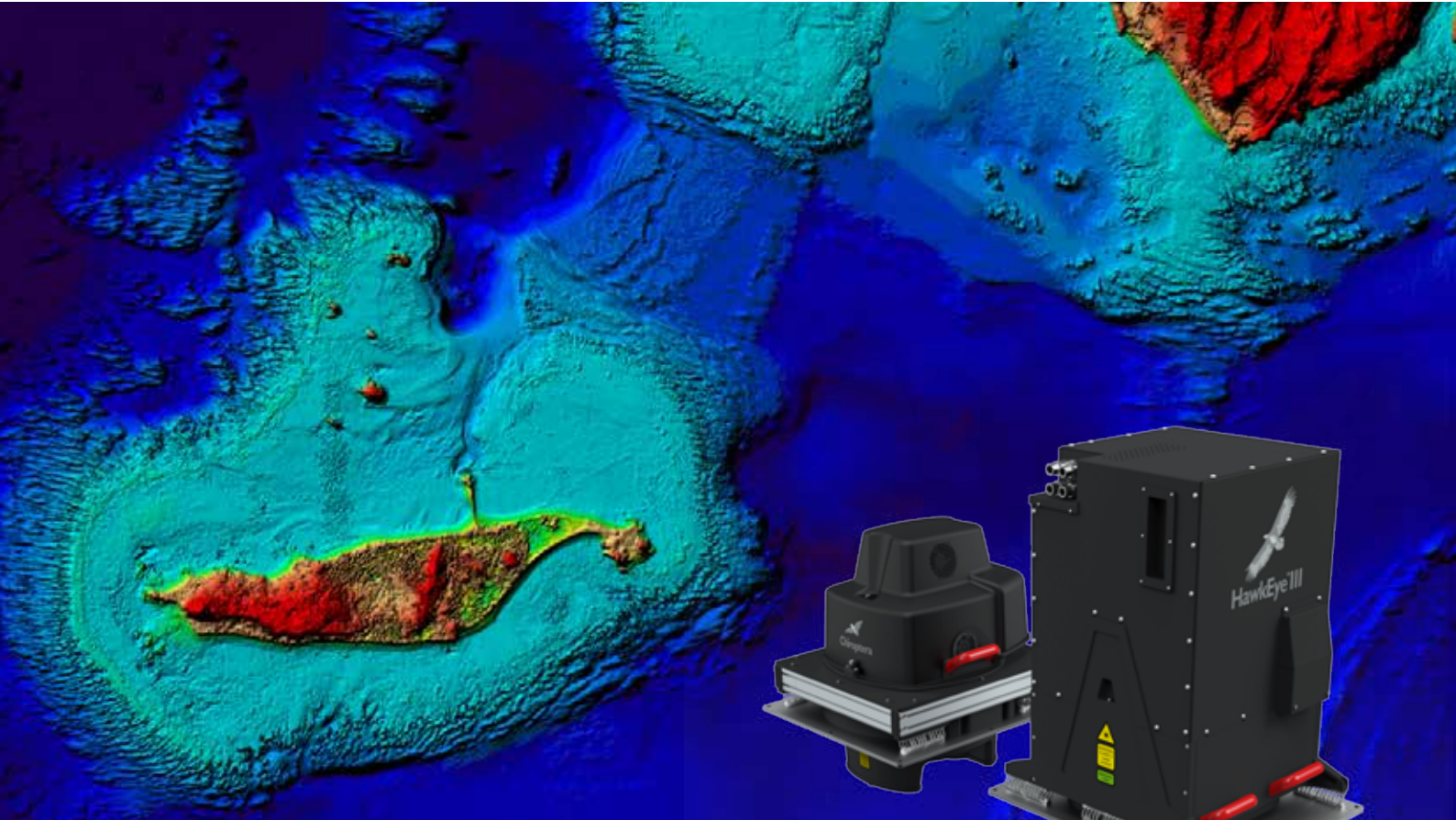


Leica HawkEye III

The most efficient deep water LiDAR sensor



The world's most competent system

This flagship system expands on the competence of Leica Chiroptera II by providing superior capability in deeper waters. Leica HawkEye III does it all. Do you currently own a Leica Chiroptera II but need to expand into deeper waters? Leica Chiroptera II can be readily upgraded to Leica HawkEye III.



From shore to deep water

Sometimes you require more power, for example when the shoreline drops into deeper water. This is when you need the Leica HawkEye III. With its 3.0 Secchi depth penetration, you can collect seabed data down to 50 m from the air. Need to capture high point density shoreline data? Leica HawkEye III does that, too.



Fastest & most automated workflow

The Leica LiDAR Survey Studio (Leica LSS) turns data processing of waveform and position data, calibrations, correcting refraction and incorporating four-band camera data into a fast and automated workflow. Manage projects, analyse data and create point clouds with maximum efficiency, using one intuitive interface.

Leica HawkEye III product specifications

LASER CHARACTERISATION

Deep bathymetric laser	10 kHz green, digital full waveform capture
Shallow bathymetric laser	35 kHz green, digital full waveform capture
Topographic laser	Up to 500 kHz infrared, with full waveform record option
Operation altitude	Bathymetry 400 – 600 m AGL Topography up to 1,600 m AGL
Depth range ¹	Deep bathymetry $D_{max} = 4/k$ (~ 3.0 Secchi depth) Shallow bathymetry $D_{max} = 2.4/k$ (~ 1.5 Secchi depth)
Scanner pattern	Oblique scanner
Field of view	$\pm 14^\circ$ front/back, $\pm 20^\circ$ left/right
Swath width	70% of AGL
Point density ²	Deep bathymetry: 0.4 pts/m ² Shallow bathymetry: 1.5 pts/m ² Topography: > 12 pts/m ²
Bathymetric accuracy ^{2,3}	Shallow: 0.15 m (2σ) Deep: $\sqrt{0.3^2 + (0.013 \cdot \text{depth})^2}$ m (2σ)
Topographic accuracy ^{2,3,4,5}	Ranging accuracy: 2 cm (1σ) Horizontal accuracy: 20 cm (1σ)

OPTICAL CHARACTERISATION

Q/A camera	5 MP, 2,448 x 2,050 pixels, 1 frame per second (fps), RGB
Leica RCD30 medium format camera (Optional)	80 MP, 10,320 x 7,752 pixels, 1 frame per second (fps), RGBN

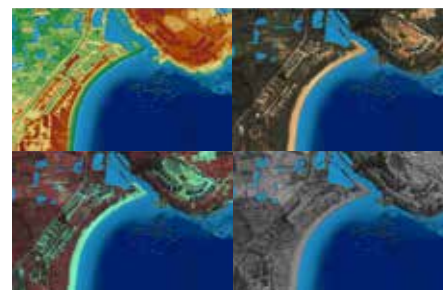
PHYSICAL & OPERATION INTERFACE

GNSS/IMU	Novatel SPAN with LCI-100 IMU (non-export restricted)
Mission planning	Leica MissionPro
Flight navigation	Leica FlightPro
Post-processing	Novatel Inertial Explorer – GNSS/IMU processing software LiDAR Survey Studio™ Leica FramePro Image processing
Storage capacity	Over 8 hours recording in ruggedised removable SSD
Operation temperature	0 °C to +35 °C
Storage temperature	-10 °C to +50 °C
Power consumption	18-32 V DC, 2 x 50A @ 28 V DC
Internal battery module	Battery supports GNSS/IMU unit operation up to 30 min without external power



Leica LiDAR Survey Studio (Leica LSS)

The Leica LiDAR Survey Studio (Leica LSS) provides a highly integrated and automated end-to-end processing workflow for the Leica DragonEye, Chiroptera II and HawkEye III systems. Maximise data processing in just one intuitive and well thought out user interface. Manage jobs, calibrate systems and convert even the most complex waveforms to ranges. Detect water, air and land interfaces, perform refraction corrections and generate highly accurate point clouds. All topographic, bathymetric and RGBN point cloud data can be viewed with any standard formats and measuring functions that are expected of a professional software.



Point cloud in elevation, RGB, CIR and NIR view

¹ k is the diffuse attenuation coefficient. Depth penetration is valid for the diffuse attenuation coefficient in the interval $0.1 < k < 0.3$. Depth penetration is subject to several other parameters aside from the diffuse attenuation coefficient k. For this specification normal sea-state and 15% seabed reflectance has been assumed.

² Accuracy and point density stated in the table is acquired @400 m AGL, 60 m/s aircraft speed

³ The 2σ value represents the 95% confidence interval, the 1σ value represents the 68% confidence interval. Typically, the RMSE value is equal to 1σ accuracy value, or half of 2σ accuracy value.

⁴ Ranging accuracy here refers to the measurement accuracy of LiDAR, not including GNSS/IMU error

⁵ Horizontal accuracy here refers to the pointing accuracy of LiDAR, not including GNSS/IMU error

Visible and invisible laser radiation, avoid eye or skin exposure to direct or scattered radiation. Class 4 Laser Product in accordance with EN/IEC 60825-1:2007.

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