

ZED-X20D



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

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 | ∅* |
| 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 | • |

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



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 | 1.2 m |
| | SBAS | 0.6 m |
| | RTK | 0.6 cm + 1 ppm |
| | PPP-RTK | < 6 cm |
| | PPP* | < 10 cm |
| Convergence time ³ | RTK | < 7 sec |
| | PPP-RTK | < 40 sec |
| | PPP* | < 120 sec |
| | Acquisition | Cold starts |
| | Aided starts | 2 s |
| | Reacquisition | 2 s |
| Sensitivity | Tracking & Nav. | -167 dBm |
| | Cold starts | -148 dBm |
| | Hot starts | -158 dBm |
| | Reacquisition | -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 |

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.

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 |
|--------------|---|

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