

NEO-6P

u-blox 6 Precise Point Positioning GPS module

Highlights

- High precision of < 1 m
- Allows ultra small GPS designs
- High accuracy positioning at a fraction of the cost of other high precision solutions
- Raw data



NEO-6P:
12.2 x 16.0 x 2.4 mm

Features

- u-blox 6 position engine:
 - Navigate down to -160 dBm and -146 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
- 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-6P module combines the high performance of the u-blox 6 position engine with Precise Point Positioning (PPP) technology. u-blox' industry proven PPP algorithm provides extremely high levels of position accuracy in static and slow moving applications, and makes the NEO-6P an ideal solution for a variety of high precision applications such as surveying, mapping, marine, or agriculture.

Ionospheric corrections such as those received from local SBAS geostationary satellites (WAAS, EGNOS, MSAS) or from GPS enable the highest positioning accuracy with the PPP algorithm. The maximum improvement of positioning accuracy is reached with PPP+SBAS and can only be expected in an environment with unobstructed sky view during a period in the order of minutes.

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 Precise Positioning 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-6P	• • • • •	•	• • • •	C • ○ 3 1 •

○ = requires external components and integration on application processor

C = Crystal

Receiver performance data

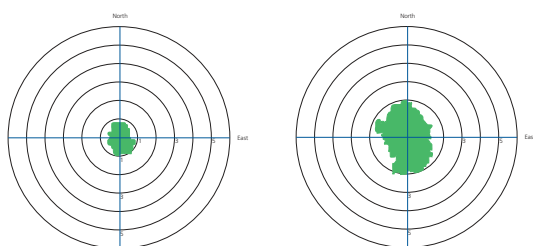
Receiver type	50-channel u-blox 6 engine GPS L1 C/A code SBAS: WAAS, EGNOS, MSAS	
Navigation update rate	up to 5 Hz	
Accuracy ¹	Autonomous	2.5 m CEP
	SBAS	2.0 m CEP
	SBAS + PPP ²	< 1 m (2D, R50) < 2 m (3D, R50)
Acquisition ¹	Cold starts:	32 s
	Aided starts ³ :	< 3 s
	Hot starts:	1 s
Sensitivity ⁴	Tracking:	-160 dBm
	Cold starts:	-146 dBm
	Hot starts:	-155 dBm

¹ All SV @ -130 dBm

² For required conditions see Data Sheet.

³ Dependent on aiding data connection speed and latency

⁴ Demonstrated with a good active antenna



Accuracy with PPP+SBAS
(units in m)

Accuracy with GPS and SBAS
(units in m)

Electrical data

Power supply	2.7 V – 3.6 V
Power consumption	117 mW @ 3.0V
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 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
Timepulse	Configurable	0.25 Hz to 1 kHz
Protocols	NMEA, UBX binary	

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Specification applies to FW 6.02

Package

24 pin LCC (Leadless Chip Carrier): 12.2 x 16.0 x 2.4 mm, 1.6 g

Pinout

13	GND	GND	12
14	MOSI/CFG_COM0	RF_IN	11
15	MISO/CFG_COM1	GND	10
16	CFG_GPS0/SCK	VCC_RF	9
17	Reserved	Reserved	8
NEO-6P Top View			
18	SDA2	VDDUSB	7
19	SCL2	USB_DP	6
20	TxD1	USB_DM	5
21	RxD1	EXTINT0	4
22	V_BCKP	TIMEPULSE	3
23	VCC	SS_N	2
24	GND	Reserved	1

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

Contact the u-blox sales team nearest you.

Ordering information

NEO-6P-0 u-blox 6 GPS Module, PPP, 12x16mm, 250 pcs/reel

Available as samples and tape on reel

Contact us

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