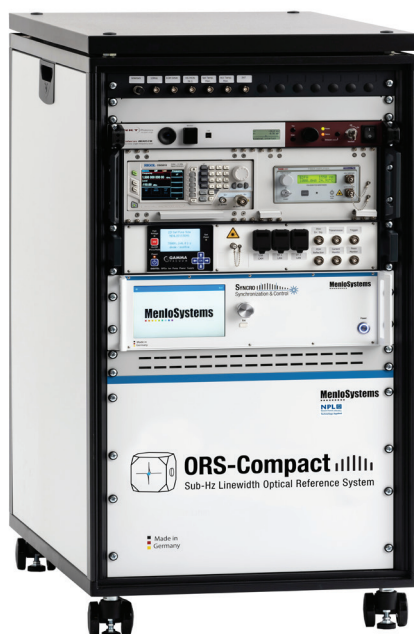


ORS-Compact

Ultrastable Laser System



The ORS-Compact Ultrastable Laser System is designed for high performance in demanding field applications. It 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 (ULE) 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 also in rough laboratory environments. Rigid mounting of the cavity ensures portability without realignment of the optical paths.

The system is operated by the newest generation of Menlo Systems' proprietary SYNCRO controller—a modular electronics platform designed for versatility and intuitive use. It incorporates all required electronics, e.g., a low-noise laser driver and a very fast (analog) servo loop for laser frequency stabilization. The user controls all parameters using either the 7" front-panel touchscreen or a GUI on a remote PC. The onboard software ensures automatic cavity locking and system monitoring.

MenloSystems

KEY SPECIFICATIONS

- Stability $<2 \times 10^{-15}$ at 1 s
- Linewidth <1 Hz
- Output Power >10 mW
- Wavelength 650–1600 nm

APPLICATIONS

- Quantum Computing
- Optical Clocks
- Ultra-low Noise Microwave Generation
- Frequency Comb Stabilization
- High Resolution Spectroscopy
- Laser Cooling and Trapping

OPTIONS

- **ORS-EOM-SBL:**
EOM Sideband Lock
- **ORS-FNC:**
Fiber Noise Cancellation
- **ORS-MWL:**
Multiple-Wavelengths Mirror Coatings
- **ORS-SHG:**
Second Harmonic Generation
- **ORS-HP:**
High Output Power
- **ORS-DDRIF:**
Cavity De-drifting
- **ORS-DSRV:**
Digital Servo Interface for Stabilisation to External Atomic Transition

ORS-Compact

Ultrastable Laser System

MenloSystems

SPECIFICATIONS

| | |
|--|---|
| Wavelength | 650–1600 nm |
| Stability (MADEV at 1 s, Linear Drift Removed) | $<2 \times 10^{-15}$ |
| Linewidth | <1 Hz |
| Phase Noise (Laser Source Dependent) | at 1 Hz -7 dBc/Hz 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 |

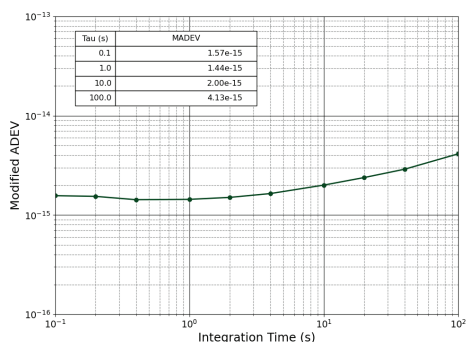
For all models
spurious signals <-20 dBc

REQUIREMENTS

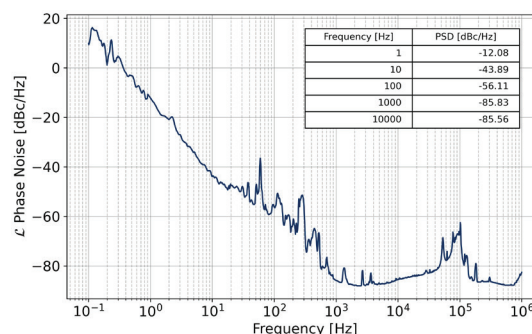
| | |
|-----------------------|---------------------|
| Operating Voltage | 100 / 115 / 230 VAC |
| Line Frequency | 50 to 60 Hz |
| Operating Temperature | 22 ± 5 °C |
| Power Consumption | <150 W |

STABILITY AND PHASE NOISE

ORS-Compact fractional frequency stability (1542nm)



ORS-Compact Phase Noise (1542nm)



ORDERING INFORMATION

Product Code

ORS-Compact

Please call for pricing. Specifications are subject to change without notice. Custom modifications are available, please inquire. The cubic cavity is an NPL patented design that is sold under a licensing agreement with the National Physical Laboratory (NPL). This configuration of the NPL cavity is intended for terrestrial use only. For further information on space-customised or space-qualified cavities, please contact NPL.



Invisible laser radiation
avoid exposure to beam
Class 3b laser

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