The L6Cc and L4Cc are the most compact and flexible all-in-one multicolor laser sources, with up to 7 laser lines and delivery up to 4 optical fiber outputs.

The modular design allows for a large choice of lasers from 375 up to 1064 nm and with output power up to 500 mW. The sources are Oxxius LaserBoxx or from other manufacturers.

The extension modules provide the ultimate level of flexibility by integrating fast switching output ports for FRAP, adjustable split power for light sheet microscopy among other advanced functionalities.

The L6Cc and L4Cc are field upgradeable to evolve as per your needs and to preserve your investment. They are microprocessor controlled to provide unique features for demanding applications.

The L6Cc and L4Cc are available in turnkey or OEM versions.

The L6Cc is also available in high power version, integrating LBX-HPE sources with up to 1.2 W output power per line. It is coupled into a speckle-free multimode fiber.

**key features**
- Up to 500 mW per wavelength
- Up to 4 output ports
- Direct modulation: analog, digital or both combined
- Linearized output power on Acousto-Optic Modulator (AOM)
- High efficiency Polarization Maintaining fiber coupling
- Multimode fiber coupling option
- Electro-mechanical shutter on each output and on each DPSS laser.
- USB computer interface
- compatible with µ-Manager environment

**Benefits**
- Up to 4 or 6 combined wavelengths
- Proven long-term stability
- Flexible configuration with extension Modules - unique for Oxxius
- Field upgradeable
- Comprehensive optical design for easy maintenance
- Extension modules with advanced features : dual output, fast switch mirror, AOTF, “+1 laser”
- Graphic User Interface software

Super Resolution Imaging
Single Molecule Localization
Light Sheet
STORM
FRAP
Confocal Microscopy
Optogenetics
Flow Cytometry
The L4Cc and L6Cc are flexible by design. Versatility, at all levels, was in mind when our engineers designed the L4Cc and the L6Cc:

- The platform features up to two independent channels and can provide up to two output ports. The combiner is ready for docking with our pre-attached extension modules.
- Our extension module is the unrivalled solution to seamlessly add new functionalities to Oxxius combiners.
- Using lasers with an industry standard footprint allows for the largest choice of wavelengths and powers.
- The electronic board embeds all functionalities as standard. Adding a second AOM or any other advanced features is effortless, simply plug it in and activate it.
- To fit the optical interface of microscopes, a large choice of connectors and collimators are available.

Output ports - Delivery options
The basic combiners feature one channel or two independent channels. They can be configured (or upgraded) with the extension modules (MDL) providing up to 4 ports and additional functionalities.
You can choose between free space beam delivery, Multimode, Single Mode or Polarization Maintaining fibers and any combination of them.

Fiber Coupling
Oxxius propose the compact SuKR or the user friendly Kineflex fiber couplers with RGBV fiber at standard 0.12 numerical aperture. The SuKR is available with magnetic repositionable support.
The fiber output options are FC/APC or FC8 connectors or free space collimators on request.

Modulations and Controls
Each laser is modulated via independent analog and digital inputs. The LB2/LPK laser sources are directly modulated with infinite extinction ratio.
The LLX DPSS are modulated through an AOM. The output power from the AOM is linearized. The extinction ratio is higher than 45 dB.
If the speed modulation is needed, the OPT-FSTS offers digital modulation up to 200 Hz or OPT-MPA up to 10 Hz with 0-100% control of the output power.
If required, an AOTF is also available.
In standard, an electro-mechanical shutter is installed on each DPSS to block the beam without switching off the lasers.
Clean-up filters are provided in standard at 488 nm and 514 nm.
Multiple ports and “+1 laser” with advanced features are available with the extension modules (MDL).
Exceptional passive alignment stability is the result of a proven design based on short optical paths in conjunction with the ultra-low heat load of the Oxxius lasers. Straightforward access to the optical components simplifies maintenance and future upgrades.

Technical Simplicity - as per customer request
L4Cc and L44C integrate the largest panel of wavelengths from 375 up to 1064 nm combined in one channel or two independent channels.
The L4Cc and L6Cc can operate up to 4 or 6 lasers and up to 2 AOMs.
The output power per laser line is as high as 220 mW at the end of single PM fiber.
Each DPSS and each output port come with an electro-mechanical shutter in standard. It is thus possible to block the beam without switching off the lasers.

Clean-up filters are provided in standard at 488 nm and 514 nm.
Multiple ports and “+1 laser” with advanced features are available with the extension modules (MDL).

Select your sources
375 nm, 70 mW
405 nm, 50 up to 300 mW
445 nm, 10 mW
450 nm, 70 mW
473 nm, 300 mW
488 nm, 40 up to 200 mW
505 nm, 70 mW
515 nm, 150 mW
532 nm, 70 mW
532 nm, 50 up to 500 mW
553 nm, 50 up to 300 mW
594 nm, 50 up to 100 mW
633 nm, 150 mW
638 nm, 100 up to 180 mW
640 nm, 300 up to 500 mW
642 nm, 130 mW
647 nm, 140 mW
660 nm, 100 mW
730 nm, 40 mW
785 nm, 40 up to 200 mW
880 nm, 200 mW
980 nm, 200 mW
1064 nm, 150 up to 500 mW and more...

Notes:
- Each wavelength should be at least 10 nm apart
- RGBV fiber coupling, wavelength range 405-660 nm
- IRRGB Fiber coupling, wavelength range 650-780 nm
- RGBUV Fiber coupling, wavelength range 375-638 nm
- LMA-5 Fiber coupling, wavelength range 455-1064nm

The L4Cc features the integrated LBM-HFE lasers (575 nm up to 590 nm), delivers up to 1.2 W per line. Square beam and scalable free output is provided by the ALBEXO unit from EPIROL.

When flexibility matters
The L4Cc and L6Cc are flexible by design. Versatility, at all levels, was in mind when our engineers designed the L4Cc and the L6Cc:

- The platform features up to two independent channels and can provide up to two output ports. The combiner is ready for docking with our pre-attached extension modules.
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- The electronic board embeds all functionalities as standard. Adding a second AOM or any other advanced features is effortless, simply plug it in and activate it.
- To fit the optical interface of microscopes, a large choice of connectors and collimators are available.

One-channel output
This is the most economical version with all embedded functionalities and still providing full capabilities for future upgrades.

Two-channel outputs
The L4Cc and L6Cc can be set with two independent output ports. Each port will deliver one or several wavelengths.
This configuration is recommended for FRAP when additional independent 405 and 488 nm lasers are needed, or when UV or NIR lines are requested.

Extension Modules - get more from your combiner
With the extension modules (MDL), the L4Cc and L6Cc are offering advanced functionalities at a reasonable cost.
The electronic board embeds in standard the electrical connections and controls for the extension modules. The Modules are also pre-aligned and can be added on site.
Up to two Modules could be stacked to expand further the possibilities.

- MDL-MDUAL - Designed for light sheet microscopy
  - Provides two outputs with the possibility to balance the output power between each port.
  - The split ratio accuracy is +/-5%.
- MDL-FSTM - Provides fast switching between two outputs up to 30Hz
  - (< 5 ms switching time)
- MDL-FLP3 - Provides fast switching between three outputs up to 30Hz
  - (< 5 ms switching time)
  - only available with L6Cc.
- MDL-MND - Recommended when only one L4Cc or L6Cc is used with two microscopes.
  - This will economically route all lines on the selected output.
  - This is not meant for frequent switching.
- MDL-L+1 - Provides one additional LBM laser, combined on the main channel or fully independent with its own output port.
- MDL-MHDF - Provides a motorized neutral density filter when low output power is needed
- MDL-AOTF - ADP modulator - one output

Your imagination is the limit...

www.oxius.com
Mechanical Drawings

L4Cc

L6Cc

L6Cc + MDL-MDUAL

L6Cc HTSK MDL-MDUAL

<table>
<thead>
<tr>
<th>Power stability (on RGBV range)</th>
<th>L4Cc</th>
<th>L6Cc</th>
</tr>
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<tbody>
<tr>
<td>Free space</td>
<td>±1% p-to-p</td>
<td>±2% p-to-p</td>
</tr>
<tr>
<td>PM fiber coupled</td>
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<table>
<thead>
<tr>
<th>Modulation</th>
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<tbody>
<tr>
<td>Analog (0 - 5V)</td>
<td>DC - 1 MHz</td>
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<tr>
<td>Digital (TTL)</td>
<td>≤ 2 ns (LBX) / ≤ 1 μs (LCX with AOM)</td>
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</tr>
<tr>
<td>Extinction ratio</td>
<td>Infinite (LBX) / ≥ 45 dB (LCX with AOM)</td>
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</tbody>
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<table>
<thead>
<tr>
<th>System specifications</th>
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<tbody>
<tr>
<td>Operating temperature</td>
<td>15 - 40 °C (at baseplate)</td>
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</tr>
<tr>
<td>Power Consumption</td>
<td>60 W</td>
<td>100 W</td>
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<tr>
<td>Supply voltage P&amp;P</td>
<td>100 - 240 V AC</td>
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<tr>
<td>Supply voltage</td>
<td>OEM 24 V DC</td>
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<tr>
<td>Warm-up time</td>
<td>10 minutes</td>
<td>10 minutes</td>
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<tr>
<td>Communication interfaces</td>
<td>USB, RS-232, dedicated I/O interface</td>
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</tr>
<tr>
<td>Software</td>
<td>Win 7, 8, 10 control software</td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>6.8 kg</td>
<td>9.3 kg</td>
</tr>
</tbody>
</table>

Packing list

- L4cc/L6cc bench including aligned laser sources and optical elements
- RemoteBoxx—remote control
- Clean up filter if ordered
- MDL-XXX-Lnc extension modules if ordered
- ACX-FCPM, SM or MM fiber coupling if ordered
- Test reports and initial setup configuration
- Printed user manual
- USB flashdrive with Oxxius softwares and manuals in PDF format
- USB cable
- Tools
- Power supply and country selected power cord

Contact us:
Oxxius S.A.
4 rue Louis de Broglie
F-22300 Lannion, France
Phone: +33 296 48 70 28
Fax: +33 296 48 21 90
sales@oxxius.com
www.oxxius.com

Oxxius has a policy of continuous product improvement. Specifications may change without notice.