



u-blox GNSS product overview

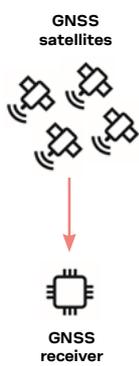
Optimized cost and performance combined with easy integration

Product diversity for all kinds of applications

u-blox is a leading provider in GNSS solutions that are tailored for every customer's needs. Because we use our own silicon, we can offer controlled quality, high performance, quick support, and stable product life cycles.

Our positioning modules, SiPs, chips, and smart antennas set the benchmark in performance and cost effectiveness, with quick delivery of accurate position data. Our wide portfolio includes standard precision, high precision, precise timing, and dead reckoning solutions. We are continually making innovative advancements in accuracy, anti-spoofing, power efficiency, small size, and low cost.

Technologies

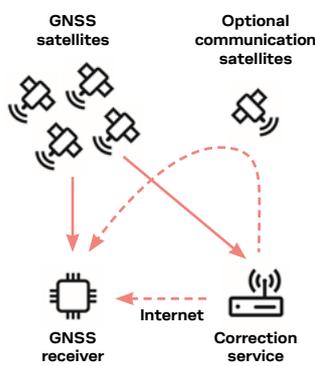


Standard precision

- Meter-level accuracy
- Cost-efficient products
- Suitable for most needs
- Super-E low power mode
- High tracking sensitivity
- Low power consumption

Application areas:

- Asset tracking
- Telematics
- Navigation
- Wearables and camera



High precision

- Sub-meter down to centimeter-level accuracy

Application areas:

- Unmanned vehicles
- Navigation
- Automotive



Dead Reckoning

- 100% positioning coverage even in parking garages, tunnels, and urban canyons

Application areas:

- Road-vehicle navigation
- Autonomous driving



Timing & Frequency

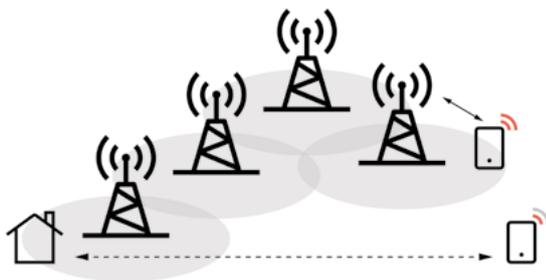
- Accurate clock and frequency generation based on satellite positioning technology

Application areas:

- Wireless communication
- Industrial
- Power distribution
- Financial applications

Services

AssistNow Online and AssistNow Offline are u-blox's end-to-end A-GNSS services for OEM customers and their end users. These services boost GNSS acquisition performance for devices with or without network connectivity. AssistNow Online and AssistNow Offline can be used either alone or in combination.



AssistNow brings four key advantages:

1. Faster time-to-first-fix (TTFF)
2. Improved position availability
3. Improved position accuracy
4. Lower power consumption



Product selection guide

u-blox products come in various integration levels catering to all kinds of needs, from low volume, ease of use scenarios to scalable solutions for customized applications. The product offering includes modules, SiPs, smart antennas, and chips. Modules and SiPs provide long-term sustainability using shared form factors and offer easy migration to High Precision, Dead Reckoning and Timing technologies. Smart Antennas, which integrate all the GNSS technology and antenna, are ideal for those with little GNSS know-how. SiPs (System in Package) are optimized for size, weight, and power. Chips are ideal for highest volumes and need expert GNSS know-how.

	Modules - LCC / LGA	Modules - SiP	Chips	Smart Antennas
Highlights	<ul style="list-style-type: none"> Form factor roadmap brings longest lifecycle (investment protection) Minimal design efforts Easy migration between SPG, HPG, and DR receivers 	<ul style="list-style-type: none"> Optimized for minimal size, weight, and power Minimal design efforts 	<ul style="list-style-type: none"> Economy of scale for highest volume opportunities 	<ul style="list-style-type: none"> Easy to design-in No radio frequency expertise needed
Product grade	Automotive, Professional, and Standard	Professional and Standard	Automotive, Professional, and Standard	Professional
Minimum Order Quantity	250 to 500 pieces	500 to 1000 pieces	4000 pieces	250 pieces
Dominant market	Automotive, Industrial	Industrial, Consumer	Automotive, Industrial, Consumer	Industrial

Product grades

The u-blox product grades serve different application needs.

	 Standard grade	 Professional grade	 Automotive grade
Environmental conditions	Consumer environment	Industrial environment	Automotive environment
Temperature	-20 °C to +65 °C	-40 °C to +85 °C	-40 °C to +85 °C or extended (up to +105 °C)
Product qualification	JESD47 (ICs) Subset of ISO 16750 (modules)	AEC-Q100 (ICs) ISO 16750 (modules)	AEC-Q100 (ICs) Extended ISO 16750 (modules)
Process levels for design, manufacturing, and testing	<ul style="list-style-type: none"> 100% outgoing test Product traceability PCN process Failure analysis 	Standard grade, plus: <ul style="list-style-type: none"> 100% automatic X-ray and optical inspection of modules 	Professional grade, plus: <ul style="list-style-type: none"> PPAP ISO/TS 16949 manufacturing Automotive test flow Component traceability 8D failure reporting Automotive PCN process Long product life cycles 0-ppm program

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Product selector table

Our form factor roadmap allows for easy migration from older to newer generations and for similar designs with different technologies or levels of precision.

Product	Form	Precision	Technology	Interfaces	Multi-band	Upgradable	Automotive
 4.5 X 4.5 mm	ZOE	meter level	SPG Super-E	UART SPI DDC		Yes	
 7.0 x 7.0 mm	EVA	meter level	DR SPG	UART USB SPI DDC		Yes	
 9.7 x 10.1 mm	MAX	meter level	SPG	UART DDC			Yes
 12.2 x 16.0 mm	NEO	dm level meter level	DR HPG SPG Timing	UART USB SPI DDC		Yes	Yes
 17.0 x 22.0 mm	ZED	cm level nanoseconds	DR HPG SPG Timing	UART USB SPI DDC	Yes	Yes	
 17.0 x 22.0 mm	LEA	nanoseconds	Timing	UART USB SPI DDC		Yes	
 9.6 x 14.0 mm	CAM	meter level	SPG	UART SPI DDC			
 15.5 x 15.5 mm	SAM	meter level	SPG	UART DDC			
 2.99 X 3.21 mm	47-pin WL-CSP	meter level	SPG	UART USB SPI DDC			
 5.0 X 5.0 mm	40-pin QFN	meter level	DR SPG	UART USB SPI DDC		Yes	Yes

Technology explanations:

- DR = Dead Reckoning
- HPG = High Precision GNSS (cm and dm level)
- SPG = Standard Precision GNSS (meter level)
- Super-E = Ideal balance between low power and good performance
- Timing = Precise timing and reference frequency

For a detailed view of our product offering, refer to our guided product selector:

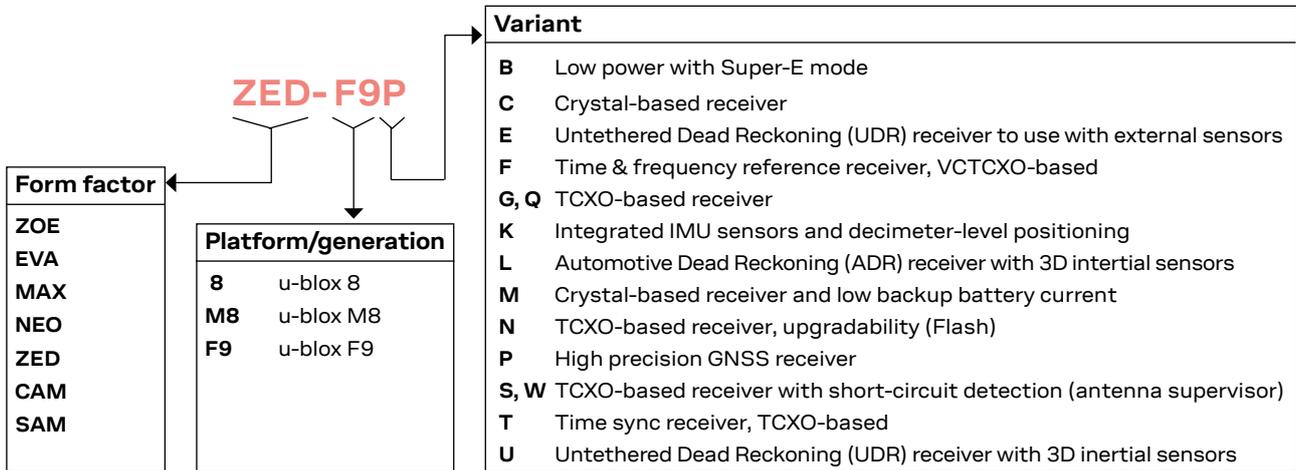
www.u-blox.com/guided-product-selector



Advantages to using modules

 Quick to market & no design risk	<ul style="list-style-type: none"> • Plug and play – just connect antenna and power • No radio frequency or hardware qualification needed • Fully qualified, tested, and certified
 Future proof & reduced supplier base	<ul style="list-style-type: none"> • Pin-to-pin and software compatibility across generations • Only one supplier for functional block, thus reducing sourcing complexity • High quality components for consistent performance and lowest ppm
 Low engineering cost & no capital investment	<ul style="list-style-type: none"> • One standard SMD component for simple assembly and production testing • No test infrastructure investment • One-stop technical support (field support and returns)

u-blox positioning product naming



u-blox values and promise

 Competent technical support worldwide	<ul style="list-style-type: none"> • Over 20 years of R&D in GNSS technology • Lifetime support and maximum competence
 Quick time to market	<ul style="list-style-type: none"> • Short and reliable delivery times • Module form factor consistency
 High quality	<ul style="list-style-type: none"> • Global leader in positioning and wireless communication • In-house chip technology
 Broad spectrum of solutions	<ul style="list-style-type: none"> • Strong synergies between technologies - Wi-fi, V2X, cellular, and positioning • Hardware, software, services, and solutions
 Security	<ul style="list-style-type: none"> • Advanced spoofing and jamming detection • End-to-end trust of domain

Further information

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

For more product details and ordering information, see the product data sheet.

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