

UAV Megacam

Multi-Megapixel Imaging System
for UHF datalinks and Satcomm
Now with realtime image mosaicing and true
orthorectification

Airborne Innovations is proud to introduce
the UAV Megacam imaging system.

UAV Megacam is a miniature UAV imaging
solution, and capable of sending multi-
megapixel images over the standard Piccolo datalink, or over other UHF datalinks and
satcomm systems such as Globalstar and Iridium. It integrates well with the Cloud Cap
Piccolo avionics, or can function standalone.



UAV Megacam Features:

- Supports satcomm (Iridium ready) or transparent UHF datalinks
- Supports a wide variety of off-the-shelf multi-megapixel digital cameras
- Cloud Cap Piccolo Ready
- Compression selectable so the user can trade off quality and transmission time
- Ready to use camera and compression module, or customizable to a variety of camera and image capture solutions.
- Typical configuration: high resolution digital camera, 3 video inputs
- GPS and aircraft attitude input and remote mapping features
- Onboard image storage available, multiple camera support, changeable resolution
- Satcomm-optimized imaging system also available (different hardware options available in the SatCam product)
- EMI Shielded Carbon Fiber Box



4 megapixel image sent in 20 seconds over the Piccolo datalink

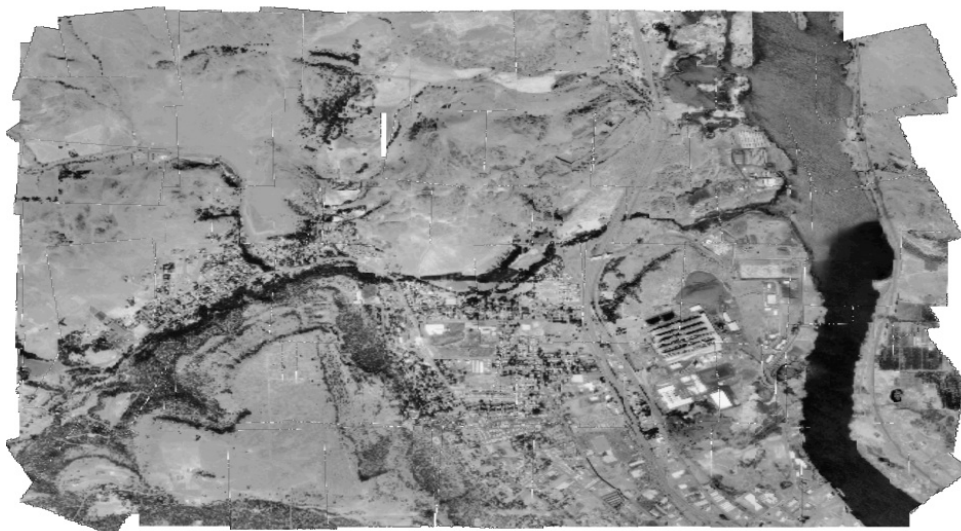
Specifications:

Imaging module only:

Power consumption: 2.5W typical

Weight: <120 grams unboxed, 54g box

UAV MegaCam and Satcam Now Support Image Mosaicing and Orthorectification



Automatic georeferenced image mosaicing from an autonomous scanning flight plan using the Megacam system and the Piccolo

The MegaCam and SatCam systems now feature automatic georeferencing, image mosaicing and orthorectification, and realtime map mosaic display.

The system obtains aircraft data from the UAV avionics via a secondary serial port. Aircraft metadata including GPS data and attitude are attached to the image, and the ground-based imagery application georeferences the images and displays and mosaics the georeferenced images on a map display as they arrive in realtime. The display application takes advantage of hardware graphics acceleration to provide outstanding and stunning smooth realtime image zooming features. Images may be overlaid on top of a georeferenced base map if desired. The system outputs image mosaics, georeferenced / orthorectified images, aircraft metadata, and raw images for a high degree of flexibility.

An aircraft-view image simulator is also provided to test or demonstrate the system in conjunction with the Piccolo simulator.

UAV Megacam System Architecture

The Megacam system typically consists of a compression board, digital camera (USB, or other interfaces available), multiple video camera inputs if desired, and a UAV avionics with payload data capability such as the Cloud Cap Piccolo.

The base station may consist only of a PC and the standard Cloud Cap ground station and antenna.

The compression board performs image compression and runs a datalink protocol for robust image transmission via radio or satcomm. The system efficiently sends images over standard Piccolo datalinks (no extra image datalink is necessary).

The system is also capable of operating with a transparent serial link which is user configurable (other datalink solutions are available).

Previous high resolution UAV imaging systems have relied on images stored on board, which does not allow inflight interpretation of imagery and retasking of the aircraft.

The system combines the best available low bandwidth optimized image compression technology with a robust image transmission protocol capable of transmitting streaming still images over ultra low bandwidth links, and georeferencing and image mosaicing.

Developers can integrate the imaging system with their own datalink and/or camera, or users can drop in a ready to go independent imaging system.

Image Compression

The system uses wavelet image compression technology for excellent quality at extremely low bandwidth. Image detail is preserved where it is necessary, and compression ratios of 250:1 and higher produce good quality images (an order of magnitude better than JPEG). The user can trade off quality vs. image transfer times. Reasonable quality 4 megapixel images can be transmitted via the standard Piccolo datalink at 38 kbaud in 15 to 20 seconds. 2 megapixel images can be efficiently transmitted over Globalstar satcomm, smaller images over Iridium.

Image Transmission

A custom reliable image transmission protocol is used which is optimized for low bandwidth datalinks. This guarantees complete image reception even if the link performance is not 100% reliable, and maximizes the use of bandwidth.

Custom configurations, royalty free source code, and video capture solutions are also available.

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