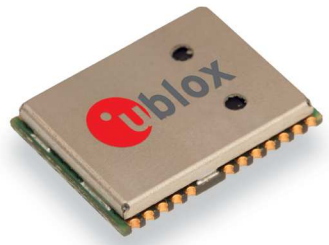
NEO-7 series

u-blox 7 GNSS modules

Highlights

- GNSS engine for GPS/QZSS, GLONASS
- Product variants to meet performance and cost requirements
- Combines low power consumption and high sensitivity
- 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 GNSS modules is built on the exceptional performance of the u-blox 7 GNSS (GPS, GLONASS, 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 (I^2C compliant) interface provides connectivity and enables synergies with u-blox cellular 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 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												Grade		
	GPS / QZSS	GLONASS	Galileo	BeiDou	Timing	Dead Reckoning	Precise Point Positioning	Raw Data	1.65 V – 3.6 V	2.7 V – 3.6 V	Lowest power (DC/DC)	UART	USB	SPI	DDC (I^2C compliant)	Programmable (Flash)	Data logging	Additional SAW	Additional LNA	RTC crystal	Internal oscillator	Active antenna / LNA supply	Active antenna / LNA control	Antenna short circuit detection / protection pin	Antenna open circuit detection pin	Frequency output	Standard	Professional	Automotive
NEO-7N	•	•								•	•	•	•	•	•	•	•	•	•	•	T	o	•						
NEO-7M	•	•							•		•	•	•	•	•					•	C	o							

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 SBAS: WAAS, EGNOS, MSAS		
Navigation update rate	up to 10 Hz		
		GPS	GLONASS
Accuracy	Position SBAS	2.5 m CEP 2.0 m CEP	4 m n.a.
Acquisition	Cold starts: Aided starts: Reacquisition:	29 s 5 s 1 s	30 s n.a. 3 s
Sensitivity	Tracking & Nav: Cold starts: Warm starts:	–162 dBm –148 dBm –148 dBm	–158 dBm –139 dBm –145 dBm
Assistance GPS	AssistNow Online AssistNow Offline AssistNow Autonomous OMA SUPL & 3GPP compliant		
Oscillator	TCXO (NEO-7N), crystal (NEO-7M)		
RTC crystal	Built-In		
Noise figure	On-chip LNA (NEO-7M); Extra LNA for lowest noise figure (NEO-7N)		
Anti jamming	Active CW detection and removal; Extra onboard SAW band pass filter (NEO-7N)		
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	17 mA @ 3 V (Continuous)[1] 5 mA @ 3 V Power Save mode (1Hz)[1]	
Backup Supply	1.4 V to 3.6 V	

[1] NEO-7M.

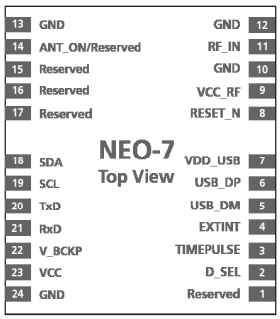
Interfaces

Serial interfaces	1 UART 1 USB V2.0 full speed 12 Mbit/s 1 SPI (optional) 1 DDC (I²C compliant)	
Digital I/O	Configurable timepulse 1 EXTINT input for Wakeup	
Timepulse	Configurable	0.25 Hz to 10 MHz
Protocols	NMEA, UBX binary, RTCM	

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

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

Support products

u-blox 7 Evaluation Kits:

Easy-to-use kits to get familiar with u-blox 7 positioning technology, evaluate functionality, and visualize GNSS performance.

EVK-7N:	u-blox 7 GNSS Evaluation Kit, with TCXO, supports NEO-7N
EVK-7C:	u-blox 7 GNSS Evaluation Kit, with Crystal, supports NEO-7M

Product variants

NEO-7N	u-blox 7 GNSS LCC Module, TCXO, Flash, SAW, LNA
NEO-7M	u-blox 7 GNSS LCC Module, Crystal, ROM

Further information

For contact information, see www.u-blox.com/contact-us.

For more product details and ordering information, see the product data sheet.