

# Airborne Multispectral Scanner

# DaedalusScanners AA3503-16

The utility and the feature set for one of our workhorse imaging systems has been further broadened. The AMS is a dual optical port multispectral scanner which records up to 16 spectral bands simultaneously onto a removable disk. Relative to the original and standard AMS, this version is optimized for higher spatial resolution (1.25 mrad IFOV), has six new spectral bands, a high capacity data recording system and geo-corrected output imagery.

**These improved features are also available as an upgrade for existing AMS, ABS or 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 into map coordinates, thus producing GIS compatible imagery and north-up orthorectified image files. Corrected compatible imagery can be available upon landing the aircraft. Uncorrected "raw" sensor data is also recorded. Other equipment can 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. The same utility tools are provided for post processing of the raw recorded data in cases where immediate results are not required. Post processing can increase the accuracy of the geo-located images.

Like the standard AMS, the improved new version provides calibrated thermal bands for determining scene 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 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.

The system's built-in test 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 status monitoring and operator control via a menu-driven touch screen.

Now with 16 spectral bands, high spatial resolution, compact 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.



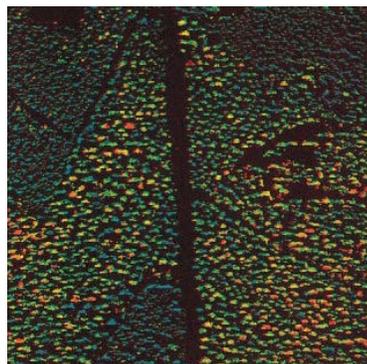
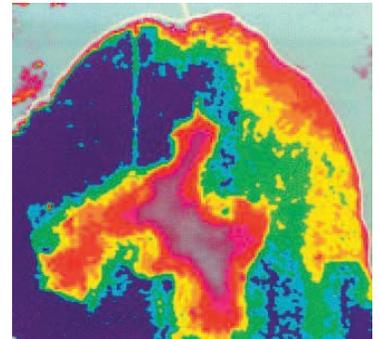
Scan Head



Data System

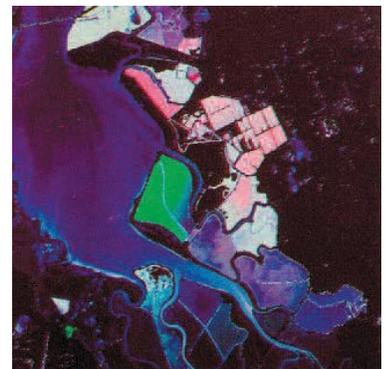
photo depicts one variation of system.

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



Air 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.



# Multispectral Scanner - AA3503-16

PARTIAL LISTING OF APPLICATIONS:	SPECTRAL BANDS																	
	VIS/NIR Spectrometer Channels														MWIR	LWIR		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		
Geologic Mapping		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 <sub>2</sub> 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.**

Bands	Band Edges	
1	0.43 - 0.45 $\mu$ m	Visible
2	0.48 - 0.50 $\mu$ m	
3	0.50 - 0.52 $\mu$ m	
4	0.52 - 0.54 $\mu$ m	
5	0.54 - 0.56 $\mu$ m	
6	0.56 - 0.58 $\mu$ m	
7	0.58 - 0.61 $\mu$ m	
8	0.61 - 0.64 $\mu$ m	Near Infrared
9	0.65 - 0.68 $\mu$ m	
10	0.68 - 0.72 $\mu$ m	
11	0.72 - 0.78 $\mu$ m	
12	0.78 - 0.84 $\mu$ m	Thermal Infrared
13	0.84 - 0.92 $\mu$ m	
14	0.97 - 1.05 $\mu$ m	
15 MWIR	3.0 - 5.4 $\mu$ m	
16 LWIR	8.5 - 12.5 $\mu$ m	

## PERFORMANCE SPECIFICATIONS

**INSTANTANEOUS FIELD OF VIEW** 1.25 milliradians standard

**FIELD OF VIEW**  
90° = 1500 scene pixels

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

**GEO-LOCATION ACCURACY**  
± 5 Pixels using 30 meter DEM

**IMAGE DISPLAY**  
Real-time scrolling moving window on touch screen

**DIGITIZATION**  
16-bit per pixel

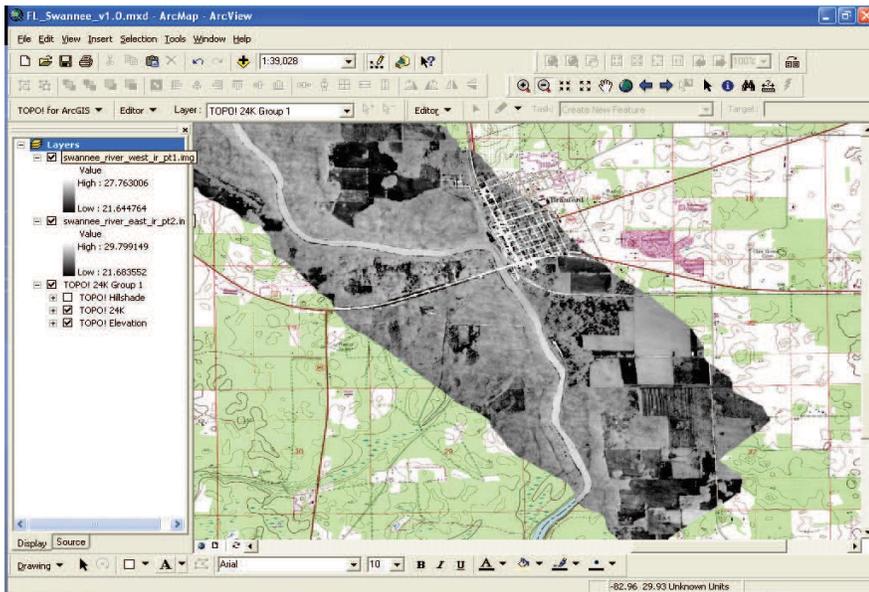
**RECORD TIME at 100 scans/sec**  
(16 channel operation)  
3 Hours per removable disk

**THERMAL REFERENCE SOURCES**  
Two controllable field-filling blackbody references

**CRYO-COOLED IR DETECTORS**  
Liquid nitrogen is not needed

**GPS/INS SYSTEM and ImageMapper software**  
An attitude and location measurement system is integral to the instrument. Data from this system is used by ImageMapper in near real-time or in post-flight processing, together with a DEM, to remove the effects of aircraft motion & terrain relief from the image data. Output image files are North-up and ortho-rectified.

This product is exportable to most countries without license (NLR)  
Specifications are subject to change.



Example: Two-line mosaic of IR band image over base map in GIS system

## OPTIONS

Spares; maintenance and calibration accessories

## PHYSICAL

	Height		Width		Depth*	
	in	cm	in	cm	in	cm
Scan Head	22.0	56.0	15.0	38.0	15.0	38.0
Electronics	10.5	26.7	20.0	50.8	20.0	50.8

Total System Weight (approx.) 57 kg  
\* Depth not including connectors and cables

## ENVIRONMENTAL

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

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