

# 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: PW4001000HSTK1A) provides maximum average power of at least 1 Watt 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.

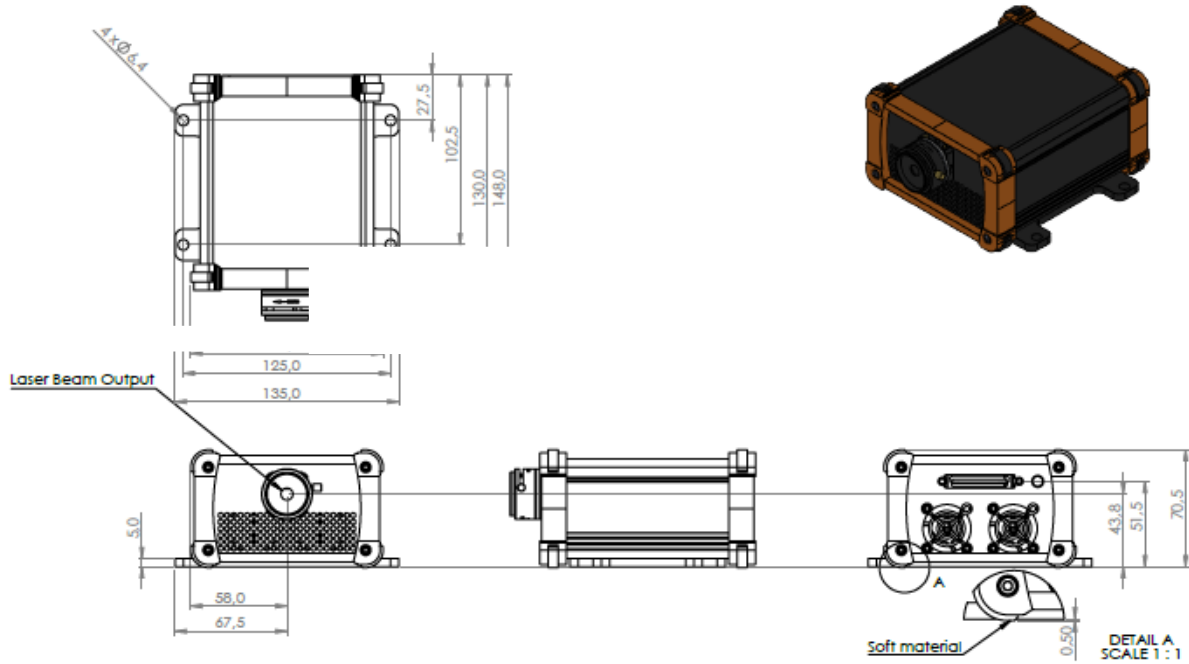
### Optical features

Maximum Average Optical Power	Minimum of 1W at +20°C of ambient temperature
Mode of operation	Quasi-CW, high duty cycled pulsed
Central wavelength	4 $\mu\text{m}$ +/- 0.1 $\mu\text{m}$
Pulse frequency	> 500 kHz
Divergence	The shape of the beam is typically circular Horizontal: typically 3 to 5 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

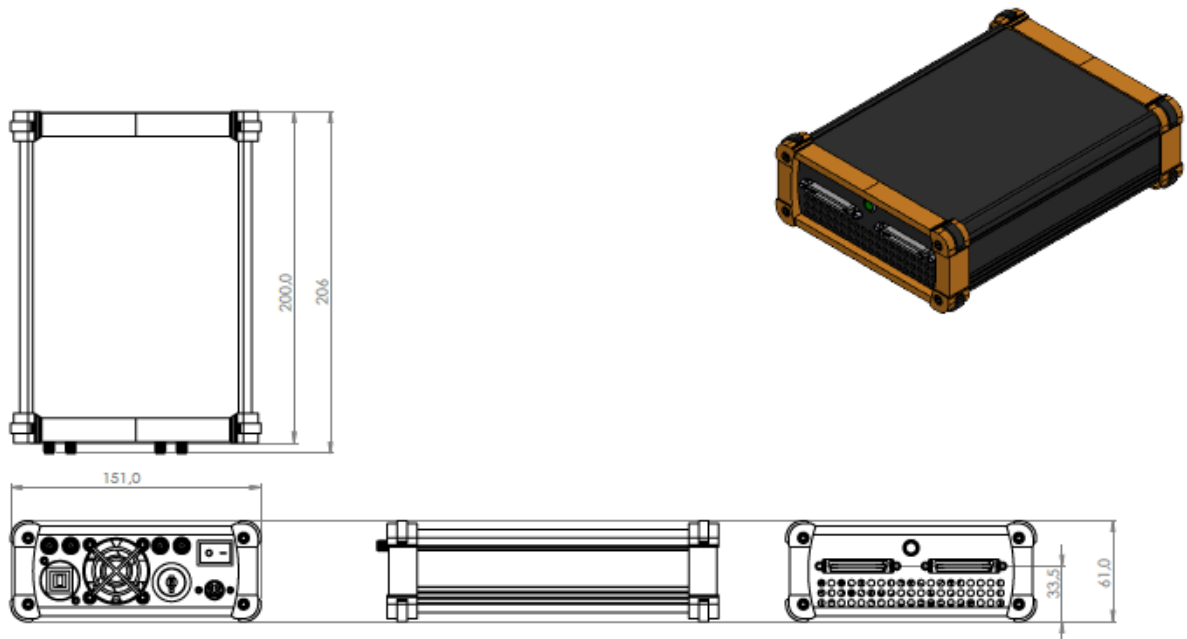
### Turnkey system features

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)

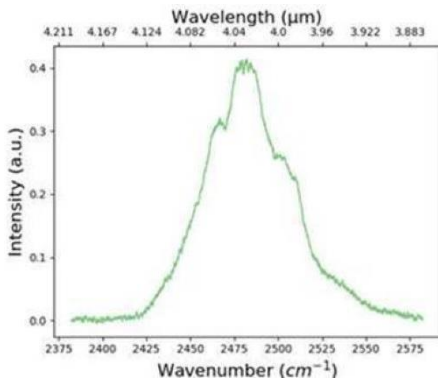


Laser head drawing

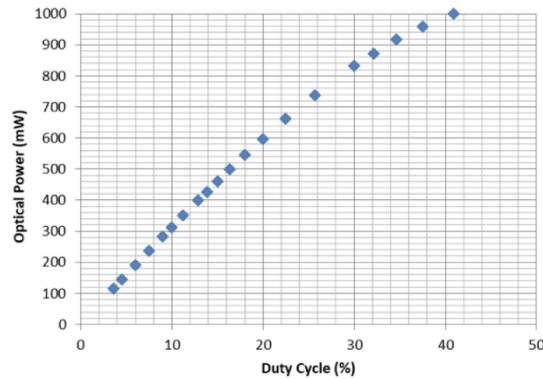


Driver drawing

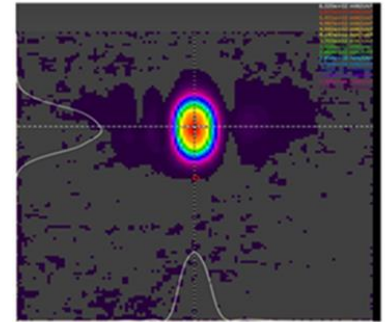
## Typical Laser Characteristics



Typical spectrum



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



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)