

AeroStab-3

Full compensating stabilizer for small and medium sized aerial cameras.



AeroStab-3 is the third generation of our full compensating stabilizer designed for high-end digital SLR cameras and mid-format cameras.

AeroStab-3 is optimized for working with AeroTopoL Flight Management System, but is operable also in a stand-alone mode and with other FMS applications using an open serial interface.

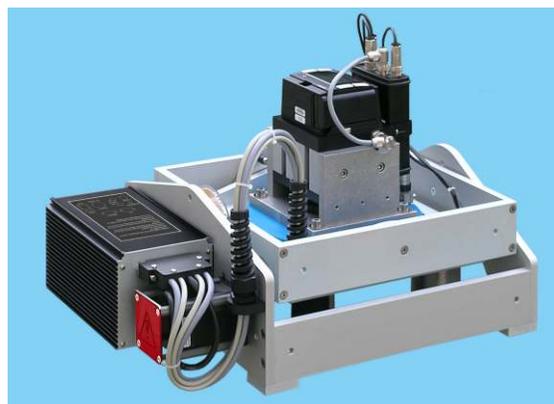
AeroStab-3 includes a high quality GPS-Vector board that enables precise positioning with 10 Hz refresh rate and true-heading determination. The IMU itself is used to measure roll and pitch angles.

All generations of AeroStab mounts are able to trigger the camera at the image centres designed in the AeroTopoL FMS, and use the event signal to read the orientation parameters exactly at the mid-exposure pulse.

Better still is our innovative solution that achieves full heading compensation in combination with our AeroTopoL FMS.

Stepper motors correct the camera orientation in real-time with a speed of 10°/sec on the roll and pitch axes. The improved model-based firmware updates continuously and rapidly for fast and smooth compensation of up to +-20 degree for roll, pitch and heading.

- x GPS/IMU Integrated
- x Open Interface Format to FMS
- x Optimized for AeroTopoL
- x Works with most Cameras
- x Release and Event Control
- x Low Power Consumption
- x Compact
- x Easily Installed
- x Full Heading Compensation
- x Eventoutput for external GPS



Technical Data: AeroStab-3

GPS-Vector board

Receiver Type: L1,C/A code, with carrier phase smoothing
Channels: Two 12 channel, parallel tracking
(Two 10 channel when tracking SBAS)
Update Rate: 10 Hz, (Option 20 Hz)

Horizontal Accuracy:

< 20 cm 95%confidence (L-Dif™)*
< 50 cm 95%confidence (DGPS)**
< 2.5 m 95%confidence (autonomous,no SA)***
Typical SBAS accuracy at aerial missions 1m x,y,z

* depends on multipath environment, number of satellites in view, satellite geometry, L-Dif baseline length and ionospheric activity
** depends on multipath environment, number of satellites in view, satellite geometry, baseline length (for local service) and ionospheric activity
*** depends on multipath environment, number of satellites in view, satellite geometry, and ionospheric activity

Start Up Time: <60 s typical
Satellite Reacquisition: <1 s
1 PPS Accuracy: ~50 ns,
Event Marker Input, active low, falling edge sync

Dual-GPS Receiver using 2 boards and 2 Antennas for the True-Heading determination in WGS84. This is done by analysing the L1-phase while predefining the antenna separation.

Update Rate: 10 Hz, (Option 20 Hz)

Heading Accuracy:

<0.4 ° rms @0.5m antenna separation
<0.2 ° rms @1.0m antenna separation
<0.10 ° rms @2.0m antenna separation
Pitch/Roll Accuracy: <1 ° rms
Rate of Turn: 90 °/s maximum
Start Up Time: <60 s typical
Heading Fix: <20 s

Gyro: Single axis gyro provides reliable <1 ° heading for periods up to 3 minutes when loss of GPS lock has occurred
Tilt Sensor: Assists in fast start up of RTK solution

GPS-Antennas

Active high sensitivity patch antennas, TNC connector, 10-40dB,

IMU

MEMS based 3 axis gyro sensor. This self calibrating multi-sensor-system makes use of accelerometers, gravity sensors, gyros and magnetometers

- accurate full 360° 3D orientation
- high dynamic response with longterm stability
- 3D acceleration, 3D rate of Turn, 3D earth-magnetic field data
- all solid state miniature MEMS inertial sensors inside
- high update rate
- temperature, 3D misalignment ,sensor cross-sensitivity compensation

Orientation Performance:

Dynamic range: all angles in 3D
Angular resolution* 0.05°
Static Accuracy (Roll/Pitch) < 0.5°
Static accuracy (Heading)** < 1°
Dynamic accuracy*** 2° RMS

* 1 σ standard deviation of 0-mean angular random walk
** in homogeneous magnetic environment
*** depends on type of motion

Correction-System

3 adjusted Stepper Motors with 1/10 Step control with attached 0.06 degree incremental sensors, processor controlled with 3 predefined dynamic models for typical airborne movements.

Correction-Limits

Roll: +- 20 °
Pitch: +- 20 °
Heading: +- 20 °

Correction-Speed (default)

Roll: 10 °/ Sec
Pitch: 10 °/ Sec
Heading: 5 °/ Sec

2 additional dynamic scenarios available (rapid and smooth)

Weight and Dimension

- Total Weight: 13,5 kg
- Width Platform 351 * 330 mm
- Height Platform 180 mm
- Width Controller 120 * 250 mm
- Height Controller 100 mm
- Hole 120 mm

Power

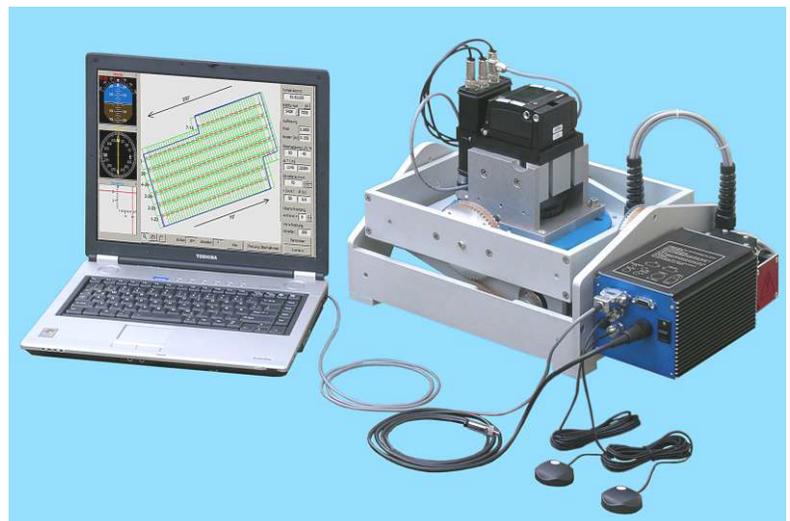
- 20-28 V DC
- Maximum 3 A
- Typically 1,6 A

Features

- Automatic Roll and Pitch Compensation
- True-Heading Compensation to Course (Drift Compensation)
- True-Heading Compensation to planned Direction (Full Heading Compensation with AeroTopoL only)
- Stop on Release (with AeroTopoL only)
- GPS, IMU and Event Synchronisation
- Release Management (D/A Exchange)
- Event Management (A/D Exchange)
- Event based Positioning
- Status of Platform can be controlled via AeroTopoL
- Event-Interface for external Devices (e.g. L1/L2 GPS Receivers)

Content of Delivery

- AeroStab-3 Engine
- AeroStab-3 Controller
- GPS-IMU
- GPS Antennas (2)
- Power Cable
- Camera Cable
- Serial Connector
- Transportation Box



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