



# LEA-4H

## ANTARIS<sup>®</sup> 4 Programmable GPS Module with SuperSense<sup>®</sup> Automotive and Mobile Terminal Applications

### Overview

The LEA-4H module combines high sensitivity, exceptionally low power consumption and a USB port in a small module measuring just 17 x 22 mm. The -158 dBm tracking sensitivity extends positioning coverage into places where GPS was not possible before, and enables solutions using smaller or covert antennas.



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. The combination of these features makes this module suitable for a broad spectrum of GPS products whose key requirements include high sensitivity, low power consumption and small size.

### Highlights

- **SuperSense Indoor GPS**
- **Ultra low power consumption**
- **Supports A-GPS services including AssistNow<sup>®</sup> Online and AssistNow<sup>®</sup> Offline<sup>1</sup>**
- **Flash EPROM: programmable and configurable**
- **4 Hz position update rate**
- **1 USB and 1 UART port**

### Features

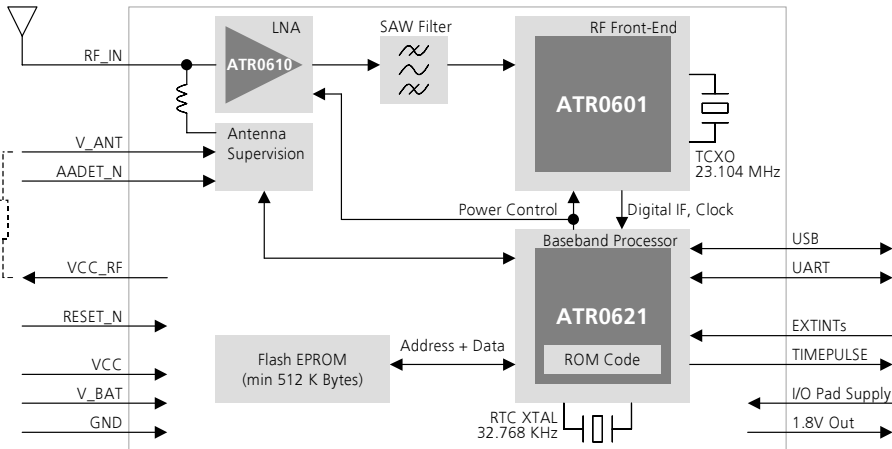
- 16 channel ANTARIS 4 positioning engine
- Supports DGPS, WAAS, EGNOS and MSAS
- Power saving modes
- 5  $\mu$ A backup current
- Configurable I/O and UART voltage levels
- Supports passive and active antennas
- Antenna short and open circuit detection and protection
- Power brown-out protection:  
No external reset hardware needed
- Operating temperature range: -40 to 85°C
- RoHS compliant (lead-free)

*your position  
is our focus*



### Block Diagram

<sup>1</sup> A special firmware is required for using AssistNow Offline.



## Receiver Performance Data

|                                    |  |
|------------------------------------|--|
| <b>Receiver Type</b>               | 16 channel,<br>L1 frequency, C/A code  |
| <b>Max. Update Rate</b>            | 4 Hz   |
| <b>Accuracy</b>                    | Position 2.5 m CEP<br>DGPS / SBAS 2.0 m CEP <sup>2</sup>   |
| <b>Start-up Times</b> <sup>3</sup> | Hot start <3.5 sec<br>Warm start 33 sec<br>Cold start 34 sec<br>Aided start 5 sec<br>Reacquisition < 1 s |
| <b>Sensitivity</b>                 | Tracking -158 dBm<br>Acquisition & Reacquisition: -148 dBm<br>Cold starts: -142 dBm                      |
| <b>Timing Accuracy</b>             | RMS 50 ns<br>99% <100 ns   |
| <b>Operational Limits</b>          | Velocity 515 m/s (1000 knots)  |

<sup>2</sup> Depends on accuracy of correction data provided by the DGPS or SBAS service

<sup>3</sup> Measured with good visibility and -125 dBm signal strength

## Interfaces

|                                |   |
|--------------------------------|---|
| <b>USB</b>                     | V1.1 (V2.0 compatible)  |
| <b>Serial Ports</b>            | 1 UART  |
| <b>Digital I/O</b>             | Configurable time pulse<br>2 EXTINTs for receiver wake-up and optional A-GPS time synchronization |
| <b>Serial and I/O Voltages</b> | Configurable output levels between 1.65 and 3.6V<br>5V tolerant inputs                            |
| <b>Protocols</b>               | NMEA, UBX binary, RTCM<br><br>Supports protocol mixing over same serial and USB ports             |

## Electrical Data

|                            |   |
|----------------------------|---|
| <b>Power Supply</b>        | 2.7 to 3.3 V  |
| <b>Power Consumption</b>   | typ. 39 mA @ 3.0 V<br>Sleep mode: typ. 65 µA  |
| <b>Backup Power</b>        | 1.5 V to 3.6 V, typ. 5 µA   |
| <b>Antenna Power</b>       | External or Internal VCC_RF   |
| <b>Antenna Supervision</b> | Integrated short-circuit detection and antenna shutdown, open circuit detection is supported with AADET_N input and little external circuitry |

## Environmental Data

|                        |   |
|------------------------|---|
| <b>Operating Temp.</b> | -40°C to 85°C                                       |
| <b>Storage Temp.</b>   | -40°C to 85°C                                       |
| <b>Vibration</b>       | 5 Hz to 500 Hz, 5g (IEC 68-2-6)                     |
| <b>Shock</b>           | Half sine 30g / 11ms<br>(IEC 68-2-27 / DIN 40046-7) |

## Mechanical Data



## Support Products

|                                     |  |
|-------------------------------------|--|
| <b>AEK-4H</b>                       | An easy-to-use kit to get familiar with the SuperSense technology on ANTARIS 4 platforms and to evaluate functionality and to visualize GPS performance. |
| ANTARIS 4 SuperSense Evaluation Kit |  |

## Ordering Information

|                       |  |
|-----------------------|--|
| <b>LEA-4H-0-000-0</b> | LEA-4H – Programmable GPS Module with SuperSense |
|                       | <u>Delivery Packing</u>                          |
|                       | 0 = Single samples                               |
|                       | 1 = Tape on reel (100 pieces)                    |

Semiconductor technology provided by ATMEL.

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