



“Lasermap Acquires Optech’s New Gemini 167 Airborne Laser Terrain Mapper (ALTM) System”

Lasermap, an early pioneer in LiDAR mapping, announces that it has now implemented the new Gemini 167 system from Optech Inc. Lasermap commenced business in 1997 when it acquired one of Optech’s first LiDAR systems. At that time, Lasermap was one of only 11 commercial LiDAR service providers worldwide. In 2003 they upgraded to the Optech 2050 system and in 2007 upgraded again to Optech’s latest Gemini 167 system.

Optech’s Gemini 167 system is the most reliable and accurate LiDAR system available, capable of producing a Digital Terrain Model (DTM) to an accuracy of 5 to 10 cm (2 to 4 in.) with point-to-point accuracies even better. Since this system can fly up to 4000 m, the system is extremely useful for large area applications where a high degree of accuracy and speed are necessary, or where accessibility is difficult. The ability to fly at a higher altitude requires fewer flight lines thus reducing project time and cost.



Optech Incorporated announces even greater improvements to their revolutionary ALTM Gemini: it now operates at a blazing 167 kHz laser pulse repetition frequency! Now, Optech's **ALTM Airborne Laser Terrain Mapper Systems** acquire digital elevation data with accuracies equivalent to those of GPS, but thousands of times faster.

Optech is the first airborne LiDAR manufacturer to develop, build and deliver commercial LiDAR systems with multi-pulse technology. With up to 167 kHz laser PRF, Optech’s ALTM Gemini pushes the technology to the next level in customer-driven requirements.

ALTM Gemini retains all the performance characteristics of the ALTM 3100EA, but offers a 62% increase in data coverage and effective collection rate over every other commercial LiDAR system in the world. With the 167 kHz enhancement, the ALTM Gemini clearly demonstrates superior performance at virtually all altitudes, and reinforces Optech's leadership position in the global LiDAR marketplace, both in product innovation *and* scientific development.

To complement this ground breaking advance in technology, Optech also introduced DASHMap processing software, the next generation in LiDAR data processing solutions with a vastly accelerated data acquisition-to-processing ratio. DASHMap supports the ALTM Gemini's new laser speeds and enables ALTM Gemini owners to maximize both flight operations *and* post-processing.

The Gemini is the most recent member of the ever-growing ALTM family, complimenting the ALTM 3100EA. While maintaining the full performance characteristics of the ALTM 3100EA, the Gemini offers higher altitude operation at its peak repetition rates. Users can now operate 100 kHz laser rep rates from altitudes up to 2 km. Other modes of operation have similarly enhanced performance ranges. This greatly improves the survey efficiency of the ALTM by more than doubling the area coverage rate.

Airborne LiDAR technology is now a proven method for acquiring accurate digital terrain model data and associated imagery under a wide range of conditions. As an active sensor, it can be used when other remote sensing tools will not work.

LiDAR technology is still new and few companies around the world own the necessary equipment and even fewer offer data acquisition and processing services that actually meet the needs of their clients. For over 11 years, the highly trained professionals at Lasermap have led the growth in this industry and developed a unique expertise in handling projects of all types and sizes including large projects with complex logistics.

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Gemini 167 Specifications

Airborne Module

- Laser repetition rate:..... 33 - 167 kHz
- Operating altitude: 80 to 4,000 m (higher altitude optional)
- Horizontal accuracy: 1/11,000 x altitude; ± 1 -sigma*
- Elevation accuracy: 5 - 10 cm typical; ± 1 -sigma
- Range capture: Up to 4 range measurements for each pulse, including last
- Intensity capture: 4 intensity readings with 12-bit dynamic range for each measurement
- Scan frequency: Variable to 100 Hz
- Scan angle: Variable from 0 to $\pm 25^\circ$, in increments of $\pm 1^\circ$
- Spot distribution: Sawtooth, uniform spot spacing across 96% of scan
Scanner product: Scan angle x scan frequency $\leq 1,000$
- Roll compensation: 5 Hz update rate (Scan angle + roll comp. angle = 30° , e.g., $\pm 20^\circ$ scan allows $\pm 10^\circ$ compensation)
- Swath width: Variable from 0 to 0.93 x altitude (m)
- Beam divergence: Dual divergence 0.15/0.25 mrad or nominal (1/e full angle) 0.80 mrad
- Data storage: Ruggedized removable media
- Position orientation: Applanix - POS/AV including internal system 12-channel dual-frequency 10 Hz GPS receiver
- Laser classification: Class IV (FDA 21 CFR)
- Power requirements: 28 VDC, 35 A (maximum)
- Ambient operating Control rack: $+10^\circ\text{C}$ to $+35^\circ\text{C}$, Sensor head: 10°C to
Temperature: $+35^\circ\text{C}$
- Storage temperature: -10°C to $+50^\circ\text{C}$
- Humidity: 0 to 95% non-condensing

Control Rack

- Vibration-isolated case
- Dimensions: 65 cm x 59 cm x 49 cm
- Weight: 53.2 kg
- Cables/laptop 7.6 kg/3 kg

Sensor Head

- Fits standard camera mounts or mounts directly to floor
- Dimensions: 26 cm x 19 cm x 57 cm
- Weight: 23.4 kg
- Minimum opening: 19.2 cm x 25.5 cm (flight direction)

Processing Software

- DASHMap Survey Suite
 - Differential kinematic GPS solution
 - Trajectory optimization from multiple base stations
 - XYZ point calculations module
 - Windows XP compatible

GPS Ground Support

- Multiple base stations
- Any dual frequency receiver with Rinex output