NEO-7P
u-blox 7 precise point positioning GNSS module

Highlights
- High precision GNSS < 1 m
- DGPS by SBAS or RTCM
- Combines low power consumption and high sensitivity
- Simple integration with u-blox cellular modules
- Backward compatible with NEO-6 and NEO-5 families
- Raw measurement data (GPS)

Product description
The NEO-7P module combines the high performance of the u-blox 7 GNSS engine with precise point positioning (PPP) technology for GPS. u-blox’ industry-proven PPP algorithm, in combination with SBAS, provides exceptional precision in clear-sky applications without the need for a reference station. This makes NEO-7P the ideal solution for many applications in surveying, marine navigation, agriculture, sports and leisure.

For world-wide application, the NEO-7P supports Differential GPS (DGPS) operation as an alternative to SBAS and PPP, using RTCM correction messages from a local reference station or aiding network. Ionoospheric corrections received from regional SBAS satellites (WAAS, EGNOS, MSAS) enable the highest stand-alone positioning accuracy from the PPP algorithm. u-blox’ PPP also provides useful improvements in stand-alone precision even without SBAS. PPP delivers its full benefits after the first few minutes of operation with an unobstructed sky view.

The entire NEO-7 series combines excellent sensitivity with low power and includes variants optimised for cost and performance. The industry-proven NEO form factor allows easy migration from previous NEO generations. The NEO-7P features a front-end SAW RF filter for increased jamming immunity. This is reinforced by sophisticated RF-architecture and interference suppression, ensuring maximum performance even in hostile signal environments. UART, USB and DDC (I2C compliant) interfaces provide flexible connectivity and synergies with u-blox SARA, LEON and LISA cellular modules. The NEO-7Ps internal Flash allows simple firmware upgrades.

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 / T = TCXO
**Features**

- **Receiver type**: 56-channel u-blox 7 engine
  - GPS L1 C/A, GLONASS L1 FDM, QZSS L1 C/A
  - SBAS: WAAS, EGNOS, MSAS
- **Navigation update rate**: Up to 10 Hz
- **Accuracy**
  - Position: 2.5 m CEP
  - SBAS: 4 m
  - SBAS + PPP: < 1 m CEP
- **Acquisition**
  - Cold starts: 30 s
  - Aided starts: 5 s
  - Reacquisition: 1 s
- **Sensitivity**
  - Tracking: –161 dBm
  - Cold starts: –147 dBm
  - Warm starts: –148 dBm
- **Assistance GPS**
  - AssistNow Online
  - AssistNow Offline
  - AssistNow Autonomous
- **Oscillator**: Crystal
- **RTC crystal**: Built-In
- **Anti jamming**: Active CW detection and removal
- **Memory**: Flash
- **Supported antennas**: Active

**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 EXTINT input for Wakeup
- **Timepulse**: Configurable 0.25 Hz to 10 MHz
- **Protocols**: NMEA, UBX binary, RTCM

**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**

**Electrical data**

- **Supply Voltage**: 2.7 V to 3.6 V
- **Power Consumption**
  - 22 mA @ 3 V (Continuous)
  - 9 mA @ 3 V Power Save mode (1 Hz)
- **Backup Supply**: 1.4 to 3.6 V

**Product variants**

- **NEO-7P**: u-blox 7 LCC Module, GNSS Precise Point Positioning, Raw Data

**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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