

RRE-SYNCRO

Repetition Rate Synchronization Electronics

MenloSystems

KEY SPECIFICATIONS

- RMS Timing Jitter <200 fs (0.1 Hz - 500 kHz)

APPLICATIONS

- Laser Stabilization
- Synchronization and Timing
- Pump and Probe Spectroscopy

FEATURES

- Synchronization to Fixed or Tunable Repetition Rate
- Two Stage Locking Scheme Fundamental / Harmonic Phase Relation Defined through Fundamental Lock, Superior Phase Sensitivity Granted through Harmonic Lock
- Support of Third Party Lasers and Actuators
- Integrated Software Control of the Tracking Actuator for Laser Drift Compensation
- Support to Dual Piezo/Dual Integrator Schemes
- Guaranteed and Tested Phase Noise Performance
- Integrated Touch Pad
- Core UI: Software for Operation and Remote Control

OPTIONS

- **Custom Reference Frequencies** depending on filter availability
- **Custom Phase Detectors** for low drift
- **External RF Phase Detector Option** for reference frequency >1 GHz and enhanced timing jitter performance
- **Adjustable Offset** to set the relative time delay between the laser pulses and the reference signal, enabling time-resolved experiments without using a mechanical delay stage
- **Tunable Repetition Rate**
- **Repetition Rate Lock Automation** enabled by our Core UI-Control software
- **Reference generation electronics** 10/20 MHz clock module higher harmonic reference generation via integrated Phase Locked Oscillator



The RRE-SYNCRO features a dual channel PID controller, an integrated phase detector and integrated amplifier modules for the stabilization of the laser cavity, as well as integrated photo diode modules for laser repetition rate detection at fundamental and harmonic frequencies.

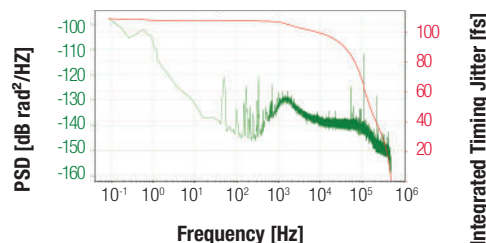
The modular design allows versatile adaptation of the system to all Menlo lasers, and also to a wide range of lasers from other manufacturers.

PERFORMANCE DATA

Timing Jitter

laser vs RF

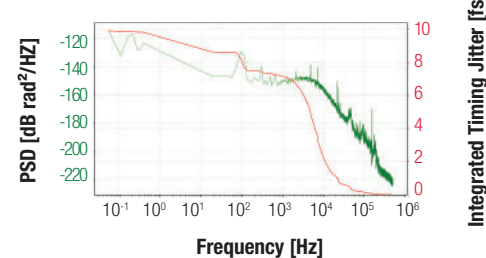
Relative Phase Noise between stabilized laser and 10 MHz reference



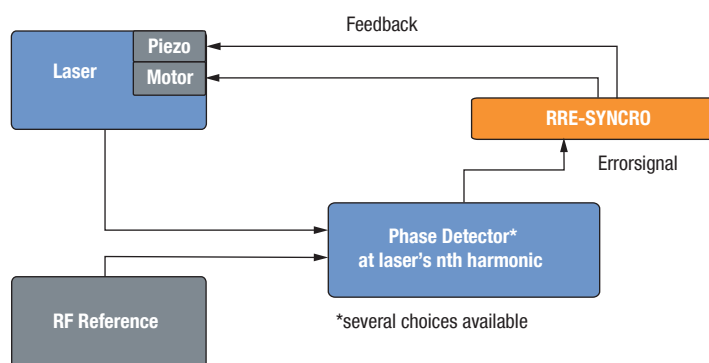
Timing Jitter

laser vs laser

Relative Phase Noise between two lasers in master-slave configuration



SCHEMATIC SETUP



RRE-SYNCRO



Repetition Rate Synchronization Electronics

SPECIFICATIONS

RMS Timing Jitter	<200 fs (0.1 Hz - 500 kHz) or same as reference whichever applies first *
External Reference Options	Master signal at repetition rate
	Harmonic Master signal (RF or optical)
	10 MHz (provided by customer or generated internally)
Stepper Motor Signal Output	Stepper Motor Control, Sub-D, 9 pin
Piezo Signal Output	Piezo Control, BNO
Error Signal Output	Error Signal for monitoring, BNC

* Values specified for models of the C-Fiber Femtosecond fiber laser series of Menlo Systems GmbH. Please contact us when stabilizing lasers from other manufacturers to optimize the performance of the RRE locking electronics.

REQUIREMENTS

Operating Voltage	110/220 V
Storage Temperature	0 °C - 40 °C
Dimensions/Weight	436 x 449 x 133 mm ³ / 7 kg
Remote Control	Unit can be connected to a PC via LAN or network connection

ORDERING INFORMATION

Product Code	RRE-SYNCRO
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Please call for pricing. Specifications are subject to change without notice. Custom modifications are available, please inquire.



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