Product Summary

EVA-M8 series

Cost-efficient u-blox M8 GNSS SiP modules

Standard

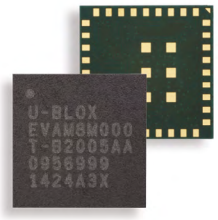
Professional

Automotive

Cost-efficient GNSS solution

- GNSS solution in 7x7 mm package
- Cost-efficient SiPs for different performance needs
- Highest accuracy thanks to 3 concurrent GNSS
- Highly integrated SiPs allow faster time-to-market
- Versatile products fit into wide range of applications

7.0 × 7.0 × 1.1 mm



Product description

The EVA-M8M and EVA-M8Q GNSS SiPs feature the superior performance of the u-blox M8 concurrent positioning engine, supporting GPS, Galileo, GLONASS and BeiDou. The EVA-M8 series delivers high sensitivity in the ultra compact EVA form factor of 7.0 x 7.0 x 1.1 mm.

The EVA-M8 series is an ideal solution for cost and space-sensitive industrial and wearable applications. It is easy to design-in, only requiring an external GNSS antenna in most applications. The layout of the EVA-M8 SiPs is especially designed to simplify the customer's design and limit near-field interferences, as RF and digital domains are kept separate. The EVA-M8Q is ideal for designs with small antennas or covert installations, whereas the EVA-M8M is the preference when system costs matter most.

With a dual-frequency RF front-end, the EVA-M8 concurrent GNSS SiPs are able to intelligently use the highest number of visible satellites from three GNSS systems (GPS and Galileo together with GLONASS or BeiDou) for reliable positioning.

The EVA-M8 series SiPs provide a Serial Quad Interface (SQI) for optional external flash which can be used for future firmware upgrades and improved Assistance GNSS performance. The EVA-M8 series also supports message integrity protection, geofencing and spoofing detection. The migration from previous generations is easy, as the EVA-M8 series is pin-compatible with the EVA-8M and EVA-7M SiPs.

The EVA-M8 series combines a high level of integration capability with flexible connectivity options in a miniature package. It can be easily integrated in manufacturing, thanks to the QFN-like package. The SiPs are available in 500 pieces/reel, which is ideal for small production batches. The DDC (I²C compliant) interface provides connectivity and enables synergies with most u-blox cellular modules.

The EVA-M8M and EVA-M8Q SiPs are fully tested and qualified according to the JESD47 standard.

	EVA-M8M	EVA-M8Q
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)	E	E
Data logging	E	E
RTC crystal	o	o
Oscillator	C	T
Timepulse	1	1
Power supply		
1.65 V – 3.6 V	•	
2.7 V – 3.6 V		•

o = Optional, or requires external components
E = External Flash Required
C = Crystal / T = TCXO

EVA-M8 series

Features

Receiver type	72-channel u-blox M8 engine GPS/QZSS L1 C/A, GLONASS L10F BeiDou B1I, Galileo E1B/C[1] SBAS L1 C/A: WAAS, EGNOS, MSAS, GAGAN	
Max nav. update rate	Single GNSS: 2 Concurrent GNSS:	up to 18 Hz up to 10 Hz
Accuracy	Position: SBAS:	2.5 m CEP 2.0 m CEP
Acquisition[1]	EVA-M8M	EVA-M8Q
Cold starts:	26 s	26 s
Aided starts:	3 s	2 s
Reacquisition:	1 s	1 s
Sensitivity[1]		
Tracking & Nav:	–164 dBm	–167 dBm
Cold starts:	–148 dBm	–148 dBm
Hot starts:	–157 dBm	–157 dBm
Assistance GNSS	AssistNow Online AssistNow Offline (up to 35 days) AssistNow Autonomous (up to 6 days) OMA SUPL & 3GPP compliant	
Oscillator	Crystal (EVA-M8M) TCXO (EVA-M8Q)	
Real time clock (RTC)	Can be derived either from onboard GNSS crystal (EVA-M8M only, for lowest system costs and smallest size) or from external RTC Clock (EVA-M8M/Q, 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/EVA-M8Q default mode: GPS/SBAS/QZSS+GLONASS
2 EVA-M8M: external LNA and SAW recommended for passive antenna applications
3 External flash required

Environmental data, quality & reliability

Operating temp.	–40 °C to +85 °C
RoHS compliant (lead-free) and green (no halogens)	
Qualification according to standard JESD47	
Moisture sensitivity level 3	

Package

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

Electrical data

Supply voltage	1.65 V to 3.6 V (EVA-M8M) 2.7 V to 3.6 V (EVA-M8Q)
Digital I/O voltage level	1.65 V to 3.6 V (EVA-M8M) 2.7 V to 3.6 V (EVA-M8Q)
Power consumption[4]	22 mA @ 3 V (Continuous) 5.3 mA @ 3 V Power Save mode (1 Hz)
Backup Supply	1.4 V to 3.6 V

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

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

Support products

Evaluation kits 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)
EVK-M8QEVA	u-blox M8 GNSS Evaluation Kit for EVA-M8Q (TCXO)
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 SiP, crystal, ROM (Default: GPS + GLONASS)
EVA-M8M-1	u-blox M8 concurrent GNSS LGA SiP, crystal, ROM (Default: GPS + BeiDou)
EVA-M8Q-0	u-blox M8 concurrent GNSS LGA SiP, TCXO, ROM (Default: GPS + GLONASS)

Further information

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

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

UBX-16014207 - R08