

ORS

Ultrastable Laser

MenloSystems

KEY SPECIFICATIONS

- Linewidth < 1.0 Hz
- Allan Deviation $< 2 \times 10^{-15}$
- Wavelength range: 500 - 1600 nm
- Finesse $\approx 250\,000$

APPLICATIONS

- Ultra High Precision Spectroscopy
- Low Noise Microwave Generation
- Interrogation of Optical Clocks
- Frequency Metrology

FEATURES

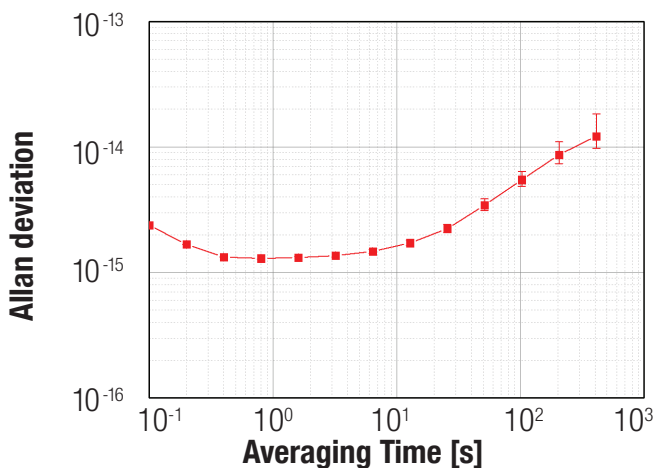
- Ultra High-Finesse Cavity (Spacer and Mirrors) made out of Ultra Low Expansion Glass
- Temperature Stabilization of the Cavity
- Complete Conflat Flange Sealed UHV System
- Mechanical Transport Lock
- Active Vibration Isolation Platform
- Acoustic Isolation
- Polarization Maintaining CW Laser
- SYNCRO Lockbox Using the Pound-Drever-Hall Locking Scheme



The Optical Reference System (ORS) delivers an optical output with ultra narrow linewidth and outstanding short term stability. The ORS1500 consists of a cw fiber laser locked to a stable high-finesse cavity made of ultra low expansion (ULE) glass. The compact design allows for integration of high vacuum, temperature stabilization, vibration and acoustic isolation into a 19" rack system and delivers state-of-the-art laser linewidth and stability. Additionally, the system design includes a mechanical locking feature which allows for transportation of the system without the need to readjust the beam coupling into the cavity, once the mechanism is disengaged.

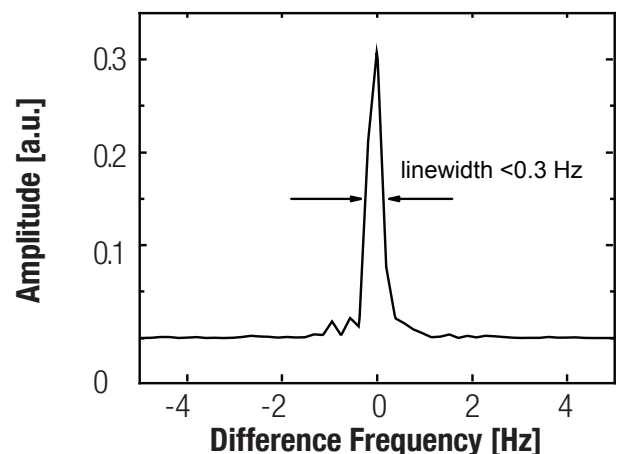
STABILITY AND LINewidth

Beat of ORS at 1064 nm against Ultra Low Noise Optical Frequency Comb locked to ORS1500:



- linear drift removed
- measured with Menlo Systems downtime free counter

Beat of two ORS at 1500 nm against each other:



- beat frequency mixed down to 30 kHz, sampled and Fourier transformed
- FWHM linewidth < 0.3 Hz

SPECIFICATIONS

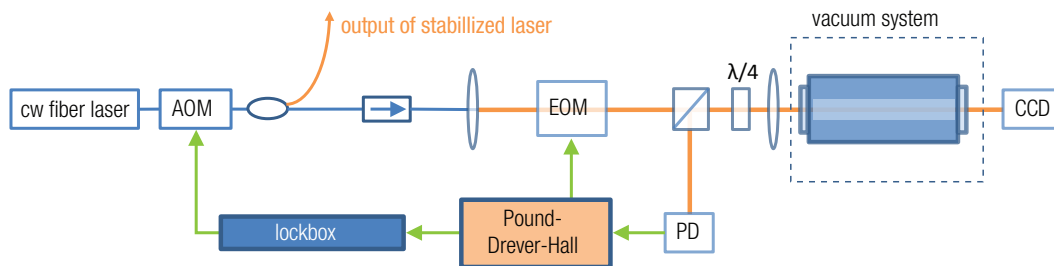
Wavelength	1542, 1064, 657, 698, 729 and 1156 nm*
Temperature of Minimal Thermal Expansion	>20 °C
Stabilized Output Power	>5 mW
Finesse	≈ 250 000
Linewidth	<1.0 Hz*
Stability (Allan Deviation, at 1s)	<2 x 10 ⁻¹⁵ (linear drift removed)*
Linear Drift Rate	approx.150 mHz/s
System Dimensions/Weight	590 x 800 x 1600 mm ³ / 260 kg

*others on request

REQUIREMENTS

Power	AC power 110-230 V
Line Frequency	50 to 60 Hz

SYSTEM SCHEME



ORDERING INFORMATION

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



Invisible laser radiation
avoid exposure to beam
Class 3b laser

