

1550nm Ultra Narrow Linewidth Single Frequency Laser Module

Part Number: IPNLS1501

Date: September 30, 2025

This product is a high performance semiconductor laser module integrating silicon photonic chip technology, ECL external cavity laser technology, advanced packaging technology, low noise, and high-precision circuit design. This module has characteristics such as ultra-narrow linewidth, high optical power output, stable wavelength, low noise, low power consumption and easy to use. This module can be used in LiDAR, coherent detection, fiber optic sensing, medical photonics, and scientific research equipment, 3D surveying and so on. It can also be customized according to customer application needs.

1. Module Outlook

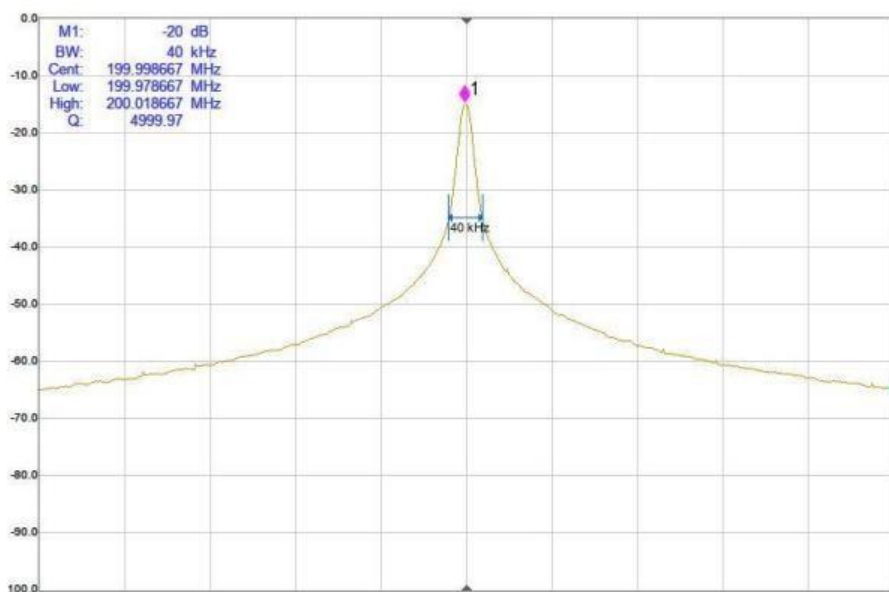


2. Optical and electric characteristics

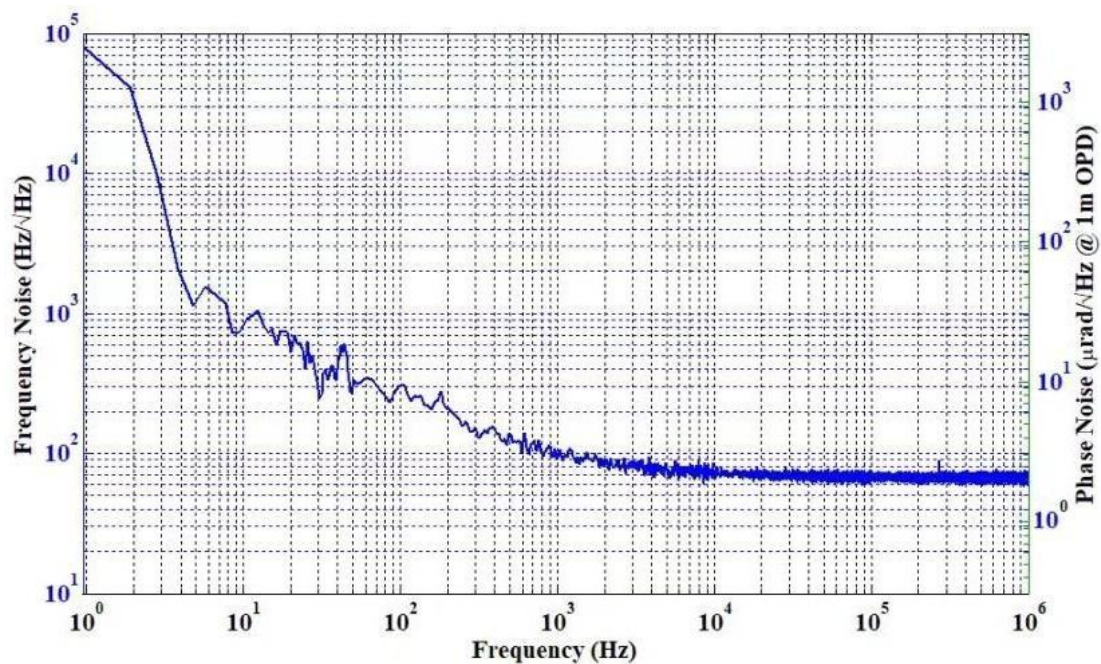
Items	Symbol	Condition	Min.	Typ.	Max.	Unit
Threshold Current	I _{th}	CW		35		mA
Central Wavelength	λ_c		1535	1550	1565	nm
Output Power	P _{op}	CW		20		mW
Lorentz Linewidth*	FWHM	CW			3	kHz
Relative Intensity Noise	RIN	$\geq 1\text{kHz}$			-145	dB/Hz
Side Mode Suppression Ratio	SMSR	CW		60		dB
Polarization Extinction Ratio	PER	CW	20			dB
Optical Isolation	ISO			50		dB
TEC Setting Temperature	T _{TEC}	CW	15		45	°C
Operating Temperature	T _o		-20		60	°C
Operating Humidity	%		5		85	%

*Testing Lorentz linewidth using delayed self-heterodyne method

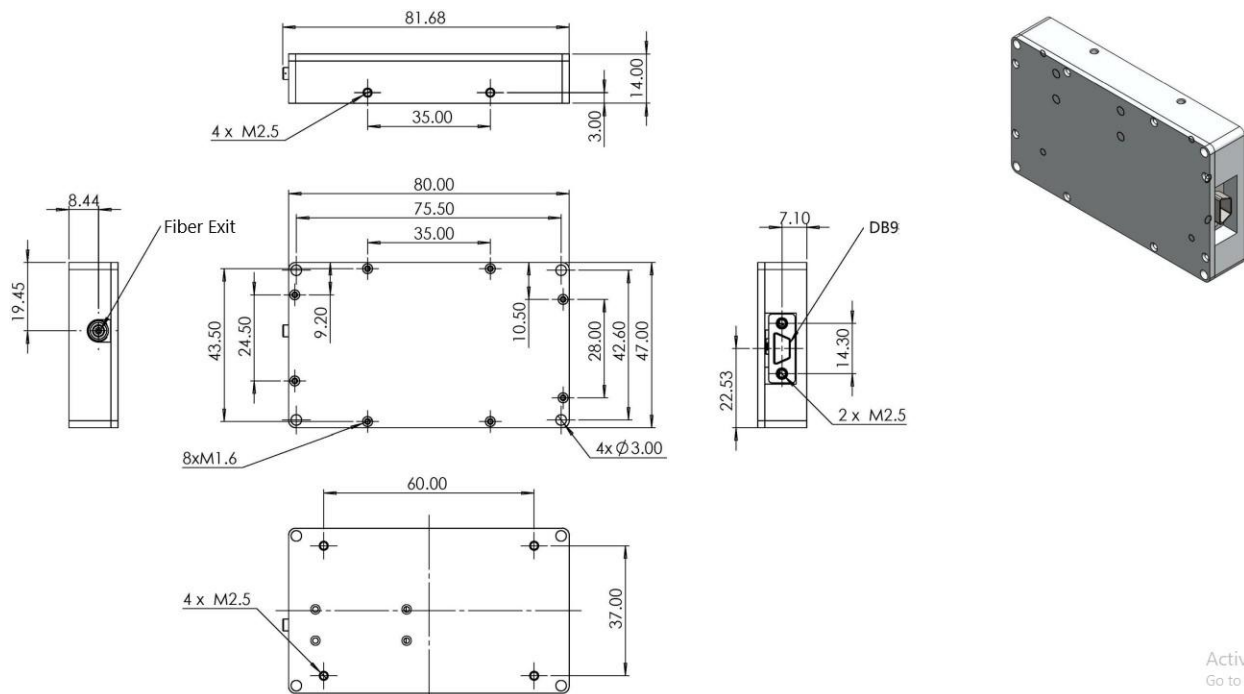
3. Typical Lorentz Linewidth (2kHz)



4. Phase Noise



5. Electrical and Appearance Parameters



6. Pin Assignment Specifications

PIN	Note
1,6	DC5V
2	Board Tx, Connecting Rx of USB/TTL
3	Board Rx, Connecting Tx of USB/TTL
5,9	GND

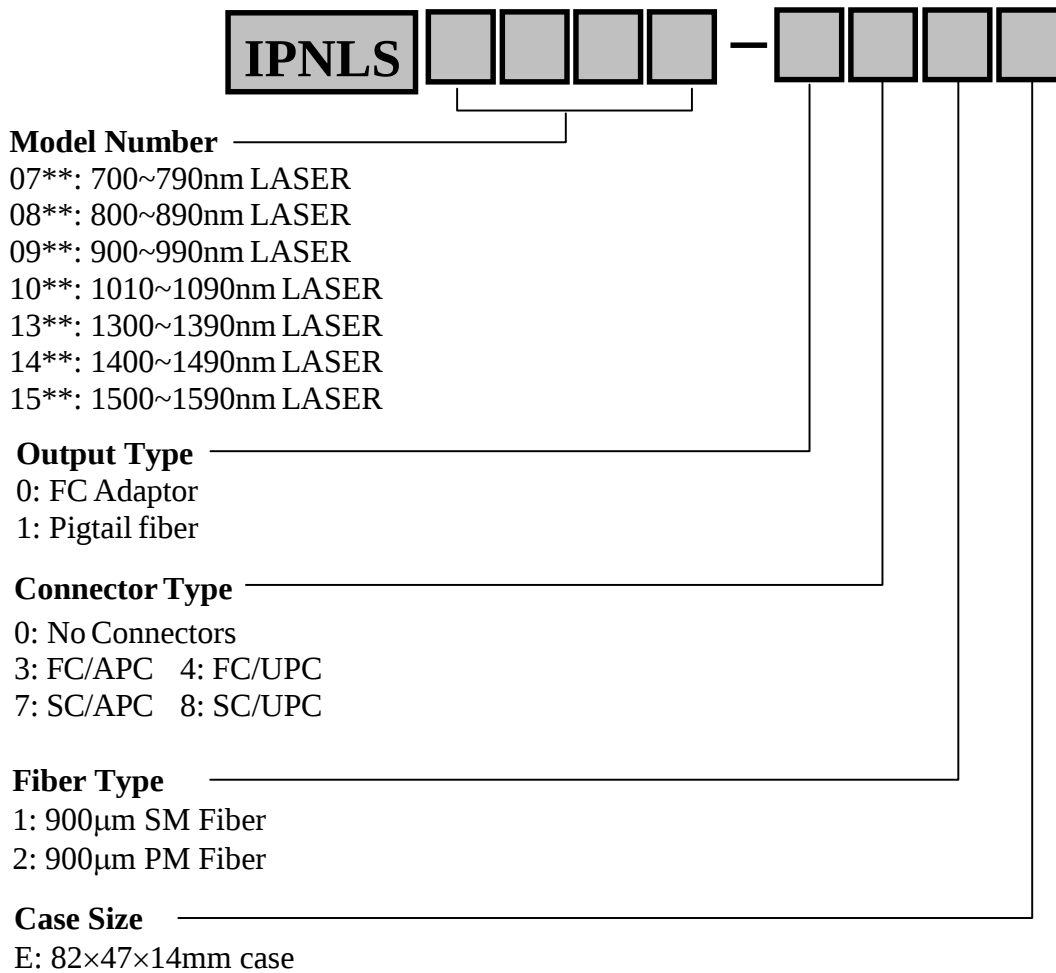
7. Dimensions and Electrical Data

Items	Parameter configuration	Unit
Appearance Dimensions	LxWxH=80x47x14	mm
Built-in Tail Fiber Type	SMF/PMF	
Connector	FC/APC	
Power Supply	DC 5V/3A	
Data Interface	Rectangular Connector (Micro DB9)	
Safety Control	Interlock	

8. Warning

- To wear protective goggles during operation, as high-power laser may be harmful to the eyes.
- Nearby operators should wear protective goggles to avoid injury caused by laser reflection.

9. Part Numbering Structure of Narrow Linewidth Laser module



Example: IPNLS1501-101E: 1550nm-type Laser module in 82×47×14mm case with pigtail fiber output, 900μm SM fiber without connector

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