VEXCEL
IMAGING

Technical Specifications
UltraCam Eagle Mark 3

2018rev02

Image Product Specification

Image data formats	JPEG; TIFF with options for 8 and 16 bits
Image storage format at level 2	Each channel at its raw resolution
Image storage format at level 3	Full resolution PAN, R, G, B, NIR, planar or pixel-interleaved

Camera Digital Sensor Subsystem

Panchromatic image size	26,460 * 17,004 pixels
Panchromatic physical pixel size	4.0 µm
Input data quantity per image	1,780 Mega Bytes
Physical format of the focal plane	105.85 mm * 68.03 mm
Color (multi-spectral capability)	4 channels – R, G, B & NIR
Color image size	8,820 * 5,668 pixels
Color physical pixel size	4.0 µm
PAN-sharpen ratio	1:3

Parameter	F80 lens system	F100 lens system	F120 lens system	F210 lens system
Lenses	Linos Vexcel Apo-Sironar digital HR	Linos Vexcel Apo-Sironar digital HR	Linos Vexcel Apo-Sironar digital HR	Linos Vexcel Apo-Sironar digital HR
Panchromatic lens focal distance	80mm	100mm	120mm	210mm
Panchromatic Lens aperture	f= 1/5.6	f= 1/5.6	f= 1/5.6	f= 1/7.8
Color lens system focal distance	27mm	33mm	40mm	70mm
Color lens aperture	f = 1/4.8	f = 1/4.8	f = 1/4.8	f = 1/5.6
Total field of view, cross track (along track)	67° (46,1°)	55,8° (37,6°)	47,6° (31,6°)	28,3° (18,4°)
Flying height for PAN Pixel size on the ground of 10 cm (GSD)	2,000m	2,500m	3,000m	5,250m
Footprint for lean restriction of 1m lean @ 5m height (across * along)	8,000 * 8,000	10,000 * 10,000	12,000 * 12,000	21,000 * 17,004

Lens systems are exchangeable by a specifically trained end user expert or Vexcel Imaging GmbH without re-calibration

Shutter system	Prontor magnetic 0 HS – Vexcel
Shutter speed options	1/1000 to 1/64
Forward-motion compensation (FMC)	TDI controlled
Maximum FMC-capability	50 pixels
Frame rate per second (minimum inter-image interval)	1 frame per 1.5 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 with 80 mm PAN lenses; including computer and storage module	43 cm x 43 cm x 73 cm
Physical dimensions of the camera with 210mm PAN lenses; including computer and storage module	43 cm x 43 cm x 80 cm
Weight of the camera with 80 mm (210 mm) PAN lenses; including computer and storage module	~ 61 kg (~ 68 kg)
Power consumption at full performance; including computer and storage module	400 W

Camera Computer And Data Storage Subsystem

Concept	Modular stack, stacked onto sensor head or released with cabling to sensor head
In-flight storage system	Solid state disc pack, with RAID system for data protection
In-flight storage capacity	Unlimited with use of multiple data units; per data unit ~10TB, ~4,600 images
Weight of data unit	< 3 kg
Method of exchanging DE units in-flight	In less than 2 minutes
Physical dimensions of module	Width 43 cm x Depth 43 cm x Height 35 cm
Weight of module	< 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)	≤ 5,000 m AGL
Flight altitude non-pressurized (reduced temperature range; 0 °C to 25 °C)	≤ 7,000 m AGL
Flight altitude pressurized aircraft	No limitation unless cabin pressure stays above 5000 m pressure
Data transfer from aircraft to office	Shipping of data units, 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	Adapter ring for most current film camera mounts (UltraMount 4000, PAV-80)
Integrated GPS/INS/FMS system	UltraNav (Applanix POSTrack OEM) full embedded into camera head
External GPS/INS/FMS support	Compatible with all major commercial systems (TrackAir, CCNS, ...)
Image geometric accuracy	Better ±2 µm