Product summary

ZED-X20P series

u-blox X20 all-band high precision GNSS module

Standard

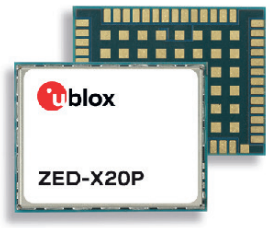
Professional

Automotive

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 and features for mass markets to protect your investments. 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. As the most reliable position sensor from the most trusted name in GNSS, 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, the ZED-X20P module 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 a Root of Trust, jamming and spoofing detection, cryptographic authentication of navigation messages through Galileo OSNMA, and more. High-value, application-specific features such as moving baseline are also available.

The receiver enables easy integration, helping 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™	•
PointPerfect Flex	•
PointPerfect Live	•
PointPerfect Global	•
Interfaces	
UART	2
SPI	1
DDC (I2C compliant)	1
Features	
Programmable (flash)	•
Carrier phase output	•
Additional SAW	•
RTC crystal	•
Oscillator	T
RTK rover	•
RTK base station	•
Moving base*	•
Timepulse	1
Power supply	
2.7 V – 3.6 V	•

T = TCXO

ZED-X20P series

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 SBAS RTK PPP-RTK PPP*	1.2 m 0.6 m 0.6 cm + 1 ppm < 6 cm < 10 cm
Convergence time [1]	RTK PPP-RTK PPP*	< 7 sec < 40 sec < 120 sec
Acquisition	Cold starts Aided starts Reacquisition	25 s 2 s 2 s
Sensitivity	Tracking & Nav. Cold starts Hot starts Reacquisition	−167 dBm −148 dBm −158 dBm −160 dBm
Assistance	AssistNow Online 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
* Feature in development

Interfaces

Serial interfaces	2 UART 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

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 Radio Equipment Directive compliant 2014/53/EU	
Environmental grade	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 A-GNSS service PointPerfect Flex GNSS correction service PointPerfect Live GNSS correction service PointPerfect Global GNSS correction service

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-00B 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

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.