The Leica ADS100 Airborne Digital Sensor

Airborne Evolution

The new Leica ADS100 Airborne Digital Sensor – Airborne evolution.

For over ten years, the Leica ADS Airborne Digital Sensor has defined airborne imaging. Just like your job requirements, it has evolved over time to continuously innovate in image quality, accuracy, acquisition performance and processing speed.

The new Leica ADS100 continues to lead the path of airborne evolution. With its number of unique features it is designed to meet the needs of 21st century airborne imaging with higher acquisition efficiency, more applications and reduced costs.

- Full multispectral color swath width of 20000 pixels in RGBN for highest data acquisition efficiency
- Selectable TDI stages for improved sensitivity and expanded operational envelope
- Improved cycle time to acquire smaller GSDs at faster speed
- Full color RGBN in forward, nadir and backward for more flexible stereo interpretation
- Improved Leica PAV100 gyrostabilized mount with adaptive control for improved image quality
- Embedded Novatel SPAN GNSS/IMU with tightly coupled processing to reduce fuel consumption
- End-to-end workflow from mission planning with Leica MissionPro to orthophoto and point cloud generation with Leica XPro

In addition, the Leica ADS100 supports a unified aircraft installation. All aircraft components such as Leica PAV100, Camera Controller CC33 as well as operator and pilot displays can be shared with the Leica RCD30 medium format and oblique cameras, thus significantly reducing cost of ownership and simplifying operation.

The new Leica ADS100 – Leading airborne evolution.

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Leica ADS100 Preliminary Product Specifications

Characteristics of Data Acquisition

Focal Plate (FPM)	Total of 13 CCD lines with 20,000 pixels each in three line groups (Forward, Nadir, Backward), Pixel size 5um, TDI stages selectable 1, 2, 4, 8, 15 (1/2, 1/4, 1/8, 1/16 @ Cycle time >1ms)
	Two Tetrachroid beamsplitters in Forward (25.6°) – full color RGBN – and Backward (17.7°) – full color RGBN One bi-Tetrachroid in Nadir – full color RGGBN (Green staggered)
Dynamic Range of CCD	72dB
Resolution A/D Converter	14-bit
Data Channel	16-bit
Data Compression	Lossless 14-bit
Recording Interval per Line (Cycle Time)	>0.5ms

Spectral Range

Spectral Range	Red, Green, Blue, Near-Infrared
Spectral Bands	
Red	619 – 651nm
Green	525 – 585nm
Blue	435 – 495nm
NIR	808 – 882nm

Optics DO65

Field of View (FoV)	Forward 65.2° across track Nadir 77.3° across track Backward 72.5° across track
Focal Length	62.5mm
F-number	4
Registration Accuracy	1um
Lens Design	Telecentric lens design. Maintains position & width of filter edges over whole FoV. Thermic and pressure compensation for high accuracy.
Flying Height Multiplier	12,500:1 10cm GSD = 1,250m AGL

Mechanical Interface

Sensor Head SH100	
Weight	~50kg with CUS6 IMU
Height	67cm
Diameter	39cm
Camera Controller CC33	
Weight with MM30	6.5kg
L x W x H	300 x 260 x 140mm Usable also with Leica RCD30 series Novatel SPAN embedded
Mass Memory MM30	Solid state drive 1,200GB per MM30 (or 600GB) Standard ¾" slot, weight 0.5kg, removable, portable
Leica Operator Controller OC60	12.1" touch-screen with 1024 x 768 resolution, Sunlight readable
Leica Pilot Display PD60	6.5" screen with 1024 x 768 resolution, Quick access buttons
Interface Stand IS40	IS40 stand fits RC30 NAV-sight installation.
IMU integrated in Sensor Head	Leica IPAS20-CUS6 IMU integrated
GNSS/IMU system	Novatel Span embedded (GPS & Glonass) in CC33
Mount	New Leica PAV100 gyrostabilized mount with adaptive control
Guidance Indicator GI40 (optional)	LED array display designed for cockpit mounting
Total Weight Installed	110kg – 120kg

In-flight Quality Control

Video Camera	
Oblique View	17° forward
Swath width	55° along x 77° across track
Waterfall Images	Waterfall images during flight available for RGB Nadir
Leica FlightPro	Full control of data acquisition parameters

Operational

Capacity of Mass Memory	Joint volume 2.4TB; recording time depending on data acquisition configuration; MM30 hot swappable in flight.
Firmware & Software	Leica FlightPro Flight Management Software
Average Ground Speed (GS) for various GSD @ 0.5ms CT	GS = 120kts for GSD of 1.2" / 3cm GS = 190kts for GSD of 2" / 5cm GS = 290kts for GSD 3" / 7.5cm GS = >350kts for GSD 4" / 10cm

Environmental

Pressure	Non-pressurized cabin up to ICAO 25,000ft (7,620m)
Humidity	0% to 95% RH according ISO7137
Operating Temperature	– 20°C to +55°C
Storage Temperature	– 40°C to +85°C (except SH100)
Storage Temperature	– 40°C to +70°C (SH100)

Electrical

Average power consumption (incl. SH100, CC33, PAV100, OC60, PD60)	~750 – 800W / 28 VDC
Fuses on aircraft power outlet	Typically 1 x 35 A or 1 x 50 A

Standards

General standards for temperature, electronics environment, etc.	ISO 7137, RTCA DO-160G, EUROCAE-14E
Standard for emergency landings	FAR § 25.561
Conformity to national regulations	USA: FCC Part 15, EU: Directive 1999/5/EC

Post Processing and Data Format

Output from Xpro post-processing	TIFF tiled

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TQM ISO 9001 / ISO 14001

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