UltraCamHawk - Technical Specifications (preliminary)

Image Product Specification

Image format	Analogous to an aerial film image at a format of 23 cm x 15 cm, scanned at 20 µm
Image data formats	JPEG; TIFF with options for 8 and 16 bits, standard tiff format
Image storage format in level 2	Full resolution panchromatic, Bayer pattern RGB and separate NIR at color resolution
Color at level 3	Full resolution R, G, B, Near-IR channels, planar or pixel-interleaved

Camera Digital Sensor Subsystem

Panchromatic image size	11,704 * 7,920 pixels
Panchromatic physical pixel size	6.0 µm
Input data quantity per image	310 Mega Bytes
Physical format of the focal plane	70.22 mm * 47.52 mm
Color (multi-spectral capability)	4 channels – RGB & NIR
Color image size	5,320 * 3,600 pixels
Color physical pixel size	6.0 µm
PAN-sharpen ratio	1:2.12
Lens System	Linos Vexcel Apo-Sironar digital HR
Panchromatic lens focal distance	70 mm
Lens aperture	f= 1/5.6
Total field of view, cross track (along track)	53° (37°)
Flying height for PAN Pixel size on the ground of 10 cm (GSD)	1,167 m
Color lens system focal distance	33 mm
Color lens aperture	f = 1/4.0
Total color field of view, cross track (along track)	53° (37°)
Shutter system	Prontor magnetic 0 – Vexcel
Shutter speed options	1/1000 to 1/32
Forward-motion compensation (FMC)	TDI controlled
Maximum FMC-capability	50 pixels
Frame rate per second (minimum inter-image interval)	1 frame per 2.0 seconds
CCD signal to noise ratio	72 dB
Radiometric resolution in each channel	>>12 bit
Analog-to-digital conversion at	14 bits
Workflow dynamic	16 bits
Physical dimensions of the camera; including computer and storage module (CHDH)	43 cm x 43 cm x 76 cm
Weight of the camera; including computer and storage module (CHDH)	~ 55 kg
Power consumption at full performance; including computer and storage module (CHDH)	350 W

Camera Computer And Data Storage Subsystem (CHDH)

Concept	Modular stack, stacked onto sensor head or released with cabling to sensor head
In-flight storage system	Solid state disc pack, optional storing of mirror images of the data on the DH unit
In-flight storage capacity	Unlimited with use of multiple data units DH; per DH unit ~1.5 TB, ~ 3,600 images
Weight of DH unit	< 3 kg
Method of exchanging DH units in-flight	In less than 2 minutes
Physical dimensions of CHDH module	Width 43 cm x Depth 43 cm x Height 35 cm
Weight of CHDH	< 30 kg
Power consumption at full performance	150 W

Camera Operational Specification

Operating / storage temperature	0 °C to 45 °C / -20 °C to 65 °C
Humidity	5 % … 95 % no condensation
Flight altitude non-pressurized (full accuracy, full temperature range)	≤ 5000 m AGL
Flight altitude non-pressurized (reduced temperature range; 0 °C to 25 °C)	≤ 7000 m AGL
Flight altitude pressurized aircraft	No limitation unless cabin pressure stays above 5000 m pressure
Data recording time @ 10 cm GSD, 60% forward overlap, 140 kts	8 hours per DH unit
Max. forward overlap @ 10 cm GSD (@ 5 cm GSD) with 140 kts	82 % (64 %)
Max. flight speed @ 10 cm GSD (@ 5 cm GSD) with 80% forward overlap	154 kts (77 kts)
Data transfer from aircraft to office	Shipping of DH, or transfer by high capacity storage medium
Post-processing of collected raw images	UltraMap, UM/AT extension, PC network or Laptop
Photogrammetric Production	TIFF-output compatible with Customer's photogrammetric production software
Extended Ortho Workflow	Full ortho workflow by UltraMap
Mounting of the camera	Using adapter ring for most current film camera mounts (UltraMount 3000 & 350, PAV-80, T-AS)
Integrated GPS/INS/FMS system	UltraNav (Applanix POSTrack OEM) full embedded into camera head
Flight planning support (external FMS)	Compatible with all major commercial systems (TrackAir, CCNS-4, ...)
Exterior orientation support (external GPS/INS system)	Compatible with all major DGPS/IMU systems (Applanix POS-AV , IGI Aero-Control, …)
Image geometric accuracy	Better ±2 µm

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