

NEO-8Q module



u-blox 8 GPS module



Robust GPS module for easy manufacturing

- High sensitivity of -166 dBm for single GNSS reception
- Cost-efficient system
- TCXO-based product enables fastest time-to-first-fix
- Low power consumption
- Superior anti-spoofing and anti-jamming



12.2 × 16.0 × 2.4 mm

Product description

The NEO-8Q standard precision GNSS module is built on the reliable performance of the u-blox 8 GNSS engine, which receives GPS, GLONASS, QZSS and SBAS signals. The NEO-8Q delivers high sensitivity and minimal acquisition times in the industry proven NEO form factor.

The NEO-8Q features low power consumption and supports advanced Power Save Modes. It also provides message integrity protection, geofencing, spoofing detection, and odometer functionalities.

NEO-8Q is an economical choice for best performance and easier RF integration. For RF optimization the NEO-8Q features an additional front-end LNA for easier antenna integration and a front-end SAW filter for increased jamming

immunity. The industry proven NEO form factor allows easy migration from previous NEO generations. Sophisticated RF architecture and interference suppression ensure maximum performance even in GNSS-hostile environments.

The NEO-8Q combines a high level of robustness and integration capability with flexible connectivity options. The DDC (I²C compliant) interface provides connectivity and enables synergies with most u-blox cellular modules.

u-blox 8 modules use GNSS chips qualified according to AEC-Q100 and are manufactured in ISO/TS 16949 certified sites. Qualification tests are performed as stipulated in the ISO16750 standard: “Road vehicles – Environmental conditions and testing for electrical and electronic equipment”.

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-8Q	•	• •	•	• • • •	• • • • T	•

T = TCXO

NEO-8Q module



Features

Receiver type	72-channel u-blox 8 engine GPS L1 C/A, GLONASS L1 FDMA, QZSS L1 C/A SBAS: WAAS, EGNOS, MSAS	
Nav. update rate	up to 18 Hz	
Position accuracy	GPS	GLONASS
Autonomous:	2.5 m CEP	4.0 m CEP
Acquisition		
Cold starts:	29 s	30 s
Aided starts:	2 s	2 s
Reacquisition:	1 s	1 s
Sensitivity		
Tracking & Nav.:	-166 dBm	-166 dBm
Cold starts:	-148 dBm	-145 dBm
Hot starts:	-157 dBm	-156 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	
Anti jamming	Active CW detection and removal; extra onboard SAW band pass filter	
Memory	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	

Electrical data

Supply voltage	2.7 V to 3.6 V
Power	22 mA @ 3.0 V (Continuous)
Consumption ¹	10 mA @ 3.0 V Power Save mode (1 Hz)
Backup Supply	1.4 V to 3.6 V

¹ For default mode: GPS incl. QZSS, SBAS

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

RoHS compliant (lead-free)

Qualification according to ISO 16750

Manufactured in ISO/TS 16949 certified production sites

Uses u-blox 8 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 8 Evaluation Kits:

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

EVK-8N u-blox 8 GNSS Evaluation Kit,
supports TCXO, supports NEO-8Q

Product variants

NEO-8Q u-blox 8 GNSS LCC module,
TCXO, ROM, SAW, LNA

Further information

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

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

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