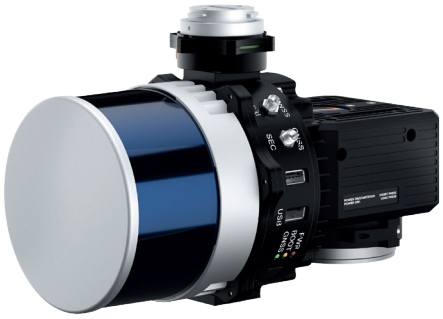
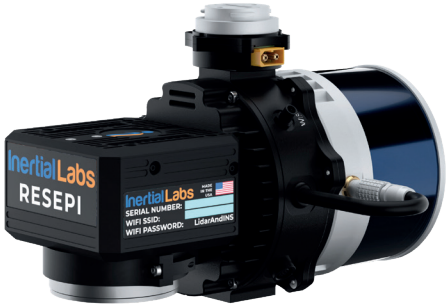
Inertial Labs
Attitude is Everything

LiDAR Scanning & Mapping Solution





RESEPI™ Hesai XT-32

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	2 - 3 cm[1]
Precision	2 - 4 cm[2]
Precision (1σ Noise Removal)	1.5 - 2.5 cm [3]
Recommended AGL	Up to 100 m
Weight	1.7 kg (with camera), 1.3 kg (without camera)
Dimensions	20.8 x 17 x 14.2 (cm)
Max Flight Time (DJI M300)	33 minutes
External Storage	256 GB USB Included
System Computer	Quad Core, 1GB RAM, 8GB eMMC
Operational Voltage Range	9-45V
Power Consumption	17W

RESEPI WITH HESAI XT-32

Compact and light-weight, the RESEPI featuring HESAI's XT-32 LiDAR scanner is an all-around very attractive system, offering the benefits of best-in-class data accuracy, good detection range, high point density, and versatility.

Applications

The RESEPI featuring HESAI's XT-32 was strategically designed for multiple application bases. This solution is ideally suited for cost effective surveying work in applications involving open-pit mining, construction site monitoring, utility infrastructure management, and general volumetrics. The 360-degree FOV laser also makes this system well suited for various platforms and operation modes, including mobile vehicles, DJI supported drones (DJI M300, M600 Pro), custom drones, handheld platforms, vehicles, the Freefly Alta-X, and many more.

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.

inertiallabs.com | +1 (703) 880-4222 | 39959 Catoctin Ridge St, Paeonian Springs, VA 20129, USA

LiDAR

Laser Range Capabilities	80m @ 10% ref. (c9-24); 50m @ 10% ref. (c1-8, 25-32); 0.05 to 120m
Range Accuracy	+/- 1 cm
FOV (Horizontal)	360°
FOV (Vertical)	31°[4]
Scan Angle (Vertical)	-16° to 15°
Beam Divergence	0.04° (H), 0.098°(V)[5]
Number of Laser	32
Number of Returns	2
Pulse Rate	640k/s (single return); 1280k/s (dual return)

Camera

Model	24MP RGB Mapping Camera
Lens	Sony E-Mount 16mm, 70° FOV
Max Trigger Rate	2 seconds
External Camera Support	Yes[6]

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	Single or 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]Dependent upon scanning pattern used

[5]Varies by measurement range

[6]For select models

[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