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Standard | Professional | Automotive

POSITIONING

UBX-M8030

u-blox M8 concurrent GNSS chips

Highlights

- Concurrent reception of up to 3 GNSS (GPS, Galileo, GLONASS, BeiDou)
- Industry leading –167 dBm navigation sensitivity
- Industry lowest current consumption
- Superior position accuracy in urban canyons
- Security and integrity protection
- Support for all satellite augmentation systems
- Operating temperature range of -40° to +105°C for automotive grade chip

UBX-M8030-CT
2.99 x 3.21 x 0.36 mm

UBX-M8030-KT
5.00 x 5.00 x 0.59 mm

UBX-M8030-KA
5.00 x 5.00 x 0.59 mm

Product description

The UBX-M8030 high performance standard precision GNSS chips from u-blox, provide exceptional sensitivity and acquisition times for all GNSS systems. The chips utilize concurrent reception of up to three GNSS systems (GPS/Galileo together with Beidou or GLONASS). Reception from more than one constellation simultaneously allows extraordinary positioning accuracy in urban canyons, even with weak signals and high dynamics.

The UBX-M8030 chips feature low power consumption in concurrent reception mode and support advanced Power Save Modes for all GNSS, the power consumption remains low even for weak signals. The UBX-M8030 chips also support message integrity protection, geofencing and spoofing detection with configurable interface settings to easy fit to customer applications. The firmware supports QZSS, GAGAN and IMES together with WAAS, EGNOS, MSAS.

UBX-M8030 chips are available in miniature WL-CSP and QFN packages. Featuring built-in LNA, LDOs and DC/DC converter, and a small external BOM, the UBX-M8030 enables ultra-small solutions with a footprint of only 30 mm^2. Supporting TCXOs or lower price oscillators further ensures a minimal Total-Cost-of-Ownership.

The ultra small UBX-M8030-CT is a perfect choice for portable consumer applications with demanding size and cost constraints. Including rigorous automotive quality and manufacturing standards, extended testing and low failure rate make the UBX-M8030-KA chip ideal for automotive applications. With UBX-M8030-KA's operational tempature from -40° to +105°C, a new industry standard is set.

Migration from existing FW2 based u-blox M8030 chip designs are simple, since the upgraded UBX-M8030 offers backward compatibility.

Product selector

Model	Package	Category				GNSS					Supply	Interfaces				Features						Grade		
	Package	Standard Precision GNSS	High Precision GNSS	Dead Reckoning	Timing	GPS / QZSS	GLONASS	Galileo	BeiDou	Number of Concurrent GNSS	1.4 V – 3.6 V	UART	USB	SPI	DDC (I²C compliant)	Programmable (Flash)	Data logging	RTC crystal	Oscillator	Antenna supply and supervisor	Timepulse	Standard	Professional	Automotive
UBX-M8030-CT	WL-CSP47	•				•	•	•	•	3	•	•	•	•	•	S	S	S	C/T	S	2			
UBX-M8030-KT	QFN40	•				•	•	•	•	3	•	•	•	•	•	S	S	S	C/T	S	2			
UBX-M8030-KA*	QFN40	•				•	•	•	•	3	•	•	•	•	•	S	S	S	C/T	S	2			

C/T = Crystal and TCXO supported

S = supported, may require external components

* = Operating temperature -40° to +105°C

Standard
Professional
Automotive

Features

Receiver type	72-channel u-blox M8 engine GPS/QZSS L1 C/A, GLONASS L10F BeiDou B1, Galileo E1B/C SBAS L1 C/A: WAAS, EGNOS, MSAS, GAGAN
Time to first fix [1]	
Cold start:	26 s
Aided start:	2 s
Hot start:	1 s
Sensitivity [1]	
Tracking & Nav.	–167 dBm
Reacquisition	–160 dBm
Cold start	–148 dBm
Hot start	–157 dBm
Max nav. update rate [2]	
Single GNSS	up to 18 Hz
2 Concurrent GNSS	up to 10 Hz
Horizontal Pos. Accuracy [1]	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 or TCXO
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
SQI Flash (optional) for	FW update AssistNow Offline AssistNow Autonomous
Raw Data	Code phase output
Odometer	Integrated in navigation filter
Geo-fencing	Up to 4 circular areas GPIO for waking up external CPU
Spoofing detection	Built-in
Signal integrity	Signature feature with SHA 256
Data-logger [3]	For position, velocity, time, and odometer data

1 For default mode: GPS/SBAS/QZSS+GLONASS with TCXO
2 ROM
3 External Flash required

Electrical data

Supply voltage	1.4 V to 3.6 V
Digital I/O voltage level	1.65 V to 3.6 V
Power consumption (2 concurrent GNSS)	21 mA @ 3.0 V (Continuous) 5.3 mA @ 3.0 V (PSM, 1 Hz)
Backup Supply	1.4 V to 3.6 V

Packages

UBX-M8030-CT	47 Pin WL-CSP, 2.99 x 3.21 x 0.36 mm
UBX-M8030-KT/KA	40 Pin QFN, 5.00 x 5.00 x 0.59 mm

Environmental data, quality & reliability

Operating temp.	–20° C to +70° C (UBX-M8030-CT) –40° C to +85° C (UBX-M8030-KT) –40° C to +105° C (UBX-M8030-KA)
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^2C compliant) 1 SPI
Digital I/O	2 configurable time pulses 2 EXTINT interrupt inputs 2 PIO for antenna supervision
Memory	SQI interface for optional Flash

Support products

u-blox M8 Evaluation Kits:

Easy-to-use kits to get familiar with u-blox M8 positioning technology, evaluate functionality, and visualize GNSS performance.

EVK-M8N	u-blox M8 GNSS Evaluation Kit, which supports TCXO-based u-blox M8 designs
EVK-M8C	u-blox M8 GNSS Evaluation Kit, which supports crystal-based u-blox M8 designs

Product variants

UBX-M8030-CT	u-blox M8 GNSS chip, 47 Pin WL-CSP
UBX-M8030-KT	u-blox M8 GNSS chip, 40 Pin QFN
UBX-M8030-KA	u-blox M8 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.