NEO-6 series
Versatile u-blox 6 GPS modules

Highlights
- UART, USB, DDC (I2C compliant) and SPI interfaces
- Available in Crystal and TCXO versions
- Onboard RTC crystal for faster warm and hot starts
- 1.8 V and 3.0 V variants

Features
- u-blox 6 position engine:
  - Navigate down to –162 dBm and –148 dBm coldstart
  - Faster acquisition with AssistNow Autonomous
  - Configurable power management
  - Hybrid GPS/SBAS engine (WAAS, EGNOS, MSAS)
  - Anti-jamming technology
- Simple integration with u-blox wireless modules
- A-GPS: AssistNow Online and AssistNow Offline services, OMA SUPL compliant
- Backward compatible (hardware and firmware); easy migration from NEO-5 family or NEO-4S
- LCC package for reliable and cost effective manufacturing
- Compatible with u-blox GPS Solution for Android
- Based on GPS chips qualified according to AEC-Q100
- Manufactured in ISO/TS 16949 certified production sites
- Qualified according to ISO 16750

Product description
The NEO-6 module series brings the high performance of the u-blox 6 position engine to the miniature NEO form factor. u-blox 6 has been designed with low power consumption and low costs in mind. Intelligent power management is a breakthrough for low-power applications. These receivers combine a high level of integration capability with flexible connectivity options in a small package. This makes them perfectly suited for mass-market end products with strict size and cost requirements. The DDC interface provides connectivity and enables synergies with u-blox LEON and LISA wireless modules.

All NEO-6 modules are manufactured in ISO/TS 16949 certified sites. Each module is tested and inspected during production. The modules are qualified according to ISO 16750 - Environmental conditions and electrical testing for electrical and electronic equipment for road vehicles.

Product selector

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<td>NEO-6G</td>
<td>Standalone GLONASS Standalone GLO/BD</td>
<td>1.75 V – 2.0 V</td>
<td>UART, USB, SPI, DDC (I2C compliant)</td>
<td>Programmable Flash FW update, Oscillator, RTC, Antenna supply and supervisor, Configuration pins, Timepulse, External interrupt / Wakeup</td>
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o = requires external components and integration on application processor
C = Crystal / T = TCXO
## Receiver performance data

**Receiver type**
- 50-channel u-blox 6 engine
- GPS L1 C/A code
- SBAS: WAAS, EGNOS, MSAS

**Navigation update rate**
- up to 5 Hz

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

**Acquisition**
- NEO-6G/Q
- NEO-6M

- Cold starts: 26 s
- Aided starts: 1 s
- Hot starts: 1 s

**Sensitivity**
- NEO-6G/Q
- NEO-6M

- Tracking: –162 dBm
- Cold starts: –148 dBm
- Hot starts: –157 dBm

1. All SV @ –130 dBm
2. Dependent on aiding data connection speed and latency
3. Demonstrated with a good active antenna

## Electrical data

**Power supply**
- 2.7 V – 3.6 V (NEO-6Q/6M)
- 1.75 V – 2.0 V (NEO-6G)

**Power consumption**
- 111 mW @ 3.0 V (continuous)
- 33 mW @ 3.0 V Power Save Mode (1 Hz)
- 68 mW @ 1.8 V (continuous)
- 22 mW @ 1.8 V Power Save Mode (1 Hz)

**Backup power**
- 1.4 V – 3.6 V, 22 µA

**Supported antennas**
- Active and passive

## Interfaces

**Serial interfaces**
- 1 UART
- 1 USB V2.0 full speed 12 Mbit/s
- 1 DDC (I²C compliant)
- 1 SPI

**Digital I/O**
- Configurable timepulse
- 1 EXTINT input for Wakeup

**Serial and I/O**
- Voltages 2.7 – 3.6 V (NEO-6Q/6M)
- 1.75 – 2.0 V (NEO-6G)

**Timepulse**
- Configurable 0.25 Hz to 1 kHz

**Protocols**
- NMEA, UBX binary, RTCM

## 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

## Support products

- u-blox 6 Evaluation Kits:
  - u-blox 6 Evaluation Kit with TCXO, suitable for NEO-6G, NEO-6Q
  - u-blox 6 Evaluation Kit with crystal, suitable for NEO-6M

## Ordering information

- NEO-6G-0: u-blox 6 GPS Module, 1.8V, TCXO, 12x16mm, 250 pcs/reel
- NEO-6M-0: u-blox 6 GPS Module, 12x16mm, 250 pcs/reel
- NEO-6Q-0: u-blox 6 GPS Module, TCXO, 12x16mm, 250 pcs/reel

Available as samples and tape on reel (250 pieces)

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