

Real Time Mapping AMS *Enhanced Airborne* Multispectral Scanner - AA3607

Argon ST has broadened the utility and advanced the feature set for one of our workhorse imaging systems. The basic AMS is a dual optical port multispectral scanner which records up to sixteen spectral bands simultaneously onto a removable disk. Relative to the standard AMS, the enhanced version is optimized for higher spatial resolution (1.25 mrad IFOV or higher), has six new spectral bands, a newly designed high capacity data system and geo-corrected output imagery. **These enhanced features are also available as an upgrade for existing AMS or ABS / ATM owners wishing to modernize and improve the capability of their system.**

The new system integrates an Applanix POS/AV™, DEM storage and enhanced processing power. Specially developed software uses the position and attitude measurements and the DEM to geocode each pixel to map coordinates, thus producing GIS compatible imagery. Corrected compatible imagery is available upon landing the aircraft. Uncorrected "raw" sensor data is also recorded. Optional accessories permit the imagery to be radio or satellite linked in real time to a ground workstation where it is superimposed onto a standard base map image. Additional tools are provided to enable post processing of the raw recorded data in cases where immediate results are not required. Post processing also increases the accuracy of the geo-located images.

Like the standard AMS, the enhanced version provides calibrated thermal outputs for the determination of radiometric temperature relationships for a variety of remote sensing applications. The compact scan head and electronics can be installed in a wide range of aircraft using standard 16" aerial camera ports and seat assemblies. The sensor configuration includes a dual element thermal infrared detector and a 14-band, visible/near-infrared spectrometer so that a total of 16 spectral bands are available. Any or all of these bands may be selected for recording by the operator without restrictions at the higher scan speeds.

The system's built-in test (BIT) capability delivers a high level of confidence in mission success. An on-board image display provides a real-time check of flight line coverage and data quality. The AMS provides continuous video monitoring and operator control via a menu-driven touch screen.

Now with 16 spectral bands, high spatial resolution, new data system and Geo-corrected output.

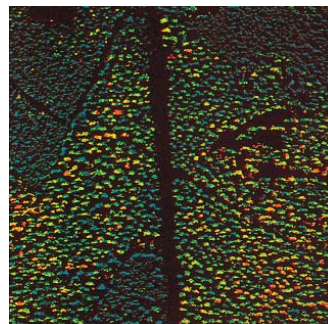
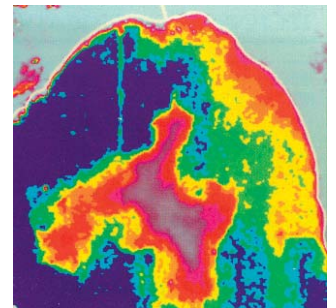
The AMS collects data for applications as diverse as:

- ▣ **Strategic intelligence**
- ▣ *Geologic mapping*
- ▣ *Forest inventory*
- ▣ *Fire mapping*
- ▣ *Oil spill detection/mapping*
- ▣ *Water chlorophyll studies*
- ▣ **And many more.**



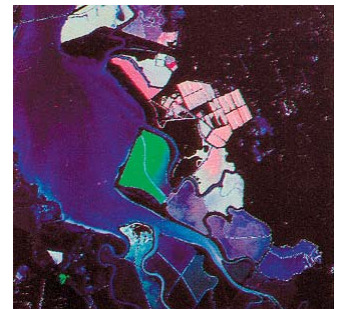
System photo depicts one variation of system.

Bay Environment Study shows sea water pollution, suspended solids and chlorophyll conditions. (Courtesy Asia Air Survey Company, Ltd., Japan)



Acid Rain Study of a forest area shows degradation of healthy trees over a one year period. Red dots are dead trees. (Courtesy Eurosense, Belgium)

Imagery of waste settling ponds in the San Francisco Bay area shows dramatic differences in spectral signatures. Diked ponds, some of which are used for industrial processing wastes, require airborne monitoring to detect leakage. (Courtesy of NASA/Ames Research Center) NASA does not endorse any commercial product.



Imaging Group

**Environmental
Remote Sensing
Technology**

Enhanced Airborne Real Time Mapping AMS Multispectral Scanner - AA3607

PARTIAL LISTING OF APPLICATIONS:	SPECTRAL BANDS																	
	VIS/NIR Spectrometer Channels														15	16		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	3 - 5 μ m SWIR	8.5-12.5 μ m LWIR		
Geologic Mapping		X			X			X	X		X	X	X	X	X	X		X
Water Chlorophyll	X	X		X	X	X								X				X
Water Suspended Sediment			X	X				X	X	X	X		X					X
H ₂ O Temp-Spring/Seep Detection													X					X
Water Algae	X		X	X	X	X	X			X		X						X
Forest Inventory		X	X	X				X	X	X	X	X	X	X				X
Crop Vigor Studies		X	X	X				X	X	X		X	X	X				X
Fire Detection/Mapping																	X	X
Oil Spill Detection/Mapping	X																X	X

The AMS collects data for applications as diverse as geologic mapping, forest inventory, fire mapping, oil spill detection/mapping, water chlorophyll studies and many more. Examples of typical applications and their recommended spectral combinations are depicted in the chart above. **Strategic intelligence applications may use all bands.**

SPECTRAL BANDS		
Visible/Near IR Bands	Band Edges	NER
1	0.43 - 0.45 μ m	\leq 0.15
2	0.48 - 0.50 μ m	\leq 0.10
3	0.50 - 0.52 μ m	\leq 0.10
4	0.52 - 0.54 μ m	\leq 0.10
5	0.54 - 0.56 μ m	\leq 0.10
6	0.56 - 0.58 μ m	\leq 0.10
7	0.58 - 0.61 μ m	\leq 0.10
8	0.61 - 0.64 μ m	\leq 0.10
9	0.65 - 0.68 μ m	\leq 0.10
10	0.68 - 0.72 μ m	\leq 0.10
11	0.72 - 0.78 μ m	\leq 0.10
12	0.78 - 0.84 μ m	\leq 0.10
13	0.84 - 0.92 μ m	\leq 0.10
14	0.97 - 1.08 μ m	\leq 0.10
Thermal IR Bands		NETD
15	3.0 - 5.4 μ m	\leq 0.15
16	8.5 - 12.5 μ m	\leq 0.1

NER is μ W/cm²nmsr and NETD in °C (6.25 scans/sec)

OPTIONS

- IR Detector Cryo-Cooling
- Radio or satellite link and corresponding ground receiving workstation
- Installation assistance
- High resolution 0.6 milliradian IR detectors

PHYSICAL SPECIFICATIONS

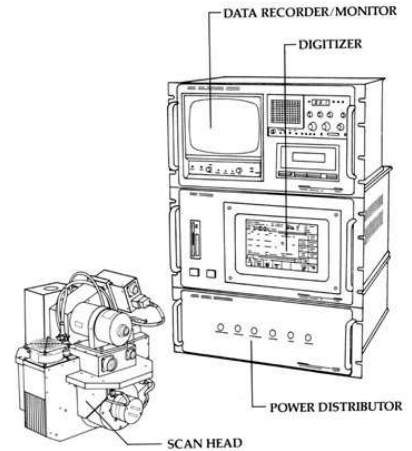
	Height		Width		Depth*	
	in	cm	in	cm	in	cm
Scan Head	15.0	38.0	15.0	38.0	15.0	38.0
Electronics	31.5	80.0	20.0	50.8	20.0	50.8
			lbs	kg		
Total System Weight (approx.)			200	91		

* Depth not including connectors and cables

ENVIRONMENTAL SPECIFICATIONS

	Temperature	Rel. Humidity (non-condensing)	Altitude
Scan Head	-55° to +70°C	0 - 95%	50,000 ft (15,200 m)
Electronics (operating)	+5° to +40°C	20 - 80%	25,000 ft* (7,600 m)
Electronics (non-operating)	-40° to +60°C	0 - 95%	50,000 ft (15,200 m)

* Video monitor will automatically switch off above 14,500 ft (4,400 m)



TECHNICAL SPECIFICATIONS

INSTANTANEOUS FIELD OF VIEW
1.25 milliradians standard

DIGITIZED FIELD OF VIEW
90° = 1500 scene pixels

SCAN RATES
100, 50, 25, 12.5 scans/sec (operator selectable)

VELOCITY/HEIGHT RATIO (V/H)
0.125 radians/sec

REAL TIME GEO-LOCATION ACCURACY
 \pm 10 Pixels for 30 M USGS DEM and DGPS

POST PROCESSED GEO-LOCATION ACCURACY
 \pm 5 Pixels for 30 M USGS DEM and DGPS

POWER REQUIREMENTS
28 \pm 3 VDC, 40 amps maximum

IMAGE DISPLAY
9" CRT 640 pixels wide in continuous moving window

DIGITIZATION PRECISION
12-bit per pixel

RECORD TIME AT 100 SCANS/SEC
(16 channel operation)
4 Hours per removable disk

THERMAL REFERENCE SOURCES
Two controllable field-filling blackbody reference sources. Range of -15° to +25°C with respect to scan head heat sink temperature.

GPS/IMU SYSTEM
A POS/AV attitude and location measurement system is integral to the instrument. Attitude and location information from this system are used in real-time or in post processing, together with a DEM, to remove the effects of aircraft motion & terrain relief from the image data.

Specifications subject to change. Argon ST reserves the right to substitute components of equal or superior performance at any time without notice.

Rev. 2 - Nov. 2004

Imaging Group

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