

UBX-G8020-KT

u-blox 8 GNSS chip

Standard Professional Automotive

POSITIONING

Highlights

- GNSS engine for GPS/QZSS and GLONASS
- High sensitivity of -166 dBm
- Low power consumption
- Advanced jamming and spoofing detection
- Superior performance for wrist worn devices
- Pin-compatible to UBX-G7020-KT and UBX-M8030-KT



UBX-G8020-KT
5.00 x 5.00 x 0.59 mm

Product description

The UBX-G8020-KT GNSS chip, based on the latest u-blox 8 position engine, supports GPS/QZSS, GLONASS, and SBAS. With superior sensitivity and acquisition times it sets new standards for single constellation receivers.

UBX-G8020-KT chip is targeted for applications where small size, high performance, minimal power, and low system costs all are a must. With a dedicated mode for wrist worn applications, UBX-G8020-KT is a perfect choice for wearable devices.

UBX-G8020-KT features low power consumption and supports advanced Power Save Modes. It also provides message integrity protection, geofencing, spoofing detection, odometer, and data logging functionalities.

The UBX-G8020-KT is available in an industry standard QFN package. Featuring built-in LNA, LDOs and DC/DC converter, and a small external BOM, the UBX-G8020-KT enables ultra-small solutions with a footprint of only ~50 mm². By supporting TCXOs or lower price oscillators, the UBX-G8020-KT further ensures a minimal Total-Cost-of-Ownership.

UBX-G8020-KT was built with backward compatibility in mind, thus simplifying migration from existing u-blox G7020-KT designs.

With its rigorous quality and manufacturing standards (AEC-Q100, ISO/TS 16949), UBX-G8020-KT meets the requirements for industrial and consumer applications.

Product selector

Model	Package	Category	GNSS				Supply	Interfaces	Features	Grade		
			GPS / QZSS	GLONASS	Galileo	BeiDou					Number of Concurrent GNSS	
UBX-G8020-KT	QFN40	<ul style="list-style-type: none"> • Standard Precision • High Precision • Dead Reckoning • Timing 	•	•		1	•	•	•	•	<ul style="list-style-type: none"> • Programmable (Flash) • Data logging • RTC crystal • Oscillator • Antenna supply and supervisor • Timepulse 	<ul style="list-style-type: none"> • Standard • Professional • Automotive

S = supported, may require external components

C/T = Crystal and TCXO supported

Features

Receiver type	72-channel u-blox 8 engine GPS/QZSS L1 C/A, GLONASS L10F SBAS L1 C/A: WAAS, EGNOS, MSAS, GAGAN	
	GPS	GLONASS
Time to first fix ¹		
Cold start:	29 s	30 s
Aided start:	2 s	2 s
Hot start:	1 s	1 s
Sensitivity ¹		
Tracking & Nav.:	-166 dBm	-166 dBm
Reacquisition:	-160 dBm	-156 dBm
Cold start:	-148 dBm	-145 dBm
Hot start:	-156 dBm	-155 dBm
Max nav. update rate	up to 18 Hz	
Horizontal Pos. Accuracy ²	2.0 m CEP	
Multi-GNSS Assistance	AssistNow Online AssistNow Offline (up to 35 days) AssistNow Autonomous (up to 6 days)	
Oscillator	Supports crystal or TCXO	
LNA	Built-in	
RTC input	32.768 kHz (optional), RTC can be derived from GNSS crystal	
Antenna supervision	Short and open circuit detection supported with external circuit	
DC/DC converter	Built-in, external component required	
Anti Jamming	Active CW detection and removal	
Odometer	Integrated in navigation filter	
Geofencing	Up to 4 circular areas; GPIO for waking up external CPU	
Spoofing detection	Built-in	
Signal integrity	Signature feature with SHA 256	
Data logging ³	For position, velocity, time, and odometer data	

¹ with TCXO

² GPS with SBAS

³ External Flash required

Electrical data

Supply voltage	1.4V to 3.6V
Digital I/O voltage level	1.65V to 3.6V
Power consumption	16 mA @ 3.0 V (continuous mode) 5 mA @ 3.0 V (PSM, 1 Hz update)
Backup Supply	1.4V to 3.6 V

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Packages

UBX-G8020-KT:	40 Pin QFN, 5.00 x 5.00 x 0.59 mm
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Environmental data, quality & reliability

Operating temp.	-40° C to +85° C
Storage temp.	-40° C to +125° C
Humidity	JEDEC MSL 1
RoHS compliant (lead-free) and green (no halogens)	
Qualification according to AEC-Q100	
Manufactured in ISO/TS 16949 certified production sites	

Interfaces

Serial interfaces	1 UART 1 USB V2.0 compatible 1 DDC (I ² C compliant) 1 SPI
Digital I/O	2 configurable time pulses 2 EXTINT interrupt inputs 2 PIO for antenna supervision

Support products

Easy-to-use kit to get familiar with u-blox 8 positioning technology, evaluate functionality, and visualize GNSS performance.

EVK-8N: u-blox 8 GNSS Evaluation Kit

Product variants

UBX-G8020-KT u-blox 8 GNSS chip, 40 Pin QFN

Further information

For contact information, see www.u-blox.com/contact-us.

For more product details and ordering information, see the product data sheet.