Leica CityMapper
More information, smarter decisions

RealCity

Capture more

Leica CityMapper is the world's first hybrid airborne sensor specifically designed for urban mapping. One sensor provides oblique and multispectral nadir imagery as well as LiDAR data. Collect all you need to create any 2D or 3D geospatial data product essential for smart city applications. Discover the most efficient way to capture airborne data in urban areas.

Process faster

Leica HxMap is the high-performance multisensor workflow featuring the industry's fastest data throughput. Process the data captured with the CityMapper in one simple, intuitive user interface and generate the SmartBase, a comprehensive geospatial base layer, at the push of a button. HxMap is modular, scalable and upgradable specific to your needs.

Work smarter

By combining the CityMapper with HxMap, Leica RealCity offers the foundation to make smart decisions in rapidly changing urban environments. It is the fastest and most efficient way to create all geospatial information layers. The SmartBase consists of up-to-date and highly accurate 2D products and 3D models, all generated from simultaneously acquired data.

Leica CityMapper product specifications

CITYMAPPER POD

Consists of	1 x Leica RCD30 CH82 multispectral camera in nadir 4 x Leica RCD30 CH81m oblique camera, viewing angle 45° 1 x Leica Hyperion LiDAR unit
IMU	SPAN CNUS5-H, no export license required US ECCN 7A994
Height / diameter	747 mm / 408 mm
Weight	54 kg

Designed for installation in Leica PAV100 and Leica PodLifter.

SOFTWARE

Mission planning	Leica MissionPro
Flight navigation & sensor operation	Leica FlightPro
Post-processing	Inertial Explorer – GNSS/IMU processing software Leica HxMap

CAMERA HEAD LEICA RCD30 CH82

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
Maximum frame rate	1.5 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 (standard configuration)	Leica NAT-D 80 mm
Optics weight / height	0.5 kg / 46 mm
Shutter	Central shutter, user replaceable (~200,000+ frames)
Aperture	Automatically controlled aperture 2.8, 4, 5.6, 8
Lens mount	Precise bayonet connection, automated electrical connection, stabilised connection mechanics

CAMERA HEAD LEICA RCD30 CH81M

CCD size (80 MP)	10,320 x 7,752 pixels
Pixel size (80 MP)	5.2 um
Dynamic range of CCD	73dB
Resolution A/D converter	14-bit
Data channel	16-bit lossless compressed
Maximum frame rate	1.5 sec
Motion compensation	Mechanical, in flight direction
Spectral range	RGB
Viewing angle	45°
Weight (w/o lens)	2.1 kg
Height / diameter	138 mm / 128 mm
Optics (standard configuration)	Leica SAT-D 150 mm
Optics weight / height	0.8 kg / 95 mm
Shutter	Central shutter, user replaceable (~200,000+ frames)
Aperture	Automatically controlled aperture 4, 5.6, 8, 11
Lens mount	Precise bayonet connection, automated electrical connection, stabilised connection mechanics

LIDAR UNIT

Laser wavelength	1,064 nm
Laser divergence	0.25 mrad ($1/e^2$)
Pulse repetition frequency	Up to 700 kHz
Return pulses	Programmable up to 15 returns, including intensity, pulse width, area under curve and skewness waveform attributes Full waveform recording option at down-sampled rates
Operation altitude [1]	300 - 2,500 m AGL at 700 KHz >4,000 m AGL at lower pulse rates
Scanner pattern	Oblique scanner, various scan patterns
Scan speed	Programmable up to 100 Hz (6,000 RPM)
Field of view	40°
Swath width	Up to 70% of flight altitude
Point density [2]	Typically 8 points per square metre at 1,000 m altitude Typically 4 points per square metre at 2,000 m altitude
Ranging accuracy [2, 3, 4]	< 2 cm RMS
Vertical accuracy [2, 3, 5]	< 5 cm 1 σ
Horizontal accuracy [2, 3, 5]	< 13 cm 1 σ
Dimensions L x W x H	252 x 190 x 485 mm
Weight	12.5 kg

CAMERA & LIDAR CONTROLLER CC33

CC33	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	64-bit WIN7, 8GB RAM, 32 GB flash, USB 2.0, SATA
Mass memory	Leica MM30 solid state drive 2,400 GB CC33 holds up to 2 MM30s
Mass memory weight	0.5 kg; removable and portable
Mass memory capacity	Joint volume 4.8 TB, > 4.5 h of data collection at max. rate

PERIPHERALS

Sensor mount	Leica PAV100 gyro-stabilised mount for high-performance data acquisition
L x H x W	673 x 532 x 168 mm
Weight	38 kg
Pod lifter	Leica PodLifter to lift up the entire Leica CityMapper pod for takeoff and landing, 20 kg
Operator display	Leica OC60 12.1" screen with 1024 x 768 resolution, designed for installation with Interface Stand IS40
Pilot display	Leica PD60 6.3" screen with 1024 x 768 resolution, designed for cockpit mounting

ENVIRONMENTAL

Pressure	Non-pressurised cabin up to ICAO 15,000 ft
Humidity	0% to 95% RH according ISO7137 (non-condensating)
Operating temperature	-10 °C to 35 °C
Storage temperature	-40 °C to 70 °C

ELECTRICAL

Avg. power consumption of complete system	900 W / 28 VDC
Max. peak power consumption of complete system	1,400 W / 28 VDC
Fuse on aircraft power outlet	1 x 50A

STANDARDS

RTCA DO-160G, EUROCAE-14G, USA FCC Part 15, EU Directive 2014/30/EU

[1] Maximum operating altitude 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 1 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 based on the integrated SPAN system and a GPS error of 5 cm

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**

Leica Geosystems