EVA-M8M series

u-blox M8 concurrent GNSS modules

Standard | **Professional** | Automotive

Highlights

- Industry's smallest standalone GPS/QZSS, GLONASS, BeiDou modules
- Minimal system cost
- Eases design and manufacturing
- No host integration or external components needed
- 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 positioning engine (GPS, GLONASS, BeiDou, QZSS and SBAS). The EVA-M8M series modules delivers high sensitivity and minimal acquisition times 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 separated.

The EVA-M8M series uses a crystal oscillator for lower system costs. Like other u-blox GNSS modules, the EVA-M8M series uses 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 amount of visible satellites from two GNSS (GPS, GLONASS and

BeiDou) systems for reliable positioning. The EVA-M8M series comes in two variants. The EVA-M8M-0 defaults to GPS/QZSS/GLONASS and fits global applications, whereas EVA-M8M-1 defaults to GPS/QZSS/BeiDou making it the ideal module for China. The right satellite constellations can be selected without touching software, and therefore reducing the design and testing effort.

The EVA-M8M series 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 size- and cost-sensitive industrial and wearable devices. The DDC (I²C compliant) interface provides connectivity and enables synergies with 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	Type								Supply		Interfaces				Features											Grade		
	GPS / QZSS	GLONASS	Galileo	BeiDou	Timing	Dead Reckoning	Precise Point Positioning	Raw Data	1.65 V – 3.6 V	Lowest power (DC/DC)	UART	USB	SPI	DDC (I²C compliant)	Programmable (Flash)	Data logger	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
EVA-M8M	•	•	R	•					•	•	•	•	•	•	O	O		O	C	O	O	O	O	O			■	

R = Galileo ready
O = Optional, or requires external components

C = Crystal

u-blox

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
Max nav. 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[1]	Cold starts: 27 s Aided starts: 4 s Reacquisition: 1 s
Sensitivity[1]	Tracking and Nav: −164 dBm Cold starts: −147 dBm Hot starts: −156 dBm
Assistance GNSS	AssistNow Online AssistNow Offline AssistNow Autonomous 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
SQI Flash (optional) for	FW update AssistNow Offline AssistNow Autonomous
Supported antennas	Active and passive[2]
Antenna supervision	Short and open circuit detection supported with external circuit

[1] EVA-M8M-0
[2] An external LNA is recommended

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	25 mA @ 3 V (Continuous) 5.5 mA @ 3 V Power Save mode (1 Hz)
Backup Supply	1.4 to 3.6 V

Interfaces

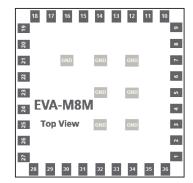|	
Serial interfaces	1 UART 1 USB 1 SPI (Optional) 1 DDC (I²C compliant) 1 SQI interface (For Flash update)
Digital I/O	Configurable timepulse 1 EXTINT input for Wakeup
Timepulse	Configurable 0.25 Hz to 10 MHz
Protocols	NMEA, UBX binary, RTCM

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

Support products

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

EVK-M8EVA:	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.