

OxxiUS

Simply Light

Wavelength Combiners



2024

Fluorescence Microscopy
Optogenetics
Microfluidic
Cytometry

Holography
Light Sheet Microscopy
FRAP
TIRF

The L6Cc and L4Cc are the most compact and flexible all-in-one multicolor laser sources that include up to 7 wavelengths delivered on up to 4 optical fiber outputs. The modular design allows for a large choice of lasers from 375 nm up to 1064 nm and with output power up to 500 mW. The sources are Oxxius LaserBoxx or from third-party manufacturers.

In addition, the extension modules provide the ultimate level of flexibility by integrating fast switching output ports for FRAP, a dual output 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.

Key features

- Up to 4 or 6 combined wavelengths
- Up to 500 mW per wavelength (TEM₀₀ beam)
- Up to 4 output ports (with extension module)
- Direct modulation on every source : analog, digital or both combined
- Accousto-optic modulator (AOM) available, delivering a linearized output
- High-efficiency Polarization Maintaining (PM) fiber coupling option
- Electro-mechanical shutter on each output and each DPSS laser.
- USB and Ethernet interfaces
- Fully accessible from µManager
- Graphic User Interface software

Select your sources

375 nm, 70 mW
395 nm, up to 100 mW
405 nm, up to 300 mW
445 nm, up to 500 mW
458 nm, up to 500 mW
473 nm, up to 300 mW
488 nm, up to 300 mW
505 nm, 70 mW
515 nm, 150 mW
522 nm, up to 100 mW
532 nm, up to 500 mW
553 nm, up to 200 mW
561 nm, up to 300 mW
594 nm, up to 100 mW
607 nm, up to 200 mW
633 nm, 100 mW
638 nm, up to 180 mW
640 nm, up to 500 mW
642 nm, 130 mW
647 nm, 140 mW
660 nm, 100 mW
730 nm, 40 mW
785 nm, up to 350 mW
980 nm, 200 mW
1064 nm, up to 500 mW
and more...

Benefits

- Flexible configuration with extension modules
- Extension modules with advanced features : dual outputs, fast-switching mirror, AOTF, ...
- Proven long-term stability
- Comprehensive optical design for easy maintenance
- Field upgradeable



Description

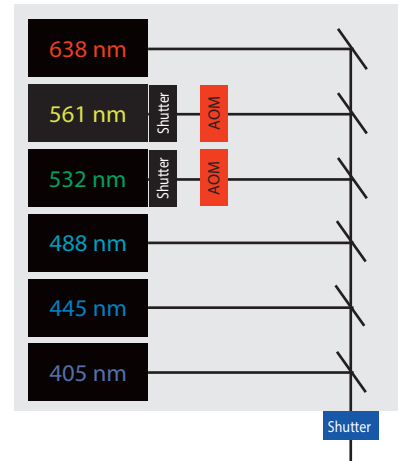
Technical Simplicity - as per customer request

L6Cc and L4Cc integrate the largest panel of wavelengths from 375 to 1064 nm, combined in one channel, or two independent channels. The L4Cc can operate up to 4 sources and up to 2 AOMs. The L6Cc can operate up to 6 sources and up to 2 AOMs.

At the end of PM fiber, the delivered power per laser line can be as high as 220 mW. Each DPSS and each output port is fitted with an electro-mechanical shutter in standard. It is thus possible to shut off the beam without having to switch off the lasers.

Clean-up filters are provided in standard for 488 nm and 515 - 522 nm sources. The extension modules (MDL) provide some additional functionalities like output port switching, power split or AOTF-based modulation.

The exceptional stability of these combiners is the result of a proven design based on short optical paths in conjunction with the ultra-low heat load of the LaserBoxx sources. A straightforward access to the optical components simplifies maintenance and future upgrades.



Output ports - Delivery options

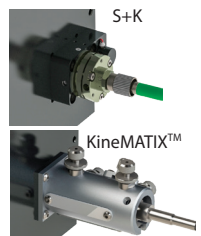
The basic combiners feature one channel or two independent channels.

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 offers the compact coupler from Schäfter+Kirchhoff ("S+K") or the user-friendly KineMATIX™ system with RGVB fiber at a standard 0.12 numerical aperture. The S+K coupler is available with a magnetic repositionable support. The fiber output options are FC/APC or FCP8 connectors or free space collimators on request.



Modulations and Controls

Each laser is modulated via independent analog and digital inputs.

The diode laser sources are directly modulated with infinite extinction ratio.

The DPSS laser sources are modulated through an AOM, delivering a linearized power.

If low 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 the laser off. The shutters are controlled via TTL signals or software commands.



The remote controller brings control elements at hand and the status within sight. The combiner can then be installed at the most convenient place.

The L4Cc and L6Cc are compatible with μManager environment. A standalone control software is also provided as a convenient graphic user interface.

- 1 USB and Ethernet ports
- 2 Digital modulation inputs
- 3 Analog modulation inputs

- 4 Input/Output port
 - analog modulation inputs
 - 8 programmable inputs to drive electro-mechanical shutters, switch mirrors or other options
 - Interlock for microscope

L4Cc and L6Cc, flexible by design

Oxxius combiner have been designed with a specific stress on versatility :

- The platform features up to two independent channels and can provide up to two output ports.
- The combiner is ready for docking with our extension modules.
- The largest choice of wavelength and power from Oxxius's LaserBoxx models, or third-party laser sources.
- The electronic board embeds all functionalities as standard.
- A large choice of connectors and collimators is available to interface with most microscope ports.



One or two outputs ports

The L4Cc and L6Cc can be set with two independent output ports. Each port will deliver one or several wavelengths.

Extension Modules - get more from your combiner

With the extension modules (MDL), the L4Cc and L6Cc are offering advanced functionalities



MDL-MDUAL - Designed for light sheet microscopy.
It 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 (< 3 ms switching time)

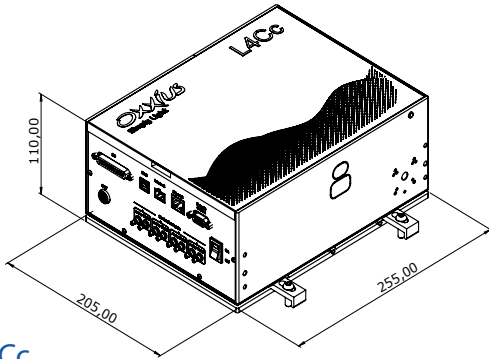
MDL-FST3 - Provides fast switching between three outputs up to 30Hz (< 3 ms switching time) - only available with L6Cc

MDL-MNDF - Provides a motorized neutral density filter when low output power is needed

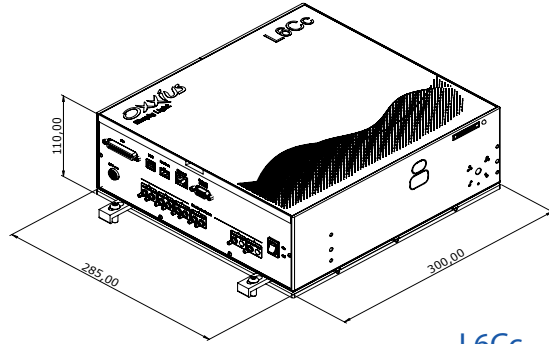
MDL-AOTF - AOTF modulator - one output



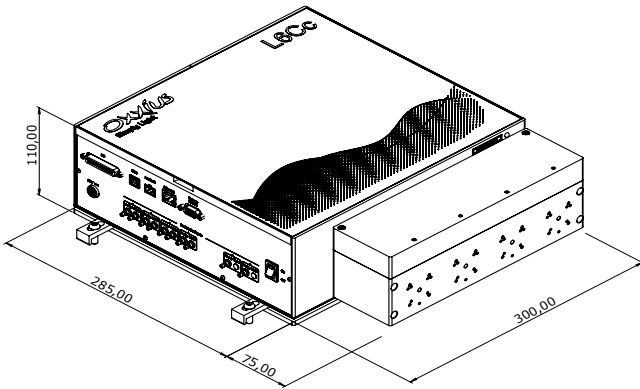
System Specifications



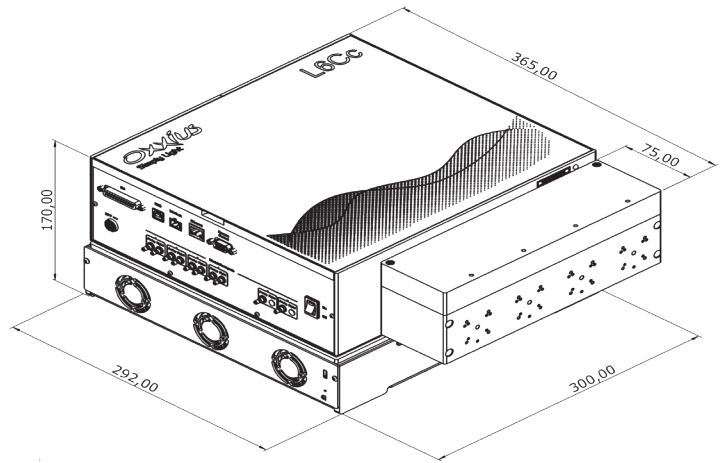
L4Cc



L6Cc




L6Cc with MDL options



L6Cc with ACX-HTSK and MDL

NEW - 4U 19" rack version

	L4Cc	L6Cc
Power stability (baseplate temperature +/-3K)		
Free space	±1% p-to-p	
PM + SM fiber coupled	±2% p-to-p	
Modulation		
Analog (0 - 5V)	DC - 1 MHz	
Rising time using digital modulation (TTL)	≤ 2 ns (LBX) / ≤ 300 ns (LCX with AOM)	
Power extinction ratio	Infinite (LBX) / ≥ 40 dB (LCX with AOM)	
System specifications		
Operating temperature	15 - 40 °C (at baseplate)	
Power Consumption	60 W	100 W
Supply voltage, Plug and Play	100 -240 V AC	
Supply voltage, OEM	24 V DC	
Warm-up time	30 minutes	
Communication interfaces	USB, RS-232, I/O Extranet	
Software	Compatible with μManager environment, dedicated Oxixus software	
Weight	6.8 kg	9.3 kg

Packing list

- L4cc/L6cc bench including aligned laser sources
- RemoteBox— remote control
- MDL extension modules, if ordered
- Fiber-coupling options, if ordered
- Power supply and country selected power cord
- USB cable
- Tools for maintenance
- Test report and user manual
- Oxixus control software



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