

EVA-M8E SiP

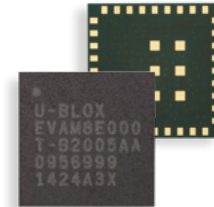


Small u-blox M8 UDR SiP



Uninterrupted positioning under all signal conditions without need for electrical connection to the car

- Industry's smallest UDR SiP form-factor
- Leading performance under poor signal conditions
- Continuous navigation during signal interruptions
- Independent of any electrical connection to the car
- Real-time positioning at rates up to 20 Hz
- Low cost of ownership, ideal for high volume projects



7.0 × 7.0 × 1.1 mm

Product description

The EVA-M8E SiP introduces u-blox's Untethered Dead Reckoning (UDR) technology in the ultra-compact EVA form-factor. Measuring merely 7 x 7 mm, the EVA-M8E offers the designer flexibility in the selection and placement of peripheral components. The EVA-M8E only requires flash memory, an inertial sensor, and an optional real-time clock (RTC) crystal. The EVA-M8E's sensor may be installed in any stable position within the vehicle without configuration.

UDR provides the benefits of Dead Reckoning (DR) without requiring speed information from the vehicle. This significantly reduces the cost of installation for after-market Dead Reckoning applications and brings DR performance to applications where previously only GNSS was possible. The strength of UDR compared with GNSS alone is particularly apparent under poor signal conditions in urban environments, where it brings continuous positioning even to devices with antennas installed within the vehicle. Useful positioning performance is also available during complete signal loss, for example in parking garages and short tunnels. UDR positioning starts as soon

as power is applied to the SiP, even before the first GNSS fix is available. Inertial sensing enables vehicle yaw, pitch, and roll to be calculated and reported directly.

The intelligent combination of GNSS and sensor measurements enables accurate, real-time positioning at rates up to 20 Hz, as needed for smooth and responsive interactive applications. Native high-rate sensor data can be relayed to the host for applications such as driving behaviour analysis or accident reconstruction.

The EVA-M8E includes u-blox's latest generation GNSS receiver, which adds Galileo to the multi-constellation reception that already includes GPS, GLONASS, BeiDou and QZSS. The SiP provides high sensitivity and fast GNSS signal acquisition and tracking. UART, USB, DDC (I²C compliant) and SSI interface options provide flexible connectivity and enable simple integration with most u-blox cellular modules.

EVA-M8E SiPs are 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	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 sensor	Timepulse	Standard Professional Automotive
EVA-M8E	UDR	•	•	•	•	3	•	•	•	•	E	E			o	T		1	•	

ADR = Automotive Dead Reckoning / UDR = Untethered Dead Reckoning / E = External flash required / o = Optional, or requires external components / C = Crystal / T = TCXO



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
Nav. update rate	Up to 20 Hz
Position accuracy ¹	2.0 m CEP
Acquisition ¹	
Cold starts:	26 s
Aided starts:	3 s
Reacquisition:	1 s
Sensitivity ¹	
Tracking & Nav:	-160 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	TCXO
Real time clock (RTC)	Can be derived from external crystal or RTC Clock
SQI flash	Required
Sensor	External DDC gyro/accelerometer required
Supported antennas	Active and passive ³
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 ⁴	For position, velocity, time, and odometer data

1 For default mode: GPS/SBAS/QZSS+GLONASS

2 Limited by FW for best DR performance

3 An external LNA and SAW recommended for passive antenna applications

4 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	

Further information

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

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

Package

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

Supply voltage	2.7 V to 3.6 V
Power consumption ⁴	29 mA @ 3.0 V (Continuous, default concurrent mode)
Backup Supply	1.4 V to 3.6 V

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

These u-blox M8 support tools are for getting familiar with u-blox M8 positioning technology, evaluating functionality, and visualizing GNSS performance.

EVK-M8U	u-blox M8 Untethered Dead Reckoning GNSS Evaluation Kit, supports NEO-M8U and EVA-M8E
C93-M8E	EVA-M8E application board, miniature EVA-M8E design example with integrated antenna

Product variants

EVA-M8E	u-blox M8 GNSS LCC SiP with Untethered Dead Reckoning, external flash and sensor
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