

# Applanix POS LVX-120 RT

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

Trimble® Applanix® POS LVX-120 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, in addition to Applanix POSpac Assure support for Quality Assurance and calibration the Applanix POS LVX-120 RT meets the needs of autonomous and real-time applications in mining, trucking, mapping and vehicle testing. The LVX-120 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-120 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
- IonoGuard Support
- Free demo subscription to CenterPoint RTX
- POSpac Assure available for Quality Control and calibration
- Fully integrated, turnkey solution for efficiency and ease-of-use
- Next generation, survey-grade GNSS receiver
- Two-antenna heading support
- Centimeter level mobile positioning accuracy
- Next generation IN-Fusion+ GNSS-aided inertial firmware featuring ProPoint GNSS Technology



# Applanix POS LVX-120 RT

## Dual GNSS-inertial solution

### PERFORMANCE SPECIFICATIONS<sup>3</sup> (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)	0.10	0.10	0.10
True Heading <sup>4</sup> (deg)	0.12	0.09	0.09

### 1 KM OR 1 MINUTE GNSS OUTAGE, STANDARD ROAD VEHICLE DYNAMICS<sup>5</sup>

	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	3.0 V
Roll & Pitch (deg)	0.20	0.20	0.20
True Heading <sup>4</sup> (deg)	0.70	0.70	0.70

## TECHNICAL SPECIFICATIONS

- Advanced Applanix IN-Fusion+ GNSS-inertial integration firmware featuring Trimble ProPoint GNSS Technology
- Trimble IonoGuard Support
- Advanced Trimble GNSS survey technology
- Position antenna based on 336 Channels Maxwell™ 7 chip:
  - GPS: L1 C/A, L2E, L2C, L5
  - BeiDou: B1, B1C, B2, B2A, B3<sup>1</sup>
  - GLONASS: L1 C/A, L2 C/A, L3 CDMA<sup>2</sup>
  - Galileo: E1, E5A, E5B, E5AltBOC, E6<sup>2</sup>
  - IRNSS: L5
  - QZSS: L1 C/A, L1 SAIF, L1C, L2C, L5, LEX
  - SBAS: L1 C/A, L5
  - MSS L-Band: Trimble 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<sup>1</sup>
  - GLONASS: L1 C/A, L2 C/A, L3 CDMA<sup>2</sup>
  - Galileo: E1, E5A, E5B, E5AltBOC, E6<sup>2</sup>
  - 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 GSOFF)
- 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 and calibration
- 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 x RS232 ports

Parameters	ASCII and Binary data streaming (Time tag, PPS sync, status, position, attitude, velocity, track and speed dynamics, performance metrics, GNSS data), reference input (CMR, CMR+, sCMRx, RTCM), configuration messages
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### 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	+/- 6g, +/- 350 dps
Mechanical Shock	+/- 75g 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

- The hardware of this product is designed for Beidou B3 compatibility (trial version) and its firmware will be enhanced to fully support such new signals as soon as the officially published signal interface control documentation (ICD) becomes available
- 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 compatible
- Typical performance. Actual results are dependent upon satellite configuration, atmospheric conditions and other environmental effects
- Using GAMS option and two metre antenna baseline
- With DMI option (DMI sold separately)
- Sensor bandwidth (-3 dB amplitude) ~ 50 Hz

*Specifications subject to change without notice.*

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