



LuOcean M4

Factsheet

The Lumics LuOcean M4 diode laser series offers OEM integrators an excellent product to manufacture state-of-the-art end-user laser systems. The easy integration and safe use of these laser components in combination with several accessories and features promotes cost efficiency in both development and manufacturing.

The Lumics LuOcean M4 modules are equipped with single emitters, which have a long service life. The modules can be water cooled and are well protected from external influences by the housing. Users can connect D80 or SMA fibers to the modules and benefit from a small footprint.

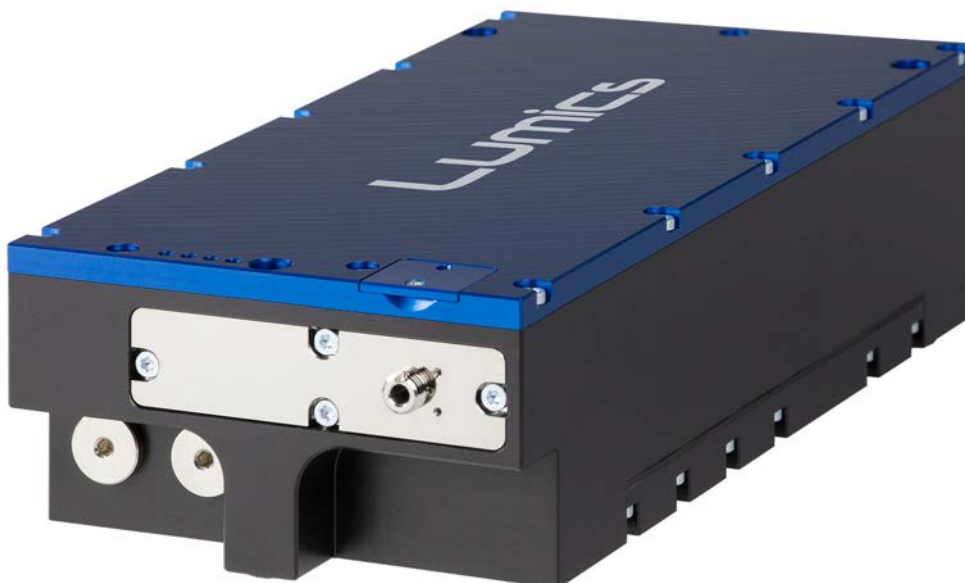
Applications for the M4 laser modules can be found in numerous medical fields, such as dermatology and surgery, as well as in the industry for material processing.

FEATURES & FUNCTIONS

- 670 / 760 / 785 / 808 / 890 / 915 / 940 / 975 / 1064 / 1470 / 1940 nm as single and multi-wavelength module
- 200 / 400 / 600 / 1000 μ m NA 0.22 fiber
- Emitter electrically in series
- Temperature and humidity sensors

OPTIONS

- Power monitor (up to two)
- Fiber monitor
- User-exchangeable exit window
- Red or green pilot beam
- Controllable pilot intensity
- OEM LD driver & chiller
- Compatible fibers



Lumics

We manufacture diode lasers.

Optical and Electrical Characteristics for Single Wavelength Modules (Typical specification)

Wavelength [nm]	Fiber core diameter [μm]	Max Power [W]	I _{op} [A]	V _{op} [V]	Fiber core diameter [μm]	Max Power [W]	I _{op} [A]	V _{op} [V]	Fiber core diameter [μm]	Max Power [W]	I _{op} [A]	V _{op} [V]	Fiber core diameter [μm]	Max Power [W]	I _{op} [A]	V _{op} [V]
670*	200	42	3.5	2 x 32	400	64	6	2 x 34	600	170	12	2 x 30	1000	280	20	2 x 30
760*									600	270	17	2 x 32				
785*	200	160	9	2 x 30	400	On request			600	270	17	2 x 32	1000	350	24	2 x 34
808*	200	160	9	2 x 30	400	240	14	2 x 30	600	270	17	2 x 32				
890*	200	On request							600	On request						
915*					400	On request			600	On request						
940	200	280	15	2 x 25	400	410	25	2 x 25	600	480	27	2 x 25				
975*	200	280	15	2 x 25	400	410	25	2 x 25	600	480	27	2 x 25				
1064	200	230	15	2 x 27	400	350	24	2 x 27	600	400	26	2 x 27				
1470	200	100	14	2 x 22	400	150	20	2 x 22								
1940	200	33	8	2 x 18	400	45	11	2 x 18								

*For these modules additional NRE costs may apply. Please contact your Sales representative for more information.
Indicated power levels for wavelengths 760 - 1064nm can be achieved using a fiber with AR coated end cap.

Optical Characteristics for Dual / Triple WL Modules (Other Variants & Options available)

Fiber core diameter [μm]	Wavelength 1 [nm]	Max Power Wavelength 1 [W]	Wavelength 2 [nm]	Max Power Wavelength 2 [W]	Wavelength 3 [nm]	Max Power Wavelength 3 [W]	Total Power [W]
400	670	30	1064	170			200
600*	760	150	1064	200			350
200	940	145	975	145			290
400	940	225	975	225			450
600	940	270	975	270			540
400	975	220	1470	70			290
200	1470	10	1940	30			40
400	1470	75	1940	45			120
400	940	225	975	225	1010	225	675
600	940	270	975	270	1010	270	810

*For these modules additional NRE costs may apply. Please contact your Sales representative for more information.

Mechanical Parameters / Operating Conditions

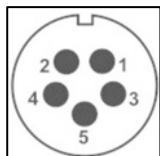
Parameter	Symbol	Min	Typical	Max	Unit
Mechanical Characteristics					
Weight of Laser Module			2500		g
Operating Conditions					
Storage Temperature	T _s	-10		55	°C
Internal Operating and (Ambient) Temperature, CW	T _{op c.w.}	10 (5)	25 (20)	35 (40)	°C
Humidity / Non-condensing Atmosphere				90	%
Maximum Fiber Flange Temperature				50	°C

General Parameters / Options / Accessories / Operating Conditions

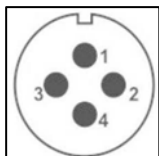
Parameter	Symbol	Min	Typical	Max	Unit
Pilot Beam (optional, see notes)					
Pilot Beam Output Power (adjustable)	red / green	0	3 / 2	3 / 2	mW
Pilot Beam Wavelength	red / green	650 ± 10 / 520 ± 10			nm
Pilot Beam Operating Voltage	red / green	4.8 / 7	5 / 8	5.2 / 8	V
Pilot Beam Operating Current	red / green	≤ 35 / 125			mA
Pilot Beam Intensity Control Voltage	red / green	0 (max. Intensity)		5 (min. Intensity)	V
Sensors (optional)					
Power Monitor Supply Voltage		10	12	14	V
Power Monitor Signal Voltage		0	4 (at max. Power)		V
Fiber Detection Sensor Supply Voltage		10	12	14	V
Fiber Detection Sensor Signal Voltage		<0.2 (unplugged)		>4.0 (plugged in)	V
Temperature Sensor	Standard: NTC (10 k); Optional: PT100 or LM35				
Cooling					
Required Water Temperature	TW (c.w.)	15		23	°C
Water Quality	>20 kOhm x cm, ph 6 - 8, hardness < 10 dH or <200 ppm CaCO ₃ , particle diameter < 200µm, anticorrosive agent of type Glysofor N at 15-35% volume ratio				
Minimum Required Water Flux at TW	(c.w.)		scales with power level		l/min
Thermal Resistance x Water Flux	(c.w.)		0.07		K/W l/min
Proportional Coefficient between Pressure Drop and Flow Rate	Fp		0.13		bar/l x min
Inlet Pressure	p			3.5	bar

Connector

Terminal 1



Terminal 2



Connector - laser diode supply

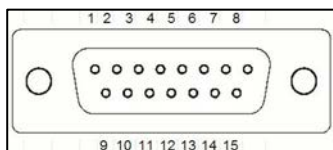
Weipu™ IP68 male connector on laser module (Part No. SY2113P5/4).

Counterparts for external cable

Part No. SY2113S5/4

Note

Maximum current / voltage per pin is 30 A / 500 V
All laser diodes per wavelength group can be operated separately or electrically in series if the current is the same per group.



Connector - signals

IP68 male D-Sub connector on laser module
Maximum current/voltage per pin is 3 A / 400 V

Counterpart for external cable

Standard 15 pol D-Sub female connector

PIN	Configuration
1	NTC 1
2	NTC 2 or not connected
3	NTC 3 or not connected
4	Vcc, 5-18 V
5	Fiber sensor 1, optional
6	Fiber sensor 2, optional
7	Monitor diode 1, 0-4 V, optional
8	Monitor diode 2, 0-4 V, optional

PIN	Configuration
9	GND NTC
10	Pilot laser supply, 5 V red, 8 V green, option
11	GND pilot laser
12	GND common
13	Pilot intensity control, 0-5 V, optional
14	Humidity sensor out, 0-4 V
15	Not connected



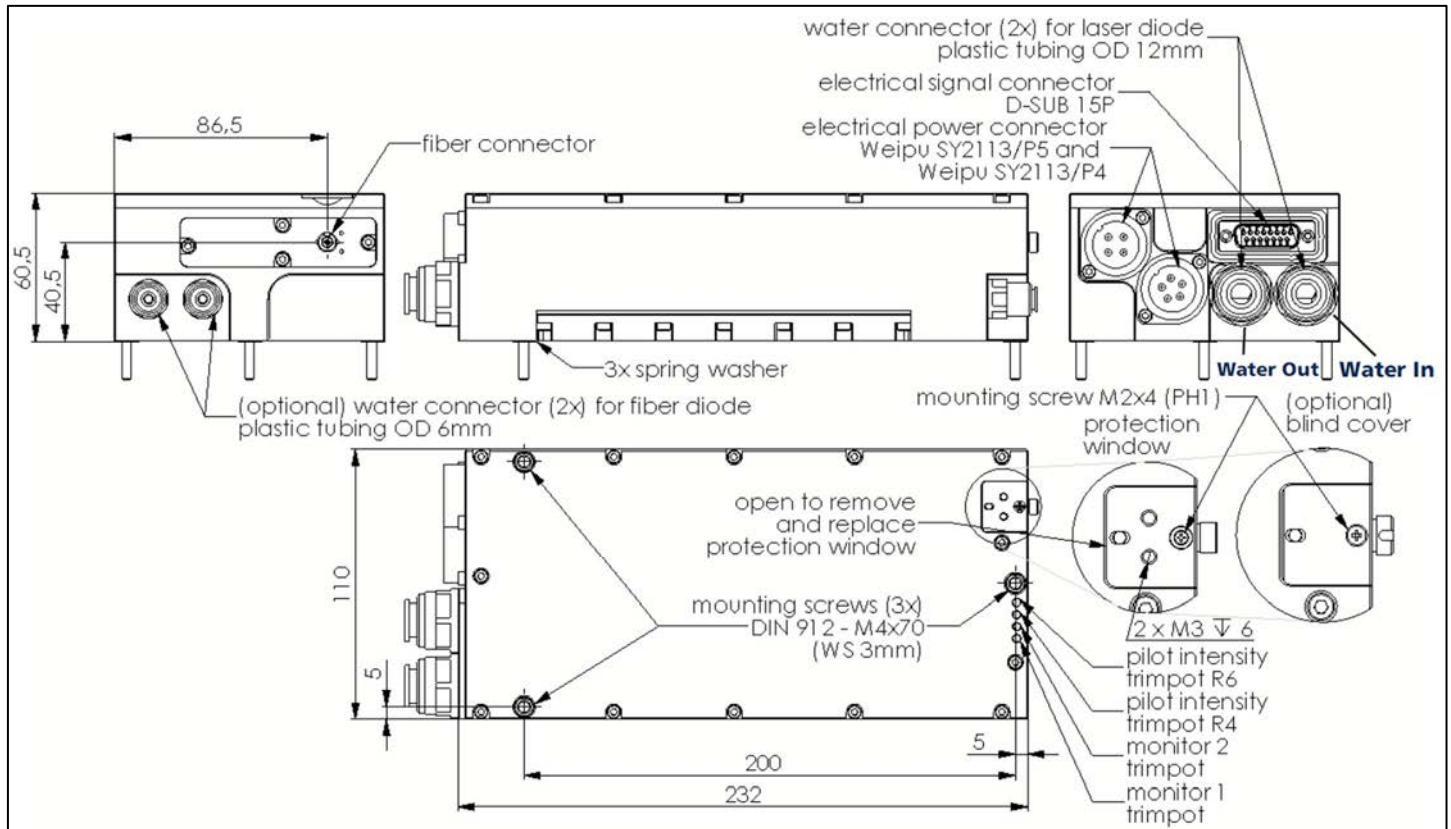
Water supply

Push-In connector, Housing material Thermoplastic

Cooling

Laser diode cooling: thread to module 3/8" and water hose outer diameter 12 mm.
Optional fiber cable cooling: thread to module 1/8" and water hose with outer diameter 6 mm.

Module Drawing (Dimensions in mm)



Notes

1. Lumics GmbH is fully compliant with RoHS.
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