

Measurement & Spectroscopy



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 & LPX's, any wavelength, less than 200 mW
 - ≤ 15 W for LPX-532 & LCX-1064, 500 mW
 - ≤ 15 W for LPX-561 300 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

Raman Spectroscopy

Brillouin Scattering

Interferometry

Photoluminescence

Holography

Laser Doppler Velocimetry

Laser Ultrasonic

Dynamic Light Scattering

Common key features

- Single Longitudinal mode
- TEM₀₀ Beam
- Beam pointing ≤ 5 μm/°C
- SM/PM/MM fiber coupling options
- USB and RS232 computer interface
- Graphic User Interface with remote diagnostics
- RemoteBoxx - CDRH Plug&Play versions
- Controllers integrated into laser head
- LBX and LCX - Industry standard footprint (100 x 40 mm²)
- LPX and LSX - 120 x 40 mm² footprint

532

553

561

633

640

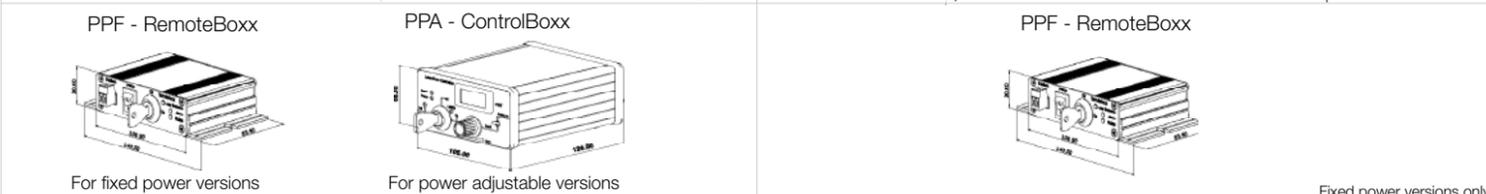
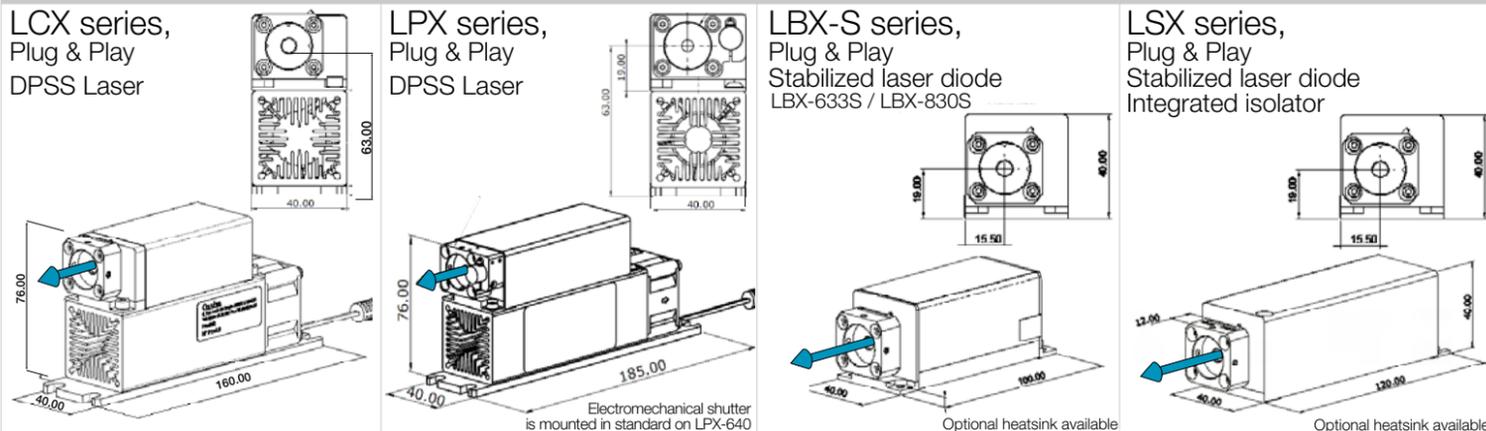
785

830

946

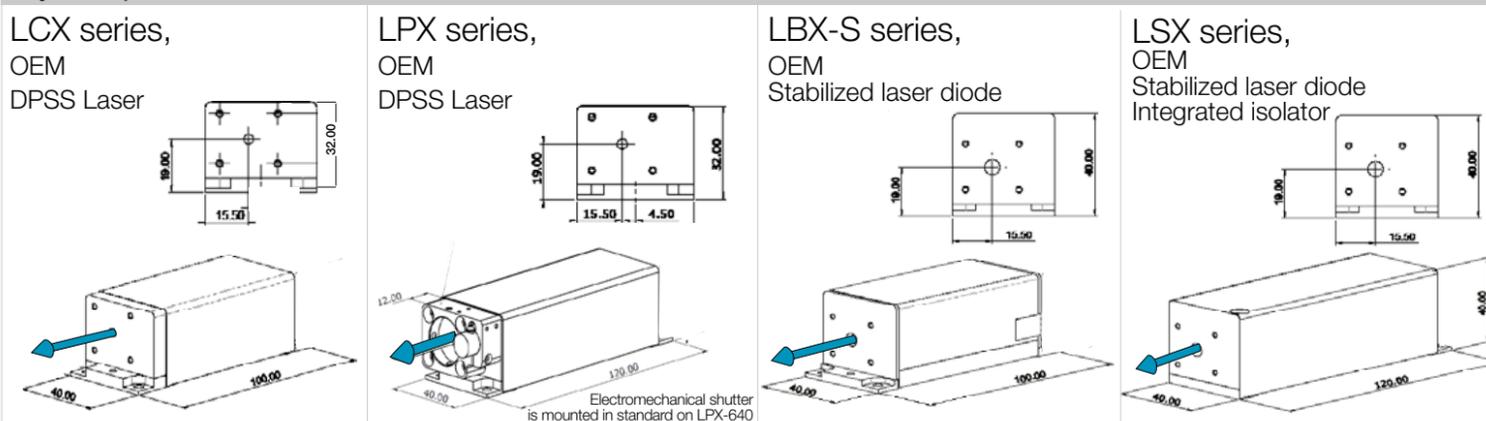
1064

System Specifications - CDRH compliant versions



Device qualification	CE	Supply voltage	100 - 240 V AC external power supply
Operating temperature	10 - 30 °C (ambient)	Warm-up time	≤ 2 minutes
Power Consumption	≤ 25 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 versions

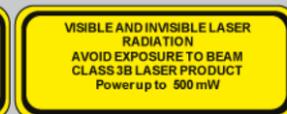


	LCX and LPX	LBX-S and LSX
Device qualification	CE	CE
Operating temperature	10 - 50 °C (baseplate)	20 - 35 °C (baseplate)
Power Consumption	≤ 20 W	≤ 10 W
Storage temperature	0 - 60 °C	0 - 60 °C
Supply voltage	5 - 12 V DC	5 - 12 V DC
Warm-up time	≤ 10 minutes	≤ 2 minutes
Communication interfaces	USB, RS-232, 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

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Specifications

Single Frequency Lasers

	LCX-532S	LPX-532S	LCX-553S	LCX-561S	LPX-561S	LCX-946S	LCX-1064S	LBX-633S	LSX-785S-ISO	LBX-830S	LBX-785S-MM	
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		946.0 nm ± 0.3 nm	1064.6 nm ± 0.6 nm	632.5 nm ± 0.5 nm	785 nm ± 0.5 nm	830 nm ± 0.5 nm	785 nm ± 0.5 nm	
Wavelength Stability over 8 hours and ±3°K	≤ 1 pm						≤ 10 pm			≤ 10 pm		
Linewidth	≤ 1 MHz						≤ 100 MHz typ.			0.07 nm		
Coherence Length	≥ 100 m						≥ 1 m typ.			n/a		
Nominal output power, continuous wave	50 mW to 300 mW	500 mW	50 mW to 200 mW	50 mW to 200 mW	300 mW	50 mW	100 mW to 500 mW***	40 mW	150 mW with isolator	100 mW	500 mW	
Control mode	Automatic power control (APC)						Automatic current control (ACC)			ACC		
Power stability over 8 hours and ±3°K	± 1%									± 1%		
Power Adjustment Optional	L1C-MPA/AOM						L1C-MPA/AOM			n/a		
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 1.0mm	0.5 ± 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						1.9 ± 0.2 mrad	2.0 ± 0.4 mrad	2 to 4 mrad	≤ 1.7 mrad	2 to 4 mrad	n/a
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	random	
PM fiber coupling option (*)												
Nominal output power	35 mW to 210 mW	350 mW	35 mW to 140 mW	35 mW to 140 mW	210 mW	35 mW	70 mW to 350 mW	20 mW	105 mW	40 mW	500 mW 105 μm, 0.22 NA	

(1) ± 0.5 nm at 500 mW * Specifications at nominal power ** 50 - 100% for LCX-553S *** The LCX-1064S emits 532nm aiming beam Other available wavelengths: 405 nm

L1C & L1C+ ADVANCED FEATURES FOR LCX, LPX, LSX and LBX



The L1C platform offers an efficient, compact and cost effective solution to add advanced features to the LCX, LPX, LSX or LBX-S lasers:

- MPA Motorized Power Attenuator**
 - 0 to 100% range
 - Maintains beam quality
 - Spectral properties keeps
 - Analog input control
 - USB and RS-232 interfaces
- AOM Accousto-Optic Modulator**
 - DC-3 MHz bandwidth
 - > 85% power transmission
 - USB interface
 - Analog digital inputs
- ISO Isolators**
 - Compact
 - High power versions

CUSTOM CAPABILITIES

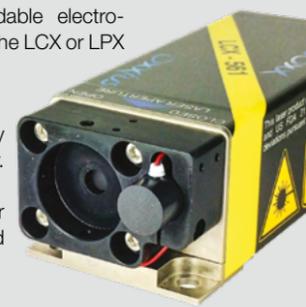
- Wavelength tunability up to 10 pm
- Tighter wavelength selection
- Custom wavelengths
- Opto-mechanical Subassemblies including:
 - Wavelengths combiner (L4Cc, L6Cc)
 - AO modulator (see L1C datasheet)
 - Specific beam diameter or beam shaping
- Custom control interface
- Extended operational temperature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

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 or LPX embedded software or via a standard TTL signal.



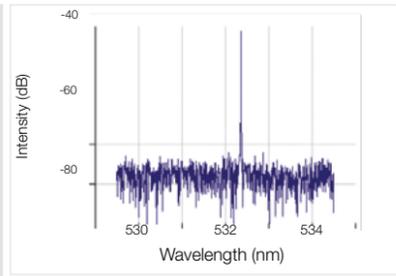
LCX & LPX - DPSS MONOLITHIC RESONATOR

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.

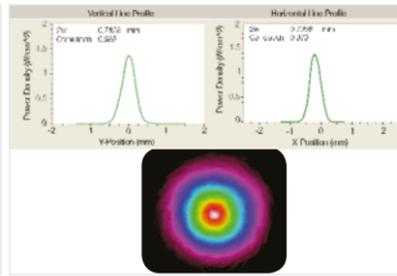


A highly transparent compound, deposited on chemically activated end-faces of two crystals, creates a bond that is extremely robust over time, temperature variations, and insensitive to mechanical vibrations. Dielectric mirrors coated at the end-faces of the crystals complete the monolithic assembly with no moving parts.

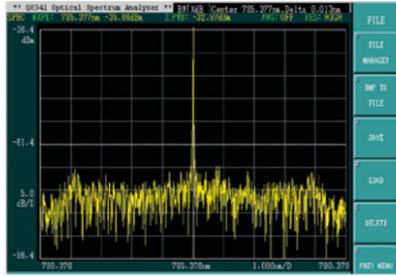
Benefits of the AMR
The OXXIUS AMR technology offer the highest spectral quality of the market and a high robustness over the time. The LCX & LPX lasers are insensitive to temperature variations and mechanical vibrations. High stability and reliability.



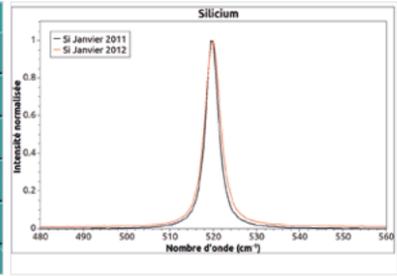
Single Longitudinal Mode
LCX-532S spectrum



Beam Profile
LCX-553S-200



Single Longitudinal Mode
LSX-785S spectrum

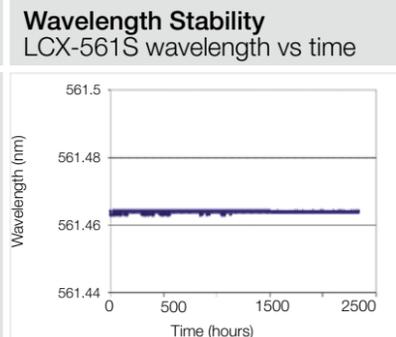


Si Raman Spectrum
obtained with LSX-785S

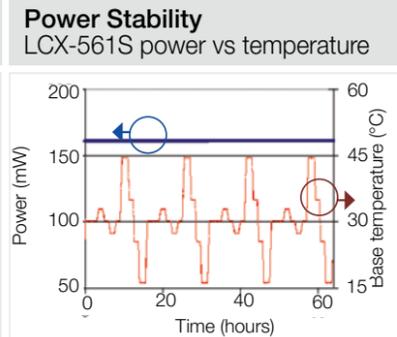
LBX & LSX PLATFORM

Technology
LBX & LSX lines are performing driver integrated platforms for stabilized laser diode.

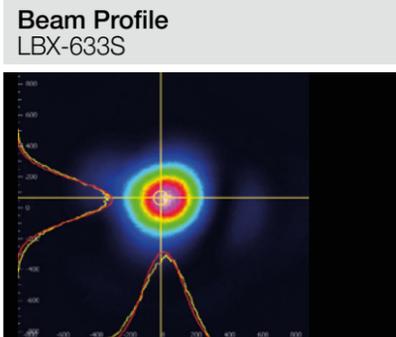
Benefits
LBX-S and LSX-S deliver ultra narrow linewidth thanks to its excellent temperature stability and low noise current. The Oxxius proprietary embedded firmware locks the laser on same mode at each start up.



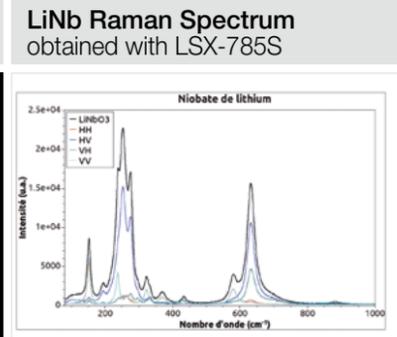
Wavelength Stability
LCX-561S wavelength vs time



Power Stability
LCX-561S power vs temperature



Beam Profile
LBX-633S



LiNb Raman Spectrum
obtained with LSX-785S

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)
LCX, LPX, LSX: ≥ 70 % LBX-S 50%	Coupling Efficiency	≥ 80 %
100 :1	Polarization Ratio (PMF only)	n/a
FC/APC FC/PC, FCP8 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