



PowerMir with electronic board High Power Pulsed QCL 4 microns HHL with its driver



PowerMir product line is high power pulsed Quantum Cascade Laser based on proprietary technology, emitting in Mid-Infra-Red. It provides maximum average power of minimum 1 Watt at 4 microns. This system is made up of a QCL HHL-packed laser plugged to an OEM PCB board. Onboard software and Windows software are both provided.

The HHL package includes the high-power laser mounted on a thermoelectric cooler and suitable optics to collimate the output of the laser. OEM driver electronic board is provided to offer plug and play solutions for easy integration.

ITAR free MirSense technology exhibits outstanding performances in term of power and wall plug efficiency. This high-performance QCL assembly takes full advantage of MirSense's state of the art technologies.

Laser features

Maximum Average Optical Power	Minimum of 1W ^(a) at +20°C of base plate temperature
Mode of operation	Quasi-CW, high duty cycled pulsed
Central wavelength ^(b)	4 µm +/- 0.1 µm
Pulse frequency	> 500 kHz
Divergence	The shape of the beam is slightly elliptical Horizontal: typically 3 to 6 mrad Vertical: typically 2 to 4 mrad
Beam quality	TM00 Gaussian beam, M ² <1.5
Output beam dimension (window output)	Typically 2 mm x 3 mm
Polarization	Linear vertically polarized

^(a) The laser's specified output power is the sum over the full spectral bandwidth.

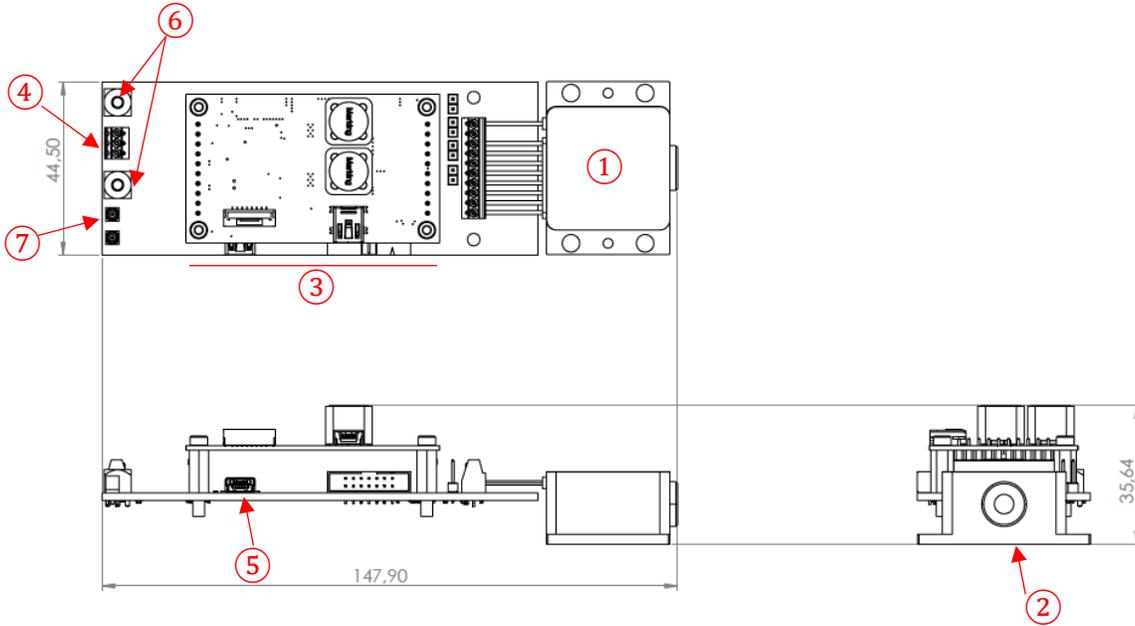
^(b) The central wavelength is defined as the optical power weighted average of the wavelength.

OEM driver features

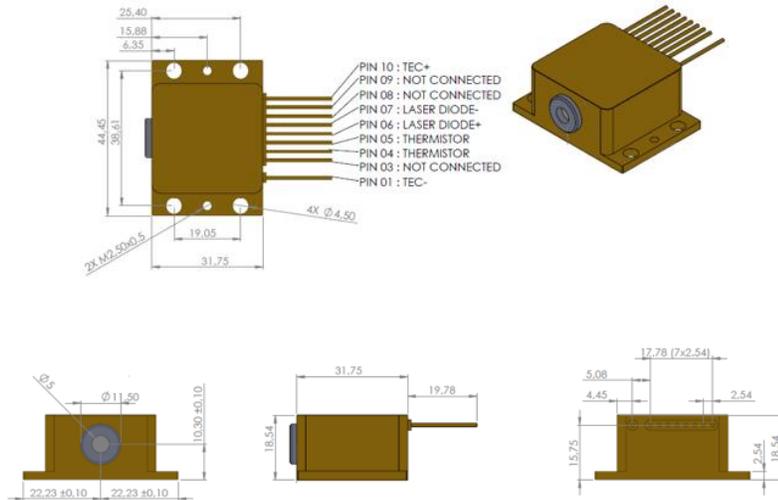
Functionalities	Laser safety, Laser driver (ON/OFF), Laser temperature and TEC control, frequency modulation, external TTL
Physical interface	USB, RS485
Protocol	MODBUS
Input power	24V DC
Dimension	4.45cm x 11cm x 2.5cm
Weight	190 g (HHL 70g and PCB 120g)
Operational temp.	-20°C to +30°C @ base plate. This working environmental temperature must in any case be above dew point to avoid water condensation

Drawings

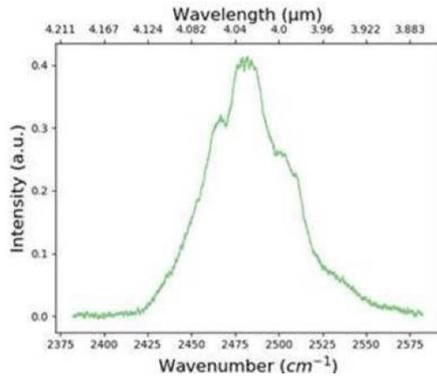
All dimensions are in mm



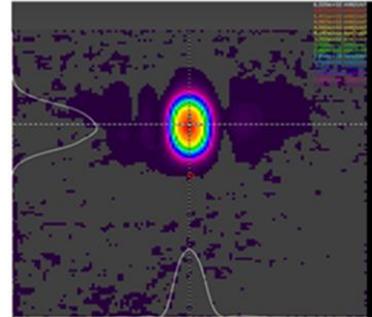
①	HHL-packaged QCL laser
②	Base plate
③	Stacked board for thermal management (it is factory-configured).
④	RS485 connector for MODBUS communication protocols
⑤	USB connector for connection to a PC with Windows software
⑥	Power connector (24V DC)
⑦	Trig-In connector (TTL external signal)



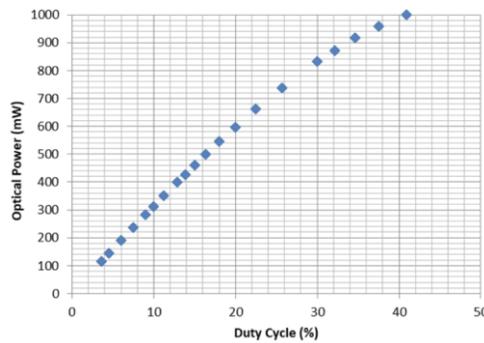
Typical characteristics of the laser



Typical spectrum



Typical beam quality



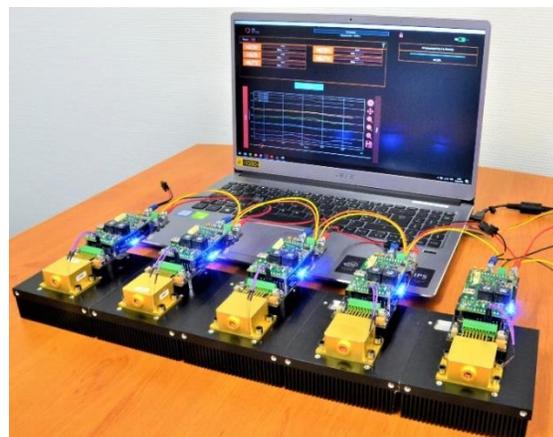
Typical average optical power of the laser as a function of the laser duty cycle with a pulswidth of 900ns and a base plate temperature of +20°C

Software and communications

Each system can be controlled by MODBUS over RS485 and several systems can be controlled by one single supervisory computer. Furthermore, a user-friendly Windows software is supplied to allow customers to easily control one or several systems. See software user guide for more details.



Screenshot of the user-friendly Windows software



One single PC can control several systems