



## LuOcean P2

### LU1470\_9xxCyyy Diode Laser Mixed Wavelength up to 120W@9xxnm and 25W@1470nm



#### Description:

The LUxxxCyyy LuOcean P2 series offers within one module selectable power at two different wavelengths with optical output power up to 120W@9xxnm and up to 25W@1470nm in c.w. operation from a 400µm core diameter, NA 0.22 fiber, respectively. The device consists of multiple single emitter laser diodes in a rugged industrial package. Long lifetime is ensured due to laser diode facet passivation, extensive burn-in testing and screening of the individual single emitters. The performance makes it a valuable tool for various applications.

#### Features & Functions:

- Wavelength 9xx/1470nm
- Burn-in tested single emitters
- Fiber: 200/400 µm
- SMA905
- Sealed housing
- Temperature sensor

#### Options:

- Power monitor
- Fiber sensor
- Red pilot laser
- Water cooling plate

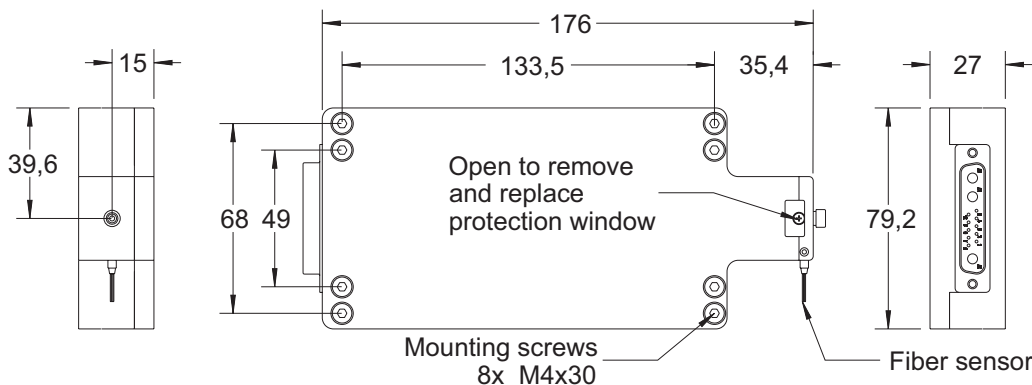
#### Benefits:

- Small foot print
- Ultra long lifetime
- Cost effective
- High efficiency
- Protective exit window option

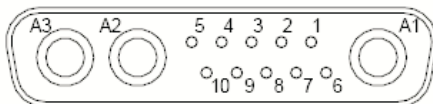
#### Applications:

- Medical treatment

#### Module Drawing (Dimensions in mm)



13w3 male Power and Signal Connector



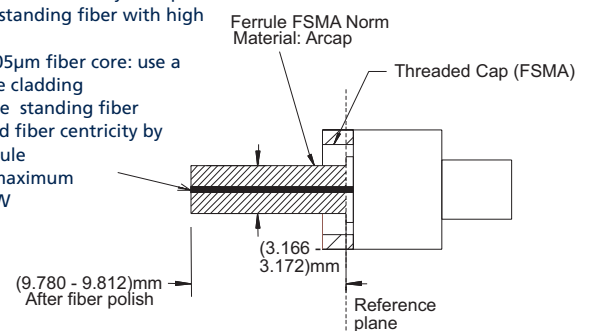
Pin	Configuration
1	9xxnm LM35 Signal or NTC of PT100/1000
2	9xxnm LM35 (5V) or NTC or PT100/100
3	Monitor Diode Cathode (5-12)V *
4	LM35 (GND1) Monitor Diode (GND1)
5	1470nm LM35 Signal or NTC or PT100/1000
6	Monitor Diode Signal 2 *
7	Monitor Diode Signal 1 *
8	Pilot Laser (GND2)
9	1470nm LM35 5V or NTC or PT100/1000
10	Pilot Laser (3-5)V *
A1	1470nm Laser Diode (+)
A2	Laser Diode common cathode (-)
A3	9xxnm Laser Diode (+)

\* Optional

#### F-SMA Connector

##### Strict Recommendations

- (1) Use transparent and high temperature fiber epoxy (e.g. Epotek ND353)
- (2) 105µm fiber core max. excentricity +/- 5µm  
>105µm fiber core max. excentricity +/-10µm
- (3) Above 60W: use free standing fiber with high power connector
- (4) Below 60W and <=105µm fiber core: use a free standing or large cladding 105µm/600µm not free standing fiber
- (5) Check always for good fiber centricity by turning the fiber ferrule between 0°-180° to maximum output power at < 5W



Your ideas are welcome.

## Electrical and Optical Characteristics (Typical laser specifications at 25°C)

Parameter	Conditions	Min	Typ	Max	Unit
<b>Version 1: 9xx + 1470 nm</b>					
Output power (1)	P <sub>op</sub> 9xxnm (c.w.)		35		W
	P <sub>op</sub> 1470nm (c.w.)		20		W
Peak wavelength (at P <sub>op</sub> )	λ <sub>peak</sub> @ 9xxnm		9xx +/-10		nm
	λ <sub>peak</sub> @ 1470nm		1470 +/-10		nm
Forward current / voltage	I <sub>op</sub> / V <sub>op</sub> @ 9xxnm		13.5 / 8		A / V
	I <sub>op</sub> / V <sub>op</sub> @ 1470nm		12 / 8.2		A / V
Threshold current	I <sub>th</sub> @ 9xxnm		1.3		A
	I <sub>th</sub> @ 1470nm		1.1		A
Fiber core diameter			200		µm
<b>Version 2: 9xx + 1470 nm</b>					
Output power (1)	P <sub>op</sub> 9xxnm (c.w.)		120		W
	P <sub>op</sub> 1470nm (c.w.)		25		W
Peak wavelength (at P <sub>op</sub> )	λ <sub>peak</sub> @ 9xxnm		9xx +/-10		nm
	λ <sub>peak</sub> @ 1470nm		1470 +/-10		nm
Forward current / voltage	I <sub>op</sub> / V <sub>op</sub> @ 9xxnm		23 / 11		A / V
	I <sub>op</sub> / V <sub>op</sub> @ 1470nm		12 / 8.2		A / V
Threshold current	I <sub>th</sub> @ 9xxnm		1.7		A
	I <sub>th</sub> @ 1470nm		1.1		A
Fiber core diameter			400		µm
<b>Other General Features</b>					
Conversion efficiency	@ 9xxnm		43		%
	@ 1470nm		20		%
Spectral shift with temp.	λ <sub>T</sub> Shift 9xxnm		0.3		nm / K
Spectral shift with temp.	λ <sub>T</sub> Shift 1470nm		0.6		nm / K
Fiber centricity			<10		µm
Numerical Aperture	NA		0.22		
Fiber connector type			SMA905		
Temperature sensor	LM35, NTC (10k) or PT100/1000 (please specify)				

### Options

#### Option 1: Red Pilot laser

C.w. output power		1-3		mW
Peak wavelength		635 +/-10		nm
Operating voltage		3-5		V
Current consumption		100		mA

#### Option 2: water cooling base plate

Water temperature	T	<18		°C
Minimum water flux (industrial water, no DI-water)		1		l/min / (100) W

#### Option 3: Fiber sensor PNP IFRM 03P1503/Q or NPN IFRM 03N1503/Q

#### Remarks:

- (1) Power is measured ex fiber according to given fiber specifications including precision and measures of fiber and ferrules for uncoated fiber facets
- (2) Required flatness of customer heat sink 0.05mm over 200mm

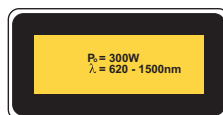
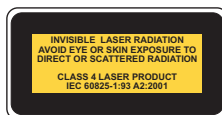
### Important Note

Read and carefully follow operating manual instructions. Especially, whenever power supply is switched on or off, always disconnect from laser module. See manual for details. Uncontrolled on / off switching may cause spikes and result in fatal device damage as well as over temperature, hard shocks or dirt on the sealing window behind the fiber flange.

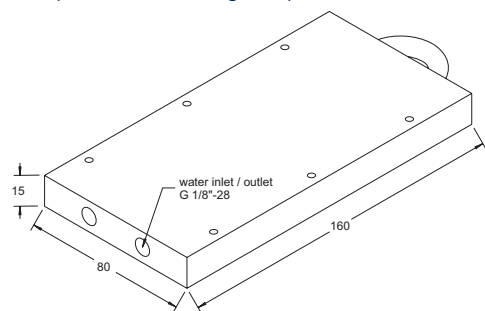
## Absolute Maximum Ratings / General Informations

Parameter	Symbol	Min	Max	Unit
Storage Temperature	T <sub>max</sub>	-15	+55	°C
Operating Temp. c.w.-operation	T <sub>op.c.w.</sub>	+5	+30	°C
Condensing Atmosphere		90	%	
Recommended Thermal Heatsink Resistance			0.03	K/W
LD Reverse Voltage	V <sub>R,max</sub>		10	V
Max fiber flange temperature			45	°C
Mounting Screws / metric		8 x M4 x 30		mm
Max. back reflection of intrinsic pump wavelength output power			10	%
Max. back reflection any other than λ of this diode laser (2)			10	µJ

## User Safety



Option 2 water cooling base plate:



Your ideas are welcome.