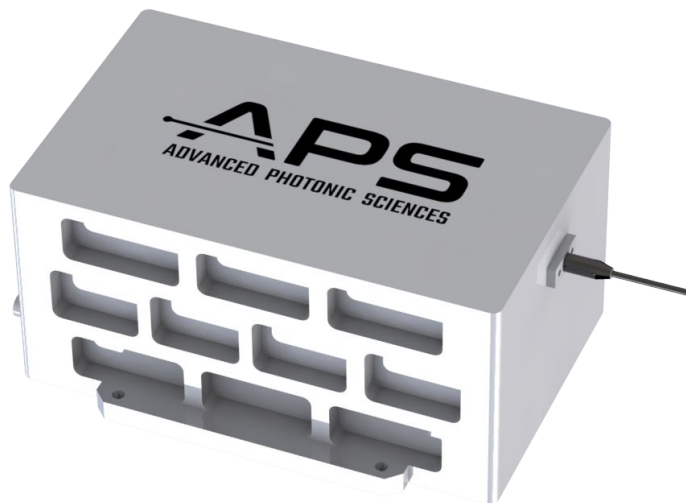


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## **445nm Fiber-Coupled Blue Laser (100W)** *Datasheet*

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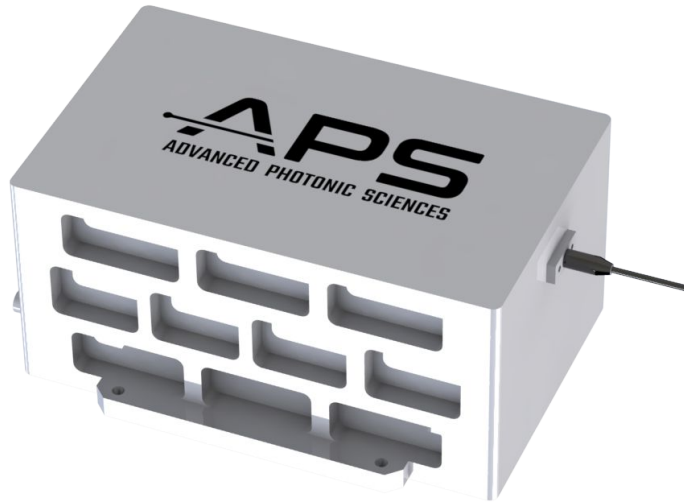
Version 1.0.1



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## **1 Overview**

Advanced Photonic Sciences' now provides a collection of high-power fiber-coupled Blue (445nm) laser modules. This datasheet contains information on the 100W power device.

### **Applications**

1. Material Processing
2. 3D Printing

### **Features**

1. 445nm Wavelength
2. 100W Output Power
3. 105 $\mu$ m 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	100W		
				Min	Typical	Max
<b>Optical</b> (1)	Total CW Output Power	$P_{bol}$ (4)	W	100	-	-
	Number of Submodules	pcs	-	-	2	-
	Submodule CW Output Power	$P_o$	W	-	50	-
	Center Wavelength	$\lambda_o$	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	-
<b>Electrical</b>	Electrical-to-Optical Efficiency	$\eta_{E-O}$	%	-	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)	$\eta_s$	W/A	-	18.5	-
	Power Supply Mode	-	-	-	2 modules	-
<b>Fiber</b>	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	-
<b>Thermistor</b>	-	$R_t$	KΩ/β(25°C)	-	10±3%/3450	-
<b>Others</b>	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 100W @ 20°C.

(2) A non-condensing environment is required for operation and storage.

(3) Operating temperature defined by the thermistor. Acceptable operating range is 15°C~30°C, but performance may vary.

(4) Product delivery qualification standards: Current beginning of life ≤ 3.5A, Power beginning of life ≥ 100W;

(5) Within the warranty period, the product is considered qualified with lend of life =3.5A, Pend of life≤80W.

### 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°C 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°C to 30°C.
10. Storage temperature ranges from -20°C to +70°C.



**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

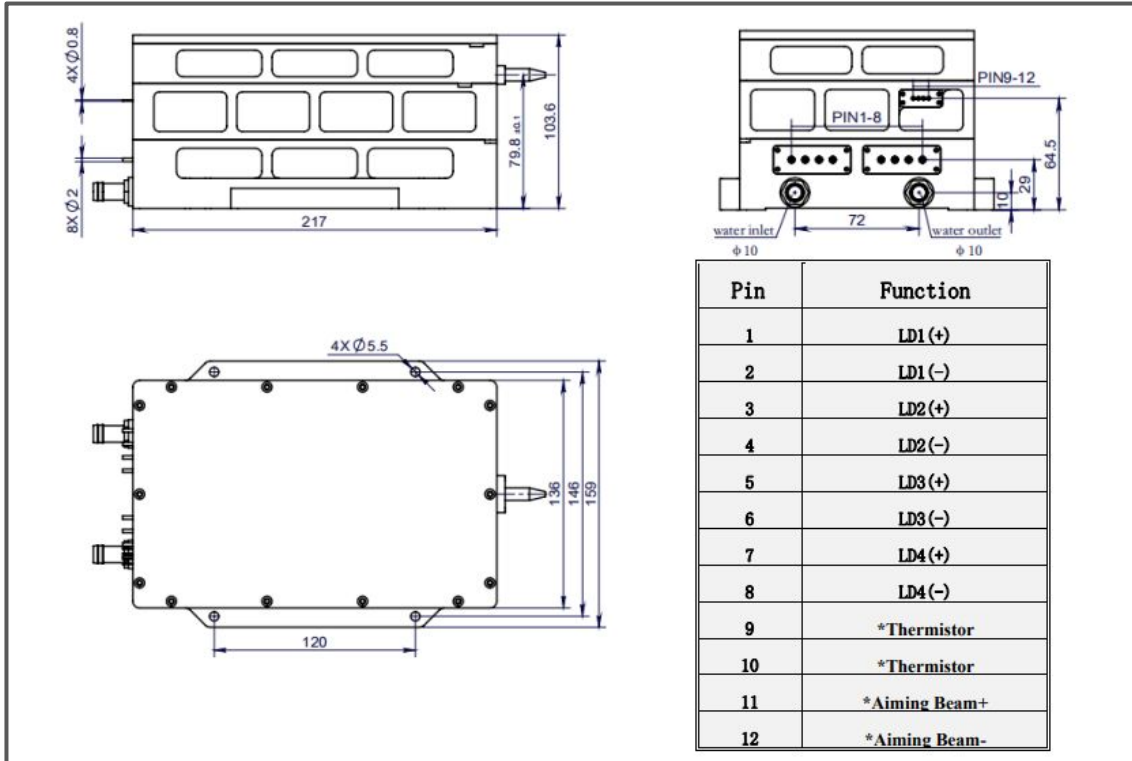


Figure 1: Device Package

## **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](http://www.apslasers.com)



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