POS AV™ SPECIFICATIONS

IMMEDIATE ANSWERS FROM AIRBORNE DIRECT GEOREFERENCING

POS AV is the foremost commercial GNSS-Inertial solution for airborne direct georeferencing. Used with digital cameras, film cameras, LIDAR systems, SAR systems, and digital scanners, POS AV precisely measures aerial sensor position and orientation hundreds of times each second, accounting for all motion variables at the exact moment of data capture. In real time or refined in post-processing with the highly productive POSPac Mobile Mapping Suite (MMS) software, the POS AV data is used to accurately georeference sensor data to the Earth or local mapping frame without the need for ground information, eliminating time consuming aerotriangulation steps. POS AV is ideally suited to support precision mapping work, especially over inhospitable environments and in rapid response capacities where ground control data may be unavailable or physically impossible to collect. POS AV integrated precision GNSS with inertial technology is supported by Applanix' industry leading expertise and a continuous dedication to technological innovation. Offering a streamlined and automated data workflow with built-in quality control features, POS AV improves productivity in all aerial mapping applications.

PERFORMANCE SPECIFICATIONS

POS AV Absolute Accuracy[1] (RMS)

POS AV	410 SPS	410 DGPS	410 XP[3]	410 Post Processed[4]	510 SPS	510 DGPS	510 XP[3]	510 Post Processed[4]	610 SPS	610 DGPS	610 XP[3]	610 Post Processed[4]
Position (m)	1.5-3.0	0.5-2.0	0.1-0.5	0.05-0.30	1.5 - 3.0	0.5-2.0	0.1-0.5	0.05-0.30	1.5- 3.0	0.5-2.0	0.1-0.5	0.05-0.30
Velocity (m/s)	0.050	0.050	0.010	0.005	0.050	0.050	0.010	0.005	0.030	0.020	0.010	0.005
Roll and Pitch (deg)	0.020	0.015	0.015	0.008	0.008	0.008	0.008	0.005	0.005	0.005	0.005	0.0025[5]
True Heading[2] (deg)	0.080	0.050	0.040	0.025	0.070	0.050	0.040	0.008	0.030	0.030	0.020	0.0050

POS AV Relative Accuracy

POS AV	410	510	510 IMU-14	610
Noise [deg/sqrt(hr)]	< 0.10	0.02	< 0.01	0.005
Drift (deg/hr)[6]	0.50	0.10	0.10	< 0.01

SYSTEM SPECIFICATIONS

Computer System

Component	Dimensions	Weight	Power	Temperature	Altitude
PCS Standard	L = 279mm, W = 165mm, H = 91mm	2.9 kg	20-34 Vdc, 78 W Max (inc. IMU)	-20 °C to +55 °C	0 to 6096 m
PCS OEM	L = 239mm, W = 158mm, H = 82mm	2.54 kg			

1 Typical performance. Actual results are dependent upon satellite configuration, atmospheric conditions and other environmental effects
2 Typical mission profile, max RMS error
3 OmniStar XP service, typical airborne results, subject to regional coverage and mission profile. Subscription sold separately.
4 POSPac MMS
5 May require local gravity model to achieve full accuracy
6 Attitude will drift at this rate up to a maximum error defined by absolute accuracy in table above.

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Inertial Measurement Unit (IMU)

Type	AV Model	Origin	Dimensions	Operational Temperature	Weight
IMU-7 IMU-8	POS AV 410 POS AV 510	US	L = 95mm, W = 95mm, H = 107mm	-54 °C to +71 °C	1.0 kg
IMU-29[7]	POS AV 410	EU	L = 128mm, W = 128mm, H = 104mm	-40 °C to +71 °C	2.1 kg
IMU-14[8]	POS AV 510	EU	L = 150mm, W = 120mm, H = 100mm	-20 °C to +55 °C	2.0 kg
IMU-31[9]	POS AV 510	EU	L = 163mm, W = 130mm, H = 137mm	-20 °C to +55 °C	2.6 kg
IMU-21	POS AV 610	US	L = 163mm, W = 165mm, H = 163mm	-40 °C to +70 °C	4.49 kg

7 Applanix has obtained rulings from the US Department of State, the Department of Foreign Affairs and International Trade (DFAIT), Canada, and The Federal Office of Economics and Export Control (BAFA), Germany, which determined that IMU-29 is not subject to US (ITAR), Canadian or German defense-related licensing restrictions. Other licensing requirements may apply to specific sensitive countries or end uses
8 Max angular rate of rotation is 60 deg/sec.
9 Applanix has obtained rulings from the Department of Foreign Affairs and International Trade (DFAIT), Canada, and The Federal Office of Economics and Export Control (BAFA), Germany, which determined that IMU-31 is not subject to Canadian or German defense-related licensing restrictions. Other licensing requirements may apply to specific sensitive countries or end uses

Global Navigation Satellite System (GNSS)

OPTIONS	Signals	OPTIONS
GPS-16	GPS L1/L2/L2C GLONASS L1/L2 Omnistar L Band	5 Hz (raw)

1. ETHERNET INPUT OUTPUT

Parameters	Time tag, status, position, attitude, velocity, track and speed, dynamics, performance metrics, raw IMU data (200 to 250 Hz, IMU dependent), raw GNSS data
Display Port	Low rate (1 Hz) UDP protocol output
Control Port	TCP/IP input for system commands
Primary Port	Real-time (up to IMU Rate) TCP/IP protocol output
Secondary Port	Buffered TCP/IP protocol output for data logging to external device

2. LOGGING

Parameters	Time tag, status, position, attitude, velocity, track and speed, dynamics, performance metrics, raw IMU data (200 to 250 Hz, IMU dependent), raw GNSS data
Media	External: Removable 1 Gbyte Flash Disk (2 supplied), Internal: Embedded 1 Gbyte Flash Disk for redundant logging

3. RS232 NMEA ASCII OUTPUT

Parameters	NMEA Standard ASCII messages: Position ($INGGA), Heading ($INHDT), Track and Speed ($INVTG), Statistics ($INGST)
Rate	Up to 50 Hz (user selectable)

4. RS232 HIGH RATE BINARY OUTPUT

Parameters	User selectable binary messages: Time, position, attitude, speed, track, PAV30 output, Yaw Drift Correction
Rate	Up to IMU Data Rate (user selectable)

5. RS232 INPUT INTERFACES

Parameter	Gimbal encoder input, AUX GPS Input (RTK, NavCom Starfire, OmniStar), RTCM104 DGPS Corrections Input
Rate	1 to IMU Data Rate

6. OTHER I/O

1PPS	1 pulse-per-second Time Sync output, normally high, active low pulse
Event Input (2)	Two time mark of external events. TTL pulses > 1 msec width, max rate 100 Hz.

7. USER SUPPLIED EQUIPMENT

- PC for POS Controller (Required for configuration):
Pentium 90 processor (minimum), 16 MB RAM, 1 MB free disk space, Ethernet adapter (RJ45 100 base T), Windows 2000/XP

- PC for POSPac Post-processing Software:
Pentium III 800Mhz or equivalent (minimum), 256 MB RAM, 400 MB free disk space, USB Port (For Security Key), Windows 2000/XP

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Date of issue: June 2009; Information subject to change at any time.