CZMIL Nova
Airborne Bathymetric Lidar

The most productive airborne system for seamless topography and bathymetry in real-world water quality conditions

Optech CZMIL Nova is an innovative airborne coastal zone mapping system that produces simultaneous high-resolution 3D data and imagery of the beach and shallow water seafloor, including coastal topography, benthic classification and water column characterization. CZMIL Nova performs particularly well in shallow, turbid waters. Its bathymetric lidar is integrated with a hyperspectral imaging system and digital metric camera. Optech HydroFusion, a powerful end-to-end software suite, handles all three sensors—from mission planning through to fused lidar and imagery data sets.

» Only system tested against military specs such as shock & vibration and validated by US and foreign government agencies
» Best seamless topo/bathy capability in clear waters up to 70-75 m and unmatched results in turbid waters
» The CZMIL Nova is optimized for weight and size, and can be mounted in aircraft as small as a Piper Navajo
» Best operational productivity with all in one HydroFusion workflow and data fusion software Optech CZMIL Nova was designed by Teledyne Optech for the U.S. Government under the auspices of the U.S. Army Corps of Engineers (USACE) and the Joint Airborne Lidar Bathymetry Technical Center of Expertise (JALBTCX). It was built and tested by Optech with the assistance of the University of Southern Mississippi (USM).

APPLICATIONS
» Coastal management
» Harbor and navigation channel inspection
» Beach/coastal erosion monitoring
» Nautical charting
» Aquatic ecosystems management
» Rapid environmental assessment
» Underwater object detection
» Turbid waters

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GENERAL SPECIFICATIONS

- Operating altitude: 400 m (nominal), up to 1,000 m
- Aircraft speed: 140 kts (nominal)
- Hyperspectral sensor: CASI-1500H
- Digital cameras: Phase One iXU-RS 1000 100MP
- Positioning & GPS/GNSS: Applanix POS AV™
- Positioning system: OmniSTAR capable (subscription required)

HYPEROGRAPHIC MODE

- Shallow channels measurement rate: 70 kHz
- Shallow channels maximum depth: $2/K_d$ (bottom reflectivity > 15%)
- Deep channel measurement rate: 10 kHz
- Deep channel maximum depth: $4.2/K_d$ (bottom reflectivity > 15%)
- Depth measurement accuracy: $\sqrt{(0.3 + 0.013d^2)}$ m, 2 σ, 0 – 30 m
- Horizontal accuracy: $(3.5 + 0.05d)$ m, 2 σ
- Scan angle: 20° circular
- Swath width: 70% of operating altitude

TOPOGRAPHIC MODE

- Measurement rate: 80 kHz
- Horizontal accuracy: ±1 m, 2 σ
- Vertical accuracy: ±15 cm, 2 σ

PHYSICAL

- Power requirements: 85 A for Lidar/camera @ 28 VDC and 95A @28VDC with CASI
- Operating temperature: 0°C to 40°C
- Storage temperature: -10°C to +60°C
- Humidity: 0-95% non-condensing
- Sensor head: 89 W x 60 D x 90 H cm; 175 kg
- Control & operations rack: 59 W x 56.5 D x 106 H cm; 112 kg
- Data processing software: CZMIL HydroFusion (Windows-based)

KEY FEATURES

- Accurate and seamless topography and water depth measurements
- Short laser pulse widths enable true shallow water bathymetry
- Circular scan pattern provides two ‘looks’ per target, for optimal object detection
- Web-based interface for real-time in-field remote diagnostics
- Simultaneous high-density topo/bathy data from a single laser
- Segmented detector capable of up to 70,000 measurements/second
- Lidar, hyperspectral, and RGB camera integrated on-board
- Weight and design optimized for airworthiness and military standards

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