

Applications

- Wide-area mapping
- Urban mapping
- Natural resource management
- Engineering & infrastructure modeling
- Powerline & transportation corridor

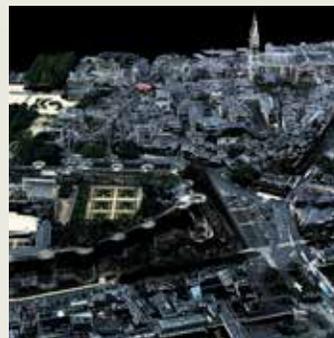


High-performance, ultra-compact, airborne lidar sensor for wide-area, mountain and corridor survey applications

The new ALTM Galaxy is the ultimate wide-area lidar sensor, with best-of-class density performance and collection efficiency. A descendant of the popular Orion platform, Galaxy is quite simply the smallest sensor on the market with the greatest performance capability, representing a giant leap ahead of its competitors in every way. Whether gyro-stabilized or fixed-mounted, high-altitude or low, one camera or six, Galaxy offers incredible collection efficiency and configuration flexibility with the highest data precision and accuracy possible.



Continuous Operating Envelope



Increased Vertical Density

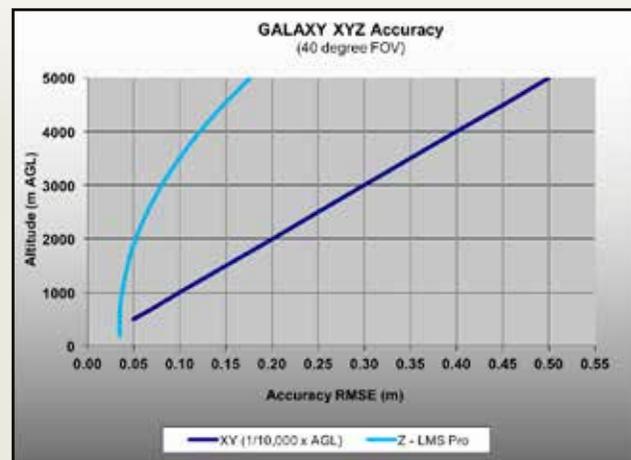
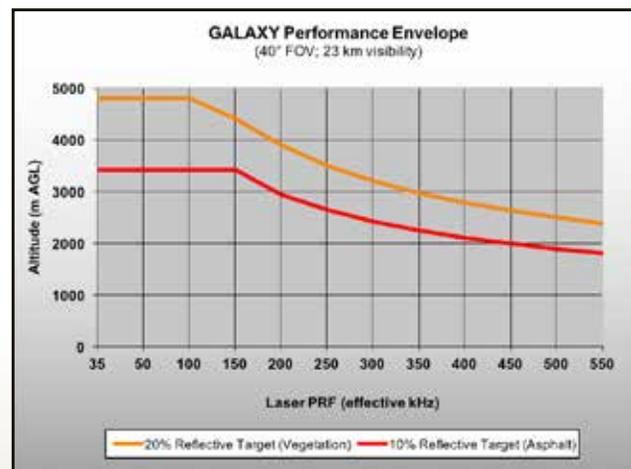
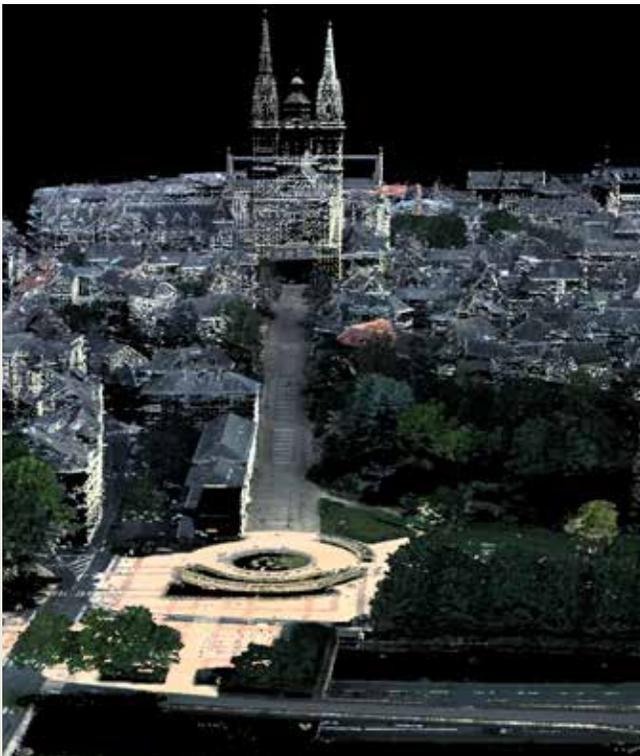


Seamlessly Integrated Cameras



The ALTM Galaxy Advantage

- PulseTRAK™ technology enables a continuous operating envelope that can accommodate high-relief terrain with no data gaps or loss of density across multipulse transition zones.
 - SwathTRAK™ technology maintains constant-width flightlines for consistent data density in variable terrain and fewer flight lines.
 - High-performance laser and scanner provide exceptional range and scan performance for maximum application flexibility and collection efficiency.
 - Capable of up to 8 returns per emitted pulse, Galaxy guarantees the highest vertical density possible without the processing and storage burden of voluminous waveform capture (full waveform capture optionally available).
 - Unique real-time sensor protocol enables in-air point cloud display for true-coverage verification and immediate rapid-response deliverables in LAS format.
 - Optech FMS Flight Management Suite provides integrated planning with simultaneous control and monitoring capability for up to 8 sensors.
- Industry-leading raw data precision and accuracy enables survey-grade deliverables for complete USGS Lidar Base Specification compliance (QL0/QL1/QL2) and the highest quality map products possible.
 - Gyro-stabilized and multi-sensor mounts maximize collection efficiency and enable custom sensor suites tailored to your application requirements.
 - Powerful Optech LMS Lidar Mapping Suite automates sensor calibration, maximizes laser point accuracies and quantifies project accuracy deliverables.



What is the secret to Galaxy's performance advantage?

POWERED BY
PulseTRAK™

POWERED BY
SwathTRAK™



Galaxy includes an innovative set of lidar technology enhancements that significantly increases sensor performance and collection efficiency, improves data quality, and greatly simplifies the collection process.

These new enhancements include:

1. Continuous Operating Envelope

PulseTRAK™ technology enables a truly continuous operating envelope by eliminating the data coverage gaps and irregular point density commonly found with other multipulse-equipped sensors. This feature greatly simplifies mission planning and produces consistent data distribution throughout the entire data set, even across receiver “blind” zones.

- Enables consistent point density with no more receiver “blind” zones.
- Complete collection freedom irrespective of terrain variability significantly enhances efficiency.
- Greatly simplifies mission planning.

2. Dynamic Field of View (FOV)

Galaxy, with SwathTRAK™ technology, is the first sensor to incorporate a real-time dynamic FOV that maintains fixed-width swaths, even in varying terrain heights.

- Maintains regular point distribution and improves point density consistency despite changes in terrain height.
- Fewer number of flight lines, compared to fixed-FOV sensors, for maximum collection efficiency

3. Real-time Sensor Protocol

Galaxy incorporates a real-time sensor protocol to enable in-air target observation and collection monitoring, significantly increasing collection confidence.

- Real-time XYZi point display enables true-coverage verification over the entire operating envelope, even across multi-pulse transition zones.
- In-air target detection and monitoring confirms detection of small targets such as powerlines in real-time.
- Real-time LAS file generation produces immediate data deliverables.

4. High-Performance Scanner

A new, high-performance galvanometric scanner forms the foundation of Galaxy's exceptional performance capability. Featuring extremely high torque and minimal electrical inductance, the new scanner provides superior scan speeds at reduced voltages for a significant boost in performance, reliability, and scan linearity, enhancing data quality and point distribution. Improved scanner stability produces maximum calibration consistency.

- Improves XY point distribution at higher PRF sample rates.
- Enables faster aircraft velocities and wider scan FOVs, as well as dramatic increases in point density at lesser FOVs.

Optech Galaxy Specifications

Parameter	Specification
Laser Configuration	
Topographic laser	1064-nm near-infrared
Laser classification	Class IV (US FDA 21 CFR 1040.10 and 1040.11; IEC/EN 60825-1)
Beam divergence	0.25 mrad (1/e)
Operating altitudes (1,2,3,4)	150-4700 m AGL, nominal
Effective pulse repetition frequency	Programmable, 35-550 kHz
Laser range precision (5)	< 0.008 m, 1 σ
Scan angle (FOV)	Programmable, 0-60°
Swath width	Programmable, 0-115% of AGL
Scan frequency	Programmable, 0-120 Hz advertised (0- 240 scan lines/sec)
Sensor scan product	2000 maximum
Absolute horizontal accuracy (2,3)	1/ 10,000 \times altitude; 1 σ
Absolute elevation accuracy (2,3)	< 0.03-0.20 m RMSE from 150-4700 m AGL
Sensor Configuration	
Position and orientation system	POS AV™ AP60 (OEM); 220-channel dual frequency GNSS receiver; GNSS airborne antenna with Iridium filters; high-accuracy AIMU (Type 57); non-ITAR
Flight management system	Optech FMS
SwathTRAK™	Dynamic field of view
PulseTRAK™	Continuous operating envelope
Range capture	Up to 8 range measurements, including last
Intensity capture	Up to 8 intensity returns for each pulse, including last (12-bit)
Roll compensation	Programmable; $\pm 5^\circ$ at 50° FOV; increasing as FOV is reduced from 50°
Minimum target separation distance	< 0.7 m (discrete)
Data storage	Internal solid state drive SSD (SATA II)
Power requirements	28 V; 300 W; 12 A
Dimensions and weight	Sensor: 0.34 \times 0.34 \times 0.25 m, 27 kg — PDU: 0.42 \times 0.33 \times 0.10 m, 6.5 kg
Operating temperature	0 to +35°C
Optional Peripherals	
External data storage	Ruggedized, removable 2.5" SSD (SATA II)
Image capture	Compatible with all Optech CS-Series and most 3rd party digital metric cameras
Full waveform capture	12-bit Optech IWR-3 Intelligent Waveform Recorder with removable SSD
Gyro-stabilization	SOMAG GSM 3000/4000 integration kit
Multi-sensor mounts and pods	2 and 4-station machined aluminum sensor mounts (aircraft and/or helicopter) Carbon-fiber sensor mount supporting nadir and fore/aft oblique cameras Heli-pod and mount options for Bell 206/407 (FAA-approved)

1. Target reflectivity $\geq 20\%$.

2. Dependent on selected operational parameters; assumes nominal FOV of up to 40° in standard atmospheric conditions (i.e. 23-km visibility) and use of Optech LMS Professional software suite.

3. Angle of incidence $\leq 20^\circ$

4. Target size \geq laser footprint

5. Under Teledyne Optech test conditions, 1 sigma