PowerMir turnkey solution

Two heads High Power Pulsed QCL
2 Watts combined power at 4,6 microns
# for development purpose

PowerMir turnkey solution is high power pulsed Quantum Cascade Laser based on proprietary technology, emitting in Mid-Infra-Red with its electronic driver. The system (spec code: PW4602000HTK2W) provides maximum average combined power of at least 2 Watts at 4,6 microns, based on two laser heads of at least 1 Watt each. It offers plug and play solution in PC for quick and easy development in lab.
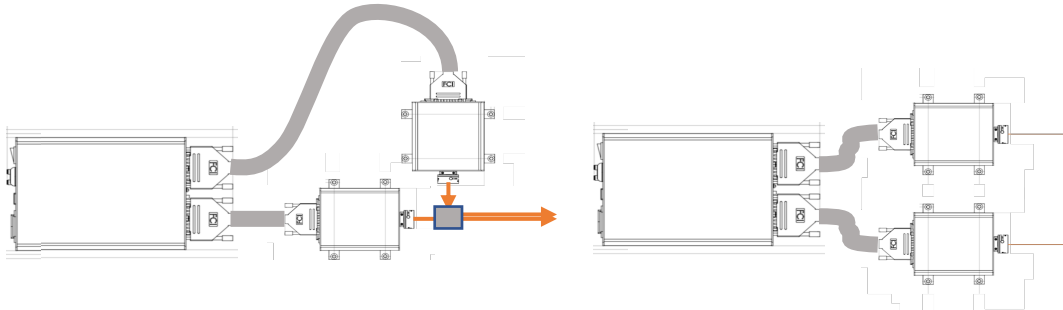
ITAR free MirSense technology exhibits outstanding performances in term of power and wall plug efficiency. This high-performance QCL assembly takes full advantage of MirSense's state of the art technologies.

System architecture
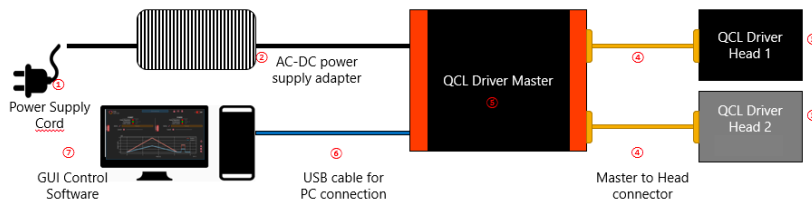
The system is based on two QCL emitting at least 1 Watt each. On request, the two wavelengths can be different.

By using polarization combination or far field configuration, the system provides maximum average power of at least 2 Watts.
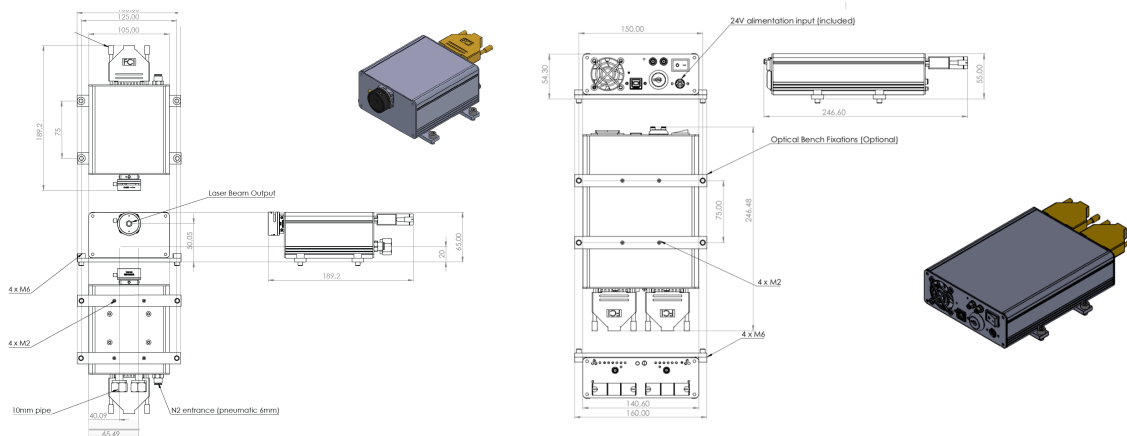
Optical features for one laser head

Maximum Average Optical Power	Minimum of 1W at +20°C of base plate temperature
Mode of operation	Quasi-CW, high duty cycled pulsed
Central wavelength	4,6 µm +/- 0.1 µm
Pulse frequency	> 500 kHz
Divergence	Horizontal < 8 mrad (typically 6mrad)
	Vertical < 6 mrad (typically 4mrad)
Beam quality	TM00 Gaussian beam, M²<1.5
Output beam dimension (window output)	2 mm x 3 mm
Polarization	Linear vertically polarized

Turnkey system features

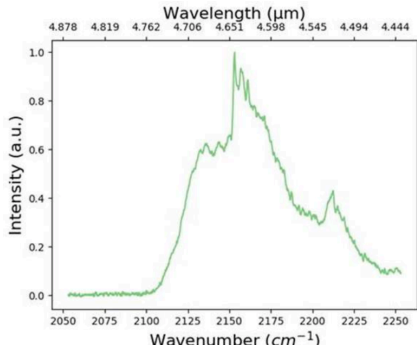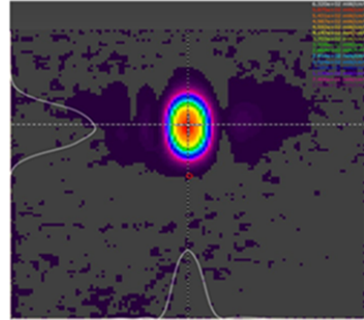|	
Functionalities	Laser safety, Laser driver (ON/OFF), Laser temperature and TEC control, frequency modulation, duty cycle, external TTL
Physical interface	USB interface for PC connexion (USB cable supplied) TTL trig IN connector for TTL external signal
Software	Windows PC
Input power	24V DC
Dimension	2 lasers head: 2 x (20cm x 15cm x 6cm) Driver: 25cm*15cm*6cm
Weight	925 g
Operational temperature	-30 °C to +40°C (this working environmental temperature must in any case be above dew point to avoid water condensation)
Laser head cooling	Water (chiller not included)

Drawings

All dimensions are in mm

One laser head

Driver for the two laser heads

MirSense / NanoInnov – 8 Avenue de la Vauve / 91120 Palaiseau, France
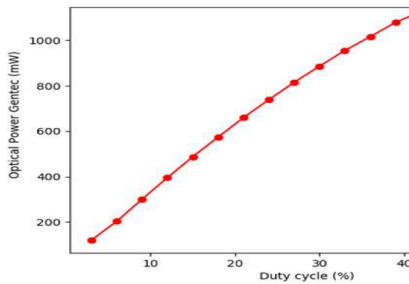Tel +33 1 69 08 05 90 / www.mirsense.com / contact@mirsense.com

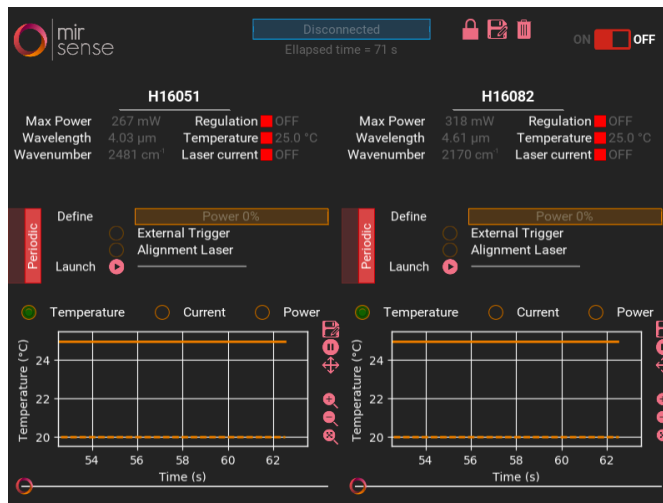## Typical Laser Characteristics of one laser head

Typical spectrum

Typical beam quality

Typical average optical power of one laser head as a function of the laser duty cycle with a pulsewidth of 900ns and a base plate temperature of +20˚C

Software interface

Software screenshot example

The PC software allows the user to drive the two laser heads and to select some modes with 3 pre-defines pulsewidth and maximum duty cycle over which the user can modulate with an internal or external TTL signal. Each head has its own TTL, allowing independent or synchronized operation. The software has built-in safety features that safeguard the laser (for example, temperature management)