NEO-6T / LEA-6T
t-u-blox 6 timing GPS modules

Highlights
- Precision Timing:
  - 1 or 2 timepulse outputs (up to 10 MHz)
  - Single-satellite operation
  - Stationary (survey-in) mode for enhanced timing accuracy
  - Time mark of external event inputs
- Raw pseudo-range data output
- UART, USB and DDC (I2C compliant) interfaces
- Onboard RTC Crystal for faster warm and hot starts

Features
- u-blox 6 position engine:
  - Navigate down to –162 dBm and –148 dBm coldstart
  - Faster acquisition with AssistNow Autonomous
  - 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 LEA-5T or LEA-4T (LEA-6T)
- LCC package for reliable and cost effective manufacturing
- Optional upgradeable Firmware support
- 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-6T/LEA-6T modules provide precision GPS timing for demanding synchronization applications such as basestations. This module features user configurable frequency and timepulse outputs. An accuracy of up to 15 ns is achievable by using the quantization error information to compensate the granularity of the time pulse. NEO-6T/LEA-6T feature a time mode function whereby the GPS receiver assumes a stationary 3D position, whether programmed manually or determined by an initial self-survey.

During stationary operation GPS timing is possible with only one visible satellite. This means that time can be maintained even under adverse signal conditions or in environments with poor sky visibility. A built-in time mark and counter unit provide precise time measurement of external event inputs. T-RAIM (Timing Receiver Autonomous Integrity Monitoring) is available to detect faulty GPS measurements. NEO-6T/LEA-6T deliver raw pseudo-range data for survey and specialist applications.

NEO-6T/LEA-6T modules are manufactured in ISO/TS 16949 certified sites. Each module is tested and inspected during production. 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
T = TCXO
Interfaces

Serial interfaces
- 1 UART
- 1 USB V2.0 full speed 12 Mbit/s
- 1 DDC (I2C compliant)
- 1 SPI (NEO-6T only)

Digital I/O
- 2 configurable timepulse (1 for NEO-6T)
- 1 EXTINT input for Timemark
- 1 reset (LEA-6T only)

Serial and I/O voltages
- 2.7 V – 3.6 V

Timepulse
- Configurable, 0.25 Hz to 10 MHz

Protocols
- NMEA, UBX binary, RTCM

Timing performance data

Timing accuracy
- RMS 30 ns
- 99% < 60 ns

Granularity
- 21 ns

Compensated
- 15 ns

1 Quantization error information can be used to compensate the granularity related error of the timepulse signal

Electrical data

Power supply
- 2.7-3.6V

Power consumption
- 123 mW @ 3.0 V (LEA-6T)
- 120 mW @ 3.0 V (NEO-6T)

Backup power
- 1.4 V – 3.6 V, 22 µA

Supported Antennas
- Active and passive

Antenna power
- External or internal VCC_RF (LEA-6T)

Antenna supervision
- Integrated short-circuit detection and antenna shutdown, open circuit detection with minimal external circuitry (LEA-6T)

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:
- Easy-to-use kits to get familiar with u-blox 6 positioning technology, evaluate functionality, and visualize GPS performance.

EVK-6T u-blox 6 Evaluation Kit with Precision Timing

Product variants

NEO-6T
- u-blox 6 GPS module, Precision Timing, TCXO

LEA-6T
- u-blox 6 GPS Module, Precision Timing, TCXO

Further information

For contact information, see www.u-blox.com/contact-us.
For more product details and ordering information, see the product data sheet.