

# 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 Flight Management System (FMS) software from Track' Air, in one compact ruggedized system. Engineered as a single system, it is compact, convenient and easily installed in all types of aircraft. Flight Management features include: mission planning with full DEM support; pilot guidance; automatic stabilized mount control and automatic camera triggering at pre-planned intervals. POS AV features include in-air initialization, levelling 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 data collection and the map production process. In addition, because Applanix is a Trimble Company (NASDAQ: TRMB), POS AV is unique in the marketplace with its ability to receive the Trimble CenterPoint RTX Correction Service. Using RTX, POS AV delivers higher accuracy and speed, lower cost, more uptime and greater reliability.

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 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	310 SPS	310 RTX <sup>3</sup>	310 RTX Post-Processed <sup>4</sup>	310 SmartBase Post-Processed <sup>4</sup>	410 SPS	410 RTX <sup>3</sup>	410 RTX Post-Processed <sup>4</sup>	410 SmartBase Post-Processed <sup>4</sup>
Position (m)	1.5 H 3 V	<0.1 H <0.2 V	<0.1 H <0.2 V	<0.05 H <0.1 V	1.5 H 3 V	<0.1 H <0.2 V	<0.1 H <0.2 V	<0.05 H <0.1 V
Velocity (m/s)	0.05	0.05	0.010	0.010	0.050	0.050	0.005	0.005
Roll and Pitch (deg)	0.03	0.02	0.015	0.015	0.020	0.015	0.008	0.008
True Heading <sup>2</sup> (deg)	0.10	0.08	0.035	0.035	0.080	0.040	0.020	0.020

POS AV	510 SPS	510 RTX <sup>3</sup>	510 RTX Post-Processed <sup>4</sup>	510 SmartBase Post-Processed <sup>4</sup>	610 SPS	610 RTX <sup>3</sup>	610 RTX Post-Processed <sup>4</sup>	610 SmartBase Post-Processed <sup>4</sup>
Position (m)	1.5 H 3 V	<0.1 H <0.2 V	<0.1 H <0.2 V	<0.05 H <0.1 V	1.5 H 3 V	<0.1 H <0.2 V	<0.1 H <0.2 V	<0.05 H <0.1 V
Velocity (m/s)	0.050	0.050	0.005	0.005	0.030	0.030	0.0050	0.0050
Roll and Pitch (deg)	0.008	0.008	0.005	0.005	0.005	0.005	0.0025 <sup>5</sup>	0.0025 <sup>5</sup>
True Heading <sup>2</sup> (deg)	0.070	0.040	0.008	0.008	0.030	0.020	0.0050	0.0050

#### POSTrack Relative Accuracy

POS AV	310	410	510	610
Noise [deg/sqrt(hr)]	0.15	<0.1	0.02	0.005
Drift (deg/hr) <sup>6</sup>	0.5	0.5	0.1	<0.01

### SYSTEM SPECIFICATIONS - Computer System

Component	Dimensions (L x W x H) mm	Weight	Power	Temperature	Altitude
POSTrack V6	179 x 323 x 68	4.0 kg	18 – 34 Vdc, 110 W Max (incl IMU and Pilot Display)	-20 C to +55 C	0 to 7,820 m
Pilot Tablet	40 x 159 x 258	1.2 kg		-20 C to +50C	0 to 7,820 m

<sup>1</sup> Typical performance. Actual results are dependent upon satellite configuration, atmospheric conditions and other environmental effects. POSTrack is not an approved aviation system, and under no circumstances should it be used as a stand alone means of navigating any aircraft. Customer assumes full responsibility for proper use and validity of flight plans.

<sup>2</sup> Typical mission profile, max RMS error

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

<sup>4</sup> With POSpac MMS, sold separately

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

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

# Global Navigation Satellite System (GNSS)

Option	Signal	Data Rate
GPS-17	GPS: L1 C/A, L2C, L2E, L5 GLONASS: L1 C/A, L1 P, L2 C/A, L2 P GALILEO <sup>7</sup> : L1 BOC, E5A, E5B, E5AltBOC QZSS: L1 C/A, L1 SAIF, L1 SAIF, L2C, L5 SBAS: Simultaneous L1 C/A and L5 L-Band: OmniSTAR VBS, XP, HP and G2, Trimble CenterPoint RTX BeiDou: B1, B2	5 Hz (raw)

<sup>7</sup> Developed under the License of European Union and European Space Agency.

## Inertial Measurement Unit (IMU)

Type	AV Model	Temp (Operational)	Dimensions (LxWxH) mm	Weight
IMU-42 <sup>9</sup>	POS AV 310	-20 C to +55 C	120 x 120 x 110 (in tophat, provided)	1.25 kg
IMU-7/IMU-8 <sup>8</sup>	POS AV 410 / POS AV 510	-54 C to +71 C	95 x 95 x 107	1.0 kg
IMU-52 <sup>9</sup>	POS AV 410	-20 C to +55 C	161 x 120 x 111	1.85
IMU-46 <sup>9</sup>	POS AV 510	-20 C to +55 C	161 x 120 x 126	2.2 kg
IMU-57 <sup>9</sup>	POS AV 610	-20 C to +55 C	179 x 126 x 127	2.6 kg
IMU-21 <sup>8</sup>	POS AV 610	-40 C to +70 C	163 x 165 x 163	4.49 kg

<sup>8</sup> These IMUs require US government approvals for all exports, a Canadian export permit for all destinations outside the US, and may be subject to local export restrictions internationally. Contact your Applanix representative for further information.

<sup>9</sup> These IMUs are exportable worldwide subject to statutory export declarations, and standard restrictions relating to certain international destinations. Contact your Applanix representative for further information.

<b>I/O</b>	
Ethernet (100 base-T)	
Parameters	Time tag, status, position, attitude, velocity, track and speed, dynamics, performance metrics, raw IMU data (at IMU rate), 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 200 Hz) TCP/IP protocol output
Secondary Port	Buffered TCP/IP protocol output for data logging to external device
<b>Logging</b>	
Parameters	Time tag, status, position, attitude, velocity, track and speed, dynamics, performance metrics, raw IMU data (at IMU rate), raw GNSS data
Media	External: Removable 4 Gbyte USB stick (2 supplied) Internal: Embedded 4 Gbyte memory for redundant logging
<b>RS232 NMEA ASCII Output</b>	
Parameters	Position (\$INGGA), Heading (\$INHDT), Track and Speed (\$INVTG), Statistics (\$INGST) Rate Up to 50 Hz (user selectable)
<b>RS232 High Rate Binary Output</b>	
Parameters	User selectable binary messages: Time, position, attitude, speed, track, PAV30 output, Yaw Drift Correction
Rate	Up to 200Hz (user selectable)
<b>RS232 Input Interfaces</b>	
Parameter	Gimbal encoder input, AUX GPS Input (RTK, NavCom Starfire, OmniStar HP), RTCM104, DGPS Corrections Input
Rate	1 to 200Hz
<b>Other I/O</b>	
1PPS	1 pulse-per-second Time Sync output, normally high, active low pulse
Event	Input (6) Six time mark of external events. TTL pulses >1 msec width, max rate 100 Hz

### SENSOR INTERFACES

<b>3-axis Mount</b>	
Drift Correction	T-AS (digital interface); PAV30 (RS232) (Requires POSOP); PAV80 (RS232) (Requires COMOP and IMUOP); GSM3000 (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); TAS (digital interface); Z/I Mount (RS232)
Stab. Control	GSM3000 (RS232); PAV30 (RS232); PAV80 (RS232); T-AS (digital interface); Z/I Mount (RS232)
<b>LiDAR</b>	
Logging On/Off	ALS40/50; Riegl Q240/560/680
<b>Frame Camera</b>	
Triggering/MEP	RC20/30; TOP RMK; LMK 1000; Vexcel UCD/UCX/UCL; Generic; DiMAC

Data Interface	RC20/30 (RC20 w/o data annotation, RC30 requires extended EDI interface); TOP RMK (requires TCU digital interface); LMK 1000; Vexcel UCD/UCX/UCL; Generic; DiMAC
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### MISSION PLANNING AND REPORTING SOFTWARE

- snapView: On screen digitizing
- Import raster data from various sources and formats, including Google Earth
  - Simple, intuitive and efficient digitizing of project areas
- snapXYZ: Entering coordinates of areas or photo lines
- Accepts all geographic or grid coordinates formats without conversion or calculation
  - Includes a graphic viewer to visually check the correctness of the text input
  - Import drawings prepared by other programs in DXF format
  - Generate geophysics survey flight plans based on swath width and altitude
- snapPLAN: Flight planning c/w DEM support
- Planning module used to add photo lines to digitized drawings or defined geographic areas
  - Worldwide DEM support via ASTER DEM product
  - Automatic stereoscopic coverage of blocks
  - Prepare flight plans with hundreds of runs and thousands of photos in one single mouse click
  - Interactive drawing of single strips, easily move strips and arrange until the best flight plan is achieved
  - Automatically prepare pinpoint flight plans where each photo position has to conform to a given grid (geographical or map)
  - Full support for line-scanner and LiDAR flight plans based on swath width and altitude
  - Export flight plans via KML
- snapBASE: Project management database
- Track and update the status and progress of projects
  - Check the data generated during the flight and log accepted or rejected photos
  - Maintain an accurate and up to date photo index of the project
  - Generate film reports, progress reports, etc.
  - Export areas flown via KML

### snapPLOT: Printing and plotting

- Printing and plotting module used to quickly and easily prepare scaled photo indices
- Plot a professional A0 photo-index in less than 2 minutes

### USER SUPPLIED EQUIPMENT

- PC for POS Controller and Operator Client Software
- Atom 1.6 GHz or equivalent (minimum)
  - Intel Graphics media accelerator 500 or equivalent (minimum)
  - 2 GB RAM, 32 GB HDD (minimum)
  - Ethernet adapter (RJ45 100 base T), USB Port
  - Windows 7
- PC for Mission Planning and optional POSpac Post-processing
- Pentium 4 (32 bits) at 2 GHz or equivalent (recommended minimum)
  - 1 GB RAM, 100 GB Free disk space (recommended minimum)
  - 2 X USB 2.0 ports for security keys
  - Internet Access (for installation, DEM download, optional SmartBase processing)
  - Windows 7



For more information on POSTrack simply scan the QR code with your mobile device to access our site.

Specifications subject to change without notice.

