

# FEMTOLOCK™

Precision repetition rate stabilization

< 200 fs jitter

long term stabilization

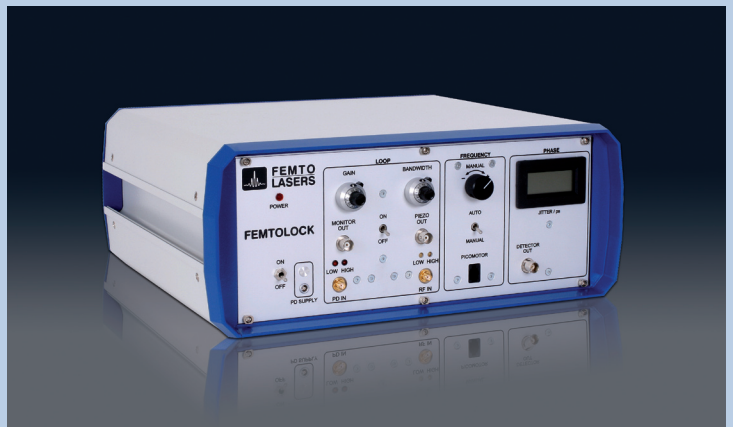
< 200 fs jitter

## Applications

Synchronization to clock signals

Synchronization to other lasers

Two color facilities



**FEMTOLOCK™** is a sub-ps-jitter synchronization for FEMTOSOURCE™ ultrafast Ti:Sapphire oscillators. It allows to lock the round-trip frequency of the oscillator pulses to a given reference RF-source or simply to another oscillator. The use of multiple harmonics of the resonator round-trip frequency in combination with a simple and stable femtosecond laser resonator (based on Dispersive Mirror technology) enables the lowest jitter levels ever demonstrated in a commercial system.\*

\* Adapted from G.M.H. Knippels et al. "Two color facility based on a broadly tunable free-electron laser and a sub-picosecond-synchronized 10-fs Ti:Sapphire laser" *Optics Letters*, Vol. 23, No. 22, Nov. 15, 1998.

# FEMTOLOCK™

## Precision repetition rate stabilization

### Extraordinary Features

- Ultra low timing jitter
- Hands-off operation
- Maximum flexibility

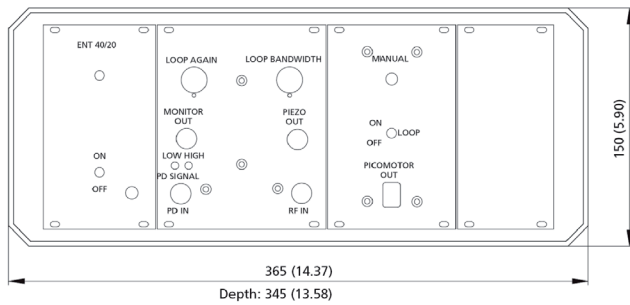
### Maximum Flexibility

Access to the loop filter settings allows the user to optimize the timing jitter and to adapt to different applications. Each system will be custom designed for your specific requirements in frequency and in system configuration.

### Stability

The system comprises a fast piezo translator (PZT) in combination with a wide range translation stage. This arrangement allows the unit to compensate for fast fluctuations (kHz), as well as for slow long term drifts (e.g. temperature drifts). This unique combination guarantees a drift free operation.

FEMTOLOCK™ - USER INTERFACE, Dimensions in [mm] ([in])



### FEMTOLOCK™

Integrated timing jitter (1 Hz - 10 kHz)

### RF reference input

Frequency range (5<sup>th</sup> harmonics of FEMTOSOURCE™)

Input level @ 50 Ohm

### FEMTOLOCK™

User Interface (w | d | h)

Actuator (l | w | h)

Detector head (l | w | h)

1) Please specify within ± 1 MHz.  
2) Jitter can not be smaller than reference source

### SPECIFICATIONS

< 200 fs<sup>2</sup> (applies to FUSION™ and FS synergy™ oscillators)

### Requirements

350 - 500 MHz <sup>1)</sup>

7 dBm

### Dimensions

365 | 345 | 150 mm

110 | 50 | 75 mm

35 | 25 | 20 mm

All specifications are subject to change without notice



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FEMTOLASERS' laser products are certified to comply with the Federal Regulations (21 CFR Subchapter J) as administered by Center of Devices and Radiological Health on all systems ordered for shipment after October 1, 2003.