

ZED-X20P series



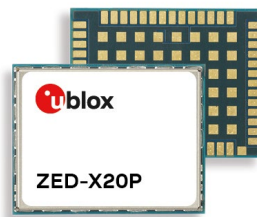
u-blox X20 all-band high precision GNSS module

All-band GNSS receiver designed in Switzerland

- All-band, all-constellation GNSS receiver
- Best position accuracy and availability in different environments
- RTK, PPP-RTK, and PPP algorithms expanding the limits of performance
- Highest quality GNSS raw data
- u-blox end-to-end hardened security



17.0 × 22.0 × 2.4 mm



Product description

The ZED-X20P module sets the standard in positioning performance. It integrates all-band GNSS with signal modernization and innovative positioning algorithms using Real-time Kinematics (RTK), PPP-RTK, and Precise Point Positioning (PPP) technologies in a compact, energy-efficient form factor. ZED-X20P ensures unparalleled reliability and performance.

ZED-X20P concurrently processes signals from the GPS, Galileo, BeiDou, QZSS, and NavIC constellations across all GNSS bands, including L-band. The highest level of integration on a single-chip receiver enables new system architectures and creates value for industrial navigation and robotics markets in products such as unmanned autonomous vehicles (UAVs), guidance systems, and auto-steering applications.

With its very high update rate, ZED-X20P is ideal for control applications, ensuring smooth and reliable operation. For advanced users, its pristine raw data features minimal cycle slips and exceptionally low noise in carrier range and pseudo-range measurements. ZED-X20P protects system integrity with multi-layered defenses, including Root of Trust, jamming and spoofing detection, and cryptographic authentication of navigation messages through Galileo OSNMA. Application-specific features such as moving baseline are also available.

Its easy integration helps product developers bring their ideas to market quickly. ZED-X20P offers support for a range of correction services natively, striking the perfect balance between performance and data usage. It supports standard RTCM corrections for Virtual Reference Stations (VRS) in a Network RTK setup or a local base station setup. SPARTN-format SSR correction service broadcasts are also supported for mass-market applications, and direct reception of PPP global services simplifies deployments.

	ZED-X20P
Grade	
Automotive	
Professional	•
Standard	
GNSS	
GPS / SBAS	•
QZSS	•
Galileo	•
BeiDou	•
NavIC	•
All-band	L1/L2/L5/L6 + L-band
Compatible u-blox services	
AssistNow™ Live Orbits	•
PointPerfect Flex	•
PointPerfect Live	•
PointPerfect Global*	•
Interfaces	
UART	2
USB	1
SPI	1
DDC (I2C compliant)	1
Features	
Programmable (flash)	•
Carrier phase output	•
Additional SAW	•
RTC crystal	•
RTK rover	•
RTK base station	•
Moving base	•
Timepulse	1
Power supply	
2.7 V – 3.6 V	•

* Feature in development

T = TCXO



Features

Receiver type	672-channel u-blox X20 engine GPS L1C/A, L2C, L5 GAL E1B/C, E5a, E6 BDS B1I, B1C, B2a, B3I QZSS L1C/A, L1C/B, L2C, L5, L6 NavIC L1*, L5 SBAS L1C/A	
Nav. update rate	RTK	up to 25 Hz
Position accuracy ¹	Standalone	1.2 m
	SBAS	0.6 m
	RTK	0.6 cm + 1 ppm CEP
	PPP-RTK	< 6 cm
	PPP ²	< 10 cm
Convergence time ¹	RTK	< 7 sec
	PPP-RTK	< 40 sec
	PPP ²	< 120 sec
Acquisition	Cold starts	25 s
	Aided starts	2 s
	Reacquisition	2 s
Sensitivity	Tracking & Nav.	-167 dBm
	Cold starts	-148 dBm
	Hot starts	-158 dBm
	Reacquisition	-160 dBm
Assistance	AssistNow Live Orbits OMA SUPL & 3GPP compliant	
Oscillator	TCXO	
RTC crystal	Built-in	
Anti-jamming	CW detection	
Anti-spoofing	Advanced anti-spoofing algorithms and OSNMA	
Memory	Flash	
Moving base	For attitude sensing and heading applications	
Supported antennas	Active	

- 1 Depends on atmospheric conditions, baseline length, GNSS antenna, multipath conditions, satellite visibility, and geometry
 - 2 Galileo HAS Service Level 1 Initial service 20 cm accuracy in 10 minutes. Performance for other services will vary.
- * Feature in development

Interfaces

Serial interfaces	2 UART 1 USB 1 SPI 1 DDC (I2C compliant)	
Digital I/O	Configurable timepulse EXTINT input for wakeup RTK fix status GEOFENCE status	
Timepulse	Configurable: 0.25 Hz to 10 MHz	
Protocols	NMEA 4.11, UBX binary, RTCM v. 3.4, SPARTN v. 2.0.2	

Package

54-pin LGA (land grid array), 17 x 22 x 2.4 mm
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Environmental data, quality, and reliability

Operating temp.	-40 °C to +85 °C
Storage temp.	-40 °C to +85 °C
Vibration	MIL-STD-810G (Category 24, 7.7g RMS)
Environmental grade	RoHS compliant (2015/863/EU)
Green (halogen-free)	
EU RED	EU Radio Equipment Directive compliant 2014/53/EU
Reliability class	Qualified according to u-blox qualification policy, based on a subset of AEC-Q104
Quality management	Manufactured and fully tested in ISO/TS 16949 certified production sites

Electrical data

Supply voltage	2.7 V to 3.6 V
Power consumption	55 mA at 3.0 V
Backup supply	1.65 V to 3.6 V

Compatible u-blox location services

Location services	AssistNow Live Orbits PointPerfect Flex GNSS correction service PointPerfect Live GNSS correction service PointPerfect Global GNSS correction service
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Support products

u-blox support products provide reference design, and allow efficient integration and evaluation of u-blox positioning technology.

EVK-X20P-00	ZED-X20P evaluation kit with ANN-MB2
u-center 2	Highly intuitive software for GNSS performance evaluation
ANN-MB2	All-band high precision antenna

Product variants

ZED-X20P-00B	All-band high precision GNSS module
ZED-X20P-01B	All-band high precision GNSS module with Galileo HAS

Further information

For contact information, see www.u-blox.com/contact-u-blox.
For more product details and ordering information, see the product data sheet.

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