



## Hyperion NEO-M8N GPS



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### Product description

The NEO-M8 series of concurrent GNSS modules is built on the high performing 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, 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 best performance and easier RF integration. The NEO-M8N offers high performance also at low power consumption levels. The future-proof NEOM8N includes an internal Flash that allows future firmware updates. This makes NEO-M8N perfectly suited to industrial and automotive applications.

The DDC (I<sup>2</sup>C compliant) interface provides connectivity and enables synergies with most cellular modules. For RF optimization the NEO-M8N/Q features an additional front-end LNA for easier antenna integration and a front-end SAW filter for increased jamming immunity.

M810 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".

### Features

- Concurrent reception from 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

### Product selector

Model	Category	GNSS	Supply	Interfaces	Features	Grade
	Standard Precision GNSS High Precision GNSS Dead Reckoning Timing	GPS / QZSS GLONASS Galileo BeiDou	Number of Concurrent GNSS 1.65 V – 3.6 V 2.7 V – 3.6 V	UART USB SPI DDC (I <sup>2</sup> C compliant)	Programmable (Flash) Data logging Additional SAW Additional LNA RTC crystal Oscillator Built-in antenna Built-in antenna supply and supervisor Time pulse	Standard Professional Automotive
NEO-M8N	•	• • • •	3	• • • •	• • • • • T	1
NEO-M8Q	•	• • • •	3	• • • •	• • • • T	1
NEO-M8M	•	• • • •	3	• • • •	• C	1

## Specifications:

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<sup>1</sup> : Single GNSS: up to 18 Hz  
2 Concurrent GNSS: up to 10 Hz

Position accuracy: 2.0 m CEP

		NEO-M8N/Q	NEO-M8M
Acquisition <sup>2</sup> :	Cold starts:	26 s	26 s
	Aided starts:	2 s	3 s
	Reacquisition:	1 s	1 s
Sensitivity <sup>2</sup> :	Tracking & Nav:	-167 dBm	-164 dBm
	Cold starts:	-148 dBm	-148 dBm
	Hot starts:	-157 dBm	-157 dBm

Assistance : AssistNow GNSS Online  
AssistNow GNSS Offline (up to 35 days)  
AssistNow Autonomous (up to 6 days)  
OMA SUPL & 3GPP compliant

Oscillator : TCXO (NEO-M8N/Q)  
crystal (NEO-M8M)

RTC crystal : Built-In

Anti-jamming: Active CW detection and removal. Extra onboard SAW band pass filter (NEO-M8N/Q)

Memory : ROM (NEO-M8M/Q) or Flash (NEO-M8N)

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<sup>3</sup> : For position, velocity, time, and odometer data

<sup>1</sup> NEO-M8M/Q

<sup>2</sup> For default mode: GPS/SBAS/QZSS+GLONASS

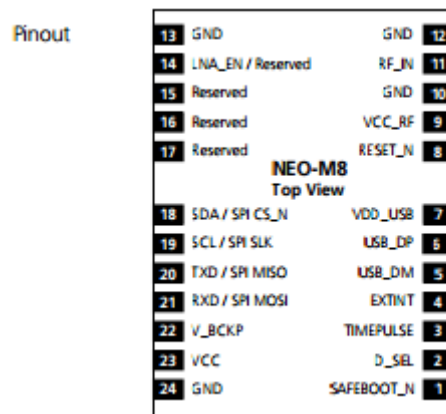
<sup>3</sup> NEO-M8N

## Interfaces

Serial interfaces:	1 UART 1 USB V2.0 full speed 12 Mbit/s 1 SPI (optional) 1 DDC (I <sup>2</sup> C compliant)
Digital I/O :	Configurable timepulse 1 EXTINT input for Wakeup
Timepulse :	Configurable 0.25 Hz to 10 MHz
Protocols :	NMEA, UBX binary, RTCM

## Pinout Diagram

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) -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

## Electrical data

Supply voltage	1.65 V to 3.6 V (NEO-M8M) 2.7 V to 3.6 V (NEO-M8N/Q)
Power consumption <sup>4</sup>	21 mA @ 3.0 V (Continuous) 5.3 mA @ 3.0 V (PSM, 1 Hz)
Backup Supply	1.4 to 3.6V

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

## Support products

M8 Evaluation Kits:

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

EVK-M8N                      M8 GNSS Evaluation Kit,  
with TCXO, supports NEO-M8N/Q

EVK-M8C:                      M8 GNSS Evaluation Kit,  
with crystal, supports NEO-M8M

## Product variants

NEO-M8N                      M8 concurrent GNSS LCC module,  
TCXO, Flash, SAW, LNA

NEO-M8Q                      M8 concurrent GNSS LCC module,  
TCXO, ROM, SAW, LNA

NEO-M8M                      M8 concurrent GNSS LCC module,  
crystal, ROM