

NEO-M8 series

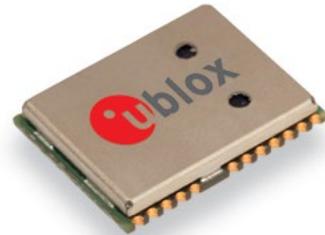
Standard Professional Automotive

POSITIONING

u-blox M8 concurrent GNSS modules

Highlights

- Concurrent reception of GPS/QZSS, GLONASS, BeiDou
- Industry leading -167 dBm navigation sensitivity
- Product variants to meet performance and cost requirements
- Combines low power consumption and high sensitivity
- Backward compatible with NEO-7, NEO-6 and NEO-5 families



NEO-M8 series:
12.2 x 16.0 x 2.4 mm

Product description

The NEO-M8 series of standalone concurrent GNSS modules is built on the exceptional performance of the u-blox M8 GNSS (GPS, GLONASS, Galileo, BeiDou, QZSS and SBAS) engine in the industry proven NEO form factor.

The NEO-M8 series provides high sensitivity and minimal acquisition times while maintaining low system power. The NEO-M8M is optimized for cost sensitive applications, while NEO-M8N and NEO-M8Q provide best performance and easier RF integration. The 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-M8 combines a high level of robustness and integration capability with flexible connectivity options. The future-proof NEO-M8N includes an internal Flash that allows

simple firmware upgrades for supporting additional GNSS systems. This makes NEO-M8 perfectly suited to industrial and automotive applications.

The DDC (I²C compliant) interface provides connectivity and enables synergies with most u-blox 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.

u-blox M8 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".

Product selector

| Model | Type | Supply | Interfaces | Features | Grade |
|---------|---|---|--|---|--|
| | GPS / QZSS GLONASS Galileo BeiDou Timing Dead Reckoning Precise Point Positioning Raw Data | 1.65 V – 3.6 V 2.7 V – 3.6 V Lowest power (DC/DC) | UART USB SPI DDC (I ² C compliant) | Programmable (Flash) Data logging Additional SAW Additional LNA RTC crystal Internal oscillator Active antenna / LNA supply Active antenna / LNA control Antenna short circuit detection / protection pin Antenna open circuit detection pin Frequency output | Standard Professional Automotive |
| NEO-M8N | • • R • | • • | • • • • | • • • • • T ○ • | |
| NEO-M8Q | • • • | • • | • • • • | • • • T ○ • | |
| NEO-M8M | • • • | • • | • • • • | • C ○ | |

○ = Optional, not activated per default or requires external components
C = Crystal / T = TCXO

R = Galileo ready

Features

| | | |
|-------------------------------|--|-------------|
| Receiver type | 72-channel u-blox M8 engine GPS/QZSS L1 C/A, GLONASS L10F, BeiDou B1 SBAS L1 C/A: WAAS, EGNOS, MSAS Galileo-ready E1B/C (NEO-M8N) | |
| Nav. update rate ¹ | Single GNSS: | up to 18 Hz |
| | Concurrent GNSS: | up to 10 Hz |
| Position accuracy | 2.0 m CEP | |
| Acquisition | | NEO-M8N/Q |
| | Cold starts: | 26 s |
| | Aided starts: | 2 s |
| | Reacquisition: | 1 s |
| Sensitivity | Tracking & Nav: | -167 dBm |
| | Cold starts: | -148 dBm |
| | Hot starts: | -156 dBm |
| | | -164 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 | |
| Noise figure | On-chip LNA (NEO-M8M). Extra LNA for lowest noise figure (NEO-M8N/Q) | |
| 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 | |
| Odometer | Travelled distance | |
| Data-logger | For position, velocity, and time (NEO-M8N) | |

¹ For NEO-M8M/Q

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 ² | 23 mA @ 3.0 V (continuous) 5 mA @ 3.0 V Power Save Mode (1 Hz, GPS only) |
| Backup Supply | 1.4 to 3.6V |

² NEO-M8M

Interfaces

| | |
|-------------------|---|
| Serial interfaces | 1 UART |
| | 1 USB V2.0 full speed 12 Mbit/s |
| | 1 SPI (optional) |
| | 1 DDC (I ² 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 |

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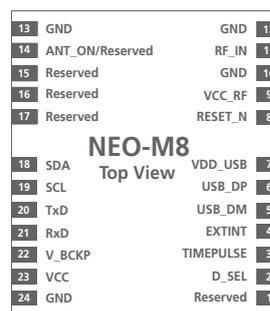
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Package

24 pin LCC (Leadless Chip Carrier): 12.2 x 16.0 x 2.4 mm, 1.6 g

Pinout



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

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-M8N: u-blox M8 GNSS Evaluation Kit,
with TCXO, supports NEO-M8N/Q

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

Product variants

| | |
|---------|--|
| NEO-M8N | u-blox M8 concurrent GNSS LCC module, TCXO, flash, SAW, LNA |
| NEO-M8Q | u-blox M8 concurrent GNSS LCC module, TCXO, ROM, SAW, LNA |
| NEO-M8M | u-blox M8 concurrent GNSS LCC module, crystal, ROM |

Further information

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

For more product details and ordering information, see the product data sheet.