EchoONE

Powered by Inertial Labs RESEPI

Secure Lightweight Airborne Laser Scanner



The **Teledyne Optech EchoONE** is a secure lightweight airborne laser scanner compatible with UAVs such as the DJI M300/M350, Inspired Flight IF800, and others. For applications such as land surveying, electric utility vegetation management and asset management, and transportation projects, the EchoONE delivers secure, colorized engineering-grade lidar point clouds.

NDAA COMPLIANT / DATA SECURITY

EchoONE is compliant with applicable requirements of the U.S. National Defense Authorization Act (NDAA) Section 889, Section 841, and Section 851.

- EchoONE is designed, developed and manufactured to be compliant with projects requiring the safety and security of data

LONG-RANGE LIDAR AND CANOPY PENETRATION

Powerful eye-safe laser with 270 m 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

5 mm lidar ranging accuracy & 1.5 cm georeferenced accuracy

- Low noise data results in crisp, detailed scans for modeling applications in utilities and transportation

ULTRA-LIGHTWEIGHT DESIGN

EchoONE weighs 1.65 kg and 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

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 5 MP global shutter camera and optional 61 MP camera

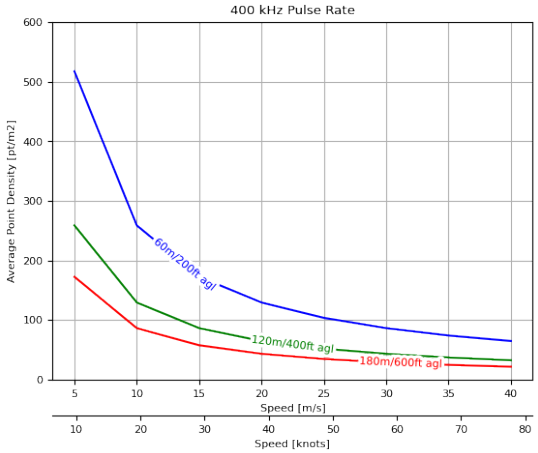
- Colorized point clouds provide additional context not available with intensity alone
- Optional 61 MP allows for simultaneous capture of high-resolution imagery for orthomosaics and inspection

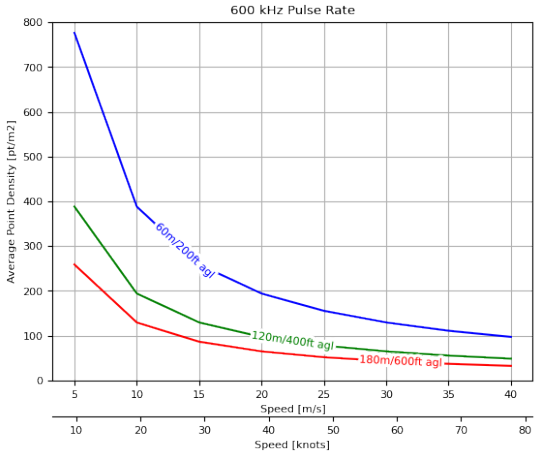
SYSTEM SPECIFICATIONS		
Example Area Coverage 30 min, 400 ft/120 m agl 8 m/s, 20% sidelap	695 acres / 281 ha	
LASER		
Laser Pulse Repetition Frequency	400 khz	600 khz
Effective Pulse Repetition Frequency	316 kHz	474 khz
Max. Measuring Range 20% targets[2]	270 m	220 m
Max. Operating Altitude agl, 20% targets[3]	175 m	130 m
Returns	Up to 8 per pulse 0.7 m minimum target separation	
Range Accuracy / Precision, 1sigma[1]	10 mm / 5 mm	
System Absolute Accuracy	1.5 cm, 1 sigma at 120 m Altitude**	
Laser beam divergence 1/e2	0.5 mrad	
Minimum range	3.0 m	
Horizontal Field-of-View	90 deg	
Scan Line Direction[5]	-10 deg, -4 deg, +4 deg, +10 deg	
Lines Per Second	250	
Wavelength	1535 nm	
Laser Product Classification	Class 1 (IEC 60825-1:2014)	
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	5 MP Global Shutter, 80 deg FOV	
External	Optional Sony ILX-LR1	

ENVIRONMENTAL	
Operating Temperature	-10C to +40C
Storage Temperature	-40C to +85C
Ingress Rating	IP54
Compliance	NDAA, CE, RoHS, WEEE, REACH
PHYSICAL	
Size	170 mm L x 144 mm H x 120 mm W
Weight (without payload adapter)	1.65 kg
Power	<75W nominal, <85W max, 9-50V
OPERATIONAL	
Communication	WLAN, Wifi
Onboard Storage	512 GB
Removable Storage	USB
SOFTWARE	
Inertial Labs PCMaster Pro	One-click post-processing Post-Processing Inertial Data Colorization Point cloud visualization and measurement Automation tools Strip Alignment
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 External Sony ILX-LR1 61MP Camera (NDAA Compliant) Teledyne LMS Pro	

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

**Under Teledyne Optech test conditions





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