Leica DragonEye
Oblique high-performance LiDAR sensor

The world is not flat

Complex urban landscapes and utility corridors with obscured objects make aerial data collection difficult. The Leica DragonEye system was designed knowing the earth is not flat. Equipped with unique oblique scanners, the Leica DragonEye can enhance vertical surface definition and minimise shadows by allowing measurement from up to four vantage points in each swath.

Flexibility & modularity

Turn Leica DragonEye into Leica Chiroptera II and perform bathymetric projects by exchanging one topographic head for a shallow water head. Need to expand into deeper water? Add the Leica HawkEye III deep water scan head or choose the entry level Leica DragonEye with 500 kHz performance. All variations use the same mission planning, flight management and processing workflow.

One flight, five bands

Maximise the utility of each flight with the integrated Leica RCD30 camera, providing four bands of image data in addition to the LiDAR scanner's XYZ and intensity data. Provide natural colour or CIR images, colour point clouds or intensity images and use the extra data for enhanced point cloud classification and thematic mapping, with no additional flights.

Leica DragonEye product specifications

LASER CHARACTERISATION

Laser wavelength	1,064 nm
Laser divergence	0.5 mrad (1/e²)
Pulse repetition frequency (PRF)	Up to 1 MHz
Return pulses	Programmable up to 15 returns, with full waveform record option
Operation altitude [1]	300 – 1,600 m AGL
Scanner pattern	Dual head oblique scanner
Scanner speed	Programmable up to 70 RPS per scanner (i.e. 280 scans/second)
Field of view	±8° and ±20° front/back, ±20° left/right
Swath width	70% of AGL
Point density [2]	>16 pts/m²
Ranging accuracy [2, 3, 4]	2 cm (1σ)
Vertical accuracy [2, 3, 5]	5 cm (1σ)
Horizontal accuracy [2, 3, 5]	25 cm (1σ)

OPTICAL CHARACTERISATION

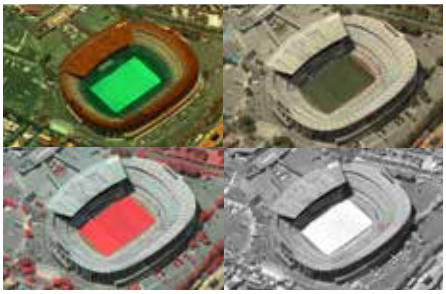
Q/A camera	5 MP, 2,448 x 2,050 pixels, 1 frame per second (fps), RGB
Leica RCD30 medium format camera	80 MP, 10,320 x 7,752 pixels, 1 frame per second (fps), RGBN

PHYSICAL & OPERATION INTERFACE

Mission planning	Leica MissionPro
Flight navigation	Leica FlightPro
GNSS/IMU	NovAtel SPAN with LCI-100c IMU (non-export restricted)
Post-processing	NovAtel Inertial Explorer – GNSS/IMU processing software Leica LiDAR Survey Studio Leica FramePro Image processing
Storage capacity	Over 8 hours recording in removable SSD
Sensor stabilisation (optional)	Leica PAV100 gyro-stabilised sensor mount
Dimension (L x W x H) & weight	560 x 500 x 632 mm, 37 kg (sensor head) 556 x 535 x 575 mm, 53 kg (control unit)
Operation temperature	0 °C to +35 °C
Storage temperature	-10 °C to +50 °C
Power consumption	18-32 V DC, 35A @ 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] Standard operation altitude here is achieved at ≥10% reflectivity (e.g. dry asphalt) and 100% laser output
[2] Accuracy and point density stated in the table is acquired @1,000 m AGL, 60 m/s aircraft speed
[3] The 1σ value represents the 68% confidence interval. Typically, the RMSE value is equal to 1σ accuracy value
[4] Ranging accuracy here refers to the measurement accuracy of LiDAR, not including GNSS/IMU error
[5] Vertical and horizontal accuracy estimation here are made assuming a LCI-100c IMU and a nominal 5 cm GNSS error

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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- when it has to be **right**

Leica Geosystems