



# MBD 200

## Resonant Frequency Doubler

The MBD 200 Monolithic Block Doubler is an efficient frequency doubler for use with single frequency laser sources, such as MBR 110. The technique of resonant frequency-doubling is used to achieve high-efficiency doubling, without compromising the performance of the fundamental laser source. The output power level of the fundamental laser source is enhanced in a highly stable external cavity, providing the high resonant powers essential for efficient nonlinear processes. A selected frequency-doubling crystal is positioned at the intra-cavity focus, providing efficient nonlinear conversion to the second harmonic.

MBD 200 features unique monolithic cavity structure for stable output performance and dual cavity-length actuators for superior servo-locking. A wide selection of available mirrors and second harmonic generation crystals allows optimised performance for the wavelengths of interest. A long extension, piezo-mounted mirror, combined with a compact resonant cavity, enables MBD-200 to follow long frequency scans of the fundamental laser source.

This resonant frequency doubler can be used to extend the spectral coverage of single frequency Ti:Sapphire or dye lasers and is advantageous for the applications like atom cooling and trapping, high precision spectroscopy, quantum physics research and others.

### FEATURES

- Unique mechanical resonator
- Enhanced output power
- Wide range of mirrors
- Precision crystal adjustment
- Automatic tracking of fundamental frequency scans
- Wide and easy mode-matching
- High-efficiency frequency doubling
- MBD E-200 servo-control unit
- Efficient doubling of single-frequency Ti:Sapphire and dye lasers

### APPLICATIONS

- Atom Cooling and Trapping
- High Precision Spectroscopy
- Quantum Physics Research

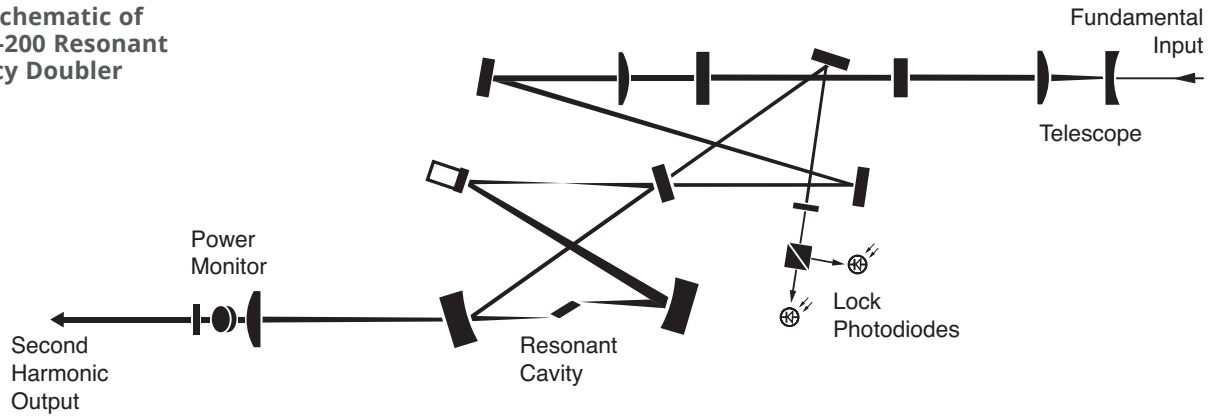


SPECIFICATIONS <sup>1</sup>	MBD 200				
Conversion Efficiency (488 to 1030 nm Fundamental Wavelength)	16% at 1W input				
Continuous Scan Range (GHz)	>20 fundamental				
CRYSTAL OPTIONS/TUNING RANGE					
Fundamental Wavelength (nm)	900	800	700	600	500
Typical Tuning Range (nm)	70	50	25	30	25
Recommended Crystal Type	LBO	LBO	LBO	BBO	BBO
FEATURES					
Mechanical Resonator	The highly compact enhancement cavity achieves extremely high passive stability through our unique monolithic block design.				
Enhancement	Intracavity enhancement of the fundamental radiation has been optimized through the use of carefully designed custom optics and low-insertion-loss nonlinear crystals.				
Mirrors	A wide range of mirrors are available for frequency-doubling many common wavelengths. All mirrors use a threaded-insert system, ensuring ease and reproducibility of mirror replacement.				
Precision Crystal Adjustment	Accurate alignment of the nonlinear crystal is easy, using a precision mount to achieve the necessary crystallographic orientation.				
Scanning	A long extension, piezo-mounted mirror, combined with a compact resonant cavity, enables the MBD-200 to follow long frequency scans of the fundamental laser source.				
Mode-matching	A telescopic optics arrangement allows fundamental light input to be easily mode-matched into the enhancement cavity.				
High Efficiency	The high level of enhancement achieved allows very efficient frequency-doubling with the MBD-200.				
MBD E-200 Servo-control Unit	Dedicated electronics designed to maintain high enhancement levels and allow the fundamental laser source to be tracked during frequency scanning.				

<sup>1</sup> At center of specified doubling crystal wavelength.

## MECHANICAL SPECIFICATIONS

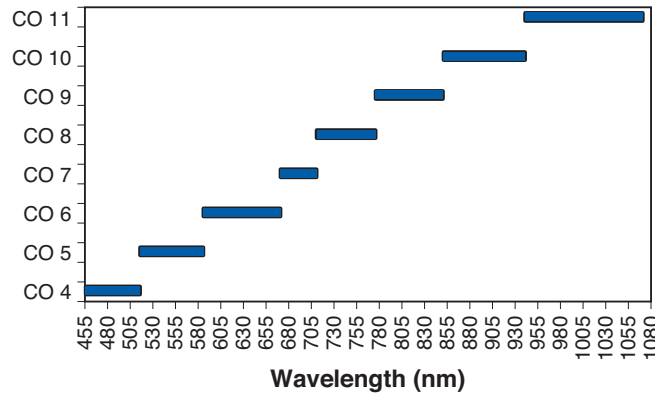
### Optical Schematic of the MBD-200 Resonant Frequency Doubler



### MBD-200 Standard Optic Sets

The MBD-200 is configured to match the desired fundamental wavelength. The non-linear crystal can be configured to the specific wavelength required. The chart shows the optics sets available to support various wavelength regions. Note that more than one crystal may be required to cover each region.

MBD 200 Standard Optic Sets



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Coherent offers a limited warranty for all MBD systems. 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. Printed in the U.S.A. MC-SC24-2000-0M0217Rev.D Copyright ©2017 Coherent, Inc.

