

# 1 $\mu$ m Femtosecond Pulsed Laser Module

Calmar's FPL-M1U is a 1 $\mu$ m seed laser module and FPL-M2U is an amplified version of FPL-M1U with optical power > 20mW. The most compact optical pulse generators, FPL-M1U and FPL-M2U are air-cooled and shockproof. They can be either used as stand-alone laser sources with a 5V DC power supply (or a separate driver), or as OEM modules to be integrated into end-user's application systems. Both modules are passively mode-locked fiber lasers, feature wide range of pulse widths, wavelengths, and high output power.

FPL-M1U has transform-limited pulse shape with low pedestals. The timing jitter from the module is less than 100 fs. It can generate optical pulses in the range of 0.3 – 10 ps. The optical wavelength can be customized throughout the range of 1.03 ~ 1.07  $\mu$ m.

As stand-alone laser sources, FPL-M1U and FPL-M2U are simple to operate. With the built-in electronic driver, they self-start and are remotely controllable. In addition, the built-in RF synchronization output provides trigger signals. As the result, the operation is turn-key and requires neither external RF source nor warm-up.

Due to the small form factor and ruggedized design, FPL-M1U and FPL-M2U are ideal for maintenance-free OEM applications. We can customize the interface to allow direct system integration with no requirement for adjustment.



## Features

- Pulse width 0.4 ~ 10 ps selectable
- Wavelength 1030–1070 nm selectable
- Transform-limited output from seed laser
- Synchronization output (SMA female)
- Small form factor
- Polarization maintaining
- Low pedestal
- No warm-up time required
- No external RF source required

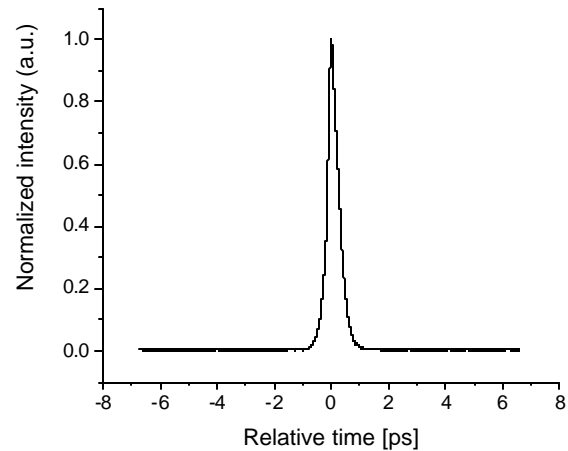
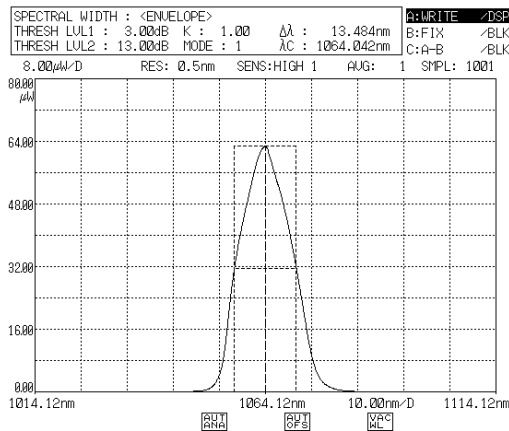
## Optional Upgrades

- Phase locking to external RF clock with ultra low jitter
- Synchronization output with >3 GHz or customized bandwidth

## Technical Specifications

Model Number	FPL-M1UFF	FPL-M2UFF
Pulse width (ps)	0.4 ~ 10 (selectable)	0.8 ~ 10 (selectable, 0.2 ps compressible)
Central Wavelength (nm)	1030 ~ 1070 (selectable)	
Repetition Rate (MHz)	40 (other repetition rate within 20~100 MHz available)	
Average Output Power (mW)	> 0.5	>10 (20 typical)
Timing Jitter (fs)	<100 (Carrier offset 100 Hz ~ 1MHz)	
Polarization Extinction Ratio (dB)	> 20	
Spectral Width (nm)	5 ~ 20	
Operating Temp (°C)	5 - 40	
Operating Voltage (VAC)	85 - 264	
Dimensions (cm)	9.5(w) x 12.7(d) x 2.0(h)	9.5(w) x 12.7(d) x 4.0(h)

Specifications are subject to change without notice. 10/19/2006



Pulsewidth : 270 fs (FWHM)



Safety information: the product complies with FDA radiation performance standards 21 CFR 1040.10 and 1040.11