



LEA-4M

ANTARIS® 4 ROM-Based GPS Module Mobile Terminal Applications

Overview

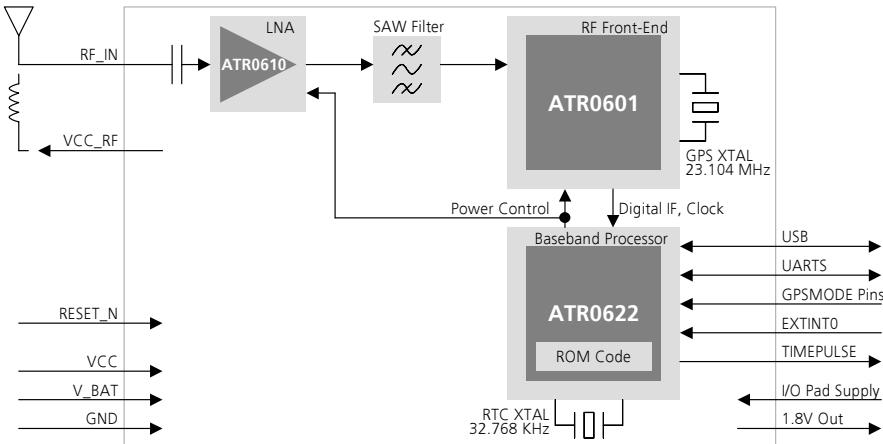
The LEA-4M has been designed for applications with very strict cost and space requirements. The module keeps costs at a minimum while retaining the high performance and low power consumption characteristic of the u-blox 16-channel ANTARIS 4 engine that powers it. The LEA-4M is suitable for applications requiring active and passive antennas with an operating temperature range of -30° to $+70^{\circ}\text{C}$ and which do not require antenna supervision.



17 x 22.4 x 3 mm

Its small form factor and SMT pads allow for fully automatic assembly processes with standard pick-and-place equipment and reflow soldering, enabling cost-efficient, high-volume production processes. This makes the LEA-4M suitable for price-sensitive mass-market end products.

Block Diagram



Highlights

- **Cost-optimized architecture (No Flash EPROM)**
- **Ultra low power consumption**
- **Supports A-GPS services including AssistNow® Online**
- **4 Hz position update rate**
- **1 USB and 2 UART ports**

Features

- 16 channel ANTARIS 4 positioning engine
- Supports DGPS, WAAS, EGNOS and MSAS
- Power saving modes
- 5 μA backup current
- 4 Boot time configuration pins
- Configurable I/O and UART voltage levels
- Supports passive and active antennas
- Power brown-out protection:
No external reset hardware needed
- Operating temperature range: -30 to 70°C
- RoHS compliant (lead-free)

*your position
is our focus*



Receiver Performance Data

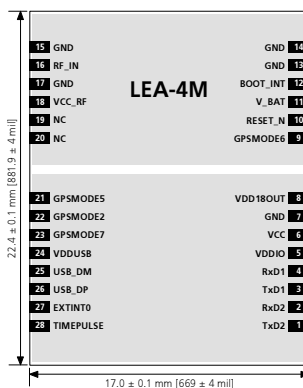
Receiver Type	16 channel, L1 frequency, C/A code	
Max. Update Rate	4 Hz	
Accuracy	Position	2.5 m CEP
	DGPS / SBAS	2.0 m CEP ¹
Start-up Times	Hot start	<3.5 sec
	Warm start	33 sec
	Cold start	34 sec
	Aided start	5 sec
	Reacquisition	< 1 s
Sensitivity	Acquisition	-140 dBm
	Tracking	-150 dBm
Timing Accuracy	RMS	50 ns
	99%	<100 ns
Operational Limits	Altitude	18,000 m
	Velocity	515 m/s
	One of the limits may be exceeded but not both.	

¹ Depends on accuracy of correction data provided by the DGPS or SBAS service

Environmental Data

Operating Temp.	-30°C to 70°C
Storage Temp.	-40°C to 125°C

Mechanical Data



Interfaces

USB	V1.1 (V2.0 compatible)
Serial Ports	2 UARTs
Digital I/O	Configurable time pulse EXTINT0 for receiver wake-up and optional A-GPS time synchronization
Serial and I/O Voltages	Configurable output levels between 1.65 and 3.6V 5V tolerant inputs
Configuration	4 GPSMODE pins to choose from different boot time configurations
Protocols	NMEA, UBX binary, RTCM Supports protocol mixing over same serial and USB ports

Support Products

AEK-4P	An easy-to-use kit to get familiar with the ANTARIS 4 positioning technology and to evaluate functionality and to visualize GPS performance.
ANTARIS 4 GPS Evaluation Kit	

Electrical Data

Power Supply	2.7 to 3.3 V
Power Consumption	typ. 35 mA @ 3.0 V typ. 34 mA @ 2.7 V Sleep mode: typ. 65 µA
Backup Power	1.5 V to 3.6 V, typ. 5 µA
Antenna Power	External (VCC_RF available)

Ordering Information

LEA-4M-0-000-0	LEA-4M – ROM-Based GPS Module
	<u>Delivery Packing</u> 0 = Single samples 2 = Tape on reel (250 pieces)

Semiconductor technology provided by ATMEL.

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