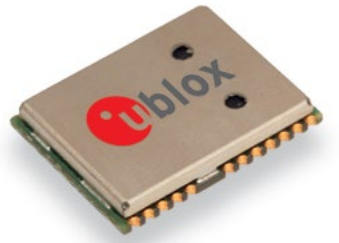
NEO-M8L

u-blox M8 ADR module including 3D sensors

Highlights

- 100% indoor/outdoor vehicle positioning
- 3D positioning
- Concurrent reception of GPS/QZSS, GLONASS, BeiDou, Galileo ready
- No additional eBOM cost
- Flexible orientation installation
- 3-axis accelerometer and gyroscope sensor included



NEO-M8L:
12.2 x 16.0 x 2.4 mm

Product description

The NEO-M8L standalone module combines the high performance u-blox M8 concurrent positioning engine with u-blox' 3D Automotive Dead Reckoning (ADR) technology, thus providing 100 % coverage and continuous 3D positioning for road vehicle applications.

The NEO-M8L module provides high sensitivity, fast GNSS signal acquisition and tracking with low system integration effort. The module's on-board 3D accelerometer, 3D gyroscope sensors, and speed-pulse input (hardware or message-bus) deliver a complete solution for road vehicle ADR applications.

u-blox' ADR and GNSS technologies deliver continuous, accurate positioning throughout the journey. Built-in dead reckoning sensors in conjunction with speed information from the vehicle provide navigation both before GNSS signals are acquired and during periods of signal loss. In difficult urban signal conditions u-blox' tightly-coupled navigation solution makes use of sensor data to deliver significant improvements in navigation accuracy during periods of unavailable or degraded GNSS signals.

With the introduction of 3D sensing and signal processing (for both acceleration and direction), the navigation range already improved by dead reckoning in tunnels and urban canyons extends to accurate navigation in multi-level highways and car-parks. 3D sensing also enables flexibility in orientation of the receiver with respect to the vehicle frame. In addition, native sensor data is made available to the application and can be reused for vehicle specific applications such as driving behaviour analysis or accident reconstruction. NEO-M8L is therefore the perfect after-market dead reckoning product.

The DDC (I^2C compliant) interface provides connectivity and enables synergies and simple integration with most u-blox cellular modules.

u-blox M8 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-M8L	•	•	R	•		D				•	•	•	•	•	•	•	•			•	C	•	•						

R = Galileo ready
C = Crystal / T = TCXO

D = Onboard 3D sensors

Features

Receiver type	72-channel u-blox M8 engine GPS/QZSS L1 C/A, GLONASS L10F, BeiDou B1 SBAS L1 C/A: WAAS, EGNOS, MSAS Galileo-ready E1B/C
Nav. update rate	Up to 20 Hz
Position accuracy	2.0 m CEP
ADR position error	(Estimated) 2 % of distance travelled without GNSS
Acquisition	Cold starts: 27 s Aided starts: 4 s Reacquisition: 1 s
Sensitivity	Tracking & Nav: –160 dBm[1] Cold starts: –147 dBm Hot starts: –156 dBm
Assistance	AssistNow GNSS Online AssistNow GNSS Offline (up to 35 days) AssistNow Autonomous (up to 6 days) OMA SUPL & 3GPP compliant
Oscillator	Crystal
RTC	Built-in
Sensor	Onboard 3D accelerometer and 3D gyroscope
Supported antennas	Active or passive antenna
Odometer	Travelled distance
Data-logger	For position, velocity, and time

[1] Limited by FW for best DR performance

Electrical data

Supply voltage	2.7 V to 3.6 V
Power consumption	31 mA @ 3.0 V (Continuous, default concurrent mode)
Backup Supply	1.4 to 3.6 V

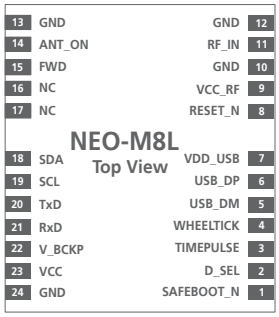
Interfaces

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
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

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 and fully tested in ISO/TS 16949 certified production sites

Uses u-blox M8 chips qualified according to AEC-Q100

Support products

u-blox M8 Evaluation Kits:

Easy-to-use kits to get familiar with u-blox M8 positioning technology, evaluate functionality, and visualize GNSS performance.

EVK-M8L:	u-blox M8 3D Dead Reckoning GNSS Evaluation Kit, supports NEO-M8L

Ordering information

See datasheet

Contact us

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