

Pure. Precise. Proven.

Ultrastable laser systems



Precision in photonics

Together we shape a sustainable future.

As the world's first commercial supplier of optical frequency combs, Menlo Systems has been leveraging innovation in laser technology for over 20 years. As a result, today we offer a portfolio of ultrastable laser systems uniting scientific precision with industrial robustness.

At the core of such systems, high-finesse optical reference cavities are employed along with locking electronics for the laser frequency stabilization, efficiently minimizing laser frequency perturbations. The technology contains no critical or lifetime limiting components. Whether designed to serve science or industry, our ultrastable lasers exhibit exceptional performance:

- **Pure.** A well-defined continuous-wave (CW) laser frequency is guaranteed for operation, even outside a laboratory environment.
- **Precise.** Ultrastable lasers with excellent phase-noise performance, for 24/7 operation.
- **Proven.** After installation, our lasers are maintenance free, and turn-key operated. Hundreds of customers count on our solutions.



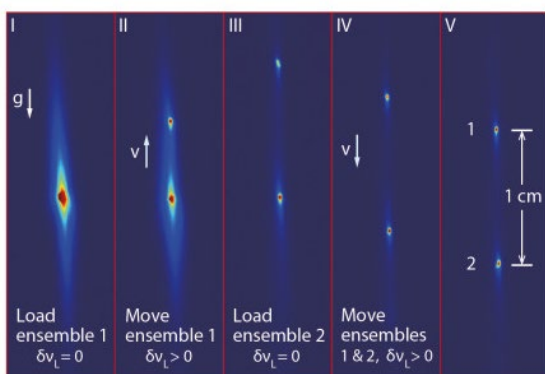
Dr. Michael Mei (left) and Dr. Ronald Holzwarth (right)
Managing directors and co-founders of Menlo Systems



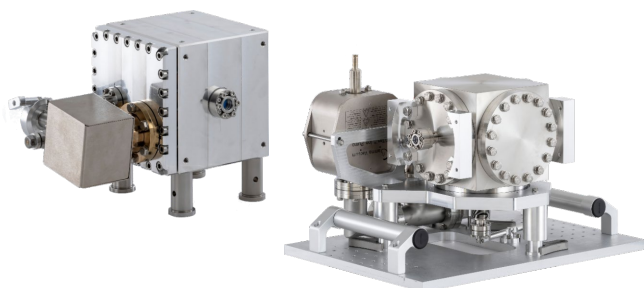
Nobel Prize Laureate Prof. Theodor Hänsch
Pioneer of optical frequency comb technology
Co-founder of Menlo Systems

Application spotlights

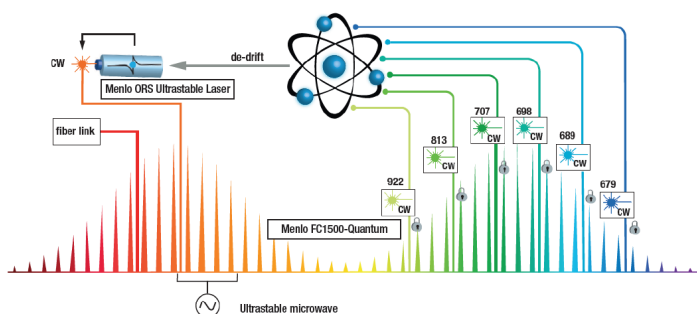
Precision you can trust. Stability you can measure.



Camera images of strontium atom ensembles taken during loading stages of a clock lattice. The simultaneous clock pair comparison uses a shared Menlo Systems' clock laser with sub-Hz performance (employed system: ORS), with the read-out performed in parallel. Ref: "X. Zheng et al., Physical Review X, 14 011006 (2024)"



ORC-Cubic (left) and ORC-Cylindric (right): Standard and custom optical reference cavity (ORC) systems with multi-wavelength coatings are available for OEM integration, ensuring reliable operation even in wavelength regions affected by scattering and absorption losses



Ultra low-noise solutions for listening to the universe

A Menlo Systems ultra-low-noise frequency comb is stabilized to an optical reference system (ORS) operating at 1550 nm. In this way, the superior spectral purity of Menlo Systems' ORS is copied to every comb line.

Moreover, by the phase-coherent division of high-fidelity optical signals into the microwave domain (UMS products), we can drastically reduce optical phase noise to levels that were previously physically impossible with more established technologies.

Optical Clocks and Metrology

Optical atomic clocks have the potential to revolutionize time and frequency standards, and require laser frequency sources with exceptional fractional frequency stability. Menlo Systems' ultrastable lasers with crystalline coatings represent the top-of-the-line system when short term stability (MADEV at 1s < 7×10^{-16}) is required. For optical-clock requirements at longer timescales (> 1 s), an ultrastable laser with a digital servo interface can be customized in power and wavelength for the stabilization to an atomic reference.

Quantum Technology

Quantum computing platforms demand stable optical reference systems to maintain qubit coherence over long computational times. Even small frequency fluctuations can induce errors in quantum computations and can cause decoherence of qubit states. Maintaining frequency stability is paramount to reduce decoherence and achieve reliable quantum computations. With their exceptional stability and low-phase noise, our fully-characterized ultrastable lasers can be used to ensure coherence in multi-qubit operations and prevent decoherence in quantum processors.

High-Precision Spectroscopy

High-resolution spectroscopic measurements require CW laser sources with exceptionally narrow linewidths. For example, in experiments probing variations in fundamental constants, such as the fine-structure constant or the proton-to-electron mass ratio, even small shifts in laser frequency could prevent the detection of signals, potentially revealing undiscovered physical phenomena. Our ultrastable lasers provide sub-Hz linewidths and outstanding frequency stability, contributing to minimizing systematic errors. We fully characterize and qualify the ORS performance by comparison against another in-house ultrastable laser, or in a three-cornered hat measurement against two in-house ultrastable lasers using a frequency comb.

ORS

The top-of-the-line

KEY FEATURES

- Unparalleled short-term stability (1s)
- Best phase noise performance
- Automated locking
- Single-rack solution
- Highly customizable

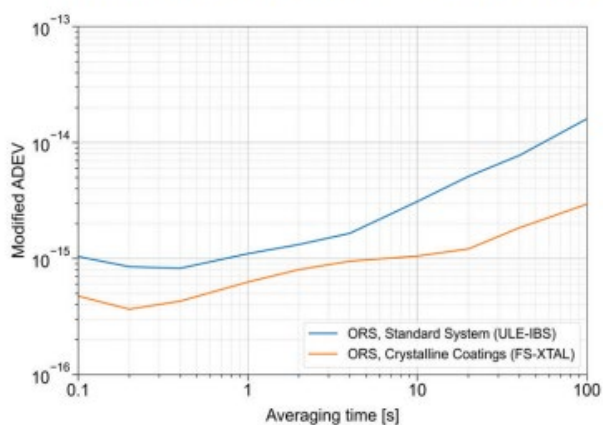


The Optical Reference System (ORS) delivers ultra-narrow linewidth laser light with outstanding frequency stability. The system's centerpiece is a high-finesse Fabry-Pérot cavity (cylindrical spacer with a length of 12.1 cm) serving as a reference for a CW laser. The cavity is made out of ultra-low expansion (ULE) glass and is operated in vacuum at the point of zero thermal expansion.

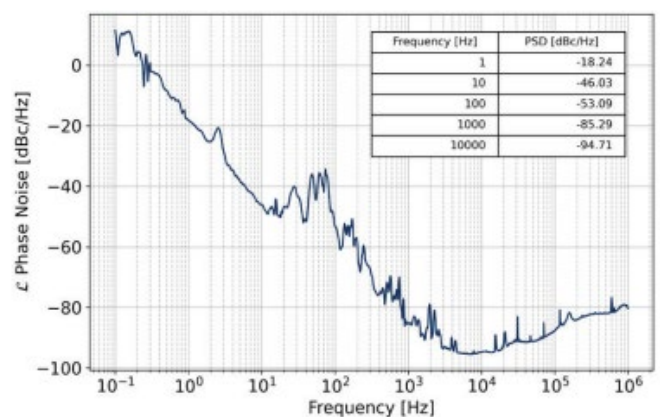
The reference cavity is actively decoupled from vibrations and acoustically isolated allowing for ultimate performance within but also outside of well-controlled laboratory environments. An easy-to-use cavity-locking mechanism ensures portability without realignment of the optical paths for operation in vacuum. The ORS is a complete 19" rack solution.

PERFORMANCE DATA

ORS Fractional Frequency Stability
(ORS and ORS with ORS-FS-XTAL, 1542nm)



ORS with ORS-FS-XTAL Phase Noise (1542nm)



SPECIFICATIONS

Wavelengths	650–1600 nm (ORS), 900–1600 nm (ORS with ORS-FS-XTAL)		
Stability (MADEV at 1 s, Linear Drift Removed)	$<7 \times 10^{-16}$ (ORS with FS-XTAL Option) $<1 \times 10^{-15}$ (ORS with ULE-IBS)		
Linewidth	<1 Hz		
Phase Noise (Laser Source Dependent)		ORS	ORS with ORS-FS-XTAL
	at 1 Hz	-8 dBc/Hz	-10 dBc/Hz
	at 10 Hz	-27 dBc/Hz	-30 dBc/Hz
	at 100 Hz	-47 dBc/Hz	-47 dBc/Hz
	at 1000 Hz	-70 dBc/Hz	-70 dBc/Hz
	For all models spurious signals <-20 dBc		
Output Power	>10 mW (FC/APC Connector), High Power on Request		
Cavity Spacer	12.1 cm, ULE, Cylindric Design		
Free Spectral Range	1.24 GHz		
Linear Drift Rate	approx. 150 mHz/s after 12 months		
Vibration Isolation Platform	Included		
Dimensions / Weight	590 x 800 x 1550 mm (29U) / 260 kg		

REQUIREMENTS

Operating Voltage	100 / 115 / 230 VAC
Line Frequency	50 to 60 Hz
Operating Temperature	22 ± 5 °C
Power Consumption	<150 W

OPTIONS

- Crystalline Mirror Coating Package (ORS-FS-XTAL)
- EOM Sideband Lock Package (ORS-EOM-SBL)
- Fiber Noise Cancellation Package (ORS-FNC)
- Multiple-Wavelengths Mirror Coatings Package (ORS-MWL)
- Second Harmonic Generation Package (ORS-SHG)
- High Output Power Package (ORS-HP)
- Cavity de-Drifting Package (ORS-DDRIF)
- Digital Servo Interface Package for Stabilization to External Atomic Transition (ORS-DSRV)

ORS-Compact

The versatile

KEY FEATURES

- Field deployable (rigid cavity mounting)
- Best long-term performance
- Automated locking
- Single-rack solution
- Highly customizable
- Full system characterization

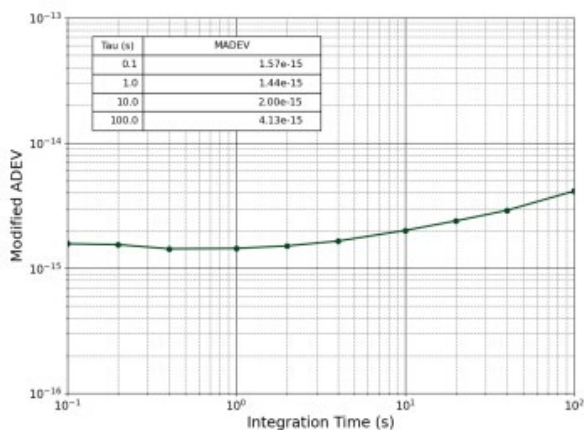


The Optical Reference System ORS-Compact delivers ultra-narrow linewidth laser light with outstanding frequency stability. The system's centerpiece is a high-finesse Fabry-Pérot cavity (cubic spacer with a length of 5 cm) serving as a reference for a CW laser. The cavity is made out of ultra-low expansion glass and is operated in vacuum at the point of zero thermal expansion.

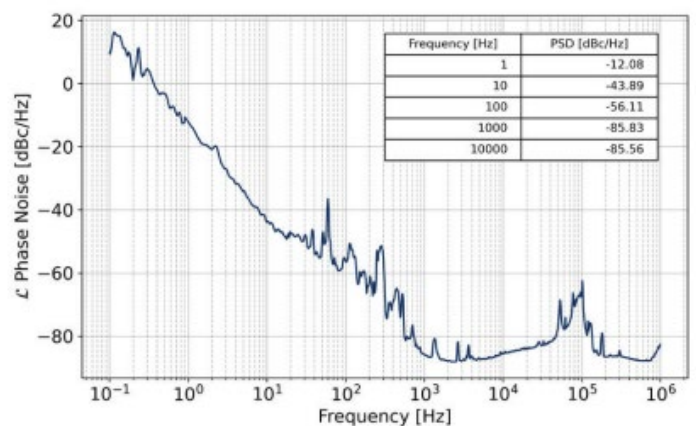
The reference cavity is actively decoupled from vibrations and acoustically isolated allowing for ultimate performance within but also outside of well controlled laboratory environments. Rigid mounting of the cavity ensures portability without realignment of the optical paths. The ORS-Compact is a complete 19" rack solution.

PERFORMANCE DATA

ORS-Compact Fractional Frequency Stability (1542nm)



ORS-Compact Phase Noise (1542nm)



SPECIFICATIONS

Wavelength	650–1600 nm		
Stability (MADEV at 1 s, Linear Drift Removed)	<2 x 10 ⁻¹⁵		
Linewidth	<1 Hz		
Phase Noise (Laser Source Dependent)	at 1Hz	-7 dBc/Hz	For all models spurious signals <-20 dBc
	at 10 Hz	-27 dBc/Hz	
	at 100 Hz	-45 dBc/Hz	
	at 1000 Hz	-70 dBc/Hz	
Output Power	>10 mW (FC/APC Connector), high power on request		
Cavity Spacer	5 cm, ULE, Cubic Design (developed in collaboration with the NPL, UK)		
Free Spectral Range	3 GHz		
Linear Drift Rate	approx. 150 mHz/s after 12 months		
Vibration Isolation Platform	included		
System Dimensions / Weight	590 x 800 x 900 mm (16U) / 180 kg		

REQUIREMENTS

Operating Voltage	100 / 115 / 230 VAC
Line Frequency	50 to 60 Hz
Operating Temperature	22 ± 5 °C
Power Consumption	<150 W

OPTIONS

- EOM Sideband Lock Package (ORS-EOM-SBL)
- Fiber Noise Cancellation Package (ORS-FNC)
- Multiple-Wavelengths Mirror Coatings Package (ORS-MWL)
- Second Harmonic Generation Package (ORS-SHG)
- High Output Power Package (ORS-HP)
- Cavity de-Drifting Package (ORS-DDRIF)
- Digital Servo Interface Package for Stabilization to External Atomic Transition (ORS-DSRV)

ORS-Mini

The tiny

KEY FEATURES

- Suitable for OEM integration
- Field deployable (rigid cavity mounting)
- Best-in-class phase noise
- Turnkey solution with automated laser locking
- Full system characterization

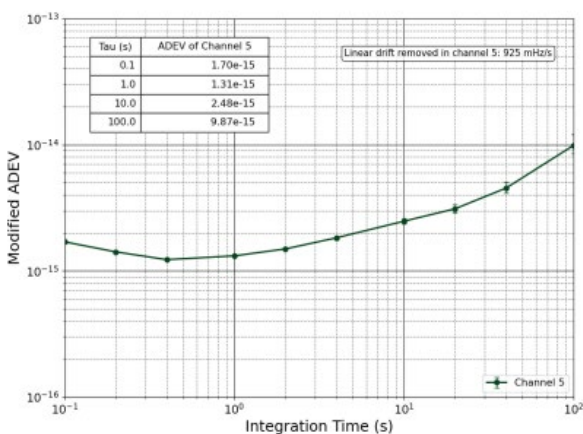


The Optical Reference System ORS-Mini delivers ultra-narrow linewidth laser light with excellent frequency stability. The system's centerpiece is a high-finesse Fabry-Pérot cavity (cubic spacer with a length of 5 cm) serving as a reference for a CW laser. The cavity is made out of ultra-low expansion glass and is operated in vacuum at the point of zero thermal expansion.

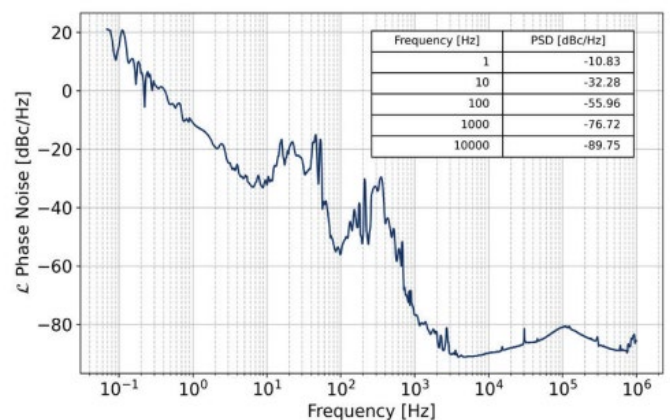
The reference cavity is acoustically isolated allowing for excellent performance within but also outside of well controlled laboratory environments. Rigid mounting of the cavity ensures portability without realignment of the optical paths.

PERFORMANCE DATA

ORS-Mini Fractional Frequency Stability (1550nm)



ORS-Mini Phase Noise (1550nm)



SPECIFICATIONS

Wavelength	1535-1565 nm or 1061-1067 nm		
Stability (MADEV at 1 s, Linear Drift Removed)	<3 x 10 ⁻¹⁵		
Linewidth	<2 Hz		
Phase Noise	at 1 Hz	-5 dBc/Hz	For all Models Spurious Signals <-5 dBc
	at 10 Hz	-23 dBc/Hz	
	at 100 Hz	-45 dBc/Hz	
	at 1000 Hz	-65 dBc/Hz	
Output Power	>10 mW (SC/APC Connector)		
PDH Servo Bandwidth	approx. 1.5 MHz		
Cavity Spacer	5 cm, ULE, Cubic Design (Developed in Collaboration with the NPL, UK)		
Free Spectral Range	3 GHz		
Linear Drift Rate	approx. 150 mHz/s after 12 months		
Vibration Isolation Platform	Not Included		
System Dimensions / Weight	450 x 550 x 360 mm (8U) / 35 kg		
	35 kg		

REQUIREMENTS

Operating Voltage	100 / 115 / 230 VAC
Line Frequency	50 to 60 Hz
Operating Temperature	22 ± 5 °C
Power Consumption	<100 W

ORC-Cubic & ORC-Cylindric

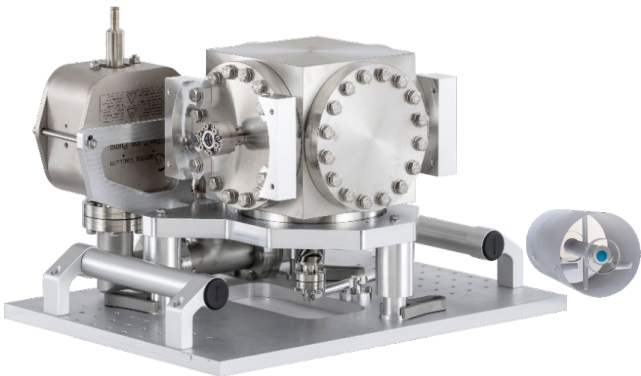
Reference cavities in vacuum housing

KEY FEATURES

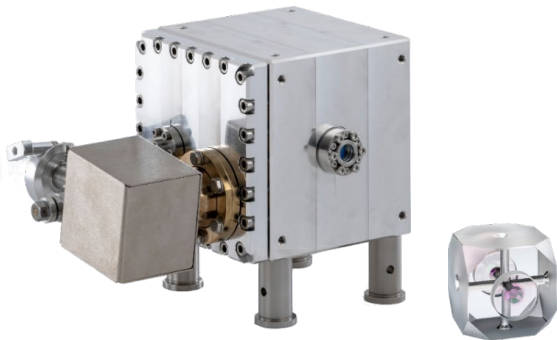
- Vacuum housing with compact footprints
- Highly customizable coating designs and finesse requirements, and optoelectronic options
- Cavity spacers available as building blocks for your experiment

The ORC products are designed to achieve the best laser stabilization performance by employing Fabry-Pérot-type cavities with a resonator spacer made out of ultra-low expansion glass (ULE). The cavity is mounted in a sealed vacuum housing, engineered for exceptional temperature stability to enable low frequency drift. The compact design ensures minimal demands on space.

The high-finesse cavity of the ORC-Cylindric consists of a ULE spacer (PTB cylindric design, length: 12.1 cm, diameter: 6 cm) and ULE mirror substrates with highly reflective mirror coatings (backside is AR coated). The ULE spacer exhibits a linear shrinking drift rate of approximately 0.15 Hz/s after settling (about 12 months after delivery). The cavity geometry is plano-concave with a radius of curvature of 1 m at the in-coupling mirror.



ORC-Cylindric (left) and cylindrical spacer (right)



ORC-Cubic (left) and cubic spacer (right)

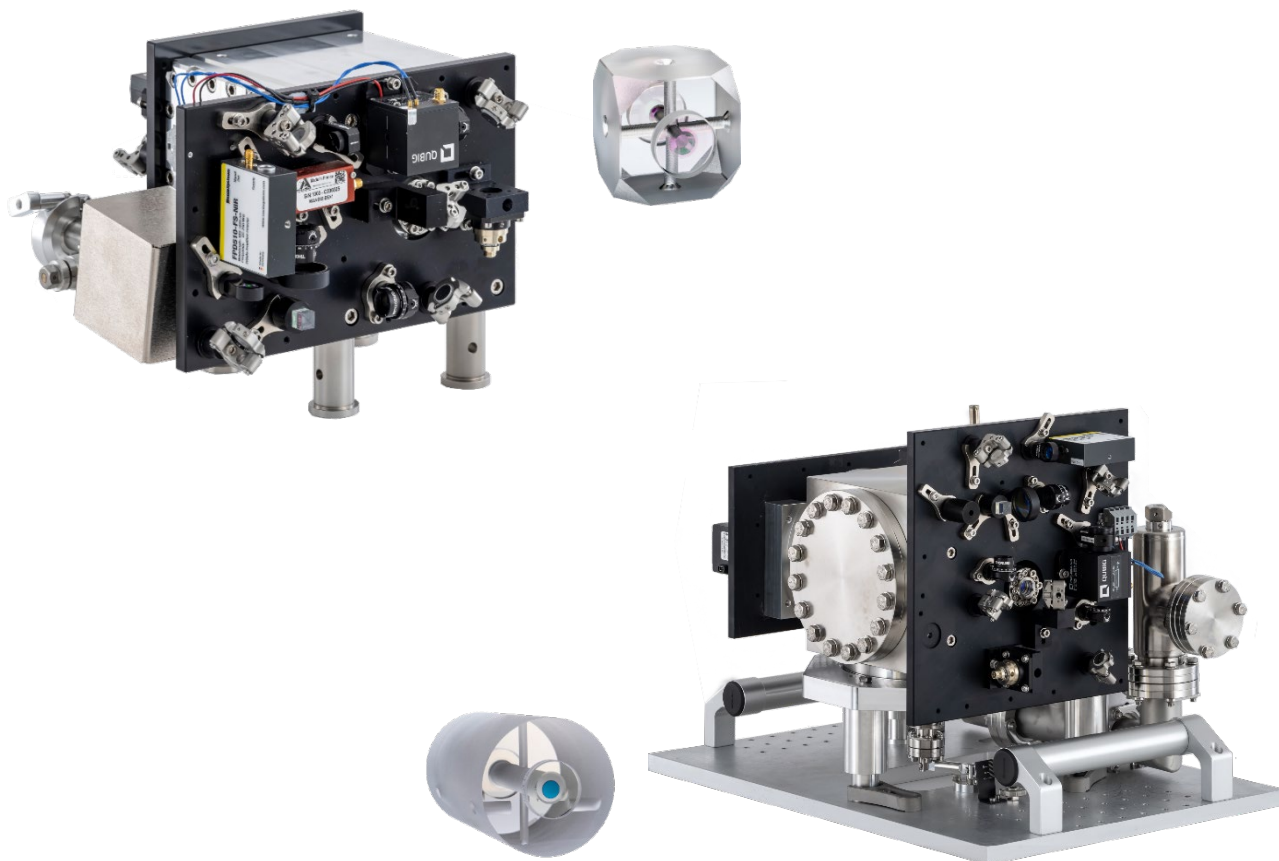
The high-finesse cavity of the ORC-Cubic consists of a ULE spacer (cubic design, licensed from National Physical Laboratory, UK, 5 cm length), ULE mirror substrates with highly reflective mirror coatings (backside is AR coated). The ULE spacer exhibits a linear shrinking drift rate of approximately 0.15 Hz/s after settling (about 12 months after delivery). The cavity geometry is plano-concave with a radius of curvature of 1 m at the in-coupling mirror.

CALCULATED THERMAL NOISE FLOOR		
	ORC-CUBIC	ORC-CYLINDRIC
Theoretical thermal noise ADEV limit	1.4×10^{-15}	5.8×10^{-16}

A broad variety of add-ons and options is available for customization, including crystalline mirror coatings, cavity mirror coatings for multiple wavelengths, input and output optical coupling platforms, PDH servo electronics, TEC controller, and characterization of the zero-crossing temperature of the coefficient of thermal expansion (CTE) of the ULE reference cavity. Finally, cavity spacers are also available without vacuum housing as building blocks for your experiment.

OPTIONS

- Optics Module for Input Coupling, PDH Locking, and Monitoring
- Dual-Extension Optics Module for Input Coupling, PDH Locking, and Monitoring
- ORC Mirror Coatings for Multiple Wavelengths Package
- TEC Driver Package
- PDH Optics
- Pound-Drever-Hall Servo Electronics Package with TEC controller
- Pound-Drever-Hall Servo Electronics Package with TEC controller and 1542 / 1550 nm Laser Module
- Characterization of the Zero-Crossing Temperature



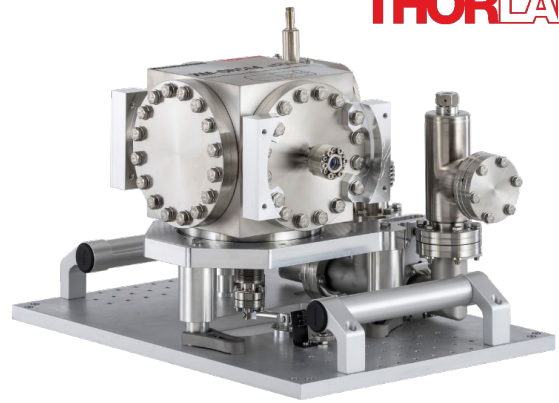
XM-ORC

Reference cavity with crystalline mirrors in vacuum housing



KEY FEATURES

- Crystalline mirrors (xtal stable™) for optimized thermal-noise-floor performance between 100 ms to 1 s (1 Hz to 10 Hz offset frequencies)
- Low Optical Absorption and Scatter and Low Thermal Resistivity
- High Reflectance for unmatched finesse performance

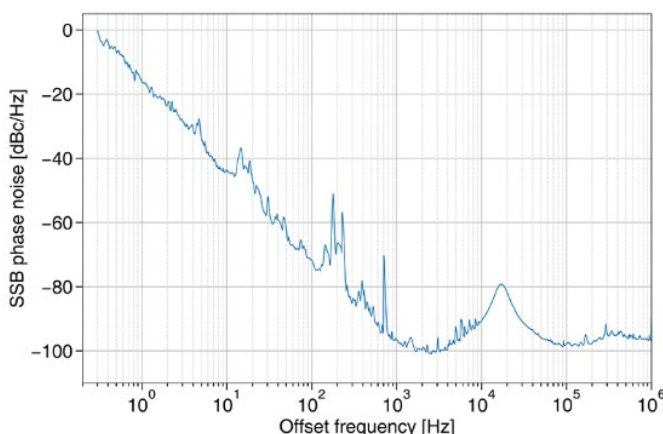


The high-finesse Optical Reference Cavity with crystalline mirrors (XM-ORC), borne out of the combined expertise of Menlo Systems and Thorlabs, is the solution when ultimate finesse and thermal-noise-floor performance is required. The ORC products are designed to achieve the best laser stabilization performance by employing Fabry-Pérot-type cavities with a resonator spacer made out of ultra-low expansion glass (ULE). The cavity is mounted in a sealed vacuum housing, engineered for exceptional temperature stability to enable low frequency drift. The compact design ensures minimal demand on space.

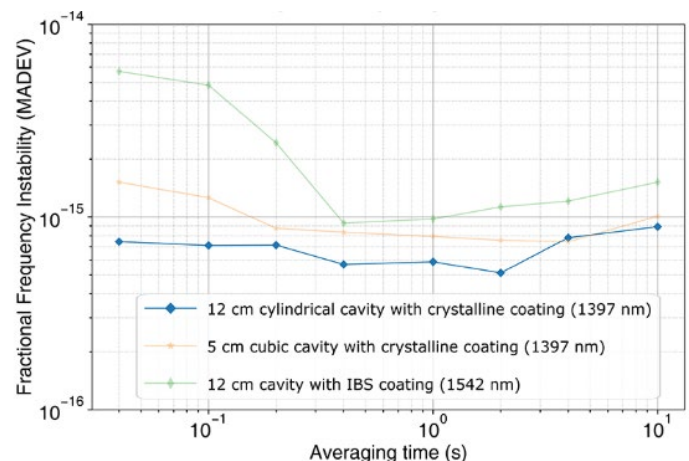
The high-finesse cavity of the XM-ORC consists of a ULE spacer (PTB cylindric design, length: 12.1 cm, diameter: 6 cm) and ULE mirror substrates with highly reflective crystalline coated mirrors (backside is AR coated) on fused silica substrates. To operate the cavity close to room temperature, ULE compensation rings are optically contacted onto the fused silica substrates (PTB patented design).

PERFORMANCE DATA

Measurement between a 12 cm cylindrical cavity and a 5 cm cubic cavity (both with crystalline coatings at 397 nm)



Three-corner hat comparison using a Menlo Systems Ultra Low Noise Optical Frequency Comb



ORC-Micro

Reference cavity in vacuum-free housing

KEY FEATURES

- Extremely compact Form Factor
- Temperature Tunability
- Free-space or Fiber in- & out Coupling
- Vacuum-free
- Plug-and-play Operation

ORC-Micro



The ORC-Micro is the optical reference cavity (ORC) with the most compact form factor, for all applications that require short-term (10 ms) laser stabilization and sub-kHz stability performance.

The cavity provides price-sensitive single-color (1542/1550 nm) optical reference options, both in free-space and fiber coupled configurations, with a free-spectral range (FSR) of 4 GHz and a finesse of > 50k. Moreover, temperature tuning and stabilization is achieved via a Peltier element. The ORC-Micro is designed to be the stable reference for applications such as laser cooling and thermal beam experiments, complementing the ultimate finesse performance of the ORC-Cubic and Cylindric.

ORC-Micro with Fiber-coupling Option

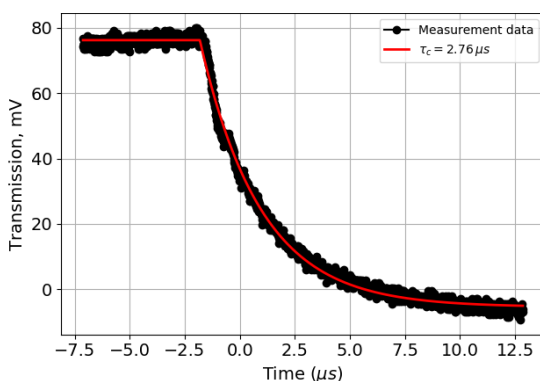


OPTIONS

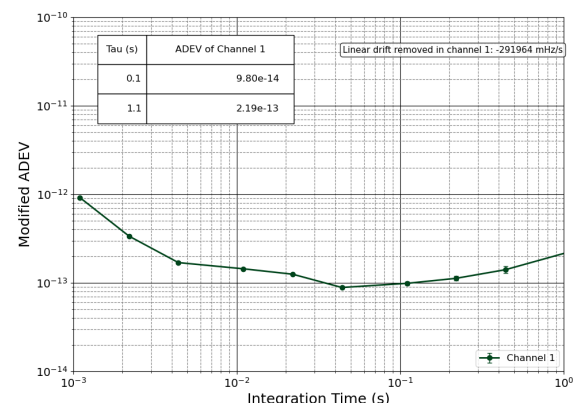
- Fiber-coupling
- TEC Controller
- Pound-Drever-Hall Servo Electronics with TEC Controller
- Pound-Drever-Hall Servo Electronics with TEC Controller and 1542/1550nm Laser Module

PERFORMANCE DATA

Finesse characterization (1542 nm) via Cavity Ringdown Time Measurement



Stability (MADEV at 10 ms) measurement with PDH electronics and 1542 nm Laser



Technology primer

Ultrastable Lasers

Menlo Systems' Optical-Reference-System (ORS) product range offers leading-performance, cost-effective and compact ultrastable laser solutions capable of satisfying challenging requirements for a broad range of applications, including quantum computing, high-resolution atomic and molecular spectroscopy, and optical clocks. In this technology primer, an introduction to the concept of laser stabilization using an external optical reference cavity is provided, highlighting the key benefits of Menlo Systems' ultrastable-laser solutions.

Laser Frequency Stabilization with Optical Reference Cavities

Environmental fluctuations such as temperature changes, mechanical vibrations, or air-pressure variations can cause the frequency of lasers to fluctuate and drift over time. Moreover, the intrinsic noise of the laser gain medium and spontaneous emission processes pose a limit to the achievable frequency noise. In order to achieve a sub-Hz linewidth of the laser, one can stabilize it to the mode of a stable optical reference cavity using the Pound-Drever-Hall (PDH) scheme.

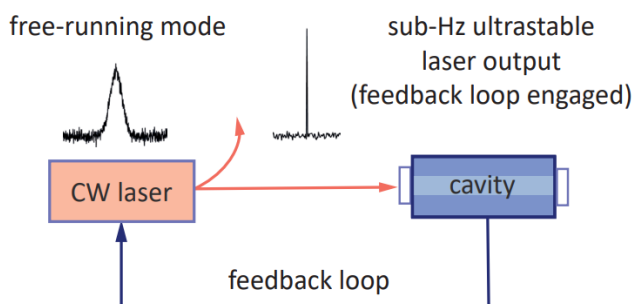


Figure 1. Principle of operation of an ultrastable laser system.

A high-finesse Fabry-Pérot cavity serves as the optical reference and represents the central part of a cavity-stabilized laser system. It comprises two mirrors, equipped with high-reflectivity coatings which are optically contacted onto the spacer. When the light enters the cavity, it undergoes multiple reflections between the mirrors, leading to constructive interference for certain wavelengths. This results in the transmission of specific cavity modes, creating a sharp spectral filter. The transmission resonances are equally separated in frequency space by the free spectral range (FSR), which is directly related to the cavity length (L) by the formula

$$\text{FSR} = c/2L,$$

where c is the speed of light (for a cavity held in vacuum). Maintaining a constant length within the cavity necessitates special design considerations and robust shielding, to prevent temperature fluctuations from interfering with the stability of the optical system.

A key parameter that characterizes the cavity performance is the linewidth of the cavity, which can be improved by increasing the cavity length or by achieving a higher finesse. The optimization of the finesse (F) value, which directly relates to the reflectivity (R) of the mirrors,

$$F = (\pi\sqrt{R})/(1-R),$$

requires the ability to manufacture mirrors with very high reflectivity. For a high-finesse Fabry-Pérot cavity, the linewidth of the resonant transmission is thus given by the ratio of the cavity free-spectral range (FSR) and the finesse value (F)

$$\Delta\nu_{\text{FWHM}} = \text{FSR}/F.$$

Therefore, careful engineering and optimization of the cavity design and its parameters, such as the finesse and cavity length, are the main ingredients for the stabilization of a free-running laser by means of a reference cavity to achieve narrow linewidths.

¹ <https://www.menlosystems.com/products/ultrastable-lasers/technology-primer/>

Menlo Systems' ORS Ultrastable Lasers

To provide sub-Hz laser linewidths and the ultimate ORS stability (MADEV at 1s, crystalline coatings: 7·10⁻¹⁶) required by the most demanding optical, atomic and metrological applications, Menlo Systems' ORS employs a single-mode continuous-wave (cw) laser, an optical reference cavity with either a cylindrical (designed by the Physikalisch-Technische Bundesanstalt (PTB)) or cubic geometry (licensed from the National Physical Laboratory (NPL)), and the associated optical and electronic devices for the implementation of the Pound-Drever-Hall scheme, which offers a high sensitivity and a wide locking range

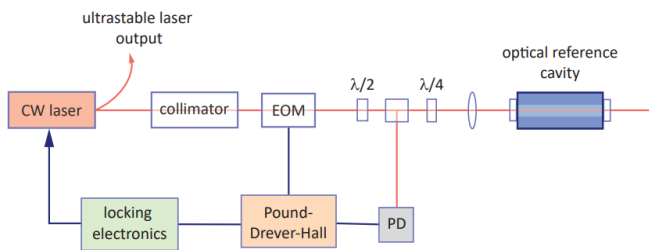


Figure 2. Schematic of operation of an ultrastable laser system. A small fraction of the single mode laser light is directed into the reference cavity. The reflection off the cavity mirror is measured by a photodiode (PD) and the resultant electrical signal is converted to an error signal by the Pound-Drever-Hall method for feedback to the single mode laser.

In the PDH scheme, an electro-optic modulator (EOM) is used to generate sidebands, before sending the light towards the reference cavity. The light from the cavity, which is detected using a photodiode and demodulated using a phase-sensitive detector, contains information about the detuning of the laser carrier frequency from the cavity resonance.

The resulting error signal is used to lock the laser frequency to the cavity using a PID feedback-control loop. To ensure the stability of the reference cavity, and therefore of the ultrastable laser system, it is essential to isolate the cavity from environmental disturbances. This can be achieved by designing the cavity geometry such that it is intrinsically insensitive to vibrations, and by constructing the cavity spacer from ultra-low expansion (ULE®) glass, which has a vanishing thermal expansion coefficient for temperatures close to room temperature.

In addition, the cavity temperature is stabilized through active feedback with TEC controllers and the time constant is increased using passive heat shields. By using vibration-isolation platforms, enclosing the cavity in a vacuum chamber and shrouding it in sound-deadening material the effects of vibrations, air pressure and acoustic noise are minimized.

Benefitting from a decade of experience in developing and engineering ultrastable lasers, Menlo Systems guarantees the performance of every ORS system in accordance with your requirements and budget, providing you the following key benefits:

- **Performance and portability.** Ultra-low phase noise and ultimate stability performance achieved in a single-rack solution.
- **Saving time and money.** Investing in the proven and robust ORS solution from Menlo Systems designed for 24/7 operation could save you valuable resources in comparison to a home-built system, allowing you to focus on your research, experiments and applications.
- **Quality control and components.** The ORS Systems are manufactured to meet strict quality standards and undergo rigorous testing and validation processes, and they have been independently proven to fulfil ESD tests required for CE certifications.
- **Full system characterization.** To ensure that the systems are delivered in agreement with the required specifications, we fully characterize and qualify the ORS performance by comparison against another in-house ultrastable laser, or in a three-cornered hat measurement against two in-house ultrastable lasers using a frequency comb.
- **Minimal learning curve.** Menlo Systems' ORS products come with detailed documentation and technical support, helping you to readily integrate the system into your laboratory.
- **Versatility and customization.** Each ORS system is configured to carefully meet all your requirements such as laser wavelength or absolute frequency of an atomic transition, power, frequency stability and phase noise.

Put to the test

Quality: Made in Germany



QUALITY STANDARDS

Our products are built in a controlled environment and pass rigorous final tests, both at component and system level, before leaving the factory. While we strive to select the best suppliers for highest quality, all of our products have fully traceable components.

Our manufacturing is organized according to lean manufacturing standards. Processes are documented and operators undergo continuous training to ensure repeatability and reliability in operation. We make use of our in-house reference systems to qualify and calibrate our products against the best standards available.



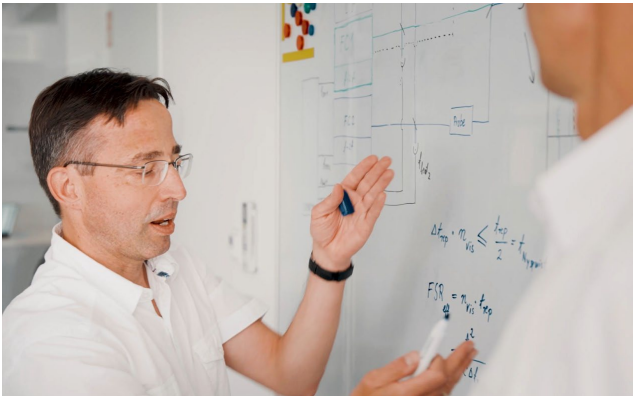
TESTING & CERTIFICATION

Besides meeting the conformity standards of the European Union, our ultrastable laser systems are tested and certified according to internationally recognized quality management standards.

Our processes and services are tested in accordance with DIN EN ISO 9001:2015 norm. As this requires a process-oriented quality management system, we have been testing and qualifying every single process at Menlo Systems to meet the highest quality standards. From order intake to the manufacturing process - all steps must go hand-in-hand to ensure the highest quality lasers "Made in Germany".

Beyond a supplier

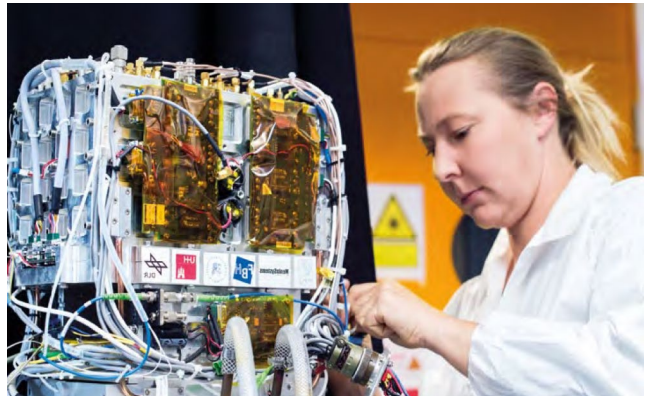
A partner to pursue visions and ideas



APPLICATION-TAILORED SUPPORT

At Menlo Systems, we have grown a passionate team of product and application specialists: Our engineers truly understand the capabilities of our systems and have extensive knowledge of relevant applications. We make all efforts needed to define application-tailored solutions together with our customers - whether cutting-edge research labs, high-technology start-ups, or industry-leading OEM integrators.

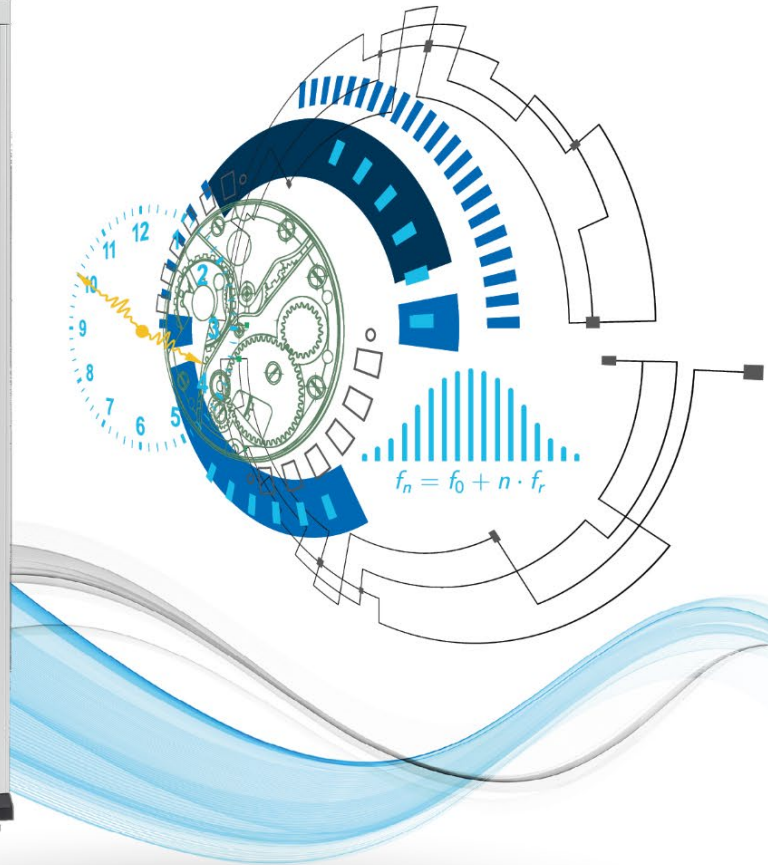
While our ultrastable laser systems are all turn-key instruments that do not require any periodic maintenance or consumables, we remain a partner after system installation. Whenever needed, a skilled and resourced team will support upgrades, adaptations to evolving user requirements, or remote diagnoses and troubleshooting – with a 24-hour response philosophy to reduce any downtime. Via our subsidiaries in the USA, China, and Japan, we can guarantee this on-time support worldwide.



INNOVATION IS AT OUR CORE

Tracing its origin to a spin-off from the renowned Max Planck Institute for Quantum Optics (MPQ) near Munich (Germany), Menlo Systems is close to 200-employees strong. Many of our team have had the privilege to work in some of the best laboratories around the globe before joining the company. It comes at no surprise that we maintain strong bonds to our scientific origins. Menlo Systems continuously strives to turn today's ideas into tomorrow's products through our leading Development & Custom Projects division, as well as together with research partners from all over the world.

Menlo Systems has been dedicated to serving the global photonics community from the very start. It is rewarding to see that our customer's trust and support has led to a continuous and organic growth of our product portfolio, our team, and the whole company. We continue to engage in trusting collaborations with our customers, while delivering products Made in Germany that meet growing demands with our established quality and performance - together we shape light!



Precision you can trust. Stability you can measure.

Menlo Systems Ultrastable Laser Systems

- Ultrastable laser technology with linewidths <1Hz
- Turnkey, portable solution for optical atomic clocks
- Customizable configurations

Precision in photonics. Together we shape a sustainable future.

Notes

Menlo Systems GmbH is a leading developer and global supplier of instrumentation for high-precision metrology. The company with headquarters in the west of Munich is known for its Nobel Prize winning optical frequency comb technology. With subsidiaries in the US, Japan, and China, and a global distributor network, Menlo Systems is closely connected to its customers from science and industry. The main product lines are optical frequency combs, ultrastable microwaves, time and frequency distribution, terahertz systems, ultrafast and ultrastable lasers, and complete systems for quantum technology applications. Besides standard products, Menlo Systems develops and manufactures tailored solutions for laser-based precision measurements.



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