ADVANCED PHOTONIC SCIENCES

445nm Fiber-Coupled Blue Laser (200W)
Datasheet

Version 1.0.1

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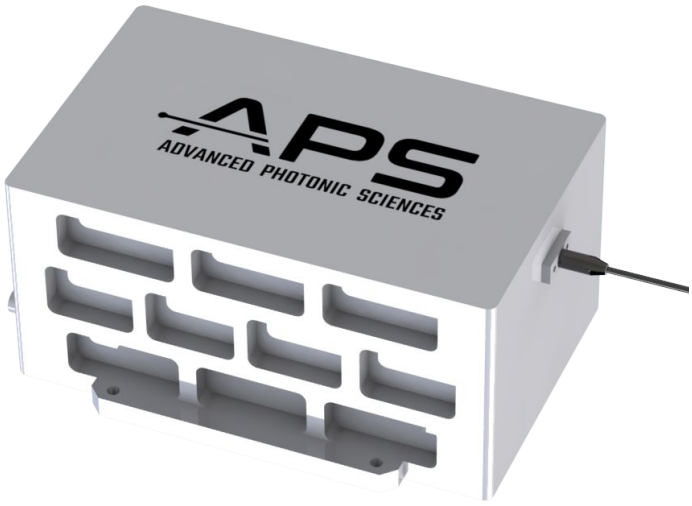
Contents



1 Overview

Advanced Photonic Sciences' now provides a collection of high-power fiber-coupled Blue (445nm) laser modules. This datasheet contains information on the 200W power device.

Applications

1. Material Processing
2. 3D Printing

Features

1. 445nm Wavelength
2. 200W Output Power
3. 105µm Fiber Core Diameter
4. 0.22 Numerical Aperture (NA)
5. Internally Water Cooled

Not Included: Thermoelectric Water Chiller, Power Supply

*For plug-and-play applications, please explore our Integrated Laser System (ILS) product line.

2 Specifications

Specification (20°C)		Symbol	Unit	200W		
				Min	Typical	Max
Optical (1)	Total CW Output Power	P_{bol} (4)	W	200	-	-
	Number of Submodules	pcs	-	-	4	-
	Submodule CW Output Power	P_o	W	-	50	-
	Center Wavelength	o	nm		445±20	
	Spectral Width (FWHM)	$\Delta\lambda$	nm	-	6	-
	Wavelength Shift with Temp.	$\Delta\lambda/\Delta T$	nm/°C	-	0.1	-
	Wavelength Shift with Current	$\Delta\lambda/\Delta A$	nm/A	-	1	-
Electrical	Electrical-to-Optical Efficiency	η_{E-O}	%	-	30	-
	Operating Current	I_{bol}	A	-	3	3.5
	Threshold Current	I_{th}	A	-	0.35	-
	Operating Voltage (single module)	V_{op}	V	-	52	60
	Slope Efficiency (single module)	η_s	W/A	-	18.5	-
	Power Supply Mode	-	-	-	4 modules	-
Fiber	Core Diameter	D_{core}	um		105	
	Numerical Aperture	NA	-		0.22	
	Estimated M2 Value	M^2	-		141	
	Min Bending Radius	R_{min}	mm	50	-	
	Fiber Length	L	m		5.5	
	Fiber Termination	-	-		SMA 905	
Thermistor	-	R_t	KΩ/β(25°C)		10±3%/3450	
Others	ESD	V_{esd}	V	-	-	500
	Storage Temperature (2)	T_{st}	°C	-20		70
	Lead Soldering Temperature	T_{ls}	°C	-	-	260
	Lead Soldering Time	t	sec	-	-	10
	Operating Temperature (3)	T_{op}	°C	15	-	30
	Relative Humidity	RH	%	15	-	75

(1) Data measured under operation output at 200W @ 20℃.
(2) A non-condensing environment is required for operation and storage.
(3) Operating temperature defined by the thermistor. Acceptable operating range is 15℃~30℃,but performance may vary.
(4) Product delivery qualification standards: Current beginning of life ≤ 3.5A, Power beginning of life ≥ 200W;
(5) Within the warranty period, the product is considered qualified with Lend of Life = 3.5A, Pend of Life ≤ 160W.

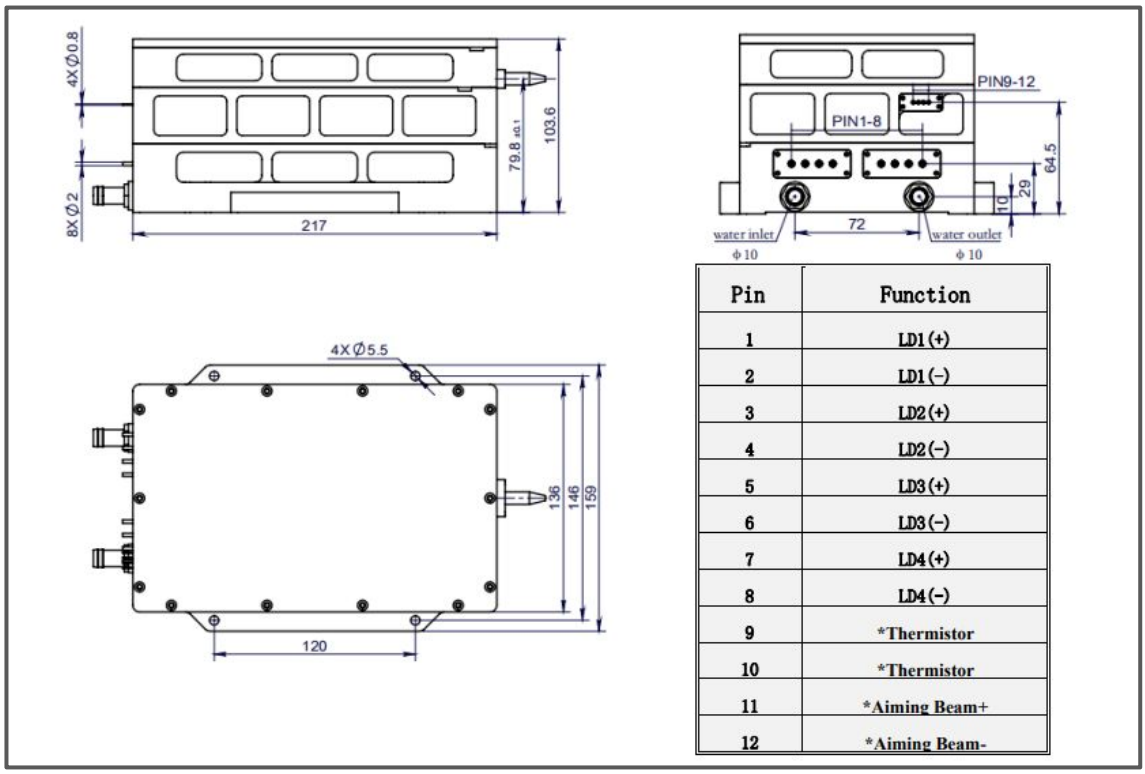
3 Operating Notes

1. Avoid eye and skin exposure to direct radiation during operation.
2. ESD precautions must be taken during storage, transportation and operation.
3. Short-circuit is required between pins during storage and transportation.
4. Please connect pins to wires by solder instead of using socket when operation current is higher than 6A. Soldering point should be close to the root of the pins. Soldering temperature should be lower than 260℃ and time shorter than 10 second.
5. Make sure the fiber output end is properly cleaned before operation of laser. Follow safety protocols to avoid injury when handling and cutting the fiber.
6. Use constant current power supply to avoid surge current during operation.
7. Laser diode must be used according to the specifications.
8. Laser diode must operate with adequate cooling (5L/min)
9. Operation temperature ranges from 15℃ to 30℃.
10. Storage temperature ranges from -20℃ to +70℃.

Declaration: Information and Specifications contained herein are deemed to be reliable and accurate. APS reserves the right to change, alter or modify the design and specifications of these products at any time without notice

4 Drawings and Dimensions

4.1 Product Dimensions



Pin	Function
1	LD1(+)
2	LD1(-)
3	LD2(+)
4	LD2(-)
5	LD3(+)
6	LD3(-)
7	LD4(+)
8	LD4(-)
9	*Thermistor
10	*Thermistor
11	*Aiming Beam+
12	*Aiming Beam-

Figure 1: Device Package

5 Packaging and Handling

This product is assembled before packaging and shipping.

Product Weight: Approx. 10 lbs

Support

Please contact Advanced Photonic Sciences for technical support.

www.apslasers.com

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