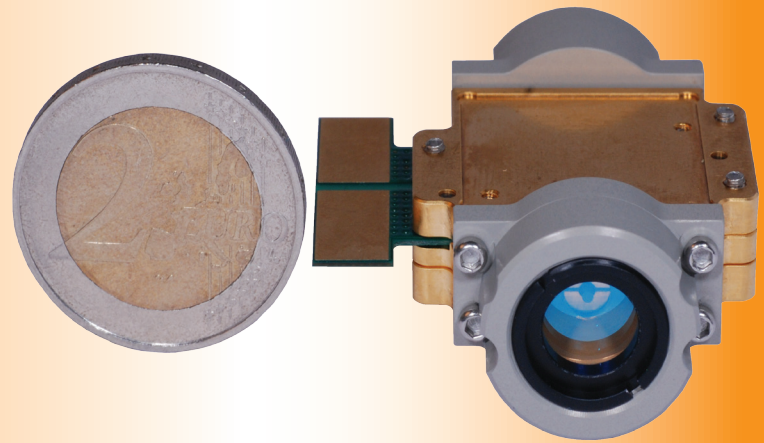


# High Power Mid-IR DPSSL Module

## DPM-2

- Ultra-Stable High Power Mid-IR Laser
- Highly Efficient Diode Pumping
- Ideal for Fiber Coupling  $\leq 100 \mu\text{m}$
- No High-Voltage Required
- Maintenance Free
- Passively Cooled
- Battery Operation Possible



## Product Description

The Er:YAG laser provides amazing results in biological tissue applications and is completely eye safe, due to the high absorption in water. The average output power of up to 2 W at repetition rates of up to 2 kHz in a compact diode-pumped package opens up new application areas not possible with lamp-pumped systems so far.

The completely sealed, rugged design ensures highly reliable operation in the harshest environments. For maximum mechanical stability, the laser rod, the laser

diode and the thermoelectric coolers (TECs) are soldered on their mechanical holders.

No deionized water is required due to the strict separation of cooling and electrical circuits. The waste heat is passively conducted to two TECs, where it is transmitted to the back plane and removed by a liquid coolant. For some applications the liquid coolant may not be acceptable. In that case, the laser can even be air-cooled at reduced duty cycles or short on-times.

## Applications

### Medical

#### Dermatology

- Micro Surgery
- Vascular Surgery

#### Ophthalmology

- Laser Vitrectomy
- Cataract Surgery

#### Aesthetics

- Reduction of Scars and Wrinkles
- Skin Resurfacing

### Industrial

#### Defense

- Directional Infrared Countermeasures
- Range Finding
- Laser Radar
- Free-Space Optical Communication

#### Analytics

- MALDI
- Gas Detection

#### Metrology

# DPM-2

## Specifications (Start of Life)

### Optical Parameters

Wavelength	2940 nm	(other wavelengths on request)
Average Output Power	up to 2 W	
Pulse Energy	up to 10 mJ	
Pulse Repetition Rate	up to 2 kHz	
Pulse Duration	30 to 200 $\mu$ s	
Duty Cycle (max)	5 %	
Mode of Operation	QCW	
Beam Quality	$M^2 < 5$	
Efficiency (optical-optical)	~ 10 %	
Power Fluctuation (rms)	< 1 %	

### Electrical Parameters

Diode Forward Voltage	< 4 V	
Diode Forward Current (max)	300 A Pulsed	
Average Power Consumption (max)	< 120 W incl. 2 TECs	
max Ripple / Overshoot	< 5 %	
TEC Voltage	2x < 10 V	
TEC Current	2x < 6 A	

### Coolant Requirements (in Case of Water Cooling)

Coolant	Distilled Water and Corrosion Inhibitor	
Coolant Temperature	20 to 35 $^{\circ}$ C	
Coolant Flow Rate	$\geq$ 1 lpm	
Coolant Pressure	$\geq$ 1 bar	
Required Cooling Power	$\geq$ 200 W @ 25 $^{\circ}$ C Environment Temperature	

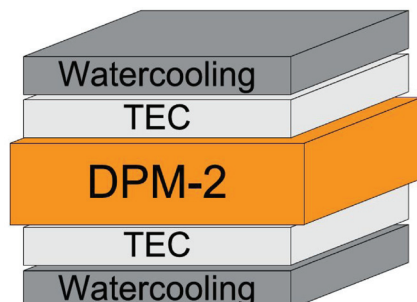
### Environmental Requirements

Humidity	10 to 85 % RH, non Condensing	
Temperature Range	15 to 45 $^{\circ}$ C	

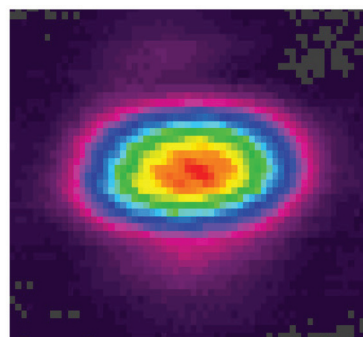
### Mechanical Dimensions (Laser incl. TECs)

W x D x H	30 x 32 x 25 mm	
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Schematic of the Laser Head



Beam Profile at 1 W



**3mikron** technology is integrated by

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