DATASHEET

Applanix POS AVX 510 RTX

CenterPoint RTX powered GNSS-Inertial solutions for reliable, efficient and high-accuracy mapping

The Applanix® POS AVX 510 RTX represents the latest in GNSS-Inertial technology, engineered for maximum efficiency and precision in airborne mapping operations. This advanced solution functions seamlessly in both real-time and post-processed environments, making it ideally suited for a wide range of high-end airborne sensors, including large-format cameras and advanced LiDAR systems. Its primary goal is to substantially reduce operational costs by minimizing reliance on ground infrastructure, thereby boosting overall airborne mapping productivity.

As an RTX-driven GNSS-Inertial solution, the Applanix POS AVX 510 RTX is designed for exceptionally reliable, efficient, and high-accuracy mapping. This state-of-the-art system is housed within a single, robust enclosure, integrating a high-precision dual GNSS receiver and leveraging an external inertial sensor unit, specifically the IMU Type 95. It includes advanced data logging capabilities and provides comprehensive interface support for various airborne mapping sensors and flight management systems.

The Applanix POS AVX 510 RTX is fully supported by Applanix POSPac™ Complete, our powerful, factory-enabled GNSS-Inertial processing software, featuring the advanced Applanix IN-Fusion®+ with PP-RTX technology for supreme productivity.

Cost effective and high performance

The Applanix POS AVX 510 RTX offers an advanced Direct Georeferencing approach for superior efficiency and ultra-high accuracy mapping. By utilizing POSPac Complete, it delivers significant operational advantages, including:

- Mapping without a base station
- Support for camera payload calibration
- Enabling reduced sidelap

Key Features

- **Optimal Productivity**: Significantly boost operational efficiency by minimizing reliance on ground infrastructure and reducing or eliminating the need for Ground Control Points (GCPs).
- **Centimeter-Level Accuracy**: Achieve uncompromised real-time and post-processed centimeter-level position accuracy with high-accuracy orientation, powered by Trimble RTX® technology.
- **Integrated Applanix IN-Fusion+**: Leverage advanced GNSS-Inertial integration with Applanix SmartCal™ compensation for superior position and orientation.
- **Seamless Workflow**: Supported by Applanix POSPac Complete, the industry-leading software for Direct Georeferencing.
- **Out-of-the-Box Ready**: Includes a 1-year factory-enabled real-time Trimble® CenterPoint® RTX and POSPac Complete service, allowing for immediate mapping operations without additional licenses.

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TECHNICAL SPECIFICATIONS

- Advanced Applanix IN-Fusion+ GNSS-Inertial integration technology
- Onboard Solid-state MEMS inertial sensors with Applanix SmartCal compensation technology
- Advanced Trimble Maxwell™ Custom GNSS survey technology with 2 × 336 tracking channels
- Primary Antenna
  - GPS: L1 C/A, L2C, L2E, L5
  - GLONASS: L1 C/A, L2 C/A, L3 CDMA
  - BeiDou: B1, B2, B3
  - Galileo: E1, E5A, E5B, E5AltBOC, E6[6]
  - IRNSS: L5
  - QZSS: L1 C/A, L1S, L1C, L2C, L5, LEX
  - SBAS: L1 C/A, L5
  - MSS L-Band: Trimble RTX
- Secondary Antenna:
  - GPS: L1 C/A, L2C, L2E, L5
  - GLONASS: L1 C/A, L2 C/A, L3 CDMA
  - BeiDou: B1, B2, B3
  - Galileo: E1, E5A, E5B, E5AltBOC, E6[6]
  - IRNSS: L5
  - QZSS: L1 C/A, L1S, L1C, L2C, L5, LEX
  - SBAS: L1 C/A, L5
- High-precision multiple correlators for GNSS pseudorange measurements
- Unfiltered, unsmoothed pseudorange measurements data with low noise, low multipath error, low time domain and high dynamic response
- Very low noise GNSS carrier phase measurements with <1 mm precision in a 1 Hz bandwidth
- Proven Trimble low elevation tracking technology
- Real-time GNSS Trimble RTX positioning mode (1-year license included)
- Real-time 100 Hz position, attitude output, 200 Hz IMU data rate logging
- Gimbal support with yaw drift correction included
- External IMU support (IMU Type 95)
- Two antenna GNSS heading support for low-speed and hovering applications included
- Navigation output format: ASCII (NMEA-0183), binary (Trimble GSOF)
- RTK license support for Reference Inputs CMR, CMR+™, sCMRx, RTCM 2.1, 2.2, 3.0, 3.1, 3.2, sold separately
- Supported by POSPac Complete (1-year license included)
- No export permit required

LAN INPUT/OUTPUT

All Ethernet functions are supported through dedicated IP address (static or DNS) simultaneously including web-based control GUI access and real-time data streaming

TCP/IP and UDP	ASCII and Binary data streaming (Time tag, PPS sync, status, position, attitude, velocity, track and speed, dynamics, performance metrics, GNSS data), configuration messages, Gimbal support
HTTP	Web based Control software (GUI) for easy system configuration and low rate display. Support for all common browsers (IE, Safari, Mozilla, Google Chrome, Firefox)

SERIAL INPUT/OUTPUT

RS232 ports (baud rates up to 460,800)

Parameters	ASCII and Binary data streaming (Time tag, PPS track and speed, dynamics, performance metrics, GNSS data), reference input (CMR, CMR+, sCMRx, RTCM), configuration messages, Gimbal support

OTHER INPUT/OUTPUT

PPS (pulse-per-second)	Time synchronization
Event Input (2)	Two-time marks for external events, TTL 3.3V, 50 Hz max rate
Strobe Output (1)	Programmable camera trigger, TTL 3.3V
Status LEDs (4)	Operator indicators of the system status
External IMU Interface	Dedicated lines for remote IMU connection (model dependent)

LOGGING

Internal Logging	6 GB flash memory
External Logging[8]	Over dedicated (user configurable) Ethernet port,
Parameters	Time tag, status, position, attitude, velocity, track and speed, dynamics, performance metrics, raw IMU data (200 Hz), raw GNSS data (5 Hz)

PERFORMANCE SPECIFICATIONS[1] (RMS ERROR)
AIRBORNE

	SPS	SBAS[3]	RTX[4]	POSPAC COMPLETE[5]
Position (m)	1.5 H	0.50 H	0.03 H	0.02 H
	3.0 V	0.85 V	0.06 V	0.03-0.05 V
Velocity (m/s)	0.050	0.050	0.010	0.005
Roll & Pitch (deg)	0.010	0.008	0.005	0.005
True Heading[2] (deg)	0.070	0.050	0.020	0.010

SYSTEM SPECIFICATION

PCS (POS Computer System)

Size ..... 185 L × 93 W × 43 H mm (nominal)
Weight ..... 0.82 kg
Power ..... Wide range input 9-30 V DC, typical power consumption of 20W max
Connectors ..... I/O: DA26 and DA15
Antenna (2): TNC (Female)
GNSS Antenna ..... AV39[7]

INERTIAL MEASUREMENT UNITS (IMU)

TYPE	RANGE	TEMPERATURE[6]	SIZE (L × W × H) mm	WEIGHT (kg)
External IMU-95	+/-10 g +/-490 dps	-25 °C to +60 °C	116 × 116 × 108 (in tophat provided)	0.98

ENVIRONMENTAL CHARACTERISTICS

Temperature ..... -40 °C to +75 °C (Operational)
-55 °C to +85 °C (Storage)
Mechanical Shock ..... +/- 75 g Survival
Operating Humidity ..... 5% to 95% R.H. non-condensing at +60 °C
Maximum Operating Limits ..... 515 m/sec
18,000 m

ADDITIONAL ACCESSORIES

Cables ..... I/O and antenna cables included

1 Typical performance. Actual results are dependent upon satellite configuration, atmospheric conditions and other environmental effects.
2 Typical survey mission profile, max RMS error. The heading error will increase for low-speed rotor applications and when hovering.
3 Subject to regional coverage.
4 Real-time Trimble CenterPoint RTX correction service typical airborne results subject to regional coverage. First year service included. Renewals sold separately.
5 Post-Processed with Applanix POSPac Complete includes (Post-processed RTX, Single and Applanix SmartBase™). Factory enabled first year service included. Renewals sold separately.
6 Temperature performance range subject to Applanix SmartCal, the system is operational outside of the range with possible reduced accuracy.
7 Single antenna included, additional antenna for GAMS operation sold separately.
8 Requires client software, not included.

Specifications subject to change without notice.

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