NEO-7 series

Versatile u-blox 7 GPS/GNSS modules

Highlights

- Multi-GNSS engine for GPS, GLONASS, Galileo and QZSS
- Product variants to meet performance and cost requirements
- Combines low power consumption and high sensitivity
- Simple integration with u-blox wireless modules
- Backward compatible with NEO-6 and NEO-5 families

NEO-7 series:
12.2 x 16.0 x 2.4 mm

Product description

The NEO-7 series of standalone GPS/GNSS modules is built on the exceptional performance of the u-blox 7 multi-GNSS (GPS, GLONASS, Galileo, QZSS and SBAS) engine. The NEO-7 series delivers high sensitivity and minimal acquisition times in the industry proven NEO form factor.

The NEO-7 series provides maximum sensitivity while maintaining low system power. The NEO-7M is optimized for cost sensitive applications, while NEO-7N provides best performance and easier RF integration. The industry proven NEO form factor allows easy migration from previous NEO generations. Sophisticated RF-architecture and interference suppression ensure maximum performance even in GPS-hostile environments.

The NEO-7 combines a high level of robustness and integration capability with flexible connectivity options. Future-proof the NEO-7N's internal Flash allows simple firmware upgrades for supporting additional GNSS systems. This makes NEO-7 perfectly suited to industrial and automotive applications. The DDC (I²C compliant) interface provides connectivity and enables synergies with u-blox SARA, LEON and LISA wireless modules. For RF optimization the NEO-7N features an additional front-end LNA for easier antenna integration and a front-end SAW filter for increased jamming immunity.

u-blox 7 modules use GPS/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

Model	Type						Supply			Interfaces				Features										
	GPS	QZSS	GLONASS	Timing	Dead Reckoning	Precise Point Positioning	2.7 V – 3.6 V	1.65 V – 3.6 V	Lowest power (DC/DC)	UART	USB	SPI	DDC (I²C compliant)	Programmable (Flash)	Data logger	Extra front-end LNA	Front-end SAW filter	Oscillator	RTC crystal	Antenna supply	Antenna short circuit detection / protection	Antenna open circuit detection pin	Timepulse	External interrupt / Wakeup
NEO-7N	•	•	•				•		•	•	•	Sel	•	•	•	•	•	T	•	o	o	o	•	•
NEO-7M	•	•	•					•	•	•	•	Sel	•					C	•	o	o	o	•	•

Sel = Select for either SPI or UART/DDC by HW configuration pin (D_SEL)
o = 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 FDMA, QZSS L1 C/A, Galileo E1B/C, Compass ready SBAS: WAAS, EGNOS, MSAS		
Navigation update rate	up to 10 Hz		
		GPS	GLONASS
Accuracy	Position	2.5 m CEP	4 m
	SBAS	2.0 m CEP	n.a.
Acquisition	Cold starts:	29 s	30 s
	Aided starts:	5 s	n.a.
	Reaquisition:	1 s	3 s
Sensitivity	Tracking:	–162 dBm	–158 dBm
	Cold starts:	–148 dBm	–140 dBm
	Warm starts:	–148 dBm	–145 dBm
Assistance	AssistNow Online AssistNow Offline AssistNow Autonomous OMA SUPL & 3GPP compliant		
Oscillator	TCXO (NEO-7N), crystal (NEO-7M)		
RTC crystal	Built-In		
Anti jamming	Active CW detection and removal		
Memory	ROM (NEO-7M) or Flash (NEO-7N)		
Supported antennas	Active and passive		

Electrical data

Supply voltage	1.65 V to 3.6 V (NEO-7M) 2.7 V to 3.6 V (NEO-7N)
Power Consumption	47 mW @ 1.8 V (Continuous)[1] 51 mW @ 3 V (Continuous)[1] 14 mW @ 1.8 V Power Save mode (1 Hz)[1]
Backup Supply	1.4 to 3.6 V

[1] NEO-7M.

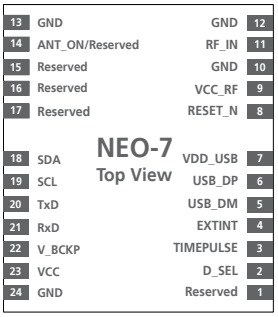
Interfaces

Serial interfaces	1 UART 1 USB V2.0 full speed 12 Mbit/s 1 SPI (optional) 1 DDC (I^2C compliant)
Digital I/O	Configurable timepulse 1 EXTINT input for Wakeup
Timepulse	Configurable 0.25 Hz to 1 kHz
Protocols	NMEA, UBX binary, RTCM

Package

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

Uses u-blox 7 chips qualified according to AEC-Q100

Ordering information

NEO-7M-0	u-blox 7 GPS/GNSS Module, 1.65–3.6V, 12x16mm, 250 pcs/reel
NEO-7N-0	u-blox 7 GPS/GNSS Module, Flash, TCXO, SAW, LNA, 12x16mm, 250 pcs/reel

Available as samples and tape on reel

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