

# Product Summary

# NEO-M8P



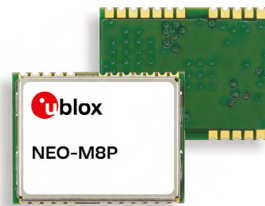
## u-blox M8 high precision GNSS modules

### Centimeter accuracy for mass market applications

- Integrated Real Time Kinematics (RTK) for fast time-to-market
- Small, light, and energy-efficient RTK module
- Complete and versatile solution due to base and rover variants
- World-leading GNSS positioning technology



12.2 × 16.0 × 2.4 mm



### Product description

The NEO-M8P module combines the high performance u-blox M8 positioning engine with u-blox's Real Time Kinematic (RTK) technology. The NEO-M8P provides cm-level GNSS performance designed to meet the needs of unmanned vehicles and other machine control applications requiring high precision guidance.

u-blox's RTK technology introduces the concept of a "rover" (NEO-M8P-0) and a "base" (NEO-M8P-2) on the M8 platform for stunning cm-level accuracy in clear sky environments. The base station module sends corrections via the RTCM protocol to the rover module via a communication link enabling the rover to output its position relative to the base station down to centimeter-level precision.

The NEO-M8P is ideal for applications that require vehicles to move faster and more accurately, operate more efficiently, and automatically return to base station platforms. Such applications include UAV, unmanned vehicles (e.g. robotic lawn mowers), and Precision Agriculture guidance.

The module enables system integrators to access u-blox's complete end-to-end RTK solution, including the stationary "survey-in" functionality that is designed to reduce the setup time and increase the flexibility of the application.

NEO-M8P includes moving base, allowing both base and rover to move while computing a centimeter-level accurate position between them. Moving base is ideal for UAV applications where the UAV is programmed to follow its owner or to land on a moving platform. It is also well suited to attitude sensing applications where both base and rover modules are mounted on the same moving platform and the relative position is used to derive attitude information for the vehicle or tool.

NEO-M8P modules are compatible with a wide range of communication technologies (Cellular, Wi-Fi, Bluetooth, UHF) enabling the user to select the communication link best suited to their application. With u-blox's RTK technology, integration and software development efforts can be reduced, ensuring a minimal cost of ownership.

u-blox M8 modules use GNSS chips qualified according to AEC-Q100, are manufactured in ISO/TS 16949 certified sites, and fully tested on a system level. Qualification tests are performed as stipulated in the ISO16750 standard: "Road vehicles – Environmental conditions and testing for electrical and electronic equipment".

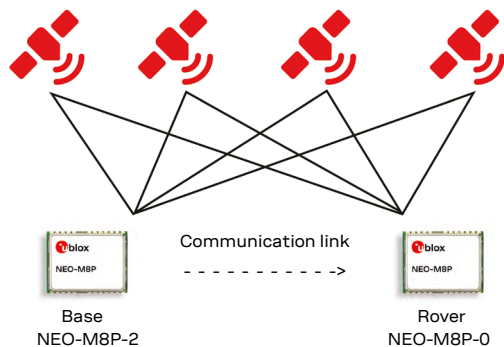
	NEO-M8P-0	NEO-M8P-2
<b>Grade</b>		
Automotive		
Professional	•	•
Standard		
<b>GNSS</b>		
GPS / QZSS	•	•
GLONASS	•	•
Galileo		
BeiDou	•	•
Number of concurrent GNSS	2	2
<b>Interfaces</b>		
UART	1	1
USB	1	1
SPI	1	1
DDC (I <sup>2</sup> C compliant)	1	1
<b>Features</b>		
Programmable (Flash)	•	•
Data logging	•	•
Carrier phase output	•	•
Additional SAW	•	•
Additional LNA	•	•
RTC crystal	•	•
Oscillator	T	T
RTK rover	•	•
RTK base station		•
Moving base	•	•
Survey-in and fixed mode		•
Timepulse	1	1
<b>Power supply</b>		
2.7 V – 3.6 V	•	•

T = TCXO

## Features

Receiver type	72-channel u-blox M8 engine GPS L1 C/A, GLONASS L1OF, BeiDou B1I	
Nav. update rate	RTK:	up to 8 Hz <sup>1</sup>
	Carrier phase data:	up to 10 Hz
Position accuracy <sup>2</sup>	Standalone	2.5 m CEP
	RTK	0.025 m + 1 ppm CEP <sup>3</sup>
Convergence time <sup>2</sup>	RTK	< 60 sec
Acquisition		
Cold starts:	26 s	
Aided starts:	2 s	
Reacquisition:	1 s	
Sensitivity		
Tracking & Nav.:	-160 dBm	
Cold starts:	-148 dBm	
Hot starts:	-156 dBm	
Reacquisition:	-158 dBm	
Assistance	AssistNow GNSS Online OMA SUPL & 3GPP compliant	
Oscillator	TCXO	
Noise figure	On-chip LNA with extra LNA for lowest noise figure	
Anti jamming	Active CW detection and removal; extra onboard SAW band pass filter.	
Memory	Flash	
Supported antennas	Active and passive	
Moving base	For moving base stations, attitude sensing and "follow-me" applications	
Survey-in base station	For generating sub-meter base station positions (for NEO-M8P-2)	

- Limited to 5 Hz for multi-GNSS RTK and to 4Hz in moving baseline configuration
- Depends on atmospheric conditions, baseline length, GNSS antenna, multipath conditions, satellite visibility, and geometry
- ppm limited to baselines up to 10 km



## 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](#).

## Package

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

## 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 and fully tested in ISO/TS 16949 certified production sites	
Uses u-blox M8 chips qualified according to AEC-Q100	

## 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 RTK Fix Status GEOFENCE Status
Timepulse	Configurable: 0.25 Hz to 10 MHz
Protocols	NMEA, UBX binary, RTCM version 3.x

## Electrical data

Supply voltage	2.7 V to 3.6 V
Power Consumption	25 mA @ 3.0 V (continuous, GPS only)
Backup Supply	1.4 V to 3.6 V

## Support products

Application board provides reference design, and allows efficient integration and evaluation of u-blox M8 high precision GNSS technology.

C94-M8P Two application boards, each with NEO-M8P-2 (rover and base station functionality), for evaluating RTK applications

## Product variants

NEO-M8P-0	u-blox M8 high precision module with rover functionality
NEO-M8P-2	u-blox M8 high precision module with rover and base station functionality

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