Leica ADS80

Airborne Digital Sensor
Digital Airborne Imaging Solution

The new Leica ADS80 offers performance in data acquisition and data processing superior to any other large-format digital sensor.

**Simplicity**
From flight planning with Leica FPES and data acquisition with the Sensor Heads SH91/92 to data delivery with Leica XPro, the Leica ADS80 represents a complete digital airborne imaging solution that is easy to use and fast to implement. Since pan-sharpening and “virtual images” are not necessary, Leica Geosystems line sensor technology constitutes a viable and simple digital alternative to those familiar with the traditional analog workflow.

**Flexibility**
Depending on the desired product, two available configurations, SH91 and SH92, acquire perfectly co-registered image data with equal resolution in panchromatic, color and color-infrared. The improved data throughput of the Control Unit CU80 facilitates simultaneous data acquisition of imagery for photogrammetry and remote sensing applications, offering you maximum flexibility.

**Productivity**
The best imagery in the world becomes less attractive if it cannot be produced and delivered in a reasonable time. The new Leica XPro ground processing software pairs the best airborne digital sensor with the fastest workflow. Leica XPro’s “processing at the speed of flight” will make the Leica ADS80 the most productive sensor solution available.

**Efficiency**
The Leica ADS80 digital airborne imaging solution consists of subsystems and components, which almost entirely are developed and manufactured in-house. This way, Leica Geosystems can provide the tight integration necessary to deliver what you expect from your chosen airborne digital sensor: best results, highest productivity and lowest costs.

**Reliability**
Leica Geosystems’ RC30 and many other products have for decades set the gold standard for the geospatial industry. The Leica ADS80 airborne digital sensor follows in this tradition and is the complete sensor solution available from the industry leader. Our worldwide support network ensures that you stay ahead of your competitors.

- when it has to be right
Leica Geosystems AG
Heerbrugg, Switzerland
www.leica-geosystems.com

Leica ADS80
Product Specifications

Electronic Characteristics of Data Acquisition Chain
Dynamic range CCD chain
12-bit
Resolution A/D converter
16-bit
Data channel
16-bit
Sensitivity
4x that of SH40
Data modes
ADS80 data format, low compression, raw
Data compression factor
~2.9x and ~3.6x
Data normalization modes
non-linear
Radiometric resolution of comp. data
10-bit and 12-bit
Recording interval per line (cycle time)
≥1 ms

Spectral Range

Recording interval per line (cycle time)
≥1 ms

Data Modes

Spectral Range and Filters

Spectral bands

Video camera

Focal Plates (FPF)

One 4-band beamsplitter in Sensor Head SH91
Total: 8 CCD lines with 12000 pixels each, pixel size 6.5 µm
2 single Pan lines
1 pair of Pan lines staggered by half a pixel
4 Spectral lines: Red, Green, Blue, Near Infrared
Two 4-band beamsplitters in Sensor Head SH92
one in nadir and one in 16° BW
Total: 12 CCD lines with 12000 pixels each, pixel size 6.5 µm
2 single Pan lines
1 pair of Pan lines staggered by half a pixel
8 Spectral lines: 2x Red, 2x Green, 2x Blue, 2x Near-infrared

Mechanical Interface

Sensor Heads SH91 & SH92
Weight: 49 kg – 52 kg, depending on integrated IMU type
Diameter: 39 cm
Height: 70 cm
Fits PAV80 mount
Control Unit CU80
Weight: 32 kg; 19'' rack mountable
Width: 49.5 cm; height: 36.5 cm; depth: 62 cm
Mass Memory MM80
Flash disk: weight: 2.5 kg, removable, portable
Operator Interface OI40
15'' touch-screen with a resolution of 1024 x 768 pixels
Firmware & Software
Capacity of Mass Memory (Pair)
Operational

\[ \text{Quality of external orientation of Leica ADS80 images depending on mission parameters and based on the application of PPP (Precise ephemera data)} \]

\[
\begin{array}{|c|c|c|c|c|c|c|c|}
\hline
\text{Mission Type} & \text{Mission Parameters} & \text{5 cm GSD} & \text{10 cm GSD} & \text{15 cm GSD} & \text{20 cm GSD} \\
\hline
\text{GCS data} & \text{GCS ground net station} & \text{Aero-triangulation} & \text{GCCPs} & \text{relative} & \text{absolute (cm)} & \text{relative} & \text{absolute (cm)} & \text{relative} & \text{absolute (cm)} \\
\hline
1 & \text{PPP} & \text{no} & \text{no} & \text{no} & \text{5 pixels} & < 100 & \text{5 pixels} & < 100 & \text{5 pixels} & < 100 & \text{5 pixels} & < 100 \\
2 & \text{PPP} & \text{no} & \text{yes} & \text{no} & \text{1 pixel} & < 50 & \text{1 pixel} & < 50 & \text{1 pixel} & < 50 & \text{1 pixel} & < 50 \\
3 & \text{PPP} & \text{no} & \text{yes} & \text{yes} & 0.5 pixels & < 5 & 0.5 pixels & < 10 & 0.5 pixels & < 15 & 0.5 pixels & < 20 \\
4 & \text{PPP} & \text{yes} & \text{no} & \text{no} & \text{5 pixels} & < 100 & \text{5 pixels} & < 100 & \text{5 pixels} & < 100 & \text{5 pixels} & < 100 \\
5 & \text{PPP} & \text{yes} & \text{yes} & \text{no} & \text{1 pixel} & < 50 & \text{1 pixel} & < 50 & \text{1 pixel} & < 50 & \text{1 pixel} & < 50 \\
6 & \text{PPP} & \text{yes} & \text{yes} & \text{yes} & 0.5 pixels & < 5 & 0.5 pixels & < 6 & 0.5 pixels & < 8 & 0.5 pixels & < 10 \\
\hline
\end{array}
\]

Operational

Capacity of Mass Memory (Pair)
480 GB per Mass Memory – 980 GB joint volume for 9.7 h recording in ADS80 data format at 2.5 msec with 3 Pan and 4 Spectral bands

Firmware & Software
FCMS Flight and Sensor Control Management System
Maximum Ground Speed (GS) for various post-processed GSD
max. GS = 90 kts for GSD of 1.2'' / 3 cm
max. GS = 140 kts for GSD of 2'' / 5 cm
max. GS = 190 kts for GSD of 3'' / 7.5 cm
max. GS = 240 kts for GSD of 6'' / 15 cm
max. GS = 300 kts for GSD of >6'' / 15 cm

Environmental

Pressure
Non-pressurized cabin up to ICAO 25,000 ft (7,620 m)
Humidity
0% to 95% RH according ICAO 7137
Operating temperature
–20°C to +55°C
Storage temperature (except SH91/92)
–40°C to B5°C
Storage temperature SH91/92
–40°C to 70°C

Electrical

Average power consumption
<100 W / 28 VDC
Fuses on aircraft power outlet
Typically 1 x 35 A or 2 x 20 A

Standards

General standards for temperature, electronics environment, etc.
ISO 7137; RTCA DO-160E, EUROCAE-14E
Standard for emergency landings
FAV § 25.561
Conformity to national regulations

Data Formats

Output from GPro/XPro post-processing:
JEGF and TIF files

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