

FIBERTEC^{II}

Fiber Coupled Diode Laser Modules

- **Ultra Compact Fiber Coupled Diode Laser Modules.**
- **Wavelengths include Violet, Blue, Green, Red, NIR.**
- **Integrated Micro-Optic Beam Shaping for High Efficiency & Stability**
- **Gaussian, Circular Diffraction Limited Beam**
- **Fully integrated temperature control and laser driver electronics**
- **Sharp edge modulation to 100 kHz for most wavelengths**



The FiberTEC^{II} Series of laser modules feature fiber coupled, high output power laser diodes with integrated drive, control and protection electronics, all in an very small size package.

The features of the new FiberTEC^{II} units include RoHs compliance, enhanced ESD protection, laser drive current monitor, a laser shutdown function, laser modulation capability and overdrive protection.

The FiberTEC^{II} module can be configured in either constant current or constant power mode of operation electronically or via a simple jumper connection. Laser output from a fiber optic pigtail optimizes beam pointing stability, produces excellent beam quality, and provides the flexibility of remote laser beam delivery. BSR's unique fiber coupled laser technology adds the benefits of high coupling efficiency of light from the diode to the fiber, this gives both high power and stable light coupling. BSR specializes in fiber-coupling visible lasers to very small core optical fibers and manufactures thousands of fiber coupled lasers every year.

The FiberTEC^{II} lasers utilize several distinct technical approaches compared to other laser diode modules. Our unique microlens approach enables stable power over time and environmental influences such as shipping shocks and vibration. This means that you never have to re-align your fiber with our lasers. The TEC stabilizes laser power output and lasing wavelength over varying operational temperatures. Power stability is better than 0.5% over any 1 hour period. Our highly integrated electronic control is entirely contained within the laser module. There is no separate control box required. You can run the lasers simply from DC power sources. Additionally you may chose to use some of the more sophisticated control features.

Custom configurations are available and include: user controllable temperature settings, various power outputs, and discrete wavelength options ranging from 405nm to 1064nm. Output options include; polarization maintaining fiber (typical extinction ratio of 100:1) and single mode or multimode fiber. Termination options include fiber connectorization or collimation optics with diameters ranging from 0.8 to 3.3 mm in diameter.

Applications

- * Analytical Instruments
- * Flow Cytometry/ Confocal Microscopy
- * Particle analysis
- * Biomedical & Medical
- * Defense & Homeland Security
- * Inspection & Metrology

Contact Information:

BLUE Sky Research * 1537 Centre Pointe Drive * Milpitas, CA 95035 * (408) 941-6068 * FAX (408)941 – 0406
www.blueskyresearch.com * email: Sales @blueskyresearch.com

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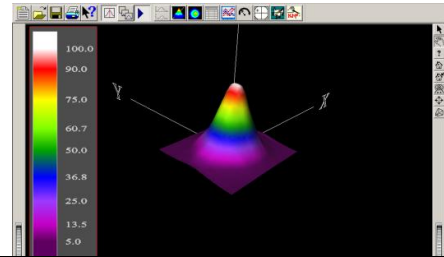
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Standard FiberTEC^{II} Products

(Call for other power and wavelength options)

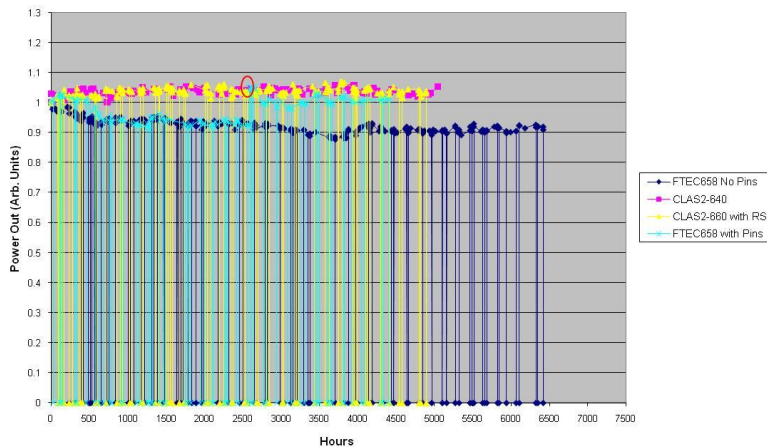


Name	FTEC2 405-25	FTEC2 440-20	FTEC2 470-10	FTEC2 488-25	FTEC2 532-20	FTEC2 635-50	FTEC2 658-60	FTEC2 785-40
Wavelength (nm)	405±5	445±5	473±5	488±5	532±1	638±3	658±5	785±5
Power * (mW)	25	20	10	25	20	50	60	40
Fiber Core Diameter (µm)	3.5	3.5	3.5	3.5	3.5	4.5	4.5	6.0
Fiber NA (typ)	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
Beam Shape (far field)	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular
Ellipticity at exit(typ)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

* Lower power devices are available. All power levels specified are minimum values set at the factory at the time the laser is shipped.

If you do not see the wavelength and power option you require please call us for availability

Modules with New Circuit in APC Mode Reliability Test
 FTEC 658 No Pins: Pout 1=61mW
 CLAS2-640: Pout 1=40mW
 CLAS2-660 with RS: Pout 1=120mW
 FTEC658 with Pins: Pout 1=63mW



Continuous Product life testing for many thousands of hours.

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Product General Specifications

Laser System Characteristics

Parameter	Specification
Wavelength Stability	$\lambda \pm 0.5\text{nm P const}$
Noise, RMS 20Hz to 2MHz	< 0.5%
Power Stability (1hrs)	< 0.5%
Power Stability (24hrs)	< 2.0%

Beam Characteristics

Parameter	Specification
Beam Diameter	see table of collimator options
Circularity	0.95 – 1.05
Bore site Accuracy	$\pm 15\text{mrad}$
Beam Divergence	Dependant on collimation optics
Beam Stability	typically < $5\mu\text{rad}/^\circ\text{C}$
Polarization	>50:1, Within 4 degrees of key

Electrical Specifications

Parameter	Specification
Input Voltage	All units 3.3V, 2A for the TEC Also 5V, 250mA for laser 635nm or higher 5V, 600mA for 532nm laser 6.5V, 250mA for laser 488nm or lower
Power Consumption	2.5W typical, 10W Max
Electrical Interface	Wires or PCB pins
Modulation- standard	10kHz (NOT for the 532nm)
High Speed	100kHz in ACC (NOT for the 532nm)

Environmental Specifications

Parameter	Specification
Storage Temperature	-20 C to 60 C
Operating Temperature	10C to 40C
Operating Humidity Range	< 70 % (Non-Condensing)

Mechanical Specifications

Parameter	Specification
Package Dimensions	See Drawing
Mounting	mount to a heat dissipative surface
Collimator	See table

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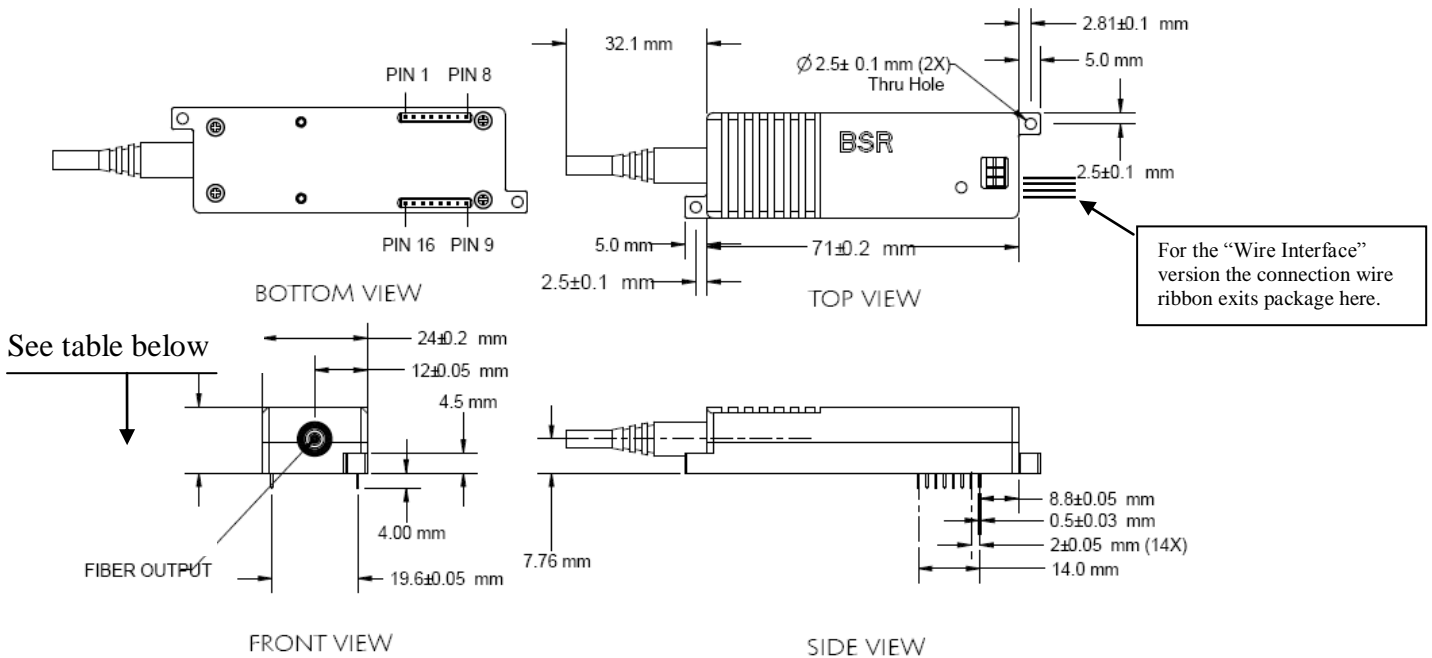
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Mechanical Layout

Lasers can be chosen to have a "PIN" electrical interface as shown in the drawing OR a simple wire interface with an 8 wire ribbon exiting the case where marked.



Package Height Table	
FTEC2-405/440/470/488	Module Height = 16.2mm Center of fiber height = 9.1mm
FTEC2-532	Module Height = 22.6 Center of fiber height = 13.0mm
FTEC2-635/658/785	Module Height = 15.0mm Center of fiber height = 7.8mm

Wire	Function
Orange	Vcc Laser
Yellow	GND Laser
Red	Vcc TEC
Brown	GND TEC
Green	V set power
Blue	LD Shutdown
Purple	PD Monitor
Grey	LD Monitor

Collimator Parameters (typical)				
Parameter	M	N	P	Q*
Beam Diameter 1/e ² (mm) ±25%	0.7 to 0.8	1.2 to 1.3	1.7 to 1.9	2.9 to 3.2
Divergence (mrad)	<1.2	<0.8	<0.5	<0.4
Size mm (Diameter x length)	11 x 17.5	11 x 17.5	11 x 17.5	11 x 25

Pin	Function
1	LD Shutdown
2	LD Monitor
3	GND (Vcc)
4	V set power
5	Temp monitor
6	APC Select
7	ACC Select
8	ACC Select
9	Vcc
10	GND Vcc
11	Temp Set Input
12	Temp in range
13	PD Monitor
14	GND VTEC
15	APC Select
16	V TEC

*cannot use with APC connector

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Part Number

FTEC2-XXX-YYZ-A-BC

Product Family – FTEC2

XXX = Wavelength – Pick from wavelength table on page 2
i.e. 635 for 635nm

Y= 0 - manual trimpot power adjustment, wires interface

V- wires interface (only option for FTEC2-532)

P - pins interface

M –High speed modulation, wires interface

H – High speed modulation, pins interface

ZZ = Power Output (mW) – Pick from table on page 2
i.e. 25 for 25mW

A = Fiber type: S for Single mode, P for Polarization Maintaining

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

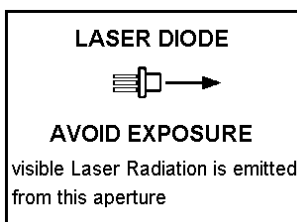
C = Collimator Choice: M, N, P, Q see table on Page 3.

“O” is no collimator

Our Sales or Application Engineers will help you determine the best product choice to meet your requirements and to help with any customization you may need.

This component does not comply with the Federal Regulations (21 CFR Subchapter1) as administered by the Center for Devices and Radiological Health. Purchaser acknowledges that his/her products must comply with these regulations before they can be sold to a customer. The output light from laser diodes is harmful to a human body even if it is invisible. Avoid looking at the output light of a laser directly or even indirectly through a lens during operation. Observance of operation should be through a TV camera or related equipment. Refer to IEC 825-1 and 21 CFR 1040.10-1040.11 as a radiation safety standard for laser products.

Blue Sky Research follows a policy of continuous improvement. Specifications are subject to change without notice.



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