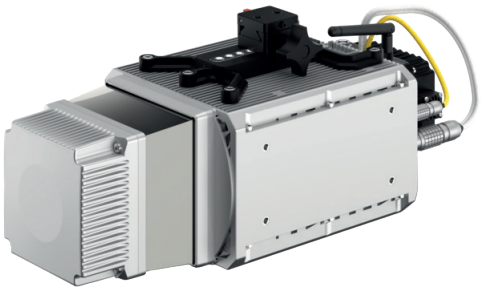
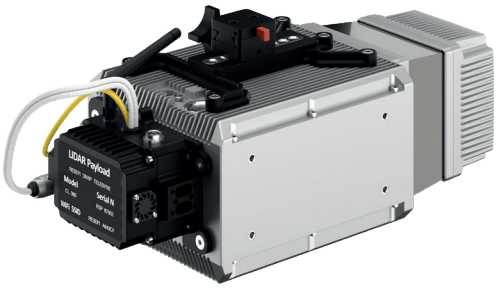
Inertial Labs
Attitude is Everything

LiDAR Scanning & Mapping Solution





RESEPI™ TELEDYNE OPTECH CL-360HD

RESEPI Overview

RESEPI™ (Remote Sensing Payload Instrument) is a sensor-fusion platform designed for accuracy-focused remote sensing applications. RESEPI utilizes a high-performance Inertial Labs INS (GPS-Aided Inertial Navigation System) with a tactical-grade IMU and a high-accuracy single or dual-antenna GNSS receiver, integrated with a Linux-based processing core and data-logging software. The platform also provides a WiFi interface, optional imaging module, and external cellular modem for RTCM corrections. RESEPI can be operated by a single hardware button or from a wirelessly connected device via a simple web interface.

System

System Vertical Accuracy	1 - 2 cm[1]
Precision	1 - 2 cm[2]
Precision (1σ Noise Removal)	1 - 2 cm [3]
Recommended AGL	Up to 200 m
Weight	4.3 kg (without camera)
Dimensions	36.9 x 16 x 15.5 (cm)
Max Flight Time (DJI M600)	23 minutes (TB48S batteries)
External Storage	256GB USB Included
System Computer	Quad Core, 1GB RAM, 8GB eMMC
Operational Voltage Range	9-36V
Power Consumption	42W (@ 100 Hz); 47W (@ 250 Hz)

RESEPI WITH TELEDYNE CL-360HD

RESEPI equipped with TELEDYNE's CL-360HD LiDAR is Inertial Labs' entrance solution to the precision solution market. This powerful system will meet users' needs, needing the best return count, range, beam divergence, accuracy, and precision. It offers a range of different laser scan speeds and frequencies, allowing users to tweak the settings to match the desired use case easily.

Applications

The RESEPI CL-360HD was strategically designed for projects requiring high performance. Due to its powerful 4-return laser and increased range of up to 750m, the CL-360HD would be perfect for mobile mapping, forestry, and crack detection in critical infrastructure areas like airport runways. Because of this diverse use-case portfolio and its 360 FOV, the RESEPI can be used for many services, including utility mapping (power lines), construction volumetrics, site surveying, precision agriculture, forestry, mining operations, and others.

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.

LiDAR

Laser Range Capabilities (200kHz)	205m @ 10% ref.; 290m @ 20% ref.; 490m @ 50% ref.; 1.5 to 750m[4]
Laser Range Capabilities (200kHz)	130m @ 10% ref.; 185m @ 20% ref.; 250m @ 50% ref.; 1.5 to 750m[5]
Range Accuracy	+/- 5 mm
FOV (Horizontal)	360°
FOV (Vertical)	NA
Scan Angle (Vertical)	NA
Beam Divergence	0.017°[6]
Number of Laser	1
Number of Returns	4
Scan Speed	50-250 lines/sec

Software

Field Checks	Yes, Included
Pre-Processing	Yes, Included
Post-Processing	Yes, Supported

GPS-Aided INS

GPS-Aided Inertial Navigation System

IMU	Inertial Labs Tactica Grade IMU-P
GNSS	Dual Antenna
Constellations	GPS, GLONASS, Galileo, BeiDou, QZSS, NavIC (IRNSS), SBAS, L-Band[7]
Frequencies	L1, L2, L5[8]
Operation Modes	RTK and PPK
Output Rates	Up to 200Hz (INS); Up to 2,000Hz (IMU)
Pitch/Roll Accuracy	0.03° (RTK); 0.006° (PPK)[9]
Heading Accuracy	0.15° (RTK); 0.03° (PPK)[10]
Velocity Accuracy	<0.03 m/s
Position Accuracy	1cm + 1ppm (RTK); 0.5cm (PPK)

[1][2]Single Pass, 50m AGL, 5m/s, Nadir, Values Based on Inertial Labs Test Conditions.

[3]Single Pass, 50m AGL, 5m/s, Nadir, Single Noise Removal, Values Based on Inertial Labs Test Conditions.

[4][5]Max Range Capacity.

[6]Varies by measurement range

[7][8]Maximum available; dependent on receiver configuration.

[9]Dynamic accuracy is dependent on type of motion.

[10]Dynamic accuracy is dependent on type of motion; RTK with a 1-meter baseline.