

1. Features

- Video Stabilization, Tracking
 - Turret Video Auto-Track
 - Image Rotation, Digital Zoom
 - Contrast Equalization
 - Edge Enhancement
 - Sharpening
 - Noise Filtering
 - False Colors for B&W Images
 - Pass-Through Communication
- Ports & power: RS-232, Ethernet



2. Description

Alticam Vision System (AVS) is an in-line video processing board compatible with all Alticam™ systems. AVS removes jitter and other motion distortion, and enhances images to provide persistent, “hands-off” surveillance, even at narrow fields of view, for extended time periods. Rugged for field operations, the AVS can be installed in ground, water or aircraft units, manned or remotely controlled.



3. Specifications

Weight:	186 gm + 11 gm (cable)
Dimensions:	16 cm X 14 cm X 5 cm + 30 cm cable
Voltage / Current	12V - 14V, 400 mA @ 13.2V
Video:	NTSC in, NTSC out
Frame Delay:	Less than 3 frames
Pass-Through Ports	2x RS-232 or 1x RS-232 + Ethernet (AVS 3.0 only)

4. Technical Details

4.1 Image Stabilization and Tracking

AVS 1.0-2.0-3.0

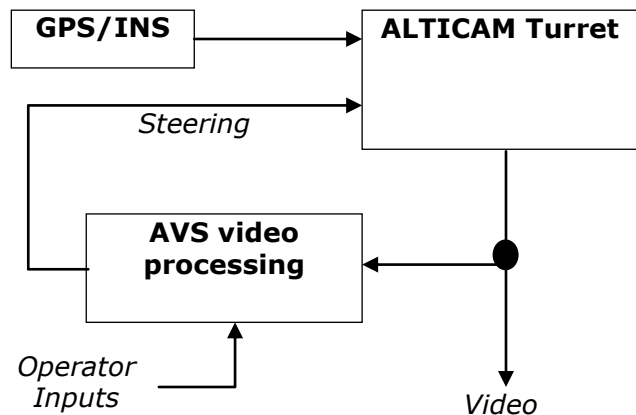


- On board video processor re-register successive video frames.
- It eliminates blur due to vibration and residual motion and generates a steady image.
- Video processing is also able to follow a sub-image within the image.
- Vehicle broadcasts high-quality corrected video.
- Video processing corrections are used for turret Video Auto-Track.

4.2 Turret Video Auto-Track: SCENE Mode & TRACK Mode

AVS 1.0-2.0-3.0

- SCENE mode uses the video stabilization corrections to drive the turret.
- SCENE eliminates effect of gyro drifts and attitude error in GPS/Inertial control to provide persistent steady image
- TRACK Mode steers the turret towards the designated sub-image. It allows for hands-free chase of vehicles



- Video Auto-Track allows one to operate hands-free at very narrow Field Of View. Even in bumpy conditions, the viewer is able to get a persistent 0.5° Field of View without Video Auto-Track losing track.
- Ground Control need not include tracking software and video processing hardware.

4.3 Image Rotation & Digital Zoom

AVS 1.0-2.0-3.0

- Image rotation presents video from roll-over-tilt turrets as pan-over-tilt configuration. The image has a familiar orientation easy to understand and to exploit.
- Digital zoom provides a detailed view of the Point Of Interest without robbing stabilization from the larger Field Of View: the viewer can center the digital zoom on the track box.



UAV Launch site, details of launch operator at 4x digital zoom

4.4 Contrast Equalization (AVS 2.0-3.0)

Contrast Equalization can reveal otherwise unseen details



Equalization reveals vehicle tracks in top right corner of the image

4.5 Enhancement (AVS 2.0-3.0)

Enhancement reveals man-made object with much better detail and clarity.



UAV Training Site, UAV on launcher, UAV on stand

4.6 Sharpening (AVS 2.0-3.0)

Sharpening operates as a “focus” enhancer. It is very useful in conjunction with digital zoom to provide the additional sharpness lost in the digitization.



4.7 Filtering / De-noise (AVS 2.0-3.0)

No pictures are available since the effect is dynamic. Filtering improves clarity when enhancement is maximum and at maximum digital zoom with sharpening on.

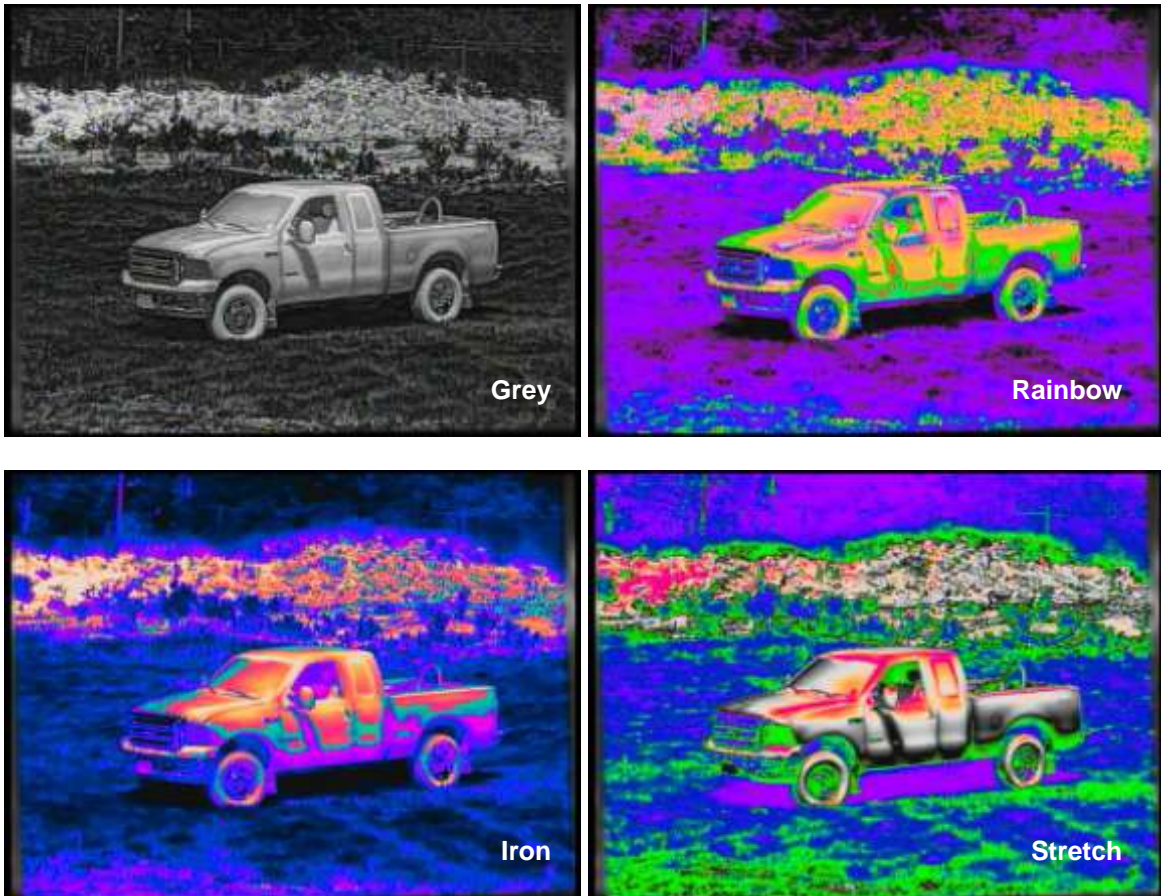
4.8 Polarity, False Colors for B&W Images (AVS 1.0-3.0)

Whereas general scenery is easier to grasp in White Hot mode, scenes with man made objects tend to look more natural in black hot. AVS changes polarity



UAV Training Site, White hot, black hot

Like Polarity change, false colors can give the operator a respite from looking at the same image. It can reveal details hard to catch otherwise. It is a good tool to compare temperatures in different parts of the scene.



4.9 Pass-Through Ports (AVS 3.0)

- Packets to/from payloads other than AltiCam are encapsulated as “pass-through”
- A Payload Ground Station can connect to UAV Ground Station: via 115,200bps serial link
- AVS opens or encapsulates pass-through packets
- AVS delivers or receives packets to and from additional payload
- Link is serial, up to 115,200bps, or Ethernet.

