POS LVX

POS LVX DUAL GNSS-INERTIAL SOLUTION FOR HIGH-ACCURACY POSITIONING AND ORIENTATION ON AUTONOMOUS GROUND VEHICLES

The POS LVX is available as a turn-key or OEM GNSS-Inertial solution that supports two antenna heading for the highest accuracy in all dynamic conditions.

Autonomous vehicles require accurate heading information immediately and in all phases of operation from stop-and-go traffic to highway speeds.

With a compact footprint, ease of integration, and fast setup the POS LVX uses on-board inertial sensors calibrated with the Applanix SmartCal™ software compensation technology for superior performance to meet the needs of autonomous vehicle manufacturers in mining, trucking, mapping, and vehicle testing.

Easily integrated with many types of sensors including optical, infrared, and lidar, the POS LVX delivers Inertially-Aided Real-Time Kinematic (IARTK) positioning in a small, lightweight form factor.

The POS LVX product uses state-of-the-art low noise multi-frequency Trimble Maxwell GNSS technology, and tracks all current satellite signals including GPS L1/L2/L2C/L5 and GLONASS L1/L2, QZSS, Beidou, IRNSS, and Galileo, and supporting SBAS, RTK, and Trimble CenterPoint® RTX positioning modes.

Key Features

- Cost effective and high-performance position and orientation solution in a small form factor enclosure
- Fully integrated, turnkey solution for efficiency and ease-of-use
- Stable, reliable and repeatable positioning solution for land-based autonomous applications
- POS LVX is a new configuration of dual GNSS POS LV designed for the smaller, modular system
- For the same performance in an OEM offering, see the Applanix APX-18
- Applanix SmartCal™ compensation technology for superior position and orientation performance

POS LVX

TECHNICAL SPECIFICATIONS

- Advanced Applanix IN-Fusion™ GNSS-Inertial integration technology
- Solid-state MEMS inertial sensors with Applanix SmartCal™ compensation technology
- Advanced Trimble GNSS survey technology
- Position antenna based on 336 Channels Maxwell 7 chip:
  - GPS: L1 C/A, L2E, L2C, L5
  - BeiDou B1, B2, B3[1]
  - GLONASS: L1 C/A, L2 C/A, L3 CDMA[2]
  - Galileo[3]: 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, B2, B3[1]
  - GLONASS: L1 C/A, L2 C/A, L3 CDMA[2]
  - Galileo[3]: 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
- Support for POSPac MMS post-processing software (sold separatey)
- No export permit required
- Supports Fault Detection & Exclusion (FDE), Receiver Autonomous Integrity Monitoring (RAIM)

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

Parameteres	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.

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

PERFORMANCE SPECIFICATIONS[4] (RMS ERROR)

No GNSS outages, standard road vehicle dynamics

	SPS	DGPS	RTK
Position (m)	1.5 H	0.1 H	0.02 H
	3.0 V	0.5 V	0.05 V
Roll & Pitch (deg)	0.04	0.03	0.03
True Heading[5](deg)	0.12	0.09	0.09

1 km or 1 minute GNSS outage, standard road vehicle dynamics[6]

	SPS	DGPS	RTK
Position (m)	2.0 H	2.0 H	1.0 H
	5.0 V	3.0 V	2.0 V
Roll & Pitch (deg)	0.09	0.09	0.09
True Heading[5] (deg)	0.35	0.35	0.30

PHYSICAL CHARACTERISTICS

Size	185 L x 93 W x 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 deg C to +75 deg C (Operational)
	-55 deg C to +85 deg C (Storage)
Measurement Range	+/- 6g[7], +/- 350 dps
Mechanical Shock	+/- 75g Survival
Operating Humidity	5% to 95% R.H. non-condensing at +60 deg 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) Developed under a License of the European Union and the European Space Agency
(4) Typical performance. Actual results are dependent upon satellite configuration, atmospheric conditions and other environmental effects
(5) With two metre antenna baseline
(6) With DMI option
(7) Sensor bandwidth (-3 dB amplitude) ~ 50 Hz

Specifications subject to change without notice.

APPLANIX
85 Leek Crescent
Richmond Hill, Ontario
L4B 3B3, Canada
+1-289-695-6000 Phone
+1-905-709-6027 Fax

www.applanix.com

applanix
A TRIMBLE COMPANY