

# OBIS CORE LS

## Next Generation Miniaturized OEM Laser Module

The Coherent OBIS CORE LS suite of products provide miniaturized building blocks for OEM instrument designers.

Consisting out of the Optically Pumped Semiconductor Laser (OPSL) technology core of OBIS LS laser with perfect beam parameters and proven reliability the CORE LS lasers are the low-risk choice for OEM instruments in life sciences applications.

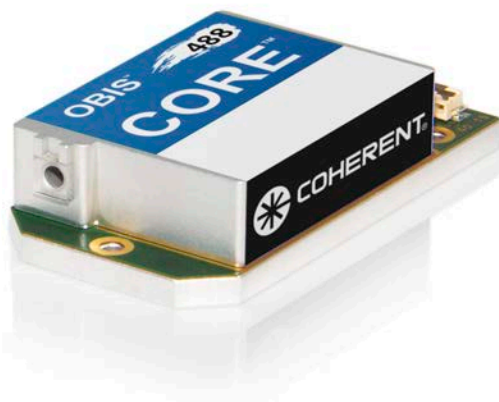
If small laser foot print, low heat dissipation and perfect beam quality are required the OBIS CORE LS modules are the best fit for OEM instrument designers.

### FEATURES & BENEFITS

- Miniaturized for Integration
- Compact and powerful
- Perfect beam quality
- Low heat dissipation
- Up to 150 mW of laser power

### APPLICATIONS

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



| SPECIFICATIONS   | OBIS CORE 488LS   | OBIS CORE 505LS                | OBIS CORE 514LS                | OBIS CORE 532LS                |
|--|---|--------------------------------|--------------------------------|--------------------------------|
| Wavelength <sup>1</sup> (nm)                                       | 488   | 505                            | 514                            | 532                            |
| Output Power <sup>2</sup> (mW)                                     | 20, 60, 80, 100, 150  | 30, 100                        | 20, 100, 150                   | 20, 50, 80, 100, 150           |
| Spatial Mode   | TEM <sub>00</sub>   | TEM <sub>00</sub>              | TEM <sub>00</sub>              | TEM <sub>00</sub>              |
| M <sup>2</sup> (Beam Quality)                                      | ≤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 <sup>2</sup> (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                           | <1.2                           |
| Pointing Stability (μrad)<br>(over 2 hours after warm-up and ±3°C) | <30   | <30                            | <30                            | <30                            |
| Pointing Stability Over Temperature (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 hours, ±3°C)                      | <2  | <2                             | <2                             | <2                             |
| Warm-Up Time <sup>3</sup> (minutes) (from cold start)              | <5  | <5                             | <5                             | <5                             |
| Polarization Ratio   | Minimum 100:1,<br>Vertical ±5°                              | Minimum 100:1,<br>Vertical ±5° | Minimum 100:1,<br>Vertical ±5° | Minimum 100:1,<br>Vertical ±5° |
| Laser Drive Modes  | CW, Analog Modulation, Digital Modulation, Computer Control |                                |                                |                                |
| Digital Modulation   |   |                                |                                |                                |
| Maximum Bandwidth (kHz)  | 1   | 1                              | 1                              | 1                              |
| Rise Time (10% to 90%) (ms)  | <1  | <1                             | <1                             | <1                             |
| Fall Time (10% to 90%) (μs)  | <100  | <100                           | <100                           | <100                           |
| Extinction Ratio   | on/no emission  | on/no emission                 | on/no emission                 | on/no emission                 |
| Analog Modulation  |   |                                |                                |                                |
| Maximum Bandwidth (kHz)  | 1   | 1                              | 1                              | 1                              |
| Rise Time (10% to 90%) (ms)  | <1  | <1                             | <1                             | <1                             |
| Fall Time (10% to 90%) (μs)  | <1  | <1                             | <1                             | <1                             |
| Dynamic Power Range (%)  | 20 to 110   | 20 to 110                      | 20 to 110                      | 20 to 110                      |
| Static Alignment Tolerances  |   |                                |                                |                                |
| Beam Position from Reference <sup>4</sup> (mm)                     | <0.5  | <0.5                           | <0.5                           | <0.5                           |
| Beam Angle <sup>4</sup> (mrad)                                     | <2.5  | <2.5                           | <2.5                           | <2.5                           |
| Beam Waist Position at Exit Window (mm)                            | ±215  | ±215                           | ±215                           | ±215                           |
| Laser Safety Classification  | 3b  | 3b                             | 3b                             | 3b                             |
| Power Consumption (W)  | Typical 5 to 8, Max. 12                                     | Typical 5 to 8, Max. 12        | Typical 5 to 8, Max. 12        | Typical 5 to 8, Max. 12        |
| Laser Head Baseplate Temp. (Max., °C)                              | 40  | 40                             | 40                             | 40                             |
| CORE LS Controller Baseplate Temp. (Max., °C)                      | 55  | 55                             | 55                             | 55                             |
| Heat Dissipation of Laser Head <sup>5</sup> (W)                    | Typical 2 to 4, Max. 5                                      | Typical 2 to 4, Max. 5         | Typical 2 to 4, Max. 5         | Typical 2 to 4, Max. 5         |
| Heat Dissipation of CORE LS Controller <sup>5</sup> (W)            | Typical 3 to 5, Max. 6                                      | Typical 3 to 5, Max. 6         | Typical 3 to 5, Max. 6         | Typical 3 to 5, Max. 6         |
| Ambient Temperature <sup>6</sup>                                   |   |                                |                                |                                |
| Operating Condition <sup>7</sup> (°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                             |

<sup>1</sup> Laser-to-laser tolerance. All CORE LS versions ±2 nm.

<sup>2</sup> Residual laser emission at 808 nm fundamental within beam at 100 mm distance <0.1 mW.

<sup>3</sup> For LS versions typical power-on delay 3 minute.

<sup>4</sup> See mechanical drawing for exit beam location.

<sup>5</sup> Heat load depends on laser power level. Heat dissipation through baseplate of laser head or controller.

<sup>6</sup> Non-Condensing.

<sup>7</sup> CORE LS laser head baseplate temperature needs to be maintained at ≤40°C

| SPECIFICATIONS   | OBIS CORE<br>552LS  | OBIS CORE<br>561LS             | OBIS CORE<br>594LS             |
|--|---|--------------------------------|--------------------------------|
| Wavelength <sup>1</sup> (nm)                                       | 552   | 561                            | 594                            |
| Output Power <sup>2</sup> (mW)                                     | 20, 60, 80, 100, 150  | 20, 50, 80, 100, 150           | 20, 60, 100                    |
| Spatial Mode   | TEM <sub>00</sub>   | TEM <sub>00</sub>              | TEM <sub>00</sub>              |
| M <sup>2</sup> (Beam Quality)                                      | ≤1.1  | ≤1.1                           | ≤1.1                           |
| Beam Asymmetry   | ≤1:1.1  | ≤1:1.1                         | ≤1:1.1                         |
| Beam Diameter at 1/e <sup>2</sup> (mm)                             | 0.7 ±0.05   | 0.7 ±0.05                      | 0.7 ±0.05                      |
| Beam Divergence (mrad, full-angle)                                 | <1.2  | <1.2                           | <1.3                           |
| Pointing Stability (μrad)<br>(over 2 hours after warm-up and ±3°C) | <30   | <30                            | <30                            |
| Pointing Stability Over Temperature (μrad/°C)                      | <5  | <5                             | <5                             |
| RMS Noise (%) (20 Hz to 20 MHz)                                    | ≤0.25   | ≤0.25                          | ≤0.25                          |
| Peak-to-Peak Noise (%) (20 Hz to 20 kHz)                           | <1  | <1                             | <1                             |
| Long-Term Power Stability (%) (8 hours, ±3°C)                      | <2  | <2                             | <2                             |
| Warm-Up Time <sup>3</sup> (minutes) (from cold start)              | <5  | <5                             | <5                             |
| Polarization Ratio   | Minimum 100:1,<br>Vertical ±5°                              | Minimum 100:1,<br>Vertical ±5° | Minimum 100:1,<br>Vertical ±5° |
| Laser Drive Modes  | CW, Analog Modulation, Digital Modulation, Computer Control |                                |                                |
| Digital Modulation   |   |                                |                                |
| Maximum Bandwidth (kHz)  | 1   | 1                              | 1                              |
| Rise Time (10% to 90%) (ms)  | <1  | <1                             | <1                             |
| Fall Time (10% to 90%) (μs)  | <100  | <100                           | <100                           |
| Extinction Ratio   | on/no emission  | on/no emission                 | on/no emission                 |
| Analog Modulation  |   |                                |                                |
| Maximum Bandwidth (kHz)  | 1   | 1                              | 1                              |
| Rise Time (10% to 90%) (ms)  | <1  | <1                             | <1                             |
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| Dynamic Power Range (%)  | 20 to 110   | 20 to 110                      | 20 to 110                      |
| Static Alignment Tolerances  |   |                                |                                |
| Beam Position from Reference <sup>4</sup> (mm)                     | <0.5  | <0.5                           | <0.5                           |
| Beam Angle <sup>4</sup> (mrad)                                     | <2.5  | <2.5                           | <2.5                           |
| Beam Waist Position at Exit Window (mm)                            | ±215  | ±215                           | ±215                           |
| Laser Safety Classification  | 3b  | 3b                             | 3b                             |
| Power Consumption (W)  | Typical 5 to 8, Max. 12                                     | Typical 5 to 8, Max. 12        | Typical 5 to 8, Max. 12        |
| Laser Head Baseplate Temp. (Max., °C)                              | 40  | 40                             | 40                             |
| CORE LS Controller Baseplate Temp. (Max., °C)                      | 55  | 55                             | 55                             |
| Heat Dissipation of Laser Head <sup>5</sup> (W)                    | Typical 2 to 4, Max. 5                                      | Typical 2 to 4, Max. 5         | Typical 2 to 4, Max. 5         |
| Heat Dissipation of CORE LS Controller <sup>5</sup> (W)            | Typical 3 to 5, Max. 6                                      | Typical 3 to 5, Max. 6         | Typical 3 to 5, Max. 6         |
| Ambient Temperature <sup>6</sup>                                   |   |                                |                                |
| Operating Condition <sup>7</sup> (°C)                              | 15 to 40  | 15 to 40                       | 15 to 40                       |
| 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 tolerance. All CORE LS versions ±2 nm.

2 Residual laser emission at 808 nm fundamental within beam at 100 mm distance <0.1 mW.

3 For LS versions typical power-on delay 3 minute.

4 See mechanical drawing for exit beam location.

5 Heat load depends on laser power level. Heat dissipation through baseplate of laser head or controller.

6 Non-Condensing.

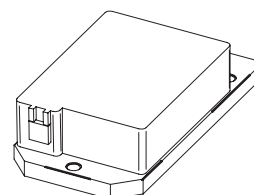
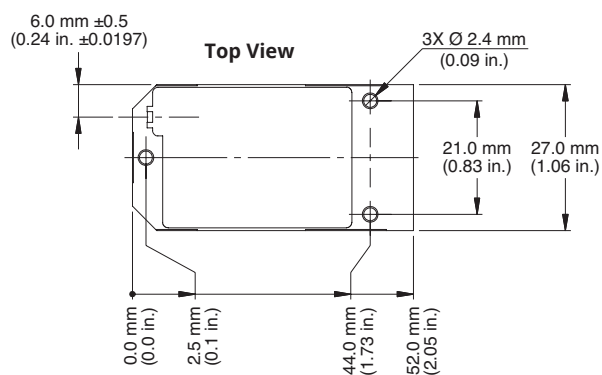
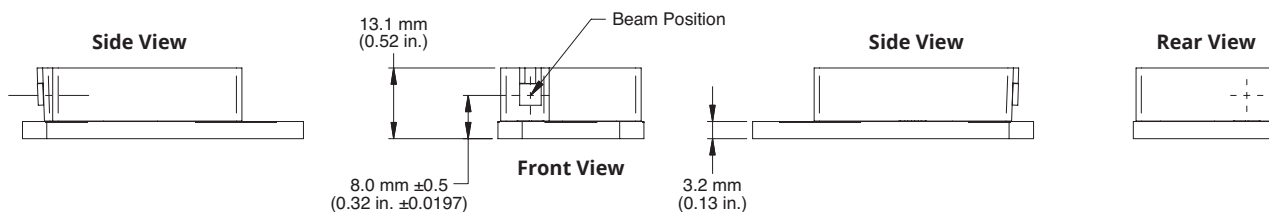
7 CORE LS laser head baseplate temperature needs to be maintained at ≤40°C

| UTILITY AND ENVIRONMENTAL REQUIREMENTS                                  |   |
|---|---|
| Operating Voltage <sup>1</sup> (VDC)                                    | 12 ±2                                     |
| Dimensions (L x W x H)  |   |
| Laser Head (mm)   | 52 x 27 x 13 mm (2.05 x 1.06 x 0.51 in.)  |
| CORE LS Controller Kit (mm)   | 115 x 33 x 16 mm (4.53 x 1.30 x 0.63 in.) |
| Cable, Laser Head to Controller (mm)<br>(3 different lengths available) | 150, 300, 500 mm (5.91, 11.81, 19.69 in.) |
| Weights   |   |
| Laser Head  | 22 g (0.05 lbs.)                          |
| CORE LS Controller Kit  | 81 g (0.18 lbs.)                          |

<sup>1</sup> DC power supply has to meet the following requirements: power >12W; ripple <5% peak-to-peak; line regulation <0.5%. The power supply must comply with SELV and LPS regulations.

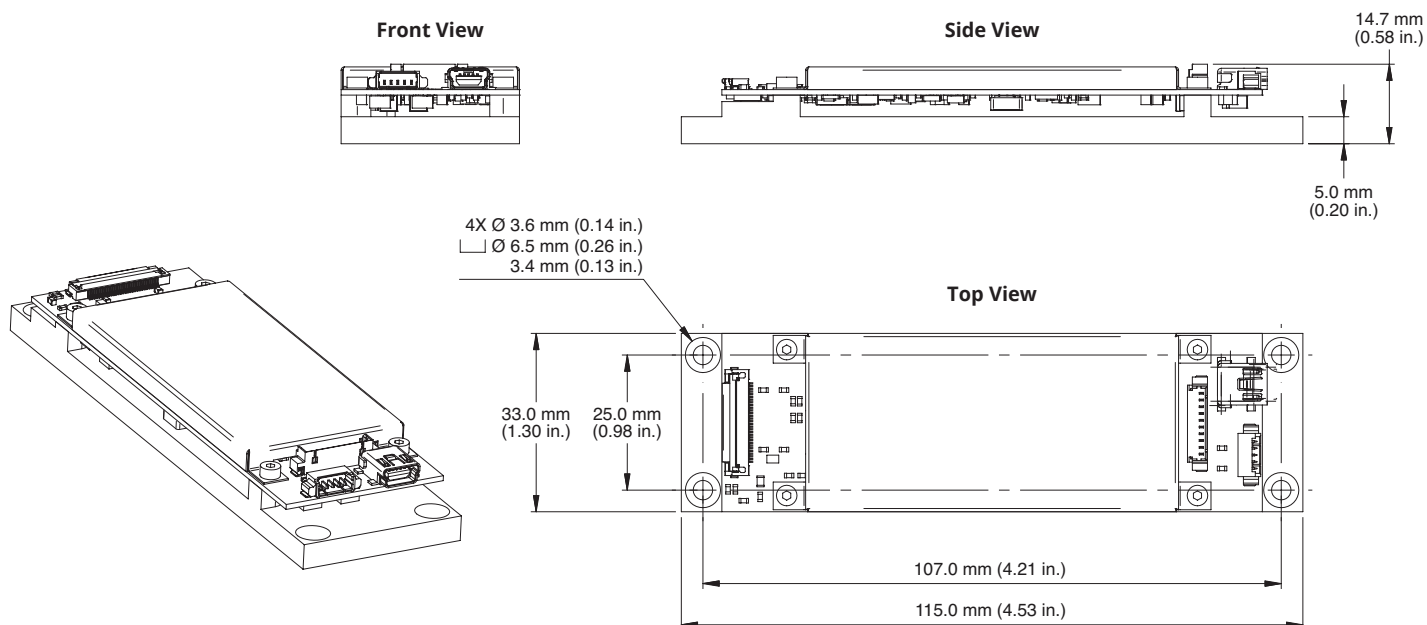
## MECHANICAL SPECIFICATIONS

### OBIS CORE LS



## MECHANICAL SPECIFICATIONS

### OBIS CORE LS Controller



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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 CORE LS 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. MC-010-16-0M0119Rev.B Copyright ©2019 Coherent, Inc.

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