Leica TerrainMapper
Highest accuracy for regional mapping projects

RealTerrain

Leading performance

With 2 MHz pulse repetition frequency and sensitive collection optics, Leica TerrainMapper increases data collection rate versus flying height, allowing you to fly larger swaths for any given point density. Achieve more efficient flight planning and even point distribution for flying heights from 300 - 5,500 m AGL with up to 35 pulses in the air and with no range gate limitations.

Fastest data delivery

As part of the Leica RealTerrain solution, TerrainMapper uses Leica HxMap to process raw data. The high-performance, multisensor workflow features the industry's fastest data throughput and allows processing of LiDAR and imaging data using an intuitive user interface with all the tools you need for calibration, colourisation, quality assurance, project reporting and product generation.

New level of accuracy

TerrainMapper reflects the continued evolution of the Leica ALS sensor series, the most trusted linear mode LiDAR in the world. The new system delivers USGS LiDAR quality Level 0 data at flying heights up to 2 km, higher than ever before. Delivering 5 cm accuracy at greater flying heights allows high collection efficiencies, even in complex and changing terrain.

Leica TerrainMapper product specifications

POD

Hosts the TerrainMapper LiDAR and optional nadir camera	
IMU	SPAN CNUS5-H, no export license required US ECCN 7A994
Height / diameter	747 mm / 408 mm
Weight	37 - 41 kg complete (depending on configuration)
Designed for installation in Leica PAV100 and optional Leica PodLifter	

LIDAR UNIT

Laser wavelength	1,064 nm
Laser divergence	0.25 mrad (1/e²)
Pulse repetition frequency	Up to 2,000 kHz (height dependent)
Return pulses	Programmable up to 15 returns, including intensity Full waveform recording option at down-sampled rates Real time waveform analysis and pulse extraction Multiple Pulses in the Air (MPiA): Up to 35 pulses simultaneously Ambiguity resolution over multiple MPiA zones
Intensity digitisation	14 bits
Operation altitude [1]	300 - 5,500 m AGL
Scanner pattern	Oblique scan with even point distribution Other options available
Scan speed	Programmable up to 150 Hz (9,000 RPM), 300 scan lines per second
Field of view	20 - 40°
Swath width	Up to 70% of flight altitude
Min. vertical separation	0.5 m
Vertical accuracy [2, 3, 4]	< 5 cm 1 σ
Horizontal accuracy [2, 3, 4]	< 13 cm 1 σ
Dimensions L x W x H	252 x 190 x 485 mm
Weight	13.5 kg

CAMERA HEAD LEICA RCD30 CH82 (OPTIONAL)

CCD size (80MP)	10,320 x 7,752 pixels
Pixel size (80MP)	5.2 um
Dynamic range of CCD	73 dB
Resolution A/D converter	14-bit
Data channel	16-bit lossless compressed
Max. frame rate	1.25 sec
Motion compensation	Mechanical, bi-directional
Spectral range	RGB and NIR (780-880 nm), co-registered
Viewing angle	Nadir
Weight (w/o lens)	3.1 kg
Height / diameter	168 mm / 128 mm
Optics	Leica NAT-D-80 mm 35.9° FOV across track, 27.4° FOV along track Leica NAG-D 50 mm 53.8° FOV across track, 41.8° FOV along track
Optics weight / height	0.5 kg / 46 mm
Shutter	Central shutter, 1/50 - 1/1000 sec, user replaceable (>200,000 frames)
Aperture 80 mm lens 50 mm lens	Automatically controlled aperture 2.8 / 4.0 / 5.6 / 8.0 4.0 / 5.6 / 8.0 / 11.0
Lens mount	Precise bayonet connection, automated electrical connection, stabilised connection mechanics

CAMERA & LIDAR CONTROLLER CC43

CC43	Controls all camera heads and LiDAR unit, includes deeply coupled GNSS/IMU solution
Weight (without MM30)	6.1 kg
Dimensions L x W x H	300 x 260 x 140 mm
Processor	64bit Win10, 16GB RAM, 64GB SSD, USB 2.0, SATA
Mass memory	Leica MM30 solid state drive 2,400 GB CC43 holds up to 2 MM30s
Mass memory weight	0.5 kg each, 2 required, removable and portable
Mass memory capacity	Joint volume 4.8 TB, >5 h of typical data collection

PERIPHERALS

Sensor mount L x H x W	Leica PAV100 gyro-stabilised mount for high-performance data acquisition, 38 kg 673 x 532 x 168 mm
Pod adapter (optional)	Available in 185 mm and 50 mm heights, allowing raising of pod up to 335 mm
Operator display	Leica OC60 12.1" screen with 1024 x 768 resolution, designed for installation with Interface Stand IS40, 5.0 kg
Pilot display	Leica PD60 6.3" screen with 1024 x 768 resolution, designed for cockpit mounting, 1.0 kg
IS40 stand	Pedestal for OC60, 5.5 kg

ENVIRONMENTAL

Pressure	Non-pressurised cabin up to ICAO 15,000 ft
Humidity	0% to 95% RH according ISO7137 (non-condensing)
Operating temperature	0 °C to 35 °C
Storage temperature	-40 °C to 70 °C

ELECTRICAL

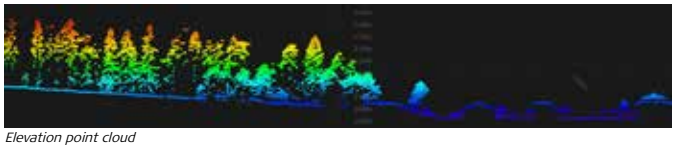
Max. power consumption of complete system	700 W / 28 VDC
Max. peak power consumption of complete system	1,000 W (<60s) / 28 VDC
Fuse on aircraft power outlet	1 x 50A

SOFTWARE

Mission planning	Leica MissionPro
Flight navigation & sensor operation	Leica FlightPro
Trajectory processing	Inertial Explorer
Point cloud/image processing	Leica HxMap

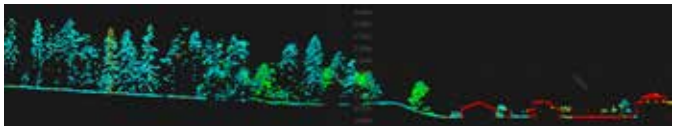
STANDARDS

RTCA DO-160G, EUROCAE-14G, USA FCC Part 15



Elevation point cloud

CIR point cloud



NDVI point cloud

[1] Maximum operating altitude is specified for 90% detection 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 1 standard deviation
[4] Stated vertical and horizontal accuracies after calibration and registration using Leica HxMap workflow and with an assumed GNSS position error of 4cm

Invisible laser radiation, avoid eye or skin exposure to direct or scattered radiation.
Class 4 laser product in accordance with EN/IEC 60825-1:2014.

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Leica Geosystems AG
www.leica-geosystems.com

- when it has to be **right**

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