

# NEO-7P

Standard Professional Automotive

## u-blox 7 precise point positioning GNSS module

### Highlights

- High precision GNSS < 1 m
- DGPS by SBAS or RTCM
- Combines low power consumption and high sensitivity
- Simple integration with u-blox cellular modules
- Backward compatible with NEO-6 and NEO-5 families
- Raw measurement data (GPS)



NEO-7P:  
12.2 x 16.0 x 2.4 mm

### Product description

The NEO-7P module combines the high performance of the u-blox 7 GNSS engine with precise point positioning (PPP) technology for GPS. u-blox' industry-proven PPP algorithm, in combination with SBAS, provides exceptional precision in clear-sky applications without the need for a reference station. This makes NEO-7P the ideal solution for many applications in surveying, marine navigation, agriculture, sports and leisure.

For world-wide application, the NEO-7P supports Differential GPS (DGPS) operation as an alternative to SBAS and PPP, using RTCM correction messages from a local reference station or aiding network. Ionospheric corrections received from regional SBAS satellites (WAAS, EGNOS, MSAS) enable the highest stand-alone positioning accuracy from the PPP algorithm. u-blox' PPP also provides useful improvements in stand-alone precision even without SBAS. PPP delivers its full benefits after the first few minutes of operation with an unobstructed sky view.

The entire NEO-7 series combines excellent sensitivity with low power and includes variants optimised for cost and performance. The industry-proven NEO form factor allows easy migration from previous NEO generations. The NEO-7P features a front-end SAW RF filter for increased jamming immunity. This is reinforced by sophisticated RF-architecture and interference suppression, ensuring maximum performance even in hostile signal environments. UART, USB and DDC (I2C compliant) interfaces provide flexible connectivity and synergies with u-blox SARA, LEON and LISA cellular modules. The NEO-7P's internal Flash allows simple firmware upgrades.

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

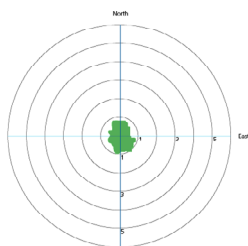
Model	Type	Supply	Interfaces	Features	Grade
NEO-7P	<ul style="list-style-type: none"> <li>• GPS / QZSS</li> <li>• GLONASS</li> <li>• Galileo</li> <li>• BeiDou</li> <li>• Timing</li> <li>• Dead Reckoning</li> <li>• Precise Point Positioning</li> <li>• Raw Data</li> </ul>	<ul style="list-style-type: none"> <li>• 1.65 V – 3.6 V</li> <li>• 2.7 V – 3.6 V</li> <li>• Lowest power (DC/DC)</li> </ul>	<ul style="list-style-type: none"> <li>• UART</li> <li>• USB</li> <li>• SPI</li> <li>• DDC (I<sup>2</sup>C compliant)</li> </ul>	<ul style="list-style-type: none"> <li>• Programmable (Flash)</li> <li>• Data logger</li> <li>• Additional SAW</li> <li>• Additional LNA</li> <li>• RTC crystal</li> <li>• Internal oscillator</li> <li>• Active antenna / LNA supply</li> <li>• Active antenna / LNA control</li> <li>• Antenna short circuit detection / protection pin</li> <li>• Antenna open circuit detection pin</li> <li>• Frequency output</li> </ul>	<ul style="list-style-type: none"> <li>• Standard</li> <li>• Professional</li> <li>• Automotive</li> </ul>

○ = Optional, not activated per default or requires external components

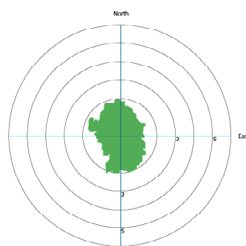
C = Crystal / T = TCXO

## 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		
Accuracy	GPS	GLONASS	
	Position:	2.5 m CEP	4 m
	SBAS:	2.0 m CEP	n.a.
	SBAS + PPP:	< 1 m CEP	n.a.
Acquisition	Cold starts:	30 s	32 s
	Aided starts:	5 s	n.a.
	Reacquisition:	1 s	1 s
Sensitivity	Tracking:	-161 dBm	-158 dBm
	Cold starts:	-147 dBm	-139 dBm
	Warm starts:	-148 dBm	-145 dBm
Assistance GPS	AssistNow Online AssistNow Offline AssistNow Autonomous OMA SUPL & 3GPP compliant		
Oscillator	Crystal		
RTC crystal	Built-In		
Anti jamming	Active CW detection and removal		
Memory	Flash		
Supported antennas	Active		



Accuracy with PPP+SBAS  
(units in m)



Accuracy with GPS and SBAS  
(units in m)

## Interfaces

Serial interfaces	1 UART 1 USB V2.0 full speed 12 Mbit/s 1 SPI (optional) 1 DDC (I <sup>2</sup> C compliant)
Digital I/O	Configurable timepulse 1 EXTINT input for Wakeup
Timepulse	Configurable 0.25 Hz to 10 MHz
Protocols	NMEA, UBX binary, RTCM

### Legal Notice

u-blox reserves all rights to this document and the information contained herein. Products, names, logos and designs described herein may in whole or in part be subject to intellectual property rights. Reproduction, use, modification or disclosure to third parties of this document or any part thereof without the express permission of u-blox is strictly prohibited.

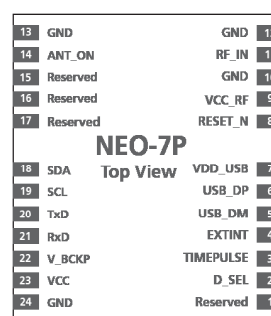
The information contained herein is provided "as is". No warranty of any kind, either express or implied, is made in relation to the accuracy, reliability, fitness for a particular purpose or content of this document. This document may be revised by u-blox at any time. For most recent documents, please visit [www.u-blox.com](http://www.u-blox.com).

Copyright © 2015, u-blox AG

## 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	

## Electrical data

Supply Voltage	2.7 V to 3.6 V
Power Consumption	22 mA @ 3 V (Continuous) 9 mA @ 3 V Power Save mode (1 Hz)
Backup Supply	1.4 to 3.6V

## Product variants

NEO-7P	u-blox 7 LCC Module, GNSS Precise Point Positioning, Raw Data
--------	---

## Further information

For contact information, see [www.u-blox.com/contact-us](http://www.u-blox.com/contact-us).

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