

High Power 780 nm Fiber Based Femtosecond Laser



Applications

- Multiphoton microscopy
- Biophotonics
- Materials characterization
- Optical metrology
- Terahertz radiation

Features

- Field proven product reliability
- Ultra compact laser head
- Easy to use
- Wavelength 780 nm
- Pulse energy > 10 nJ
- Pulse widths < 100 fs with negligible pulse pedestal
- RF synchronization output
- High repetition rate of 50 MHz
- Air cooled – no chiller required
- Low power consumption
- Excellent beam pointing and pulse energy stability
- Fiber Beam Delivery for simplified optical path and reduced optical dispersion.

The Carmel CFL-05RFF0 is a high power, 780 nm, fiber based femtosecond laser. Its ultra compact laser head is about 300 times smaller than many Ti:Sapphire lasers with a similar output power level. It is a turnkey, rugged industrial laser system with a portable design and excellent system stability. Push button startup and no maintenance makes our fiber lasers easy to use and hassle free. The CFL series offers user-friendly front panel control knobs for flexible system adjustment. The pulse width is less than 100 fs with a negligible pedestal. The repetition rate can be specified from 10 to 50 MHz with a polarization-maintaining (PM) output and excellent beam quality, with an $M^2 < 1.2$. An RF synchronization output is provided as a trigger signal.

For multiphoton spectroscopy applications, the Carmel offers ideal performance to optimally image tissue with less scatter and lowered risk of tissue damage. The compact size and fiber delivery simplifies implementation by eliminating costly redesign of delivery optics and by easily integrating within existing microscopes.

Calmar's CFL operation is based upon the company's proprietary passive mode-locking technology, which ensures reliable startup and stable long term performance. Carmel high power, fiber based femtosecond lasers enable end users to focus on the job at hand, and not the laser tool being used.

Technical Specifications

Model Number	CFL-05RFF0
OPTICAL	
Wavelength (nm, FWHM)	780 ± 5
Average Power (mW)	> 500
Pulse Width ² (fs)	< 100 (90 typ.)
Pulse Energy (nJ)	> 10
Peak Power (kW)	> 100
Beam Quality	M ² < 1.2
Beam Diameter (mm, 1/e ²)	0.7 ± 10%
Beam Roundness (%)	> 90
Spectral Width (nm)	~ 10 (typ)
Nominal Pulse Repetition Rate ¹ (MHz)	50
Polarization Ratio (dB)	> 25
Pulse Energy Stability (%rms, 8 hours)	<1
ELECTRICAL	
Supply Voltage (VAC)	85 ~ 264 autoranging
Supply Frequency (Hz)	47 ~ 63 autoranging
Power (VA)	200
RF Synchronization Output	Included
MECHANICAL	
Warm up time	10 minutes (typ)
Operating Temperature (°C)	17 - 32
Storage Temperature (°C)	0 ~ 50
Length of fiber between controller and head (cm)	80
Laser Head Dimensions (cm)	3.0 (w) x 13.0 (d) x 9.0 (h)
Laser Head Weight (kg)	0.1
Laser Controller Dimensions (cm)	48 (w) x 50 (d) x 18 (h)
Laser Controller Weight (kg)	12
Cooling	Air-Cooled

¹ Other nominal repetition rate can be factory-configured, may affect other specifications

² A sech² pulse shape (convolution factor of 0.65) is used to determine the pulse width from the second harmonic autocorrelation trace. Due to continuous improvement, all product specifications are subject to change without prior notice.

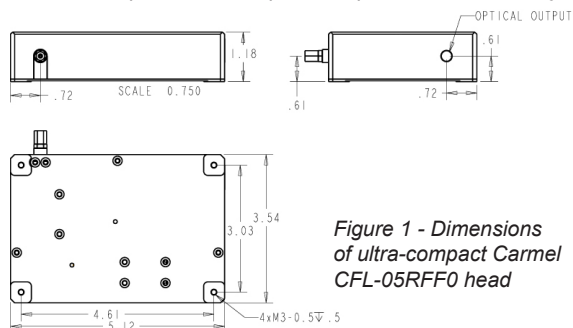


Figure 1 - Dimensions of ultra-compact Carmel CFL-05RFF0 head

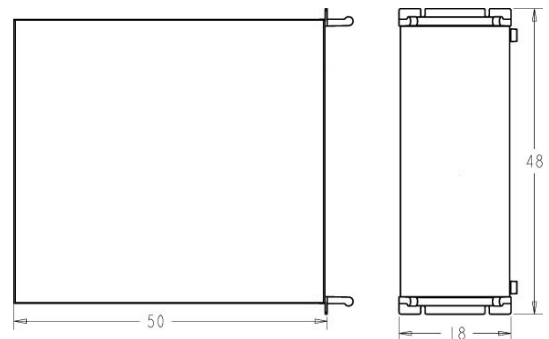


Figure 2 - Dimensions of Carmel CFL-05RFF0 controller

