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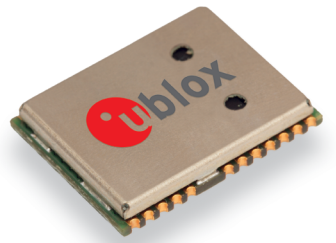
# NEO-7 series

## u-blox 7 GNSS modules

### Highlights

- GNSS engine for GPS/QZSS, GLONASS
- Product variants to meet performance and cost requirements
- Combines low power consumption and high sensitivity
- Backward compatible with NEO-6 and NEO-5 families



NEO-7 series:
12.2 x 16.0 x 2.4 mm

### Product description

The NEO-7 series of standalone GNSS modules is built on the exceptional performance of the u-blox 7 GNSS (GPS, GLONASS, QZSS and SBAS) engine. The NEO-7 series delivers high sensitivity and minimal acquisition times in the industry proven NEO form factor.

The NEO-7 series provides maximum sensitivity while maintaining low system power. The NEO-7M is optimized for cost sensitive applications, while NEO-7N provides best performance and easier RF integration. The industry proven NEO form factor allows easy migration from previous NEO generations. Sophisticated RF-architecture and interference suppression ensure maximum performance even in GPS-hostile environments.

The NEO-7 combines a high level of robustness and integration capability with flexible connectivity options. Future-proof the NEO-7N's internal Flash allows simple firmware upgrades for supporting additional GNSS systems. This makes NEO-7 perfectly suited to industrial and automotive applications. The DDC ($I^2C$ compliant) interface provides connectivity and enables synergies with u-blox cellular modules. For RF optimization the NEO-7N features an additional front-end LNA for easier antenna integration and a front-end SAW filter for increased jamming immunity.

u-blox 7 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 | 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 ($I^2C$ 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-7N** | • | • | | | | | | | | • | • | • | • | • | • | • | • | • | • | • | T | o | • | | | | | ■ | |
| **NEO-7M** | • | • | | | | | | | • | | • | • | • | • | • | | | | | • | C | o | | | | | | ■ | |

o = Optional, not activated per default or requires external components

C = Crystal / T = TCXO

## Features

| | | | |
|---|---|---|---|
| Receiver type | 56-channel u-blox 7 engine<br>GPS L1 C/A, GLONASS L1 FDMA,<br>QZSS L1 C/A<br>SBAS: WAAS, EGNOS, MSAS | | |
| Navigation update rate | up to 10 Hz | | |
| | | GPS | GLONASS |
| Accuracy | Position<br>SBAS | 2.5 m CEP<br>2.0 m CEP | 4 m<br>n.a. |
| Acquisition | Cold starts:<br>Aided starts:<br>Reacquisition: | 29 s<br>5 s<br>1 s | 30 s<br>n.a.<br>3 s |
| Sensitivity | Tracking & Nav:<br>Cold starts:<br>Warm starts: | –162 dBm<br>–148 dBm<br>–148 dBm | –158 dBm<br>–139 dBm<br>–145 dBm |
| Assistance GPS | AssistNow Online<br>AssistNow Offline<br>AssistNow Autonomous<br>OMA SUPL & 3GPP compliant | | |
| Oscillator | TCXO (NEO-7N), crystal (NEO-7M) | | |
| RTC crystal | Built-In | | |
| Noise figure | On-chip LNA (NEO-7M); Extra LNA for lowest noise figure (NEO-7N) | | |
| Anti jamming | Active CW detection and removal; Extra onboard SAW band pass filter (NEO-7N) | | |
| Memory | ROM (NEO-7M) or Flash (NEO-7N) | | |
| Supported antennas | Active and passive | | |

## Electrical data

| | |
|---|---|
| Supply voltage | 1.65 V to 3.6 V (NEO-7M)<br>2.7 V to 3.6 V (NEO-7N) |
| Power Consumption | 17 mA @ 3 V (Continuous)[1]<br>5 mA @ 3 V Power Save mode (1Hz)[1] |
| Backup Supply | 1.4 V to 3.6 V |

[1] NEO-7M.

## Interfaces

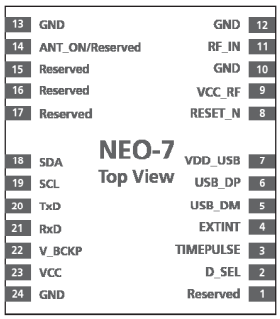
| | |
|---|---|
| Serial interfaces | 1 UART<br>1 USB V2.0 full speed 12 Mbit/s<br>1 SPI (optional)<br>1 DDC (I²C compliant) |
| Digital I/O | Configurable timepulse<br>1 EXTINT input for Wakeup |
| Timepulse | Configurable 0.25 Hz to 10 MHz |
| Protocols | NMEA, UBX binary, RTCM |



## 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 |

RoHS compliant (lead-free)

Qualification according to ISO 16750

Manufactured in ISO/TS 16949 certified production sites

Uses u-blox 7 chips qualified according to AEC-Q100

## Support products

u-blox 7 Evaluation Kits:

Easy-to-use kits to get familiar with u-blox 7 positioning technology, evaluate functionality, and visualize GNSS performance.

| | |
|---|---|
| EVK-7N: | u-blox 7 GNSS Evaluation Kit,<br>with TCXO, supports NEO-7N |
| EVK-7C: | u-blox 7 GNSS Evaluation Kit,<br>with Crystal, supports NEO-7M |

## Product variants

| | |
|---|---|
| NEO-7N | u-blox 7 GNSS LCC Module, TCXO, Flash, SAW, LNA |
| NEO-7M | u-blox 7 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.