

# Trimble PX-1 RTX Smart Antenna

A subscription-based solution for real-time applications

Trimble® PX-1 RTX Smart Antenna (SA) combines two industry-leading technologies into one powerful turnkey solution for reliable drone navigation in challenging environments. By integrating the **Trimble OEM PX-1 RTX** with the latest **Calian® GNSS Accutenna®** in a compact enclosure, we have created a high-precision GNSS-INS smart antenna. It is specifically engineered to provide robust navigation, centimeter-level accuracy and unmatched resilience for the demanding environments of the drone industry.

## Flexible business model

PX-1 RTX SA is offered through a subscription model aimed at reducing upfront investment and maintenance costs for integrators. Through a yearly subscription, integrators will have unlimited access to precise and reliable positioning.

## Robust solutions for challenging environments

The drone industry operates in challenging GNSS environments, high-interference or multipath zones like urban canyons, dense forest canopies—or industrial sites with heavy magnetic interference. In these settings, standard GNSS simply isn't enough. The **Trimble PX-1 RTX SA** is engineered specifically to maintain integrity in those conditions to keep UAVs on their charted path.

## PX-1 RTX centimeter positioning—without base stations

Trimble CenterPoint® RTX provides high-accuracy corrections via L-band or NTRIP to the PX-1 RTX; delivering centimeter-level positioning in real time, without the need for base station infrastructures.

## Reduce integration and adoption cost

The GNSS signal “extended filtering” and embedded vibration-dampening mechanism significantly reduces integration time and effort.



## Key features

- High accuracy positioning in a “plug and play” drone format—fusing Trimble GNSS-INS hardware and advanced RTX Correction service with the latest Calian GNSS antenna for reliable operation.
- Accurate takeoff and landing in GNSS-challenged environments.
- Centimeter level positioning accuracy with Trimble RTX®.
- Reduce additional infrastructure requirements.
- Applanix® IN-Fusion®+ multi-sensor aided inertial technology.
- Consistent performance in all environments.
- GNSS interference and improved jamming resilience using Calian Accutenna technologies.
- Subscription business model offers a new level of flexibility.

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## Technical specifications

- Advanced Trimble Applanix IN-Fusion+ multi-sensor aided inertial integration technology
- State of the art Trimble Maxwell™ GNSS tracking technology
- Trimble ProPoint® GNSS positioning technology
  - 336 Channels
  - GPS: L1 C/A, L2C, L2E, L5
  - GLONASS: L1 C/A, L2 C/A, L3 CDMA<sup>4</sup>
  - BeiDou: B1, B1C, B2, B2A, B2B
  - Galileo: E1, E5A, E5B, E5AltBOC
  - QZSS: L1 C/A, L1 SAIF, L1C, L2C, L5, LEX
  - SBAS: L1 C/A, L5
  - MSS L-band: CenterPoint RTX
- High precision multiple correlator for GNSS pseudorange measurements
- 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
- Up to 100 Hz real-time position, roll, pitch and heading output for autopilot support
- Up to 100Hz Navigation output for autopilot support
- Navigation output format: ASCII (NMEA-0183), Binary (Trimble GSOF)

GNSS antenna	
Multi-band Calian Accutenna 4 technology	
Axial Ratio at Zenith <1.0 dB across all bands with PCV +/- 2mm	
Integrated Extended Filtering (XF) for supreme noise rejection and interference disruption	
Active continuous wave detection for anti-jamming resilience	
Additional accessories	
Test Cable Kit <sup>6</sup>	
Performance specifications <sup>1</sup> (RMS Error) Unmanned Airborne Vehicle applications	
	Real time RTX <sup>5</sup>
Position (m)	0.03-0.06
Velocity (m/s)	0.04
Roll & pitch (deg)	0.09
True heading <sup>2</sup> (deg)	0.4

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.
Serial input/output	
Serial ports: RS232 and TTL level (3.3V) USB 2.0	
Parameters	ASCII and Binary data streaming (Time tag, PPS sync, status, position, attitude, velocity, track and speed, dynamics, performance metrics, GNSS data), reference input configuration messages

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Other input/output	
<b>PPS (pulse-per-second)</b>	Time Sync Pulse output
<b>Event input (2)</b>	Two time mark of external events TTL 3.3 V pulses, max rate 50 Hz
Physical characteristics	
<b>Size</b>	123 L × 123 W × 51 H mm (envelope)
<b>Weight</b>	284 g
<b>Power</b>	Wide range input 9-30 V DC, typical power consumption of 4 W at room temperature
<b>Connectors</b>	3 × M8 (Main, Ethernet, Aux)

Environmental characteristics	
<b>Temperature</b>	-40 °C to +75 °C (Operational) -55 °C to +85 °C (Storage)
<b>Measurement range</b>	+/- 10g <sup>3</sup> , +/- 300 dps
<b>Mechanical shock</b>	+/- 50g Survival
<b>Operating humidity</b>	5% to 95% R.H. non-condensing at +60 °C
<b>Maximum operating limits</b>	515 m/sec 18,000 m
<b>Weatherproof</b>	Designed for IP69K environments <sup>6</sup>
Logging	
<b>Internal logging</b>	6 GByte Flash memory
<b>Parameters</b>	Time tag, status, position, attitude, velocity, track and speed, dynamics, performance metrics, raw IMU data (200 Hz), raw GNSS data (5 Hz)

- 1 Typical performance, after dynamic alignment, RTX initialization and with continuous RTX corrections. Actual results are dependent upon satellite configuration, atmospheric conditions and other environmental effects such as multipath. CenterPoint RTX subscription included with product.
- 2 Max RMS error, for typical dynamic profiles after alignment and RTX initialization. Heading error will increase for low speed rotor applications, long constant speed flight lines, and extended hovering periods.
- 3 Sensor bandwidth (-3 dB amplitude) ~ 50 Hz.
- 4 There is no official GLONASS L3CDMA. The current tracking capability is based on publicly available information. Full receiver compatibility cannot be guaranteed.
- 5 Requires valid subscription to operate and output data. Typical initialization time to full position performance in fast regions is < 3 minutes. Actual initialization time subject to geographical location, atmospheric conditions and multipath environment. RTX corrections available over L-band and IP. L-band coverage is limited to specific geographic locations.
- 6 Integration Requirements: System-level IP69K is achieved when the radome-to-gasket interface is properly secured, and supplemental protection is provided for the installation surface, connectors, and venting elements. Without supplemental protection rating is IP67.
- 7 Sold separately

Specifications subject to change without notice.