Product summary

PointPerfect

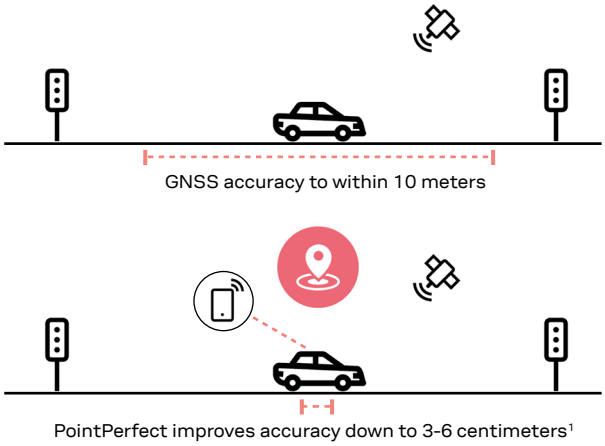
GNSS augmentation service

3-6 cm[1] accuracy and convergence within seconds

- Low bandwidth data reduces transmission cost
- Intuitive IoT services delivery platform is frictionless for business
- 99.9% uptime availability via internet and L-band satellite
- Homogeneous coverage in contiguous USA, Europe, and South Korea
- Seamless cooperation with positioning and connectivity hardware

The challenges of stand-alone GNSS

Global navigation satellite systems (GNSS) have transformed our world and enable anyone to pinpoint their location anywhere on the planet quickly and easily. GNSS provides location accuracy down to several meters, which is more than satisfactory for most applications. However, certain emerging use cases, such as autonomous vehicles, precision agriculture, or robotic lawn mowers require far higher accuracy. To achieve this, GNSS correction data is provided via mobile internet and L-band satellite signal to account for satellite clock and orbit errors and signal biases, as well as ionospheric and tropospheric influences. This, combined with the primary GNSS signal, makes it possible to improve accuracy to within centimeters.



PointPerfect overview and key benefits

PointPerfect is the u-blox high precision GNSS augmentation service that provides real-time, verified, scalable, affordable, and high-quality GNSS positioning solutions to the mass market for consumer, industrial, and automotive applications. Industry-leading positioning and connectivity hardware can now work seamlessly in combination with advanced high accuracy GNSS augmentations to deliver robustness, reliability, and end-to-end security as it relates to performance. This, in combination with an easy-to-use IoT services delivery platform, eliminates complexities and allows users to engage more efficiently and reduce time-to-market. This way, the vision of high precision GNSS positioning is brought forward to the modern age of IoT and to the realities of mass-market scale.

With mass-market scalability in mind, PointPerfect is ideally suited to the needs of industrial application areas including autonomous vehicles, such as unmanned aerial vehicles (UAV) and service robots, machinery automation, micro mobility, and other advanced navigation applications. Emerging automotive applications include automated driving (AD) and advanced driver assistance system (ADAS), lane-accurate navigation, and telematics.

High accuracy and convergence within seconds

PointPerfect's augmentation data is generated by processing data collected across a broad network of GNSS reference stations. Each reference station constantly monitors the signals broadcast by orbiting GNSS satellites to measure any effects incurred as the signals traverse the charged layers of the atmosphere. The data is processed and converted to a state-of-the-art communication protocol and broadcast through the internet and L-band satellite. The result is a GNSS correction data stream that significantly improves position accuracy to 3-6 centimeters[1] and convergence within seconds.

Low bandwidth

Modern positioning systems require a combination of low bandwidth, high accuracy, availability, reliability, and integrity of communication between service providers and end users. The SPARTN format is an open messaging standard designed to meet these requirements. SPARTN combines the advantages of state representation with modernized communication protocol fundamentals, resulting in a bandwidth-optimized solution that reduces transmitting costs for end users. PointPerfect uses a single outbound broadcast stream for all endpoints, providing efficiencies of scale for mass-market use cases.

1: 3-6 cm horizontal accuracy with a compatible receiver. Accuracy results are based on error-free GNSS observation data, complete and uninterrupted correction data reception, and ambiguity-fixed position results.

PointPerfect

Frictionless for business

A truly differentiated aspect of our solution is the delivery method. Thingstream is the u-blox IoT services delivery platform for all services, including PointPerfect. This enterprise-grade cloud platform utilizes auto-scaling technology and is proven to support billions of messages. The intuitive interface provides a self-serve environment from which users have autonomy to manage IoT device fleets, manage billing, monitor events, and have complete API control of functionality. In addition to a traditional subscription-based approach, we offer flexible pay-as-you-go service plans to address various customers, use cases, and applications. Thingstream enables a frictionless business experience because it eliminates complexities and allows users to engage more efficiently and reduce time-to-market. The combination serves as an inflection point in the market evolution of high precision GNSS solutions.

Features / details

Technology	Advanced PPP-RTK (SSR)
Horizontal accuracy[1] (2-sigma 95%)	3-6 cm
Startup time[2]	< 30 s
Coverage	Europe, contiguous United States, and South Korea
Broadcast data format	SPARTN 2.0 - open industry format, SSR based
Data rate	Continental: 2400 bps (with reduced bandwidth options)
Standard correction rate	Satellite clock: 5 s Satellite orbits, bias, atmosphere: 30 s
Reference frame	ITRF2014 current epoch
GNSS signal support	GPS: L1 C/A, L2P, L2C, L5 GLONASS: L1 C/A, L2 C/A Galileo: E1, E5A/B
Communication methods	Mobile internet: MQTT Satellite: L-band EU and US

Availability assured

We stand behind our service with 99.9% uptime[3] availability, and with full warranty and the support of our technical experts. PointPerfect is delivered via both mobile internet and L-band satellite, a redundancy of communications that provides higher reliability to the user. These assurances mean you can trust PointPerfect for mission-critical applications.

Homogeneous and continental coverage

PointPerfect GNSS augmentation service is available on a continental scale with seamless coverage in Europe, contiguous USA, and South Korea, including up to 12 nautical miles (~ 22 km) off coastlines. We are continuously expanding our coverage according to market demand.

Seamless integration

PointPerfect brings a proven GNSS augmentation service to the mass market by means of a comprehensive silicon-to-cloud set of solutions and offerings. Our industry-leading high precision multi-band GNSS receiver modules and connectivity hardware can now work seamlessly in combination with advanced GNSS augmentation services to provide a one-stop-shop solution from silicon-to-cloud. We develop all technology building blocks in-house where we have full control without the external dependencies that can be barriers to responsiveness or that may call longevity into question. Since PointPerfect is based on open SPARTN format, its use is not restricted to a single hardware manufacturer. In this way, customers have the flexibility to make hardware and service selections that optimize overall return on investment.

u-blox products supporting PointPerfect

u-blox ZED-F9P high precision GNSS module
u-blox NEO-D9S correction receiver

1: Horizontal accuracy: Typically, 3-6 cm with a compatible receiver. All accuracy results are based on:
a) error-free GNSS observation data
b) receiving complete and uninterrupted correction data
c) ambiguity-fixed position results

2: The maximum time for transmitting all data needed by the receiver to start positioning.

3: For L-band, 99.0% guaranteed and 99.9% target, on annual basis

Further information

For contact information, see **www.u-blox.com/contact-u-blox-services**.