

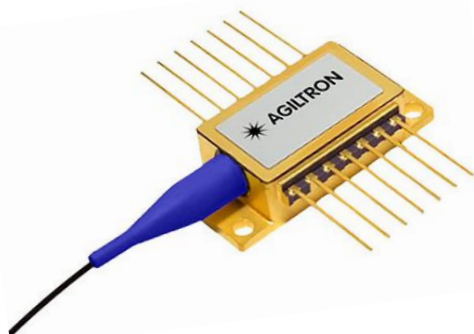
# 1420-1510nm Butterfly FBG Laser Diode



1420-1470 nm up to 600 mW, 1471-1510 nm up to 550mW, SM, PM

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The FBGD series fiber-coupled laser diodes are FBG-type lasers, ideal for distributed or discrete Raman amplification applications (1420 to 1480 nm for C- and L-band coverage). The laser integrated a fiber grating for wavelength stability. It also provides up to 600 mW of power and high thermal efficiency to enable longer links and spans, lower bit-error rate (BER), and greater wavelength coverage for high speed and ultra-long-haul (ULH) systems.

## Features

- Up to 600 mW
- Fiber Bragg Grating Stabilization
- High Thermal Efficiency
- Integrated Thermoelectric Cooler, Thermistor, and Monitor Diode
- Robust High-Power Operation (0 to 70°C)

## Applications

- High-Speed and Ultra-Long-Haul Systems
- Distributed or Discrete Raman Amplification

## Specifications

Parameter		Min	Typical	Max	Unit
Threshold Current	1420-1495 nm			220	mA
	1496-1510 nm			250	
Forward Current				3000	mA
LD Reverse Voltage				2	V
LD Reverse Current				10	μA
Wavelength		1420		1510	nm
Optical Output Power	1420-1470 nm			600	mW
	1471-1510 nm			550	
Wavelength Temperature Tunability					nm/°C
Spectral Bandwidth, RMS				2.0	nm
Polarization Extinction Ratio		13			dB
Monitor Current @ VrPD=5V		0.5		5.0	μA/mW
Monitor Dark Current @ VrPD=5V				300	nA
PD Reverse Voltage				20	V
PD Forward Current				10	mA
TEC Current				4.0	A
TEC Voltage				4.5	V
Thermistor Forward Current				5	mA
Thermistor B Constant		3700	3900	4100	K
Thermistor Resistance @25°C		9.5	10.0	10.5	kΩ
Operating Case Temperature		-5		+70	°C
Storage Temperature		-40		+75	°C
Lead Soldering Temperature				300 (<10s)	°C



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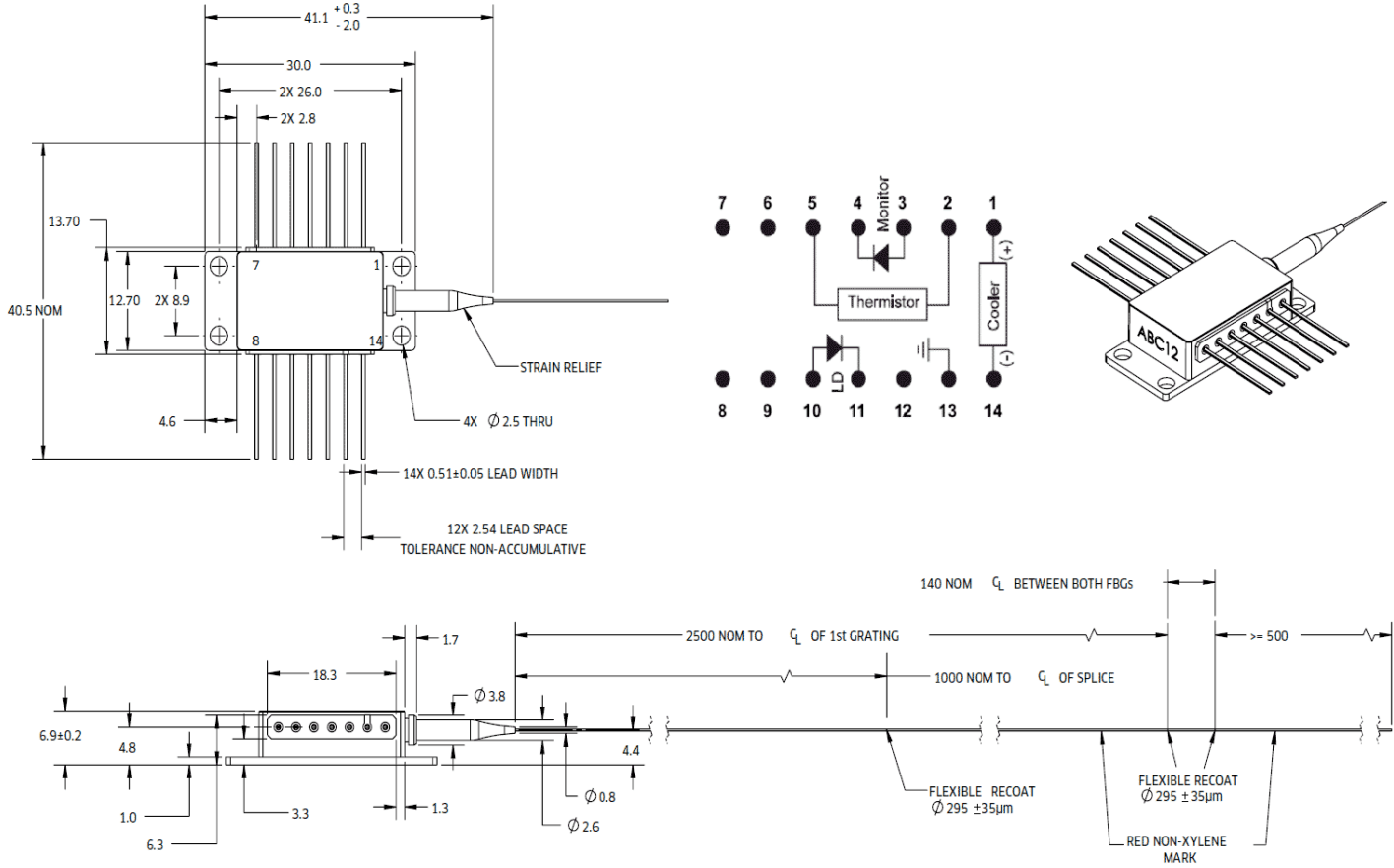
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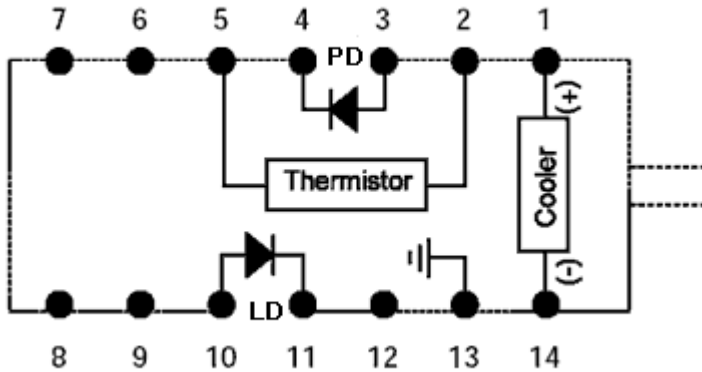
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### Mechanical Dimension (mm)



\*Product dimensions may change without notice. This is sometimes required for non-standard specifications.

### PIN Assignment



PIN	Function
1	Thermoelectric Cooler (+)
2	Thermistor
3	Monitor PD Anode (+)
4	Monitor PD Cathode (-)
5	Thermistor
6	NC
7	NC
8	NC
9	NC
10	Laser Anode (+)
11	Laser Cathode (-)
12	NC
13	Case Ground
14	Thermoelectric Cooler (-)

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### Power Consumption

Wavelength (nm)	Power (mW)	Operating Current I <sub>op</sub> BOL (mA)	Operating Voltage V <sub>op</sub>		TEC Current I <sub>TEC</sub>		TEC Voltage V <sub>TEC</sub>		Total Power Dissipation EOL (W)	Total Power Consumption	
			BOL (V)	EOL (V)	EOL (A)	EOL (V)	EOL (W)	Typical (W)			
1420 to 1470 nm included	300	1300	1.32	1.38	1.40	1.75	4.20	4.50	3.36		
	320	1365	1.35	1.41	1.45	1.80	4.43	4.75	3.51		
	340	1435	1.38	1.44	1.50	1.85	4.66	5.00	3.69		
	360	1510	1.41	1.47	1.55	1.90	5.14	5.50	3.88		
	380	1590	1.43	1.50	1.60	1.95	5.62	6.00	4.08		
	400	1670	1.46	1.53	1.65	2.00	6.10	6.50	4.31		
	420	1760	1.49	1.56	1.75	2.05	6.58	7.00	4.55		
	430	1840	1.51	1.59	1.80	2.10	7.07	7.50	4.67		
	450	1920	1.54	1.62	1.90	2.20	7.55	8.00	4.93		
	500	2150	1.62	1.71	2.10	2.40	8.50	9.00	5.66		
	550	2400	1.70	1.80	2.30	2.60	10.00	10.55	6.49		
	600	2600	1.79	1.91	2.60	2.90	11.90	12.50	7.43		
1471 to 1495nm included	300	1470	1.35	1.41	1.65	1.95	5.00	5.30	3.86		
	320	1550	1.38	1.44	1.70	2.00	5.20	5.50	4.01		
	340	1630	1.41	1.47	1.80	2.05	5.70	6.00	4.19		
	360	1720	1.44	1.50	1.85	2.10	6.10	6.50	4.38		
	380	1810	1.48	1.53	1.90	2.15	6.60	7.00	4.58		
	400	1900	1.52	1.57	2.00	2.20	7.10	7.50	4.81		
	420	2000	1.56	1.62	2.10	2.30	8.10	8.50	5.05		
	430	2050	1.58	1.66	2.15	2.40	8.60	9.00	5.17		
	450	2150	1.62	1.71	2.20	2.60	9.10	9.50	5.43		
	500	2400	1.70	1.80	2.45	2.80	10.50	11.00	6.16		
	550	2600	1.79	1.91	2.65	2.95	12.00	12.50	6.99		
	1496 to 1510 nm included	300	1650	1.42	1.48	1.82	2.06	5.9	6.2	4.4	
400		2150	1.62	1.71	2.20	2.60	9.1	9.5	5.7		
450		2420	1.71	1.81	2.47	2.82	10.85	11.3	6.6		
500		2650	1.81	1.94	2.70	2.98	12.7	13.2	7.7		

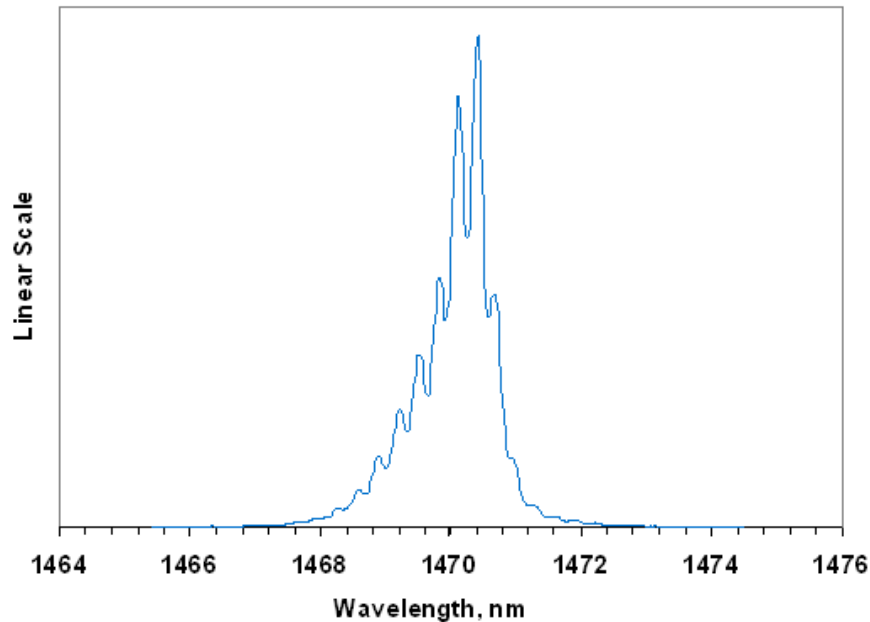
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### Typical Spectrum



### Ordering Information

Prefix	Wavelength	Output Power	Linewidth	TEC Cooling	PD	Fiber Type	Fiber Buffer	Fiber Length	Connector
FBGD-	1420-1470nm = 142 1471-1510nm = 147 Special = 0	600mW = 1 550mW = 2	2nm = 1	Yes = 2	None = 1 Yes = 2	SM28 = 1 PM1550 = 5 Special = 0	0.9mm Tube = 3 Special = 0	1.0 m = 1 Special = 0	FC/APC = 3 Special = 0

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### Benchtop Matching Laser Diode Driver



Agiltron cost-effective LDCB series benchtop control kit is designed for easy laser diode mounting and precise control. It incorporates a high-precision, low-noise auto-feedback drive electronics to ensure constant output power or a constant driving current and an integrated temperature control unit maintains optimal operating conditions. The system provides up to 1A driving current and up to 2A TEC cooling current. Each system features a front fiber output connector. The user interface includes an intuitive LCD display for independent control of output power and temperature via two front rotating knobs. The LDCB also includes a universal power supply compatible with 100 to 240 VAC. The LDCB has a built-in isolator option to prevent reflection-induced laser emissions instability. The LDCB is designed as a laser diode and TEC controller kit for customer to install laser diode. It has three types of pluggable laser mounts of butterfly, DIL, and TOCAN. The TOCAN mount contains an external TEC that maintains a constant temperature for wavelength stability.

For details please click: <https://agiltron.com/product/laser-diode-tec-controllers-benchtop-kit/>

### Turn-Key Module Matching The Laser Diode



The Agiltron LDCM series laser source module is designed for OEM applications and features all-in-one high reliability and highly stable laser output. The LDCM contains high-precision, low-noise, auto-feedback laser diode drive electronics to ensure constant output power or driving current and an integrated temperature controller that maintains optimal operating conditions. An optional fiber optical isolator can be integrated to prevent reflection-induced laser emission instability, which is essential for achieving highly stable lasers. Agiltron produces isolators from 370nm to 2600nm. The system provides up to 1A driving current and up to 2A TEC cooling current. Each unit features a single FC/APC connector output and two front rotating knobs for independent setting of laser output power and temperature. A toggle switch allows selection between constant current control mode and feedback constant output power mode.

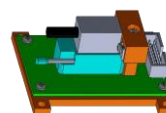
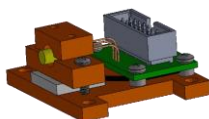
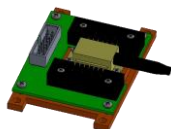
For details please click: <https://agiltron.com/product/laser-diode-tec-controllers-module/>

### Laser Driver Kit



Agiltron cost-effective LDCD series module control kit is designed for easy laser diode mounting and precise control. It incorporates a high-precision, low-noise auto-feedback drive electronics to ensure constant output power or a constant driving current and an integrated temperature control unit maintains optimal operating conditions. The system provides up to 1A driving current and up to 2A TEC cooling current. It has three types of pluggable laser mounts of butterfly, DIL, and TOCAN. The TOCAN mount contains an external TEC that maintains a constant temperature for wavelength stability. It comes with cables to connect between the mounting module to the driving module, making integration convenient.

For details please click: <https://agiltron.com/product/laser-diode-tec-controllers-compact/>



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### Caution Electrostatic Sensitivity



- Never touch laser diode and the module using hands
- Always use protections when handle a laser diode
- Recommend mounting the laser diode using an ionic gun and ESD finger cots



### Laser Safety

This product meets the appropriate standard in Title 21 of the Code of Federal Regulations (CFR). FDA/CDRH Class 1M laser product. This device has been classified with the FDA/CDRH under accession number 0220191. All versions of this laser are Class 1M laser products, tested according to IEC 60825-1:2007 / EN 60825-1:2007. An additional warning for Class 1M laser products. For diverging beams, this warning shall state that viewing the laser output with certain optical instruments (for example eye loupes, magnifiers, and microscopes) within a distance of 100 mm may pose an eye hazard. For collimated beams, this warning shall state that viewing the laser output with certain instruments designed for use at a distance (for example telescopes and binoculars) may pose an eye hazard.

Wavelength = 1.3/1.5  $\mu$ m.

Maximum power = 30 mW.



\*Caution - Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

\*IEC is a registered trademark of the International Electrotechnical Commission.