EasyQCL-1000 :
High-Power Terahertz Quantum Cascade Laser System

LONGWAVE PHOTONICS

The **EasyQCL-1000** system is our latest generation of turnkey terahertz Quantum Cascade Laser source, offering average power levels of up to 20 mW* thanks to the more powerful Pulse Tube cryocooler. The system is configurable with a wide range of QCLs emitting at discrete frequencies between 1.9 and 5 THz in CW/pulsed and single/multimode. Multiple QCLs can be mounted in the same cooler (Multi-QCL option), and is available on request.

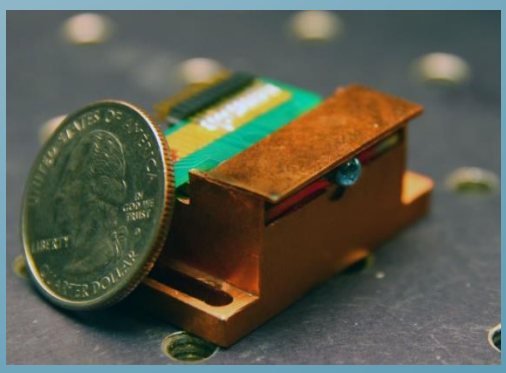
- The **EasyQCL-1000** system Includes:
  - QCL laser diode module
  - Closed cycle single stage Pulse Tube Cryocoole
  - QCL drive electronics capable of pulsed or continuous wave operation (0.4 µs up to DC)
  - All necessary accessories for turnkey operation

- A variety of user interchangeable QCL modules are available:
  - 10's of Milli-watt average power levels
  - Continuous wave operation available at select frequencies
  - Choice of center frequencies ranging from 1.9 to 5 THz
  - Multimode operation
  - Single mode DFB output at select frequencies

- The **EasyQCL-1000** system is designed for ease of use:
  - Cryogen free – laser diode cooling is by closed cycle refrigeration
  - No optical alignment
  - Cooler is maintenance free
  - Main system is tabletop compact and operates on 240 V single phase power source

- Applications:
  - High power Illumination source for focal plane arrays
  - Noise and responsivity Characterization of detectors
  - Local oscillator to pump Schottky-diode mixers for heterodyne detection

EasyQCL-1000 Main body
(with compressor detached)



THz QCL Submount

* At select frequencies, see **QCL Power and Spectra Data Sheet**.

Data Sheet

EasyQCL-1000 Technical Data

Included Components:

- QCL device(s) characterized for wavelength, output power, beam divergence and current versus voltage
- Vacuum chamber with electrical feedthroughs and vacuum gauge
- Liquid/Air cooled, Pulse-Tube cryocooler
- LWP-PS3 pulsed laser driver or DC power supply (for CW operation)
- Compact rotary vane vacuum pump
- Laptop PC with software for control of the driver and cryocooler

QCL Characteristics:

- Multimode and single mode laser diodes available.
- Beam divergence from 5 to 35 degrees FWHM
- Select devices operable in continuous wave

LWP-PS3 Laser Driver Specifications:

QCL Driver Electronics (FPO typical values):

Current:	Up to 2 A
Voltage:	Up to 100 V
Pulsed width:	400 ns up to 5 ms
Frequency:	100 Hz to 500 kHz
Triggering:	TTL Internal/External Gate BNC connector
Interface:	USB
Compatibility:	Windows 7/8.1/10
Software Options:	Laser bias current/voltage, pulse width, duty cycle and trigger source (internal external)
AC voltage range:	100 - 125 / 200 - 240 V
Rated frequency:	50 - 60 Hz
Rated Current:	120 V/5 A – 240 V/ 2.5 A

Pulse-Tube Cryocooler Specifications:

- Room Temperature, no cryogens.
- Cooldown time < 45 min to ~50 K
- Maintenance: Cold head requires periodic vacuum purge to ~10^{-2} mbar with provided compact vacuum pump (e.g. Edwards E2M0.7 or similar). No turbo pumping required.

AC voltage range:	200VAC / 208-230VAC
Rated frequency:	50 / 60 Hz
Rated Power Consumption:	3.5 kW / 4.2 kW
Operating modes:	Open Loop

(Close Loop Temperature Control Package available on request)

Warranty

- One year parts and labor
- First compressor maintenance: 15,000 Hours

Dimensions

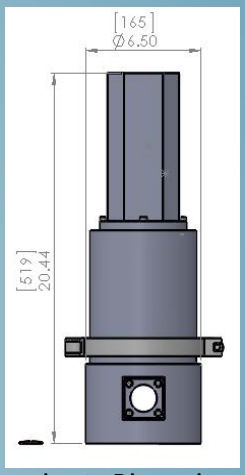
Cooler:
approx 7 x 7 x 21 in
(17 x 17 x 52 cm)

Compressor:
20 x 22 x 22 in
(50 x 56 x 56 cm)

Weight:

Cooler : ~10 kg

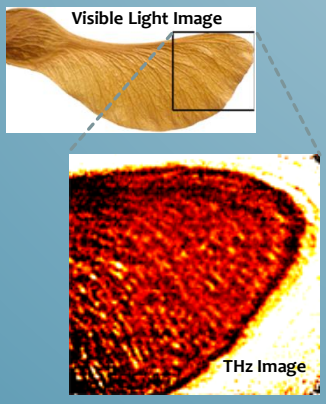
Compressor: ~80 kg



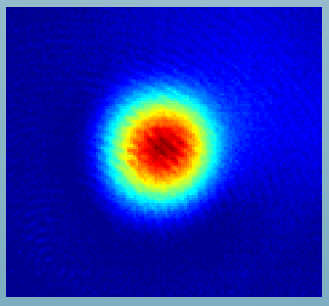
Approximate Dimensions in inches [mm]

Applications

Illumination source for THz imaging

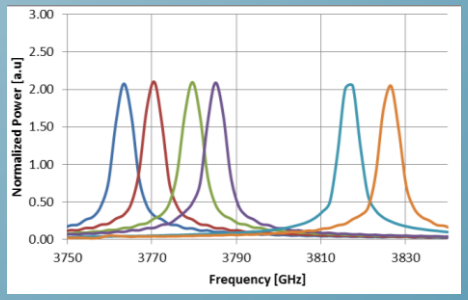


High Quality Beam for pumping heterodyne mixer



Beam focused using f/1 dia/25 mm High Resistivity Silicon Lens onto NEC IRV-TO831 Focal Plane Array

Single Mode Radiations for High Resolution Spectroscopy



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