



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

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.

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_C

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	20-40 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	10 GHz		
Extended Tuning Range (Continuous)	30 GHz (See options)		
(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)	8.8 x 19.1 x 3.3 cm		
Fiber Pigtail	PM-FC/APC (PANDA Fiber, Slow Axis)		
Frequency Modulation (option)	Bandwidth = DC – 100 kHz Tuning Sensitivity = 10 – 25 MHz/V (typical) Range = 200 – 500 MHz (typical)		

***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	> 20 mW
		HP	> 40 mW
Extended Tuning Range (Continuous)	ZZ =	-	N/A
(Non-Continuous)		T1	30 GHz
		T2	90 GHz
		T3	150 GHz
		T4	210 GHz
Frequency Modulation	MOD =	-	N/A
		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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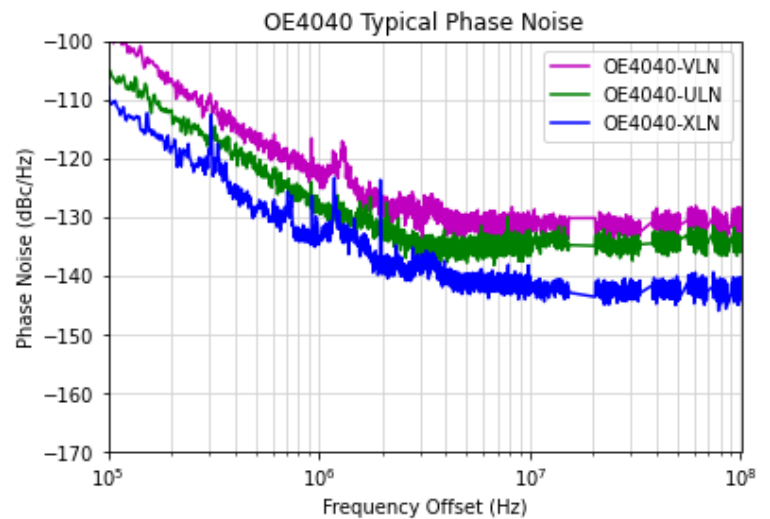
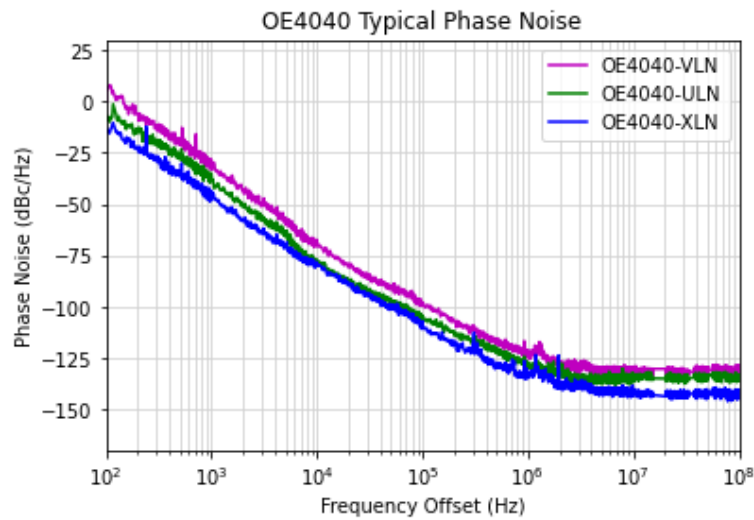
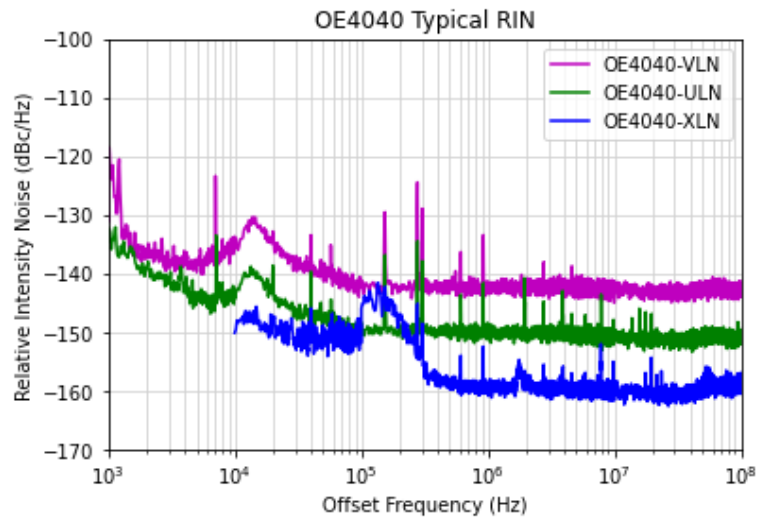
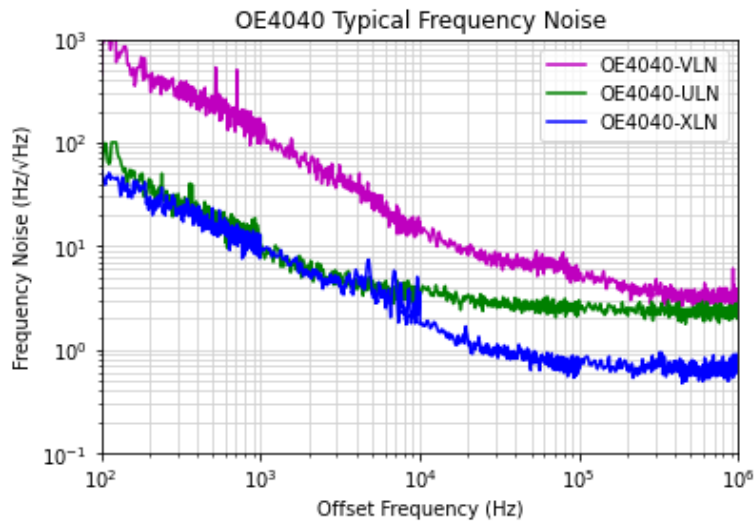
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TYPICAL PERFORMANCE

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

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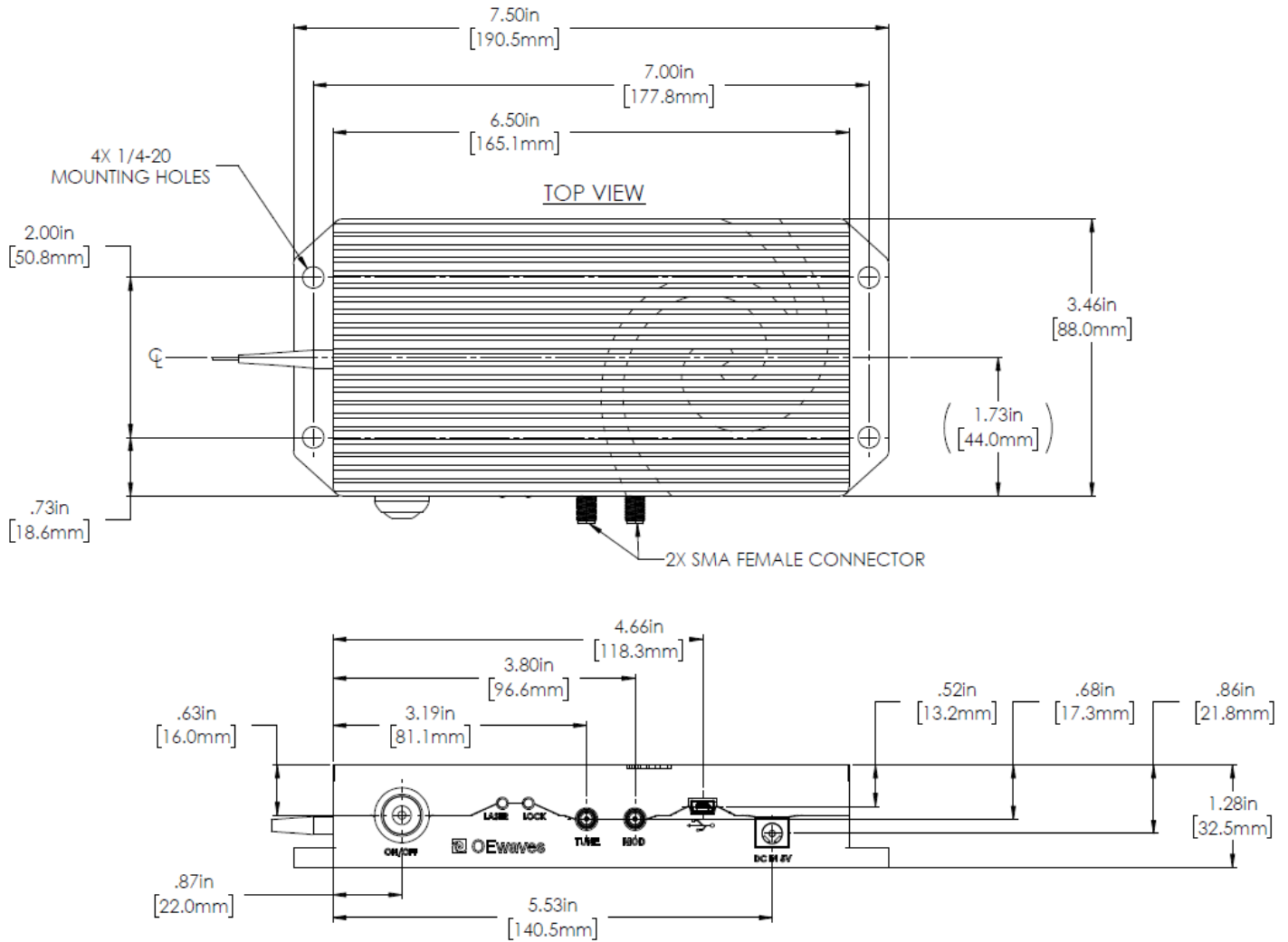
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MECHANICAL DIMENSIONS

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