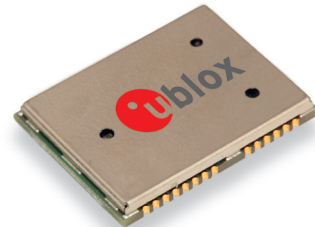


# LEA-6 series

## Feature rich u-blox 6 GPS/GLONASS & Galileo modules

### Highlights

- Industry standard 17.0 x 22.4 x 2.4 mm package
- UART, USB and DDC (I<sup>2</sup>C compliant) interfaces
- Available in Crystal and TCXO versions
- Onboard RTC Crystal for faster warm and hot starts
- Integrated antenna supervisor



LEA-6:  
17.0 x 22.4 x 2.4 mm

### Features

- u-blox 6 position engine:
  - Navigate down to -162 dBm and -148 dBm coldstart
  - Faster acquisition with AssistNow Autonomous
  - Configurable power management
  - Hybrid GPS/SBAS engine (WAAS, EGNOS, MSAS)
  - Anti-jamming technology
- Simple integration with u-blox wireless modules
- A-GPS: AssistNow Online and AssistNow Offline services, OMA SUPL compliant
- Supports GLONASS<sup>1</sup>, Galileo ready (LEA-6H)
- Backward compatible (hardware and firmware); easy migration from LEA-5 or LEA-4 families
- Based on GNSS chips qualified according to AEC-Q100
- Manufactured in ISO/TS 16949 certified sites
- LCC package for reliable and cost effective manufacturing
- Operating temperature range: -40°C to 85°C

<sup>1</sup> Available with LEA-6H-0-002. HW GLONASS ready, requires firmware upgrade.

### Product description

The LEA-6 module series brings the high performance of the u-blox6 position engine to the industry standard LEA form factor. u-blox 6 has been designed with low power consumption and low costs in mind. Intelligent power management is a breakthrough for low-power applications. These versatile, standalone receivers combine an extensive array of features with flexible connectivity options. Their ease of integration results in fast time-to-market for a wide range of automotive, consumer and industrial applications.

All LEA-6 modules are based on GNSS chips qualified according to AEC-Q100 and are manufactured in ISO/TS 16949 certified sites. Qualification tests on LEA-6 modules are performed as stipulated in the ISO16750 standard: "Road vehicles – Environmental conditions and testing for electrical and electronic equipment".

### Product selector

Model	Type	Supply	Interfaces	Features
	Standalone GPS GLONASS Timing & Raw Data Dead Reckoning	1.75 V – 2.0 V 2.7 V – 3.6 V	UART USB SPI DDC (I <sup>2</sup> C compliant)	Programmable (Flash) FW update TCXO RTC crystal Antenna supply and supervisor Configuration pins Timepulse External interrupt / Wakeup
LEA-6H	• R	•	• • •	• • • • 1 •
LEA-6S	•	•	• • •	• • • 1 1 •
LEA-6A	•	•	• • •	• • 1 1 •

R = HW GLONASS ready, firmware upgrade required.

## Receiver performance data

Receiver type	50-channel u-blox 6 engine GPS L1 C/A code GLONASS L1 FDMA <sup>1</sup> Galileo L1 open service (with upgrade) SBAS: WAAS, EGNOS, MSAS		
Navigation update rate	up to 5 Hz (ROM version), 2 Hz (Flash)		
Accuracy <sup>2</sup>	Position	2.5 m CEP	
	SBAS	2.0 m CEP	
Acquisition <sup>2</sup>		LEA-6H/6S	LEA-6A
	Cold starts:	26 s	27 s
	Aided starts <sup>3</sup> :	1 s	< 3 s
	Hot starts:	1 s	1 s
Sensitivity <sup>4</sup>		LEA-6H/6S	LEA-6A
	Tracking:	-162 dBm	-162 dBm
	Cold starts:	-148 dBm	-147 dBm
	Hot starts:	-157 dBm	-156 dBm

<sup>1</sup> Available with LEA-6H-0-002 with firmware upgrade

<sup>2</sup> All SV @ -130 dBm

<sup>3</sup> Dependent on aiding data connection speed and latency

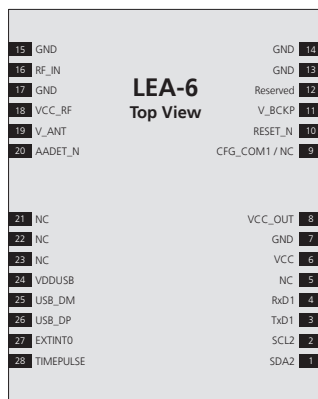
<sup>4</sup> Demonstrated with a good active antenna

## Electrical data

Power supply	2.7 V – 3.6 V
Power consumption	117 mW @ 3.0 V (continuous) 33 mW @ 3.0 V Power Save Mode (1 Hz)
Backup power	1.4 V – 3.6 V, 22 µA
Antenna power	External or internal VCC_RF
Supported antennas	Active and passive
Antenna supervision	Integrated short-circuit detection and antenna shutdown, open circuit detection with minimal external circuitry

## Package

Dimensions	LCC (Leadless Chip Carrier), surface mount package: 17.0 x 22.4 x 2.4 mm
Weight	2.1 g
Pinout	



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Specification applies to FW 7

## Interfaces

Serial interfaces	1 UART 1 USB V2.0 full speed 12 Mbit/s 1 DDC (I <sup>2</sup> C compliant)
Digital I/O	Configurable timepulse 1 EXTINT input for Wakeup 1 reset
Serial and I/O	Voltages 2.7 V – 3.6 V
Timepulse	Configurable 0.25 Hz to 1 kHz
Protocols	NMEA, UBX binary, RTCM

## Environmental data

Operating temp.	-40° C to 85° C
Storage temp.	-40° C to 85° C
RoHS compliant (lead-free)	

## Support products

u-blox 6 Evaluation Kits:

Easy-to-use kits to get familiar with u-blox 6 positioning technology, evaluate functionality, and visualize GPS performance.

EVK-6H:	u-blox 6 Evaluation Kit with TCXO, suitable for LEA-6H, LEA-6S
EVK-6P:	u-blox 6 Evaluation Kit with Crystal, suitable for LEA-6A

## Ordering information

LEA-6H-0	Programmable u-blox 6 GPS Module with TCXO, GLONASS and Galileo ready
LEA-6S-0	ROM-based u-blox 6 GPS Module with TCXO
LEA-6A-0	ROM-based u-blox 6 GPS Module with Crystal

Available as samples and tape on reel (250 pieces)

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