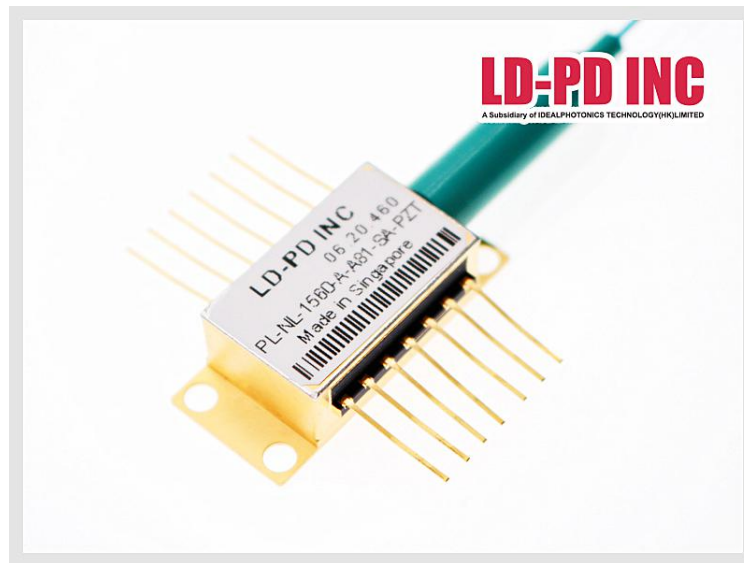


1560nm Single frequency FBG stabilized Tunable Narrow Linewidth Laser Diodes



Description

The PL-NL series is Fiber Bragg Grating laser is a stable narrow band light source with a wavelength tuning possibility in 1-2 nm range. The laser is packaged in 14-pin standard butterfly package with monitor photodiode and thermo-electric cooler (TEC).

Features

- Optical output: 10mW
- Narrow linewidth ($\Delta\nu < 0.1\text{MHz}$)
- Wavelength: 1560.48nm @ 25°C
- SM or PM Fiber ($\varnothing 0.9\text{mm}$)
- FC-APC connector
- 14-pin butterfly package
- Internal monitor PD and TEC
- Low power consumption

Application

- Laser interference experiment
- Drop-side of DWDM long-haul transport equipment
- Optical Test and Instrumentation
- Microwave Photonics
- CATV networks
- Sensors

E/O Characteristics

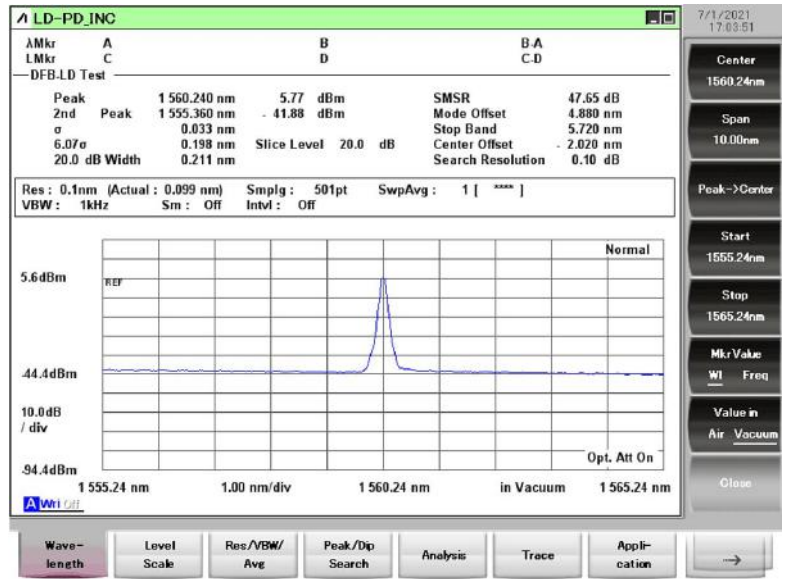
Optical Characteristics (at 25 °C laser temperature)

Parameter	Symbol	Condition	Min	Typical	Max	Unit
Centre Wavelength	λ_c	TL=15~35°C CW	1559.48	1560.48	1561.48	nm
Peak Optical Output Power	PO	-	10	-	20	mW
Spectral linewidth	LW	-	-	1	10	KHz
Side-mode Suppression Ratio	SMSR	CW	40	45	-	dB
Optical Isolation	-	-10 < TC < +70°C	30	-	-	dB
Polarization Extinction Ratio	ER	-	20	-	-	dB
Relative Intensity Noise	RIN	CW, output power 5mW	-	-	-145	dB
Wavelength drift with case (-10 to 70°C) temperature	$\Delta\lambda$	TL=15~35°C	-	-	± 30	pm
Wavelength Temperature coefficient	$\Delta\lambda/\Delta T$	TL=15~35°C	-	60	80	pm/°C
Wavelength Current coefficient	$\Delta\lambda/\Delta I$	-	-	1.5	2	pm/mA

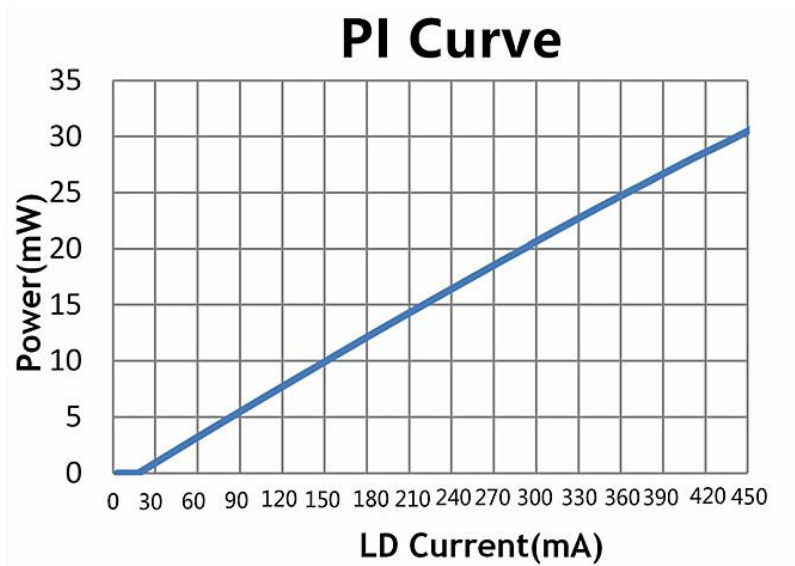
Optical Characteristics (at 25 °C laser temperature)

Parameter	Symbol	Condition	Min.	Typical	Max.	Unit
Threshold Current	ITH	-		45	65	mA
Slope Efficiency	η	CW, 10 mW	0.064	0.1	-	mW/mA
Operating current	Iop	CW	-	200	300	mA
TEC set temperature	Ts	-	15	-	35	°C
Laser Forward Voltage	VF	CW output power 5 mW	-	1.3	1.8	V
Monitor Dark Current	ID	-	-	-	0.1	μ A
Cooler Voltage	Vc	IF=EOL, TC=70°C			2.7	V
Cooler Current	Ic	IF=EOL, TC=70°C	-	-	1.4	A
Thermistor Resistance	RTH	TL = 25 °C	9.5	10	10.5	K Ω
TEC Current	ITEC	TL = 25 °C, TC = 70 °C	-	-	1.8	A
TEC Voltage	VTEC	TL = 25 °C, TC = 70 °C	-	-	3.5	V
Tuning Range	Δf		1		1.5	nm
PZT Tuning Voltage	VT		0		150	V
Mode Hop Free Range	ΔI			30		mA
Extinction Ratio	XP	CW 10 mW	17			dB

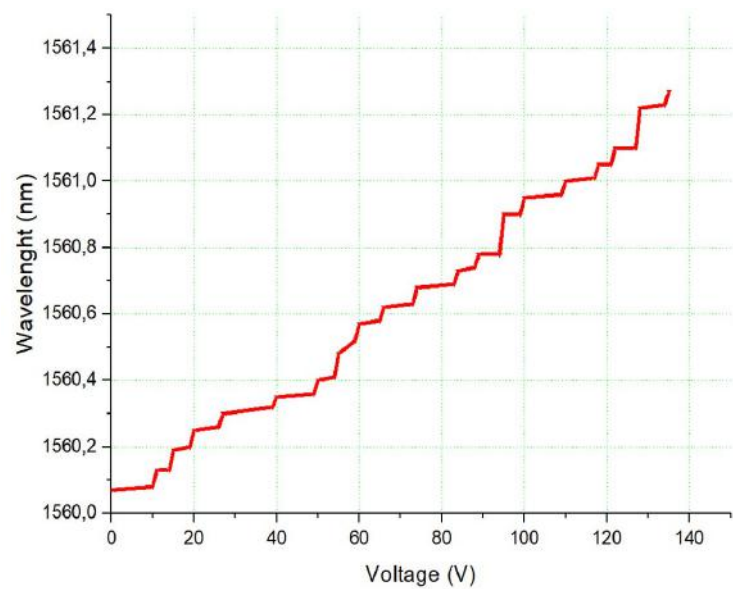
Spectrum



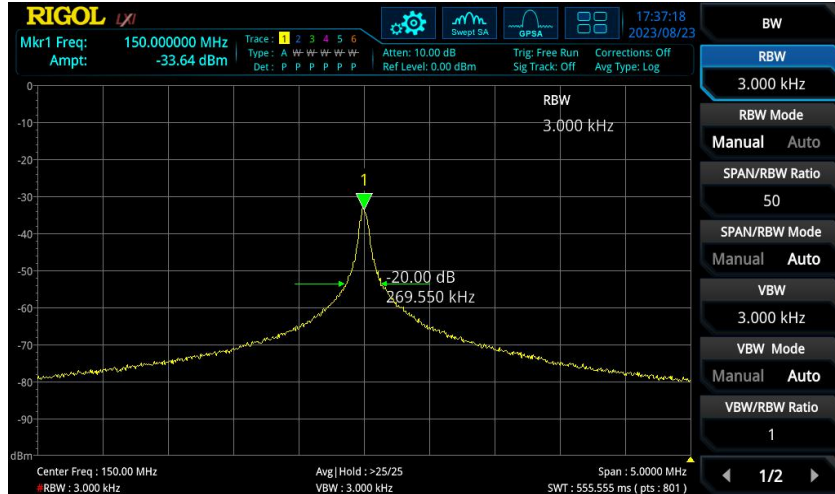
L-I Curve



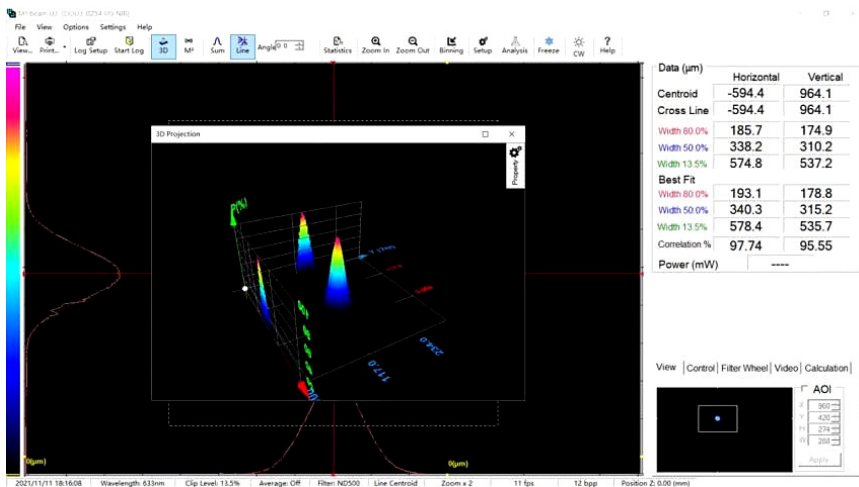
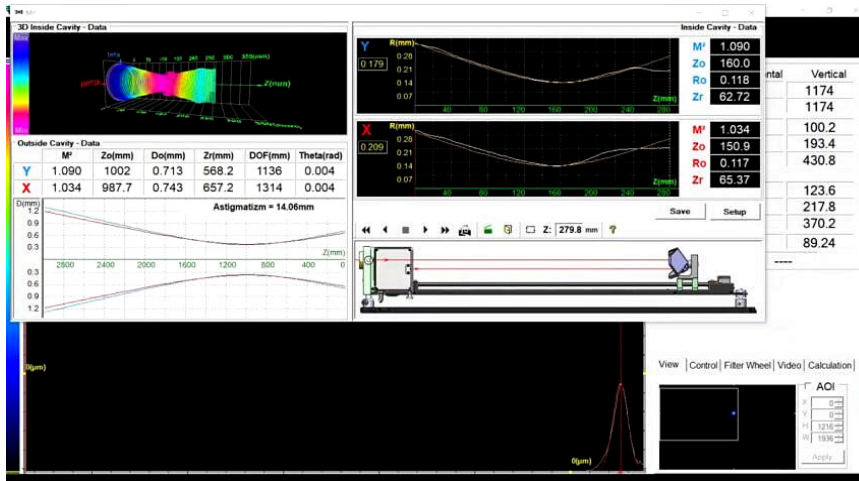
Wavelength VS PZT Voltage

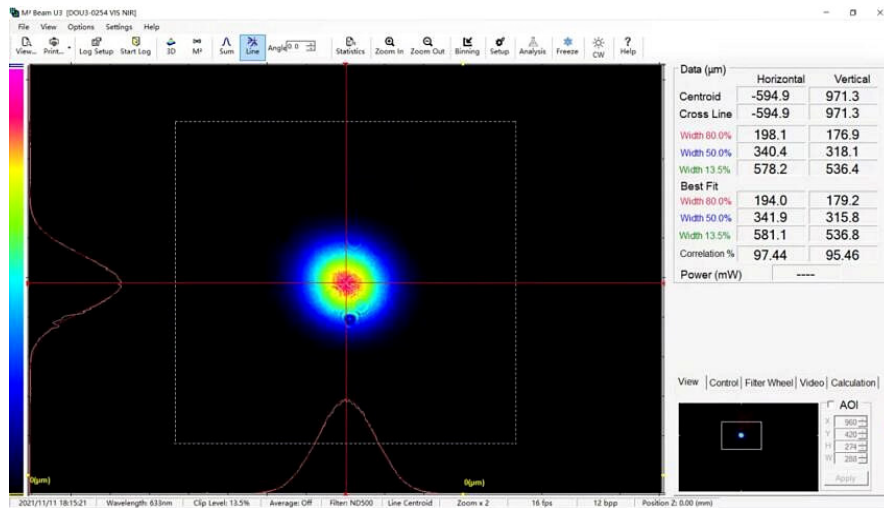


Linewidth Testing Result



Beam Quality(M2,2D/3D Beam)

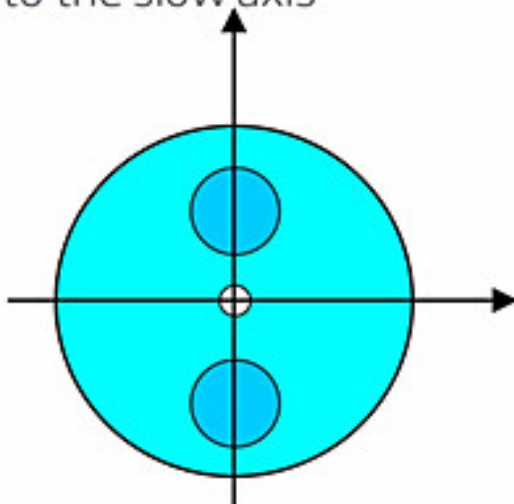




Fiber Pigtail Specifications

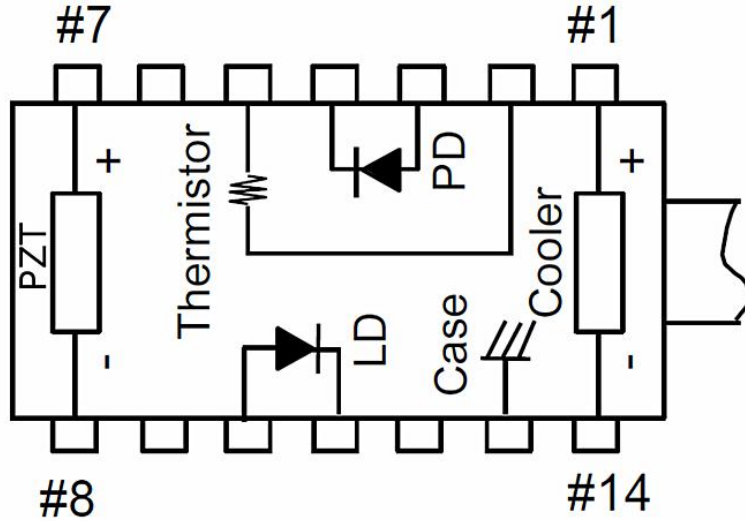
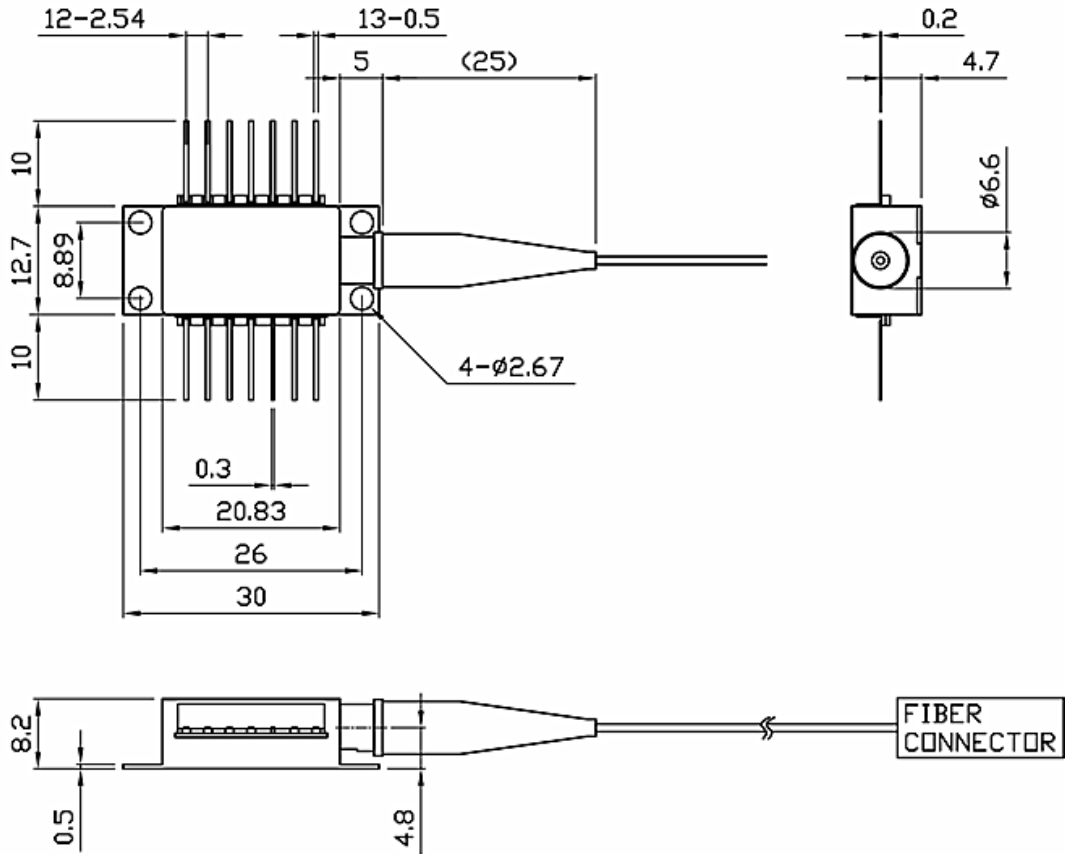
Parameter	Description
Fiber Type	PM fiber
Jacket Type	900µm loose tube
Pigtail Length	1.0±0.1m
Connector Type	FC/APC
PM fiber Connector Orientation	Please see the right figure

Polarized light aligned to the slow axis



Polarized light aligned to the fast axis

Package Size and Pin definition



1	Thermoelectric Cooler (+)	8	PZT tuning -
2	Thermistor	9	N/C
3	PD Monitor Anode (-)	10	laser Anode (+)
4	PD Monitor Cathode (+)	11	Laser Cathode (-)
5	Thermistor	12	N/C
6	N/C	13	Case Ground
7	PZT tuning +	14	Thermoelectric Cooler (-)

Absolute Maximum Ratings

Item	Unit	Min	Typ	Max
Case Temperature	°C	-5	25	70
Chip Temperature	°C	+10	25	40
Operating Current	mA	0	100	120
Forward Voltage	V	0.8	1.2	1.8
TEC Current	A	-	-	1.2
Reverse Voltage (LD)	V	-	-	2.0
Reverse Voltage (PD)	V	-	-	20

Ordering Info

PL-NL-□□□□-☆-A8▽-XX-PZT

□□□□:Wavelength

0633:633nm

1550:1550nm

1555:1555nm

1560:1560nm

☆ :Output Power

A:10mW

B:20mW

▽:Linewidth

1:<100KHZ

2:<200KHZ

XX: Fiber and Connector Type

SA=SMF-28E+ FC/APC

SP=SMF-28E+ FC/PC

PP=PM Fiber+ FC/PC

PA=PM Fiber+ FC/APC