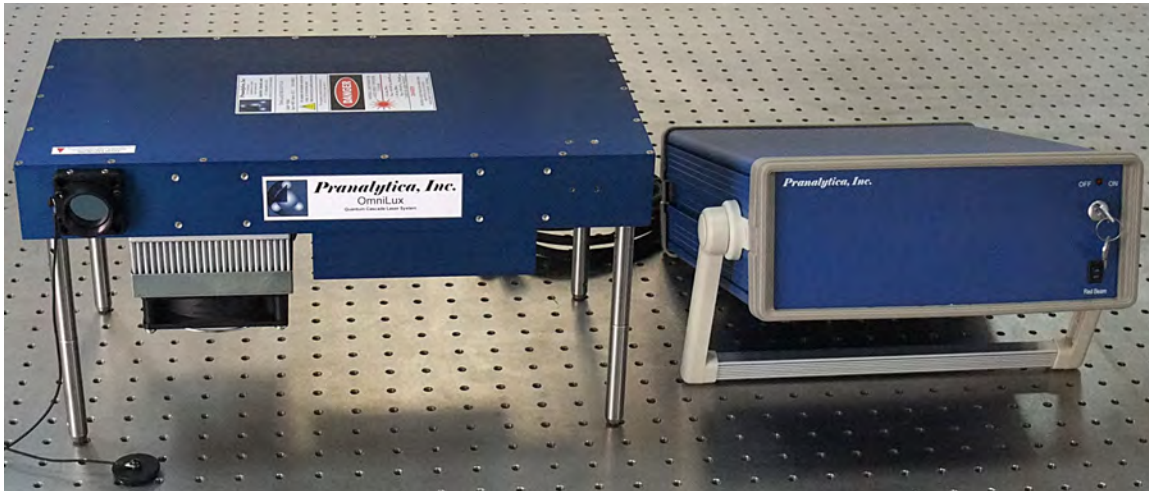




OmniLux-AA-BB-CC-DD

Specifications



OmniLux Laser Head (left) and Power Supply (right)

OmniLux is a wavelength tunable external grating cavity multiple quantum cascade laser system. The system can accommodate up to four independent QCLs for providing broad wavelength coverage of about 3,000 nm. The four QCLs, their thermoelectric coolers and collimating optics are located in the laser head that is sealed for trouble free operation in real environments. OmniLux is available as a complete system consisting of the laser head and matched power supply, ready to be turned on in customer's location. The overall wavelength coverage is determined by the choice of the center wavelength, AA, BB, CC and DD of the four QCLs.

The QCLs are operated in a quasi-CW mode with 200-500 ns pulses with a repetition rate of 500 kHz - 2 MHz giving a duty cycle of ~50 %. In this mode of operation, the average power output from a QCL exceeds 100 mW at the center of its tuning curve.



OmniLux-AA-BB-CC-DD

Multiple Tunable Quantum Cascade Laser System (laser head)

Operation	<ul style="list-style-type: none">• QCW operation with the laser head at room temperature (50 ns-500 ns pulsed operation at a pulse repetition rate of 1 MHz-2 MHz)
Wavelength	<ul style="list-style-type: none">• Centered at AA, BB, CC and DD wavelengths (user specified)• Available center wavelengths are 3.8 μm, 4.1 μm, 4.5 μm, 4.8 μm, 6.3 μm, 6.8 μm, 7.3 μm, 8.5 μm, 9.5 μm and 10.2 μm.
Output spectrum	<ul style="list-style-type: none">• Tunable over the gain bandwidth of the QCLs• Up to four lasers can be accommodated in the laser chassis; All lasers can be tuned simultaneously or independently across their tuning ranges
Tuning Speed	<ul style="list-style-type: none">• 100 ms for entire tuning range for each laser• 100 ms in case of simultaneous tuning
TTL Gate	<ul style="list-style-type: none">• 5V TTL gate output is synchronized with laser tuning
Power output	<ul style="list-style-type: none">• Average power output of 100 mW at the center of each QCL tuning curve for a duty cycle of ~ 50%
Power Output Stability	<ul style="list-style-type: none">• $\pm 3\%$ pulse-to-pulse; $\pm 2\%$ average power over hours
Pulse width	<ul style="list-style-type: none">• 50 ns to 500 ns
Pulse repetition rate	<ul style="list-style-type: none">• Up to 1 MHz (maximum duty cycle 50%)
Pulse trigger	<ul style="list-style-type: none">• Internal or external; In external mode any pulse repetition sequence can be generated within 50% maximum duty cycle
Output linewidth	<ul style="list-style-type: none">• $< 2\text{ nm}$ ($< 0.3\text{ cm}^{-1}$) when operated in QCW mode
Output beam	<ul style="list-style-type: none">• Collimated with beam divergence of $< 5\text{ mrad}$
Output beam quality	<ul style="list-style-type: none">• Nearly diffraction limited (TEM_{00})
Wavelength Accuracy	<ul style="list-style-type: none">• Better than 0.5 cm^{-1}
Wavelength repeatability	<ul style="list-style-type: none">• $\pm 0.5\text{ cm}^{-1}$ unidirectional
Wavelength Scanning	<ul style="list-style-type: none">• Continuous uni or bidirectional; Step to a desired wavelength
Cooling	<ul style="list-style-type: none">• Air cooled
Guiding beam	<ul style="list-style-type: none">• Red 640nm, 4mW laser aligned with IR beams to assist optical arrangement
Physical Details	<ul style="list-style-type: none">• Size: 22 cm (W), 12 cm (H), 39 cm (D)• Weight: 7 kg
Computer Interface	<ul style="list-style-type: none">• USB
Computer Requirements	<ul style="list-style-type: none">• Windows XP or later computer with USB 2.0 port• Software controls laser operation and allows user to select pulse repetition rate for each laser as well as enable/disable individual lasers

Laser Power Supply

Laser supply	<ul style="list-style-type: none">• Provides the necessary laser drive current for the quantum cascade laser (factory adjusted to provide appropriate voltages to the QCLs to deliver the specified laser output power), drive currents for the wavelength tuning elements and powers the on-board microprocessor board.
Physical Details	<ul style="list-style-type: none">• Size: 26 cm (W), 11 cm (H), 33 cm (D)• Weight: 5 kg
Electrical Details	<ul style="list-style-type: none">• 110/220 V, 2.5 A (max).
Umbilical cord length	<ul style="list-style-type: none">• 8'