

aisa FENIX hyperspectral sensor



AisaFENIX is optimized for the most demanding defense, law enforcement, and environmental applications. In a single continuous image, AisaFENIX delivers the best hyperspectral data ever seen over VNIR, NIR, and SWIR wavelengths. Its rugged, compact design is ideal for turret and UAV installations.

» -75% REDUCTION IN SIZE AND WEIGHT COMPARED TO PREVIOUS MULTI-SENSOR SYSTEMS «



AisaFENIX sensor
 L: 387 mm
 W: 222.5 mm
 H: 450 mm
 Mass: 15 kg

AisaFENIX is the most versatile HSI unit for field, airborne and ground vehicle use. It delivers unprecedented performance over the entire visible, NIR, and SWIR spectral ranges.

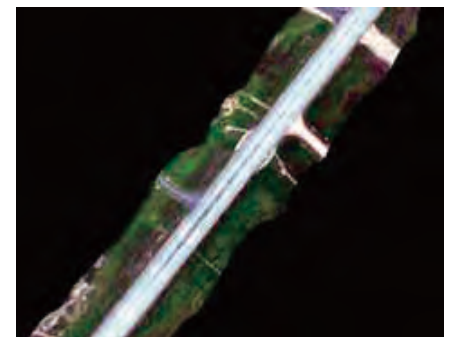
AisaFENIX is designed for simplicity, reliability and performance in field usage. Patent pending imaging spectrograph, optimized mechanical structure, and passive temperature compensation make the instrument one of the most stable hyperspectral imagers.

Environmental analysis and law enforcement applications require high quality spectral information at different wavelength areas. This need has previously resulted in complicated and expensive multi-sensor systems.

AisaFENIX eliminates past challenges in “full spectrum imaging”. It is a single optics imager, with two focal plane arrays always staring exactly the same spot of the object. Thus, there is no need for the co-alignment of two separate imagers with different distortions, sharpness, and FOV.

Key benefits - in the air and field

- Entire 380 nm - 2500 nm range in a single datacube.
- High radiometric stability, repeatability, and performance. Polarization independency, excellent transmission (>65%), high signal-to-noise ratio SNR (500-1000), and spectral resolution (620 bands).
- Simplicity and reliability in operation. No need for the co-alignment of two separate optical systems with different distortions, sharpness, and FOV.
- Compact and solid structure - 75% reduction in size and weight compared to previous multi-sensor systems. Ideal for ground and airborne installations, including turrets / gimbals, pan&tilt units, and unmanned vehicles.
- Optimized performance for environmental, defense, and law enforcement applications, including:
 - vegetation research, precision agriculture, and environmental analysis
 - detection of Camouflaged Objects and Improvised Explosive Devices
 - detection of invasive species, both plants and insects
 - detection of illicit/narcotic plants including marijuana, coca, poppy
 - mineral mapping / geological exploration



Georectified AisaFENIX image

AisaFENIX

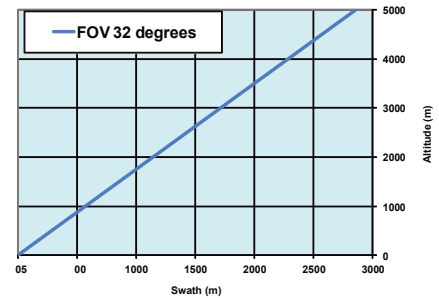
OPTICAL CHARACTERISTICS		TYPICAL SPECIFICATIONS		
		VNIR		SWIR
Spectrograph	High efficiency transmissive imaging spectrograph. Throughput practically independent of polarization. Smile and keystone < 0.2 pixels.			
Numerical aperture	F/2.4			
Spectral range	380 - 970 nm		970 - 2 500 nm	
Spectral resolution	3.5 nm		10 nm	
Calibration	Sensor provided with wavelength and radiometric calibration file.			
FORE OPTICS				
FOV	32.3 degrees			
IFOV	0.084 degrees			
Swath width	0.58 x altitude			
Altitude for 1 m pixel size	660 m			
ELECTRICAL CHARACTERISTICS				
Detector	CMOS		Stirling cooled MCT	
Spectral binning options	2x	4x	8x	-
Number of spectral bands	344	172	86	275
Spectral sampling/band	1.75 nm	3.5 nm	7 nm	6 nm
Frame rate, up to (frames/s)	130			
Spatial pixels	384			
Output	12 bits CL		16 bits CL	
SNR	500 - 1 000:1 (peak) *		900:1 (peak)	
	More detailed SNR data in various conditions available from SPECIM.			
Integration time	Adjustable, within frame time			
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.			
Typical power consumption **	150 W			
Maximum power consumption **	500 W			
ENVIRONMENTAL CHARACTERISTICS				
Storage	- 20 ... +50 °C			
Operating	+ 5 ... +40 °C, non-condensing			

*) depends on spectral binning

**) Complete system with rack PC

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

Swath width vs altitude from the ground



Ground pixel vs. altitude from the ground

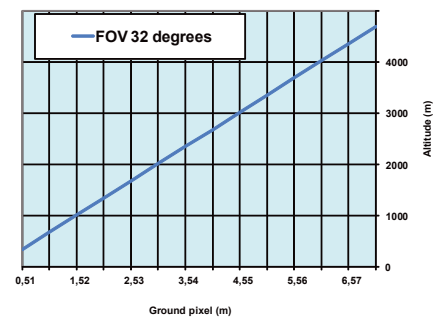
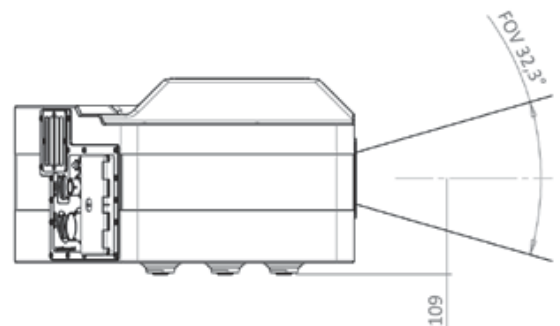
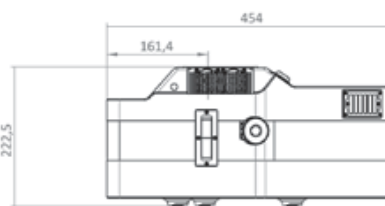
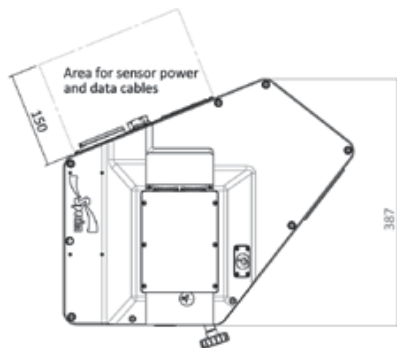
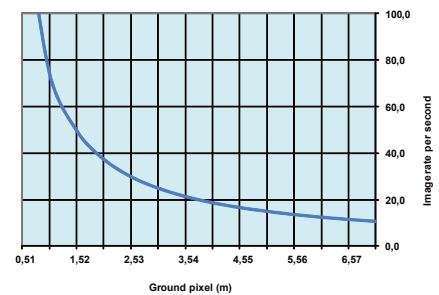


Image rate for square ground pixel @ aircraft speed 60 m/s (120 knots)



AisaFENIX datasheet veri-2012