

# UBX-M8030



## Versatile u-blox M8 GNSS chips

### Versatile GNSS chips in three product grades

- 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 °C to +105 °C for the automotive grade chip



2.99 × 3.21 × 0.36 mm



5.00 × 5.00 × 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 either 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, and MSAS.

UBX-M8030 chips are available in miniature WL-CSP and QFN packages. Featuring built-in LNA, LDOs and a DC/DC converter, and a small external BOM, the UBX-M8030 enables ultra-small solutions with a footprint of only 30 mm<sup>2</sup>. 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 temperature from -40 °C 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.

	UBX-M8030-CT	UBX-M8030-KT	UBX-M8030-KA*
<b>Grade</b>			
Automotive			•
Professional		•	
Standard	•		
<b>GNSS</b>			
GPS / QZSS	•	•	•
GLONASS	•	•	•
Galileo	•	•	•
BeiDou	•	•	•
Number of concurrent GNSS	3	3	3
<b>Interfaces</b>			
UART	1	1	1
USB	1	1	1
SPI	1	1	1
DDC (I <sup>2</sup> C compliant)	1	1	1
<b>Features</b>			
Programmable (Flash)	S	S	S
Data logging	S	S	S
RTC crystal	S	S	S
Oscillator	C/T	C/T	C/T
Antenna supply & supervisor	S	S	S
Timepulse	2	2	2

S = supported, may require ext. components C/T = Crystal and TCXO supported  
 \* = Operating temperature -40 °C to +105 °C



## 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 <sup>1</sup>		
Cold starts:	26 s	
Aided start:	2 s	
Hot start:	1 s	
Sensitivity <sup>1</sup>		
Tracking & Nav:	-167 dBm	
Reacquisition:	-160 dBm	
Cold start:	-148 dBm	
Hot start:	-157 dBm	
Nav. update rate <sup>2</sup>	Single GNSS	up to 18 Hz
	2 Concurrent GNSS	up to 10 Hz
Horizontal Pos. Accuracy <sup>1</sup>	2.0 m CEP	
Multi-GNSS Assistance	AssistNow GNSS Online AssistNow GNSS 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 <sup>3</sup>	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	21 mA @ 3.0 V (Continuous)	
(2 concurrent GNSS)	5.3 mA @ 3.0 V (PSM, 1 Hz)	
Backup Supply	1.4 V to 3.6 V	

## Further information

For contact information, see [www.u-blox.com/contact-us](http://www.u-blox.com/contact-us).

For more product details and ordering information, see the [product data sheet](#).

## Package

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.	-40°C to +85°C (UBX-M8030-CT, 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 full speed 12 Mbit/s 1 DDC (I <sup>2</sup> C compliant) 1 SPI
Digital I/O	2 configurable time pulse 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

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