

NEO-M8Q-01A module



Automotive grade u-blox M8 GNSS module



Automotive grade GNSS module with operational range -40 °C to +105 °C

- Highest accuracy thanks to concurrent reception of 3 GNSS
- Superior security and integrity protection
- Industry leading -167 dBm navigation sensitivity
- Zero PPM program



12.2 × 16.0 × 2.4 mm

Product description

The NEO-M8Q-01A is a ROM-based Automotive Grade concurrent GNSS module, targeted for use in hazardous environments such as automotive applications.

The module is built on the exceptional performance of the u-blox M8 GNSS engine in the industry proven NEO form factor. It utilizes concurrent reception of up to three GNSS systems (GPS/Galileo together with either BeiDou or GLONASS) for more reliable positioning.

The NEO-M8Q-01A provides high sensitivity and minimal acquisition times while maintaining low system power. The automotive grade module is optimized for applications where an extended operational temperature range (-40 °C to +105 °C) is required. The sophisticated RF architecture and interference suppression ensure maximum performance even in GNSS-hostile environments.

The NEO-M8Q-01A combines a high level of robustness and

integration capability along with flexible connectivity options via USB, I²C, UART and SPI. The DDC (I²C compliant) interface provides connectivity and enables synergies with most u-blox cellular modules.

With sophisticated message signature capabilities and spoofing detection, the NEO-M8Q-01A automotive grade module offers high protection against malicious positioning interference. The NEO-M8Q-01A uses GNSS chips qualified according to AEC-Q100. The modules 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".

The NEO-M8Q-01A automotive grade module adheres to automotive industry standard quality specifications and production flow.

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	2.7 V – 3.6 V	UART USB SPI DDC (I ² C compliant)	Programmable (flash) Data logging Additional SAW Additional LNA RTC crystal Oscillator Built-in antenna Built-in antenna supply and supervisor Timepulse	Standard Professional Automotive
NEO-M8Q-01A	•	• • • •	3	•	• T	1	•

T = TCXO

NEO-M8Q-01A module



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 Concurrent GNSS: up to 10 Hz
Position accuracy	2.0 m CEP
Acquisition ¹	
Cold starts:	26 s
Aided starts:	2 s
Reacquisition:	1 s
Sensitivity ¹	
Tracking & Nav.:	-167 dBm
Cold starts:	-148 dBm
Hot starts:	-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
RTC crystal	Built-in
Noise figure	On-chip LNA
Anti jamming	Active CW detection and removal
Memory	ROM
Supported antennas	Active and passive ²
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

2 External LNA and SAW is recommended for passive antenna applications

Electrical data

Supply voltage	2.7 V to 3.6 V
Power	22 mA @ 3.0 V (continuous, concurrent)
Consumption ¹	6.3 mA @ 3.0 V Power Save mode (1 Hz)
Backup Supply	1.4 V to 3.6 V

Further information

For contact information, see www.u-blox.com/contact-us.

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

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 +105 °C

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-M8N³ u-blox M8 GNSS Evaluation Kit,
supports NEO-M8Q-01A

3 The EVK supports a temperature range of -40 °C to +65 °C

Product variants

NEO-M8Q-01A u-blox M8 concurrent GNSS LCC module,
TCXO, ROM, Automotive Grade

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