

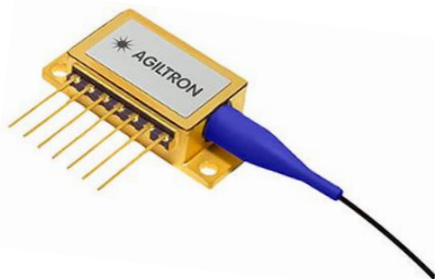
830nm Fiber Coupled MM Butterfly Laser

50/125μm fiber, multimode, 2W, TEC



DATASHEET

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The FCML series of Fiber Coupled Multimode Butterfly Laser features high power output of 2W through a multimode 50/125 fiber. It is designed for high-stability performance with an integrated power monitor and thermoelectric (TEC) cooler ensure reliable and stable output.

Due to their high sensitivity to electrostatic discharge, warranty coverage applies only to fully metal covered modules the benchtops, which include proper protection. Other versions of the lasers and photodetectors are not covered by any warranty. Please use them with great caution.

Features

- Compact design
- High stability
- Excellent reliability

Applications

- Medical application
- Spectrum analysis
- Scientific research



Specifications

Parameter	Min	Typical	Max	Unit
Wavelength		830		nm
Operating Power		2		W
Operating Current ^[1]		2.1	2.5	A
Operating Voltage		1.9	2.2	V
Threshold Current		300	500	mA
Slope Efficiency		1		W/A
PD Parameter		<2000		μA
Thermistor (25°C)		10%±5/3930		kΩ/β
TEC Max Current		2.5		A
TEC Max Voltage		6.3		V
Fiber Core Diameter		50		μm
Fiber Cladding Diameter		125		μm
Fiber Coating Diameter		250		μm
Fiber Length		100±10		cm
Numerical Aperture		0.22		
Connector		SMA905		
Operating Temperature (min/max)		-10/50		°C
Operating Relative Humidity (min/max)		75		%
Storage Temperature (min/max)		-40/80		°C
Storage Relative Humidity		90		%
Lead Soldering Temperature		250(10Sec.)		°C

Notes:

[1]. Please note that CW lasers may be damaged by excessive driver current or switching transients

[2]. Device degradation accelerates with increased temperature

* Data is base on CW operation at 25°C

Rev 11/26/25

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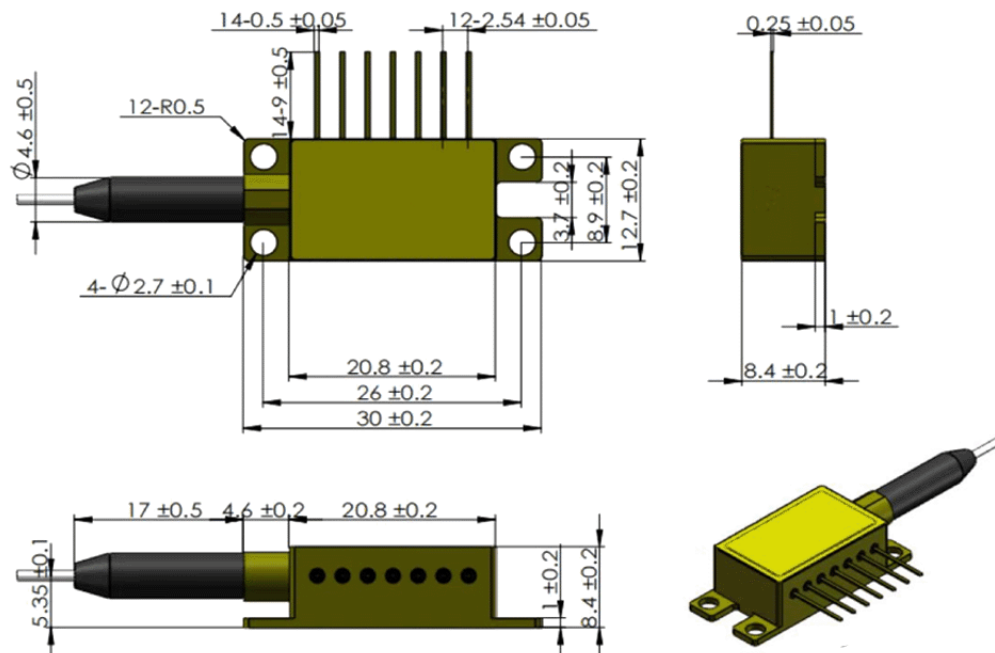
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Mechanical Dimension (mm)



Notes:

1. Mechanical reference only.
2. Mounting and/or thermal sinking solution must be sufficient to maintain device within operational specifications. Use of a thermal pad between package and heat sink is advised.
3. A properly tuned TEC controller must be used to ensure the device remains within operational limits.
4. Device is ESD sensitive. Handling precautions are required to ensure device meets specifications. Please visit our website for safe handling information.
5. Connector pins are plated gold over nickel. Solder at max 250°C for $\leq 5s$ with an ESD safe soldering tool.
6. Fiber-coupled packages are subject to fiber bend radius and end face cleaning information.
7. Please visit our website for fiber and connector options.

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

PIN Assignment

PIN	Function
1	Thermistor -
2	Thermistor +
3	Laser Cathode (-)
4	Laser Anode (+)
5	NC
6	Thermoelectric Cooler (+)
7	Thermoelectric Cooler (-)

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Typical Spectrum

Ordering Information (Part Number)

	83	2	1	2	2	M	3	1	S
Prefix	Wavelength	Output Power	Linewidth	TEC Cooling	PD	Fiber Type	Fiber Buffer	Fiber Length	Connector ^[1]
FCML-	830nm = 83	2W = 2	3nm = 1	Yes = 2	None = 1 Yes = 2	50/125 = M Special = 0	0.9mm Tube = 3 Special = 0	1.0 m = 1 Special = 0	SMA = S Special = 0

[1]. The default connector configuration uses fiber with 0.9 mm buffer protection. The connector cannot be installed directly onto bare fiber because the bare fiber is prone to damage during shipping. However, the connector can be assembled on bare fiber if a 3 cm protective loose tube is added for reinforcement. The customer may remove this protective tube after testing. The optical power handling of a standard connector is less than 0.5 W for SMF-28 fiber and decreases further for smaller-core fibers.

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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.

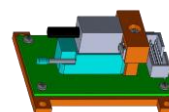
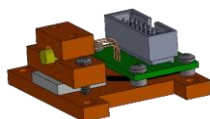
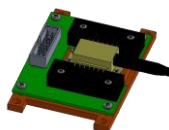
For details please click: <https://agiltron.com/product/laser-diode-tec-controllers-module/>

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 µm.

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.

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