

LASERTUNE™ IR SOURCE



Key Benefits & Advantages

- Industry-leading wide tuning range
4 or 5 micron ($\sim 600\text{ cm}^{-1}$)
- Fully integrated single-box solution
- Pulses from $\sim 50\text{-}500\text{ nsec}$
- Repetition rate up to $\sim 1\text{MHz}$
- Internal or external triggering
- Flexible socket programming
- Rapid tuning
- Excellent spectral resolution and beam quality
- $2 \times 4\text{ mm}$ collimated, vertically polarized beam
- Narrow stable linewidths
- Easy to operate

Description

LaserTune™ is a pulsed mid-infrared (IR), widely tunable laser source based on a next generation Quantum Cascade Laser (QCL). The fully integrated LaserTune system is a single box solution which has the widest tuning range of any mid-IR QCL laser source available.

The system is available in two versions, one that covers the $\sim 6\text{-}10\text{ }\mu\text{m}$ range and the other that covers the $\sim 7\text{-}12\text{ }\mu\text{m}$ range. The laser source can be programmed to emit pulses from 50 to 500 nsec with a repetition rate up to $\sim 1\text{MHz}$ while maintaining a duty-cycle up to $\sim 5\%$. The pulses can be internally triggered at regular intervals and a sync-out signal available. The pulses can also be triggered from an external source and the system enforces duty-cycle and pulse limits. The $2 \times 4\text{ mm}$ output beam can be tuned to a specific wavelength, or can be programmed to step scan across the whole range. LaserTune offers fast tuning, excellent tuning resolution, and narrow, stable linewidths.

As a fully integrated and embedded system, LaserTune offers full control via a USB connection to a computer. LaserTune comes with its own LaserTune Software and can also be remotely controlled via a socket interface providing the flexibility to be used with various lab automation software such as LabView, Matlab and C.

LaserTune's wide tuning range, flexible tuning, and superb beam quality make it ideal for high performance laboratory applications, and its compact size allows for easy integration into any system or instrument.



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Parameter	Specification
Continuous Wavelength Coverage	LaserTune610: 6.25-10 μm ($\sim 1600\text{-}1000\text{ cm}^{-1}$) LaserTune712: 7-12 μm ($\sim 1430\text{-}830\text{ cm}^{-1}$)
Tuning	Step scan, start, stop
Triggering	Internal Programmable, sync out, external trigger
Pulse Repetition Rate	up to $\sim 1\text{ MHz}$
Pulse Width	$\sim 50\text{-}500\text{ nsec}$
Duty Cycle	up to $\sim 5\%$
Wavelength Accuracy	$< 1\text{ cm}^{-1}$ typical
Wavelength Repeatability	$< 0.5\text{ cm}^{-1}$ typical
Minimum Average Power	0.5 mW (at 5% duty cycle)
Maximum Average Power	12 mW (at 5% duty cycle)
Peak Power	10-120 mW typical
Pulse Stability	$< 5\%$ pulse to pulse typical
Power Variation	$< 0.1\%$ over 10 msec
Beam Divergence	$< 8\text{ mrad}$ typical
Beam Diameter	2 x 4 mm Collimated
Polarization	TEM, 100:1 extinction, Vertically Polarized
Pointing Stability	$< 5\text{ mrad}$ up to 600 cm^{-1} tuning
Line Width	$< 1\text{ cm}^{-1}$
Dimensions	25.4 x 20.3 x 12.7 cm (10 x 8 x 5 in)
Weight	4.3 kg (9.5 lbs)
Operating Temp. Range	10 to 30 $^{\circ}\text{C}$
Storage Temp. Range	-10 to 70 $^{\circ}\text{C}$
Communication Interface	USB
Operating System	Win XP-SP3 or later
Electrical Interface	100-240 Volts (50/60 Hz) 2 Amp
Mechanical Interface	Emmission port centered vertically and ~ 4 -inches above the bench (iris to block the beam)