Product summary

ZED-X20D

u-blox X20 all-band high precision GNSS heading module

Standard

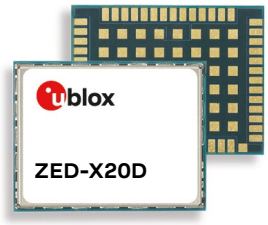
Professional

Automotive

All-band GNSS module designed for high precision heading applications

- Heading with all-band GNSS on both antennas
- Best-in-class heading accuracy and availability in different environments
- RTK, PPP-RTK and PPP provide scalable options for diverse accuracy and market needs
- High quality GNSS measurements for reliable post-processing
- Industry-proven ZED form factor enabling seamless integration and faster time to market
- u-blox end-to-end hardened security

17.0 × 22.0 × 2.4 mm



Product description

Based on the u-blox X20 all-band high-precision technology, the ZED-X20D module is designed for dual-antenna applications requiring robust RTK positioning and precise heading information. It supports all major GNSS systems for maximum position availability, ensuring reliable positioning and heading performance even in challenging GNSS environments.

The ZED-X20D integrates an all-band GNSS engine with innovative positioning algorithms using real-time kinematics (RTK), precise point positioning (PPP) and PPP-RTK technologies in a compact form factor. For advanced users, its pristine raw data features minimal cycle slips and exceptionally low noise in carrier range and pseudo-range measurements.

ZED-X20D protects system integrity with multi-layered measures, including Root of Trust, jamming and spoofing detection, and cryptographic authentication of navigation messages through Galileo OSNMA. It offers support for a range of correction services, striking the perfect balance between performance and data usage.

Thanks to the compact design, robust RF architecture and integration-friendly heading solution, ZED-X20D is ideally suited for precision agriculture (incl. heavy machinery), unmanned autonomous vehicles (UAVs), and other industrial applications requiring robust positioning and accurate GNSS-based heading. Furthermore, customers benefit from a trusted western supply chain, minimizing risk and securing long-term availability.

With ZED-X20D, customers have a secure, reliable, and ready-to-use all-band heading solution that minimizes design efforts and accelerates mass adoption.

	ZED-X20D
Grade	
Automotive	
Professional	•
Standard	
GNSS	
GPS / SBAS	•
QZSS	•
GLONASS	Ø *
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	2
Additional SAW	•
RTC crystal	•
Oscillator	T
RTK	•
Timepulse	1
Power supply	
3.0 V – 3.6 V	•

Ø = GLONASS generally available, restricted in some geographical areas
* Feature in development
T = TCXO

ZED-X20D series

Features

Receiver type	1344-channel u-blox X20 engine GPS L1C/A, L2C, L5 GLONASS L1OF, L2OF GAL E1B/C, E5a, E6 BDS B1I, B1C, B2a, B3I QZSS L1C/A, L1C/B*, L2C, L5, L6 NavIC L1*, L5 SBAS L1C/A L-band *	
Heading accuracy (1 m baseline)	0.1 degree (RMS) [1]	
Heading update rate	Up to 10 Hz	
Nav. update rate [2]	RTK	up to 25 Hz
Position accuracy [3]	Standalone SBAS RTK PPP-RTK PPP*	1.2 m 0.6 m 0.6 cm + 1 ppm < 6 cm < 10 cm
Convergence time [3]	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
Oscillator	TCXO	
RTC crystal	Built-in	
Anti-jamming	CW detection	
Anti-spoofing	Advanced anti-spoofing algorithms and OSNMA	
Memory	Flash	
Supported antennas	Active	

1 Target specification
2 The highest navigation rate can limit the number of supported constellations and heading feature
3 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 USB 1 DDC (I2C compliant)
Digital I/O	Configurable timepulse EXTINT input for wakeup Heading status RTK 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)	
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	3.0 V to 3.6 V
Power consumption	125 mA at 3.0 V
Backup supply	1.65 V to 3.6 V

Compatible u-blox products and services

Location services	AssistNow Live Orbits 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-X20D-00	ZED-X20D evaluation kit with 2 pcs ANN-MB2
u-center 2	Highly intuitive software for GNSS performance evaluation
ANN-MB2	All-band high precision antenna

Product variants

ZED-X20D-00B	All-band high precision GNSS heading 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.