

1350 nm Fiber Based Femtosecond Laser with Fiber Delivery



Applications

- Two-photon integrated circuit testing
- Telecom component testing
- Optical-beam-induced current microscopy
- Photodetector characterization
- Optical metrology
- Multiphoton microscopy
- Materials characterization

Features

- > 100 mW output at 1350 nm
- < 200 fs pulse widths
- Single Mode PM fiber Delivery
- All air-cooled, no chiller required
- Single rack mountable module
- Full computer control and data logging capability
- Remote system diagnostics

The Carmel F-1350 represents the first in a new series of fiber-delivered, femtosecond fiber lasers with output powers of over 100 mW and pulse widths of less than 200 fs. The system utilizes the same building blocks used in the industry leading Carmel X-series but with the convenience of a fiber-delivered output. The Carmel F-1350 is the perfect source for two-photon transient current injection used in the testing and characterization of integrated circuits.

The system features a single rack mountable controller with a robust armored fiber-cable output, which facilitates its incorporation into OEM designs and provides for the direct delivery of high peak power optical pulses to test samples. A simple key switch interface provides for manual operation with full remote access through computer control. The system includes the capability of remote data logging, power monitoring and system diagnostics for OEM service support. The rugged, all-fiber architecture is designed for 24/7 operation.

The Carmel F-1350 has a standard repetition rate of 55 MHz to ensure excellent signal-to-noise for data averaging applications and a high peak power, low pedestal pulse of < 200 fs for efficient two-photon current creation in test devices. Single-mode fiber delivery ensures outstanding beam quality with high spatial resolution for the optical test probe. An RF synchronization output is also provided as a trigger signal.

The Carmel F-1350 is the first all fiber-based femtosecond source specifically designed for straight forward integration into OEM microscope and metrology systems used in the test and characterization of integrated circuits. The fiber-delivered output minimizes the need for delivery optics and provides for spatial flexibility and specificity for transient current generation.

FIBER BASED FEMTOSECOND LASER

Technical Specifications¹

Model Number	CFL-01OFF
Average Power (mW)	100
Repetition Rate ² (MHz)	55
Central Wavelength (nm)	1347 ± 10
Minimum Pulse Width ³ (fs)	< 200
Pulse Energy (nJ)	> 2
Polarization Extinction Ratio (dB)	> 20
Power Stability in Operating Temperature Range (% rms, 8 hours) ⁴	< 3
Termination / Output	Single Mode PM fiber with FC/APC connector
Supply Voltage (VAC)	85 - 264 autoranging
Supply Frequency (Hz)	47 - 63 autoranging
Power Consumption (VA)	200
RF Synchronization Output (V)	0.5 with SMA connector
Warm up time (min)	10 (typical)
Operating Temperature (°C)	20 - 28
Storage Temperature (°C)	0 - 50
Output Armored Fiber Length ⁵ (m)	1.5
Laser Dimensions (cm)	48(w) x 50(d) x 18(h); 19" 4U rack mountable
Cooling	Air-cooled by low noise fan
Communication Interface Type	RS232
Laser Status Indicators on Front Panel	Electrical Power On/Off, Laser On and Operational, Emergency Stop

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. 55 MHz is standard. For other repetition rates, please contact sales@calmarlaser.com.

3. A sech² pulse shape (deconvolution factor of 0.65) is used to determine the pulse width from the second harmonic autocorrelation trace.

4. With a temperature control of ± 0.5°C.

