

## LuOcean M2

**LU1470A or LU1530A Diode Laser**  
**Up to 250 W c.w. Operating Power**



### Description:

The **LuOcean M2** 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. Its performance makes it a valuable tool for various applications.

### Features & Functions:

- Wavelength 1470 or 1530 nm
- Burn-in tested single emitters
- SMA connector
- Sealed housing
- Internal cooling
- Temperature sensor
- Power monitor

### Options:

- Up to 2 fiber sensors
- Up to 2 temperature sensors
- Red pilot laser
- Replaceable protection window
- D80 connector (uncooled)

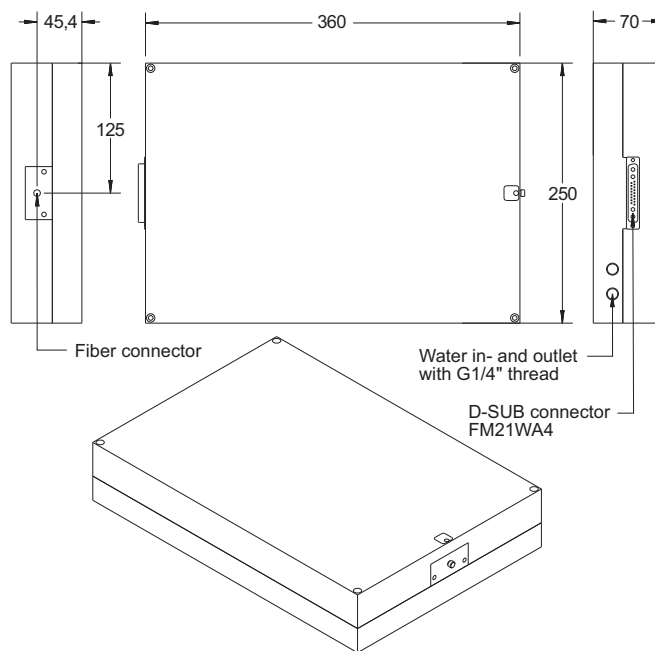
### Benefits:

- No DI water required
- Low current

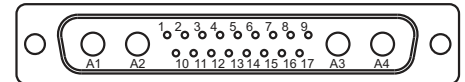
### Applications:

- Medical treatment
- Material processing

### Module Drawing (Dimensions in mm)



### Connector



### Pin Connections

1	V <sub>s</sub> =12 V for Fiber sensor* / Monitor diode cathode (12 V)
2	GND for Fiber sensor*/LM35*/Monitor diode
3	Fiber sensor 1 signal*
4	Fiber sensor 2 signal*
5	NTC 1 or LM35 5 V or PT100/1000
6	NTC 1 signal or LM35 signal or PT100/1000
7	NTC 2 or LM35 5 V or PT100/1000 *
8	NTC 2 signal or LM35 signal or PT100/1000 *
9	Monitor diode 1 signal
10	Monitor diode 2 signal*
11	Pilot laser (3-5 V)*
12	Pilot laser (GND)*
13	Pilot laser power control (0-5 V)*
14	NTC 3 or LM35 5 V or PT100/1000 *
15	NTC 3 signal or LM35 signal or PT100/1000 *
16/17	N. C.
A1	Laser diode GND (-)
A2	N. C.
A3	N. C.
A4	Laser diode (+)
* = optional	

**Your ideas are welcome.**

1

USA  
Laser Components USA, Inc.  
Tel: +1 603 821 – 7040  
Fax: +1 603 821 – 7041  
info@laser-components.com  
[www.laser-components.com](http://www.laser-components.com)

France  
Laser Components S.A.S.  
Tel: +33 1 39 59 52 25  
Fax: +33 1 39 59 53 50  
info@lasercomponents.fr  
[www.lasercomponents.fr](http://www.lasercomponents.fr)

### Electrical and Optical Characteristics

Typical laser specifications at 25 °C\*

Parameter	Conditions	Symbol	90 W in 200 µm	250 W in 400 µm	Unit
Output power (1)	c.w.	$P_{op}$	90	250	W
Operating current	c.w.	$I_{op}$	13.5	19	A
Absolut max. forward current	c.w.	$I_{max}$	14	19.5	A
Peak wavelength	LU1470A		1470 ± 20	1470 ± 20	nm
	LU1530A		1530 ± 15	1530 ± 15	nm
Spectral width (FWHM)		$\Delta\lambda$	10	10	nm
Threshold current		$I_{th}$	1.3	2.0	A
Operating voltage		$V_f$	35	64	V
Conversion efficiency			19	20	%
Wavelength tuning vs. temperature		$\lambda / T$	0.7	0.7	nm/K
Wavelength tuning vs. operating current		$\lambda / I$	2	1	nm/A
Weight		$m$	ca. 8100	ca. 8100	g
Output fiber (SMA905 or D80 connector on module)					
Core diameter of output fiber		$d_{core}$	200	400	µm
Fiber centricity			10	10	µm
Numerical aperture		NA	0.22	0.22	
Power monitor		PD	10-30	10-30	mV/W
Temperature sensor			LM35, NTC (10k) or PT100/1000 (please specify)		
Thermal resistance (bottom to temp. sensor)		$R_{th}$	0.013	0.013	K/W
Water temperature (recommended)		T	<18°	<15°	°C
Min. recommended water flux (industrial water)			2.7	3.5	l/min
<b>Options</b>					
Red pilot laser					
C.w. output power			1	1	mW
Peak wavelength			650 ± 15	650 ± 15	nm
Operating voltage			3-5	3-5	V
Fiber sensor					
Fiber sensor signal			12	12	V
Fiber sensor type PNP IFRM03P1503/Q (normally open) or with open collector output (please specify)					

**Remarks:**

\* taken at internal temperature sensor

(1) Power is measured ex fiber according to given fiber specifications including precision and measures of fiber and ferrules for uncoated fiber facets

Rule of thumb: Power ex fiber decreases up to 4% every 10 °C temperature increase at internal temp. sensor, lifetime decreases by about factor of two every 10 °C

Calculation example of necessary water temperature for 100 W output power:

Thermal load = Output power \* (1/conversion efficiency - 1), Water temperature = internal temperature - thermal load \* Thermal resistance

Example: Output power: 100 W, Conversion efficiency: 0.2, Thermal resistance: 0.01 K/W, Internal temperature: 25 °C

Thermal load = 100 W \* (1/0.2 - 1) = 400 W, Water temperature = 25 °C - 400 W \* 0.01 K/W = 19 °C, (water flux must be adjusted accordingly)

### Absolute Maximum Ratings / General Informations

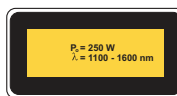
Parameter	Symbol	Min	Max	Unit
Storage temperature	$T_{max}$	0	+50	°C
Operating temp.* c.w.-operation **	$T_{op.c.w.}$	+15	+35	°C
Humidity / non condensing atmosphere			90	%
LD reverse voltage	$V_R, max.$		10	V
Max fiber flange temperature			45	°C
Mounting screws / metric			M6	

**Remarks:**

\* taken at internal temperature sensor

\*\* we recommend to operate the laser above dew point

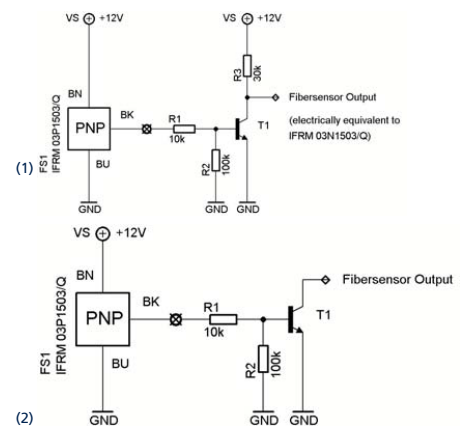
### User Safety



**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.

**Option fiber sensor signal:**



Your ideas are welcome.