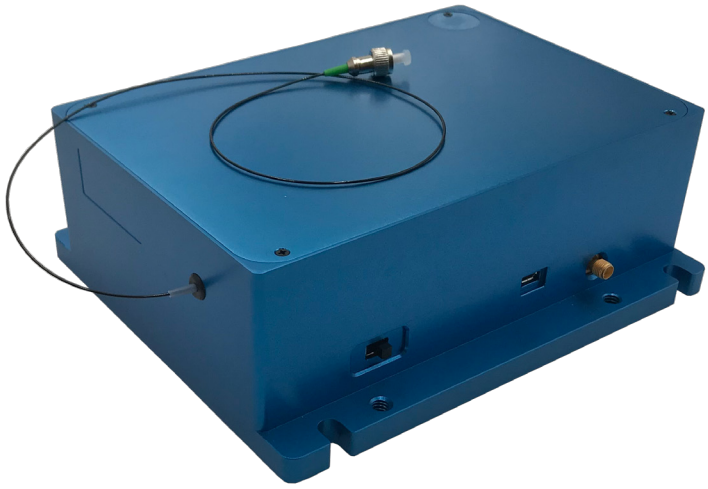
MENDOCINO

1550 nm Medium Power Femtosecond Fiber Laser Module with Long Fiber Delivery



Applications

- Remote terahertz sensing/imaging
- Two-photon integrated circuit testing
- Telecom component testing
- Optical metrology
- Materials characterization
- Biophotonics

Features

- Average power > 100 mW
- Central Wavelength 1550 nm
- Pulse width < 110 fs
- Fiber delivery up to 50 m
- Robust all-fiber architecture
- Exceptional long term stability
- RF synchronization output

The 1550 medium power femtosecond fiber laser (FPL) is a passively mode-locked fiber laser that has been specifically optimized for industrial applications to deliver short pulse output (< 110 fs) at 1550 nm from up to 50 m of PM delivery fiber, which can be spilt into two branches for a pump-probe configuration. The laser utilizes the proprietary Mendocino saturable absorber technology, which has been developed and perfected over a twenty-year period, to provide reproducible mode-locking at turn-on with excellent stability and reliability. It features a convenient polarization-maintaining (PM) fiber output with a total output power level of greater than 100 mW that can be configured to provide > 30 mW per limb in a dual branch fiber delivery system. The laser also provides an RF 100 MHz synchronization output as a trigger signal.

One specific application area for this laser is the generation of terahertz radiation (wavelengths in the range of 30 µm to 3 mm) to enable time-domain spectroscopy/imaging (THz-TDS) for thickness measurements in a wide range of materials, such as plastics, composites, textiles, etc. This non-destructive technique is increasingly used for process control in industrial environments, requiring dual fiber delivery of femtosecond laser pulses to a remote terahertz antenna source and receiver.

The module (FPL-M) series features a robust architecture that is insensitive to shock and vibration. It can be used as a stand-alone laser system with a user-supplied 5 VDC power supply and is the perfect source for integration into demanding OEM applications. An advanced engineering design and consistent manufacturing process ensure the highest quality standards for volume production.

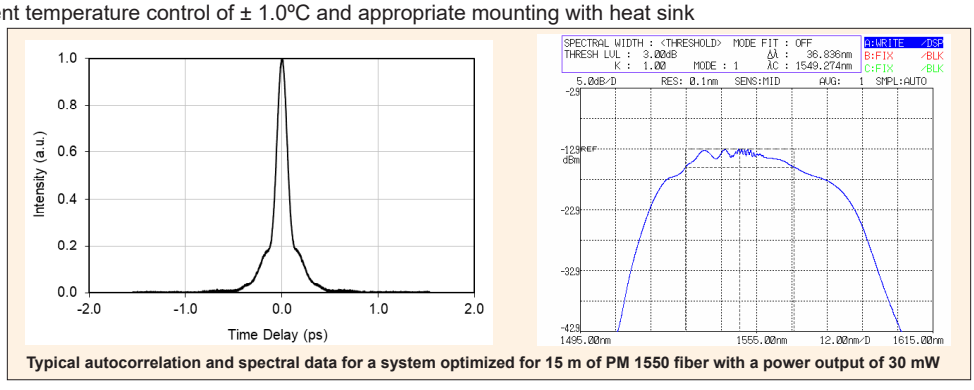
If the performance parameters do not quite fit your application requirements, please contact us at sales@calmarlaser.com to discuss a customized solution

1550 nm Medium Power Femtosecond Fiber Laser

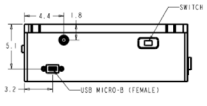
Technical Specifications[1]

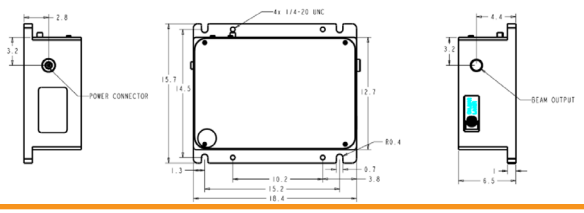
Model Number	FPL-M4CFF1
OPTICAL	
Central Wavelength (nm)	1550
Pulse Width[2] (fs)	Compressible to < 110 fs up to 30 mW with up to 50 m of PM 1550 delivery fiber[3]
Average Power (mW)	> 100
Repitition Rate[3] (MHz)	100
Spectral Width (FWHM, nm)	> 30
Power Stability over 8 hours[4] (%, RMS)	< 1.0
Beam Quality, M^2	< 1.1
Polarization Extinction Ratio (dB)	> 20
Output/Termination	~ 0.5 m PM 1550 fiber pigtail with FC/APC connector
ELECTRICAL	
Electrical Synchronization (V)	~ 0.5, SMA connector
Operating Voltage (VDC)	~ 5
Power Consumption (W)	< 20 W
Electrical Interface	USB Micro B
Computer Control	Yes
MECHANICAL	
Operating Temperature (°C)	20 - 35
Dimensions (cm)	18.5(W) x 15.7(D) x 6.5(H)
Weight (kg)	1.5
Mounting	Heat sink for steady state heat load of up to 20 W (up to 25 W at turn-on)
Warm-up Time (min)	< 10

1. Due to our continuous improvement philosophy, all product specifications are subject to change without prior notice. Please contact sales@calmarlaser.com for customized specifications.
2. A $sech^2$ pulse shape (deconvolution factor of 0.65) is used to determine the pulse width from the second harmonic autocorrelation trace.
3. The laser is configured to deliver > 30 mW per limb (up to 50 m) in a dual fiber delivery configuration.
4. For other repetition rates, please contact sales@calmarlaser.com.
5. Requires an ambient temperature control of ± 1.0ºC and appropriate mounting with heat sink



Typical autocorrelation and spectral data for a system optimized for 15 m of PM 1550 fiber with a power output of 30 mW





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LASER RADIATION