

Press Release

December 15, 2016

ORS-DL Optical Reference System – ultra-narrow lasers in the visible range

Menlo Systems has extended the capabilities of their Optical Reference System (ORS) product range with the first models providing output in the visible range. The new ORS-DL series use interference filter cateye design external cavity diode lasers from MOGLabs. These diode lasers, which are known for their robustness, stability, and narrow linewidth, are available at wavelengths such as 657 nm, 689 nm, 698 nm, 729 nm, and many others from 400 nm to 1650 nm. By stabilizing these lasers to high-finesse ULE cavities, Menlo Systems realized sub-Hz linewidths and Allan deviations below 2×10^{-15} at 1 s averaging time. The ORS-DL system includes all control and locking electronics, monitors, vacuum system, temperature stabilization, vibration and acoustic isolation as well.

Menlo Systems' established ORS1500 system uses a fiber laser at 1542 nm, and quickly found its application in low-noise microwave synthesis and ultra-stable frequency dissemination via optical fiber. The joint effort of Menlo Systems and MOGLabs now makes the state-of-the-art optical reference available to many atomic and molecular physics applications. The attractive solution saves valuable R&D time, enabling the users to focus on the experiments.

The cooperation between Menlo Systems and MOGLabs also aims at combining Menlo Systems frequency comb systems with MOGLabs cateye lasers, offering complete stabilized laser set-ups tailored to the specific needs of our

customer's applications. Such a set-up could include an FC1500-250-ULN Ultra Low Noise Optical Frequency comb locked to an ORS-DL Optical Reference System and several cateye lasers locked to different parts of the comb spectrum via beat detection units, thereby transferring the ultra-high stability throughout the entire visible and infrared spectrum.

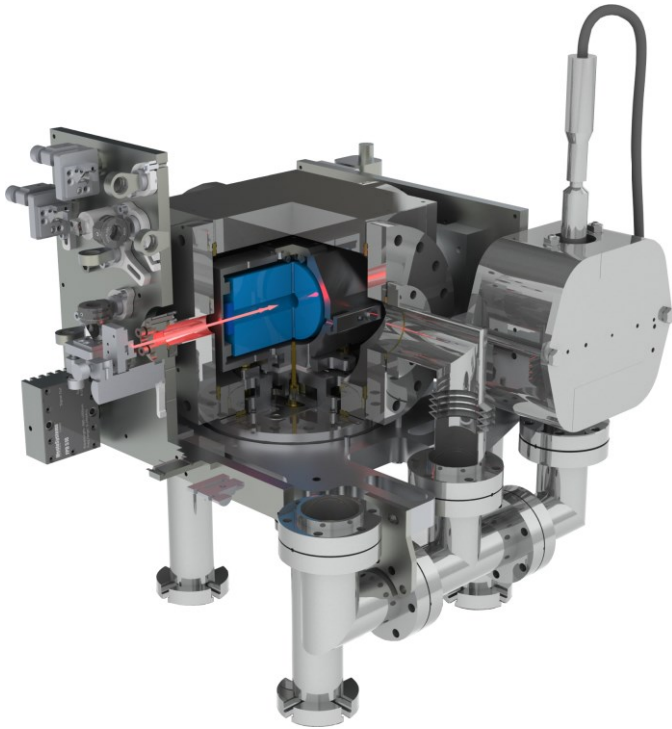


Figure 1: computer-rendered design of the ORS-DL.

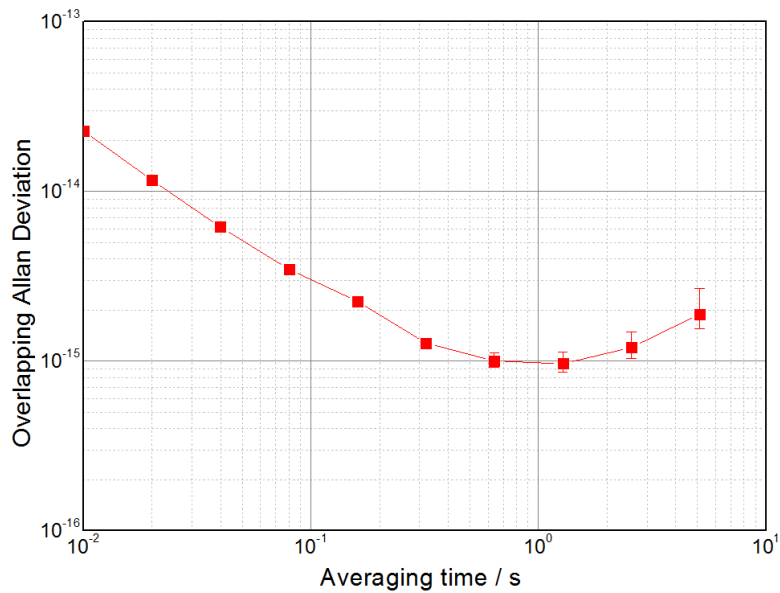


Figure 2: Allan Deviation for the beat between ORS-DL (698 nm) against Ultra Low Noise frequency comb referenced to ORS1500 (1542 nm).

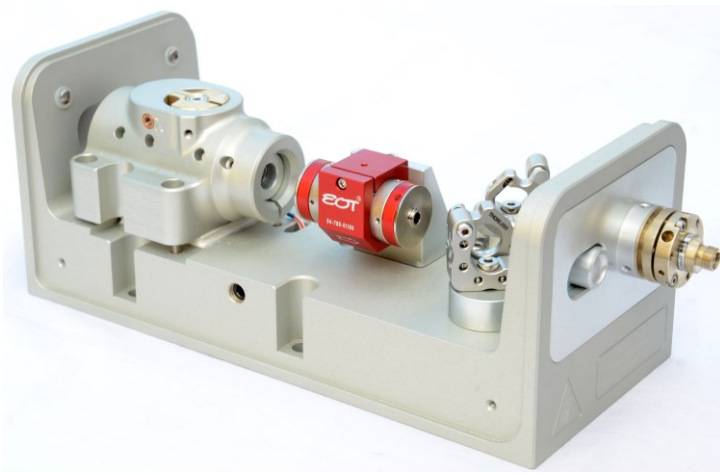


Figure 3: photograph of MOGLabs cateye laser.

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About Menlo Systems:

Precision in Photonics. Together we shape light.

Menlo Systems, a leading developer and global supplier of instrumentation for high-precision metrology, was founded in 2001 as a spin-off of the Max Planck Institute for Quantum Optics, with the foremost aim to commercialize optical measurement technologies and make it available to newly emerging application fields. Menlo Systems maintains a strong bond to co-founder Theodor W. Hänsch, who pioneered precision laser techniques.

Known for the Nobel Prize-winning optical frequency comb technology, the Munich-based company offers complete solutions based on ultrafast lasers and synchronization electronics and THz systems for applications in industry and research.