# 520nm Fiber Coupled FP Laser

## SMF, PMF, up to 20mW, 2nm

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The FPLD series fiber-coupled laser diodes are designed with a GaAs quantum well structure. These diodes feature a built-in photodiode for precise monitoring and feedback control of the laser's output power. Housed in standard TO packages, these diodes are pigtailed to a 1-meter long single-mode fiber terminated with an FC/APC connector. Each unit undergoes rigorous testing prior to shipment to ensure reliability.

The laser cavity is highly sensitive to light reflection. We have an isolator to block reflections, consequently providing emission stability. Additionally, we offer a cost-effective, high-performance feedback laser diode controller/driver kit that maintains a constant and adjustable output power, along with an externally cooled co-axial laser mounting fixture to stabilize the output wavelength. It is available in a module or benchtop with an integrated isolator.

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

- 520nm Diode Laser
- 3um SM, PM Fiber
- Coaxial or B82 Package
- High Stability
- High Reliability

## Applications

- Medical Laser Treatment
- Biotechnology
- Others

## Specifications

| Parameter | Min | Typical | Max | Unit |
|---|---|---|---|---|
| Threshold Current | - | 45 | 85 | mA |
| Operating Current | - | 220 | 240 | mA |
| Operating Voltage | - | 7.5 | 8.0 | V |
| Optical Output Power | - | 20 | - | mW |
| Center Wavelength@25°C | 510 | 520 | 530 | nm |
| Wavelength-Temperature Dependence | 0.06 | | 0.1 | nm/°C |
| Spectral Width | - | - | 2 | nm |
| Polarization Extinction Ratio (PM) [1] | - | 13 | 15 | dB |
| PD Current (SM) | | 100 | | μA |
| Reverse Voltage | - | - | 2.0 | V |
| Fiber Core | | 3 | | μm |
| Fiber Type | SM, PM | | | |
| Package Style | Coaxial or B82 | | | |
| Fiber Connector | FC/APC (PM), FC/SC/SMA905 (SM) | | | |
| Recommend Operating Temperature | 25 | | | °C |
| Operating Case Temperature [2] | -20 | - | 60 | °C |
| Storage Temperature | -40 | - | 85 | °C |
| Lead Soldering Temperature | - | - | 260(10s) | °C |

[1]. High Polarization Extinction Ratio (PER) Version Laser Module is also available, please contact us.

[2]. Because laser operational lifespan is directly tied to junction temperature, we offer two thermal management options: a copper block for passive heat dissipation ($79) or active external TEC cooling integrated directly into our laser driver. We recommend operating the laser below 30°C.

RoHS COMPLIANT

**Note:** The specifications provided are for general applications with a cost-effective approach. If you need to narrow or expand the tolerance, coverage, limit, or qualifications, please [click this link]:

Rev 08/03/26

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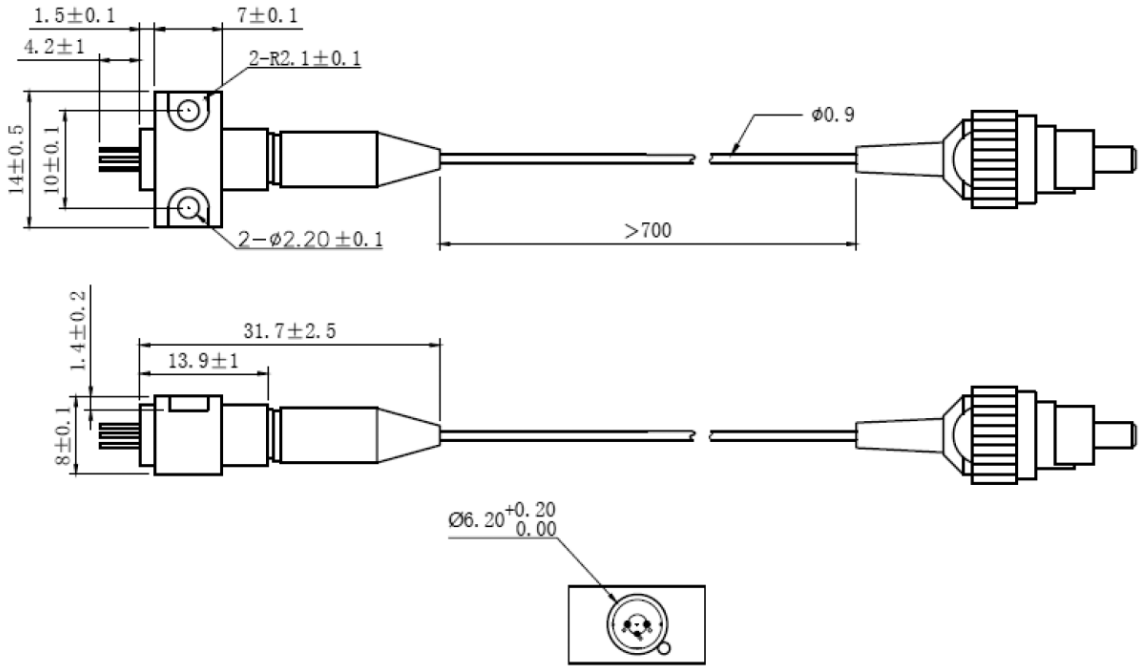
## Mechanical Dimension (mm)

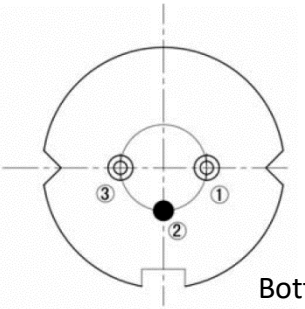
### Coaxial Package View:

### B82 Package View:




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

## PIN Assignment




Bottom View

| PIN | Function |
|---|---|
| 1 | LD(-) |
| 2 | LD(+) & PD(-) |
| 3 | PD(+) |



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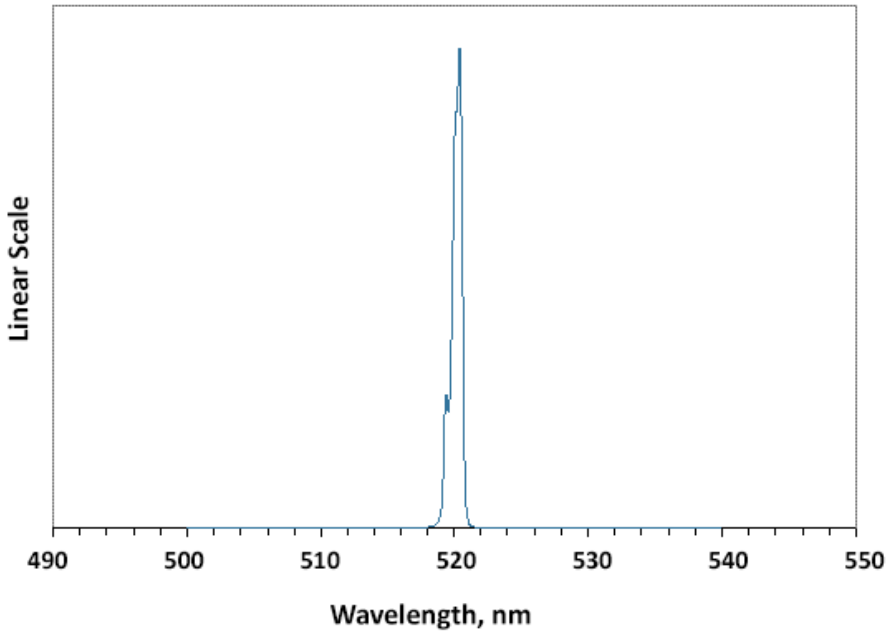
### Typical Spectrum

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### Ordering Information (Part Number)

| | ☐☐☐☐ | ☐☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
|---|---|---|---|---|---|---|---|
| **Prefix** | **Wavelength** | **Power** | **Package** | **Fiber Type** | **Fiber Buffer** | **Fiber Length** | **Connector** [2] |
| **FPLD-** | 520nm = 0520 | 20mW = 20 | Coaxial = C<br>Vacuum [1] = S<br>B82 = B | SM400 = 4<br>SM450 = 3<br>PM460 = B<br>Special = 0 | 0.9mm Tube = 3<br>Special = 0 | 0.5m = 2<br>0.25m = 1<br>1.0 m = 3<br>1.5 m = 5<br>Special = 0 | Non = 1<br>FC/APC = 3<br>FC/PC = 2<br>SC/PC = 4<br>SC/APC = 5<br>LC/PC = 7<br>LC/UPC = U<br>Special = 0 |

**Note**:

[1]. Vacuum and Space applicable

[2]. 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

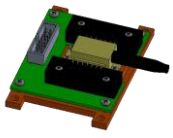
The Agiltron LDCM series laser source module is designed for OEM applications and features all-in-one high reliability and highly stable laser output. The LDCM contains high-precision, low-noise, auto-feedback laser diode drive electronics to ensure constant output power or driving current and an integrated 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.

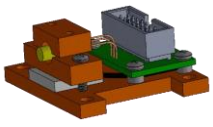
**For details please click**: https://agiltron.com/product/laser-diode-tec-controllers-module/

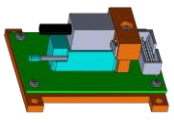
### Laser Driver Kit

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

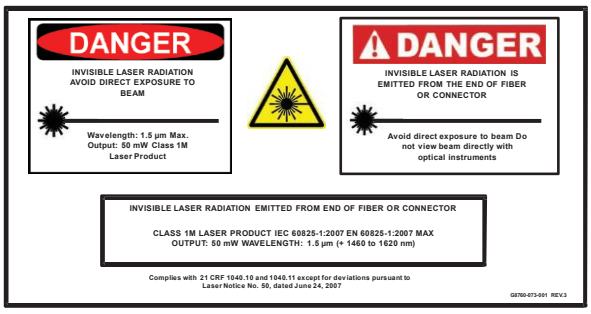
- Never touch laser diode and the module using hands
- Always use protections when handle a laser diode
- Recommend mounting the laser diode using an ionic gun and ESD finger cots

## 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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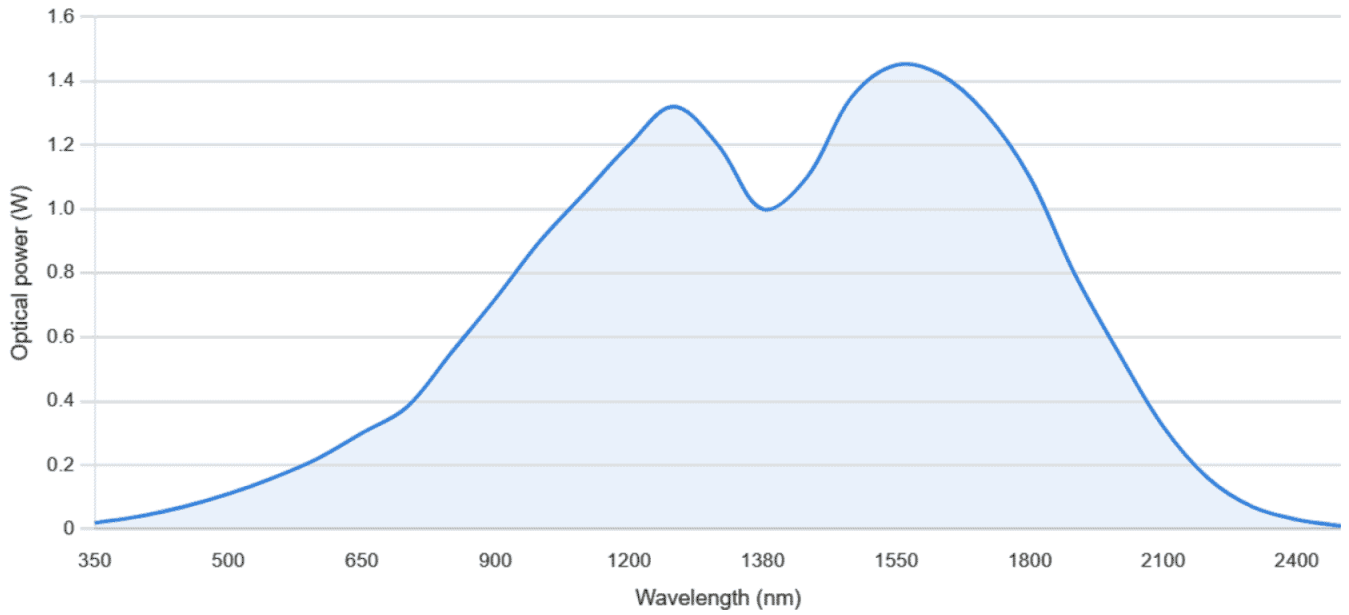
### Regular Single Mode / Polarization Maintaining Fiber Optical Power Handing vs Wavelength




Single mode fiber optical power is limited by nonlinear effects in addition to absorption that increase loss and generate heat. The curve shows the approximate safe CW power envelope for standard single-mode fiber. Actual limits depend on fiber design, core size, length, and laser characteristics. Specialty fibers can significantly increase the power limit.

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