

# Fiber Coupled VCSEL Laser Diode 808nm

SM, PM , TEC, PD Monitor



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## Features

- Single Longitudinal & Transverse Mode
- Low Wavelength Drift
- TEC
- Power Monitor
- Modulation Bandwidth >100MHz

## Applications

- Distance Sensing
- Gas Sensing
- Eye Tracking Detection
- FTIR Spectroscopy
- Spectroscopic Sensors
- Interferometry

The FCVC is a fiber-coupled, vertically-emitting, single-mode diode laser based on a semiconductor quantum-well configuration. The diode chip is housed in a TOCAN package, featuring TEC cooling and a power monitoring photodetector. Wavelength tuning can be achieved through laser current and temperature adjustments. Our 808nm single mode VCSEL is designed for high-speed, high-performance communication applications. All of our laser products are Telcordia GR-468 qualified and comply with RoHS Directives.

## Specifications

Parameter	Min	Typical	Max	Unit
Optical Power Output	2		5	mW
Threshold Current	0.5	0.8	1.1	mA
Forward Current		3.2		mA
Slope Efficiency		0.83		W/A
Peak Wavelength	800	808	816	nm
Spectral bandwidth (FWHM)		100		MHz
SMSR		25		dB
Laser Forward Voltage		2.0	2.4	V
Power Conversion Efficiency		32		%
Series Resistance		88		$\Omega$
Wavelength Temp. Drift			0.065	nm/ $^{\circ}$ C
Wavelength tuning over current	0.2	0.3	0.5	nm/mA
Rise time		80		ps
Fall time		80		ps
Thermal resistance	9.7	10.0	10.3	KW
Beta Value		3930		K
TEC Voltage			0.51	V
TEC Current			0.96	A
TEC Efficiency			0.29	W
Soldering Temperature			260(10s)	$^{\circ}$ C
Operating Temperature	-40		70	
Case Operating Temperature	-40		105	$^{\circ}$ C
Storage Temperature	-40		125	$^{\circ}$ C
Soldering Temperature		260(10s)		$^{\circ}$ C
Reverse Voltage		5		V
Maximum Continuous Current		12		mA
ESD exposure (Human body)		2-4k (Class 2)		V
Moisture sensitivity level		3		

### Note:

1. Stresses greater than those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or other conditions above those indicated in the operations section for extended periods of time may affect reliability.
2. In its maximum rating diode laser operation could damage its performance or cause potential safety hazard such as equipment failure.
3. Electrostatic discharge is the main reason for the laser fault of the diode. Take effective precautions against ESD. When dealing with laser diodes, use the wrist strap, grounding work surface and strict antistatic technology.

**Warning:** The device can be damaged by a spike in applying voltage. Do not touch by hand or use a regular power supply. The device mounted on PCB is a cost-effective OEM module for professional system integration only, not intended for laboratory use, which be a protected turn-key boxed package. Information is believed to be accurate and is subject to change without notice. Some specific combinations of options may not be available. The user assumes all risks and liability in connection with the use of a product or its application.

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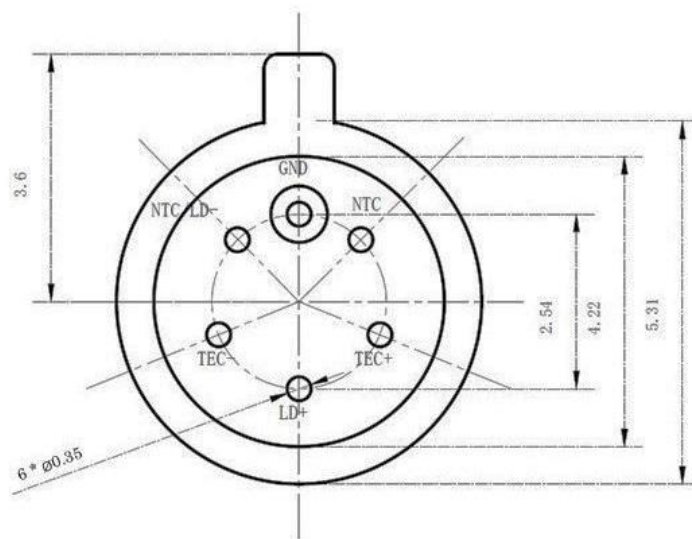
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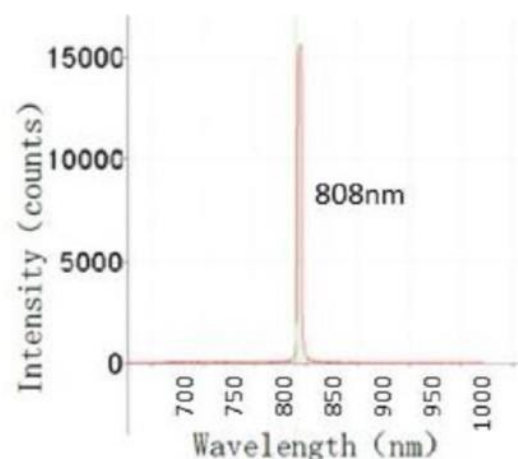
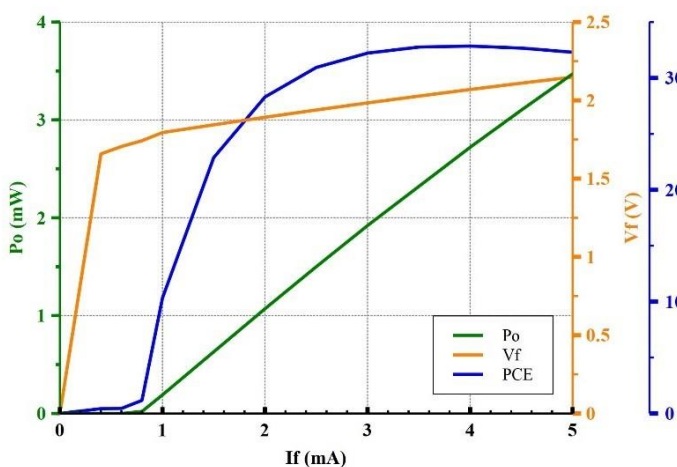
### Mechanical Dimensions and Electrical Pin Layout (mm)



bottom view

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

### Typical Performance (LIV curve and wavelength)



Note:

1. LIV graph was measured at 25 °C (left); power output, voltage and power conversion efficiency
2. Variation trend with changed operating temperature (right, normalized).
3. Forward Voltage (VF) measurement allowance is  $\pm 0.1$  V.
4. Peak Wavelength ( $\lambda_P$ ) measurement allowance is  $\pm 1.5$  nm.
5. Others measurement allowance is  $\pm 10\%$ .

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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.

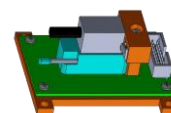
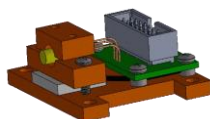
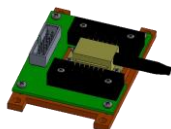
For details please click: <https://agiltron.com/product/laser-diode-tec-controllers-module/>

## 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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### Ordering Information

Prefix	Wavelength	Output Power	Linewidth	TEC Cooling	Package	Fiber Type	Fiber Buffer	Fiber Length	Connector
FCVC-	808nm = 8	0.3mW = A 0.5mW = B 1mW = C	2nm = 1 Special = 0	Yes = 1	TOCAN = 2	SM780 = S PM780 = P	900µm tube = 3	1m = 1	FC/APC=3

### 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 Q220191. 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.