

# NEO-6 series

## Versatile u-blox 6 GPS modules

### Highlights

- UART, USB, DDC (I<sup>2</sup>C 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



NEO-6:  
12.2 x 16.0 x 2.4 mm

### Product description

The NEO-6 module series brings the high performance of the u-blox6 position engine to the miniature NEO form factor. u-blox6 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

Model	Type	Supply	Interfaces	Features
	Standalone GPS Standalone GLONASS Timing & Raw Data Dead Reckoning	1.75 V – 2.0 V 2.7 V – 3.6 V	UART USB SPI DDC (I <sup>2</sup> C compliant)	Programmable (Flash) FW update Oscillator RTC crystal Antenna supply and supervisor Configuration pins Timepulse External interrupt / Wakeup
NEO-6G	•	•	• • • •	T • ○ 3 1 •
NEO-6Q	•	•	• • • •	T • ○ 3 1 •
NEO-6M	•	•	• • • •	C • ○ 3 1 •

○ = 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 <sup>1</sup>	Position	2.5 m CEP
	SBAS	2.0 m CEP
Acquisition <sup>1</sup>	NEO-6G/Q	NEO-6M
	Cold starts:	26 s    27 s
	Aided starts <sup>2</sup> :	1 s    < 3 s
	Hot starts:	1 s    1 s
Sensitivity <sup>3</sup>	NEO-6G/Q	NEO-6M
	Tracking:	-162 dBm    -161 dBm
	Cold starts:	-148 dBm    -147 dBm
	Hot starts:	-157 dBm    -156 dBm

<sup>1</sup> All SV @ -130 dBm

<sup>2</sup> Dependent on aiding data connection speed and latency

<sup>3</sup> 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 @ 3.0V (continuous) 33 mW @ 3.0V Power Save Mode (1 Hz) 68 mW @ 1.8V (continuous) 22 mW @ 1.8V Power Save Mode (1 Hz)	
Backup power	1.4 V – 3.6V, 22 µA	
Supported antennas	Active and passive	

## Interfaces

Serial interfaces	1 UART 1 USB V2.0 full speed 12 Mbit/s 1 DDC (I <sup>2</sup> C 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	

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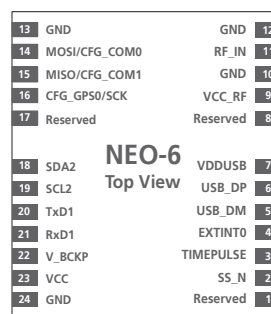
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Specification applies to FW 7

## 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

## 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-6H:                    u-blox 6 Evaluation Kit with TCXO, suitable for NEO-6G, NEO-6Q

EVK-6P:                    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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