



Product Specification

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Turnkey Tabletop CW Laser Drive Module

Part #LN-WLxx-RIN-Pxx

PRODUCT FEATURES

- Simple turnkey operation with factory presets
- Low-noise circuit designed to optimize laser low-noise performance
- Accurately controls laser temperature and drive current
- Ruggedized packaging—tested to MIL-STD-810G and MIL-STD 461G RE102



APPLICATIONS

- Laser source for RF over fiber interconnects requiring high gain, high dynamic range and low noise figure
- Remote or external modulator RF over fiber links
- Sensing applications requiring high power, low noise, and narrow linewidth sources

DESCRIPTION

The Turnkey Tabletop CW Laser Drive Module enables optimal operation and control of the inherent low noise, high power DFB laser. The laser is operated at a factory preset with optimized temperature and drive current to produce a constant wavelength and power output with an extremely low RIN that is equivalent to the shot noise limit. The laser chip is mounted on a thermo-electric cooler (TEC) and hermetically sealed in a package that is integrated with the electronics board. To eliminate electronics induced noise, the drive circuitry is entirely analog. The laser is driven with linear regulators and stabilized with a linear TEC controller. The electronics were carefully designed to eliminate any switching noise or spurious peaks so any additional line broadening beyond the intrinsic linewidth of the laser is reduced. This makes this laser an exceptional choice for a very broad spectrum of RF over Fiber applications. Its unmatched RIN performance is paired with very high optical power that translates directly into increased gain and linearity for RF over Fiber links.

ABSOLUTE MAXIMUM RATINGS

Parameter	Minimum	Maximum	Units	Condition/Comments
Storage Temperature	-55	115	°C	Non-operating, power disconnected
Operating Temperature	-20	75	°C	At specified operating current
ESD		±500	V	

OPTICAL AND ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Min.	Typ.	Max.	Units	Condition/Comments
Operational Wavelength	λ	1530		1565	nm	Refer to performance specs of integrated laser
Continuous Wave Optical Power	P_{out}				mW	Refer to performance specs of integrated laser
Output Power Flatness	P_{flat}	-1		1	dB	Over full temperature range
Power Stability	ΔP			0.1	dB	Over a 12 hour period
Linewidth	$\Delta\lambda$				KHz	Refer to performance specs of integrated laser
Relative Intensity Noise	RIN				dB/Hz	Refer to performance specs of integrated laser
Threshold Current	I_{th}				mA	Refer to performance specs of integrated laser
Optical Return Loss	ORL				dB	Refer to performance specs of integrated laser
Side Mode Suppression Ratio	SMSR				dB	Refer to performance specs of integrated laser
Monitor PD	V_{PD}	0	2	2.5	V	
TEC Set Temp	T_{set}	15	20	25	°C	Factory Set Point (typical)
TEC Adjust Voltage	V_{Tset}	0	2.2	4.5	V	Factory Set Point (typical)
Laser Current Adjust Voltage	V_{Lset}	0	2	2.2	V	Factory Set Point
Supply Voltage	V_{drive}	4.75	5	5.25	V	
Current Draw	I_{drive}			2.8	A	Maximum draw at 75° C

LASERS AVAILABLE FOR INTEGRATION INTO THE TABLETOP DRIVE MODULE

The following lasers are available for integration into the tabletop drive module; performance will be identical to the laser employed within the tabletop module:

Tabletop Model	Laser Model Number	Description
LN-1550-165-40	AL-40-1550-165-1-APC	CW 40 mW Laser; -165 RIN up to 10 GHz
LN-1550-165-60	AL-60-1550-165-1-APC	CW 60 mW Laser; -165 RIN up to 10 GHz
LN-1550-165-80	AL-80-1550-165-1-APC	CW 80 mW Laser; -165 RIN up to 10 GHz
LN-1550-165-100	AL-100-1550-165-1-APC	CW 100 mW Laser; -165 RIN up to 10 GHz
LN-1550-168-80	CWL-80-1550-168-20-1-APC	CW 80 mW Laser; -168 RIN to ~ 20 GHz
LN-1550-168-100	CWL-100-1550-168-20-1-APC	CW 100 mW Laser; -168 RIN to ~ 20 GHz

MECHANICAL SPECIFICATIONS

Parameter	Symbol	Minimum	Maximum	Units	Condition/Comments
Height	H		22	mm	
Area	A		87 x 75	mm ²	
Electrical Connector					9 Pin D-Sub female connector
Package Heat Flow					Heat sink on bottom surface
Fiber Pigtail Length		0.95	1.05	m	PC/APC with PM single mode fiber; slow axis aligned
Pigtail Termination					FC/PC/APC PM panda fiber, Slow Axis aligned

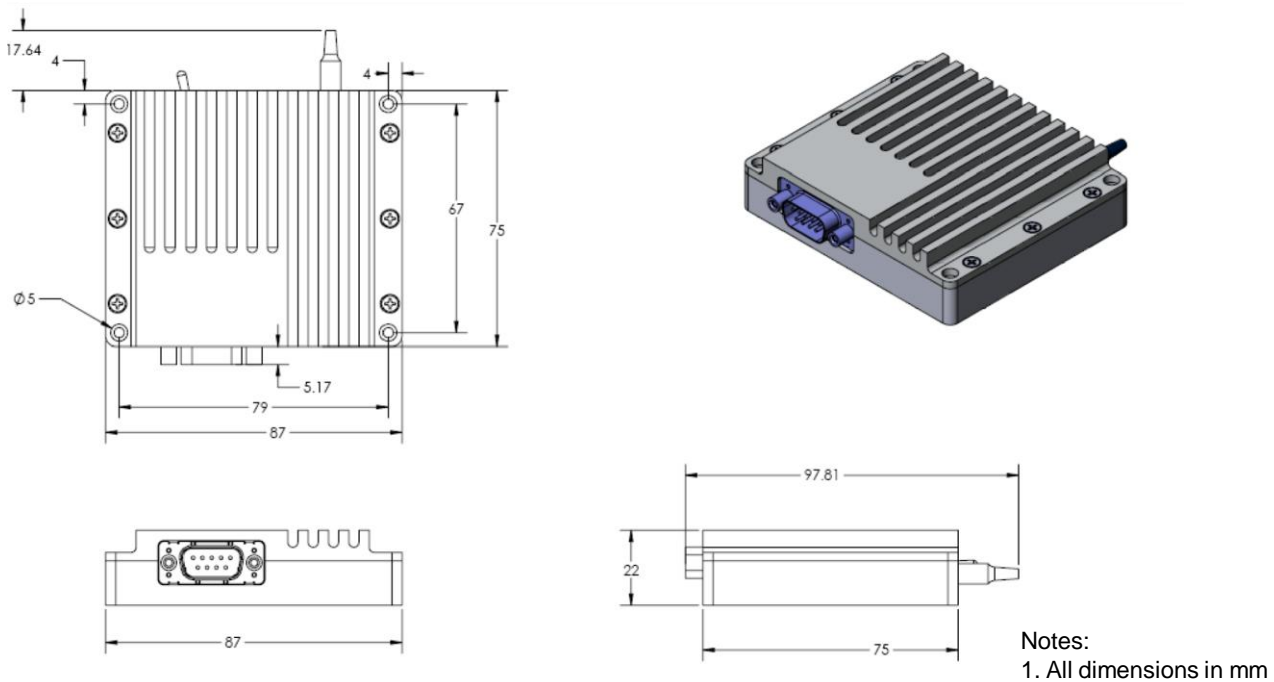
ENVIRONMENTAL SPECIFICATIONS

Parameter	Minimum	Maximum	Units	Condition/Comments
Operating Temperature	-20	+75	°C	Case temperature
Storage Temperature	-55	+95	°C	
Operating Humidity	0	90	% RH	
Shock	20 g amplitude and 11 ms duration, three shocks each axis, each direction			MIL-STD-810 Method 516, Procedure I. Non-operational
Operational Vibration	3.56 Grms one hour each axis			MIL-STD-810 Method 514, Procedure IV.
Endurance Vibration	8.25 Grms one hour each axis			MIL-STD-810 Method 514, Procedure IV.
Reliability Performance	40,000		hours	

ELECTROMAGNETIC INTERFERENCE SPECIFICATIONS

Type of Test	Minimum	Maximum	Units	Condition/Comments
Radiated Emission				In accordance with MIL-STD 461G, Method RE102

MECHANICAL DRAWING

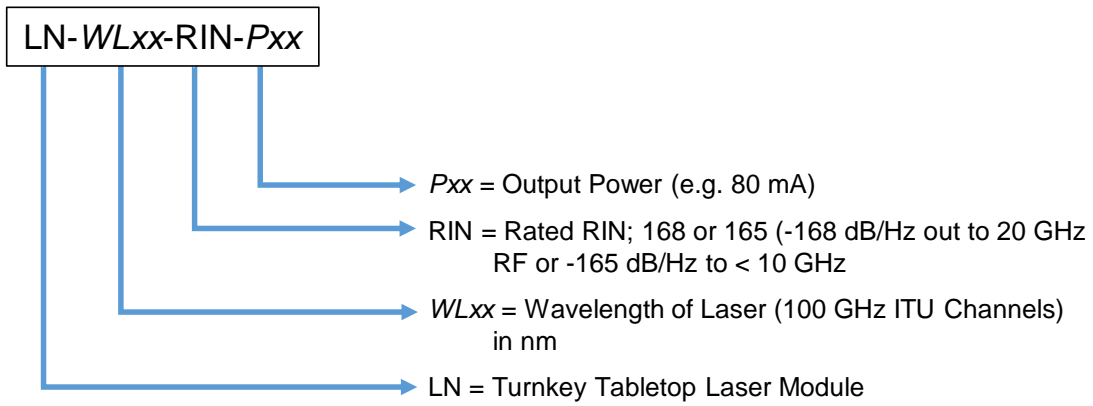


PIN DESCRIPTION OF D-SUB 9 CONNECTOR

Pin #	Symbol	Description
1	LSR_mon	Laser current monitor (0-1V: 0-1A laser drive current)
2-3	GND	Ground
4-5	V _{CC}	Drive Voltage: +5V
6	LSR_adj	Laser set point adjust (0-2.5V: 0-1A Laser Set current)
7	Enable	External voltage laser enable (>2V = ON)
8	RESERVED	Laser PD monitor (0-1V: 0-100 μA PD current)
9	Temp_adj	TEC Temp adjust (0-4.5V: 10-30°C TEC temp)



ORDERING INFORMATION



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