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 SH81/82 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, SH81 and SH82, 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.
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
~2.5x and ~3.6x
Data normalization modes
non-linear
Radiometric resolution of comp. data
10-bit and 12-bit
Recoding interval per line (cycle time)
≥ 1 Ms
Spectral Range and Filters
Spectral range
Panchromatic, RGB, Near-infrared
Optics D064
Field of View (FoV)
64° across track (swath angle)
f-number
4
Spatial range
400 km
Resolution
~1.03 m/px, optimized for CCD’s
Registration accuracy
1 µm
Lens design
Telecentric lens design
Maintains position & width of filter edges over whole FoV
Thermic & Pressure compensation for high accuracy
Video camera
Oblique view
10° behind nadir, 40° forward
Swath width
64° normal
Zoom steps
1x 1.2x 2x 4x 5x 8x

Focal Plates (FPF)
One 4-band beamsplitter in Sensor Head SH81
Total: 8 CCD lines with 12000 pixels each, pixel size 6.5 µm
2 single Pan lines
1 pair of Pan lines staggered by a half pixel
4 Spectral lines: Red, Green, Blue, Near Infrared
Two 4-band beamsplitters in Sensor Head SH82
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 a half pixel
8 Spectral lines: 2x Red, 2x Green, 2x Blue, 2x Near-infrared
Mechanical Interface
Sensor Heads SH81 & SH82
Weight: 61 kg – 65 kg, depending on integrated IMU type
Diameter: 39 cm
Height: 79 cm
Fits PRZC mount
Control Unit CUB0
Weight: 32 kg; 19” rack mountable
Width: 49.5 cm; height: 36.5 cm; depth: 62 cm
Mass Memory MMB80
Flash disk: weight: 2.5 kg, removable, portable
Operator Interface OI40
15” touch-screen with a resolution of 1024x768 pixels
Interface Stand IS40
16-gap stand fits RC30 NAV-sight installation
IMU Integrated in Sensor Head
Leica IRS20-NUS4
Leica IRS20-DUS5
Leica IRS20-NUS5
Leica IRS20-CUS6
CNS5/IMU system integrated in CUB0
Leica IRS20 embedded (GPS & GlONASS)
Mount
Leica PRZD gyro-stabilized mount
Pilot Interface OC50
6.3” screen with 1024x768 pixel resolution
Guidance Indicator GI40
LED array display designed for cockpit mounting
Total weight installed
193 kg – 197 kg (depending on IMU)

Operational
Capacity of Mass Memory (Pair)
768 GB Disk for up to 11.4 h recording in ADS80 data format at 2.5 msec with 3 Pan and 4 Spectral bands
384 GB Disk for up to 5.7 h recording in ADS80 data format at 2.5 msec with 3 Pan an 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 0.7” / 1.75 cm
max. GS = 190 kts for GSD of 0.5” / 1.25 cm
max. GS = 240 kts for GSD of 0.4” / 10 cm
max. GS = 300 kts for GSD of 0.3” / 7.5 cm

Environmental
Pressure
Non pressurized cabin up to ICAO 25,000 ft (7,620 m)
Humidity
0% to 95 % RH according ISO 7137
Operating temperature
-20°C to +55°C
Storage temperature (except SH81/B2)
-45°C to 85°C
Storage temperature SH81/B2
-40°C to 70°C
Electrical
Average power consumption
Typically 1 x 35 A or 2 x 20 A
Standards
General standards for temperature, electronics environment, etc.
ISO 7117; RTCA DO-160E, EUROCAE-14E
Standard for emergency landings
FM 25.561
Conformity to national regulations

Data Formats
Output from GPro/XPro post-processing:
.JPE and.TIF liked

Quality of external orientation of Leica ADS80 images depending on mission
parameters and based on the application of PPP (Precise ephemera data)

<table>
<thead>
<tr>
<th>Mission Type</th>
<th>Mission Parameters</th>
<th>5 cm GSD</th>
<th>10 cm GSD</th>
<th>15 cm GSD</th>
<th>20 cm GSD</th>
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<tr>
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<td>CNS5 ground ref nst</td>
<td>Aero-triangulation</td>
<td>CCPs</td>
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<td>absolute (cm)</td>
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<tr>
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<tr>
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<td>yes</td>
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<td>&lt; 5</td>
</tr>
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</table>

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