

LEA-M8S module



u-blox M8 GNSS module



Seamless upgrade of existing LEA-6 designs to multi-GNSS

- Concurrent reception of up to 3 GNSS (GPS, Galileo, GLONASS, BeiDou)
- Industry leading -167 dBm navigation sensitivity
- Combines low power consumption and high sensitivity
- Superior anti-spoofing and anti-jamming
- UART, USB and DDC (I²C compliant) interfaces
- Easy migration from LEA-6 modules



17.0 × 22.4 × 2.4 mm

Product description

The LEA-M8S module delivers concurrent GNSS location capability together with high-performance u-blox M8 positioning technology in the industry proven LEA form factor.

With its dual-frequency RF front-end, the LEA-M8S concurrent GNSS module is able to intelligently use the highest number of visible satellites from up to three GNSS systems (GPS/Galileo together with either BeiDou or GLONASS) for more reliable positioning. The LEA-M8S provides exceptional performance with low system power, and is optimized for cost sensitive applications. It also supports message integrity protection, geofencing, and spoofing detection.

The LEA-M8S has sophisticated RF-architecture and interference suppression ensuring maximum performance even in GNSS-hostile environments. It features very low power

GLONASS functionality. This 6th generation module in the LEA form factor allows simple migration from LEA-6x GPS and LEA-6N GPS /GLONASS modules.

The LEA-M8S combines a high level of robustness and integration capability with flexible connectivity options. The DDC (I²C compliant) interface provides connectivity and enables synergies with most u-blox cellular modules. For RF optimization, the LEA-M8S features a front-end SAW filter for increased jamming immunity.

LEA-M8S module uses u-blox GNSS chips qualified according to AEC-Q100 and is 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	Category	GNSS				Supply	Interfaces	Features	Grade
	Standard Precision GNSS High Precision GNSS Dead Reckoning Timing	GPS/QZSS GLONASS Galileo BeiDou		Number of concurrent GNSS	2.7 V – 3.6 V	UART USB SPI DDC (I ² C compliant)	Programmable (flash) Data logging Additional SAW Additional LNA RTC crystal Oscillator Built-in antenna Built-in antenna supply and supervisor Timepulse	Standard Professional Automotive	
LEA-M8S	•	• • • •		3	•	• • • •	• • • T •	•	

C = Crystal / T = TCXO



Features

Receiver type	72-channel u-blox concurrent 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	Single GNSS:	up to 18 Hz
	2 Concurrent GNSS:	up to 10 Hz
Accuracy	Position	2.5 m CEP
	SBAS	2.0 m CEP
Acquisition ¹		
Cold starts:	26 s	
Aided starts:	2 s	
Reacquisition:	1 s	
Sensitivity ¹		
Tracking & Nav.:	-167 dBm	
Cold starts:	-148 dBm	
Hot starts:	-157 dBm	
Assistance GNSS	AssistNow Online AssistNow Offline (up to 35 days) AssistNow Autonomous (GPS only, up to 3 days) OMA SUPL & 3GPP compliant	
Oscillator	TCXO	
RTC crystal	Built-in	
Anti jamming	Active CW detection and removal; extra onboard SAW band pass filter	
Memory	Onboard ROM	
Supported antennas	Active and passive	
Raw data	Code phase output	
Odometer	Integrated in navigation filter	
Geofencing	Up to 4 circular areas GPIO for waking up external CPU	
Spoofing detection	Built-in	
Signal integrity	Signature feature with SHA 256	

Electrical data

Supply voltage	2.7 V to 3.6 V
Power	22 mA @ 3.0 V (Continuous)
Consumption ¹	6.2 mA @ 3.0 V Power Save mode (1 Hz)
Backup supply	1.4 V to 3.6 V

¹ For default mode: GPS incl. QZSS, SBAS

Package

28 pin LCC (Leadless Chip Carrier): 17.0 x 22.4 x 2.4 mm, 2.1 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 DDC (I ² C compliant)
Digital I/O	Configurable timepulse 2 EXTINT input for Wakeup
Timepulse	Configurable: 0.25 Hz to 10 MHz
Protocols	NMEA, UBX binary, RTCM

Support products

u-blox 8 Evaluation Kits:

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

EVK-M8N	u-blox M8 GNSS Evaluation Kit, with TCXO, supports LEA-M8S
---------	---

Product variants

LEA-M8S	u-blox M8 concurrent GNSS Module, TCXO, ROM, SAW
---------	---

Further information

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

For more product details and ordering information, see the [product data sheet](#).

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.
Copyright © 2018, u-blox AG