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**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>186 gm + 11 gm (cable)</td>
</tr>
<tr>
<td>Dimensions</td>
<td>16 cm X 14 cm X 5 cm + 30 cm cable</td>
</tr>
<tr>
<td>Voltage / Current</td>
<td>12V - 14V, 400 mA @ 13.2V</td>
</tr>
<tr>
<td>Video</td>
<td>NTSC in, NTSC out</td>
</tr>
<tr>
<td>Frame Delay</td>
<td>Less than 3 frames</td>
</tr>
<tr>
<td>Pass-Through Ports</td>
<td>2x RS-232 or 1x RS-232 + Ethernet (AVS 3.0 only)</td>
</tr>
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</table>
4. Technical Details

4.1 Image Stabilization and Tracking

- 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

- 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**

- 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.

![Image of UAV launch site with 2.0° Field Of View and 4x digital zoom on launch operator]

**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.

![Image of vehicle tracks with contrast equalization off and on]

*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](image)

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.

![Sharpening OFF](image)

![Sharpening ON](image)

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](image)

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.

![White Hot](image)

![Black Hot](image)

![Grey](image)

![Rainbow](image)

![Iron](image)

![Stretch](image)
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.