

EVA-M8M series

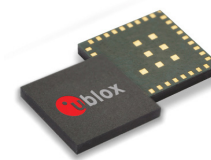
Standard Professional Automotive

POSITIONING

u-blox M8 concurrent GNSS modules

Highlights

- Industry's smallest GNSS module
- Concurrent reception of up to 3 GNSS (GPS, Galileo, GLONASS, BeiDou)
- Security and integrity protection
- Supports all satellite augmentation systems
- Advanced jamming and spoofing detection
- Backward compatible with EVA-7M



EVA-M8M
7.0 x 7.0 x 1.1 mm

Product description

The EVA-M8M GNSS modules feature the exceptional performance of the u-blox M8 concurrent positioning engine, supporting GPS, Galileo, GLONASS and BeiDou. The EVA-M8M modules deliver high sensitivity in the ultra compact EVA form factor.

The EVA-M8M series is an ideal solution for cost and space-sensitive applications. It is easy to design-in, only requiring an external GNSS antenna in most applications. The layout of the EVA-M8M is especially designed to ease the customer's design and limit near field interferences since RF and digital domains are kept separate.

The EVA-M8M modules use a crystal oscillator for lower system costs. Like other u-blox GNSS modules, the EVA-M8M modules use components selected for functioning reliably in the field over the full operating temperature range.

With dual-frequency RF front-end, the u-blox M8 concurrent GNSS engine is able to intelligently use the highest number of visible satellites from three GNSS (GPS/Galileo together with GLONASS or BeiDou) systems for reliable positioning.

In addition, the EVA-M8M modules provide an SPI interface for optional external FLASH, which can be used for future firmware upgrades and improved A-GNSS performance. EVA-M8M series supports message integrity protection, geofencing and spoofing detection.

The EVA-M8M can be easily integrated in manufacturing, thanks to the QFN-like package. The modules are available in 500 pcs/reel, ideal for small production batches. The EVA-M8M modules combine a high level of integration capability with flexible connectivity options in a miniature package. This makes the EVA-M8M modules perfectly suited for small size and cost-sensitive industrial and wearable devices. The DDC (I²C compliant) interface provides connectivity and enables synergies with most u-blox cellular modules.

The EVA-M8M modules are manufactured in ISO/TS 16949 certified sites and qualified as stipulated in the JESD47 standard.

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	1.65 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
EVA-M8M	•	•	•	•	•	3	•	•	•	•	E	E	•	C					1	•	

E = External Flash required
• = Optional, or requires external components

C = Crystal

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
Max 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: 3 s Reacquisition: 1 s
Sensitivity ¹	Tracking and Nav: -164 dBm Cold starts: -148 dBm Hot starts: -157 dBm
Assistance GNSS	AssistNow Online AssistNow Offline (up to 35 days) AssistNow Autonomous (up to 6 days) OMA SUPL & 3GPP compliant
Oscillator	Crystal
Real time clock (RTC)	Can be derived either from onboard GNSS crystal (for lowest system costs and smallest size) or from external RTC Clock (Default mode, for lower battery current)
Anti jamming	Active CW detection and removal
Memory	ROM
SQI Flash (optional) for	FW update AssistNow Offline AssistNow Autonomous Data logging
Supported antennas	Active and passive ²
Antenna supervision	Short and open circuit detection supported with external circuit
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
Data-logger ³	For position, velocity, time and odometer data

¹ EVA-M8M-0 default mode: GPS/SBAS/QZSS+GLONASS

² External LNA and SAW recommended for passive antenna applications

³ External Flash required

Electrical data

Supply voltage	1.65 V to 3.6 V
Digital I/O voltage level	1.65 V to 3.6 V
Power Consumption ¹	22 mA @ 3 V (Continuous) 5.3 mA @ 3V Power Save mode (1 Hz)
Backup Supply	1.4 to 3.6V

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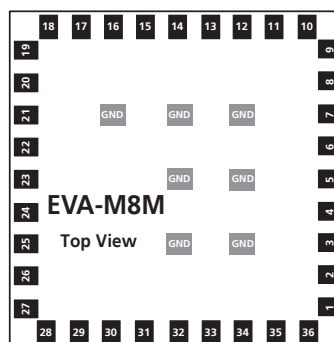
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Package

43 pin LGA (Land Grid Array): 7.0 x 7.0 x 1.1 mm, 0.13 g

Pinout



Environmental data, quality & reliability

Operating temp.	-40° C to 85° C
Storage temp.	-40° C to 105° C
RoHS compliant (lead-free) and green (no halogens)	
Qualification according to standard JESD47	
Manufactured in ISO/TS 16949 certified production sites	
Moisture sensitivity level 3	

Interfaces

Serial interfaces	1 UART 1 USB 1 SPI (Optional) 1 DDC (I ² C compliant) 1 SQI interface (For Flash update)
Digital I/O	Configurable timepulse 1 EXTINT input for Wakeup
Timepulse	Configurable: 0.25 Hz to 10 MHz
Protocols	NMEA, UBX binary, RTCM

Support products

Evaluation kit to get familiar with u-blox M8 positioning technology, evaluate functionality, and visualize GNSS performance.

EVK-M8MEVA	u-blox M8 GNSS Evaluation Kit for EVA-M8M (crystal)
C88-M8M	NEO adaptor board using EVA-M8M for easy evaluation of existing NEO-xM designs

Product variants

EVA-M8M-0	u-blox M8 concurrent GNSS LGA module, crystal, ROM (Default: GPS + GLONASS)
EVA-M8M-1	u-blox M8 concurrent GNSS LGA module, crystal, ROM (Default: GPS + BeiDou)

Further information

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

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