LEA-4A
Low-Cost GPS Receiver Module
ANTARIS® 4 Positioning Engine

Preliminary Data

your position is our focus

Overview

The LEA-4A is a low-cost GPS module featuring the new u-blox 16-channel ANTARIS 4 receiver technology. It provides high performance at 35% less power consumption and features a newly added USB port for faster data transmission and more flexibility. The ANTARIS 4 GPS engine inside offers outstanding navigation performance in the most challenging metropolitan areas.

17 x 22.4 x 3 mm

The LEA-LA successor, it also shares the LEA-LA's 17 x 22.4 form factor initially created by u-blox. 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. The combination of these features makes this module suitable for a broad spectrum of GPS products whose key requirements include high performance, low cost, low power consumption and small size.
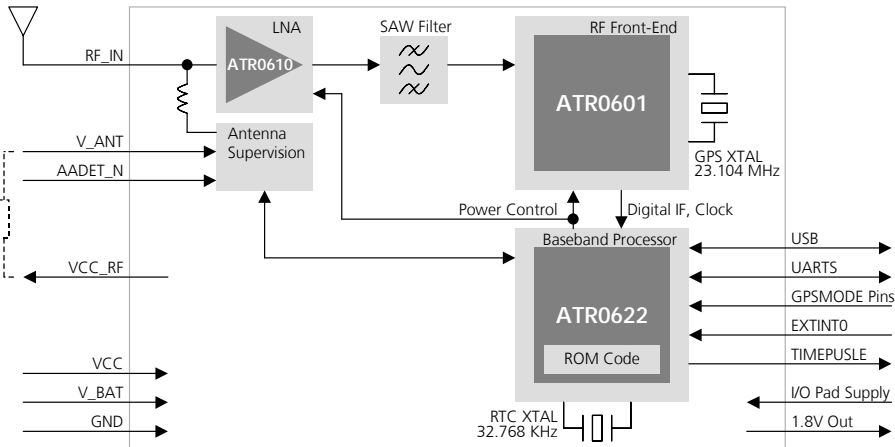
New with ANTARIS 4

- 34 mA supply current
  (Power reduction by more than 35% compared to predecessor modules)
- USB connectivity
- Same functionality in 40% smaller footprint
- Significantly lower battery backup current
- Configurable I/O and UART voltage levels
- RoHS compliant (lead-free)

Key Features

- 16 channel ANTARIS 4 positioning engine
- 4 Hz position update rate
- Assisted GPS (MS-Assisted, MS-Based)
- DGPS and full SBAS (WAAS, EGNOS) support
- FixNOW™ power saving mode
- 4 Boot time configuration pins
- Supports passive and active antennas
- Antenna short and open circuit detection and protection
- Operating temperature range: –40 to 85°C

Block Diagram

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

Interfaces

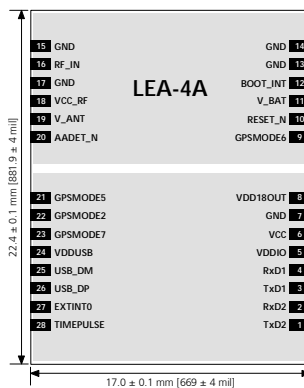|	
USB	V1.1 (V2.0 compatible)
Serial Ports	2 UARTs
Digital I/O	Configurable time pulse EXTINT0 input for time mark / counter (optional)
Serial and I/O Voltages	Configurable output levels between 1.65 and 3.6V 5V tolerant inputs
Configuration	4 GPSMODE Pins to choose from different boot time configurations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

Electrical Data

Power Supply	2.7 – 3.3 V
Power Consumption	typ. 35 mA @ 3.0 V typ. 34 mA @ 2.7 V
	Sleep mode: typ. 80 µA
Backup Power	1.5 V – 3.6 V, typ. 5 uA
Antenna Power	External or Internal VCC_RF
Antenna Supervision	Integrated short-circuit detection and antenna shutdown, open circuit detection is supported with AADET_N input and little external circuitry

Environmental Data

Operating Temp.	-40°C to 85°C
Storage Temp.	-40°C to 125°C
Vibration	5 Hz to 500 Hz, 5g (IEC 68-2-6)
Shock	Half sine 30g / 11ms (DIN 40046-7)

Mechanical Data

LEA-4A

Pin	Left		Right	Pin
15	GND		GND	14
16	RF_IN		GND	13
17	GND		BOOT_INT	12
18	VCC_RF		V_BAT	11
19	V_ANT		RESET_N	10
20	AADET_N		GPSMODE6	9
21	GPSMODE5		VDD18OUT	8
22	GPSMODE2		GND	7
23	GPSMODE7		VCC	6
24	VDDUSB		VDDIO	5
25	USB_DM		RxD1	4
26	USB_DP		TxD1	3
27	EXTINT0		RxD2	2
28	TIMEPULSE		TxD2	1

22.4 ± 0.1 mm [881.9 ± 4 mil]

17.0 ± 0.1 mm [669 ± 4 mil]

Support Products

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

Ordering Information

LEA-4A-0-000-0   LEA-4A – Low-cost GPS Receiver Module

Delivery Packing
0 = Single samples
1 = Tape on reel (100 pieces)

Parts of this product are patent protected.