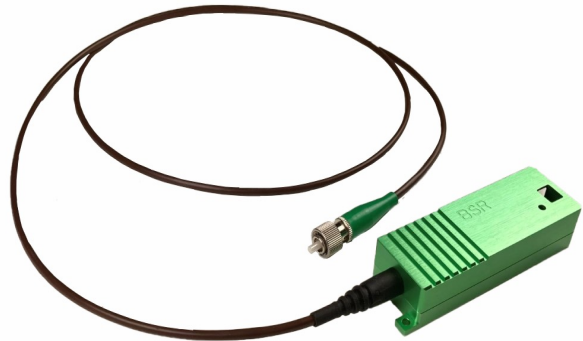


Applications

- Laser Imaging
- Fluorescence
- Flowcytometry
- Medical Instrumentation
- Raman Spectroscopy



Module Features

- Low power noise (0.15% RMS and 1.5% Pk-Pk)
- PM Single Mode fiber output
- Integrated Electronics – Drive, Temp stability & Protection
- Rugged and compact package design

Low Noise 532nm Fiber Coupled Laser

The low noise 532nm FiberTec LN™ is the new member of FiberTec™ product family from Blue Sky Research. This laser module features one fiber-coupled, high performance DPSS laser. Integrated electronics provide laser drive current, temperature stability, ESD protection, drive current monitor, module shutdown, laser modulation, and laser overdrive protection functions. Laser power output is via a connectorized, 1-meter-long PM single mode fiber (standard offering). Circuits are RoHS 3 compliant.

The FiberTec LN™ 532 Laser Module is offered with a 532 nm wavelength DPSS Laser. Proprietary optical design and the integrated electronics are optimized for low noise operation. All FiberTec LN™ Laser Modules incorporate BSR technologies, such as μ Lens™, to maximize laser power coupling to the fiber and assure stable output over product lifetime. The FiberTec LN™ laser module is designed to be easily integrated into OEM instrumentation and offers an excellent balance of performance, value and reliability.

Advantages of Using Fiber

The unique properties of optical fibers allow a reduction in optical systems complexity while enabling lower system cost. System performance can be optimized by using the cost-effective fiber for light relay and beam shaping. A single mode fiber maintains near perfect Gaussian beams without introducing aberrations. In addition, optical fibers maintain the best beam pointing and steering tolerances throughout temperature variations compared to free-space delivery optics, enabling a robust and stable system performance over wide operation conditions.

Blue Sky Research is an ISO 9001:2015 organization

Optical Specifications

Specification

Wavelength	nm	532	532
Optical Output Power (Max)*	mW	6	25
Central Wavelength Tolerance	nm	+/- 1	+/- 1
Single Spatial Mode Field Diameter	μm	4.5	4.5
M ² Beam Quality		< 1.1	< 1.1
RMS Noise (10Hz to 20MHz)**	%	< 0.15	< 0.15
Pk-Pk Noise (10Hz to 2MHz)**	%	< 1.5	< 1.5
Power Stability (1 hr)**	%	0.5	0.5
PM Fiber Numerical Aperture	NA	0.11	0.11
Polarization Ratio (typical)**	dB	20	20

* Contact Sales@Blueskyresearch.com for latest information on laser power offerings and custom configurations

** Specification are valid at rated output power

Electrical Specifications

Electrical Specification	Units	
Operating Voltage	V	3.3V ± 0.25 (TEC), 5.0V ± 0.5 (LD)
Operating Current	A	1.5A max for 3.3V (TEC), < 0.5A for 5.0V (LD)
Operation Mode		ACC
Analog Modulation Frequency	kHz	3kHz
Dynamic Extinction Ratio	dB	>20

Environmental Specifications

Parameter	Units	Specification		Conditions
		Min	Max	
Operating Temperature	°C	10	40	Non-Condensing
Storage Temperature	°C	-10	85	Non-Condensing
Storage Humidity	%	10	90	Non-Condensing

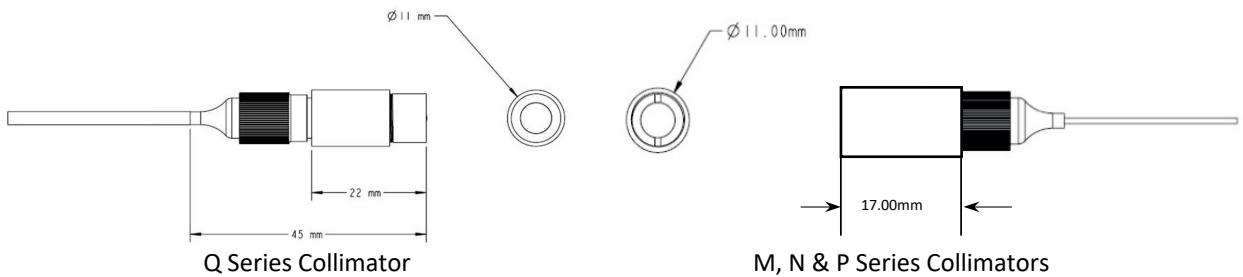
Collimation Optics

A cylindrical collimator option is available for the FiberTec LN™; the collimator is a miniature lens enclosure secured to the fiber pigtail's connector and houses an aspheric or doublet lens which provides a specific collimated beam diameter and divergence. The collimator does not affect beam quality or Polarization Extinction Ratio (PER). Beam size specifications must be specified at time of purchase. Please contact Blue Sky Research for special beam requirements. Focus optics are available as an option.

Collimator Specifications	M	N	P	Q
Beam Diameter* @ 1/e ² (mm) , +/- 25%	0.75	1.25	1.8	3
Beam Divergence (mrad) **	1.20	0.80	0.50	0.40

* Typical data at 638nm, constant temp of 25°C, constant Pout.

** Beam Diameter and Divergence will change with LD wavelength, contact Blue Sky Sales for exact specifications relative to your specific wavelength of interest



ACC and APC Operation

For optimal spectral and optical power performance of the FiberTec LN™ module, ACC operation is recommended.

ACC (automatic current control): Laser Diode driving current is detected and feedback to control circuit. An error signal is generated to lock the LD current to preset value or user specified setting. This is the preferred mode of operation for the FiberTec LN™ module.

APC (automatic power control): Laser power is detected via a back facet monitor inside the laser diode housing (TO can). An error signal is generated to adjust LD current to lock power to preset value or user specified setting.

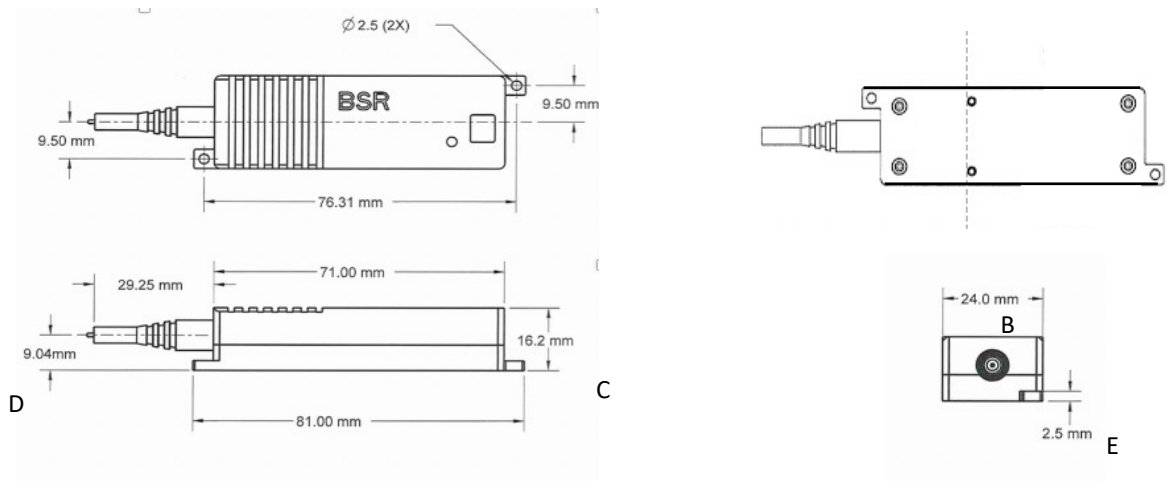
Electrical Connection and Operation of FiberTec LN™

Control functions for FiberTec LN™ – 8 wire ribbon Interface

Wire Ribbon	Name	Type	Description
BLUE	DIS	Input	SHUTDOWN, Laser enable/disable, GND active. CMOS HI (>4.2V) to disable, input impedance ~20kΩ
GREY	LDV	Output	Laser Diode Monitor, Voltage proportional to drive current on LD (in test report that comes w/FiberTec LN™)
YELLOW	GND	Input	Ground
GREEN	Vset	Analog Input	Constant Current or Constant Power setting, Variable power input control, 0 ~ 5V
ORANGE	Vcc	Power	LD Driver Circuit Supply Voltage, 5V/6.5V/8V laser specific.
YELLOW	GND	Input	Ground
PURPLE	PD Mon	Output	PD Monitor, Voltage is inversely proportional to output power, laser specific, see FiberTec LN™ test report
BROWN	TEC GND	Input	GND for 3.3V TEC Supply
RED	Vtec	Input	TEC Supply Voltage, 3.3V

* The FiberTec LN™ is set at ACC mode in factory

FiberTec LN™ Mechanical Specifications



FiberTec LN™	Dimension
A Length	81 mm
B Width	24 mm
C Height	22.6 mm
D Fiber Exit Height	13.0 mm
E Flange Height	4.5 mm

All FiberTec LN™ modules come with 1 meter connectorized PM smf pigtail output as standard. Please contact Blue Sky Research Sales if different fiber pigtail is required.

FTEC LN 532™ Ordering Information

FTEC LN-XXX-YZZZ-P-BCDE

Product Family – FTEC LN

FTEC LN = Low Noise wavelength laser system w/TEC, control, drive & stability circuits

XXX - Wavelength in nm – 532 for 532nm DPSS laser

Y - O = Wire ribbon interface, with manual trimpot power adjust

- V = Wire ribbon interface

ZZZ - Power Output (mW), e.g., 025 = 25mW or 006 = 6mW

P = Polarization Maintaining (PM) single mode fiber

B - Optical Connector: F = FC/PC, A = APC

C - Collimator choice: O = no collimator, G = Cylinder,

D – Collimator lens - M, N, P, Q see collimator specifications for details, O = no collimator lens

E – H = 3mm buffer, J = 3mm armored metal jacket, K = 900um PVC Jacket

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ISO 9001:2015 Certified
RoHS 3 Compliant

