DATASHEET

Applanix POS LVX+ 400

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

The Applanix® POS LVX+ 400 represents a significant advancement in GNSS-Inertial technology. It is specifically engineered to enhance the efficiency and precision of mapping operations in real-time and post-processed environments. This advanced solution is particularly well-suited for projects utilizing LiDAR sensors or cameras, as well as for fleet management and automotive applications. The power of Trimble® CenterPoint® RTX correction service enables high real-time positioning without the need for an RTK network, thereby reducing operational costs and enhancing productivity.

This system comprises a robust enclosure, integrating a high-precision dual GNSS receiver, embedded inertial sensor unit (IMU Type 79), external inertial sensor unit (IMU Type 64), and data logging capabilities with comprehensive interface support. In addition, the system fully supports odometry (DMI) input.

The Applanix POS LVX+ 400 is fully supported by Applanix POSPac™ Complete, factory enabled powerful 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 LVX+ solution leverages POSPac Complete to deliver significant operational advantages, such as:

- Mapping without a base station
- LiDAR payload calibration
- SLAM-aided trajectory adjustment
- Trimble IonoGuard™ Support
- 1-year factory enabled POSPac Complete and real-time CenterPoint RTX subscription

Key Features

- **Optimal Productivity**:
  Engineered to significantly boost operational efficiency by minimizing reliance on ground infrastructure for real-time corrections
- **Centimeter-Level accuracy**:
  Achieve uncompromised performance with real-time and post-processed centimeter-level position accuracy, combined with high accuracy orientation, powered by Trimble RTX® technology.
- **Integrated Applanix IN-Fusion+**:
  Leveraging advanced GNSS-Inertial integration with Applanix SmartCal™ compensation technology for superior position and orientation performance.
- **Seamless Workflow**:
  Supported by Applanix POSPac Complete, the industry-leading software for Direct Georeferencing of mobile mapping sensors.
- **Out-of-the-Box Ready**:
  Includes 1-year factory-enabled real-time Trimble CenterPoint RTX correction service and POSPac Complete post-processing, allowing for immediate mapping operations without additional license or cost.
- **Dual IMU**:
  Onboard and external IMU for quick installation, troubleshooting, and redundancy.

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

TECHNICAL SPECIFICATIONS

- Advanced Applanix IN-Fusion+ GNSS-Inertial integration firmware featuring Trimble ProPoint® GNSS Technology
- Trimble IonoGuard Support
- 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, B1C, B2, B2A, B3
  - Galileo: E1, E5A, E5B, E5AltBOC, E6
  - 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, B1C, B2, B2A, B3
  - Galileo: E1, E5A, E5B, E5AltBOC, E6
  - IRNSS: L5
  - QZSS: L1 C/A, L1S, L1C, L2C, L5, LEX
  - SBAS: L1 C/A, L5
- High-precision multiple correlators for GNSS pseudorange measurements
- Advanced RF Spectrum Monitoring and Analysis 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
- Internal OnBoard IMU (IMU Type 79)
- External IMU support (IMU Type 64)
- Two antenna GNSS heading support for low-speed 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
- Receiver Autonomous Integrity Monitoring (RAIM)
- Support for Distance Measurement Indicator (DMI) input, sold separately
- Applanix POSPac Complete post-processing (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)
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 (3) 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

OTHER INPUT/OUTPUT

PPS (pulse-per-second)	Time Sync Pulse output
Event Input (2)	Two-time marks for external events, TTL 3.3V, 50 Hz max rate
Strobe Output (2)	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)
DMI Input	Quadrature pulse with reference voltage
CAN Port	

LOGGING

Internal Logging	9 GB flash memory
External Logging	Over dedicated (user configurable) Ethernet port, USB 2.0 Device port
Parameters	Time tag, status, position, attitude, velocity, track and speed, dynamics, performance metrics, raw IMU data (200 Hz), raw GNSS data (5 Hz)

ADDITIONAL ACCESSORIES

DMI kit

PERFORMANCE SPECIFICATIONS[1,8] (RMS ERROR)
NO GNSS OUTAGES, STANDARD ROAD VEHICLE DYNAMICS

	SBAS[3]	RTK/ RTX[4]	POST-PROCESSED[5]
Position (m)	0.30 H	0.02 H	0.02 H
	0.50 V	0.03 V	0.03 V
Velocity (m/s)	0.010	0.010	0.005
Roll & Pitch (deg)	0.008	0.015	0.008
True Heading[2] (deg)	0.020	0.020	0.020

1 KM OR 1 MINUTE GNSS OUTAGE, STANDARD ROAD VEHICLE DYNAMICS[9]

	SBAS[3]	RTK	POST-PROCESSED[5]
Position (m)	0.56 H	0.34 H	0.12 H
	0.45 V	0.27 V	0.10 V
Roll & Pitch (deg)	0.020	0.02	0.02
True Heading[2] (deg)	0.030	0.03	0.02

SYSTEM SPECIFICATION

PCS (POS Computer System)

Size[7] ..... 185 L × 93 W × 42 H mm (nominal)
Weight[7] ..... 0.82 kg
Power[7] ..... 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 LNA Power Input ..... Trimble 540AP included

INERTIAL MEASUREMENT UNITS (IMU)

TYPE	RANGE	TEMPERATURE[6]	SIZE (L × W × H) mm	WEIGHT (kg)
Internal Onboard IMU-79	+/-6 g +/-350 dps	-20 °C to +60 °C	n/a	n/a
External IMU-64	+/-15g +/-499 dps	-20 °C to +55 °C	158 × 158 × 124	2.6

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
IP rating IP67

1 Typical performance. Actual results are dependent upon satellite configuration, atmospheric conditions and other environmental effects.
2 Using GAMS option and two meter antenna baseline
3 Subject to regional coverage.
4 Real-time Trimble CenterPoint RTX correction service typical Land 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 operational outside of the range with possible reduced accuracy.
7 Does not include external IMU
8 Performance based upon external IMU
9 With DMI, DMI sold separately

Specifications subject to change without notice.

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