

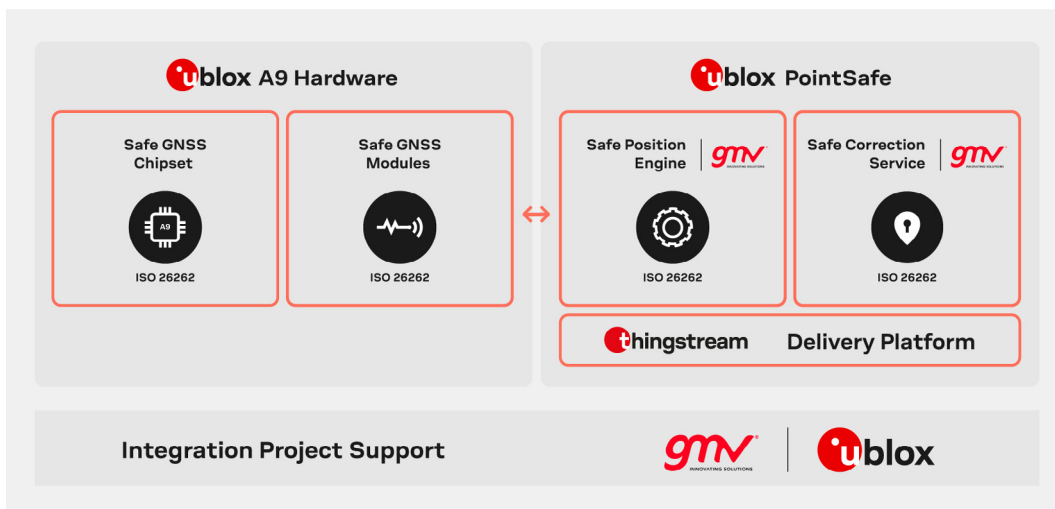
PointSafe



Safe positioning service

Proven technology already in use on millions of kms of roads

- Certified for safety-critical applications: ASIL-B (ISO 26262) and SOTIF (ISO 21488)
- Best-in-class performance for accuracy, integrity, and availability
- Natively supported by u-blox A9 functional safe GNSS chip and u-safe end-to-end safe positioning solution
- Flexibility to support automotive grade components; usable as a standalone option for customer solutions
- Ideally suited for ADAS L3 and above autonomous driving applications



PointSafe overview and key benefits

PointSafe is a safe positioning service composed of an ISO 26262-certified safe correction service and safe on-board position engine software that are already on the road today, u-blox and GMV join forces to deliver cutting-edge safe positioning solutions for autonomous driving applications.

PointSafe meets the ASIL-B (ISO 26262) and SOTIF (ISO 21488) standards for Safety-Critical Applications and is among the few services available in the market today to meet standards for the functional safety of road vehicles.

PointSafe is exactly suited for Advanced Driver Assistance Systems (ADAS) defined by the automotive industry and directly suited to the SAE Levels 3-5. Our focus is positioning, integrity, and functional safety, always considering the needs of customers and applications.

Features / details

| | |
|-------------------------------|---|
| Technology | High-accuracy SSR corrections |
| Horizontal accuracy | < 10 cm RMS |
| Target integrity risk (TIR) | Up to 10^{-7} per hour |
| Convergence time (cold start) | < 30 s (reconvergence within seconds) |
| Protection level | 2 to 5 m |
| Service availability | > 99.9 % |
| Time to alert (TTA) | < 5 s |
| Position, velocity, heading | up to 10 Hz |
| Coverage | Europe, contiguous United States, Canada, and other planned regions |
| Delivery | Direct-to-Vehicle or Service-to-Service via OEM backend |
| Communication | SSR corrections encapsulated in binary large objects (BLOBs) and published via Internet using MQTT protocol |
| GNSS signal support | GPS: ASIL-B Galileo: ASIL-B BeiDou: 1Q24 |

RMS = root mean square



PointSafe provides a precise and safe algorithmic solution for highly demanding autonomous driving. It is a complete GNSS safe positioning service composed of a safe position engine and safe correction service.

Safe position engine

- Sensor fusion (IMU, wheel ticks, etc.)
- Correction service integration
- PVT + Protection Level calculation
- Integrated on host processor or on u-blox module
- ASIL B output available (ISO 26262)
- Integrity layer (ISO 21448 – SOTIF)
- Cybersecurity mechanisms

Safe correction service

- Field-proven SSR / PPP-RTK technology
- Multi-constellation and multi-frequency
- Integrity data processing through SSR
- ISO 26262
- Fast convergence
- Coverage including Europe, contiguous United States, and Canada; other regions planned



Proven technology

PointSafe's safe correction service and safe on-board position engine are on the road today, delivering high performance and trusted positioning for automotive Tier 1's and OEMs. This proven technology has been tested over millions of kilometers and is part of first safe solutions on public roads. Years of research and development have culminated in a mature and proven solution ready for the market.



Best-in-class performance

Achieving a sufficient performance requires a holistic solution based on GNSS hardware, software, and service. PointSafe provides the highest standards of performance for accuracy, integrity, and availability:

- Horizontal Accuracy* < 10 cm RMS
- Target Integrity Risk < up to 10⁻⁷/h
- Service Availability (SLA) > 99,9 %
- Convergence time < 30 s with reconvergence in seconds

* Nominal accuracy achieved with a mass-market automotive and GNSS receiver under open sky conditions



Safety-critical certified

PointSafe meets the ASIL-B standards for Safety-Critical Applications. ASIL refers to Automotive Safety Integrity Level, a risk classification system defined by the ISO 26262 standard for the functional safety of road vehicles. Integrity + Functional Safety is recognized as a critical capability for ADAS SAE L3-5; therefore, the service complies to the following standards:

- ASIL-B (ISO 26262 – ISO 21488) Standards for Safety-Critical Applications
- ISO 21448 (SOTIF Safety of The Intended Function)
- A-SPICE CL3 (Automotive SPICE® Capability Level 3)



Highly flexible

Natively supported by industry-leading u-blox A9 functional safety chipsets and modules and in adding customized integration support, PointSafe is a core component of u-safe end-to-end safe positioning solution, providing a proven one-stop-shop for advanced driving. PointSafe also offers the configurability and flexibility to support non-u-blox automotive grade components and is usable as a standalone option for customer solutions.

u-blox products supporting PointSafe

UBX-A9 functional safe GNSS chip

u•safe Advanced Driving end-to-end safe positioning solution

Further information

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

For more details, see www.u-blox.com/product/pointsafe.

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