

# POSTrack™ SPECIFICATIONS

## GNSS-INERTIAL DIRECT GEOREFERENCING WITH INTEGRATED FLIGHT MANAGEMENT FOR AIRBORNE MAPPING

POSTrack tightly integrates the POS AV GNSS-Inertial direct georeferencing technology from Applanix with the XTRACK Flight Management System (FMS) from Track' Air, in one compact ruggedized system. Engineered as a single system, it is compact, convenient, and easily installed on all types of aircraft. Flight Management features include mission planning, pilot guidance, automatic stabilized mount control and automatic camera triggering at pre-planned intervals. POS AV features include in-air initialization, leveling of stabilized mounts, automatic drift correction, GNSS position translation using encoder data from stabilized mounts, and generation of Exterior Orientation of each image for the mapping process. These features significantly reduce the cost of airborne mapping by improving the efficiency of the data collection and map production process.

POSTrack puts you in control: various performance, price points and export control options allow you to build the right solution for your application and for your budget. And all POSTrack solutions can utilize the highly productive POSpac Mobile Mapping Suite (MMS) software, featuring the Applanix IN-Fusion™ technology and Applanix SmartBase™ module. POSpac MMS enables airborne missions to be flown with higher reliability and in less time, saving fuel costs and reducing environmental impact.

### PERFORMANCE SUMMARY

#### POSTrack Absolute Accuracy<sup>1</sup> (RMS)

POS AV	410 SPS	410 DGPS	410 XP <sup>2</sup>	410 PP	510 SPS	510 DGPS	510 XP <sup>2</sup>	510 PP	610 SPS	610 DGPS	610 XP <sup>2</sup>	610 PP
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	0.05-0.3
Velocity (m/s)	0.050	0.050	0.010	0.005	0.05	0.05	0.01	0.005	0.030	0.02	0.01	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 <sup>1</sup>
True Heading <sup>2</sup> (deg)	0.080	0.050	0.040	0.025	0.07	0.050	0.040	0.008	0.030	0.030	0.020	0.0050

#### POSTrack 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) <sup>3</sup>	0.5	0.10	0.10	< 0.01

### SYSTEM SPECIFICATIONS

#### Computer System

Component	Dimensions	Weight	Power	Temperature	Altitude
PCS and FCS	L = 279mm, W = 330mm, H = 91mm	5.9 kg	20-34 Vdc, 110 W Max including IMU and Pilot Display	-20 °C to +55 °C	0 to 6096 m
Pilot Touch screen	L = 45mm, W = 315mm, H = 175mm	1.82 kg		-10 °C to +55 °C	0 to 6096 m

<sup>1</sup> Typical performance. Actual results are dependent upon satellite configuration, atmospheric conditions and other environmental effects.

<sup>2</sup> Typical mission profile, near RMS error.

<sup>3</sup> Omnitix XP service, typical airborne results, subject to regional coverage and mission profile. Subscription sold separately.

<sup>4</sup> POSpac MMS.

<sup>5</sup> May require local gravity model to achieve full accuracy.

<sup>6</sup> Altitude will drift at this rate up to a maximum error defined by absolute accuracy in table above.

## Inertial Measurement Unit (IMU)

Type	AV Model	Origin	Dimensions	Operational Temperature	Weight
IMU-7	POS AV 410	US	L = 95mm, W = 95mm, H = 107mm	-54 °C to +71 °C	1.0 kg
IMU-8	POS AV 510				
IMU-29 <sup>7</sup>	POS AV 410	EU	L = 128mm, W = 128mm, H = 104mm	-40 °C to +71 °C	2.1 kg
IMU-14 <sup>8</sup>	POS AV 510	EU	L = 150mm, W = 120mm, H = 100mm	-20 °C to +55 °C	2.0 kg
IMU-31 <sup>9</sup>	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 200Hz (user selectable)

### 5. RS232 INPUT INTERFACES

Parameter	Gimbal encoder input, AUX GPS Input (RTK, NavCom Starfire, OmniStar), RTCM104 DGPS Corrections Input
Rate	1 to 200Hz

### 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. SENSOR INTERFACES

<b>3-axis Mount</b>	
Drift Correction	T-AS (digital interface), PAV30 (RS232) (Requires POSOP) PAV80 (RS232) (Requires COMOP and IMUOP), GSM300 (RS232) DSS Azimuth Mount (RS232), Z/I Mount (RS232)
Levelling Control	PAV30 (RS232), PAV80 (RS232), GSM3000 (RS232), Z/I Mount (RS232)
Gimbal Encoder	PAV30 (RS232), PAV80 (RS232), GSM3000 (RS232) DSS Azimuth Mount (RS232), T-AS (digital interface), Z/I Mount (RS232)
Stab. Control	GSM3000 (RS232), PAV30 (RS232), PAV80 (RS232), T-AS (digital interface), Z/I Mount (RS232)
<b>Frame Camera</b>	
Triggering/MEP	RC20/30, TOP RMK, LMK 1000, Vexcel UC/DUC/UCL, Generic, DiMAC
Data Interface	RC20/30 (RC30 requires extended EDI interface), TOP RMK (requires TCU digital interface), LMK 1000, Vexcel UC/DUC/UCL, Generic DiMAC
<b>LIDAR</b>	
Logging On/Off	ALS40/50 Riegl Q240/560

### 8. 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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