

ATM with UV Band

Enhanced Daedalus *Multispectral Scanner*

The utility and feature set has been broadened for one of our workhorse imaging systems. The basic ATM is a multi optical port multispectral scanner which records up to 16 spectral bands simultaneously onto a removable disk. Relative to the standard ATM, the enhanced version is configured to add a ultraviolet (UV) spectral band a 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 a GPS/INS subsystem and enhanced processing power. Specially developed software uses the position and attitude measurements and a DEM to geocode each pixel to map coordinates, producing GIS compatible north-up imagery. Corrected compatible imagery can be 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 ATM, 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 aerial camera ports and seat assemblies. The sensor configuration includes VNIR, SWIR and thermal infrared detectors for a total of 16 spectral bands. Any or all of these bands may be selected for recording by the operator without restrictions.

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 ATM provides continuous image monitoring and operator control via a menu-driven touch screen.

With compact data system and Geo-corrected output.

The ATM 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.

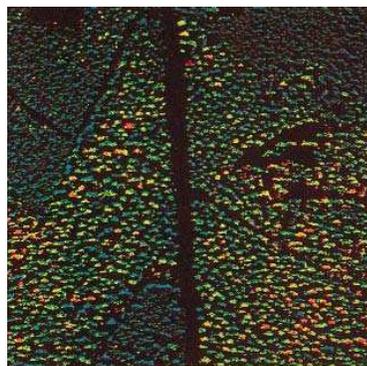
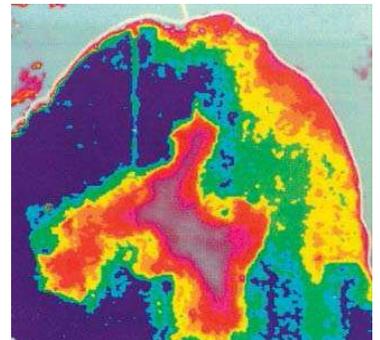


Data System

Scan Head

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.

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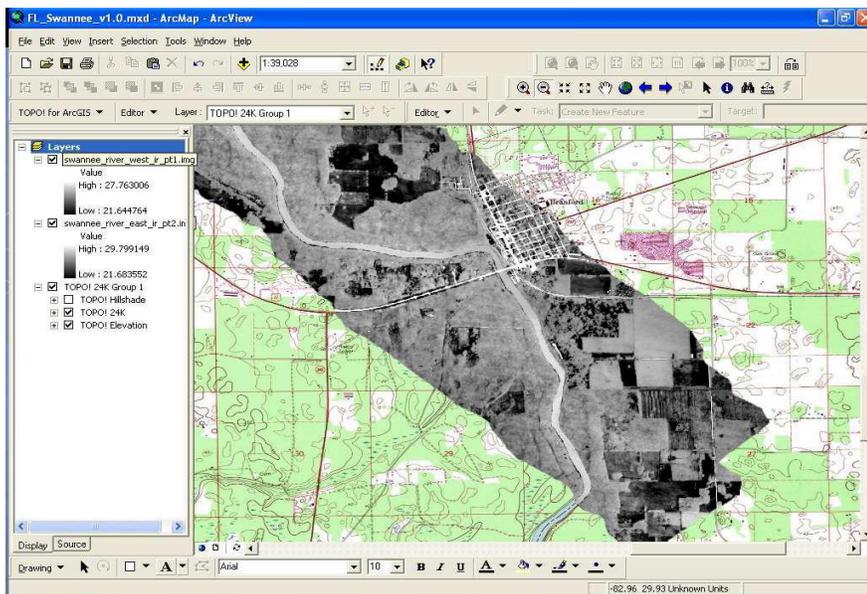
ATM with UV Band

Multispectral Scanner

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

The ATM 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.**

Band	Band Edges	
1	0.32 – 0.38 μ m	UV
2	0.43 – 0.45 μ m	
3*	0.45 – 0.52 μ m	Visible
4*	0.52 – .60 μ m	
5	0.60 – 0.63 μ m	
6*	0.63 – 0.69 μ m	
7	0.69 – 0.75 μ m	Near Infrared
8*	0.76 – 0.90 μ m	
9	0.91 – 1.05 μ m	
10	MWIR 3.0 – 5.4 μ m	Thermal Infrared
11	LWIR 8.5 – 12.5 μ m	



Two line mosaic of IR ATM image over base map in GIS system

OPTIONS

Detector cryo cooling or Liquid Nitrogen cooled
Installation assistance; - maintenance and calibration accessories

PHYSICAL

	Height		Width		Depth*	
	inch	cm	inch	cm	inch	cm
Scan Head	15.0	38.0	15.0	38.0	15.0	38.0
Electronics	10.5	26.7	19.0	48.3	21.5	54.6

Total System Weight (approximate) 150 lbs or 68 kg

* Depth not including connectors and cables

ENVIRONMENTAL

	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)

TECHNICAL SPECIFICATIONS

INSTANTANEOUS FIELD OF VIEW
2.5 milliradians standard

DIGITIZED FIELD OF VIEW
90° =750 scene pixels

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

REAL TIME GEO-LOCATION ACCURACY
± 5-10 Pixels for 30 M USGS DEM and DGPS
POST PROCESSED GEO-LOCATION ACCURACY
±5 Pixels for 30 M USGS DEM and DGPS

POWER REQUIREMENTS
28 ±3 VDC, 30 amps maximum

IMAGE DISPLAY
Continuous moving window on operator interface screen

DIGITIZATION PRECISION
16 -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 & Image Mapper
An attitude and location measurement system is integral to the instrument. Attitude and location information from this system are used by Image Mapper in near 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.

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