

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



NEO-6:
12.2 x 16.0 x 2.4 mm

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-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 ² 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 ¹	Position	2.5 m CEP	
	SBAS	2.0 m CEP	
Acquisition ¹		NEO-6G/Q	NEO-6M
	Cold starts:	26 s	27 s
	Aided starts ² :	1 s	< 3 s
	Hot starts:	1 s	1 s
Sensitivity ³		NEO-6G/Q	NEO-6M
	Tracking:	−162 dBm	−161 dBm
	Cold starts:	−148 dBm	−147 dBm
	Hot starts:	−157 dBm	−156 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 (I ² 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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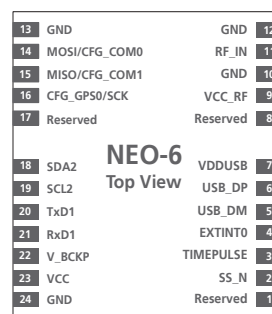
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Specification applies to FW 7

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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