

509nm Single Frequency Fiber Laser

Description:

Connet 509nm Single Frequency Fiber Laser is one narrow linewidth frequency-doubled single frequency fiber laser. The laser consists of two parts: 1018nm high power narrow linewidth single frequency fiber laser and high efficiency frequency doubling unit. These two parts are connected by optical fiber. The standard polarization-maintaining fiber is normally adopted for output. The output beam quality is excellent and the product is easy to operate.



Based on the built-in 1018nm single frequency fiber laser, the 509nm single frequency fiber laser can achieve the real single frequency, single longitudinal mode and linear polarization output. The frequency doubling unit adopts the Periodically Polarized Lithium Niobate (PPLN) Technology. The 509nm laser maintains the low-noise performance of 1018nm single frequency fiber laser. The output power of the 509nm single frequency fiber laser can be up to 1W.

Features:

- Single Frequency, Single Longitudinal Mode, Linear Polarization Output
- Narrow Linewidth (<20kHz)
- Low Phase Noise and Low Relative Intensity Noise
- Low RIN
- Thermal Wavelength Tuning Function
- PZT Fast Modulation Function
- Output Power in Optical Fiber Type: up to 1W

Applications:

- Laser Cooling and Trapping
- Cesium Atomic Clock, Optical Atomic Clock
- Quantum Sensing
- Precision Measurement
- Rydberg Inspire
- Quantum Computing
- Optical Parameter Oscillation (OPO)



Specifications:

Parameter	Unit	Specification		
		Min	Typ.	Max
Part no.		CoSF-FC-509-B		
Center Wavelength	nm	508	509	510
Output Power	mW	-	500	1000
Laser Emission		CW, Single frequency, Single longitudinal mode		
Beam Quality	M ²	-	1.05	1.1
Linewidth	kHz	-	20	50
RIN Peak Frequency	kHz	800	1000	1200
RIN Peak	dBc/Hz	-	-105	-100
RIN @10MHz	dBc/Hz	-	-140	-130
SMSR (50pm resolution)	dB	30	35	-
Output Polarization		Linear		
Polarization Extinction Ratio (PER)	dB	18	20	-
Output Power Stability	%	-	1	3
Wavelength Thermal Tuning Range	nm	-	0.3	-
PZT Wavelength Modulation		Optional		
PZT Modulation Frequency (Linear)	kHz	DC	10	20
PZT Modulation Wavelength Range	GHz	-	>10	>15
Operating Temperature	°C	0	-	40
Storage Temperature	°C	-20	-	60
Operation Voltage	V _{AC}	220		
Communication Interface		RS232		
Output Fiber Type		PM460 or Free Space Output		
Output Fiber Length	m	0.8	1.0	1.2
Output Fiber Connector		FC/APC (narrow key slow axis) or collimator		
Dimension	mm	510x480x150		

Notes:

- Standard Linewidth: <20kHz
- RIN Peak Frequency and RIN Peak are based on CoSF-D Single Frequency Fiber Laser
- Wavelength Thermal Tuning Range can be customized. The standard range is 0.3nm
- High Output Power Stability optional.

Ordering Information:

- CoSF-FC-509-<P>-<PW>-PZT-FA/COL
- P: package, B for benchtop, M for module
- PW: output power 0050: 50mW
- PZT: PZT fast modulation (optional)
- FA: FC/APC connector COL: Free Space Output

Make Single Frequency Fiber Laser Better