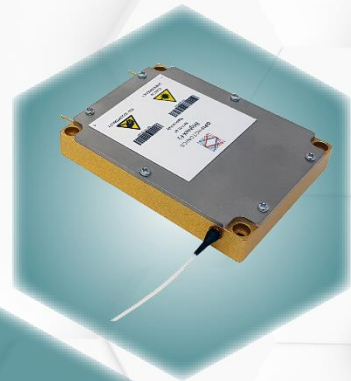


# OPIPHOTONICS

## HIGH-POWER LASER DIODES



BrighteX Line  
Fiber coupled  
laser diodes



BrightboX Line  
Laser diode  
systems



High-Power  
Laser Switch  
and Coupler



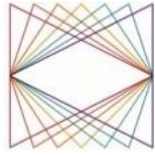
High-Power  
Laser Collimator  
and Optics

## HIGH-POWER LASER BEAM DELIVERY SYSTEMS



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BRIGHTEX-P2

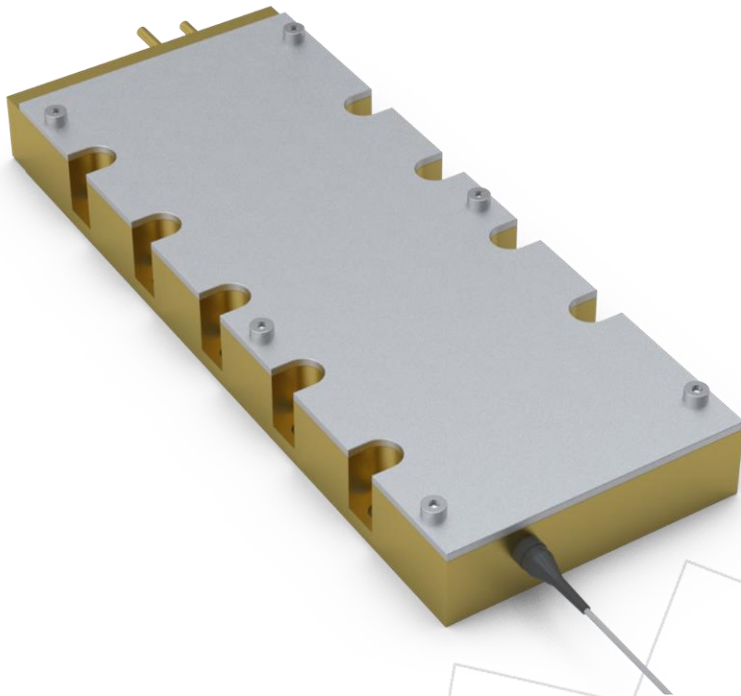


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# BRIGHTEX-P2

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HIGH-POWER FIBER COUPLED LASER DIODES



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## 1 BrighteX-P2 overview

OPI BrighteX-P2 platform is the natural evolution of the P1 set, where polarisation multiplexing is exploited to double the fiber coupled power.

List of products:

<b>Model</b>	<b>Wavelength</b>	<b>-</b>	<b>Power</b>	<b>-</b>	<b>Fiber Core</b>	<b>-</b>	<b>Page</b>
Bx-P2-808-120W-200-00	808 nm		120 W		200 $\mu$ m		4
Bx-P2-915-200W-135-00	915 nm		200 W		135 $\mu$ m		5
Bx-P2-915-300W-200-00	915 nm		300 W		200 $\mu$ m		6

## 2 Bx-P2-808-120W-200:

### Applications

- DPSS laser pumping
- Material processing

### Features

- 120W output power
- 200 $\mu$ m/0.22NA delivery fiber
- 1030nm feedback protection
- 95% of power within 0.15 beam NA

### 2.1 Specifications

	Parameter	Unit	Minimum	Typical	Maximum
Electro-optical characteristics (1)	CW output power	W	120		
	Operating current	A			10
	Operating voltage	V			40
	Wall plug efficiency	%	35	45	
	Beam NA at 95% of power	-			0.15
	Central wavelength (2)	nm	803	808	812
	Wavelength temperature gradient	nm/ $^{\circ}$ C		0.3	
	Back-reflection isolation at 1020-1100nm	dB	30		
Fiber characteristics (3)	Fiber core diameter	$\mu$ m		200	
	Fiber cladding diameter	$\mu$ m		220	
	Fiber coating diameter	$\mu$ m		320	
	Fiber NA	-	0.20	0.22	0.24
	Fiber loose tubing diameter	mm	0.7		1.1
	Pigtail length	m	1.5		2
	Loose tubing length	mm	150		160
	Fiber bend radius	mm	30		
	Pigtail termination	-		None	
Maximum ratings (4)	Operating temperature	$^{\circ}$ C	15		30
	Relative humidity	%	35		60
	Storage temperature	$^{\circ}$ C	-20		85
	Lead soldering time	S			10
	Lead soldering temperature	$^{\circ}$ C			270

### Notes

- (1) Values at 20 $^{\circ}$ C device base temperature
- (2) Other wavelengths available upon request.
- (3) Other options (fiber type, length, jackets, termination etc....) available upon request

Exceeding absolute maximum ratings may lead to device degraded performance, shorter lifetime or sudden failure



### 3 Bx-P2-915-200W-135:

#### Applications

- Fiber laser pumping
- Material processing

#### Features

- 200W output power
- 135µm/0.22NA delivery fiber
- 1050nm feedback protection
- 95% of power within 0.15 beam NA

### 3.1 Specifications

	Parameter	Unit	Minimum	Typical	Maximum
Electro-optical characteristics (1)	CW output power	W	200		
	Operating current	A			13
	Operating voltage	V			38
	Wall plug efficiency	%	50	56	
	Beam NA at 95% of power	-			0.15
	Central wavelength (2)	nm	905	915	925
	Wavelength temperature gradient	nm/°C		0.3	
	Back-reflection isolation at 1050-1100nm	dB	30		
Fiber characteristics (3)	Fiber core diameter	µm		135	
	Fiber cladding diameter	µm		155	
	Fiber coating diameter	µm		320	
	Fiber NA	-	0.20	0.22	0.24
	Fiber loose tubing diameter	mm	0.7		1.1
	Pigtail length	m	1.5		2
	Loose tubing length	mm	150		160
	Fiber bend radius	mm	30		
	Pigtail termination	-	None		
Maximum ratings (4)	Operating temperature	°C	15		30
	Relative humidity	%	35		60
	Storage temperature	°C	-20		85
	Lead soldering time	S			10
	Lead soldering temperature	°C			270

#### Notes

- (1) Values at 20°C device base temperature
- (2) Other wavelengths available upon request.
- (3) Other options (fiber type, length, jackets, termination etc....) available upon request

Exceeding absolute maximum ratings may lead to device degraded performance, shorter lifetime or sudden failure

#### 4 Bx-P2-915-300W-200:

##### Applications

- Fiber laser pumping
- Material processing

##### Features

- 300W output power
- 200 $\mu$ m/0.22NA delivery fiber
- 1050nm feedback protection
- 95% of power within 0.15 beam NA

#### 4.1 Specifications

	Parameter	Unit	Minimum	Typical	Maximum
Electro-optical characteristics (1)	CW output power	W	300		
	Operating current	A			20
	Operating voltage	V			40
	Wall plug efficiency	%	50	56	
	Beam NA at 95% of power	-			0.15
	Central wavelength (2)	nm	905	915	925
	Wavelength temperature gradient	nm/°C		0.3	
	Back-reflection isolation at 1050-1100nm	dB	30		
Fiber characteristics (3)	Fiber core diameter	$\mu$ m		200	
	Fiber cladding diameter	$\mu$ m		220	
	Fiber coating diameter	$\mu$ m		320	
	Fiber NA	-	0.20	0.22	0.24
	Fiber loose tubing diameter	mm	0.7		1.1
	Pigtail length	m	1.5		2
	Loose tubing length	mm	150		160
	Fiber bend radius	mm	30		
	Pigtail termination	-	None		
Maximum ratings (4)	Operating temperature	°C	15		30
	Relative humidity	%	35		60
	Storage temperature	°C	-20		85
	Lead soldering time	S			10
	Lead soldering temperature	°C			270

##### Notes

- (4) Values at 20°C device base temperature
- (5) Other wavelengths available upon request.
- (6) Other options (fiber type, length, jackets, termination etc....) available upon request

Exceeding absolute maximum ratings may lead to device degraded performance, shorter lifetime or sudden failure

## 5 Technical drawings

### Beta version

#### Drawings available only on specific customer request and under internal approval

All dimensions are in millimetres.

## 6 Pinout

The BrighteX-P1 pinout is the following:

- A – Laser Anode (+)
- C – Laser Cathode (-)



## 7 Customization

The BrighteX line of high power laser diode is conceived as a platform, so customizations are easily implemented. Both minor and major changes are possible.

Minor customizations are available also on the standard part numbers and involve the following items and are tracked by the “CC” suffix in the extended part number:

- Fiber pigtail length
- Fiber pigtail termination (SMA or other connectors)
- Loose tubing length
- Package temperature sensor

Major customizations will apply to the components used inside the module and will change:

- Emission wavelength (“XXX” field of the extended part number)
- Output power (“YYY” field of the extended part number)
- Delivery fiber (“ZZZ” field of the extended part number)

## 8 Ordering information

Extended part number: Bx-P2-XXX-YYYW-ZZZ-CC

Model	Wavelength	-	Power	-	Fiber Core	-	Customization
Bx-P2-808-120W-200-00	808 nm		120 W		200 μm		00 (standard) or 01-99
Bx-P2-915-200W-135-00	915 nm		200 W		135 μm		00 (standard) or 01-99
Bx-P2-915-300W-200-00	915 nm		300 W		200 μm		00 (standard) or 01-99

## 9 General safety and operating precautions

### 9.1 Electrostatic discharge (ESD)

ESD is the primary cause of device sudden failure. Use good ESD practice (wrist straps, dissipative working surfaces, air ionizers etc...) whenever handling the device.

### 9.2 Operating instructions

Laser diodes may be damaged by excessive bias current or transient current spikes. Use proper electronics to drive the device.

Contact OPI Photonics for driving electronics recommendation and reference design solutions.

### 9.3 Laser safety

Extremely **dangerous invisible laser radiation** is emitted by this laser diode when in operation. Laser radiation can be emitted by the laser only when connected to a power supply and current is flowing through the connecting pins.

Wear the proper protecting devices selected for the laser beam power and wavelength. Apply all safety measures in the area where the device is operated (warning signals, controlled access, safety interlocks).

This device is not certified for 21CFR 1040.10 or IEC 60825-1:2014, since it is meant for system integration. Certification is to be performed at system level.

#### BrigtheX Line:



#### BrightboX Line:



# SUMMARY

## 10 Summary

1	BrighteX-P2 overview .....	3
2	Bx-P2-808-120W-200: .....	4
2.1	Specifications .....	4
3	Bx-P2-915-200W-135: .....	5
3.1	Specifications .....	5
4	Bx-P2-915-300W-200: .....	6
4.1	Specifications .....	6
5	Technical drawings .....	7
6	Pinout .....	7
7	Customization .....	8
8	Ordering information .....	8
9	General safety and operating precautions .....	9
9.1	Electrostatic discharge (ESD) .....	9
9.2	Operating instructions .....	9
9.3	Laser safety .....	9
10	Summary .....	10