MixWave

By Oxxius

Wavelength Combiners

Combine up to six wavelengths into one
perfectly aligned beam.
Compact, modular and ready to integrate.

- 2 formats
- Up to 1000 mW per wavelength
- Integrated control electronics
- Direct modulation on each source
- Accousto-Optic Modulator (AOM) with linearized output

OXXIUS
Laser Matters

www.oxxius.com

All Built-In. Ready to Go.

Oxxius Wavelengths Combiners

MixxWave is Oxxius' **all-in-one multicolor laser platform**, combining up to 4 or 6 wavelengths into a single, perfectly aligned beam. Built on a modular architecture **compatible with Oxxius FlexxRay, StaxxBeam and MaxxPower lasers**, it spans 375 to 1064 nm and scales from standard fluorescence setups to advanced microscopy.

Why Oxxius MixxWave?

- Proven long-term stability
- Extension modules with advanced features: dual outputs, fast-switching mirror, AOTF, etc.
- Easy maintenance
- Field upgradeable
- Dedicated Oxxius software
- Fully accessible from µManager
- USB and Ethernet interfaces

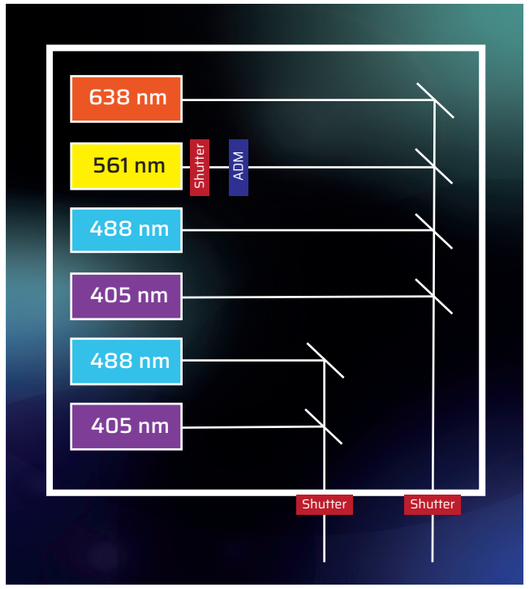
Multi-wavelength Beam Combining, Simplified

MixxWave combines multiple laser wavelengths into a single, perfectly aligned beam, with delivery in free space or through one or more optical fibers.

ONE PLATFORM, TWO FORMATS

- L4Cc supports up to 4 laser sources and 2 AOMs (Accousto-Optic Modulators).
- L6Cc supports up to 6 laser sources and 2 AOMs

Both formats cover wavelengths from 375 to 1064 nm and can be configured with lasers from the Oxxius FlexxRay, StaxxBeam or MaxxPower ranges.



Example configuration of an **L6Cc combiner with two outputs**.

STABLE BY DESIGN, EASY TO MAINTAIN

MixxWave stability is built on a proven optical layout with **short beam paths** and the **ultra-low thermal load** of Oxxius sources.
Optical components are straightforward to access, making maintenance simpler and enabling future upgrades.

BUILT FOR AUTOMATION AND SAFETY

MixxWave is compatible with the **µManager** environment and also includes a standalone control software with a user-friendly GUI.
For safe operation, each **DPSS laser** and each output port is equipped as standard with an **electromechanical shutter**, controllable via **TTL signals** or software commands.

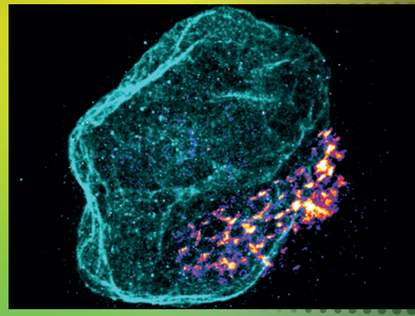
Compact integration and easy access for maintenance

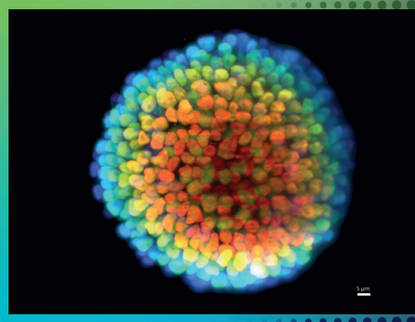
BEAM DELIVERY — OUTPUT PORTS

- **One channel** or **two independent channels**
- **Free-space output** by default
- **Standard electromechanical shutter** on the main output
- Configurable (and upgradeable) with extension modules providing up to **4 ports** and additional functionalities
- Choose **free space, multimode, single-mode, or polarization-maintaining (PM)** fiber delivery ; any combination available

Applications at a Glance

- Raman Spectroscopy
- Fluorescence Microscopy
- Optogenetics
- Microfluidics
- Cytometry
- Light Sheet Microscopy
- FRAP / TIRF
- Holography
- Lithography
- Semiconductor Inspection





Credit : Image courtesy of R. Galland, C. Butler and JB. Sibarita - Univ. Bordeaux, CNRS, Interdisciplinary Institute for Neuroscience, IINS - Image acquired using the soSPIM technology puts.

Configure MixxWave your way

A modular platform built to match your setup

From Oxxius' complete range of lasers (and, if needed, third-party lasers), **select the desired wavelengths** (with a **minimum spacing of 7 nm**) and the **laser power** to achieve the required **output laser configuration**.
To choose the optimal power for each individual laser, use an approximate **combining efficiency of 55%** (i.e., **combiner output power / individual laser power ≈ 55%**) for a **single-mode fiber output**.

Our Laser Source Portfolio

HIGH-PERFORMANCE LASERS OPTIMIZED FOR BEAM COMBINING

FlexRay
By Oxxius

CW & Modulated Laser Sources

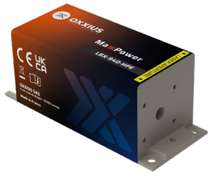
Compact continuous-wave laser sources offering high stability and ultra-low noise, making them particularly well suited for beam combining in sensitive applications such as life sciences, microscopy, and fluorescence.

- Wavelength range: 375 nm – 1064 nm
- Output power: up to 1 W
- Ultra-low noise: < 0.2% RMS
- Beam quality: TEM_{00}

Specific options for CW & modulated laser source combiner:

- Automatic neutral density filter
- Motorized Power Attenuators

MaxPower
By Oxxius



High-Power Laser Diode Modules

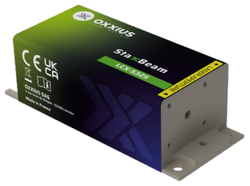
High-power multimode laser diode modules designed for efficient integration into combiners, enabling high optical power delivery for demanding applications such as fluorescence microscopy, optogenetics, and industrial processes.

- Wavelength range: 375 nm – 980 nm
- Output power: up to 1200 mW

Specific options for high-power source combiner:

- Speckle reducer
- Square or hexagonal-shaped fibers
- Liquid light guide

StaxBeam
By Oxxius



Single-Frequency Laser Sources

Continuous-wave single-frequency lasers providing excellent wavelength stability and narrow linewidth, ideal for combiners requiring accurate wavelength or frequency referencing in spectroscopy and interferometric applications.

- Wavelength range: 473 nm – 1064 nm
- Output power: up to 800 mW
- Wavelength stability: down to 1 pm
- Narrow linewidth

Specific options for single-frequency source combiner:

- Optical isolators
- Motorized Power Attenuators

Technical Information

System Specifications

	L4Cc	L6Cc
Power Stability (baseplate temperature ±3°K)		
Free space	± 1 % p-to-p	
PM + SM fiber coupled	± 2 % p-to-p	
Modulation		
Analog (0-5 V)	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		
Operation temperature	15 - 40°C (at baseplate)	
Power Consumption	60 W	100 W
Supply Voltage, End-user version	100-240 V AC	
Supply Voltage, OEM	24 V AC	
Warm-up time	30 minutes	
Communication interfaces	USB, Ethernet, dedicated electrical interface	
Software	Dedicated Oxxius GUI compatible with **µManager**	
Typical weight	7-9 kg	10-12 kg

L4Cc

L6Cc

What's included with your system?

Everything you need to get started is delivered with your L4Cc/ L6Cc system:

- L4Cc/L6Cc system with laser sources pre-aligned and ready to use
- Remote control for convenient operation
- Extension modules (if ordered)
- Heatsink (if ordered)
- Fiber-coupling options (if ordered)
- Power supply with the appropriate country-specific power cord
- USB cable for connection and setup
- Maintenance tools to keep your system performing at its best
- Test report and user manual for full traceability and guidance
- Oxxius control software to configure and operate your system easily

Test Our Combiners!

We offer standard demo units so you can validate performance in your own environment before moving forward.

» Contact us to check availability, lead times and the best configuration for your application.

Available options

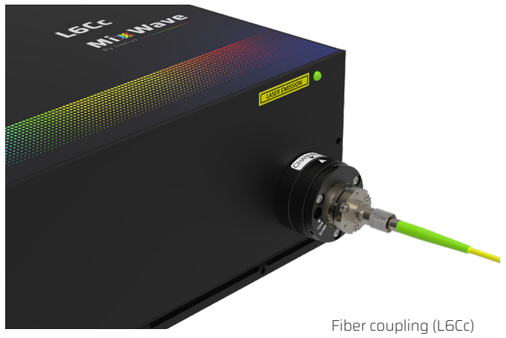
Extend Your Performances

MixxWave offers a wide range of options to fit your application. Start with what you need today, and expand later with field-upgradeable modules as your requirements evolve.

1 Fiber coupling

For efficient, temperature-stable power delivery

› **Single-mode or multimode** fiber coupling
› Connector types: **FC/APC, FCP8, SMA**
› **LMA fiber** option covering a broad wavelength range (375–1064 nm)
› **Magnetic, repositionable mount** for quick, repeatable connections.



Fiber coupling (L6Cc)

2 Modulation & Control

Each laser line can be driven through independent analog and digital inputs:

› **Diode lasers** are directly modulated with an **infinite extinction ratio**
› DPSS lasers are modulated via an **AOM**, providing **linearized optical power**
› A **Motorized Power Attenuator (MPA)** offers an alternative way to adjust DPSS output from 1% to 100% of nominal power
› **Common synchronization** input enables digital synchronization of all lasers using a single TTL signal.

Remote Controller

3 Heat Management

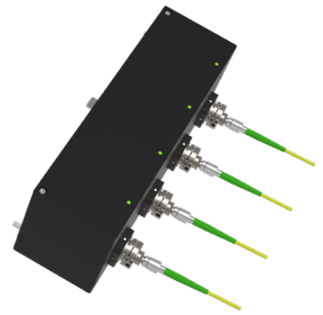
For easy integration and stable operation

› **Forced air heatsink with active fan regulation** (2 formats: L4Cc or L6Cc)
› **4U 19” rack with forced air heatsink for combiner**

L6Cc with heatsink

4 Extension Modules (MDL)

Add modules to expand output-beam functionality and adapt the system to specialized workflows:



› **Broadband beam splitter** (MDL-MDUAL)
- Splits power across two outputs with a user-selectable ratio
- ±5% split ratio accuracy
- Designed for light sheet microscopy

› **1:2 High Rate Switch** (MDL-FSTM)
Fast switching between 2 outputs (<30 ms)

› **1:3 High Rate Switch** (MDL-FST3)
Fast switching between 3 outputs (<30 ms)
For L6Cc only

› **1:2 Beam Switch** (MDL-FLPM)
- Switching between **2 outputs (~1 s)**
- Recommended for powering multiple instruments from a single combiner

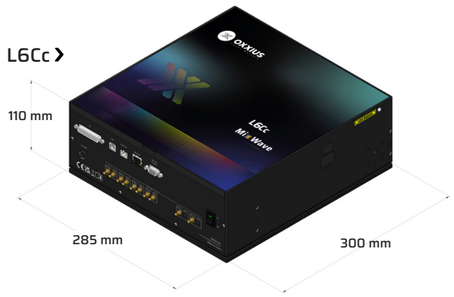
› **Controlled Optical Density** (MDL-MNDF)
- Switchable attenuator with a **fixed attenuation value**

› **Multi-channel Modulation** (MDL-AOTF)
- Modulates **all laser lines at once** using an **Acousto-Optic Tunable Filter (AOTF)**
- **Single-output** configuration

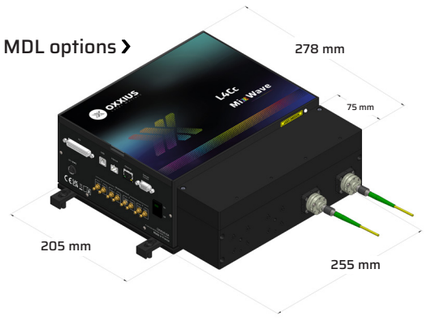
Dimensions

L4Cc ›

L6Cc ›

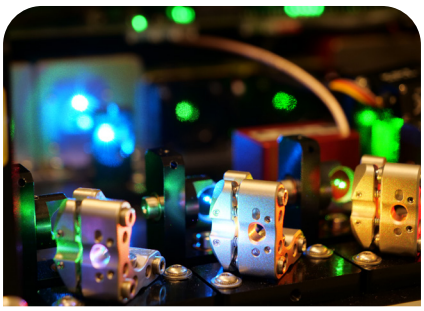


L4Cc with MDL options ›

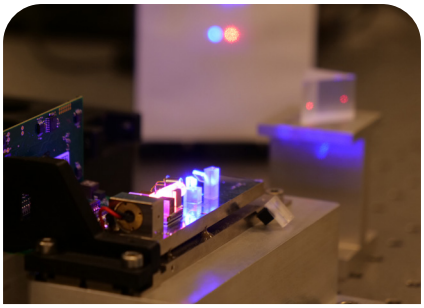


L6Cc with ACX-HTSK and MDL ›

When laser matters, innovation happens.



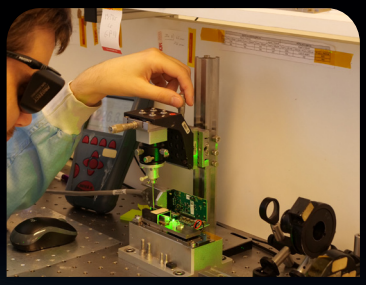
Rely on Oxxius' stable and compact lasers to speed your development in life science, metrology, and industrial applications.



Oxxius develops, designs and delivers powerful, high-performance, spectrally pure visible lasers, built to evolve with your needs.

Our compact, ultra-stable, ISO 9001-certified solutions speed development, simplify integration, and enable breakthroughs in medical diagnostics, research, semiconductor inspection, and more.
Every system is backed by fast iteration, proven reliability and dedicated customer support.

Let's configure the right laser for your application: contact us for technical guidance, lead times and demo options at sales@oxxius.com.



Global sales network

Our distributors are worldwide, making Oxxius products easy to access wherever you are.
See the full list of partners and locations at www.**oxxius.com**.

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