1. **Camera**

   - **Image Size:** 39 MP: 5412 x 7216
   - **Pixel Size:** 0.0068 mm
   - **Filter Array:** Color (VIS) or ColorIR (CIR)

   **Applanix AeroLens™ by Carl Zeiss:**
   - Standard: 60 mm, F/3.5, FOV(deg): crosstrack 44, alongtrack 34, diagonal 54 (CIR and VIS)
   - Optional: 40 mm, F/4, FOV(deg): crosstrack 62, alongtrack 49, diagonal 74 (CIR and VIS)

   **Exposure Control:** Aperture priority (calibrated), Manual or Shutter priority

   **Light Metering:** Center weighted average

   **Shutter:** Electronically controlled focal plane

   **Shutter Speed:** 125 - 4000 (slower speeds not recommended)

   **ISO:** Up to 800

   **Exposure Compensation:** +/- 2 EV in 1/3 EV steps

   **Max Exposure Rate:** 2.8 seconds ± 0.03 sec 1 sigma

   **Sensor Head:** Proprietary CCD mount, ruggedized exoskeleton, Designed to hold geometric accuracy over RTCA/DO-160D shock/vibe spec to within 1 pixel*

   **Calibration:** Terrestrial and Airborne calibration with full report

   *When mounted on supplied shock isolators

2. **Computer System**

   **Data Logger**
   - Embedded OS
   - Removable pressurized and temperature controlled ruggedized disk drive, 7000 image capacity per drive (2 supplied, 500 GByte each)

   **Navigation, Direct Georeferencing and Flight Management**
   - Embedded Applanix POSTrack, Integrated GPS/Inertial Direct Georeferencing and Flight Management System
   - XTRACK Mission Planning software
   - Remote Pilot display with touch screen
   - Operator or pilot only operation mode
   - Panasonic Toughbook for optional operator interface (operator client can be run on any Windows computer)
   - Real-time image, camera, and POS status display

   Tested and meets RTCA/DO-106D specs for shock and vibe

3. **Performance**

   **Direct Georeferencing, RMS**

<table>
<thead>
<tr>
<th></th>
<th>C/A GPS</th>
<th>DGPS*</th>
<th>Post-Processed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Position (m)</td>
<td>4.0-6.0</td>
<td>0.3-2</td>
<td>0.05-0.3</td>
</tr>
<tr>
<td>Velocity (m/s)</td>
<td>0.1</td>
<td>0.05</td>
<td>0.005</td>
</tr>
<tr>
<td>Roll &amp; Pitch (deg)</td>
<td>0.015</td>
<td>0.010</td>
<td>0.008</td>
</tr>
<tr>
<td>True Heading (deg)</td>
<td>0.08-0.016</td>
<td>0.050</td>
<td>0.015</td>
</tr>
</tbody>
</table>

   *When using optional Satellite Based Augmentation Service (SBAS)

4. **Physical**

   **Size:**
   - Camera sensor head 180 x 180 x 360 mm
   - Camera mount tray 250 x 310 x 36 mm
   - Computer system 340 x 370 x 340 mm

   **Weight:**
   - Camera w/o Az Mount ~ 7 kg (60 mm lens)
   - Camera mount tray ~ 2 kg
   - Computer system 24 kg

   **Power:**
   - Computer system 28 VDC 280 W (max) (includes camera, Az Mount)

   **Temp. Range:**
   - Camera 0 deg C to +40 deg C
   - Computer System -20 deg C to +55 deg C

   **Humidity:** 5 to 90% RH non-condensing

   **Altitude:**
   - Up to 10,000 ft, with supplied operator laptop (higher altitude option available)
   - Up to 20,000 ft, without supplied laptop

5. **Processing Software**

   Produces plotter ready images and Exterior Orientation data

   **DSS Tools**
   - MissionView: Data management software, downloads images from removable drives
   - ImageView: Image development software, lens fall-off correction < 3%, image sharpening tools, formats conversion: TIFF, JPEG, IMG, quantization conversion: 8 bit or 12 bit, color balance via calibration inputs

   **POSPAC Air**
   - GNSS Aided INS Processing Tools: Differential GNSS processing, Inertial/GNSS post-processing
   - Photogrammetry Tools: Direct Georeferencing software; produces exterior orientation for each photo, IMU/camera boresight calibration, camera calibration, Quality Control

   **DTMBox and OrthoBox (Optional)**
   - Softcopy Software by InPHO; automatic DTM extraction and OrthoMosaic generation

6. **User Supplied Equipment**

   **PC for Post-processing**
   - PC with Windows OS
   - Minimum of 300 GB disk space (512 MB of RAM)
   - Tower rack with external SATA or USB port

   **Softcopy OrthoPhoto Software**
   - Compatible with BAE Socet Set, Z/I ImageStation, Leica LPS, and others
1. Description
The DSS Azimuth Mount is a small, ruggedized, single axis mount, designed to automatically remove the effects of aircraft crab or yaw drift. This ensures that all images taken with the DSS are parallel to each other, which is essential for high performance stereo applications.

The mount is controlled automatically by the POS AV embedded in the DSS and can be commanded to follow the mean track angle (velocity vector along the ground) or a desired heading. The mount correction angle is encoded and fed back to the POS AV for dynamic lever arm translation.

2. Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>432 mm x 355 mm x 58 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>15 kg without camera head</td>
</tr>
<tr>
<td></td>
<td>22 kg with camera head</td>
</tr>
<tr>
<td>Power</td>
<td>28 Watts Max, 28 VDC (supplied with the DSS)</td>
</tr>
<tr>
<td>Altitude</td>
<td>0 to 20,000 ft</td>
</tr>
<tr>
<td>Temperature</td>
<td>0 deg C to +55 deg C operational</td>
</tr>
<tr>
<td>Drift Correction Range</td>
<td>+/- 40 deg</td>
</tr>
<tr>
<td>Drift Correction Accuracy</td>
<td>&lt; 0.5 deg RMS, absolute</td>
</tr>
<tr>
<td>Encoder Rate</td>
<td>5 Hz</td>
</tr>
<tr>
<td>Encoder Resolution</td>
<td>0.01 deg</td>
</tr>
<tr>
<td>Interfaces</td>
<td>RS232 to POS AV COM1 and COM3</td>
</tr>
<tr>
<td>Shock/Vibration Isolation</td>
<td>Built-in isolators</td>
</tr>
<tr>
<td>Motor Reliability</td>
<td>100,000 hours MTBF as per MIL SPEC 17 methods</td>
</tr>
</tbody>
</table>

3. Typical Results
Figure 1 shows a plot of the crab angle (heading of the aircraft minus the track angle over ground) that was experienced during a flight test of the mount. In this case, the crab easily exceeded +/- 20 deg.

Figure 2 shows the residual tracking error of the mount for the same flight, which is the heading of the camera minus the track angle over the ground. The mount removes the crab angle so that the images are taken parallel to each other to less than 0.5 deg RMS. This is also illustrated in Figure 3 which shows the footprints of the images projected onto the ground.