

MAX-M10S module



u-blox M10 standard precision GNSS module

Ultra-low power GNSS receiver for high-performance asset tracking devices

- Less than 25 mW power consumption without compromising GNSS performance
- Maximum position availability with concurrent reception of 4 GNSS
- Proven excellent performance, even with small antennas
- Advanced spoofing and jamming detection
- Pin-compatible with previous MAX products



9.7 × 10.1 × 2.5 mm



Product description

The MAX-M10S module is built on the ultra-low power u-blox M10 GNSS platform, which provides exceptional sensitivity and acquisition times for all L1 GNSS systems.

The extremely low power consumption of less than 25 mW in continuous tracking mode allows great power autonomy for all battery-operated devices, such as asset trackers, without compromising on GNSS performance.

MAX-M10S supports concurrent reception of four GNSS (GPS, GLONASS, Galileo, and BeiDou). The high number of visible satellites enables the receiver to select the best signals. This maximizes the position availability, in particular under challenging conditions such as in deep urban canyons. u-blox Super-S technology offers great RF sensitivity and can improve the dynamic position accuracy by up to 25% with small antennas or in a non-line-of-sight scenario.

The MAX-M10S module integrates an LNA followed by an SAW filter in the RF path for maximum sensitivity in passive antenna designs.

MAX-M10S detects jamming and spoofing attempts and reports them to the host, so that the system can react to such events. Advanced filtering algorithms mitigate the impact of RF interference and jamming, thus enabling the product to operate as intended.

MAX-M10S offers backwards pin-to-pin compatibility with previous u-blox generations, which saves designers time and cost when upgrading their designs.

The MAX-M10S module is based on the u-blox M10 GNSS chip, which is qualified according to AEC-Q100, manufactured in IATF 16949 certified sites, and fully tested on a system level.

MAX-M10S

	MAX-M10S
Grade	
Automotive	
Professional	•
Standard	
GNSS	
GPS + QZSS/SBAS	•
GLONASS	•
Galileo	•
BeiDou	•
Number of concurrent GNSS	4
Interfaces	
UART	1
SPI	
DDC (I2C compliant)	1
Features	
RTC crystal	•
Oscillator	T
Timepulse	1
Power supply	
2.7 V – 3.6 V	•

C = Crystal / T = TCXO



Product performance

Receiver type	u-blox M10 engine GPS L1 C/A, QZSS L1 C/A/S, GLONASS L10F BeiDou B1I/B1C, Galileo E1B/C SBAS L1 C/A: WAAS, EGNOS, MSAS, GAGAN	
Nav. update rate	Up to 10 Hz (4 concurrent GNSS)	
Horizontal position accuracy	1.5 m CEP	
Acquisition ¹	Cold start	24 s
	Aided start	2 s
	Hot start	1 s
Sensitivity ¹	Tracking & Nav.	-167 dBm
	Reacquisition	-161 dBm
	Cold start	-148 dBm
	Hot start	-159 dBm

Tracking features

u-blox Super-S	Improved accuracy with small antennas
Data batching	Autonomous tracking up to 10 min at 1 Hz
Odometer	Measure traveled distance with support for different user profiles

Security features

Signal integrity	RF interference & jamming detection and reporting Active GNSS in-band filtering Spoofing detection and reporting
Device integrity	Receiver configuration lock by command
Secure interface	Signed UBX messages (SHA-256) JTAG debug interface disabled by default

Electrical data

Power supply	2.7 V to 3.6 V
Power consumption ¹	3 GNSS: 22 mW 4 GNSS: 28 mW
Backup supply	1.65 V to 3.6 V

¹ = For continuous tracking in default mode: GPS/BeiDou/Galileo + SBAS/QZSS

Package

18 pin LCC (Leadless Chip Carrier): 9.7 × 10.1 × 2.5 mm, 0.6 g

Environmental data, quality & reliability

Operating temp.	-40 °C to +85 °C
Storage temp.	-40 °C to +85 °C
Environmental grade	2015/863/EU RoHS-3
EMC (electromagnetic compatibility)	2014/53/EU RED
Environmental testing	ISO 16750
Quality management	Manufactured and fully tested in IATF 16949 certified production sites

Interfaces

Serial interfaces	1 UART 1 DDC (I2C compliant)
Digital I/O	Configurable timepulse 1 EXTINT input for Wakeup
Raw Data output	Code phase data
Timepulse	Configurable: 0.25 Hz to 10 MHz
Supported antennas	Active and passive
Protocols	NMEA 4.10, UBX binary

Services

Assisted GNSS	AssistNow GNSS Online: Data valid 2-4 hours AssistNow GNSS Offline: Data valid up to 35 days AssistNow Autonomous: Data valid up to 6 days OMA SUPL & 3GPP compliant
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Support products

EVK-M101	u-blox M10 GNSS evaluation kit with UBX-M10050-KB chip and I/O interface
u-center	Highly interactive and easy-to-use GNSS evaluation software

Product variants

MAX-M10S	u-blox M10 concurrent GNSS LCC module, firmware in ROM, SAW filter, LNA
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Further information

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

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

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