



Product summary

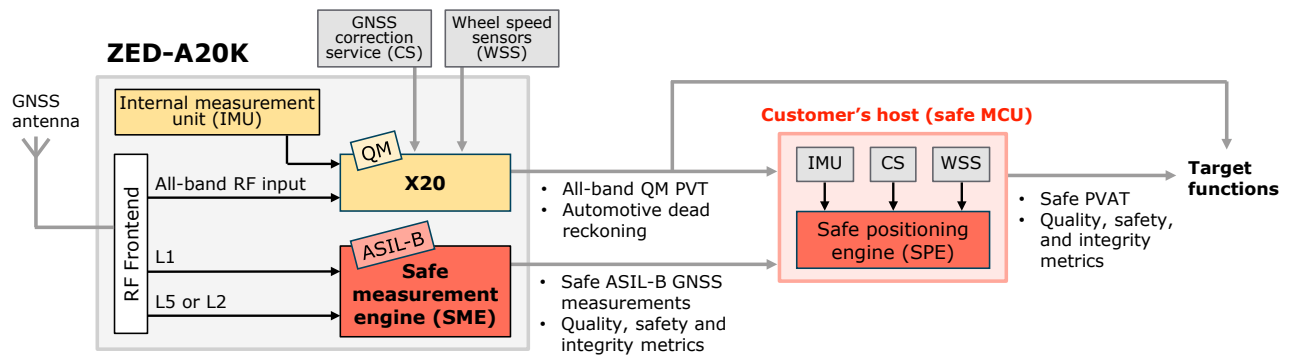
ZED-A20K

u-blox A20 functional safe and all-band GNSS module



Module designed for safe positioning architectures

- Simultaneous output of ASIL-B measurements and high-performance position, velocity, attitude, and time (PVAT)
- ASIL-B certified, dual-band (L1/L5 or L1/L2) GNSS raw data provision with safety, integrity and quality metrics
- Automotive-grade safety (ISO 26262), cyber-security (ISO 21434) and quality (ASPICE L2) compliance
- All-band, high-performance PVAT output with RTK, PPP and PPP-RTK support and output rates up to 50Hz
- For autonomous driving (AD) and advanced driver assistance systems (ADAS) targeting SAE level L2+ (and higher)



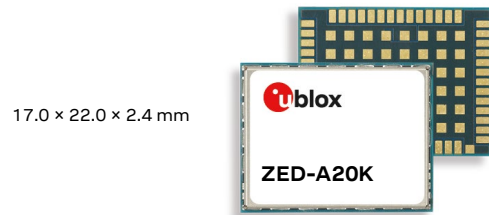
Product description

ZED-A20K is a mixed criticality GNSS module integrating the u-blox A9 ASIL-B safe measurement engine with the u-blox X20 all-band, high-precision GNSS receiver. It targets AD/ADAS applications at L2+ and higher automation levels, where performance, availability, and functional safety matter.

The integrated UBX-A9940-KA chips are developed in compliance with functional safety, quality, and security standards. They operate as an independent ASIL-B safe measurement engine, providing safety-qualified dual-band GNSS raw measurements (L1/L5 or L1/L2). Redundant architecture enables cross checking, fault detection, and high diagnostic coverage to support robust system-level safety concepts. Safety-qualified raw data (pseudorange, carrier phase, and Doppler measurements) and integrity metrics are output in the safe UBX format for an external safe position engine (SPE) or other safety targeting localization units.

The X20 receiver delivers high performance PVAT outputs. It supports all band, multi-constellation GNSS and is compatible with RTK and PPP correction services, including Galileo high accuracy service (HAS) and PointPerfect Global, enabling centimeter-level accuracy. Furthermore, an internal IMU and automotive dead-reckoning (ADR) algorithms enable accurate positioning in challenging environments.

ZED-A20K delivers high performance positioning and ASIL-B measurements simultaneously from a single module. Architectural separation simplifies functional safety analysis, reduces integration complexity, and minimizes customer certification efforts. It also incorporates advanced spoofing and jamming detection and is compliant with ISO 21434. The module offers maximum flexibility, allowing system designers to select features matching their target architecture.



	ZED-A20K
Grade	
Automotive	•
Professional	
Standard	
GNSS	
GPS + QZSS/SBAS	•
GLONASS	•
Galileo	•
BeiDou	•
NavIC	•
Bands	L1/L5 (safe GNSS) and all-band (QM PVT)
Interfaces	
UART	2
USB	1*
Features	
Programmable (flash)	•
Additional SAW	•
RTC crystal	•
OSR correction support	•
PointPerfect support	•
Power supply	
3.0 V – 3.6 V	•

* Debugging only





Features of the ASIL-B A9 chip

Receiver type	240-channel u-blox A9 engine GPS L1 C/A, L5 GAL E1C, E5a BDS B1I, B2a	
Primary output	Safe (ASIL-B) GNSS raw data: <ul style="list-style-type: none"> • Pseudoranges • Carrier-phases • Doppler measurements • Safety and integrity metrics 	
Update rate	10 Hz	
Max. safety level	ASIL-B	
Safety and security compliance	ISO 21434 (Cybersecurity) ISO 26262 ASIL-B (Functional safety)	
Acquisition	Time to acquire first satellite signal	6 s
Sensitivity	Fine acquisition Tracking and nav. Cold starts	-151 dBm -150 dBm -146 dBm
Built-in features	TCXO, SAW diplexer	
Anti-jamming	Advanced anti-jamming algorithms	
Protocols	Safe UBX (SUBX)	

Features of the X20 engine

Receiver type	672-channel u-blox X20 engine GPS L1C/A, L2C, L5 GLO L10F GAL E1B/C, E5a, E6 BDS B1I, B1C, B2a, B3I QZSS L1C/A, L1C/B*, L2C, L5 NavIC L5 SBAS L1C/A	
Primary output	High-performance QM PVAT: Position, Velocity, Attitude, Time	
Update rate	Up to 50 Hz	
Max. safety level	QM	
Safety and security compliance	ISO 21434 (Cybersecurity)	
Acquisition	Cold starts Aided starts Reacquisition	24 s 2 s 2 s
Sensitivity	Tracking & Nav. ¹ Cold starts Hot starts	-160 dBm -148 dBm -158 dBm
Built-in features	TCXO, RTC, flash memory, IMU (3D accelerometer, 3D gyroscope), SAW triplexer	
Anti-jamming	Advanced anti-jamming algorithms	
Anti-spoofing	Advanced anti-spoofing algorithms	
Protocols	NMEA 4.11, UBX binary, RTCM v. 3.4, SPARTN v. 2.0.2	
Position accuracy	RTK < 10 cm + 1 ppm CEP PPP < 20 cm	
ADR position error	< 1% of distance travelled without GNSS	
Convergence time	RTK < 10 sec PPP-RTK < 40 sec PPP* < 120 sec	

¹ Limited by FW for best DR performance
* Feature in development

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 & reliability

Operating temp.	-40 °C to +105 °C
Storage temp.	-40 °C to +105 °C
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
Chips	Integrated u-blox chips qualified according to AEC-Q100
MSL	1
Quality management	ISO 9001 Manufactured and fully tested in IATF 16949 certified production sites AEC-Q004 zero ppm strategy Aspice Level 2 (certified for A9 SME)
Other standards	Compliant to UK Radio Equipment Regulations (S.I. 2017/1206) and GB/T 45086.1

Electrical data

Supply voltage	3.0 V to 3.6 V
Power consumption	190 mA @ 3.3 V (continuous)

Interfaces

Serial interfaces	2 UART 1 USB (only for debugging) Error pins
Digital I/O	Measurement pulse

Compatible u-blox products and services

Location services	AssistNow Live Orbits PointPerfect GNSS correction services
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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-X20DR EVK-A9	Easy to use evaluation boards with various communication interfaces for correction services
u-center 2	Highly intuitive software for GNSS performance evaluation
ANN-MB2	All-band high precision antenna

Product variants

ZED-A20K-01A	u-blox A20 functional safe and all-band GNSS module
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