Product summary

NEO-M8 series

Versatile u-blox M8 GNSS modules

Standard

Professional

Automotive

Versatile GNSS modules in different variants for easy manufacturing

- Concurrent reception of up to 3 GNSS (GPS, Galileo, GLONASS, BeiDou)
- Industry leading –167 dBm navigation sensitivity
- Security and integrity protection
- Supports all satellite augmentation systems
- Advanced jamming and spoofing detection
- Product variants to meet performance and cost requirements
- Backward compatible with NEO-7 and NEO-6 families

12.2 × 16.0 × 2.4 mm

Product description

The NEO-M8 series of concurrent GNSS modules is built on the high-performing u-blox M8 GNSS engine in the industry-proven NEO form factor.

The NEO-M8 modules utilize concurrent reception of up to three GNSS systems (GPS/Galileo together with BeiDou or GLONASS), recognize multiple constellations simultaneously and provide outstanding positioning accuracy in scenarios where urban canyon or weak signals are involved. For even better and faster positioning improvement, the NEO-M8 series supports augmentation of QZSS, GAGAN and IMES together with WAAS, EGNOS, and MSAS. The NEO-M8 series also supports message integrity protection, geofencing, and spoofing detection with configurable interface settings to easily fit to customer applications.

The NEO-M8M is optimized for cost-sensitive applications, while NEO-M8N and NEO-M8Q provide the best performance. The future-proof NEO-M8N and NEO-M8J include an internal flash that allows future firmware updates. This makes NEO-M8N and NEO-M8J perfectly suited to industrial and automotive applications.

The I2C-compliant DDC interface provides connectivity and enables synergies with most u-blox cellular modules. For RF optimization, NEO-M8J, NEO-M8N, and NEO-M8Q feature an additional front-end LNA for easier antenna integration and a front-end SAW filter for increased jamming immunity.

u-blox M8 modules use GNSS chips qualified according to AEC-Q100, are manufactured in ISO/TS 16949 certified sites, and are 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”.

	NEO-M8J	NEO-M8M	NEO-M8N	NEO-M8Q
Grade				
Automotive				
Professional	•	•	•	•
Standard				
GNSS				
GPS / QZSS	•	•	•	•
GLONASS	•	•	•	•
Galileo	•	•	•	•
BeiDou	•	•	•	•
Number of concurrent GNSS	3	3	3	3
Interfaces				
UART	1	1	1	1
USB	1	1	1	1
SPI	1	1	1	1
DDC (I2C compliant)	1	1	1	1
Features				
Programmable (Flash)	•		•	
Data logging	•		•	
Additional SAW	•		•	•
Additional LNA	•		•	•
RTC crystal	•	•	•	•
Oscillator	C	C	T	T
Timepulse	1	1	1	1
Power supply				
1.65 V – 3.6 V		•		
2.7 V – 3.6 V	•		•	•

C = Crystal T = TCXO

NEO-M8 series

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[1]	Single GNSS: 2 concurrent GNSS:	up to 18 Hz up to 10 Hz
Postition accuracy	2.5 m CEP	
Acquisition[2] Cold starts: Aided starts: Hot starts:	NEO-M8N/Q 26 s 2 s 1 s	NEO-M8M/J 26 s 3 s 1 s
Sensitivity[2] Tracking & Nav.: Cold starts: Hot starts:	 −167 dBm −148 dBm −157 dBm	 −164 dBm −148 dBm −157 dBm
Assistance GNSS	AssistNow Online AssistNow Offline (up to 35 days) AssistNow Autonomous (up to 6 days) OMA SUPL & 3GPP compliant	
Oscillator	TCXO (NEO-M8N/Q) Crystal (NEO-M8M/J)	
RTC crystal	Built-in	
Anti jamming	Active CW detection and removal. Extra onboard SAW band pass filter (NEO-M8N/Q/J)	
Memory	ROM (NEO-M8M/Q) or flash (NEO-M8N/J)	
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	
Data-logger[3]	For position, velocity, time, odometer data	

1 NEO-M8M/Q
2 For default mode: GPS/SBAS/QZSS+GLONASS
3 NEO-M8J and NEO-M8N

Electrical data

Power supply	1.65 V to 3.6 V (NEO-M8M) 2.7 V to 3.6 V (NEO-M8N/Q/J)
Power Consumption[4]	21 mA at 3.0 V (Continuous) 5.3 mA at 3.0 V Power Save mode (1 Hz)
Backup Supply	1.4 V to 3.6 V

4 NEO-M8M in default mode: GPS/SBAS/QZSS+GLONASS

Package

24 pin LCC (Leadless Chip Carrier): 12.2 x 16.0 x 2.4 mm, 1.6 g

Environmental data, quality & reliability

Operating temp.	−40 °C to +85 °C
Storage temp.	−40 °C to +85 °C (NEO-M8N/Q/J) −40 °C to +105 °C (NEO-M8M)

RoHS compliant (lead-free)

Qualification according to ISO 16750

Manufactured and fully tested in ISO/TS 16949 certified production sites

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

Interfaces

Serial interfaces	1 UART 1 USB V2.0 full speed 12 Mbit/s 1 SPI (optional) 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 NEO-M8N/Q
EVK-M8C	u-blox M8 GNSS Evaluation Kit, with crystal, supports NEO-M8M/J

Product variants

NEO-M8J	u-blox M8 concurrent GNSS LCC module, crystal, flash, SAW, LNA
NEO-M8M	u-blox M8 concurrent GNSS LCC module, crystal, ROM
NEO-M8N	u-blox M8 concurrent GNSS LCC module, TCXO, flash, SAW, LNA
NEO-M8Q	u-blox M8 concurrent GNSS LCC module, TCXO, ROM, SAW, LNA

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.