# Leica Chiroptera II
## The most cost-effective nearshore LiDAR sensor

## Most capable coastal surveying system

Superior topographic and effective nearshore bathymetric data acquisition coupled with the imagery of the Leica RCD30 camera make Leica Chiroptera II the world's leading coastal and inland water surveying sensor and a smart investment to enter the hydrography market. Leica Chiroptera II manages a wide range of land or sea projects, keeping asset utilisation and ROI high.

## Highly accurate results in less time

Capture data efficiently in areas slow and hazardous to map using multibeam sonar. Efficient and cost-effective nearshore data collection in difficult or turbid waters is possible using the Leica Chiroptera II. Capture data at depths of up to 1.5 Secchi with a 300 m wide swath in minutes. Its superior penetration and high accuracy make this system a fast and reliable performer.

## 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.

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# Leica Chiroptera II product specifications

### LASER CHARACTERISATION

| | |
|---|---|
| **Bathymetric laser** | 35 kHz green, digital full waveform capture |
| **Topographic laser** | Up to 500 kHz infrared, with digital full waveform capture option |
| **Operation altitude** | Bathymetry 400 – 600 m AGL <br> Topography up to 1,600 m AGL |
| **Depth range [1]** | $D_{max}$ = 2.4/k (~ 1.5 Secchi depth) |
| **Scanner pattern** | Oblique scanner |
| **Field of view** | ±14° front/back, ±20° left/right |
| **Swath width** | 70 % of AGL |
| **Point density [2]** | Bathymetry: 1.5 pts/m² <br> Topography: >12 pts/m² |
| **Bathymetric accuracy [2, 3]** | 0.15 m (2σ) |
| **Topographic accuracy [2, 3, 4, 5]** | Ranging accuracy: 2 cm (1σ) <br> 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-100c IMU (non-export restricted) |
| **Mission planning** | Leica MissionPro |
| **Flight navigation** | Leica FlightPro |
| **Post-processing** | Novatel Inertial Explorer – GNSS/IMU processing software <br> Leica LiDAR Survey Studio™ <br> Leica FramePro image processing |
| **Storage capacity** | Over 8 hours recording in ruggedised removable SSD |
| **Sensor stabilisation (optional)** | Leica PAV100 gyro-stabilised sensor mount |
| **System weight** | <80 kg (complete system) |
| **Operation temperature** | 0 °C to +35 °C |
| **Storage temperature** | -10 °C to +50 °C |
| **Power consumption** | 18-32 V DC, 30A @ 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.
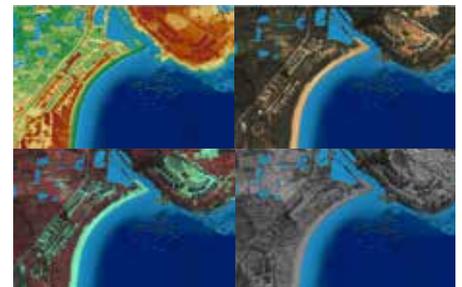


Point cloud in elevation, RGB, CIR and NIR view

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[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% sea-bed 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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