

Trimble PX-1 RTX

FREQUENTLY ASKED QUESTIONS

1) What is the Trimble PX-1 RTX?

The Trimble PX-1 RTX is a small form factor GNSS-IMU OEM board module that combines three core Trimble's technologies **Trimble ProPoint® GNSS**, **Applanix In-Fusion™+ and Trimble CenterPoint® RTX correction service**, designed to provide:

- ▶ Accurate and robust high rate cm level continuous GNSS-inertial position with CenterPoint RTX correction service.
- ▶ High accuracy orientation with true heading immune to environmental effects.
- ▶ Small, lightweight, single antenna triple-frequency multi-constellation embedded GNSS-IMU hardware.

Offered to Autopilot, UAV manufacturers and integrators to improve drone operation and safety through a service subscription model.

2) How does it help my drone?

With tight integration with Autopilot, the PX-1 RTX helps in a number of different ways:

- ▶ Achieving cm level positioning performance without a need for supplying RTK corrections from a dedicated ground base station improves and simplifies your drone hardware design as well as ground operation.
- ▶ BVLOS flying without base line limitation (distance between GNSS rover and ground base station).
- ▶ Contribution to efficiency and productivity of your drone by being able to plan missions with increased trajectory accuracy to maintain often strict mapping payload requirements when it comes to narrow field-of-view and maintaining gap free ground coverage.
- ▶ Robustness of integrated navigation solution with continuous precise position and attitude/heading information provides autopilot key guidance ingredient during take-off and landing stage.



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Frequently asked questions

3) What is ProPoint GNSS?

ProPoint GNSS is high-precision GNSS positioning technology from Trimble. It leverages the latest developments in GNSS signal infrastructure and Trimble's high-precision Maxwell™ 7 receiver hardware to deliver improved positioning performance in challenging environments.

ProPoint GNSS supports data from all GNSS constellations (GPS, Galileo, GLONASS, BeiDou, QZSS) and all frequencies. Its advanced algorithms enable robust GNSS positioning performance under harsh tracking conditions where satellite line of sight can be impaired, such as under tree canopy and highway overpasses, and in dense urban areas, while its sophisticated signal filtering and error modeling means better protection against jamming, spoofing, and multipath interference.

4) What is Applanix IN-Fusion+?

The Applanix IN-Fusion+ is Trimble technology that provides an advanced version of an "Aided-inertial" navigation system or Aided INS. An Aided INS is an INS that uses other sources of information to continuously correct or "aid" the INS errors. Such an approach means that the INS errors no longer grow unbounded, allowing the use of a less accurate and hence smaller and less expensive IMU (ie. using MEMs sensors), while still obtaining sufficient position and orientation accuracy.

It also is an optimal method of "blending" or "fusing" the information of all measurement systems into a single solution. This advanced technology takes the advantages of each measurement technology and eliminates or significantly reduces their limitations. The result is the most accurate and robust spatial knowledge solution.

The Applanix IN-Fusion+ is tightly integrated with ProPoint GNSS allowing it to achieve extremely robust high-rate Aided-INS position output at the cm level under all types of signal environments.

5) What is Trimble CenterPoint RTX?

Trimble CenterPoint RTX is advanced, precise point positioning technology that provides real-time, centimeter level corrections with high-level of accuracy without need for terrestrial infrastructure, delivered worldwide via L-band satellite or cellular/IP network.

Truly, multi-frequency GNSS technology employs its own dedicated precise ephemeris correction service and derives integer level ambiguities for accuracy approaching that of RTK. It supports GPS, GLONASS, Galileo, BeiDou, and QZSS.

6) What is the SWaP requirement?

The GNSS-IMU board weights 60 grams with nominal size 67L x 60W x 15H mm, supports wide range power input (9-30V) with 3.5W consumption.

7) What does PX-1 RTX subscription include?

The subscription includes OEM hardware without GNSS antenna, real time software and correction service. The GNSS antenna hardware is not included and needs to be purchased separately.

8) What GNSS antennas are supported?

When it comes to performance, the antenna is a critical element in any GNSS integration. The optimum antenna choice is subject to a particular UAV platform when it comes to size, weight and shape. Applanix offers a number of GNSS antenna products ranging from light weight helical technology (AV17/AV18) all the way to fully certified FAA antennas (AV39/AV37).

All the antennas are active devices, powered directly through PX-1 RTX and provide triple frequency GNSS and L-band tracking for over the air correction service.

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9) How do I purchase a subscription and what is the cost?

The product is offered through Trimble-Applanix sales channels. Please contact your regional representative for more details regarding the sale and pricing.

<https://www.applanix.com/contact.htm#support>

The shipping of the initial product comes with a variety of subscription terms.

10) Is the PX-1 RTX functional without subscription?

No, once the initial subscription expires the GNSS tracking will be disabled automatically until renewal.

11) What is the subscription renewal process?

The renewal process could be handled automatically over the air (prior expiration date) or by obtaining credentials to be entered directly into the product through web user-interface or API.

The renewal process is handled directly by Trimble Applanix sales channel.

<https://www.applanix.com/contact.htm#support>

12) Can I obtain a post-processed solution?

No, the default product is intended for real time use only. If you require post processing ability, please contact your sales representative for more details.

Specifications subject to change without notice.

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