Applanix POS LVX-125 RT

Dual GNSS-inertial solution for robust real-time positioning and orientation on ground vehicles

Trimble® Applanix® POS LVX-125 RT is a turn-key GNSS-inertial solution that supports two antenna GNSS heading for the highest accuracy in all dynamic conditions, and includes the all new Applanix IN-Fusion®+ GNSS-aided inertial firmware featuring Trimble ProPoint® GNSS technology, while Trimble IonoGuard™ support protects RTK GNSS from ionospheric disturbances.

Autonomous vehicles, fleet management, and other real-time applications require accurate heading information immediately and in all phases of operation from stop-and-go traffic to highway speeds. Compact and simple to install, the Applanix POS LVX-125 RT uses onboard inertial sensors calibrated with the Applanix SmartCal™ software compensation technology for superior performance to meet the needs of autonomous and real-time applications in mining, trucking, mapping and vehicle testing. The LVX-125 RT supports SBAS, RTK, and Trimble CenterPoint® RTX positioning modes, as well as odometry (DMI) integration designed for real-time operation for autonomous and robotics applications.

When autonomous vehicles and ADAS systems requiring robust position and orientation information at all times, the LVX-125 RT provides accurate pose estimates using proven GNSS-Aided Inertial technology from Trimble Applanix.

Whether it is for autonomous vehicle development, groundtruth or enabling vehicles to navigate themselves through difficult driving conditions, the Trimble Applanix RT product line provides best in class navigation and positioning solutions (up to 100 Hz), lowering costs and potential rework.

Key Features

- Proven GNSS-aided inertial technology from Trimble Applanix
- Trimble IonoGuard Support
- Free demo subscription to Trimble CenterPoint RTX
- POSPac Assure available for Quality Control (QC) and calibration
- Fully integrated, turnkey solution for efficiency and ease-of-use
- Stable, reliable and repeatable positioning solution for land-based real-time and automotive applications
- Next generation, survey-grade GNSS receiver
- Two-antenna heading support
- Centimeter level mobile positioning accuracy
- Applanix SmartCal compensation technology for superior position and orientation performance
- Next generation Applanix IN-Fusion+ GNSS-aided inertial firmware featuring Trimble ProPoint GNSS technology

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Dual GNSS-inertial solution

PERFORMANCE SPECIFICATIONS[3] (RMS ERROR) NO GNSS OUTAGES, STANDARD ROAD VEHICLE DYNAMICS			
	SPS	SBAS	RTK
X, Y Position (m)	1.5 H	0.5 H	0.02 H
Z Position (m)	3.0 V	0.85 V	0.03 V
Velocity	0.01	0.01	0.01
Roll & Pitch (deg)	0.04	0.03	0.03
True Heading[4] (deg)	0.12	0.09	0.09

1 KM OR 1 MINUTE GNSS OUTAGE, STANDARD ROAD VEHICLE DYNAMICS[5]			
	SPS	SBAS	RTK
X, Y Position (m)	2.0 H	2.0 H	1.0 H
Z Position (m)	5.0 V	3.0 V	2.0 V
Roll & Pitch (deg)	0.09	0.09	0.09
True Heading[4] (deg)	0.35	0.35	0.30

TECHNICAL SPECIFICATIONS

- Advanced Applanix IN-Fusion+ GNSS-inertial integration firmware featuring Trimble ProPoint GNSS technology
- Trimble IonoGuard support
- Onboard IMU with solid-state MEMS inertial sensors with Applanix SmartCal compensation technology
- Advanced Trimble GNSS survey technology
- Position antenna based on 336 Channels Trimble Maxwell™ 7 chip:
  · GPS: L1 C/A, L2E, L2C, L5
  · BeiDou: B1, B1C, B2, B2A, B3[1]
  · GLONASS: L1 C/A, L2 C/A, L3 CDMA[2]
  · Galileo: E1, E5A, E5B, E5AltBOC, E6[2]
  · IRNSS: L5
  · QZSS: L1 C/A, L1 SAIF,L1C, L2C, L5, LEX
  · SBAS: L1 C/A, L5
  · MSS L-Band: OmniSTAR®, Trimble RTX®
- Vector Antenna based on second 336 Channel Maxwell 7 chip:
  · GPS: L1 C/A, L2E, L2C, L5
  · BeiDou B1, B1C, B2, B2A, B3[1]
  · GLONASS: L1 C/A, L2 C/A, L3 CDMA[2]
  · Galileo: E1, E5A, E5B, E5AltBOC, E6[2]
  · IRNSS L5
  · QZSS: L1 C/A, L1 SAIF, L1C, L2C, L5, LEX
- High precision multiple correlator for GNSS pseudorange measurements
- Advanced RF Spectrum Monitoring and Analysis
- Unfiltered, unsmoothed pseudorange measurements data for low-noise, low multipath error, low time domain correlation 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
- 100 Hz real-time position and orientation output
- IMU data rate 200 Hz
- Navigation output format: ASCII (NMEA-0183), Binary (Trimble GSOF)
- Supported Reference input:
  · CMR, CMR+™, sCMRx, RTCM 2.1, 2.2, 2.3, 3.0, 3.1, 3.2
- Supports Fault Detection & Exclusion (FDE), Receiver Autonomous Integrity Monitoring (RAIM)
- Support for Distance Measurement Indicator (DMI) input (sold separately)
- No export permit required
- POSPac Assure post-processing available for quality control, lever arm calibration (sold separately)
- POSPac Cloud support (sold separately). (POSPac MMS not supported).

LAN INPUT/OUTPUT

All Ethernet functions are supported through dedicated IP address (Static or DNS) simultaneously.

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)

LOGGING:

Internal Logging	6 GByte Flash memory
External Logging	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)

SERIAL INPUT/OUTPUT

2 × RS232 ports

Parameteres	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 I/O

PPS (pulse-per-second)	Time Sync Pulse output
Event Input (2)	Two time mark of external event
DMI Input	Quadrature pulse with reference voltage

PHYSICAL CHARACTERISTICS

Size .... 185 L × 93 W × 42 H mm (nominal)
Weight.. 0.76 kg
Power ....Wide range input 9-30 V DC, typical power consumption of 3.5 W at room temperature
Connectors ....I/O: DA26
DMI: DE9
Antenna (2): TNC (Female)
GNSS Antenna LNA Power Input...Trimble 540AP included
Minimum required LNA gain ....31.0 dB (> 35 dB Recommended)

ENVIRONMENTAL CHARACTERISTICS

Temperature..-40 °C to +75 °C (Operational)
-55 °C to +85 °C (Storage)
Measurement Range...+/- 6 g[6], +/- 350 dps
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 alt
IP rating IP67

1 The hardware of this product is designed for Beidou B3 compatability (trial version) and its firmware will be enhanced to fully support such new signals as soon as the oficially published signal interface control documentation (ICD) becomes available
2 There is no public GLONASS L3 CDMA or Galileo E6 ICD. The current capability in the receivers is based on publicly available information. As such, Trimble cannot guarantee that these receivers will be fully compatable
3 Typical performance. Actual results are dependent upon satellite configuration, atmospheric conditions and other environmental effects.
4 Using GAMS option and two metre antenna baseline
5 With DMI option (DMI sold separately)
6 Sensor bandwidth (-3 dB amplitude) ~ 50 Hz

Specifications subject to change without notice.

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