

# OBIS LX SF - Single Frequency

Narrow Linewidth, Single  
Longitudinal Mode Lasers

OBIS lasers now with single frequency, narrow linewidth in 405 nm, 633 nm, and 660 nm. These are direct diode laser modules with an internal Volume Holographic Grating (VHG) to create a single frequency, long coherence length laser.

OBIS LX SF is an ideal source for demanding 405 nm single longitudinal mode (SLM) applications. OBIS LX SF at 632.8 nm (633 nm) can replace stabilized Helium Neon (HeNe) lasers.

OBIS offers excellent beam quality combined with extremely low RMS Noise. High signal and low noise gives your application exceptional signal-to-noise ratio (SNR).

## Features and Benefits

- Commonality across the spectrum in OBIS LX/LS
- Single frequency, narrow linewidth
- Collimated TEM00 circular beam output
- Long coherence length of ~1 meter
- Integrated control electronics

## Applications

- Raman Spectroscopy
- Interferometry
- HeNe (Helium Neon) Replacement
- Holography
- Medical Imaging and Instrumentation
- Metrology
- Bio-instrumentation
- Particle Characterization
- Industrial Gas Sensing



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## SPECIFICATIONS

	OBIS 405 nm LX SF 40 mW	OBIS 633 nm LX SF 50 mW	OBIS 660 nm LX SF 35 mW
Wavelength <sup>1</sup> (nm)	405	633	660
Linewidth (MHz) (typical)	160	150	300
Linewidth (pm) (maximum)	0.3	0.3	1.5
Spectral Purity (SMSR) (typical) (dB)	40	40	40
Output Power <sup>2</sup> (mW)	40	50	35
Spatial Mode	TEM <sub>00</sub>	TEM <sub>00</sub>	TEM <sub>00</sub>
M <sup>2</sup> (Beam Quality) <sup>3</sup>	≤1.8	≤1.3	≤1.4
Beam Asymmetry	≤1:1.1	≤1:1.2	≤1:1.2
Beam Diameter at 1/e <sup>2</sup> (mm)	0.4 ±0.1	0.5 ±0.1	1.1 ±0.3
Beam Divergence (mrad, full-angle)	<2	<2.2	<1.7
Pointing Stability (μrad) (over 2 hours after warm-up and ±3°C)	<30	<30	<30
Pointing Stability Over Temp. (μrad/°C)	<5	<5	<5
RMS Noise <sup>4</sup> (%) (20 Hz to 20 MHz)	≤0.05	≤0.05	≤0.05
Peak-to-Peak Noise <sup>4</sup> (%) (20 Hz to 20 kHz)	<0.5	<0.5	<0.5
Long-term Wavelength Stability (pm) (8 hrs., ±2°C) typical	<2	<3	<10
Long-term Power Stability (%) (8 hrs., ±3°C)	<1	<1	<1
Warm-up Time <sup>5</sup> (minutes) (from cold start)	<5	<5	<5
Polarization Ratio	Minimum 100:1, Vertical ±5°		
Laser Drive Modes	CW: Current and Computer Control		
Static Alignment Tolerances			
Beam Position from Reference <sup>6</sup> (mm)	<1	<1	<1
Beam Angle <sup>5</sup> (mrad)	<5	<5	<5
Laser Safety Classification	3b	3b	3b
ESD Protection	EN61326-1	EN61326-1	EN61326-1
Power Consumption (W)	Typical 5, Max. 13	Typical 5, Max. 13	Typical 5, Max. 13
Laser Head Baseplate Temp. (maximum, °C)	50	50	50
Heat Dissipation of Laser Head <sup>7</sup> (W)	Typical 5, Max. 13	Typical 5, Max. 13	Typical 5, Max. 13
Ambient Temperature <sup>8</sup>			
Operating Condition (°C)	10 to 50	10 to 50	10 to 50
Non-operating Condition (°C)	-20 to 60	-20 to 60	-20 to 60
Shock Tolerance (g) (6 ms)	30	30	30
Laser Part Number	1448284	1448283	1447430
Laser System Part Number (includes laser, remote, power supply, cables)	1448286	1448288	1448287
OBIS LX/LS Heat Sink with Fan (sold separately)	1193289		

<sup>1</sup> Measured as an Air reference. Laser-to-laser wavelength tolerance ±1 nm for all OBIS LX SF versions, except OBIS 633nm LX SF with a wavelength tolerance of 632.8 ±0.5 nm.

<sup>2</sup> Output power is variable in CW Mode from 1 mW (1% for LX Models) to 110% of rated power. Specifications are valid for 100% power.

<sup>3</sup> M<sup>2</sup> measured with ModeMaster with 90/10 clip levels.

<sup>4</sup> RMS Noise and Peak-to-Peak Noise measured in Constant Current mode.

<sup>5</sup> Typical power-on delay to reach output power in 0.1 minutes.

<sup>6</sup> See mechanical drawing for exit beam location.

<sup>7</sup> Typically 85% of heat load through the base plate. See Users Manual for more detail.

<sup>8</sup> Non-Condensing. See User Manual for more detail.

# OBIS LX SF – Single Frequency

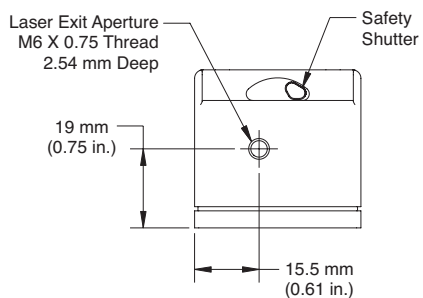
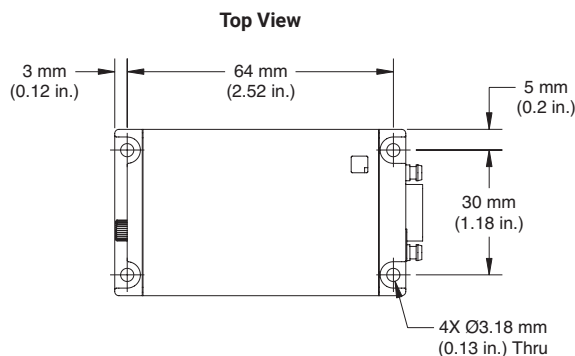
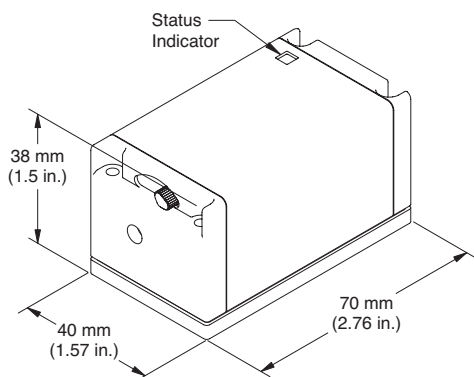
Narrow Linewidth, Single Longitudinal Mode Lasers

Utility and Environmental Requirements	
Operating Voltage <sup>1</sup> (VDC)	12 ±2
Dimensions (L x W x H)	
Laser	70 x 40 x 38 mm (2.75 x 1.57 x 1.5 in.)
OBIS Remote (optional)	105 x 68 x 36 mm (4.13 x 2.68 x 1.42 in.)
DC Power Supply (optional)	105 x 42 x 33 mm (4.13 x 1.65 x 1.3 in.)
Cable, Laser to OBIS Remote (optional)	1 meter (3.28 ft.) (3 meter and 0.3 meter sold separately)
Weight	
Laser	0.16 kg (0.35 lbs.)
OBIS Remote (optional)	0.24 kg (0.53 lbs.)
DC Power Supply (optional)	0.36 kg (0.79 lbs.)
Cable, Laser to OBIS Remote (optional)	0.1 kg (0.22 lbs.) for 1 meter

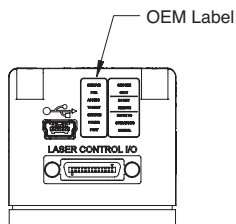
<sup>1</sup> If user supplied, the DC power supply has to meet the following requirements: power >20W; ripple <5% peak-to-peak; line regulation <0.5%.

## MECHANICAL SPECIFICATIONS

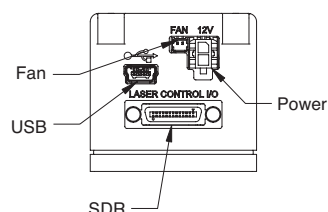
### OBIS LX SF



Front View







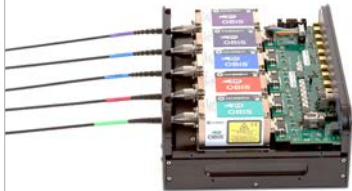
Rear View



Rear View with  
OEM Label  
Removed

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Optional OBIS Laser Accessories	Description
	<p>OBIS Heat Sink with fan for thermal management, includes hardware to mount to table. Laser can be mounted on top or side for horizontal polarization. Convenient 69 mm (2.7 inch) beam height.</p> <p>Part Number 1193289 OBIS Heat Sink Mount.</p>
	<p>OBIS LX/LS Single Laser Remote with full features for control with Analog and Digital modulation inputs. Includes USB and RS-232 connectors on the back panel of the Remote.</p> <p>Part Number 1214875 OBIS LX/LS Single Laser Remote, with Power Supply, 1 meter laser-to-remote (SDR) cable, USB cable, and Coherent Connection applications software.</p> <p>Part Number 1173961 OBIS LX/LS Single Laser Remote, with Power Supply, USB cable, and Coherent Connection applications software (no SDR Laser-to-Remote cable).</p>
	<p>OBIS LX/LS 6-Laser Remote with CDRH features. Separate power switches and power cables for each laser. NOTE: Does not support modulation inputs.</p> <p>Part Number 1203909 OBIS LX/LS 6-Laser Remote, with Power Supply, 6 power cables from laser-to-remote, and Coherent Connection applications software.</p> <p>Part Number 1306263 OBIS LX/LS 6-Laser Remote, with Power Supply and Coherent Connection applications software (no laser-to-remote power cables).</p>
	<p>OBIS LX/LS Scientific Remote with full features for control with analog/digital inputs for up to six lasers. User interface touch screen and connectivity through USB, RS-232, and Ethernet.</p> <p>Part Number 1234466 OBIS LX/LS Scientific Remote, with internal Power Supply, 6 laser-to-remote (SDR) cables, and Coherent Connection applications software.</p> <p>Part Number 1234465 OBIS LX/LS Scientific Remote, with internal Power Supply, and Coherent Connection applications software (no SDR Laser-to-Remote cables).</p> <p><b>NOTE: OBIS LX/LS Scientific Remote is not compatible with OBIS LX SF.</b></p>
	<p>OBIS LX/LS Laser Box with five laser mounting bays with thermal management, cooling fans, analog/digital inputs, RS-232, USB, key-switch, and interlock in one compact package. Lasers sold separately.</p> <p>Part Number 1228877 OBIS LX/LS Laser Box, with Power Supply, USB cable, and Coherent Connection applications software. Analog Modulation Impedance = 2k <math>\Omega</math>, Digital Modulation Impedance = 50 <math>\Omega</math>.</p> <p>Part Number 1343229 OBIS LX/LS Laser Box, with Power Supply, USB cable, and Coherent Connection applications software. Analog Modulation Impedance = 2k <math>\Omega</math>, Digital Modulation Impedance = 2k <math>\Omega</math>.</p>



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Coherent follows a policy of continuous product improvement. Specifications are subject to change without notice. Coherent's scientific and industrial lasers are certified to comply with the Federal Regulations (21 CFR Subchapter J) as administered by the Center for Devices and Radiological Health on all systems ordered for shipment after August 2, 1976.

Coherent offers a limited warranty for all OBIS LX SF Lasers. For full details of this warranty coverage, please refer to the Service section at [www.Coherent.com](http://www.Coherent.com) or contact your local Sales or Service Representative.

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