NEO/LEA-M8T

u-blox M8 GNSS timing modules

Market leading acquisition and tracking sensitivity

- Concurrent reception of GPS/QZSS, GLONASS, BeiDou, Galileo
- Market leading acquisition and tracking sensitivity
- Optimized accuracy and availability with Survey-in and single-satellite timing
- Minimized power consumption with low duty-cycle operation
- Maximized reliability with integrity monitoring and alarms
- Backward compatible with LEA-5T, LEA-6T and NEO-6T

NEO-M8T
12.2 x 16.0 x 2.4 mm

LEA-M8T
17.0 x 22.4 x 2.4 mm

Product description

The NEO-M8T and LEA-M8T concurrent GNSS modules deliver high integrity, precision timing in demanding applications world-wide. Support for BeiDou, GLONASS and Galileo constellations enables compliance with national requirements. Enhanced sensitivity and concurrent constellation reception extend coverage and integrity to challenging signal environments. Survey-in and fixed-position navigation reduce timing jitter, even at low signal levels, and enable synchronization to be maintained with as few as one single satellite in view. Support for low duty cycle operation reduces power consumption for battery-powered applications.

u-blox timing products include timing integrity measures with Receiver Autonomous Integrity Monitoring (RAIM) and continuous phase uncertainty estimation. They feature high dynamic range radios with both analog and digital interference mitigation, supporting applications in wireless communications equipment.

The M8T timing modules are delivered in u-blox's established LEA and NEO form-factors with standard pin-out, allowing ready migration from previous product generations.

u-blox timing products can make use of u-blox AssistNow or industry standard aiding data. This reduces the time to first fix and delivers exceptional acquisition sensitivity, even on first installation before precise location, time or frequency are known.

u-blox M8 modules use GNSS chips qualified according to AEC-Q100, are manufactured in ISO/TS 16949 certified sites, and are fully tested on a system level. Qualification tests are performed as stipulated in the ISO16750 standard: "Road vehicles – Environmental conditions and testing for electrical and electronic equipment".

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 (I²C compliant)	Programmable (Flash)	Data logging	Carrier phase output	Additional SAW	Additional LNA	Oscillator	Timepulse	Frequency output	Standard	Professional	Automotive
NEO-M8T				•	•	•	•	•	3	•	•	•	•	•	•	•	•	•	•	T	2				
LEA-M8T				•	•	•	•	•	3	•	•	•	•	•	•	•	•	•		T	2				

T = TCXO

Features - GNSS

Receiver type	72-channel u-blox M8 engine GPS/QZSS L1 C/A, GLONASS L10F, BeiDou B1 SBAS L1 C/A: WAAS, EGNOS, MSAS, GAGAN Galileo E1B/C		
Nav. update rate	Concurrent GNSS: up to 4 Hz		
Position accuracy	2.5 m CEP (Autonomous)		
Acquisition		**GPS & GLONASS**	**GPS & BeiDou**
	Cold starts:	25 s	28 s
	Aided cold starts:	2 s	2 s
Sensitivity	Tracking & Nav:	–167 dBm	–166 dBm
	Cold starts (aided):	–157 dBm	–157 dBm
	(autonomous):	–148 dBm	–148 dBm
	Reacquisition:	–160 dBm	–160 dBm
Assistance	AssistNow GNSS Online AssistNow GNSS Offline (up to 35 days) AssistNow Autonomous (up to 6 days) OMA SUPL & 3GPP compliant		
Oscillator	TCXO		
RTC crystal	Built-In		
Noise figure	On-chip LNA (LEA-M8T) Extra LNA for passive antenna (NEO-M8T)		
Anti jamming	Active CW detection and removal. On-board SAW band pass filter		
Memory	Internal SQI Flash for Firmware update		
Supported antennas	Active and passive		

Features - Timing

Timing accuracy	Clear sky:	≤ 20 ns
Time-pulse frequency		0.25 Hz – 10 MHz
Time-pulse jitter		±11 ns
Time-mark resolution		21 ns
Integrity reports	RAIM active, phase uncertainty time-pulse rate/duty-cycle	

Environmental data, quality & reliability

Operating temp.	–40° C to 85° C
Storage temp.	–40° C to 85° C

RoHS compliant (lead-free)

Qualification according to ISO 16750

Manufactured and fully tested in ISO/TS 16949 certified production sites

Uses u-blox M8 chips qualified according to AEC-Q100

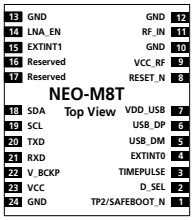
Electrical data

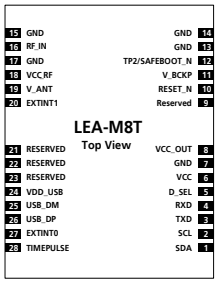
Supply voltage	2.7 V to 3.6 V
Power consumption	15 µA (Battery backup, NEO-M8T)) 30 µA (Software backup, NEO-M8T) 32 mA @ 3.0 V (Operational, NEO-M8T) 28 mA @ 3.0 V (Operational, LEA-M8T)
Backup Supply	1.4 to 3.6 V

Package

NEO-M8T: 24 pin LCC (Leadless Chip Carrier): 12.2 x 16.0 x 2.4 mm, 1.6 g
LEA-M8T: 28 pin LCC (Leadless Chip Carrier): 17.0 x 22.4 x 2.4 mm, 2.6 g

Pinouts





Features - Raw data and IMES

Measurement data	GPS, GLONASS, BeiDou, SBAS and QZSS (Carrier phase; Code phase & pseudo-range; Doppler)
Message data	GPS, GLONASS, BeiDou, SBAS, QZSS L1S and IMES beacons (50/250 bps auto-baud)

Features - Power management

Power-save modes	On/off low duty-cycle
Off control	Hardware, message interface
On control	Hardware, wake-on UART activity, Timer (using low power RTC)

Automatic on/off with configurable period (GPS-only)

Features - Antenna management

NEO-M8T	External with logic-level antenna switching output, filtered continuous supply.
LEA-M8T	Internal antenna bias supply with switching, over-current protection and alarm. Optional input for external open-circuit detection.

Interfaces

Serial interfaces	SPI or UART and DDC (I^2C compliant) USB V2.0 full speed 12 Mbit/s
Protocols	NMEA, UBX binary, RTCM
Time-pulse outputs	2
Time-mark inputs	2

Support products

EVK-M8T:	u-blox M8 Timing GNSS Evaluation Kit

Product variants

NEO-M8T	u-blox M8 GNSS LCC module in NEO form factor, Timing, TCXO, flash, SAW, LNA
LEA-M8T	u-blox M8 GNSS LCC module in LEA form factor, Timing, TCXO, flash, SAW

Further information

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

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