Product summary

MAX-F10S module

u-blox F10 standard precision GNSS module

Standard

Professional

Automotive

L1/L5 dual-band GNSS receiver for meter-level accuracy in urban environments

- Effective multipath mitigation to boost urban accuracy
- Exceptional RF interference immunity with co-located cellular modems
- Proven excellent performance, even with small antennas
- Pin-compatible with previous MAX products for easy migration

9.7 × 10.1 × 2.5 mm

Product description

The MAX-F10S module is built on the u-blox F10 dual-band GNSS technology using L1/L5 GNSS bands, which provides solid meter-level position accuracy in urban areas.

With its proprietary dual-band multipath mitigation technology, u-blox F10 uses the best signals from the L1/L5 bands to achieve a significantly better position accuracy in urban environments than with the L1 band only. Applications like vehicle tracking and micromobility benefit significantly.

MAX-F10S offers a single antenna input. Two SAW filters in series with a LNA in between provide high robustness against RF interference from co-located cellular modems.

MAX-F10S is pin-to-pin compatible with previous u-blox generations, which saves designers time and cost when upgrading their designs.

u-blox modules are manufactured in IATF 16949 certified sites and are fully tested on a system level.

	MAX-F10S
Grade	
Automotive	
Professional	•
Standard	
GNSS	
GPS + QZSS/SBAS	•
Galileo	•
BeiDou	•
NavIC	•
Multi-band	L1/L5/E5a/B2a
Interfaces	
UART	1
DDC (I2C compliant)	1
Features	
Additional SAW	•
Additional LNA	•
RTC crystal	•
Oscillator	TCXO
Timepulse	1
Power supply	
1.76 V – 3.6 V	•

MAX-F10S module

Product performance

Receiver type	u-blox F10 engine GPS L1C/A, L5 QZSS L1C/A, L1S, L1Sb, L5 GAL E1B/C, E5a BDS B1C, B2a NavIC L5 SBAS L1C/A, BDSBAS B1C	
Nav. update rate [1]	Up to 10 Hz	
Horizontal position accuracy [2]	1.0 m CEP (with SBAS) 1.5 m CEP (without SBAS)	
Acquisition	Cold start Aided start Hot start	28 s 1 s 1 s
Sensitivity	Tracking & Nav. Reacquisition Cold start Hot start	–167 dBm –159 dBm –148 dBm –159 dBm

Tracking features

Odometer	Measure traveled distance with support for different user profiles
Protection level	Real-time position accuracy estimate with 95% confidence

Security features

Signal integrity	RF interference and jamming detection and reporting 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 consumption at 3 V	3 GNSS: 57 mW
Power consumption at 1.8 V	3 GNSS: 47 mW
Power supply	1.76 V to 3.6 V
Backup supply	1.65 V to 3.6 V

Package

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

Environmental data, quality, and 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	Qualified according to u-blox qualification policy, based on a subset of AEC-Q104
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 4.11, UBX binary

Compatible u-blox location services

AssistNow	Achieves premium performance in challenging IoT environments

Support products

EVK-F101	u-blox F10 GNSS evaluation kit with UBX-F10050-KB chip and TCXO
ANN-MB5	L1/L5 multi-band active GNSS antenna
u-center 2	Highly intuitive software for GNSS performance evaluation

Product variants

MAX-F10S	u-blox F10 GNSS LCC module, firmware in ROM, 2 SAW filters, LNA, TCXO

1 = The highest navigation rate can limit the number of supported constellations
2 = Depends on atmospheric conditions, GNSS antenna, multipath conditions, satellite visibility, and geometry

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.