BLOCK engineering

# LaserTune™

## Widely Tunable Mid-IR Laser Source

### Key Features

- Industry-leading gap-free tuning range
  - $\lambda \approx 5.4 - 12.8$ µm ($\Delta\nu > 1050$ cm$^{-1}$)
  - Configurable with up to 4 internal laser modules
- Fastest tuning (sweeps 25 cm$^{-1}$/msec)
- Excellent beam pointing stability
- Single-box fully-integrated solution
- Flexible user-friendly interface (wireless option)
- Ideally suited for OEM & handheld applications

### Smallest Widely Tunable QCL System


### Flexible and User-Friendly Interface

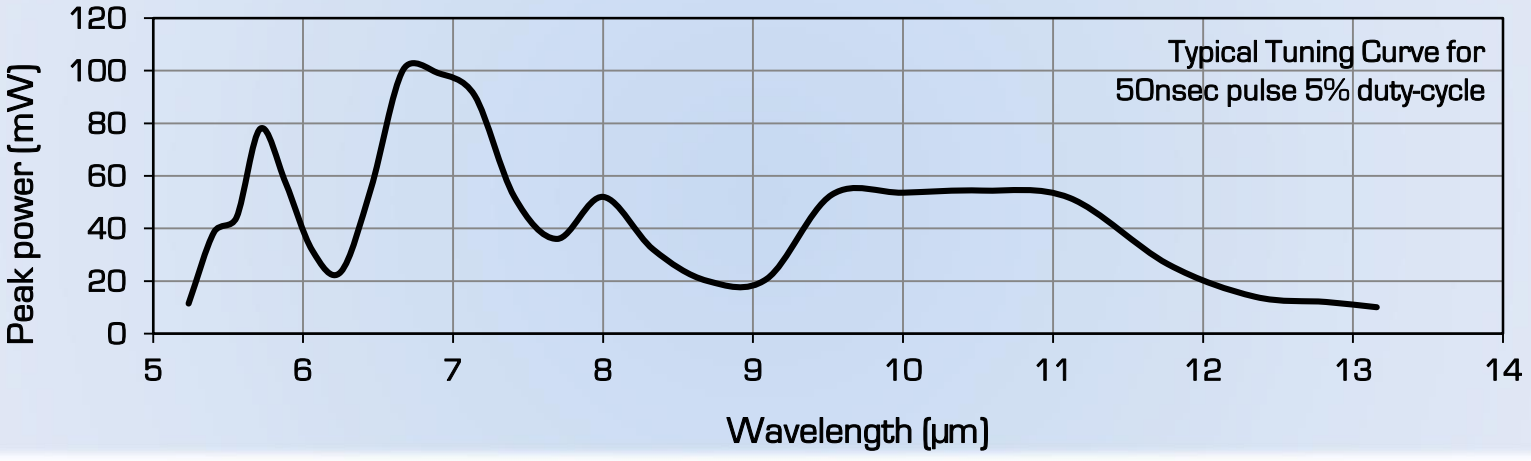
#### Internal Modes

- Manual Control
- Programmable Step Tune
- Programmable Sweep Tune
- Arbitrary Step Tune


#### Settings

- Pulse Parameters
  - Width, rep-rate, current
- Thermal Control
- Triggering Selection
  - Internal and external trigger
  - External pulse

### Industry-Leading Gap-Free Tuning Range

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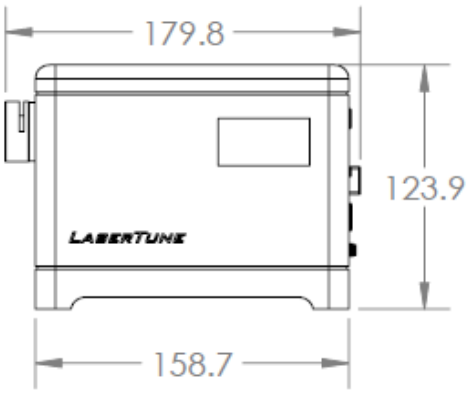
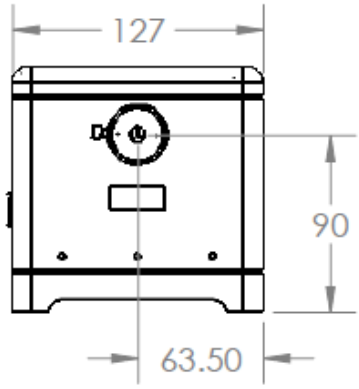
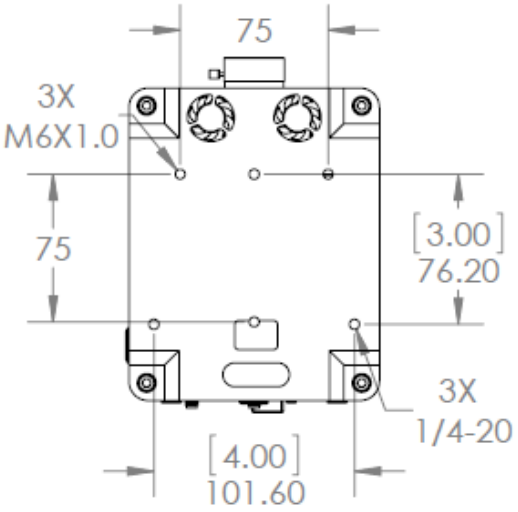
## Mechanical Interface & Dimensions




All dimensions in mm [inches]

## Tunable Mid-IR Laser Source Specifications

| | |
|---|---|
| **Gap-Free Tuning Range** | λ ≈ 5.4 – 12.8 µm (Δν > 1050 $cm^{-1}$) (typical)<br>(system can be configured with up to 4 tuners) |
| **Spectral Linewidth** | 2 $cm^{-1}$ (typical) |
| **Spectral Accuracy / Repeatability** | < 2 $cm^{-1}$ / < 0.5 $cm^{-1}$ (typical) |
| **Maximum Peak Power** | 150 mW (typical for 4 tuners, see tuning curve) |
| **Average Power** | 0.5 – 15 mW over 95% of 1150 $cm^{-1}$<br>typical at 5% duty-cycle for 4 tuners |
| **Power Stability** | < 5% pulse-to-pulse (typical)<br>< 0.05% over 10 msec @ 1 MHz (typical) |
| **Pulse Width** | 30 – 300 nsec<br>▫ continuously variable with External Pulse Control<br>▫ 10-ns-resolution with Int.& Ext.Triggering |
| **Pulse Repetition Frequency** | Up to 3 MHz |
| **Maximum Duty Cycle (DC)** | 2.5 – 15% (depending on pulse parameters) |
| **Beam Quality** | Single spatial mode |
| **Beam Diameter** | 2 x 4 mm, collimated output |
| **Beam Divergence** | < 5 mrad |
| **Pointing Stability** | < 1 mrad 99% of 1150 $cm^{-1}$ |
| **Polarization** | Vertically polarized, 100:1 extinction |
| **Tuning Modes** | Move Tune – manual control<br>Step Tune – programmable sequences<br>Sweep Tune – programmable linear sweeps |
| **Step Tune Speed** | 10 $cm^{-1}$ step in <1 msec (100 $cm^{-1}$ step in <2 msec)<br>▫ Example: Step across1000cm-1 in 1.1 seconds with 100 steps with 10 msec dwell per step |
| **Sweep Tune Speed** | Linear sweep > 25 $cm^{-1}$/msec |
| **Computer Control** | Wireless; Ethernet; HTML/SOAP interface<br>Digital monitoring of wavelength |
| **Analog Pulse Control** | Internal Trigger – with Sync-Out and adjustable offset<br>External Trigger – for laser pulse & wavelength tune<br>Pulse Control – directly controls rising & falling edges |
| **Dimensions** | Approx. 6.25 × 5 × 4.9 inches → Volume = 2.6 liters |
| **Weight** | 2 kg (4.5 lbs) |
| **Cooling** | Active cooling via fans |
| **Temperature Range (Operating / Storage)** | 10 to 30 °C / -10 to 70 °C |
| **Electrical Power** | 100 – 240 Volts (50/60 Hz) 2 Amp |

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