Product Summary

NEO-8Q module

u-blox 8 GPS module

Standard

Professional

Automotive

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 (I^2C 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”.

	NEO-8Q
Grade	
Automotive	
Professional	•
Standard	
GNSS	
GPS / QZSS	•
GLONASS	•
Galileo	
BeiDou	
Number of concurrent GNSS	1
Interfaces	
UART	1
USB	1
SPI	1
DDC (I^2C compliant)	1
Features	
Additional SAW	•
Additional LNA	•
RTC crystal	•
Oscillator	T
Timepulse	1
Power supply	
2.7 V – 3.6 V	•

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	
Postition accuracy Autonomous:	GPS 2.5 m CEP	GLONASS 4.0 m CEP
Acquisition Cold starts: Aided starts: Reacquisition:	 29 s 2 s 1 s	 30 s 2 s 1 s
Sensitivity Tracking & Nav.: Cold starts: Hot starts:	 –166 dBm –148 dBm –157 dBm	 –166 dBm –145 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 Consumption[1]	22 mA @ 3.0 V (Continuous) 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 (I^2C 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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