Uncooled Multimode Laser Diode Module

976nm, 4.5nm linewidth, 510W, 200μm fiber

DATASHEET

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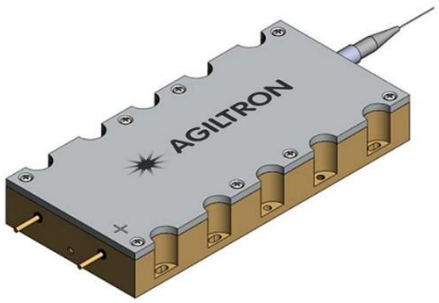

The diode laser employs professional coupling technology, that enjoy multiple advantages, e.g., compact design, stable output power, high power, high efficiency and convenient packaging. These laser diode modules can provide solutions for fiber laser applications and direct suppliers.

The performance and aging tests have been performed upon the production line to guarantee reliable, stable and long lifetime of products. To provide customers with high-quality, high cost performance products is the company's goal.

Features

- Based on a single fire spot laser module
- High output power 510W
- High stability
- 0.22NA 200μm core Double-clad fiber
- 2-Pin sealed package
- Standard central wavelength 976nm
- RoHS compliance

Applications

- Medical
- Direct application
- Pump source
- Material processing

Specifications *

Parameter	Min	Typical	Max	Unit
Output Power		510		W
Centre Wavelength	973	976	979	nm
Spectral Width (FWHM)		4.5	6	nm
Threshold Current		1.5	2.0	A
Operating Current		27.0	30.0	A
Operating Voltage		38.5	40.0	V
Conversion Efficiency		50		%
95% Power			0.175	NA
Wavelength shift vs. Temperature		0.35		nm/℃
Slop Efficiency		20.0		W/A
Storage Temperature	-30	25	70	℃
Operating Temperature	15	25	35	℃
Fiber Bend Radius	50			mm
Core Diameter		200		μm
Cladding Diameter		220		μm
Buffer Diameter		320		μm
1064ISO (1050-1150 nm)		30		dB
Numeric Aperture	0.2	0.22	0.24	
Fiber length	1.0	1.5		M
Protection Tube	0.9		1.5	mm
Fiber Connector		CO		

* Functional parameters are tested on condition that the heat sink temperature is 25 degree, contact resistance of the component and the heat sink is smaller than 1CM² K/W.

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]:
*The contact resistance between the diode and the heat sink is less than 1cm2 K/W.

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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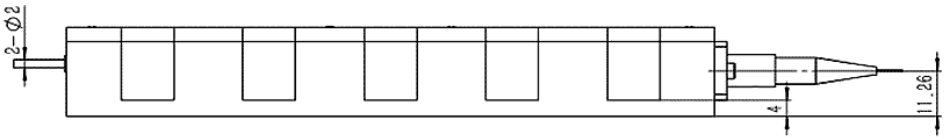
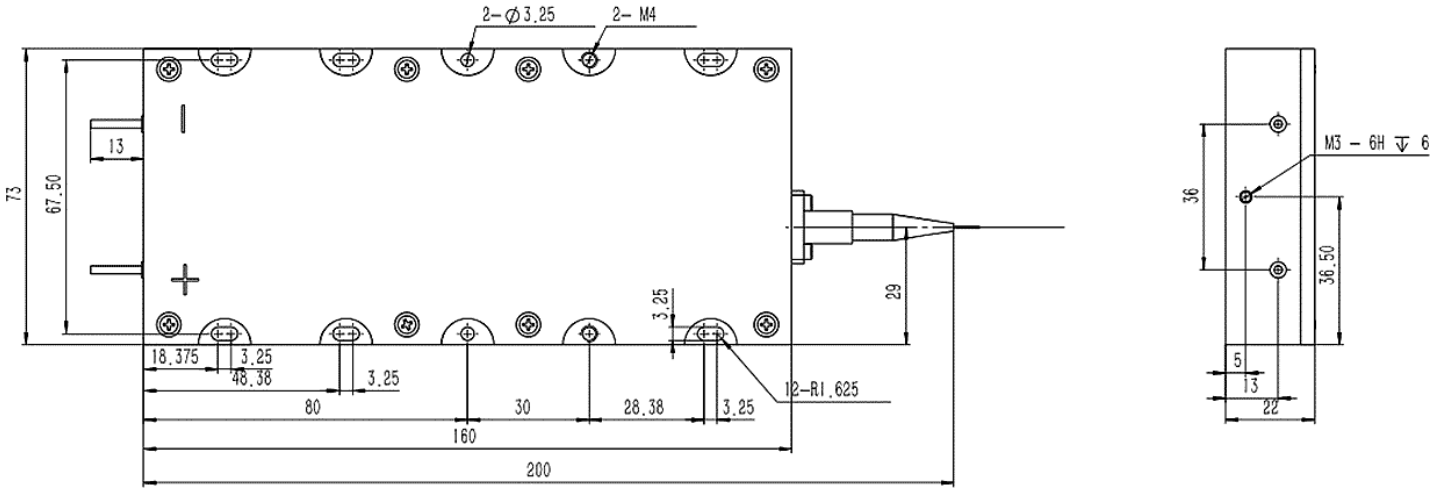
Mechanical Dimensions (mm) 200W





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

Ordering Information

	976	51	C	2	3	2	1
Prefix	**Wavelength**	**Output Power**	**Package**	**Fiber Type**	**Fiber Buffer**	**Fiber Length**	**Connector**
FCMH-	976nm = 976	3W = 03 10W = 01 20W = 02 50W = 05 100W = 10 200W = 20 250W = 25 300W = 30 320W = 32 340W = 34 510W = 51 550W = 55 900W = 90		200 µm = 2 400 µm = 4 135 µm = 1	0.9mm Tube = 1 3mm Tube = 3 Armor = A	0.5m = 1 1m = 2 1.5m = 3	Non = 1 SMA = 2

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Instructions

- Avoid eyes or skin exposure to direct or scattered radiation;
- ESD protection is required for transportation, storage and operation; short-circuit protection between pins is required for transportation and storage.
- Please connect pins by solder when operating current is over 6A; solder point should be close to the root of pins with a max soldering temperature at 260℃ and a duration less than 10 seconds;
- Drive constant current power supply by laser and avoid surge while working;
- Operate under rated current and rated power;
- Good heat dissipation is required;
- Please test with coated fiber in order to avoid chip damage by reducing back reflection;
- Operating temperature is 15℃ ~ 35℃;
- Storage temperature is -30℃ ~ +70℃.

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Laser Safety

- Laser Safety: Avoid direct exposure to the fiber output or the collimated beam along its optical axis while the device is in operation. Always wear proper laser safety eyewear.
- Maximum Ratings: Absolute maximum ratings should only be applied to the device for short periods. Extended exposure or operation beyond these ratings may result in damage or reduced reliability. Ensure power supplies are configured so that the maximum peak optical power is not exceeded.
- Thermal Management: A proper heatsink must be used with the device to ensure sufficient heat dissipation. Thermal conductance to the heatsink must be maintained for reliable operation.
- Operating Conditions: The device is an open-heatsink diode laser, suitable for operation in a cleanroom atmosphere or dust-protected housing. Ensure controlled operating temperature and humidity to avoid condensation on laser facets. Contamination or contact with the laser facets must be avoided.
- ESD Protection: Electrostatic discharge (ESD) is a leading cause of product failure. Use wrist straps, grounded work surfaces, and strict antistatic measures when handling the device.
- Regulatory Compliance: This product complies with Title 21 of the Code of Federal Regulations (CFR) and is classified as an FDA/CDRH Class 1M laser product under accession number 0220191. It has been tested according to IEC 60825-1:2007 / EN 60825-1:2007 standards. For Class 1M lasers, viewing the laser output with certain optical instruments (such as eye loupes, magnifiers, or microscopes) within 100 mm may pose an eye hazard. Similarly, viewing collimated beams with instruments designed for distance (e.g., telescopes or binoculars) may also pose an eye hazard.

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

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