

UBX-M9340



u-blox M9 standard precision GNSS chip with dead reckoning

First GNSS receiver with UDR and ADR for fleet management and micromobility applications

- Three times better positioning accuracy for a smooth urban navigation experience
- Maximum position availability with reception of 4 GNSS plus dead reckoning technology
- Easy-to-use UDR and advanced ADR for high flexibility and fast time to market
- Pin-compatible with other u-blox M9 chips



Standard



Professional



Automotive

5.00 × 5.00 × 0.55 mm



Product description

Based on the ultra-robust M9 platform, UBX-M9340 is the first u-blox chip to include both UDR and ADR options integrated into one receiver. The chip is designed to support various aftermarket telematics applications. It includes different dynamic models for cars, motorcycles, and micromobility applications. Furthermore, the whole solution runs on the chip, which means that it is not necessary to run external libraries on the host.

This innovative u-blox M9 standard precision GNSS chip with dead reckoning technology delivers three times better accuracy than GNSS-only receivers, enabling a smooth urban navigation or tracking experience. In challenging environments, GNSS-only receivers typically have many outliers. In such conditions, statistical accuracy can easily exceed 10 meters. With UBX-M9340, there are few or no outliers. In typical urban scenarios, UBX-M9340 offers sub-5-meter accuracy.

Maximum position availability is guaranteed, thanks to the concurrent reception of four global navigation satellite systems (GPS, Galileo, GLONASS, and BeiDou) and dead reckoning technology.

UDR enables fast time to market, and ADR improves the accuracy performance if there are long GNSS outages.

UBX-M9340 is pin-compatible with other u-blox M9 chips such as UBX-M9140, offering the possibility to easily populate the same boards with different product versions.

u-blox M9 GNSS chips are qualified according to AEC-Q100 and are manufactured in ISO/TS 16949 certified sites.

UBX-M9340-KB

Grade	
Automotive	
Professional	•
Standard	
GNSS	
GPS + QZSS/SBAS	•
GLONASS	•
Galileo	•
BeiDou	•
Number of concurrent GNSS	4
Interfaces	
UART	1
USB	1
SPI	1
DDC (I2C compliant)	1
Features	
Upgradeable firmware	•
RTC crystal	S
Oscillator	T
Antenna supply & supervisor	S
Timepulse	1

S = supported, may require ext. components

T = TCXO

**Product performance**

Receiver type	92-channel u-blox M9 engine GPS L1 C/A, QZSS L1 C/A/S, GLONASS L1 OF, BeiDou B1I (1561.098 MHz) only, Galileo E1B/C, SBAS L1 C/A: WAAS, EGNOS, MSAS, GAGAN	
Nav. update rate	Up to 50 Hz (4 concurrent GNSS)	
Horizontal position accuracy ¹	1.5 m CEP (with SBAS) 2.0 m CEP (without SBAS)	
ADR position error	2% of distance traveled without GNSS	
UDR position error	10% of distance traveled without GNSS (duration < 60 s)	
Acquisition ¹	Cold start	24 s
	Aided start	3 s
	Hot start	2 s
Sensitivity ¹	Tracking & nav.	-159 dBm
	Reacquisition	-158 dBm
	Cold start	-147 dBm
	Hot start	-159 dBm

External components

Oscillator	TCXO
RTC input	32.768 kHz (optional)
Antenna supply and supervisor	External circuit required for short and open circuit detection
Flash memory	SPI, minimum 16 MBit
DC/DC converter	Built-in, external component required

Tracking features

Geofencing	GPIO for waking up the host CPU
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Security features

Signal integrity	RF interference & jamming detection and reporting Active GNSS in-band filtering Spoofing detection and reporting (consistency checks based on GNSS and sensors)
Device integrity	Secure boot of firmware loaded from flash Receiver configuration lock by command
Secure interface	Signed UBX messages (SHA-256) JTAG debug interface port locked

¹ = For default mode: GPS/GLO/BDS/GAL+SBAS/QZSS

Package

40 pin QFN: 5.00 x 5.00 x 0.55 mm

Environmental data, quality & reliability

Operating temp.	-40°C to +85°C
Storage temp.	-40 °C to +125 °C
MSL	1
Environmental grade	2015/863/EU RoHS-3, Green, IEC-61249-2-21 halogen-free
Environmental testing	AEC-Q100
Quality management	Manufactured and fully tested in IATF 16949 certified production sites

Electrical data

Supply voltage	1.8 V or 3 V
Power consumption	34 mA at 3.0 V (4 GNSS continuous) 29 mA at 3.0 V (2 GNSS continuous) 22 mA at 3.0 V (1 GNSS continuous)
Backup supply	1.65 V to 3.6 V

Interfaces

Serial interfaces	1 UART 1 USB V2.0 full speed 12 Mbit/s 1 I2C 1 SPI
Digital I/O	1 configurable timepulse 2 EXTINT interrupt inputs: Wheel tick Wake-on-motion 3 PIO for antenna supervision
Raw data output	Code phase data
Memory	SPI interface for Flash
Protocols	NMEA 4.11, UBX binary

Services

GNSS assistance	AssistNow Live Orbits
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Support products

EVK-M9DR	u-blox M9 ADR and UDR Evaluation Kit
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Product variants

UBX-M9340-KB	u-blox M9 standard precision GNSS chip with dead reckoning, 40 pin QFN
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Further information

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

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

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