Product Summary
MAX-M8 series

Small u-blox M8 GNSS modules

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Standard

Professional

Automotive

Small GNSS modules for easy manufacturing

- Concurrent reception of up to 3 GNSS (GPS, Galileo, GLONASS, BeiDou)
- Industry leading –167 dBm navigation sensitivity
- Product variants to meet performance and cost requirements
- Miniature LCC package
- Superior anti-spoofing and anti-jamming
- Pin-compatible with MAX-7 and MAX-6

9.7 × 10.1 × 2.5 mm

Product description

The MAX-M8 series of concurrent GNSS modules is built on the exceptional performance of the u-blox M8 engine in the industry proven MAX form factor.

The MAX-M8 modules utilize concurrent reception of up to three GNSS systems (GPS/Galileo together with either Bei-Dou or GLONASS) for more reliable positioning. The MAX-M8 series provides high sensitivity and minimal acquisition times while maintaining low system power. It also supports message integrity protection, geofencing, and spoofing detection.

The MAX-M8C is optimized for cost-sensitive applications and has the lowest power consumption, the MAX-M8Q provides best performance for passive and active antennas designs, while the MAX-M8W is optimized for active anten-nas with an integrated antenna supply and supervisor to detect an open or short circuit on the antenna line. The in-dustry-proven MAX form factor allows easy migration from previous MAX generations.

The MAX-M8 series combines a high level of integration capability with flexible connectivity options in a miniature package. This makes MAX-M8 perfectly suited for industrial applications with strict size and cost requirements. The MAX-M8Q is also halogen free (green) which makes it a perfect solution for consumer applications. The DDC (I²C compliant) interface provides connectivity and enables synergies with most u-blox cellular modules.

u-blox M8 modules use GNSS chips qualified according to AEC-Q100, are manufactured in ISO/TS 16949 certified sites, and fully tested on a system level. Qualification tests are performed as stipulated in the ISO16750 standard: "Road vehicles – Environmental conditions and testing for electrical and electronic equipment".

	MAX-M8C	MAX-M8Q	MAX-M8W
Grade			
Automotive			
Professional	•	•	•
Standard			
GNSS			
GPS / QZSS	•	•	•
GLONASS	•	•	•
Galileo	•	•	•
BeiDou	•	•	•
Number of concurrent GNSS	3	3	3
Interfaces			
UART	1	1	1
USB			
SPI			
DDC (I²C compliant)	1	1	1
Features			
Oscillator	C	T	T
RTC crystal	♦	•	•
Built-in antenna supply and supervisor			•
Timepulse	1	1	1
Power supply			
1.65 V – 3.6 V	•		
2.7 V – 3.6 V		•	•

♦ = Yes, but with higher backup current   C = Crystal / T = TCXO

u-blox

MAX-M8 series

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Features

Receiver type	72-channel u-blox M8 engine GPS/QZSS L1 C/A, GLONASS L10F BeiDou B1I, Galileo E1B/C SBAS L1 C/A: WAAS, EGNOS, MSAS, GAGAN
Nav. update rate	Single GNSS: up to 18 Hz 2 Concurrent GNSS: up to 10 Hz
Postition accuracy	Autonomous 2.5 m CEP

		MAX-M8Q/W	MAX-M8C
Acquisition[1]	Cold starts:	26 s	26 s
	Aided starts:	2 s	3 s
	Reacquisition:	1 s	1 s
Sensitivity[1]	Tracking:	−167 dBm	−164 dBm
	Cold starts:	−148 dBm	−148 dBm
	Hot starts:	−157 dBm	−157 dBm

Assistance GNSS	AssistNow Online AssistNow Offline (up to 35 days) AssistNow Autonomous (GPS only, up to 3 days) OMA SUPL & 3GPP compliant
Oscillator	TCXO (MAX-M8Q/M8W) Crystal (MAX-M8C)
RTC crystal	Built-in (MAX-M8Q/M8W) Cost efficient solution with higher backup current (MAX-M8C)
Anti jamming	Active CW detection and removal
Memory	Onboard ROM
Supported antennas	Active and passive
Raw Data	Code phase output
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

1 For default mode: GPS / SBAS / QZSS + GLONASS

Electrical data

Power supply	1.65 V to 3.6 V (MAX-M8C) 2.7 V to 3.6 V (MAX-M8Q/M8W)
Digital I/O voltage level	1.65 V to 3.6 V (MAX-M8C) 2.7 V to 3.6 V (MAX-M8Q / M8W)
Power Consumption[2]	23 mA @ 3 V (Continuous) 5.4 mA @ 3 V Power Save mode (1 Hz)
Backup Supply	1.4 V to 3.6 V

2 MAX-M8C, GPS / SBAS / QZSS + GLONASS (default mode)

Package

18 pin LCC (Leadless Chip Carrier): 9.7 x 10.1 x 2.5 mm, 0.6 g

Environmental data, quality & reliability

Operating temp.	−40 °C to +85 °C
Storage temp.	−40 °C to +85 °C (MAX-M8Q/M8W) −40 °C to +105 °C (MAX-M8C)

RoHS compliant (lead-free)

Green (halogen-free): MAX-M8Q

Qualification according to ISO 16750

Manufactured in ISO / TS 16949 certified production sites

Uses u-blox M8 chips qualified according to AEC-Q100

Interfaces

Serial interfaces	1 UART 1 DDC (I²C compliant)
Digital I/O	Configurable timepulse 1 EXTINT input for Wakeup
Timepulse	Configurable: 0.25 Hz to 10 MHz
Protocols	NMEA, UBX binary, RTCM

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, with TCXO, supports MAX-M8Q / M8W
EVK-M8C	u-blox M8 GNSS Evaluation Kit, with Crystal, supports MAX-M8C

Product variants

MAX-M8C	u-blox M8 GNSS LCC module, crystal, ROM
MAX-M8Q	u-blox M8 GNSS LCC module, TCXO, ROM
MAX-M8W	u-blox M8 concurrent GNSS LCC module, TCXO, active antenna supply, ROM

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.