Product summary

NEO-F10T module

u-blox F10 high accuracy timing module

Standard

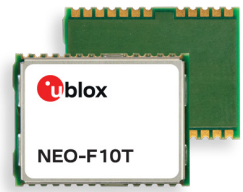
Professional

Automotive

Compact dual-band GNSS receiver with nanosecond-level timing accuracy

- Meets 5G time synchronization requirements on a global scale
- Unaffected by ionospheric errors
- Combines accurate timing with low power consumption
- Built-in security, including Galileo OSNMA, for highest robustness against malicious attacks
- Industry-standard compact NEO form factor – easy upgrade from NEO-M8T

12.2 × 16.0 × 2.4 mm



Product description

The NEO-F10T timing module provides nanosecond-level timing accuracy to the most demanding infrastructure applications.

Thanks to the module's dual-band functionality, it can provide excellent timing accuracy without the need of an external GNSS correction service. Additionally, when within the operational area of a Satellite Based Augmentation System (SBAS), NEO-F10T offers the possibility to improve the timing performance by using the ionospheric corrections provided by the SBAS system.

In addition to the global satellite constellations, NEO-F10T supports also Indian NavIC system, and Japan's QZSS system, making it ideal for global deployments with single HW SKU. The NEO-F10T module supports the L1/L5/E5a configuration.

NEO-F10T includes advanced security features such as secure boot, secure interfaces, T-RAIM, and Galileo OSNMA to provide the highest level of timing integrity.

The module has a single RF input for all the GNSS bands and dual SAW filters for exceptional signal selectivity and out-of-band attenuation.

NEO-F10T is designed to meet the most stringent timing synchronization requirements in 5G mobile networks on a global scale. By significantly reducing the time error of the primary source of cellular network synchronization, the NEO-F10T module will help operators maximize the performance of their networks and so optimize the return on their investment in 5G communications.

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

	NEO-F10T
Grade	
Automotive	
Professional	•
Standard	
GNSS	
GPS / QZSS	•
Galileo	•
BeiDou	•
NavIC	•
Multi-band	L1/L5/E5a
Interfaces	
UART	1
Features	
Galileo OSNMA	•
Programmable (Flash)	•
Carrier phase output	•
Additional SAW	•
RTC crystal	•
Oscillator	T
Survey-in and fixed mode	•
Time pulse output	1
Time mark input	1
Power supply	
2.7 V – 3.6 V	•

T = TCXO

NEO-F10T module

Features

Receiver type	u-blox F10 engine GPS L1C/A, L5 GAL E1B/C, E5a QZSS L1C/A, L5 NavIC L5 SBAS L1C/A: WAAS, EGNOS, L1Sb, GAGAN	BDS B1C, B2a
Nav. update rate[1]	up to 10 Hz	
Position accuracy[2]	Standalone	2.0 m CEP
Acquisition	Cold starts Aided starts Reacquisition	26 s 2 s 1 s
Sensitivity	Tracking and Nav. Reacquisition Hot starts Cold starts	-167 dBm -160 dBm -157 dBm -148 dBm
AssistNow	Achieves premium performance in challenging IoT environments	
Oscillator	TCXO	
RTC crystal	Built-in	
Anti-jamming	Active CW detection and removal Dual onboard band pass filters	
Anti-spoofing	Advanced anti-spoofing algorithms Galileo OSNMA	
Security	Secure boot Secure firmware update Configuration lock	
Memory	Flash	

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

Features - Timing

Timing accuracy	10 ns (1-sigma, clear sky, dual-band mode)
Time pulse frequency	0.25Hz – 25 MHz
Time pulse jitter	±8 ns
Time mark resolution	16 ns
Integrity reports	T-RAIM active, phase uncertainty Time pulse rate/duty-cycle, inter-constellation biases
Survey-in period	Configurable

Features - Raw data

Measurement data	Carrier phase, code phase and pseudo-range, Doppler on all signals
Message data	GPS, BeiDou, Galileo, QZSS, NavIC, SBAS

Package

24-pin LCC (Leadless Chip Carrier)
12.2 x 16.0 x 2.4 mm

Environmental data, quality and reliability

Operating temp.	–40 °C to +85 °C
Storage temp.	–40 °C to +85 °C
RoHS compliant (2015/863/EU)	
ETSI-RED compliant	
Qualification based on AEC-Q104	
Manufactured and fully tested in IATF 16949 certified production sites	
High vibration and shock resistance	

Electrical data

Supply voltage	2.7 V to 3.6 V
Power consumption	19 mA @ 3.0 V (continuous)
Backup supply	1.65 V to 3.6 V

Interfaces

Serial interfaces	1 UART
Protocols	NMEA, UBX binary
Time pulse output	1
Time mark input	1

Support products

u-blox support products provide reference design, and allow efficient integration and evaluation of u-blox positioning technology.

EVK-F10T	u-blox F10 GNSS evaluation kit for timing receivers with L1/L5/E5a bands
ANN-MB1	L1/L5 multi-band active GNSS antenna

Product variants

NEO-F10T-00B	u-blox F10 high accuracy timing module, with L1/L5/E5a bands

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.