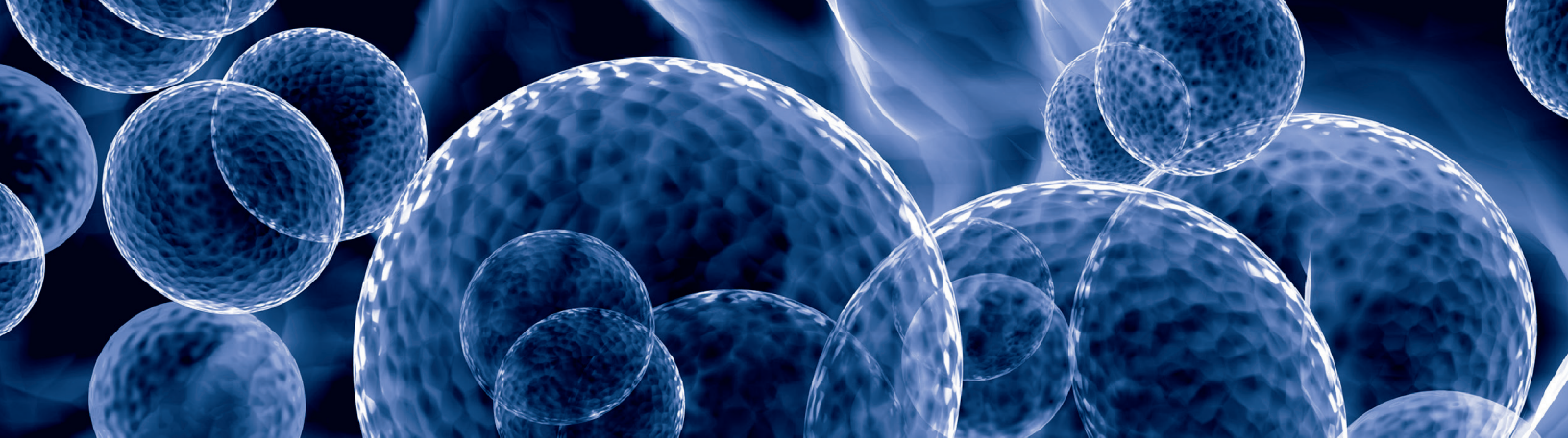

OBIS LX/LS

Lasers for Plug-and-Play Simplicity

The Coherent OBIS suite of products offers higher signal-to-noise ratio laser technology for a wide range of applications in the Life Sciences, Environmental Monitoring, and Inspection markets.

Our Optically Pumped Semiconductor Laser (OPSL) technology com-bined with our laser diode solutions delivers the industry-best laser reliability and performance. The OBIS family of smart lasers covers the wavelength spectrum—from the Ultraviolet at 375 nm to the near-Infrared at 980 nm.

The plug-and-play flexibility allows customers to integrate the product of their choice much faster, thereby reducing their time-to-market and costs.

OBIS LX/LS lasers deliver superior power, low RMS noise, and higher beam quality that are key customers needs from any laser source.

Coherent has implemented an intelligent design that allows multiple ways to interface with the laser, giving our customers the ability to choose the smartest operation process for their specific application requirements.

FEATURES & BENEFITS

- Commonality across the spectrum in dimensions, beam and interface
- Integrated control electronics
- Analog, digital and mixed modulation modes

APPLICATIONS

- Confocal Microscopy
- DNA Sequencing
- Flow Cytometry
- Medical Imaging and Instrumentation

COHERENT®
Superior Reliability & Performance

SPECIFICATIONS	OBIS 375LX	OBIS 405LX	OBIS 413LX	OBIS 422LX	OBIS 445LX
Wavelength[1] (nm)	375	405	413	422	445
Output Power[2] (mW)	16, 50	50, 100 200, 250, 365	100	100	75
Spatial Mode	TEM_{00}	TEM_{00}	TEM_{00}	TEM_{00}	TEM_{00}
M^2 (Beam Quality)[3]	≤1.3	≤1.2 ≤1.3	≤1.2	≤1.2	≤1.2
Beam Asymmetry	≤1:1.2	≤1:1.2	≤1:1.2	≤1:1.2	≤1:1.2
Beam Diameter at $1/e^2$ (mm)	0.7 ±0.1	0.8 ±0.1	0.8 ±0.1	0.9 ±0.1	0.6 ±0.1
Beam Divergence (mrad, full-angle)	<1	<1	<1	<1.1	<1.1
Pointing Stability (µrad) (over 2 hours after warm-up and ±3°C)	<30	<30	<30	<30	<30
Pointing Stability Over Temp. (µrad/°C)	<5	<5	<5	<5	<5
RMS Noise (%) (20 Hz to 20 MHz)	≤0.05	≤0.05	≤0.05	≤0.05	≤0.05
Peak-to-Peak Noise (%) (20 Hz to 20 kHz)	<0.5	<0.5	<0.5	<0.5	<0.5
Long-term Power Stability (%) (8 hrs., ±3°C)	<2	<2	<2	<2	<2
Warm-up Time[4] (minutes) (from cold start)	<5	<5	<5	<5	<5
Polarization Ratio	Minimum 100:1, Vertical ±5°				
Laser Drive Modes	CW, Analog Modulation, Digital Modulation and Computer Control				
Digital Modulation					
Maximum Bandwidth (MHz)	75	150	150	150	150
Rise Time (10% to 90%) (nsec)	<5	<2	<2	<2	<2
Fall Time (90% to 10%) (nsec)	<5	<2	<2	<2	<2
Modulation Depth (extinction ratio)	>1,000,000:1 at 0 Hz, >250:1 at 75 MHz	>1,000,000:1 at 0 Hz, >250:1 at 150 MHz	>1,000,000:1 at 0 Hz, >250:1 at 150 MHz	>1,000,000:1 at 0 Hz, >250:1 at 150 MHz	>1,000,000:1 at 0 Hz, >250:1 at 150 MHz
Analog Modulation					
Maximum Bandwidth (kHz)	500	500	500	500	500
Rise Time (10% to 90%) (nsec)	<700	<700	<700	<700	<700
Fall Time (90% to 10%) (nsec)	<700	<700	<700	<700	<700
Modulation Depth (extinction ratio)	>1,000,000:1	>1,000,000:1	>1,000,000:1	>1,000,000:1	>1,000,000:1
Static Alignment Tolerances					
Beam Position from Reference[5] (mm)	<1	<1	<1	<1	<1
Beam Angle[5] (mrad)	<5	<5	<5	<5	<5
Beam Waist Position at Exit Window (mm)	n/a	n/a	n/a	n/a	n/a
Laser Safety Classification	3b	3b	3b	3b	3b
ESD Protection	EN61326-1	EN61326-1	EN61326-1	EN61326-1	EN61326-1
Power Consumption (W)	Typical 5, Max. 13	Typical 5, Max. 13	Typical 5, Max. 13	Typical 5, Max. 13	Typical 5, Max. 13
Laser Head Baseplate Temp. (Max., °C)	50	50	50	50	50
Heat Dissipation of Laser Head[6] (W)	Typical 5, Max. 13	Typical 5, Max. 13	Typical 5, Max. 13	Typical 5, Max. 13	Typical 5, Max. 13
Ambient Temperature[7]					
Operating Condition[8] (°C)	10 to 50	10 to 50	10 to 50	10 to 50	10 to 50
Non-operating Condition (°C)	-20 to 60	-20 to 60	-20 to 60	-20 to 60	-20 to 60
Shock Tolerance (g) (6 ms)	30	30	30	30	30

1 Laser-to-laser wavelength tolerance ±2 nm for all OBIS LS versions. For OBIS LX wavelength tolerance of ±5 nm except for 413LX with a 410 nm to 420 nm range; 520LX with a 520 nm to 530 nm range; 640LX with 635 nm to 644 nm range; 660LX with 652 nm to 665 nm range; and 685LX, 730LX, 785LX, 808LX, and 980LX with a ±10 nm range.

2 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. For LS versions all residual laser emission at 808 nm pumplight or fundamental <0.1 mW.

3 For LX versions the M^2 measured with ModeMaster with 90/10 clip levels.

4 For LS versions typical power-on delay 1 minute. For LX versions typical power-on delay 0.1 minutes.

5 See mechanical drawing for exit beam location.

6 Typically 85% of heat load through the base plate. See Users Manual for more detail.

7 Non-Condensing. See User Manual for more detail.

8 For LS versions laser head baseplate temperature needs to be maintained at ≤40°C.

SPECIFICATIONS	OBIS 458LX	OBIS 473LX	OBIS 488LX	OBIS 488LS
Wavelength[1] (nm)	458	473	488	488
Output Power[2] (mW)	75	75	50 150	20, 60, 80, 100, 150
Spatial Mode	TEM_{00}	TEM_{00}	TEM_{00}	TEM_{00}
M^2 (Beam Quality)[3]	≤1.2	≤1.2	≤1.2	≤1.1
Beam Asymmetry	≤1:1.2	≤1:1.2	≤1:1.2	≤1:1.1
Beam Diameter at $1/e^2$ (mm)	0.8 ±0.1	0.8 ±0.1	0.8 ±0.1 0.7 ±0.1	0.7 ±0.05
Beam Divergence (mrad, full-angle)	<1.1	<1.1	<1.2	<1.2
Pointing Stability (µrad) (over 2 hours after warm-up and ±3°C)	<30	<30	<30	<30
Pointing Stability Over Temp. (µrad/°C)	<5	<5	<5	<5
RMS Noise (%) (20 Hz to 20 MHz)	≤0.05	≤0.05	≤0.05	≤0.25
Peak-to-Peak Noise (%) (20 Hz to 20 kHz)	<0.5	<0.5	<0.5	<1
Long-term Power Stability (%) (8 hrs., ±3°C)	<2	<2	<2	<2
Warm-up Time[4] (minutes) (from cold start)	<5	<5	<5	<5
Polarization Ratio	Minimum 100:1, Vertical ±5°			
Laser Drive Modes	CW, Analog Modulation, Digital Modulation and Computer Control			
Digital Modulation				
Maximum Bandwidth (MHz)	150	150	150	0.05
Rise Time (10% to 90%) (nsec)	<2	<2	<2	<18,000
Fall Time (90% to 10%) (nsec)	<2	<2	<2.5	<2000
Modulation Depth (extinction ratio)	>1,000,000:1 at 0 Hz, >250:1 at 75 MHz	>1,000,000:1 at 0 Hz, >250:1 at 150 MHz	>1,000,000:1 at 0 Hz, >250:1 at 150 MHz	Infinite at 0 Hz to 50 kHz
Analog Modulation				
Maximum Bandwidth (kHz)	500	500	500	100
Rise Time (10% to 90%) (nsec)	<700	<700	<700	<3000
Fall Time (90% to 10%) (nsec)	<700	<700	<700	<3000
Modulation Depth (extinction ratio)	>1,000,000:1	>1,000,000:1	>1,000,000:1	>50:1
Static Alignment Tolerances				
Beam Position from Reference[5] (mm)	<1	<1	<1	<0.5
Beam Angle[5] (mrad)	<5	<5	<5	<2.5
Beam Waist Position at Exit Window (mm)	n/a	n/a	n/a	±200
Laser Safety Classification	3b	3b	3b	3b
ESD Protection	EN61326-1	EN61326-1	EN61326-1	EN61326-1
Power Consumption (W)	Typical 5, Max. 13	Typical 5, Max. 13	Typical 5, Max. 13	Typical 8, Max. 12
Laser Head Baseplate Temp. (Max., °C)	50	50	50	40
Heat Dissipation of Laser Head[6] (W)	Typical 5, Max. 13	Typical 5, Max. 13	Typical 5, Max. 13	Typical 8, Max. 12
Ambient Temperature[7]				
Operating Condition[8] (°C)	10 to 50	10 to 50	10 to 50	15 to 40
Non-operating Condition (°C)	-20 to 60	-20 to 60	-20 to 60	-20 to 60
Shock Tolerance (g) (6 ms)	30	30	30	30

1 Laser-to-laser wavelength tolerance ±2 nm for all OBIS LS versions. For OBIS LX wavelength tolerance of ±5 nm except for 413LX with a 410 nm to 420 nm range; 520LX with a 520 nm to 530 nm range; 640LX with 635 nm to 644 nm range; 660LX with 652 nm to 665 nm range; and 685LX, 730LX, 785LX, 808LX, and 980LX with a ±10 nm range.
2 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. For LS versions all residual laser emission at 808 nm pumplight or fundamental <0.1 mW.
3 For LX versions the M^2 measured with ModeMaster with 90/10 clip levels.
4 For LS versions typical power-on delay 1 minute. For LX versions typical power-on delay 0.1 minutes.
5 See mechanical drawing for exit beam location.
6 Typically 85% of heat load through the base plate. See Users Manual for more detail.
7 Non-Condensing. See User Manual for more detail.
8 For LS versions laser head baseplate temperature needs to be maintained at ≤40°C.

SPECIFICATIONS	OBIS 505LX	OBIS 505LS	OBIS 514LX	OBIS 514LS	OBIS 520LX
Wavelength[1] (nm)	505	505	514	514	520
Output Power[2] (mW)	50	30, 100	40	20, 100, 150	40
Spatial Mode	TEM_{00}	TEM_{00}	TEM_{00}	TEM_{00}	TEM_{00}
M^2 (Beam Quality)[3]	≤1.2	≤1.1	≤1.2	≤1.1	≤1.2
Beam Asymmetry	≤1:1.2	≤1:1.1	≤1:1.2	≤1:1.1	≤1:1.2
Beam Diameter at $1/e^2$ (mm)	0.7 ±0.1	0.7 ±0.05	0.6 ±0.1	0.7 ±0.05	0.6 ±0.1
Beam Divergence (mrad, full-angle)	<1.2	<1.2	<1.1	<1.2	<1.1
Pointing Stability (µrad) (over 2 hours after warm-up and ±3°C)	<30	<30	<30	<30	<30
Pointing Stability Over Temp. (µrad/°C)	<5	<5	<5	<5	<5
RMS Noise (%) (20 Hz to 20 MHz)	≤0.05	≤0.25	≤0.05	≤0.25	≤0.05
Peak-to-Peak Noise (%) (20 Hz to 20 kHz)	<0.5	<1	<1	<1	<1
Long-term Power Stability (%) (8 hrs., ±3°C)	<2	<2	<2	<2	<2
Warm-up Time[4] (minutes) (from cold start)	<5	<5	<5	<5	<5
Polarization Ratio	Minimum 100:1, Vertical ±5°				
Laser Drive Modes	CW, Analog Modulation, Digital Modulation and Computer Control				
Digital Modulation					
Maximum Bandwidth (MHz)	150	0.05	100	0.05	100
Rise Time (10% to 90%) (nsec)	<2	<18,000	<3.5	<18,000	<3.5
Fall Time (90% to 10%) (nsec)	<2.5	<2000	<2	<2000	<2
Modulation Depth (extinction ratio)	>1,000,000:1 at 0 Hz, >250:1 at 150 MHz	Infinite at 0 Hz to 50 kHz	>1,000,000:1 at 0 Hz, >250:1 at 100 MHz	Infinite at 0 Hz to 50 kHz	>1,000,000:1 at 0 Hz, >250:1 at 100 MHz
Analog Modulation					
Maximum Bandwidth (kHz)	500	100	500	100	500
Rise Time (10% to 90%) (nsec)	<700	<3000	<700	<3000	<700
Fall Time (90% to 10%) (nsec)	<700	<3000	<700	<3000	<700
Modulation Depth (extinction ratio)	>1,000,000:1	>50:1	>1,000,000:1	>50:1	>1,000,000:1
Static Alignment Tolerances					
Beam Position from Reference[5] (mm)	<1	<0.5	<1	<0.5	<1
Beam Angle[5] (mrad)	<5	<2.5	<5	<2.5	<5
Beam Waist Position at Exit Window (mm)	n/a	±200	n/a	±200	n/a
Laser Safety Classification	3b	3b	3b	3b	3b
ESD Protection	EN61326-1	EN61326-1	EN61326-1	EN61326-1	EN61326-1
Power Consumption (W)	Typical 5, Max. 13	Typical 8, Max. 12	Typical 5, Max. 13	Typical 8, Max. 12	Typical 5, Max. 13
Laser Head Baseplate Temp. (Max., °C)	50	40	50	40	50
Heat Dissipation of Laser Head[6] (W)	Typical 5, Max. 13	Typical 8, Max. 12	Typical 5, Max. 13	Typical 8, Max. 12	Typical 5, Max. 13
Ambient Temperature[7]					
Operating Condition[8] (°C)	10 to 50	15 to 40	10 to 50	15 to 40	10 to 50
Non-operating Condition (°C)	-20 to 60	-20 to 60	-20 to 60	-20 to 60	-20 to 60
Shock Tolerance (g) (6 ms)	30	30	30	30	30

1 Laser-to-laser wavelength tolerance ±2 nm for all OBIS LS versions. For OBIS LX wavelength tolerance of ±5 nm except for 413LX with a 410 nm to 420 nm range; 520LX with a 520 nm to 530 nm range; 640LX with 635 nm to 644 nm range; 660LX with 652 nm to 665 nm range; and 685LX, 730LX, 785LX, 808LX, and 980LX with a ±10 nm range.
2 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. For LS versions all residual laser emission at 808 nm pumplight or fundamental <0.1 mW.
3 For LX versions the M^2 measured with ModeMaster with 90/10 clip levels.
4 For LS versions typical power-on delay 1 minute. For LX versions typical power-on delay 0.1 minutes.
5 See mechanical drawing for exit beam location.
6 Typically 85% of heat load through the base plate. See Users Manual for more detail.
7 Non-Condensing. See User Manual for more detail.
8 For LS versions laser head baseplate temperature needs to be maintained at ≤40°C.

SPECIFICATIONS	OBIS 532LS	OBIS 552LS	OBIS 561LS	OBIS 594LS
Wavelength[1] (nm)	532	552	561	594
Output Power[2] (mW)	20, 50, 80, 100, 150	20, 60, 80, 100, 150	20, 50, 80, 100, 150	20, 60, 100
Spatial Mode	TEM_{00}	TEM_{00}	TEM_{00}	TEM_{00}
M^2 (Beam Quality)[3]	≤1.1	≤1.1	≤1.1	≤1.1
Beam Asymmetry	≤1:1.1	≤1:1.1	≤1:1.1	≤1:1.1
Beam Diameter at $1/e^2$ (mm)	0.7 ±0.05	0.7 ±0.05	0.7 ±0.05	0.7 ±0.05
Beam Divergence (mrad, full-angle)	<1.2	<1.2	<1.2	<1.3
Pointing Stability (µrad) (over 2 hours after warm-up and ±3°C)	<30	<30	<30	<30
Pointing Stability Over Temp. (µrad/°C)	<5	<5	<5	<5
RMS Noise (%) (20 Hz to 20 MHz)	≤0.25	≤0.25	≤0.25	≤0.25
Peak-to-Peak Noise (%) (20 Hz to 20 kHz)	<1	<1	<1	<1
Long-term Power Stability (%) (8 hrs., ±3°C)	<2	<2	<2	<2
Warm-up Time[4] (minutes) (from cold start)	<5	<5	<5	<5
Polarization Ratio	Minimum 100:1, Vertical ±5°			
Laser Drive Modes	CW, Analog Modulation, Digital Modulation and Computer Control			
Digital Modulation				
Maximum Bandwidth (MHz)	0.05	0.05	0.05	0.05
Rise Time (10% to 90%) (nsec)	<18,000	<18,000	<18,000	<18,000
Fall Time (90% to 10%) (nsec)	<2000	<2000	<2000	<2000
Modulation Depth (extinction ratio)	Infinite at 0 Hz to 50 kHz	Infinite at 0 Hz to 50 kHz	Infinite at 0 Hz to 50 kHz	Infinite at 0 Hz to 50 kHz
Analog Modulation				
Maximum Bandwidth (kHz)	100	100	100	100
Rise Time (10% to 90%) (nsec)	<3000	<3000	<3000	<3000
Fall Time (90% to 10%) (nsec)	<3000	<3000	<3000	<3000
Modulation Depth (extinction ratio)	>50:1	>50:1	>50:1	>50:1
Static Alignment Tolerances				
Beam Position from Reference[5] (mm)	<0.5	<0.5	<0.5	<0.5
Beam Angle[5] (mrad)	<2.5	<2.5	<2.5	<2.5
Beam Waist Position at Exit Window (mm)	±200	±200	±200	±200
Laser Safety Classification	3b	3b	3b	3b
ESD Protection	EN61326-1	EN61326-1	EN61326-1	EN61326-1
Power Consumption (W)	Typical 8, Max. 12	Typical 8, Max. 12	Typical 8, Max. 12	Typical 8, Max. 12
Laser Head Baseplate Temp. (Max., °C)	40	40	40	40
Heat Dissipation of Laser Head[6] (W)	Typical 8, Max. 12	Typical 8, Max. 12	Typical 8, Max. 12	Typical 8, Max. 12
Ambient Temperature[7]				
Operating Condition[8] (°C)	15 to 40	15 to 40	15 to 40	15 to 40
Non-operating Condition (°C)	-20 to 60	-20 to 60	-20 to 60	-20 to 60
Shock Tolerance (g) (6 ms)	30	30	30	30

1 Laser-to-laser wavelength tolerance ±2 nm for all OBIS LS versions. For OBIS LX wavelength tolerance of ±5 nm except for 413LX with a 410 nm to 420 nm range; 520LX with a 520 nm to 530 nm range; 640LX with 635 nm to 644 nm range; 660LX with 652 nm to 665 nm range; and 685LX, 730LX, 785LX, 808LX, and 980LX with a ±10 nm range.
2 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. For LS versions all residual laser emission at 808 nm pumplight or fundamental <0.1 mW.
3 For LX versions the M^2 measured with ModeMaster with 90/10 clip levels.
4 For LS versions typical power-on delay 1 minute. For LX versions typical power-on delay 0.1 minutes.
5 See mechanical drawing for exit beam location.
6 Typically 85% of heat load through the base plate. See Users Manual for more detail.
7 Non-Condensing. See User Manual for more detail.
8 For LS versions laser head baseplate temperature needs to be maintained at ≤40°C.

SPECIFICATIONS	OBIS 637LX	OBIS 640LX	OBIS 647LX
Wavelength[1] (nm)	637	640	647
Output Power[2] (mW)	140	40, 100	120
Spatial Mode	TEM_{00}	TEM_{00}	TEM_{00}
M^2 (Beam Quality)[3]	≤1.2	≤1.2	≤1.2
Beam Asymmetry	≤1:1.2	≤1:1.2	≤1:1.2
Beam Diameter at $1/e^2$ (mm)	0.7 ±0.1	0.8 ±0.1	0.8 ±0.1
Beam Divergence (mrad, full-angle)	<1.3	<1.3	<1.3
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 (%) (20 Hz to 20 MHz)	≤0.05	≤0.05	≤0.05
Peak-to-Peak Noise (%) (20 Hz to 20 kHz)	<0.5	<0.5	<0.5
Long-term Power Stability (%) (8 hrs., ±3°C)	<2	<2	<2
Warm-up Time[4] (minutes) (from cold start)		<5	<5
Polarization Ratio	Minimum 100:1, Vertical ±5°		
Laser Drive Modes	CW, Analog Modulation, Digital Modulation and Computer Control		
Digital Modulation			
Maximum Bandwidth (MHz)	150	150	150
Rise Time (10% to 90%) (nsec)	<2	<2	<2
Fall Time (90% to 10%) (nsec)	<2	<2	<2
Modulation Depth (extinction ratio)	>1,000,000:1 at 0 Hz, >250:1 at 150 MHz	>1,000,000:1 at 0 Hz, >250:1 at 150 MHz	>1,000,000:1 at 0 Hz, >250:1 at 150 MHz
Analog Modulation			
Maximum Bandwidth (kHz)	300	500	500
Rise Time (10% to 90%) (nsec)	<1200	<700	<700
Fall Time (90% to 10%) (nsec)	<800	<700	<700
Modulation Depth (extinction ratio)	>1,000,000:1	>1,000,000:1	>1,000,000:1
Static Alignment Tolerances			
Beam Position from Reference[5] (mm)	<1	<1	<1
Beam Angle[5] (mrad)	<5	<5	<5
Beam Waist Position at Exit Window (mm)	n/a	n/a	n/a
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. (Max., °C)	50	50	50
Heat Dissipation of Laser Head[6] (W)	Typical 5, Max. 13	Typical 5, Max. 13	Typical 5, Max. 13
Ambient Temperature[7]			
Operating Condition[8] (°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

1 Laser-to-laser wavelength tolerance ±2 nm for all OBIS LS versions. For OBIS LX wavelength tolerance of ±5 nm except for 413LX with a 410 nm to 420 nm range; 520LX with a 520 nm to 530 nm range; 640LX with 635 nm to 644 nm range; 660LX with 652 nm to 665 nm range; and 685LX, 730LX, 785LX, 808LX, and 980LX with a ±10 nm range.
2 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. For LS versions all residual laser emission at 808 nm pumplight or fundamental <0.1 mW.
3 For LX versions the M^2 measured with ModeMaster with 90/10 clip levels.
4 For LS versions typical power-on delay 1 minute. For LX versions typical power-on delay 0.1 minutes.
5 See mechanical drawing for exit beam location.
6 Typically 85% of heat load through the base plate. See Users Manual for more detail.
7 Non-Condensing. See User Manual for more detail.
8 For LS versions laser head baseplate temperature needs to be maintained at ≤40°C.

SPECIFICATIONS	OBIS 660LX	OBIS 685LX	OBIS 730LX
Wavelength[1] (nm)	660	685	730
Output Power[2] (mW)	100	40	30
Spatial Mode	TEM_{00}	TEM_{00}	TEM_{00}
M^2 (Beam Quality)[3]	≤1.2	≤1.2	≤1.2
Beam Asymmetry	≤1:1.2	≤1:1.2	≤1:1.2
Beam Diameter at $1/e^2$ (mm)	0.9 ±0.1	0.8 ±0.1	0.8 ±0.1
Beam Divergence (mrad, full-angle)	<1.3	<1.3	<1.3
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 (%) (20 Hz to 20 MHz)	≤0.05	≤0.05	≤0.05
Peak-to-Peak Noise (%) (20 Hz to 20 kHz)	<0.5	<0.5	<0.5
Long-term Power Stability (%) (8 hrs., ±3°C)	<2	<2	<2
Warm-up Time[4] (minutes) (from cold start)	<5	<5	<5
Polarization Ratio	Minimum 100:1, Vertical ±5°		
Laser Drive Modes	CW, Analog Modulation, Digital Modulation and Computer Control		
Digital Modulation			
Maximum Bandwidth (MHz)	150	150	150
Rise Time (10% to 90%) (nsec)	<2	<2	<2
Fall Time (90% to 10%) (nsec)	<2	<2	<2
Modulation Depth (extinction ratio)	>1,000,000:1 at 0 Hz, >250:1 at 150 MHz	>1,000,000:1 at 0 Hz, >250:1 at 150 MHz	>1,000,000:1 at 0 Hz, >250:1 at 150 MHz
Analog Modulation			
Maximum Bandwidth (kHz)	500	500	500
Rise Time (10% to 90%) (nsec)	<700	<700	<700
Fall Time (90% to 10%) (nsec)	<700	<700	<700
Modulation Depth (extinction ratio)	>1,000,000:1	>1,000,000:1	>1,000,000:1
Static Alignment Tolerances			
Beam Position from Reference[5] (mm)	<1	<1	<1
Beam Angle[5] (mrad)	<5	<5	<5
Beam Waist Position at Exit Window (mm)	n/a	n/a	n/a
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. (Max., °C)	50	50	50
Heat Dissipation of Laser Head[6] (W)	Typical 5, Max. 13	Typical 5, Max. 13	Typical 5, Max. 13
Ambient Temperature[7]			
Operating Condition[8] (°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

1 Laser-to-laser wavelength tolerance ±2 nm for all OBIS LS versions. For OBIS LX wavelength tolerance of ±5 nm except for 413LX with a 410 nm to 420 nm range; 520LX with a 520 nm to 530 nm range; 640LX with 635 nm to 644 nm range; 660LX with 652 nm to 665 nm range; and 685LX, 730LX, 785LX, 808LX, and 980LX with a ±10 nm range.
2 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. For LS versions all residual laser emission at 808 nm pumplight or fundamental <0.1 mW.
3 For LX versions the M^2 measured with ModeMaster with 90/10 clip levels.
4 For LS versions typical power-on delay 1 minute. For LX versions typical power-on delay 0.1 minutes.
5 See mechanical drawing for exit beam location.
6 Typically 85% of heat load through the base plate. See Users Manual for more detail.
7 Non-Condensing. See User Manual for more detail.
8 For LS versions laser head baseplate temperature needs to be maintained at ≤40°C.

SPECIFICATIONS	OBIS 785LX	OBIS 808LX	OBIS 980LX
Wavelength[1] (nm)	785	808	980
Output Power[2] (mW)	100	150	100, 150
Spatial Mode	TEM_{00}	TEM_{00}	TEM_{00}
M^2 (Beam Quality)[3]	≤1.2	≤1.2	≤1.3
Beam Asymmetry	≤1:1.2	≤1:1.2	≤1:1.3
Beam Diameter at $1/e^2$ (mm)	0.7 ±0.1	0.7 ±0.1	0.7 ±0.1
Beam Divergence (mrad, full-angle)	<1.7	<2.1	<2.8
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 (%) (20 Hz to 20 MHz)	≤0.05	≤0.05	≤0.05
Peak-to-Peak Noise (%) (20 Hz to 20 kHz)	<0.5	<0.5	<0.5
Long-term Power Stability (%) (8 hrs., ±3°C)	<2	<2	<2
Warm-up Time[4] (minutes) (from cold start)	<5	<5	<5
Polarization Ratio	Minimum 100:1, Vertical ±5°	Minimum 50:1, Vertical ±10°	Minimum 100:1, Vertical ±5°
Laser Drive Modes	CW, Analog Modulation, Digital Modulation and Computer Control		
Digital Modulation			
Maximum Bandwidth (MHz)	150	150	150
Rise Time (10% to 90%) (nsec)	<2	<2	<2
Fall Time (90% to 10%) (nsec)	<2	<2	<2
Modulation Depth (extinction ratio)	>1,000,000:1 at 0 Hz, >250:1 at 150 MHz	>1,000,000:1 at 0 Hz, >250:1 at 150 MHz	>1,000,000:1 at 0 Hz, >250:1 at 150 MHz
Analog Modulation			
Maximum Bandwidth (kHz)	500	500	500
Rise Time (10% to 90%) (nsec)	<700	<700	<700
Fall Time (90% to 10%) (nsec)	<700	<700	<700
Modulation Depth (extinction ratio)	>1,000,000:1	>1,000,000:1	>1,000,000:1
Static Alignment Tolerances			
Beam Position from Reference[5] (mm)	<1	<1	<1
Beam Angle[5] (mrad)	<5	<5	<5
Beam Waist Position at Exit Window (mm)	n/a	n/a	n/a
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. (Max., °C)	50	50	50
Heat Dissipation of Laser Head[6] (W)	Typical 5, Max. 13	Typical 5, Max. 13	Typical 5, Max. 13
Ambient Temperature[7]			
Operating Condition[8] (°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

1 Laser-to-laser wavelength tolerance ±2 nm for all OBIS LS versions. For OBIS LX wavelength tolerance of ±5 nm except for 413LX with a 410 nm to 420 nm range; 520LX with a 520 nm to 530 nm range; 640LX with 635 nm to 644 nm range; 660LX with 652 nm to 665 nm range; and 685LX, 730LX, 785LX, 808LX, and 980LX with a ±10 nm range.
2 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. For LS versions all residual laser emission at 808 nm pumplight or fundamental <0.1 mW.
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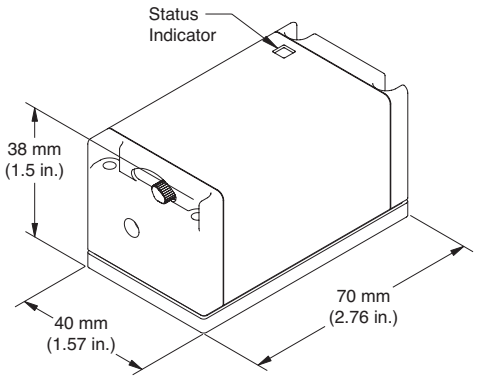
5 See mechanical drawing for exit beam location.
6 Typically 85% of heat load through the base plate. See Users Manual for more detail.
7 Non-Condensing. See User Manual for more detail.
8 For LS versions laser head baseplate temperature needs to be maintained at ≤40°C.

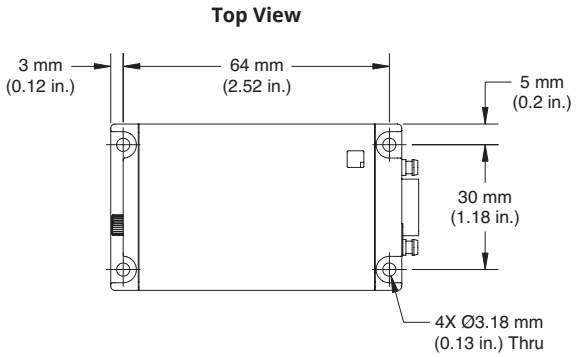
UTILITY AND ENVIRONMENTAL REQUIREMENTS	
Operating Voltage[1] (VDC)	12 ±2
Dimensions (L x W x H)	
Laser	70 x 40 x 38 mm (2.75 x 1.57 x 1.5 in.)
OBIS Remote (optional)	105 x 68 x 36 mm (4.13 x 2.68 x 1.42 in.)
DC Power Supply (optional)	105 x 42 x 33 mm (4.13 x 1.65 x 1.3 in.)
Cable, Laser to OBIS Remote (optional)	1 m (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

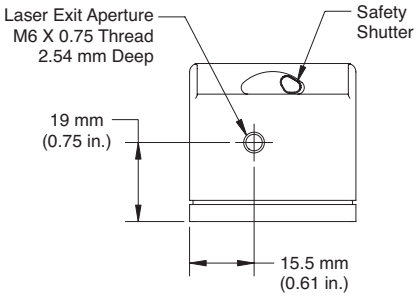
1 If user supplied, the DC power supply has to meet the following requirements: power >20W; ripple <5% peak-to-peak; line regulation <0.5%.

MECHANICAL SPECIFICATIONS

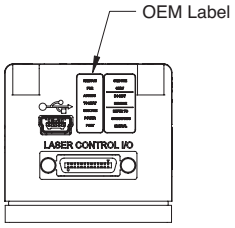
OBIS LX/LS



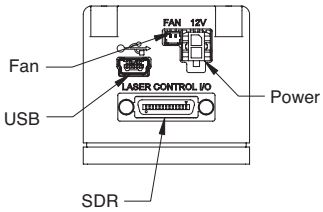




Front View



Rear View



Rear View with OEM Label Removed