Product summary

NEO-M8L series

u-blox M8 ADR modules with 3D sensors

Standard

Professional

Automotive

Continuous accurate navigation under all signal conditions

- Integrated 3D sensors with speed information from the vehicle
- Continuous navigation during signal loss
- Automatic configuration of wheel-tick/speed input
- Real-time positioning up to 30 Hz rate
- GPS/QZSS, GLONASS, BeiDou, Galileo
- Zero PPM program for automotive grade module
- Supports ADR and UDR modes

12.2 × 16.0 × 2.4 mm



Product description

The NEO-M8L 3D Automotive Dead Reckoning (ADR) modules combine GNSS, inertial sensing, and speed information from the vehicle to provide continuous and accurate positioning for telematics, navigation and V2X applications. The position engine tolerates missing wheel sensor data and also supports UDR mode without any wheel sensor data.

Incorporating u-blox's latest advancements in multi-GNSS signal processing, the NEO-M8L delivers the ideal solution where navigation performance is the priority, regardless of GNSS signal quality or availability. In addition to the on-board sensors, NEO-M8L further eases installation with automatic configuration of speed or wheel-tick inputs, and compensation for in-vehicle antennas.

The intelligent combination of sensor measurements and GNSS enables accurate, real-time positioning, speed and heading information at rates up to 30 Hz, as essential for smooth and responsive interactive display. Access to native, high-rate sensor data enables host applications to make full use of the receiver's assets.

The NEO-M8L includes u-blox's latest generation GNSS technology with multi-constellation reception including Galileo, GPS, GLONASS, BeiDou and QZSS. The module provides high sensitivity and fast GNSS signal acquisition and tracking.

UART, USB, DDC (I2C compliant) and SPI interface options provide flexible connectivity and enable simple integration with most u-blox cellular modules.

NEO-M8L 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".

The NEO-M8L automotive grade module adheres to automotive industry standard quality specifications and production flow.

	NEO-M8L-xxA	NEO-M8L-xxB
Grade		
Automotive	•	
Professional		•
Standard		
GNSS		
GPS / QZSS	•	•
GLONASS	•	•
Galileo	•	•
BeiDou	•	•
Number of concurrent GNSS	3	3
Interfaces		
UART	1	1
USB	1	1
SPI	1	1
DDC (I²C compliant)	1	1
Features		
Programmable (Flash)	•	•
Data logging	•	•
RTC crystal	•	•
Oscillator	T	C
Built-in sensor	•	•
Timepulse	1	1
Power supply		
2.7 V – 3.6 V		•
3.0 V – 3.6 V	•	

T = TCXO C = Crystal

NEO-M8L series

Features

Receiver type	72-channel u-blox M8 engine GPS/QZSS L1 C/A, GLONASS L10F BeiDou B1I, Galileo E1B/C SBAS L1 C/A: WAAS, EGNOS, MSAS, GAGAN
Nav. update rate	up to 30 Hz
Postition accuracy	Autonomous 2.5 m CEP with SBAS 1.5 m CEP
ADR position error	2 % of distance travelled without GNSS
Acquisition Cold starts: Aided starts: Reacquisition:	 26 s 3 s 1 s
Sensitivity Tracking & Nav.: Cold starts: Hot starts:	 −160 dBm [1] −148 dBm −157 dBm
Assistance GNSS	AssistNow Online AssistNow Offline (up to 35 days) AssistNow Autonomous (up to 6 days) OMA SUPL & 3GPP compliant
Oscillator	TCXO (NEO-M8L-xxA) Crystal (NEO-M8L-xxB)
RTC	Built-in
Sensor	Onboard 3D accelerometer and 3D gyroscope
Supported antennas	Active or passive antenna
Raw data	Code phase output
Navigation outputs	Position, speed, acceleration, heading, heading rate, attitude, time
Data-logger	For position, velocity, time, and odometer data

1 = Limited by FW for best DR performance

Electrical data

Supply voltage	3.0 V to 3.6 V (NEO-M8L-xxA) 2.7 V to 3.6 V (NEO-M8L-xxB)
Power Consumption	29 mA @ 3.0 V (Continuous, default concurrent mode)
Backup Supply	1.4 V to 3.6 V

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 (I²C compliant)
Digital I/O	Configurable timepulse
Timepulse	Configurable: 0.25 Hz to 10 MHz
Protocols	NMEA, UBX binary, RTCM

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 modules

Product variants

NEO-M8L-xxA	u-blox M8 GNSS LCC module with 3D Dead Reckoning and onboard sensors, Automotive Grade
NEO-M8L-xxB	u-blox M8 GNSS LCC module with 3D Dead Reckoning and onboard sensors, Professional Grade

Further information

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

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

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