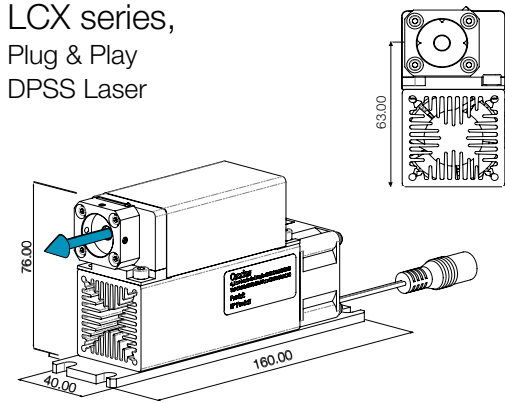


## Biophotonics & Industrial

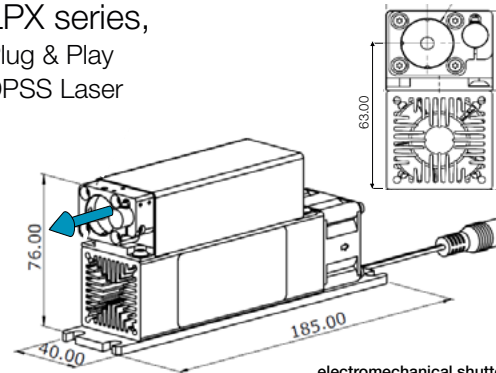


### System Specifications - CDRH compliant versions

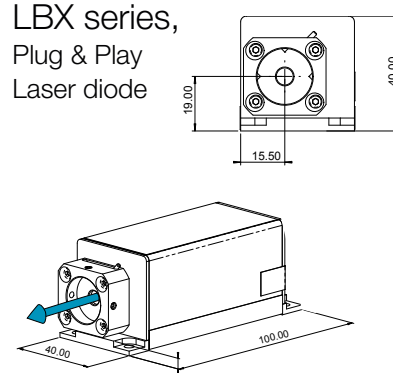
LCX series,  
Plug & Play  
DPSS Laser



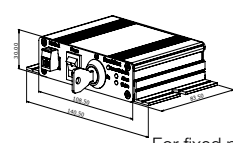
LPX series,  
Plug & Play  
DPSS Laser



LBX series,  
Plug & Play  
Laser diode

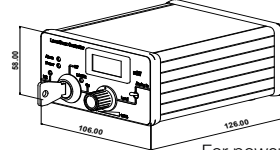


PPF - RemoteBoxx



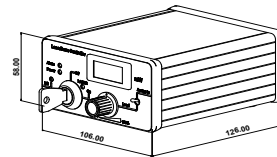
For fixed power versions

PPA - ControlBoxx



For power adjustable versions

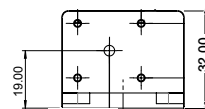
PPA - ControlBoxx



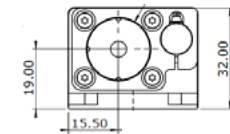
Device qualification	CE	Supply voltage	100-240 V AC external power supply
Operating temperature	10-38°C (ambient)	Warm-up time	LCX & LPX : ≤ 10 minutes / LBX : ≤ 2 minutes
Power Consumption	≤ 20 W	Communication interfaces	USB, RS-232, dedicated I/O interface
Storage temperature	0-60 °C	Laser head weight	≤ 600 g with heatsink

### System Specifications - OEM

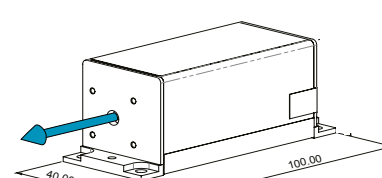
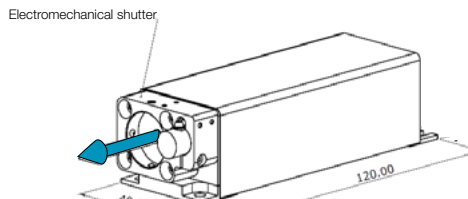
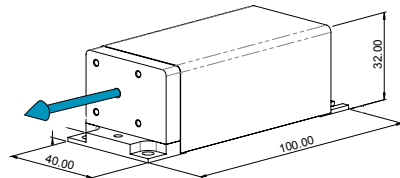
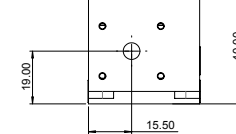
LCX series,  
OEM  
DPSS Laser



LPX series,  
OEM  
DPSS Laser



LBX series,  
OEM  
Laser diode



	LCX & LPX	LBX
Device qualification	CE	CE
Operating temperature	10 - 50 °C (baseplate)	10 - 50 °C (baseplate)
Power Consumption	≤ 20 W	≤ 10 W
Storage temperature	0-60 °C	0-60 °C
Supply voltage	LCX : 5 - 12 V DC / LPX : 6 - 12 V DC	5 - 12 V DC
Warm-up time	≤ 10 minutes	≤ 2 minutes
Communication interfaces	USB, RS-232, dedicated I/O interface	USB, RS-232, dedicated I/O interface
Laser head weight	≤ 250 g	≤ 330 g
Electronic	integrated into laser head	integrated into laser head

## LaserBoxx

One platform for all colors

### Low Noise CW Monolithic DPSS benefits

- Up to 500 mW
- Low profile laser head (32 mm)
- Lowest power consumption
  - ▶ ≤ 12 W for LCX's, any wavelength, less than 200 mW
  - ▶ ≤ 20 W for LPX-532 & LPX-640, 500 mW
  - ▶ ≤ 15 W for LPX-561, 300 mW
- Tailored beam diameter capability (0.6 up to 1.4 mm)

### Laser Diode modules benefits

- Fast TTL and analog modulation
- Optional clean up filter

Super Resolution Imaging  
Confocal Microscopy  
Flow Cytometry  
DNA Sequencing  
Optogenetics

Fluorescence Microscopy  
Wavelength Combiner  
Polymer Curing  
Material Analysis  
Laser Marking

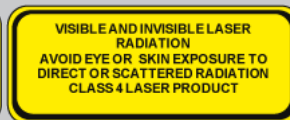
### Common key features

- Ultra Low Noise ≤ 0.2% rms
- TEM<sub>00</sub> Beam
- Beam pointing ≤ 5 μrad/°C
- SM/PM/MM fiber coupling options
- USB and RS232 computer interfaces
- Graphic User Interface with remote diagnostics
- Remote ControlBoxx with power display (Plug&Play versions - CDRH)
- Controllers integrated into laser head
- LBX and LCX - Industry standard footprint (100x40 mm<sup>2</sup>)

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375 405 445 450 473 488 505 515 522 532 553 561 633 638 640 642 647 660 730 785 980 1064

# Specifications

# Biophotonics & Industrial

	LBX-375	LBX-405	LBX-445	LBX-450	LBX-473	LBX-488	LBX-505	LBX-515	LBX-522	LCX-532L	LPX-532L	LCX-553L	LCX-561L	LPX-561L	LPX-640L	LBX-633	LBX-638	LBX-642	LBX-647	LBX-660	LBX-730	LBX-785	LBX-980	LBX-1064																																																			
Technology	Laser diode										DPSS					Laser diode																																																											
<b>Optical characteristics</b>																																																																											
Emission wavelength (typ.)	375 nm	405 nm	445 nm	450 nm	473 nm	488 nm	505 nm	515 nm	522 nm	532.3 nm	532.3 nm	553.0 nm	561.4 nm	561.4 nm	639.7 nm	633 nm	638 nm	642 nm	647 nm	660 nm	730 nm	785 nm	980 nm	1064 nm																																																			
Wavelength range	± 5 nm	± 5 nm	± 5 nm	± 10 nm	± 5 nm	± 5 nm	± 5 nm	± 2 nm	± 2 nm	± 0.5 nm	± 0.5 nm	± 0.5 nm	± 0.5 nm	± 1 nm	± 3 nm	-6/+4 nm	-7/+5 nm	-1/+4 nm	-8/+5 nm	± 10 nm	± 10 nm	± 10 nm	± 10 nm																																																				
Linewidth	≤ 1.5 nm - Clean Up filter (optional)					≤ 2 nm - Clean Up filter (optional)					≤ 0.1 nm		≤ 0.1 nm			≤ 0.3 nm																																																											
Output power, continuous wave	70 mW	50, 100, 180, 300 mW	100, 500 mW	70 mW	100, 300 mW	40, 50, 60, 100, 150, 200 mW***	70 mW	150 mW	70, 100 mW	50 to 300 mW	500 mW	50 to 200 mW	50 to 200 mW	300 mW	300, 500 mW	100 mW	100, 150 mW	180 mW	140 mW	140 mW	100 mW	40 mW	100 mW	250, 350 mW	200 mW	200 mW																																																	
Control mode(s)	Automatic Power Control (APC), Automatic Current Control (ACC)										APC		APC			APC, ACC								ACC																																																			
Power stability over 8 hours and within ±3K	± 0.5%										± 1%		± 1%			± 0.5%								± 1%		± 2%		± 2%																																															
Power adjustment range	0 - 100%										optional : 30 - 100% with L1C-MPA : 0 - 100%		optional 50 - 100% optional 30 - 100% with L1C-MPA : 0 - 100%			5 - 100%								0 - 100%																																																			
Optical noise % RMS, 10Hz - 20MHz bandwidth	≤ 0.2%					≤ 0.2% % RMS, 10 Hz - 2 MHz bandwidth					≤ 0.2%		≤ 0.2%			≤ 1.5%								≤ 0.2%		≤ 1%		≤ 0.2%		≤ 0.8%		≤ 0.8%																																											
<b>Transverse singlemode free-space beam *</b>																																																																											
Beam waist diameter (typ.) at 1/e <sup>2</sup> , 50mm from output aperture	0.7 mm	0.7 mm	0.7 mm	0.55 mm	0.8 mm	0.7 mm	0.7 mm	0.7 mm	0.8 mm	0.7 ± 0.1 mm	0.7 ± 0.1 mm	0.7 ± 0.1 mm	0.7 ± 0.1 mm	0.7 ± 0.1 mm	0.7 ± 0.1 mm	0.8 mm	0.9 mm	1 mm	1 mm	1 mm	0.8 mm	0.7 mm	0.5 mm	0.9 mm	0.9 mm																																																		
Beam divergence at 1/e <sup>2</sup> , full angle, in far field	≤ 1mrad	≤ 1mrad	≤ 1.2mrad	≤ 1.4mrad	≤ 1.1mrad	≤ 1.2mrad	≤ 1.1mrad	≤ 1.1mrad	≤ 1mrad	1.0 to ± 0.2mrad	1.0 to ± 0.2mrad	1.0 to ± 0.2mrad	1.0 to ± 0.2mrad	1.0 to ± 0.2mrad	1.0 to ± 0.2mrad	≤ 1.5mrad	≤ 1.3mrad	≤ 1.3mrad	≤ 1.3mrad	≤ 1.3mrad	≤ 1.3mrad	≤ 1.7mrad	≤ 1.7mrad	≤ 2.3mrad	≤ 1.8mrad	≤ 1.9mrad																																																	
Beam quality factor (M <sup>2</sup> )	≤ 1.3	≤ 1.25	≤ 1.25	≤ 1.25	≤ 1.25	≤ 1.25	≤ 1.25	≤ 1.25	≤ 1.25	≤ 1.1	≤ 1.1	≤ 1.1	≤ 1.1	≤ 1.1	≤ 1.1									≤ 1.25																																																			
Beam circularity, in far field											≥ 90%													≥ 90%																																																			
Beam pointing stability											≤ 5 μrad/K													≤ 5 μrad/K																																																			
Polarization state											linear, vertical at +/-5°													see**		linear, vertical at +/-5°		see**		linear, vertical at +/-5°																																													
Polarization extinction ratio (typ.)	100:1										1000:1					1000:1					100:1					100:1					50:1					see**					100:1					100:1					100:1					100:1					100:1					50:1					50:1				
<b>Modulation functions</b>																																																																											
<b>Digital modulation</b>													<b>Analog modulation</b>																																																														
Max. modulation frequency	150 MHz	150 MHz	150 MHz	150 MHz	150 MHz	150 MHz	150 MHz	150 MHz	150 MHz	150 MHz	150 MHz	150 MHz	150 MHz	150 MHz	150 MHz	150 MHz	150 MHz	150 MHz	150 MHz	150 MHz	150 MHz	150 MHz	150 MHz	150 MHz	150 MHz																																																		
Rise / fall time, 10%-90%	≤ 2 ns	≤ 2 ns	≤ 2 ns	≤ 2 ns	≤ 2 ns	≤ 2 ns	≤ 2 ns	≤ 2 ns	≤ 2 ns	≤ 2 ns	≤ 2 ns	≤ 2 ns	≤ 2 ns	≤ 2 ns	≤ 2 ns	≤ 2 ns	≤ 2 ns	≤ 2 ns	≤ 2 ns	≤ 2 ns	≤ 2 ns	≤ 2 ns	≤ 2 ns	≤ 2 ns	≤ 2 ns																																																		
Bandwidth 3dB cut-off frequency, ACC mode	0 - 5 V input voltage										Optional L1C-AOM DC - 3 MHz					Optional L1C-AOM DC - 3 MHz			0 - 5 V input voltage																																																								
Rise / fall time 10%-90%, ACC mode	≥ 3 MHz															DC-1.5 kHz			≥ 3 MHz																																																								
	≤ 150 ns															20 μs			≤ 150 ns																																																								
<b>PM fiber coupling option *</b>																																																																											
Output power	45 mW	35 to 210 mW	70 to 350 mW	50 mW	70 to 210 mW	25 to 140 mW	50 mW	105 mW	50, 70 mW	35 to 210 mW	350 mW	35 to 140 mW	35 to 140 mW	210 mW	210 to 350 mW	70 mW	70 to 105 mW	120 mW**	95 mW	95 mW	70 mW	25 mW	70 mW	175 to 240 mW**	140 mW	140 mW																																																	

\* Specifications at nominal power    Other available wavelengths: 395 nm, 415 nm, 458 nm, 705 nm, 808 nm, 830 nm.    \*\*\* For LBX-488-50 and LBX-488-60 rise/fall time : ≤ 3.5 ns and Max. modulation frequency : 100 MHz    \*\* Polarization ratio is not specified for LBX-638-180 and for LBX-785-250/350

## LCX & LPX - 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 & LPX lasers are insensitive to temperature variations and mechanical vibrations. High stability and reliability.

## LBX PLATFORM - LASER DIODE

### Technology

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

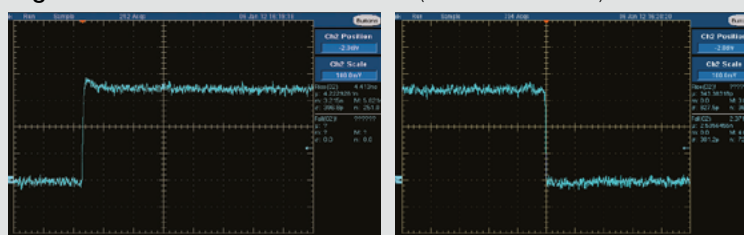
### Benefits

The LBX lasers provide superior beam quality, excellent stability and fast modulation capabilities.

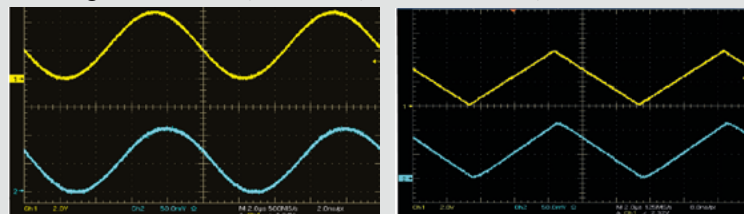
## CUSTOM CAPABILITIES

- Tighter wavelength selection
- Custom wavelengths
- Wavelengths combiners (L4Cc, L6Cc)
- Specific beam diameter or beam shaping
- Optical isolator
- Extended operational temperature range

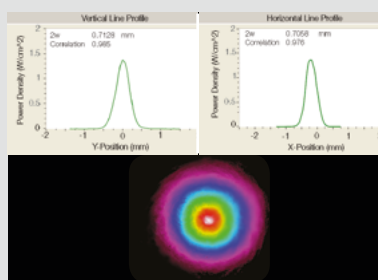
### Digital Modulation Rise/Fall times ≤ 2 ns (LBX-488-100-CSB)



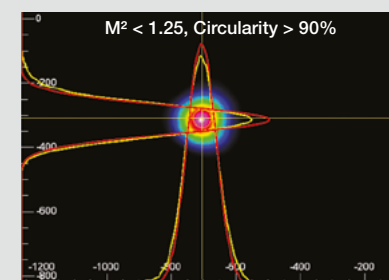
### Analog Modulation up to 3 MHz (LBX-405-100-CSB)



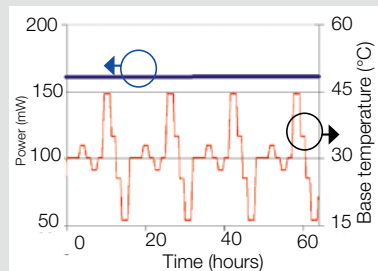
### Beam Profile LCX-553L-200-CSB



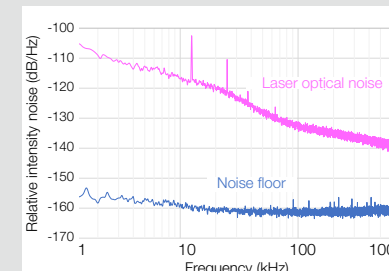
### Beam Profile - Far Field LBX-488-100-CSB



### Power Stability LCX-561L Power vs temperature



### Relative Intensity Noise LCX-561L-200



## FIBER COUPLING

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



SM and PM Fiber	Specifications	MM Fiber (50 μm, 0.22 NA)
≥ 70 %	Coupling Efficiency	≥ 80 %
100 : 1	Polarization Ratio (PMF only)	n/a
FC-APC FC/PC, FCPB on demand	Fiber Output Connector	FC-APC
± 2 %	Power Stability over 8 hours, ± 1.5 °C	± 2 %
2.0 m	Fiber length	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.

The fiber coupling and other options are fully compatible with the electro-mechanical shutter. The ACX-SHTE is actuated via the LCX/LPX embedded software or via a standard TTL signal.

