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

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 (I2C 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

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= Optional, not activated per default or requires external components

C = Crystal / O = TCXO

Production Information
**Features**

**Receiver type** 56-channel u-blox 7 engine
- GPS L1 C/A, GLONASS L1 FDDMA,
- QZSS L1 C/A
- SBAS: WAAS, EGNOS, MSAS

**Navigation update rate** up to 10 Hz

**Accuracy**
- Position 2.5 m CEP
- SBAS 2.0 m CEP

**Acquisition**
- Cold starts: 29 s
- Aided starts: 5 s
- Reacquisition: 1 s

**Sensitivity**
- Tracking & Nav: –162 dBm
- Warm starts: –148 dBm

**Assistance GPS**
- AssistNow Online
- AssistNow Offline
- AssistNow Autonomous
- 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)
- 2.7 V to 3.6 V (NEO-7N)

**Power Consumption**
- 17 mA @ 3 V (Continuous)
- 5 mA @ 3 V Power Save mode (1Hz)

**Backup Supply**
- 1.4 V to 3.6V

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**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 EXTI 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, with TCXO, supports NEO-7N
- **EVK-7C**: u-blox 7 GNSS Evaluation Kit, 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.