NP Photonics

Rock™ Module

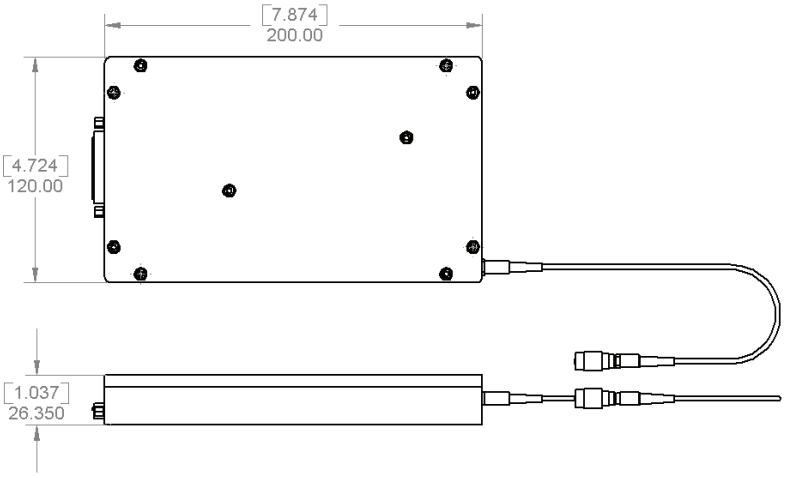
Compact Single-frequency Fiber Laser OEM Module

Features

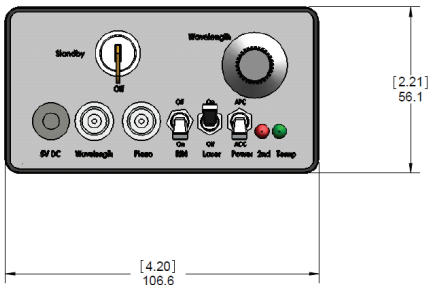
- Narrow Linewidth <700Hz
- Ultra-Low Phase-Noise
- Excellent Frequency Stability
- Broad Mode-Hop-Free Tunability
- Comprehensive, User-Friendly Interface
- Low Sensitivity to Acoustic Noise

Mechanical Outline:

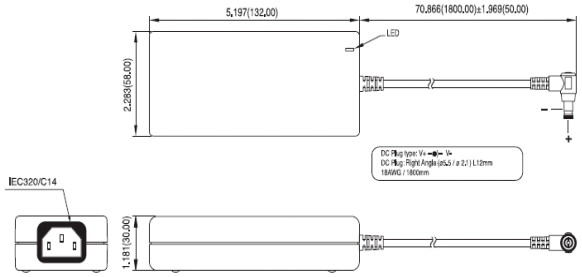
Rock Module

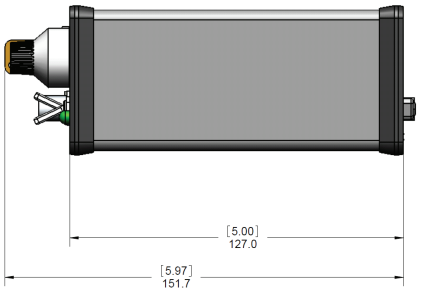


Interface Box (optional)



5V External Power Supply (Optional)





Performance | Reliability | Innovation

Parameter	Rock Module 1.5 micron	Rock Module ULTRA 1.5 micron	Rock Module 1 micron
Center Wavelength Range (nm) [1]	1530-1565	1530-1565	1030-1075
Laser Emission		CW - single frequency	
Output Power (mW) [2]	25, 50, 80, 100, 125	25, 40, 80	25, 50, 80, 100, 125
Line Width (120 µsec [3]) (kHz)	<3kHz for ≤50mW <5kHz for ≥80mW	<700Hz	<5kHz
Beam Quality		$M^2 < 1.05$	
Frequency Stability (MHz) [4]		20MHz	
RIN-Peak Frequency (MHz)		~0.5 - 1	
Optical S/N (dB) (50 pm resolution bandwidth) [5]		>75dB	
PM output		Standard	
Thermal tuning		Standard	
Thermal Tuning Range [6]	>60GHz (480pm)	>60GHz (480pm)	>66GHz (250pm)
Fast Piezo Tuning Capability [7]		Optional	
Piezo-electric Tuning Range - Internal Driver		+/-200MHz	
Piezo-electric Tuning Range - External Driver - Optional [8]		8GHz [9]	
Piezo-electric Modulation Frequency [10] (kHz)		up to 40kHz	
Calibrated Power Monitor		Standard	
Signal to ASE Noise (Integrated)		35dB	
Side Mode Suppression Ratio		>50dB	
Operating Temperature (degrees C)		-10 to 35	
Wavelength Set Resolution		50MHz	
Power Stability (% RMS) [11]		0.12	
Absolute Wavelength Accuracy		+/-8pm	
Fiber Pigtail (PM FC/APC)		Standard	
Polarization Extinction Ratio	>23dB	>23dB	>20dB
Frequency-noise (Hz/√Hz) - (Ultra only)		150@10Hz 45@100Hz 18@1kHz 5@10kHz 0.9@300kHz	
Phase-noise (µrad/√Hz) 1m opt. Path - (Ultra only)		4.6@10Hz 1.4@100Hz 0.6@1kHz 0.2@10kHz <0.1@300kHz	
RIN level (dB/Hz) - (Ultra only)		-125@0.3MHz <-140@10MHz <-155@100MHz	
RIN Level at peak (dB/Hz)	<-110dB/Hz @ PEAK	<-115dB/Hz @ PEAK	<-100dB/Hz @ PEAK
Optical Isolation (dB)	>45dB	>45dB	>35dB
Power Tuning (optional) [12]	10%-100% max output	10%-100% max output	

FOOTNOTES

1. Wavelength selectable from range. Other wavelengths available.
2. Other power levels available
3 Linewidth based on self-heterodyne measurement with 120µS delay line.
4. Over 1 hour with base temperature constant within 0.2 degrees C after a 30 minute warm-up
5. ~80dB typical
6. Continuous mode-hop-free tuning range operating with a case temperature of 25 degrees C
7. Internal PZT driver included (+/-10V)
8. External PZT drive required -20 to +65V
9. 64pm @ 1550nm / 30pm @ 1064nm
10. External signal required to reach 40kHz. Up to 14kHz @ 3dB bandwidth for internal driver
11. <0.1% RMS in current mode
12. Can modulate the output (e.g. sawtooth, sinewave) up to 1kHz bandwidth with no impact on laser performance

Ordering Example: RFLM-100-0-1550.92-1, Rock Fiber Laser Module, 100mW, No Tunability, 1550.92nm, with Power Supply

RFLM---------[ ]----------[ ]----------[ ]----------[ ]----------[ ]----------[ ]

Power	Code
25mW	25
50mW	50
80mW	80
100mW	100
125mW	125

Tunability	Code
None	0
Tuning	1
Modulation	2
Tuning & Modulation	3

Wavelength	Code
Standard	15xx.xx
Or ITU Grid	Hxx/Cxx
Generic C-Band	C

Power Supply	Code
None	0
Power Supply	1

Linewidth	Code
<700Hz	U
Standard	S

Power Tuning	Code
Yes	V
No	0

NP Photonics Rock Laser Modules are protected by a 12 month warranty. All components and assemblies are unconditionally warranted to be free of defects in workmanship and materials for the warranty period, beginning from the date of shipment. This warranty is in lieu of all other warranties, expressed or implied, and does not cover incidental or consequential loss. This warranty does not apply to devices damaged due to operating conditions outside of the specified parameters. Modified warranties for OEM customers are available.

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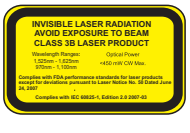

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