

PowerMir turnkey solution

High Power Pulsed QCL 4 microns HHL with its driver for development purpose



The **PowerMir** turnkey solution is a high-power pulsed Quantum Cascade Laser plug-and-play system based on proprietary technology, emitting in Mid-Infra-Red providing a laser head with its electronic driver. The system (spec code: PW4000500HSTK1A) provides maximum average power between 450mW and 500mW at 4 microns. It offers a plug-and-play solution with a PC software for quick and easy development in lab. 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.

Optical features

Maximum Average Optical Power	Between 450mW ^(a) and 500mW ^(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

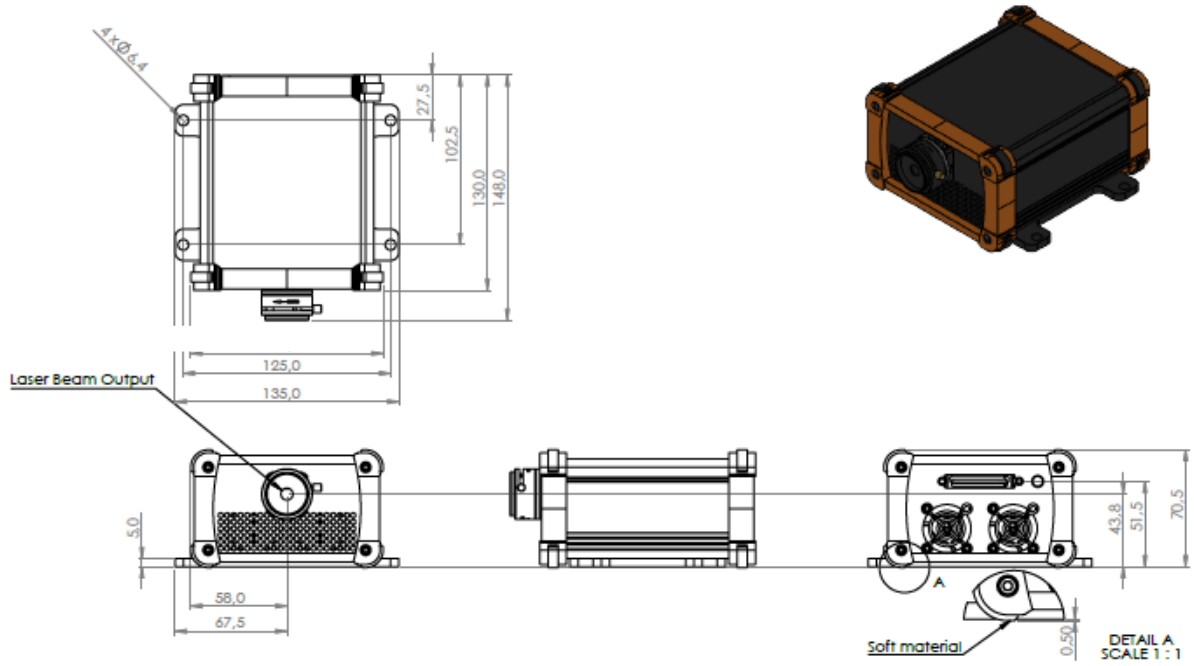
^(a) The laser's specified output power is the sum over the full spectral bandwidth.

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

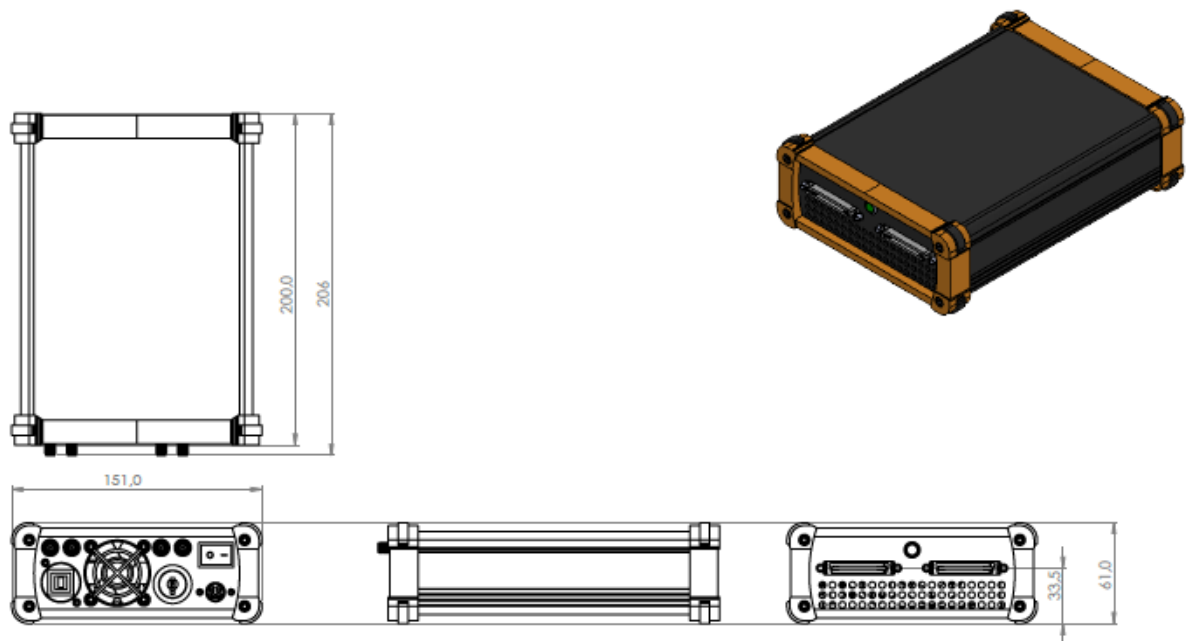
Turnkey system features

Functionalities	Laser safety, Laser driver (ON/OFF), Laser temperature and TEC control, frequency modulation, duty cycle, external TTL
Physical interface	USB interface for PC connexion (USB cable supplied) TTL trig IN connector for TTL external signal Option: Extra red laser beam for alignment help (typically 2-3mrad of divergence between the red laser beam and the infra-red beam)
Software	Windows PC
Input power	24V DC
Dimension	laser head: 20cm x 15cm x 6cm / driver: 25cm*15cm*6cm
Weight	925 g
Operational temperature	+10°C to +30°C of ambient temperature
Laser head cooling	Air cooled

Drawings (dimensions are in mm)

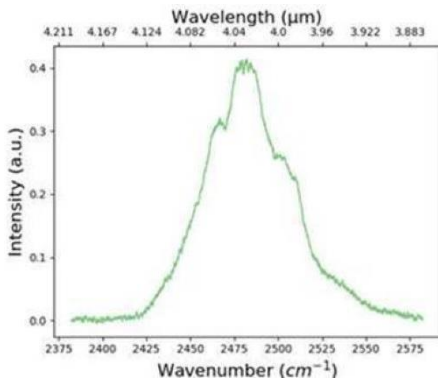


Laser head drawing

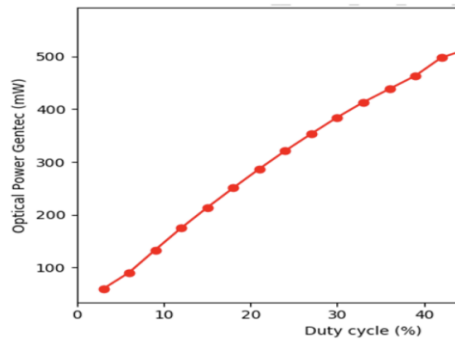


Driver drawing

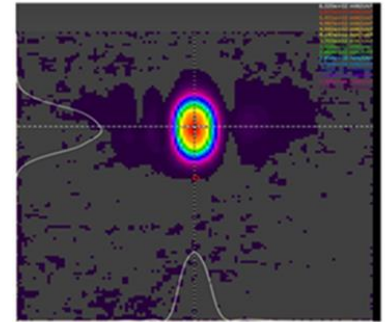
Typical Laser Characteristics



Typical spectrum



Typical average optical power of the laser as a function of the laser duty cycle with a pulsed width of 900ns



Typical beam quality

Software interface



Software screenshot example (this is for the version with two laser heads)

The PC software allows the user to easily select some modes with 3 pre-defined pulse widths and maximum duty cycles over which the user can modulate with an internal or external TTL signal. The software has built-in safety features that safeguard the laser (for example, temperature management)