

NEO/LEA-M8T series



u-blox M8 GNSS timing modules

Market leading acquisition and tracking sensitivity

- Concurrent reception of GPS/QZSS, GLONASS, BeiDou, and 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



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".

	NEO-M8T	LEA-M8T
Grade		
Automotive		
Professional	•	•
Standard		
GNSS		
GPS / QZSS	•	•
GLONASS	•	•
Galileo	•	•
BeiDou	•	•
Number of concurrent GNSS	3	3
Interfaces		
UART	1	1
USB	1	1
SPI	1	1
DDC (I ² C compliant)	1	1
Features		
Programmable (Flash)	•	•
Data logging	•	•
Carrier phase output	•	•
Additional SAW	•	•
Additional LNA	•	
RTC crystal	•	•
Oscillator	T	T
Survey-in and fixed mode	•	•
Timepulse	2	2
Power supply		
2.7 V – 3.6 V	•	•

T = TCXO



Features

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 start (aided):	-157 dBm	-157 dBm
(autonomous):	-148 dBm	-148 dBm
Reacquisition:	-160 dBm	-160 dBm
Assistance GNSS	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	

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 V to 3.6 V	

Interfaces

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

Further information

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

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

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

Features – Raw data and IMES

Measurement data	GPS, GLONASS, BeiDou, SBAS and QZSS (Carrier phase; Code phase & pseudorange; 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.	

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 in ISO/TS 16949 certified production sites		
Uses u-blox M8 chips qualified according to AEC-Q100		

Support products

These u-blox M8 support tools are for getting familiar with u-blox M8 positioning technology, evaluating functionality, and visualizing GNSS performance.

EVK-M8T	u-blox M8 Timing GNSS Evaluation Kit
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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

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