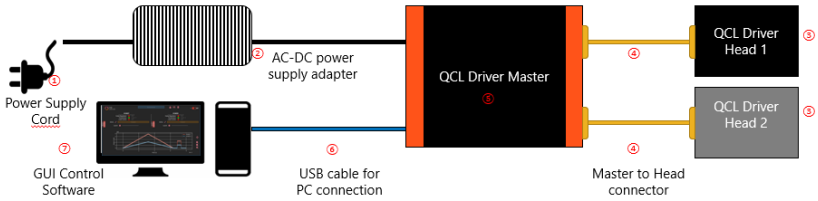
PowerMir turnkey solution

High Power pulsed QCL – two laser heads
Twice 1 Watt at 4 microns
for development purpose

The PowerMir turnkey solution is a high-power pulsed Quantum Cascade Laser system based on proprietary technology, emitting in Mid-Infra-Red with its electronic driver. The system (spec code: PW4001000S-4001000STK2A) provides two laser beams of maximum average power of at least 1 Watt at 4 microns, based on two laser heads each providing at least 1 Watt each connected to a single driver. 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.

Optical features for one laser head

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 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)	2 mm x 3 mm
Polarization	Linear vertically polarized

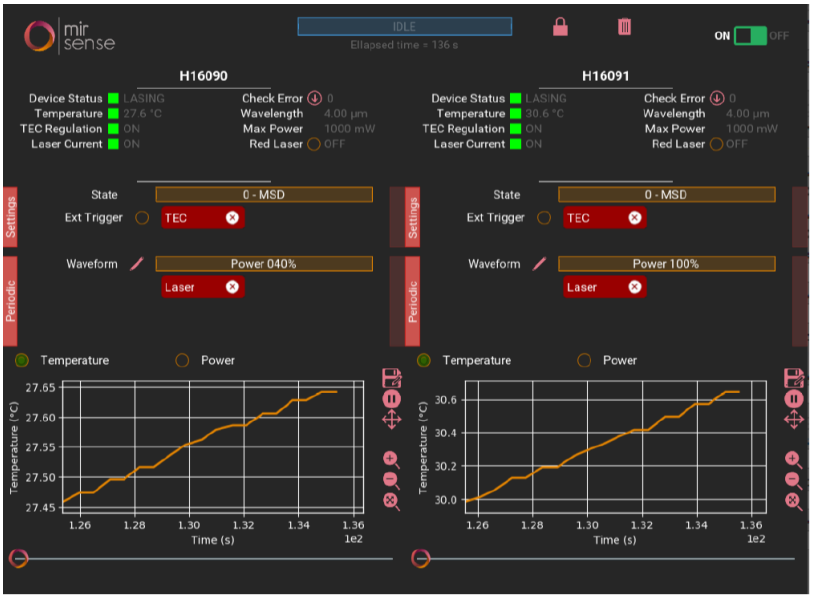
Turnkey system features

Functionalities	Laser safety, Laser driver (ON/OFF), Laser temperature and TEC control, frequency modulation, duty cycle, external TTL
Physical interface	USB interface for PC connection (USB cable supplied) Option: 10m usb cable to control the system 10 meters away TTL trig IN connector for TTL external signal Option: Each laser head is suited with a red alignment laser beam.
Software	Windows PC
Input power	24V DC (AC/DC power transformer supplied with the system)
Dimension	2 lasers head: 2 x (20cm x 15cm x 6cm) Driver: 25cm*15cm*6cm
Weight	~1 kilo for the driver and ~1 kilo for each laser head
Operational temperature	+10°C to +30°C
Laser head cooling	Air

Please read the turnkey system general user guide for more details.

The turnkey system is delivered inside a protective case

Software interface



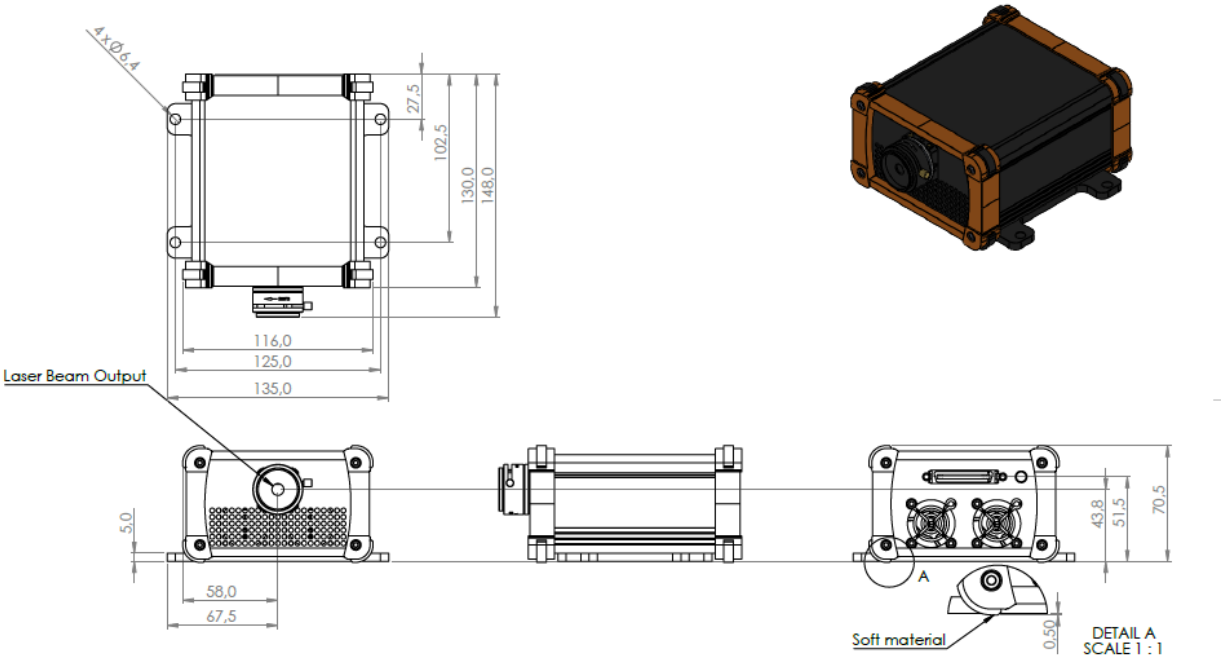
Software screenshot example

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)

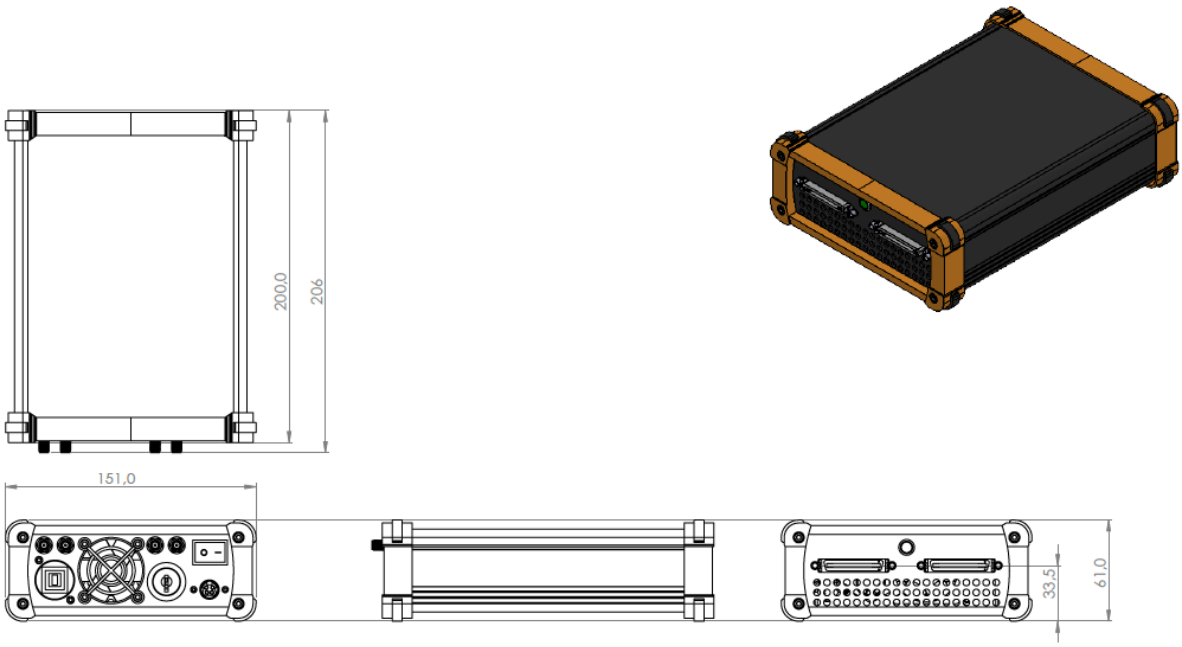
Please read the PowerMir software user guide for more details.

Drawings

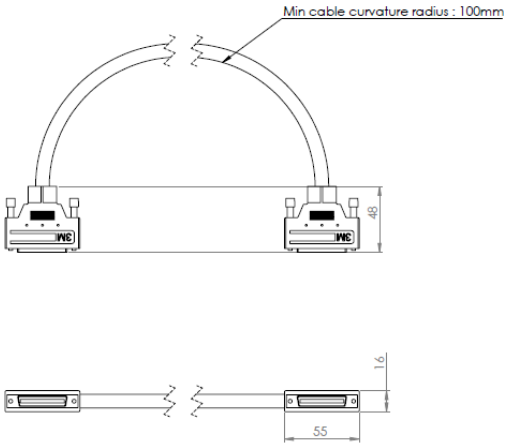
All dimensions are in mm



Laser head (the system includes two laser heads)

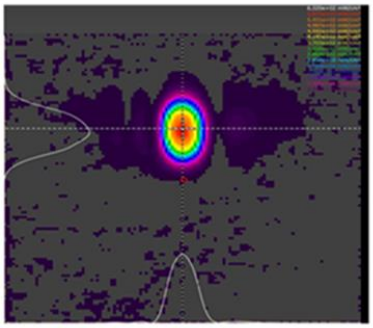


Driver for the two laser heads (this single driver controls both laser heads)

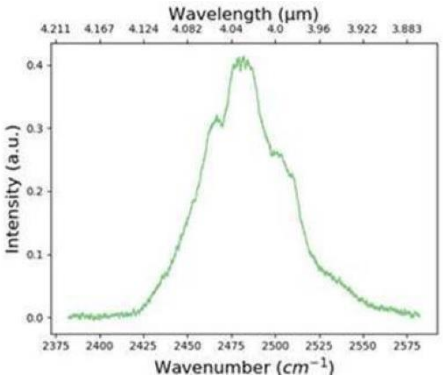


Cable that links one laser head to the driver (two cables are supplied to link two laser heads)

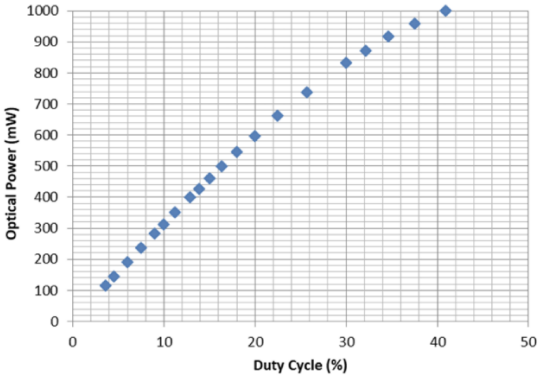
Typical Laser Characteristics of one laser head



Typical spectrum



Typical beam quality



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