RMS, 10Hz - 20MHz bandwidth | ≤ 0.2% | | | | | | | |
| Transverse singlemode free-space beam (*) | | | | | | | | |
| Beam waist diameter (typ.) at 1/e ² , 50mm from output aperture | 0.7 ± 0.1 mm | | | | | 0.5 to 1.0 mm | 0.7 ± 0.1 mm | 0.5 to 1.0 mm |
| Beam divergence at 1/e ² , full angle, in far field | 1.0 ± 0.2 mrad | | | 2.0 ± 0.4 mrad | | 2 to 4 mrad | ≤ 1.7 mrad | 2 to 4 mrad |
| Beam quality factor (M ²) | ≤ 1.1 | | | | | ≤ 1.9 | ≤ 1.25 | ≤ 1.9 |
| Beam circularity in far field | ≥ 90% | | | | | ≥ 65% | ≥ 90% | ≥ 65% |
| Beam pointing stability | ≤ 5 μrad/°K | | | | | | | |
| Polarization state | linear, vertical | | | | | | | |
| Polarization extinction ratio (typ.) | 1000:1 | | | | | 100:1 | | |
| PM fiber coupling option (*) | | | | | | | | |
| Nominal output power | 35 mW to 350 mW | 35 mW to 140 mW | 35 mW to 210 mW | 70 mW to 175 mW | 35 mW to 350 mW | 20 mW | 115 mW | 40 mW |

(1) ± 0.5 nm at 500 mW

* Specifications at nominal power

Other available wavelengths: 405 nm, 946 nm

LCX - DPSS Monolithic Resonator

Technology

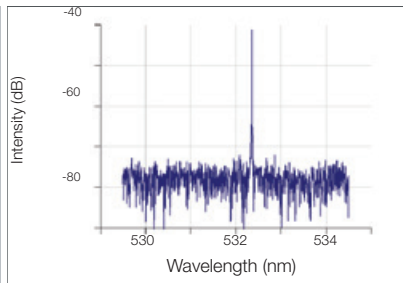
The unique feature of the LaserBoxx DPSS is a proprietary, Alignment-free Monolithic Resonator (AMR). The elements of resonator are assembled into a single ultra-low-loss optical subsystem, using a proprietary crystal bonding technique.

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.

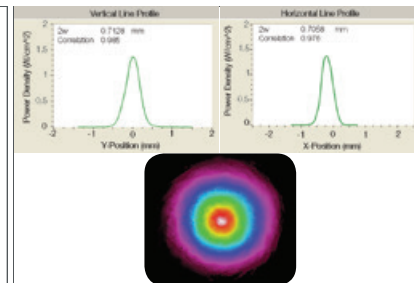


Benefits of the AMR

The OXXIUS 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.

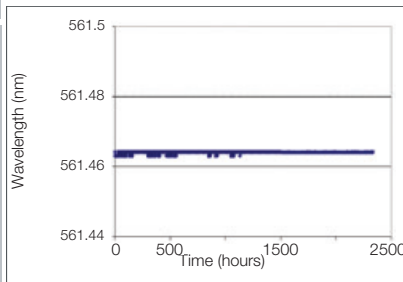


Single Longitudinal Mode
LCX-532S spectrum

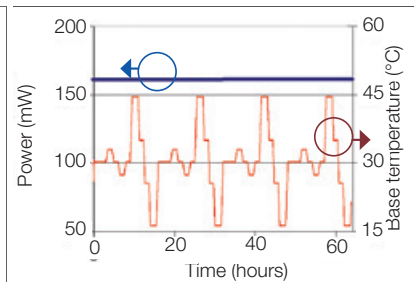


Beam Profile
LCX-553S-200

Wavelength Stability
LCX-561S wavelength vs time



Power Stability
LCX-561S power vs temperature



LBX Platform

Technology

The LBX line is a performing driver integrated platform for laser diode. It provides fast TTL and analog modulation.

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.

Biophotonics & Industrial

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 ³ | 100 x 40 x 40 mm ³ 120 x 40 x 40 mm ³ (ISO) |
| 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, 556 nm)
- o Opto-mechanical Subassemblies including:
 - Wavelengths combiner (L2C, L4Cc, L6Cc)
 - AO modulator (see L2C datasheet)
 - 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 $\geq 25\text{dB}$ 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.

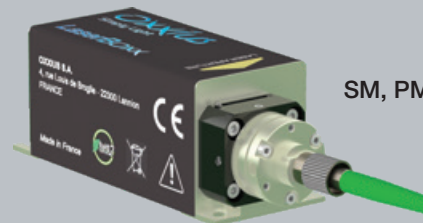
The fiber coupling and other options are fully compatible with the electro-mechanical shutter.

The ACX-SHTE is actuated via the LCX embedded software or via a standard TTL signal.



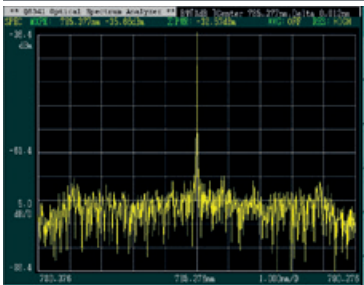
Fiber coupling options

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

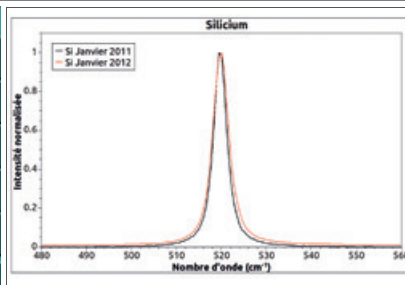


SM, PM & MM Fiber coupling

| Specifications | | |
|---------------------------------|---|---------------------------------------|
| SM and PM Fiber | | MM Fiber (50 μm , 0.22 NA) |
| $\geq 70\%$ | Coupling Efficiency | $\geq 80\%$ |
| 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, $\pm 1.5\text{ }^\circ\text{C}$ | $\pm 2\%$ |
| 2.0 m | Fiber length | 2.0 m |

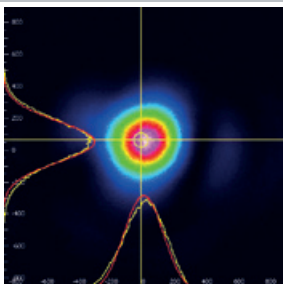


Single Longitudinal Mode
LBX-785S spectrum

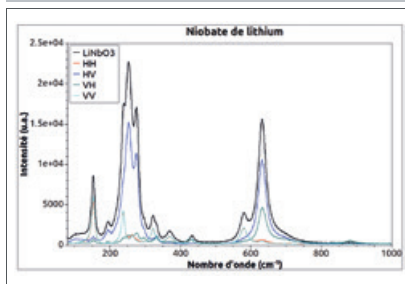


Si Raman Spectrum
obtained with LBX-785S

Beam Profile
LBX-633S

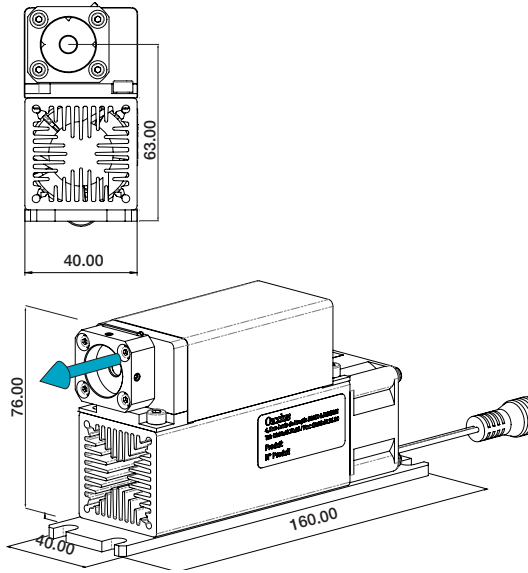


LiNb Raman Spectrum
obtained with LBX-785S



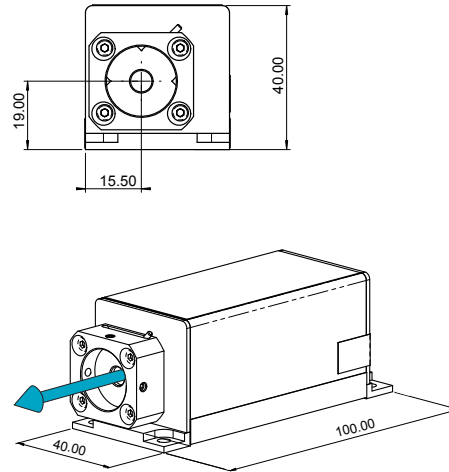
Mechanical Drawings

LCX series, Plug & Play DPSS Laser

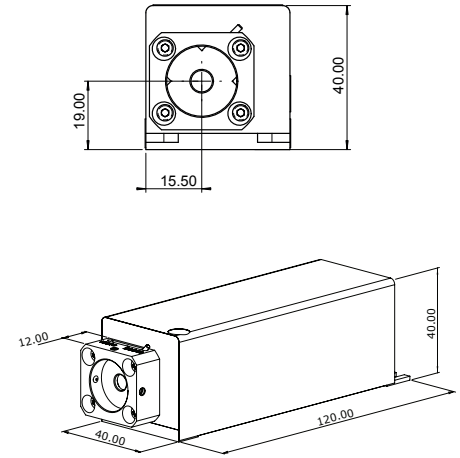


LBX series, Plug & Play Laser Diode

LBX-633S / LBX-830S

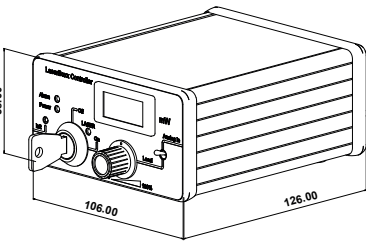


LBX-785S-ISO



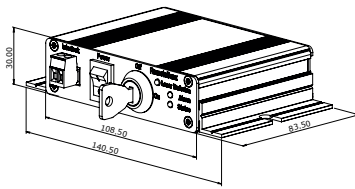
The heatsink is optional

PPA - ControlBoxx



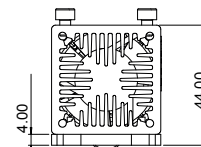
With power adjustable

PPF - RemoteBoxx

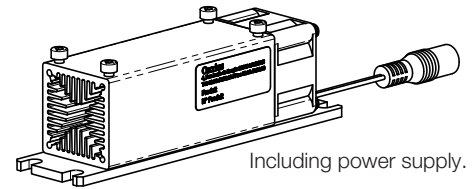


Standard fixed output power

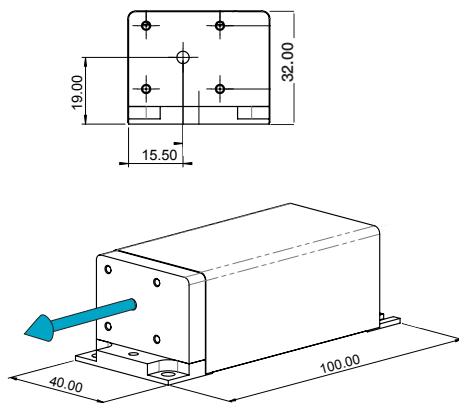
Optional heatsink for LCX series



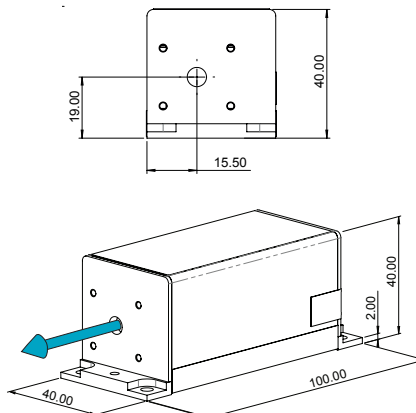
Optional air-forced heat sink for maximum ambient temperature of 38°C.



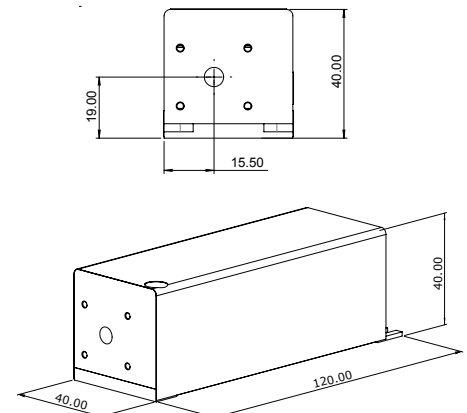
LCX series, OEM DPSS Laser



LBX series, OEM Laser Diode



LBX-785S-ISO



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

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