CZMIL SuperNova

Topographic/Bathymetric Mapping System

CZMIL SuperNova Topographic / Bathymetric Lidar

SuperNova is the next generation topo/bathy lidar system from Teledyne Optech and Teledyne CARIS. Equipped with the most powerful green laser on the market,SuperNova provides maximum depth penetration, superior coverage in turbid waters and better than double the point density of CZMIL Nova.

SuperNova FEATURES

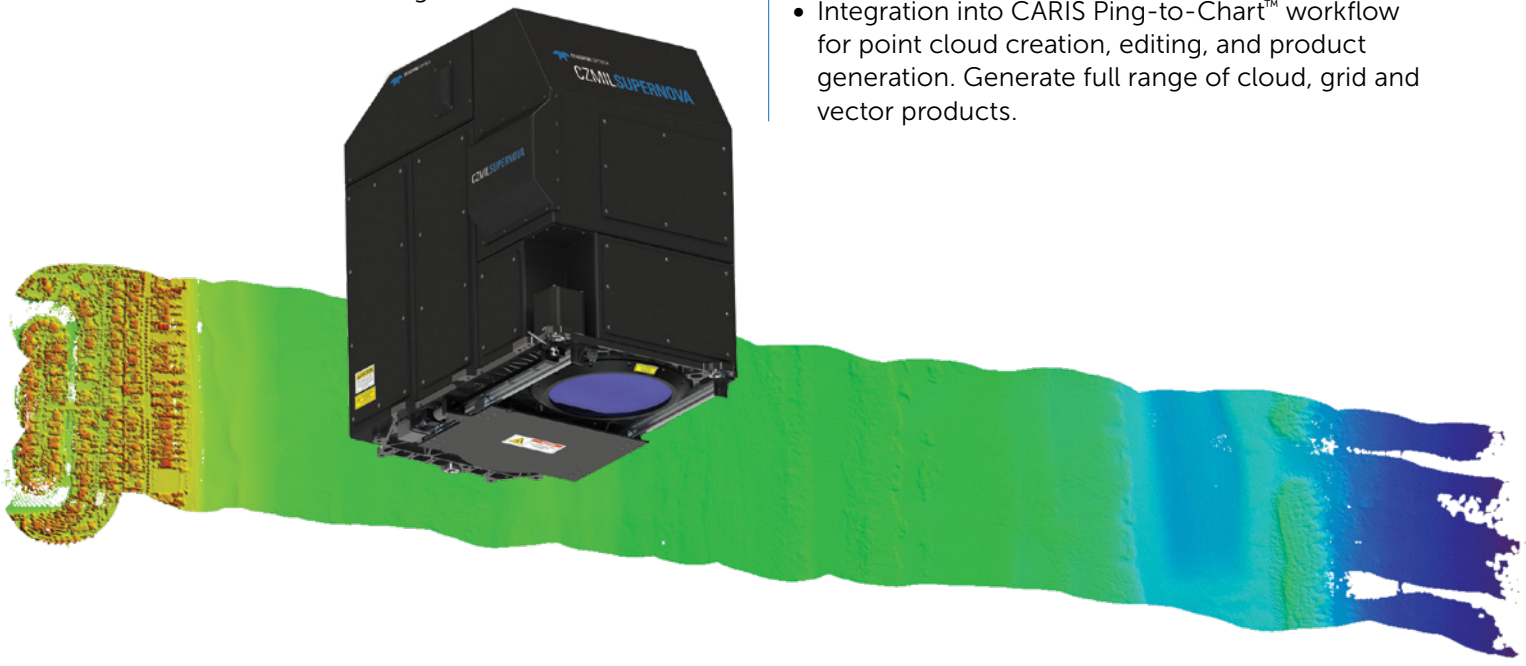
- Deepest depth penetration, best performance in turbid water.
- SmartSpacing technology for even point distribution.
- Up to triple the point density from Nova.
- Field programmable sensor settings for flexibility in different water environments.
- Full waveform capture of land and water opens the door to a variety of data products beyond elevation and depth such as object detection, water clarity maps, seafloor reflectance and vegetation maps (both on land and submerged).

SuperNova Processing in CARIS BASE Editor

Data is processed in CARIS BASE Editor software and leverages AI based techniques for land/water discrimination and noise classification. The CARIS processing tools open the door to a full range of processing options from datum shifts to full wave-form display and editing to the creation of enhanced information products in a wide variety of formats.

SuperNova FEATURES

- Deep Learning algorithms for land/water interface detection to produce seamless topo/bathy coverage.
- Deep Learning algorithms for automated noise classification for cleaner datasets and less editing time.
- Full waveform visualization, analysis and editing of 3D point cloud.
- Special algorithms for turbid and shallow water mapping.
- Production of 2D information products: seafloor reflectance, water attenuation.
- Integration into CARIS Ping-to-Chart™ workflow for point cloud creation, editing, and product generation. Generate full range of cloud, grid and vector products.



Technical Specifications

General Specifications	
Operating altitude	400 meters to 600 meters AGL
Aircraft speed	120 - 140 kts
Digital cameras	Phase One iXM-RS150F
Positioning & GPS/GNSS	Applanix POS AV™ 610 with PPRTX subscription
Lidar Hydrographic Mode	
Shallow channels measurement rate	Up to 210,000 Hz
Shallow channels maximum depth	$2.9/K_d$ (bottom reflectivity ≥ 15%)
Shallow channel depth accuracy	$\sqrt{(0.25^2+(0.0075d)^2}$ m, 2 σ
Deep channel measurement rate	Up to 30,000 Hz
Deep channel maximum depth	$4.4/K_d$ (bottom reflectivity ≥ 15%)
Deep channel depth accuracy	$\sqrt{(0.3^2+(0.013d)^2}$ m, 2 σ
Scan angle	20° circular
Swath width	73% of operating altitude (292 m at 400 m AGL)
Laser classification	Class 4 laser product: IEC 60825-1 Ed. 3.0 2014
Lidar Topographic Mode	
Measurement rate	Up to 240,000 Hz
Horizontal accuracy	±0.40 m, 2 σ
Vertical accuracy	±10 cm, 2 σ
Physical	
Power requirements	85 A for Lidar/camera @ 28 VDC
Operating temperature	0°C to 40°C
Storage temperature	-20°C to +60°C
Humidity	0-95% non-condensing
Sensor head	89 W x 60 D x 90 H cm; 163 kg (360 lbs)
Control & operations rack	59 W x 56.5 D x 106 H cm; 119 kg (262 lbs)

Data accuracy specifications are for data acquired at 400 m AGL.

d is the depth in m and K_d (m^{-1}) is the water diffuse attention coefficient (a measure of water turbidity). Maximum depth is valid for K_d in the interval 0.08 – 0.4 m^{-1}.

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