

# Airborne Scanner for Oil & Fire Mapping

## Model AA3503DS

The model AA3503DS is a dual optical port scanner configured with two or three sensors which are ideally suited for detection and mapping of oil spills and/or hot targets such as wildfires. The system records all spectral channels directly onto a removable hard disk. The scanner provides calibrated thermal images and information for determining radiometric temperature relationships for various 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 system performs simultaneous scanning of one or two thermal infrared bands and an ultraviolet spectral band. All bands are spatially co-registered.

Calibration of the thermal IR channel(s) is standard using the built-in blackbody references. The system's Built-In Test (BIT) function runs automatically at startup, delivering 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.

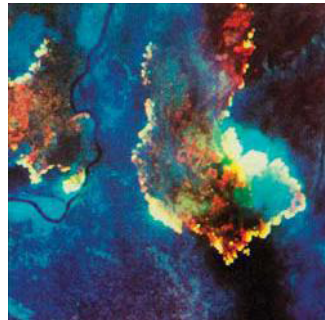
The system's built-in-test function runs automatically at startup.

Operator control is through a menu driven touch-screen located on the front panel. This function can be remoted to a laptop or on-board workstation.

ImageMapper software is included which provides the capability to produce Arc GIS compatible and north-up orthorectified image files.

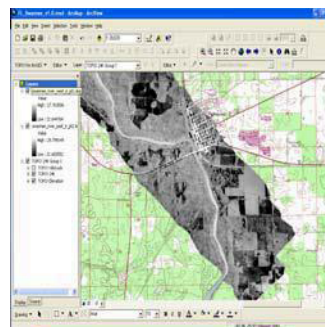
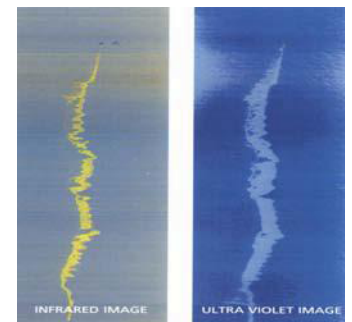
### The scanner collects data for applications as diverse as:

- Geologic studies
- Maritime surveillance
- Fire Mapping
- Heat loss detection
- Pollution monitoring
- And many more.



(Left) Forest fire smoke is penetrated here using several regions of the infrared to pinpoint hot spots and fire fronts for ground personnel. (Courtesy of NASA/Ames Research Center). Note: NASA does not endorse any commercial product.

(Right) Oil spill monitoring using thermal IR and UV channels. The UV assists in determining total area of oil slick while the IR is used for oil thickness estimates. (Courtesy of the North Sea Directorate)



(Left) Spring detection and mapping using the thermal IR channel and the Daedalus ImageMapper Software allows the St. Johns River Water Management District to improve their understanding of the Floridian Aquifer quickly and efficiently. ArcGIS compatible image maps can be produced within minutes of data acquisition

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## SOME DETECTOR COMBINATIONS

Partial Listing of Applications:	UV	VNIR	MWIR	LWIR
Geologic mapping				X
Ground water discharge				X
Offshore spring mapping				X
Thermal discharge monitoring				X
Fire detection/mapping			X	X
Geothermal exploration			X	X
Search and rescue			X	X
Ice mapping			X	
Soil moisture studies		X		X
Thermal inertia mapping		X		X
Crop and forestry studies		X		X
Oil spill detection/mapping	X			X

Examples of typical applications and their recommended spectral combinations are depicted in the chart above.

**NOTE:** The ABS can be upgraded to the 10 or 16 band multispectral scanner.

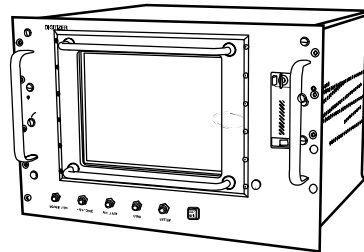
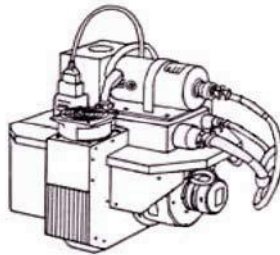
### OPTIONS

#### ALTERNATE DETECTORS

Visible/Near Infrared Detector (V/NIR) 0.4 - 1.1  $\mu\text{m}$

Note: Optional detectors can be purchased later as needs develop.

#### INSTALLATION ASSISTANCE



## PERFORMANCE SPECIFICATIONS

### SPECTRAL BANDS

UV 0.32 – 0.38  $\mu\text{m}$   
LWIR 8.5 - 12.5  $\mu\text{m}$

MWIR 3.5 5  $\mu\text{m}$  optional

Note: IR detectors are closed cycle cryo-cooled; liquid nitrogen is not needed.

### INSTANTANEOUS FIELD OF VIEW

1.25 milliradians

(2.5 milliradians optional)

Note: For best performance the UV band is 5 mrad only.

### DIGITIZED FIELD OF VIEW = 90°

1500 recorded pixels per line @ 1.25 mrad

750 recorded pixels per line @ 2.5 mrad

### SCAN RATES

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

### VELOCITY/HEIGHT RATIO (V/H)

0.125 radians/sec with 1.25 mrad IFOV

0.25 radians/sec with 2.5 mrad IFOV

### POWER REQUIREMENTS

28  $\pm$ 3 VDC, 20 amp.

### IMAGE DISPLAY

Real-time water fall display

### DIGITIZATION PRECISION = 16-bit

### RECORD TIME > 15 hours

### THERMAL REFERENCE SOURCES

Two controllable field-filling blackbody references are built in. Controlled range is -15°C to +25°C with respect to scan head temperature.

### RUGGEDIZED DATA SYSTEM

The electronics packaging design is enhanced to survive and operate in a high dust and vibration environment.

### GPS/INS Subsystem and ImageMapper

An attitude and location measurement system is integral to the scanner. Data from this system is synchronized to the scanner and recorded for use by ImageMapper in near real-time or in post-flight processing, together with a customer provided DEM, to remove the effects of aircraft motion and terrain relief from the image data. Output image files are north-up and orthorectified.

## 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	10.5	26.7	20.0	50.8	20.0	50.8

Total System Weight (approx.) 100 lbs. (45 kg)

\* 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 +50°C	20 - 80%	25,000 ft. (7,600 m)
Electronics (non-operating)	-40° to +60°C	0 - 95%	50,000 ft. (15,200 m)

Specifications subject to change. DaedalusScanners reserves the right to substitute components of equal or superior performance at any time without notice. This product is exportable to most countries without license (NLR)

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