

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.

NEO-M8Q-01A

Grade	
Automotive	•
Professional	
Standard	
GNSS	
GPS / QZSS	•
GLONASS	•
Galileo	•
BeiDou	•
Number of concurrent GNSS	3
Interfaces	
UART	1
USB	1
SPI	1
DDC (I ² C compliant)	1
Features	
RTC crystal	•
Oscillator	T
Timepulse	1
Power supply	
2.7 V – 3.6 V	•

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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