

# NLL—NARROW LINEWIDTH LASER

The PureSpectrum™ - NLL is a fully integrated module suitable for embedded design / OEM instrumentation.



The PureSpectrum™ -NLL Narrow Linewidth Laser is a compact, ultra-low noise DFB semiconductor laser module.

- Uses state-of-the-art frequency noise control technology
- Significant reduction of the optical linewidth of a DFB laser diode while preserving the benefits of the semiconductor diode
- Fast frequency tuning options for FMCW or other advanced sensing schemes

## Features

- Linewidth below 5 kHz
- Output power up to 80 mW
- Low phase noise
- Long coherence length
- High frequency stability
- High reliability
- Vibration immunity
- Fast Frequency tuning options

## Applications

- Test & measurement
- Coherent OTDR
- Pipeline and bridge monitoring
- Perimeter detection in security applications
- LIDAR

## Available Configurations

	Units				
Wavelength Option <sup>(2)</sup>	nm	1525 – 1565 / 1617 (ITU grid)			
Output Power Option	mW	40 or 80			
Fast Frequency Tuning Option		No Fast tuning	Option 1	Option 2	Option 3
Fast Frequency Tuning Range	± MHz	N/A	± 12	± 100	± 200

## Optical Parameters<sup>(1)</sup>

		Units	No Fast Tuning	Option 1	Option 2	Option 3
Linewidth <sup>(3)</sup>		kHz	< 5		< 10	< 20
Frequency Noise	5 Hz – 1 kHz	Hz <sup>2</sup> /Hz	< 1x10 <sup>6</sup>		< 2x10 <sup>6</sup>	< 2x10 <sup>6</sup>
	1 kHz – 100 kHz		< 5x10 <sup>3</sup>		< 2x10 <sup>4</sup>	< 5x10 <sup>4</sup>
	100 kHz – 3 MHz		< 5x10 <sup>5</sup>		< 5x10 <sup>5</sup>	< 5x10 <sup>5</sup>
	3 MHz – 100 MHz		< 1x10 <sup>5</sup>		< 1x10 <sup>5</sup>	< 1x10 <sup>5</sup>
Frequency Stability		Allan Std. Dev.	< 5x10 <sup>-10</sup> @ 1 s, < 5x10 <sup>-9</sup> @ 100 s		< 5x10 <sup>-9</sup> @ 1 s, < 5x10 <sup>-9</sup> @ 100 s	
Side Mode Suppression Ratio		dB	> 30			
Polarization Extinction Ratio		dB	> 17			
Relative Intensity Noise		dBc/Hz	< -130 (1 kHz - 10 kHz) < -140 (10 kHz - 1 MHz) < -150 (1 MHz - 1 GHz)			
Output Type			CW			

## Slow Frequency Tuning

Frequency Tuning Method		Thermal Control Via Software Command
Frequency Tuning Range	GHz	± 10
Frequency Tuning Resolution	MHz	5
Slow Tuning Speed	GHz/s	0.5 (average)

## Fast Frequency Tuning (Option 1,2 or 3)

Frequency Tuning Method		Through External Modulation Input
Tuning Voltage Magnitude <sup>(4)</sup>	V	-2 to +2
Modulation Bandwidth (Tuning Speed)	MHz	Up to 1

## Electrical Parameters

Power Supply	VDC	+ 9 to + 36
Power Consumption <sup>(5)</sup>	W	< 4.5

## Mechanical Parameters

Operating Temperature	°C	- 5 to + 55
Storage Temperature	°C	- 40 to + 85
Humidity Level	%	95, Non-Condensing
Dimensions (H x W x L)	mm	30 x 64 x 90
Fiber Type		PM Panda
Optical Connector Type		FC / APC (Narrow Key), Key Aligned to Slow Axis

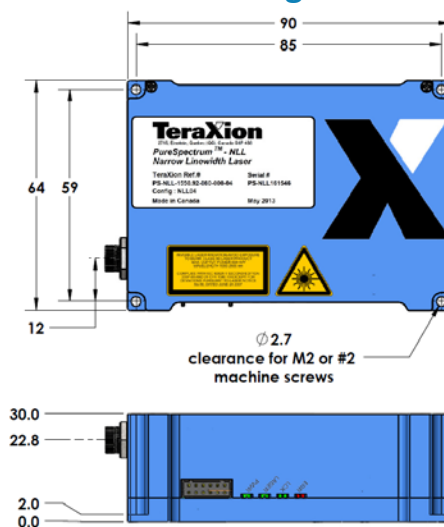
## Computer Interface

Interface	RS-232
Connector	Hirose DF11-12DP-2DS
PC-Side Software <sup>(6)</sup>	TeraXion PureSpectrum Control and Monitoring Software
Power and Communication Module	TeraXion 12 V PS-PU (Optional)

Typical specifications may vary depending upon user's requirements

- (1): At nominal wavelength
- (2): In vacuum
- (3): FWHM, Voigt profile
- (4): Voltage must be fixed at 0V at turn-on and resets
- (5): Typical at 25°C for 80mW output power
- (6): Windows XP/VISTA/7 Compatible

## Outline diagram



MKT-FTECH-PS-NLL 201406-3.2

## Laser safety information

