AMDC Airborne Multispectral Digital Camera

AA497

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The AA497 Airborne Multispectral Digital Camera consists of three primary modules:

- The camera head with lens and shutter, filter wheel and an inertial attitude measurement system.
- A system control and recording chassis packaged into a computer case and including an integral GPS receiver.
- A remote operator interface unit consisting of a display and keyboard housed in a portable case for lap top use.

The package also includes system cables, a GPS antenna and cable, and a mechanical assembly to install the camera head into a 16” diameter mapping camera mount.

The AA497 Airborne Multispectral Digital Camera (AMDC) is a 2-dimensional framing device with approximately 2000 pixels in each axis. Optical filters on a movable wheel provide spectral images.

Fast data transfer to solid state memory allows rapid capture of 2 to 5 spectral images with 80 to 98% overlap, producing a multispectral frame. The percentage of overlap depends on V/H and the number of spectral images (bands) in the multispectral frame. The frame is recorded to 8 mm tape. Co-registration of the spectral images is done with a resampling algorithm. A resampling algorithm, based on a 2-dimensional projective transform and a flat earth model, is supplied for use in a ground data processing system.

AMDC Airborne Multispectral Digital Camera

PHYSICAL SPECIFICATIONS

Parameter	Camera Head	Computer	Monitor	Units
Size (H x W x D)	12 dia. x 15 high	7 x 19 x 18	9 x 14 x 2	inches
Weight	28	38	6	pounds

Total weight with cables: approximately 80 pounds

TECHNICAL SPECIFICATIONS

CAMERA RESOLUTION
2020 x 2041 spectral image pixels (multispectral image depends on overlap)

GROUND COVERAGE (with 28 mm lens)
Approximately 4000 x 4000 ft. @ 6000 feet altitude (AGL)
IFOV approximately 0.32 mrad

MULTISPECTRAL FRAME CAPTURE RATE
0.45 to 1.8 seconds for 2 to 5 spectral bands

MULTISPECTRAL FRAME REPETITION RATE
4 to 8 seconds minimum for 2 to 5 bands
Operator selectable for longer rates

FRAME TRIGGERING
Internal timer, external signal, or manual (operator select)
First exposure of each frame is synchronized to GPS PPS

OPERATOR INTERFACE AND CONTROL
Operator input from a display with touch-screen controls instrument functions. Instrument status and acquired images are displayed to the operator on the remote unit sunlight readable LCD screen.

OPERATING ENVIRONMENT
Temperature: 5° to 35°C
20% to 80% relative humidity
10,000 feet above sea level

GPS AND AIRCRAFT ATTITUDE
Built-in receiver and inertial system records aircraft position and attitude into output data. Position and attitude data is automatically correlated to first spectral image of each frame. Differential GPS is included.

POWER
28VDC nominal input (approximately 350 watts)

LENS APERTURE CONTROL
Adjustable lens f /#: range is f /2.8 to f /16 for 28 mm lens

CAMERA SHUTTER CONTROL
5 to 40 ms exposure, operator selectable

SPECTRAL BANDWIDTH
Visual to near IR spectrum, approximately 400 to 1000 nm

STANDARD FILTER
1) Blue 420 - 495 nm
2) Green 515 - 565 nm
3) Red 600 - 670 nm
4) Near IR 738 - 772 nm
5) Pan 530 - 680 nm

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