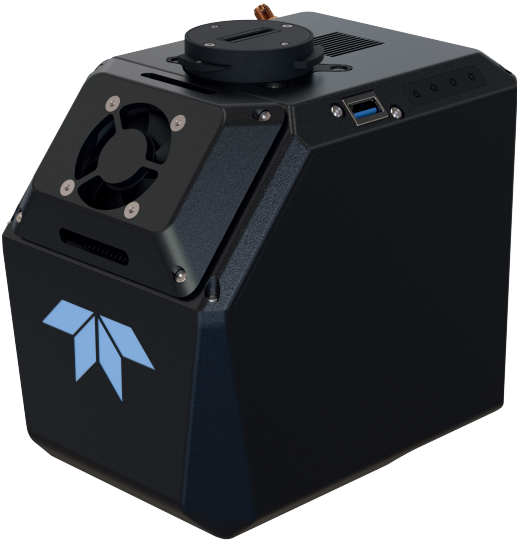




TELEDYNE EchoONE
POWERED BY INERTIAL LABS RESEPI™
SECURE LIGHTWEIGHT AIRBORNE LASER SCANNER



TELEDYNE EchoONE OVERVIEW

NDAA compliant
EchoONE is compliant with FY2020 NDA Sec 848 and FY2023 NDA Sec 817
EchoONE is designed, developed and manufactured to be compliant with projects requiring the safety and security of data

Long-range lidar with up to 8 returns per laser pulse
Powerful eye-safe laser with 270m range to 20% reflectivity targets
Flexibility to map large areas quickly from a high operating altitude, capture narrow electric utility conductors or wires, and penetrate thick vegetation with returns from both tree structure and ground

Wide-angle perspective
90 deg horizontal field of view with 4 unique +/- 10 deg vertical scan angles
Wide horizontal field of view maximizes swath reducing flight time
Vertical field of view captures utility poles and building walls

Precise data
5mm lidar ranging precision
Low noise data results in crisp, detailed scans for modelling applications in utilities and transportation

Ultra-lightweight design
Echo is the lightest weight UAV laser scanner with its performance
Capture larger areas with increased flight time before needing battery swaps
Compatible with smaller airline transportable UAVs and fewer transportation cases

Realtime georeferenced point cloud
Georeferenced point cloud generated on-sensor in realtime
Pilot QC review of LAS file to ensure project coverage prior to leaving site
Realtime API for third-party customized solutions

High-accuracy inertial measurement unit
EchoONE includes the Inertial Labs KERNEL-210 tactical grade IMU
High accuracy inertial measurements ensure the accuracy and reliability of lidar point clouds when verified to ground control points

Integrated colorization camera
EchoONE includes a 5MP global shutter camera and optional 61MP camera
Colorized point clouds provide additional context not available with intensity alone
Optional 61MP allows for simultaneous capture of high-resolution imagery for orthomosaics and inspection

SYSTEM PERFORMANCE

Example Area Coverage 30min, 120m agl, 8m/s, 20% sidelap	695 acres/281 ha
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ENVIRONMENTAL

Operating Temperature	-10C to +40C
Storage Temperature	-40C to +85C
Ingress Rating	IP54
Compliance	CE, RoHS, WEEE REACH, NDA

PHYSICAL

Size	L: 170 mm H: 144 mm W: 120 mm
Weight	1.65 kg
Power	<75W nominal, <85 max, 9-50V

OPERATIONAL

Communication	WLAN, Wifi
Onboard Storage	512 GB
Removable Storage	USB



About Inertial Labs
Inertial Labs is at the forefront of developing and manufacturing position and orientation technologies for the commercial sector, government, defense, and aerospace. Inertial Labs' product catalog includes Inertial Measurement Units (IMU), Inertial Navigation Systems (INS), Motion Reference Units (MRU), and Wave Sensors (WS) along with RESEPI, our LiDAR scanning and mapping package. We supply solutions for land, sea, and air to exacting customers from some of the largest organizations in the world.

LASER

Laser Pulse Repetition Frequency (kHz)	400 khz	600 khz
Effective Pulse Repetition Frequency (kHz)	316k Hz	474 kHz
Max Measuring Range 20% targets ⁽²⁾	270 m	220 m
Max Operating Altitude Agl, 20% targets ⁽³⁾	175 m	130 m
Max Returns Per Pulse	8	
Range Accuracy / Precision, 1sigma ⁽¹⁾	10 mm/5mm	
Laser beam divergence 1/e2	0.5 mrad	
Minimum Range	3.0 m	
Horizontal Field of View	90 deg	
Vertical Scan Lines (Nadir) ⁽⁵⁾	-10 deg, -4 deg, +4 deg, +10 deg	
Lines Per Second	Up to 250	
Wavelength	1535 nm	
Laser Product Classification	Class 1 (IEC 60825-1:2014)	

SOFTWARE

Inertial Labs PCMaster Pro	One-click post-processing Post-Processing inertial data Colorization Point cloud visualization and measurement Automation tools
Teledyne LMS Pro (Optional)	Multiple coordinate reference systems Lidar system calibration Boresight calibration Strip alignment Control point report Visual quality control tools

OPTIONS

Skyport Payload Interface
Smart Dovetail Payload Interface
Gremsy Payload Interface
Sony ILX-LR1 61MP Camera
External Multiple Service Plans
Training

INS

Constellations	GPS, GLONASS, Galileo, BeiDou, QZSS, NavIC (IRNSS), SBAS, L-Band ⁽⁴⁾
Frequencies	L1, L2, L5 ⁽⁴⁾
Pitch / Roll Accuracy	0.03° (RTK); 0.006° (PPK)
Heading Accuracy	0.08° (RTK); 0.03° (PPK)

CAMERA

Internal	5MP Global Shutter, 80deg FOV
External	Optional Sony ILX-LR1

⁽¹⁾Under Teledyne Geospatial test conditions

⁽²⁾Nominal, Target size >= laser footprint, perpendicular angle of incidence, 23 km clear visibility

⁽³⁾Nadir +/- 40 deg, +/-5 deg roll

⁽⁴⁾Maximum available, dependent on receiver configuration

⁽⁵⁾At Nadir

