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. Futureproof 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 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				Ту	pe				S	upp	ly	lı	nter	face	S						Feat	ture	s			(Grad	е
	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 (I²C 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	Standard	Professional	Automotive
NEO-7N	•	•								•	•	•	•	•	•	•	•	•	•	•	Т	0	•					
NEO-7M	•	•							•		•	•	•	•	•					•	C	0						

• 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
 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. Reacquisition: 1 s 3 s

Sensitivity Tracking & Nav: -162 dBm -158 dBm Cold starts: -148 dBm -139 dBm

Warm starts: -148 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)

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	ANT_ON/	Reserved	RF_IN	1
15	Reserved		GND	1
16	Reserved		VCC_RF	9
17	Reserved		RESET_N	8
18	SDA	NEO-7	VDD_USB	7
19	SCL	Top View	USB_DP	6
20	TxD		USB_DM	5
21	RxD		EXTINT	4
22	V_BCKP		TIMEPULSE	3
23	VCC		D_SEL	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 Uses u-blox 7 chips qualified according to AEC-Q100

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

1.4 V to 3.6 V

5 mA @ 3 V Power Save mode (1Hz)¹

Backup Supply

¹ NEO-7M.

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

Interfaces

Serial interfaces 1 UART

1 USBV2.0 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

Product variants

NEO-7N u-blox 7 GNSS LCC Module, TCXO, Flash,

SAW, LNA

NEO-7M u-blox 7 GNSS LCC Module, Crystal, ROM

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