

# aisa **EAGLE** hyperspectral sensor

The best performance-to-cost efficiency for airborne hyperspectral imaging in the VNIR range (400 - 970 nm). AisaEAGLE system acquires full, high quality hyperspectral data with 1024 swath pixels and high image rates.



**AisaEAGLE sensor**  
L: 146 mm  
W: 145,5 mm  
H: 347 mm  
Mass: 6,5 kg

**A**isaEAGLE is an excellent analytical, detection and mapping tool that provides an exceptional performance in airborne and field use at an affordable cost.

The sensor has established its ability in a range of commercial, research and public service applications. The applications that AisaEAGLE has been involved in include forestry management, vegetation cultivation, environmental investigations, precision farming, target identification, water assessment and land use planning.

## HIGH STABILITY

The newest AisaEAGLE sensor offers now even higher performance. With its temperature stabilized CCD camera, it provides the highest spectral stability and quality in varying operating conditions, both airborne and in the field. The only moving part of AisaEAGLE is the shutter, used for dark image calibration between data collection sessions. Since the image data is captured without any moving parts, there is no distortion caused by mechanical inaccuracies of the sensor itself.

## AisaEAGLE Airborne Hyperspectral Imaging System

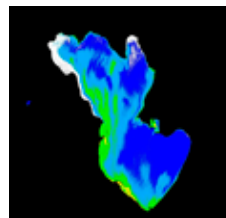
SPECIM provides AisaEAGLE as a full, ready-to-use system. The complete AisaEAGLE system consists of

- The AisaEAGLE sensor
- Data Acquisition and Power Unit (DPU) with a user-friendly interface and image acquisition software (RSCube)
- High performance GPS/IMU sensor
- CaliGeoPRO pre-processing software

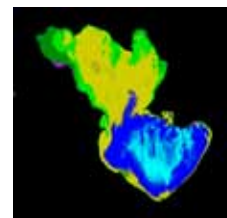
For more information about the complete system, please see the AISA Systems brochure.



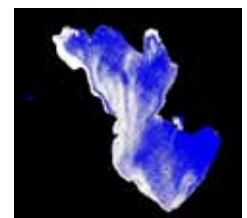
Rectified Reflectance Image



Lake Chlorophyll Map



Lake Total Suspended Solids Map



Lake Phycocyanin Map

AisaEAGLE usage on inland water application.

Target area is Pawnee Lake in Lincoln, Nebraska.

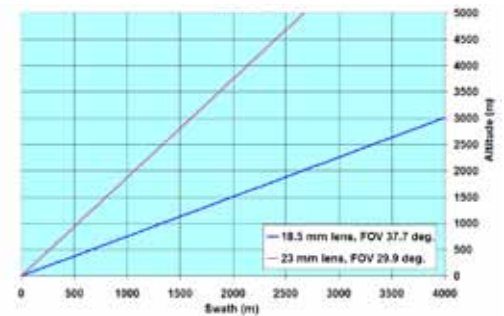
(Courtesy of CALMIT Center of Advanced Land Management Information Technologies, University of Nebraska, the Nebraska Game and Parks Commission and the Nebraska Department of Environmental Quality.)

## AisaEAGLE

OPTICAL CHARACTERISTICS		TYPICAL SPECIFICATIONS			
Spectrograph	High efficiency transmissive imaging spectrograph. Throughput practically independent of polarization. Smile and keystone < 2 microns.				
Numerical aperture	F/2.4				
Spectral range	400-970 nm				
Spectral resolution	3.3 nm				
FODIS (optional)	Diffuse down welling irradiance collector and fiber optic cable (5 m standard) with SMA connector				
Calibration	Sensor provided with wavelength and radiometric calibration file.				
FORE OPTICS					
Fore optics options	OLE23	OLE18,5	OLE9		
FOV	29.9 degrees	37.7 degrees	Wide FOV lens More specifications upon request		
IFOV	0.029 degrees	0.037 degrees			
Swath width	0.53 x altitude	0.68 x altitude			
Ground resolution @ 1000 m altitude	0.52 m	0.68 m			
ELECTRICAL CHARACTERISTICS					
Detector	Progressive scan CCD detector				
Spectral binning options	1x	2x	4x	8x	
Number of spectral bands	488	244	122	60	
Spectral sampling/band	1.25 nm	2.3nm	4.6nm	9.2nm	
Frame rate, up to (frames/s)	30	59	100	160	
Spatial pixels	Up to 1024, of which 70 - 80 FODIS pixels (optional)				
Output	12 bits digital				
SNR	1250:1 (maximum theoretical) More detailed SNR data in various conditions available from SPECIM.				
Integration time	Adjustable, independent of image rate				
Shutter	Electromechanical shutter for dark background registration, user-controllable by software.				
Operating modes	Hyperspectral and multispectral The operator can create application specific band configurations, and quickly change from one mode or configuration to others in flight operation.				
Power consumption					
Complete system with rack PC	350 W				
Complete system with lightweight PC	220 W				
ENVIRONMENTAL CHARACTERISTICS					
Storage	- 20 ... +50 °C				
Operating	+ 5 ... +40 °C, non-condensing				

Disclaimer: specifications are subject to change without prior notice. Any errors or omissions are unintentional.

Swath width vs altitude



Ground pixel size vs. altitude

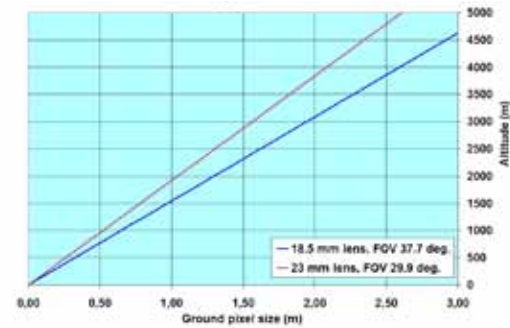
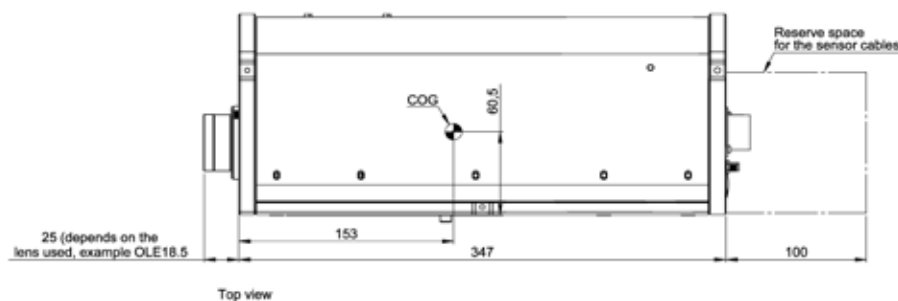
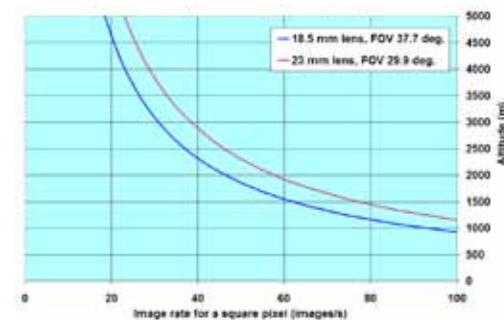
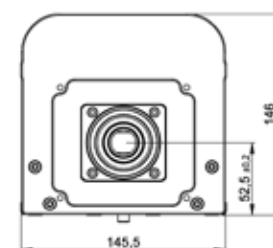


Image rate at aircraft velocity of 60 m/s (120 knots)



Top view

AisaEAGLE sensor, side view



AisaEAGLE sensor, front view