LEA-M8S

u-blox M8 concurrent GNSS module

Highlights

- Concurrent reception of GPS/QZSS, GLONASS, BeiDou
- Combines low power consumption and high sensitivity
- Industry leading –167 dBm navigation sensitivity
- UART, USB and DDC (I²C compliant) interfaces
- Easy migration from LEA-5 and LEA-6 modules

LEA-M8S:
17.0 x 22.4 x 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 u-blox M8 concurrent GNSS engine is able to intelligently use the highest number of visible satellites from two of the GNSS systems (GPS, GLONASS and BeiDou) for more reliable positioning. The LEA-M8S provides exceptional performance with low system power, and is optimized for cost sensitive applications.

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-5 / LEA-6 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 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 (I2C 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
LEA-M8S	•	•		•						•	•	•	•		•			•		•	T	•		•	•				

C = Crystal / T = TCXO

u-blox

Features

Receiver type	72-channel u-blox concurrent M8 engine GPS/QZSS L1 C/A, GLONASS L10F, BeiDou B1, SBAS L1 C/A: WAAS, EGNOS, MSAS
Navigation update rate	Single GNSS: up to 18 Hz Concurrent GNSS: up to 10 Hz
Accuracy	Position 2.5 m CEP SBAS 2.0 m CEP
Acquisition	Cold starts: 26 s Aided starts: 2 s Reaquisition: 1 s
Sensitivity	Tracking & Nav.: −167 dBm Cold starts: −148 dBm Hot starts: −156 dBm
Assistance GNSS	AssistNow Online AssistNow Offline (up to 35 days) AssistNow Autonomous (up to 6 days) OMA SUPL & 3GPP compliant
Noise figure	On-chip LNA
Anti-jamming	Active CW detection and removal. Extra onboard SAW band pass filter
Oscillator	TCXO
RTC crystal	Built-In
Memory	Onboard ROM
Supported antennas	Active and passive
Odometer	Travelled distance

Electrical data

Supply voltage	2.7 V to 3.6 V
Power Consumption	26 mA @ 3 V (continuous) 6 mA @ 3 V Power Save mode (1 Hz, GPS only)
Backup Supply	1.4 V to 3.6 V

Interfaces

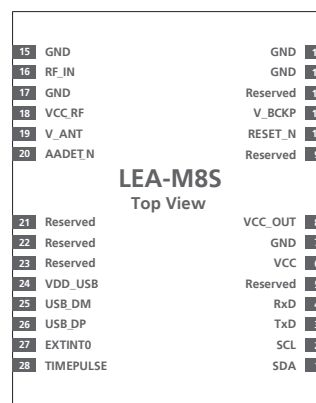|	
Serial interfaces	1 UART 1 USB V2.0 full speed 12 Mbit/s 1 DDC (I²C compliant)
Digital I/O	Configurable timepulse 1 EXTINT input for Wakeup
Timepulse	Configurable 0.25 Hz to 10 MHz
Protocols	NMEA, UBX binary, RTCM

Package

28 pin LCC (Leadless Chip Carrier): 17.0 x 22.4 x 2.4 mm, 2.1 g

Pinout

15 GND	GND 14
16 RF_IN	GND 13
17 GND	Reserved 12
18 VCC_RF	V_BCKP 11
19 V_ANT	RESET_N 10
20 AADET_N	Reserved 9

LEA-M8S
Top View

21 Reserved	VCC_OUT 8
22 Reserved	GND 7
23 Reserved	VCC 6
24 VDD_USB	Reserved 5
25 USB_DM	RxD 4
26 USB_DP	TxD 3
27 EXTINT0	SCL 2
28 TIMEPULSE	SDA 1

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-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.