+POS AV™ SPECIFICATIONS

Immediate Answers from Airborne Direct Georeferencing

POS AV is the foremost commercial 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 leading up to the exact moment of data capture. Collected in real time and refined in post-processing, data is accurately georeferenced 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 survey 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 traditional aerial mapping applications.

PERFORMANCE SUMMARY - POS AV Absolute Accuracy

POS AV	210 C/A GPS	210 DGPS	210 RTK	210 PP	310 C/A GPS	310 DGPS	310 RTK	310 PP
Position (m)	4.0 - 6.0	0.5 - 2.0	0.1 - 0.3	0.05 - 0.30	4.0 - 6.0	0.5 - 2	0.1 - 0.3	0.05 - 0.3
Velocity (m/s)	0.050	0.050	0.050	0.010	0.050	0.050	0.010	0.075
Roll & Pitch (deg)	0.050	0.050	0.050	0.040	0.030	0.030	0.030	0.015
True Heading[1] (deg)	0.150	0.100	0.100	0.080	0.100	0.080	0.070	0.035

POS AV	410 C/A GPS	410 DGPS	410 RTK	410 PP	510 C/A GPS	510 DGPS	510 RTK	510 PP
Position (m)	4.0 - 6.0	0.5 - 2.0	0.1 - 0.3	0.05 - 0.30	4.0 - 6.0	0.5 - 2	0.1 - 0.3	0.05 - 0.3
Velocity (m/s)	0.050	0.050	0.010	0.005	0.050	0.050	0.010	0.005
Roll & Pitch (deg)	0.015	0.015	0.015	0.008	0.008	0.008	0.008	0.005
True Heading[1] (deg)	0.080	0.050	0.040	0.015	0.070	0.050	0.040	0.008

POS AV	610 C/A GPS	610 DGPS	610 RTK	610 PP
Position (m)	4.0 - 6.0	0.5 - 2.0	0.1 - 0.3	0.05 - 0.30
Velocity (m/s)	0.030	0.020	0.010	0.005
Roll & Pitch (deg)	0.005	0.005	0.005	0.0025[2]
True Heading[1] (deg)	0.030	0.030	0.020	0.0050

PERFORMANCE SUMMARY - POS AV Relative Accuracy

POS AV	210	310	410	510	510 IMU-8	610
Noise (deg/sqrt(hr))	0.20	0.15	0.07	< 0.01	0.02	0.005
Drift (deg/hr)[3]	0.75	0.50	0.50	0.10	0.10	< 0.01

[1] Typical mission profile, max RMS error
[2] May require local gravity model to achieve full accuracy
[3] Attitude will drift at this rate up to a maximum error defined by absolute accuracy in table above.

SYSTEM SPECIFICATIONS

COMPONENT	SIZE	WEIGHT	POWER	TEMPERATURE	ALTITUDE
PCS Standard	L = 279mm, W = 165mm, H = 91mm	2.90 kg	20 – 34 Vdc, 78 W Max *(incl IMU)*	-20 C to +55 C	0 to 6,096 m
PCS OEM	L = 239mm, W = 158mm, H = 82mm	2.54 kg	20 – 34 Vdc, 78 W Max *(incl IMU)*	-20 C to +55 C	0 to 6,096 m

INERTIAL MEASUREMENT UNIT (IMU)

TYPE	AV MODEL	ORIGIN	OPERATIONAL TEMPERATURE	DIMENSIONS	WEIGHT
IMU-15 IMU-2 IMU-7 IMU-8	POS AV 210 POS AV 310 POS AV 410 POS AV 510	US	-54 C to +71 C	L = 95mm, W = 95mm, H = 107mm	1.0 kg
IMU-23 IMU-5 IMU-18	POS AV 210 POS AV 310 POS AV 410	US	-40 C to +71 C	L = 105mm, W = 105mm, H = 107mm	1.7 kg
IMU-26	POS AV 310	EU	-40 C to +71 C	L = 128mm, W = 128mm, H = 104mm	2.1 kg
IMU-6	POS AV 510	US	-20 C to +55 C	L = 109mm, W = 109mm, H = 89mm	1.6 kg
IMU-14*	POS AV 510	EU	-20 C to +55 C	L = 150mm, W = 120mm, H = 100mm	2.0 kg
IMU-21	POS AV 610	US	-40 C to +70 C	L = 163mm, W = 165mm, H = 163mm	4.49 kg

*Max angular rate of rotation is 60 deg/sec.

GLOBAL NAVIGATION SATELLITE SYSTEM (GNSS)

OPTION	SIGNALS	DATA RATE
GPS-13	GPS L1/L2/L2C	10 Hz (raw)
GPS-14	GPS L1/L2/L2C GLONASS L1/L2	2 Hz (raw)

1. ETHERNET INPUT OUTPUT

Ethernet	(100 base-T)
Parameters	Time tag, status, position, attitude, velocity, track and speed, dynamics, performance metrics, raw IMU data (200 to 300 Hz, IMU dependent), raw GPS data (10Hz)
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 300 Hz, IMU dependent), raw GPS data (10Hz)
Media External:	Removable 1 Gbyte Flash Disk (2 supplied),
Media 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 HP), 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 98/2000/NT/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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