



The OEwaves HI-Q[®] Laser offers ultra-narrow Lorentzian linewidth and low phase/frequency noise in a compact form factor. The unique technology of the OEwaves HI-Q[®] laser leverages proprietary self-injection locking of a laser diode via resonant optical feedback from a high quality factor (Q) Whispering Gallery Mode (WGM) micro-resonator to achieve unmatched low noise performance. Monolithic integration of optical components provides a micro-scale mass and volume which make the laser virtually insensitive to environmental vibrations.

This HI-Q[®] laser houses a proprietary driver/controller and is available at C band wavelengths from 1530 to 1565 nm.

FEATURES

- Ultra-Narrow Instantaneous Laser Linewidth
- Ultra-Low Phase/Frequency Noise
- 1530 – 1565 nm
- Wide Thermal Tuning Range
- Low RIN
- Low Vibration / Acceleration Sensitivity
- Ultra-low Residual Amplitude Modulation
- Wavelength Stability
- Compact Package
- Integrated Driver/Controller

APPLICATIONS

- Interferometric Optical Sensing
- Quantum Technologies
- Quantum Communication
- B-OTDR Temperature and Strain Sensing
- Gas Sensing
- Optical Metrology and Spectroscopy
- Acoustic Sensing
- Oil and Gas Exploration
- Coherent Communication
- Test and Measurement

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465 N. Halstead Street, Suite 140 Pasadena, CA 91107

PDS-0020_A

HI-Q® 1.5 MICRON LASER SERIES

SPECIFICATIONS

OE4040

	OE4040-VLN	OE4040-ULN	OE4040-XLN
Spectral Linewidth* (Lorentzian, instantaneous)	< 7 Hz	< 3 Hz	< 1 Hz
Wavelengths Offered	1530 – 1565 nm (Single Frequency, CW; Vacuum)		
Output Power	10-20 mW (See options)		
Frequency Noise			
▪ 1 kHz Offset	30 Hz/√Hz	15 Hz/√Hz	15 Hz/√Hz
▪ 10 kHz Offset	10 Hz/√Hz	5 Hz/√Hz	2 Hz/√Hz
▪ 1 MHz Offset	4 Hz/√Hz	2 Hz/√Hz	0.8 Hz/√Hz
Thermal Tuning Range (Continuous)		10 GHz	
Extended Tuning Range (Non-Continuous)		90, 150, or 210 GHz (See options)	
Thermal Tuning Rate		100 MHz/s	
Relative Intensity Noise (at 10 MHz)	- 145 dBc/Hz	- 150 dBc/Hz	- 155 dBc/Hz
Short Term Stability (Typical)	10 ⁻⁹ @ 1 s (At Constant Case Temperature)		
Frequency Stability (Typical)		100 MHz/day	
Polarization Extinction Ratio		20 dB	
Side-Mode Suppression Ratio		50 dB	
Vibration / Acceleration Sensitivity		5 x 10 ⁻¹¹ /g	
Operating Temperature		+20°C to +40°C	
Storage Temperature		-10°C to +50°C	
Monitor / Control Interface		USB (Standard) or RS-232 (Option)	
Package (with Driver Electronics)		6 x 15 x 2.5 cm	
Fiber Pigtail		PM-FC/APC (PANDA Fiber, Slow Axis)	
Frequency Modulation		DC-10 kHz; 5 - 15 MHz/V; > ±100 MHz Range	

***Technical Note:** Instantaneous Linewidth is computed from the noise floor of the power spectral density of frequency noise (PSDFN).

Laser Safety: This product meets the appropriate standard in Title 21 of the Code of Federal Regulations (CFR) 1040 and is classified as a FDA/CDRH Class 3b laser product.

Note: These specifications are subject to change without notice. This product line is covered by one or more of the following U.S. patents: 6,871,025; 6,879,752; 7,248,763; 7,991,025; 7,869,472. Other patents pending.
ECCN: EAR99



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ORDERING INFORMATION

OE4040

Order Code:

OE4040-15WWWW-XXX-YY[-ZZ][-MOD][-INT]

Example part numbers:

OE4040-154292-ULN-SP

OE4040-155560-VLN-HP-T3-EXT-RS232

Wavelength	15WWWW =	Desired wavelength to 0.01 nm 1530-1565 nm	
Spectral Linewidth* (Lorentzian, instantaneous)	XXX =	VLN	< 7 Hz
		ULN	< 3 Hz
		XLN	< 1 Hz
Output Optical Power	YY =	SP	> 10 mW
		HP	> 20 mW
Extended Tuning Range (Non-Continuous)	ZZ =	-	N/A
		T1	90 GHz
		T2	150 GHz
		T3	210 GHz
Frequency Modulation (5-15 MHz/V; > ±100 MHz Range)	MOD =	-	DC-10 kHz
		EXT	DC-100 kHz
Monitor/Control Interface	INT =	-	USB
		RS232	RS-232

***Technical Note:** Instantaneous Linewidth is computed from the noise floor of the power spectral density of frequency noise (PSDFN).

**Contact OEwaves sales for additional options

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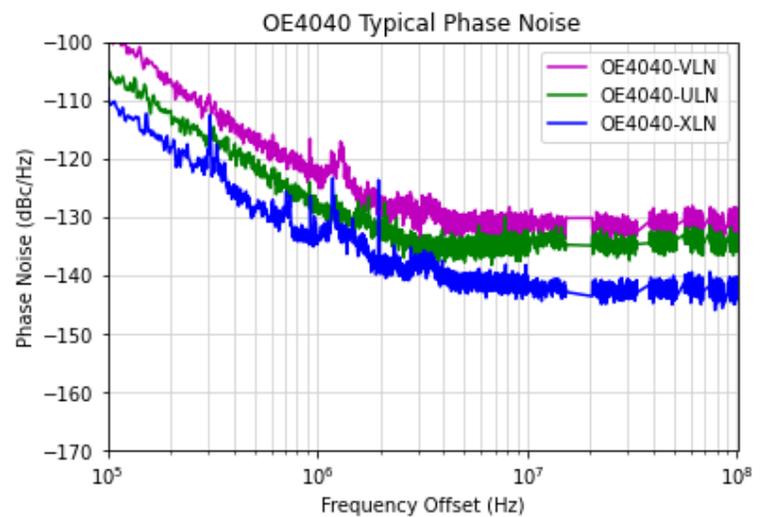
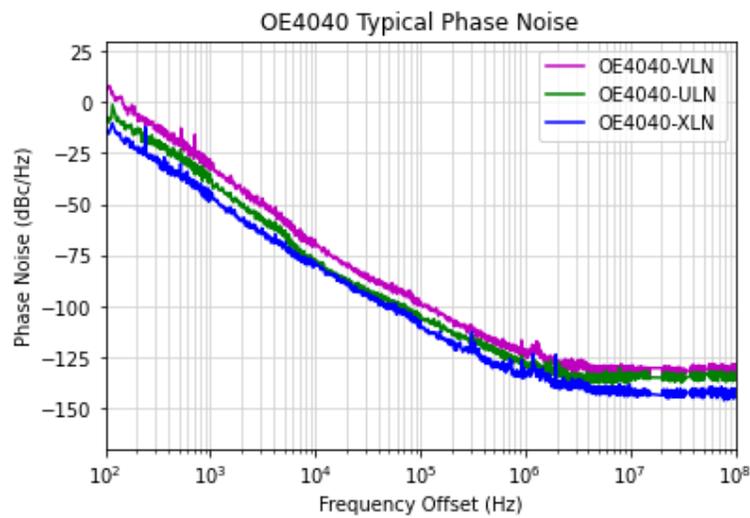
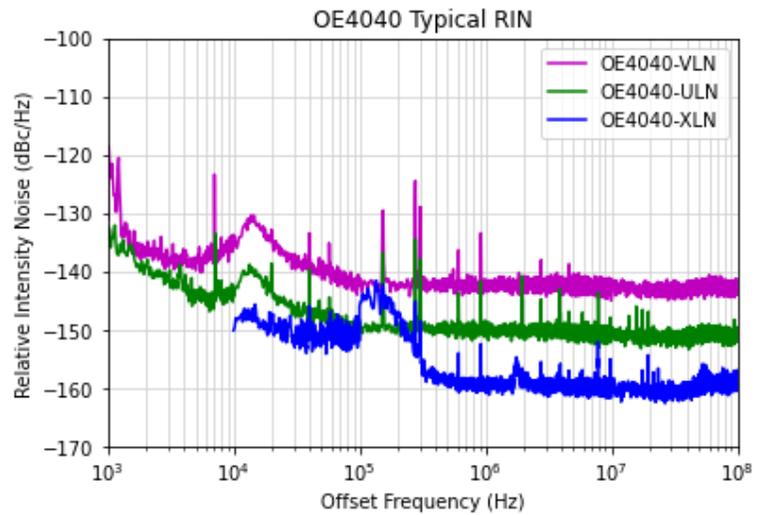
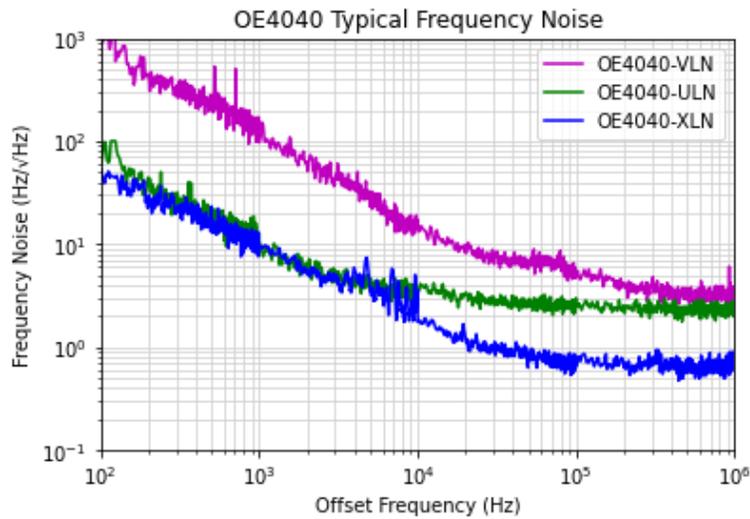
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TYPICAL PERFORMANCE

OE4040



- Measurements performed with OEwaves OE4000 Optical Phase Noise Test System (OPNTS) with RIN option
- All data collected at 25°C

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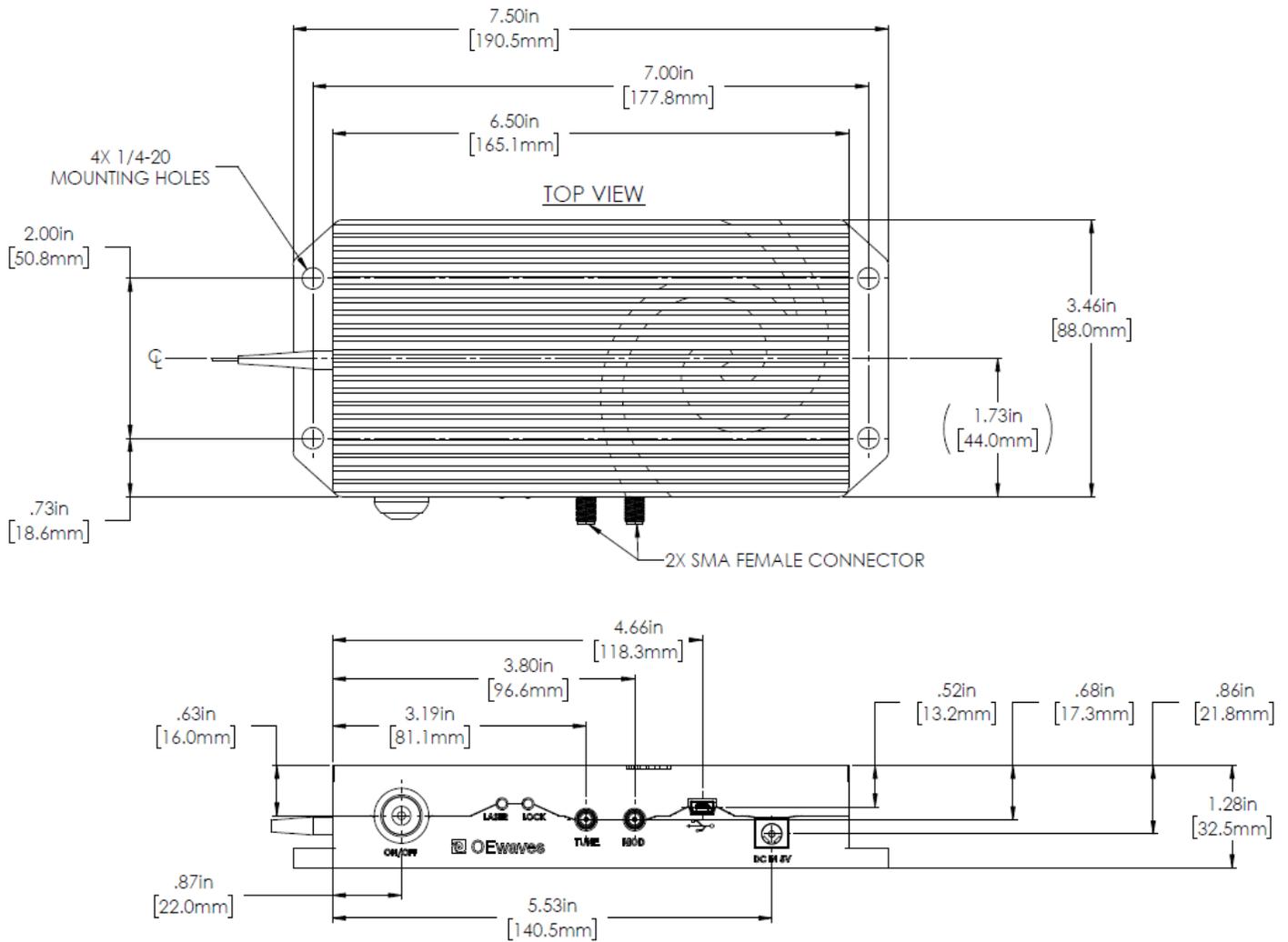
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MECHANICAL DIMENSIONS

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