



# TIM-4H

## SuperSense<sup>®</sup> GPS Receiver Module ANTARIS<sup>®</sup> 4 Positioning Engine

Preliminary Data

### Overview

The TIM-4H module combines high sensitivity with exceptionally low power consumption. The -158 dBm tracking sensitivity extends positioning coverage into places where GPS was not possible before, and enables solutions using smaller or covert antennas.



25.4 x 25.4 x 3 mm

The successor to the TIM-LH module also shares the TIM-LH's 25.4 x 25.4 x 3 mm industry standard form factor initially created by u-blox. A 35% reduction in power consumption means extended battery time for portable, handheld devices. Finally, its small form factor and SMT pads are designed for fully automatic assembly processes with standard pick-and-place equipment and reflow soldering, enabling cost-efficient, high-volume production.

### New with ANTARIS 4

- 38mA supply current (Power reduction by more than 35% compared to predecessor modules)
- Significantly lower battery backup current
- RoHS compliant (lead-free)

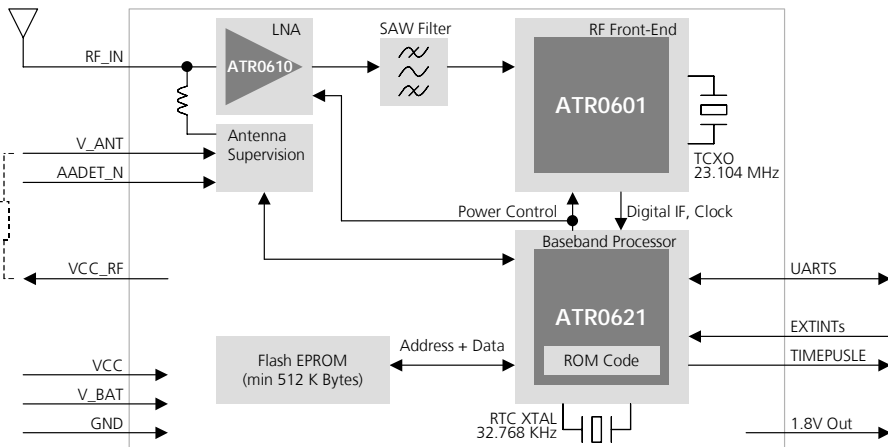
### Key Features

- SuperSense Indoor GPS
- 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<sup>™</sup> power saving mode
- Supports passive and active antennas
- Antenna short and open circuit detection and protection
- Operating temperature range: -40 to 85°C

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is our focus*



### Block Diagram



## Receiver Performance Data

<b>Receiver Type</b>	16 channel, L1 frequency, C/A code	
<b>Max. Update Rate</b>	4 Hz	
<b>Accuracy</b>	Position	2.5 m CEP
	DGPS / SBAS	2.0 m CEP <sup>1</sup>
<b>Start-up Times<sup>2</sup></b>	Hot start	<3.5 sec
	Warm start	33 sec
	Cold start	34 sec
	Aided start	5 sec
	Reacquisition	< 1 s
<b>Sensitivity</b>	Tracking	-158 dBm
	Acquisition & Reacquisition:	-148 dBm
	Cold starts:	-142 dBm
<b>Timing Accuracy</b>	RMS	50 ns
	99%	<100 ns
<b>Operational Limits</b>	Altitude	18,000 m
	Velocity	515 m/s
	One of the limits may be exceeded but not both.	

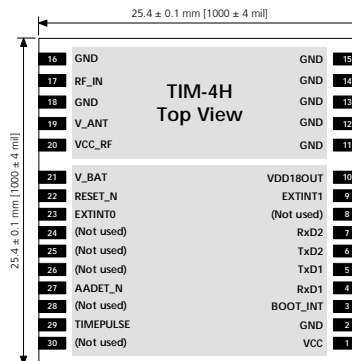
<sup>1</sup> Depends on accuracy of correction data provided by the DGPS or SBAS service

<sup>2</sup> Measured with good visibility and -125 dBm signal strength

## Environmental Data

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

## Mechanical Data



## Interfaces

<b>Serial Ports</b>	2 UARTs
<b>Digital I/O</b>	Configurable time pulse 2 EXTINTs inputs for time mark / counter (optional)
<b>Serial and I/O Voltages</b>	3 V levels, 5 V tolerant inputs
<b>Protocols</b>	NMEA, UBX binary, RTCM  Supports protocol mixing over same serial port

## Support Products

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

## Electrical Data

<b>Power Supply</b>	2.7 – 3.3 V
<b>Power Consumption</b>	typ. 39 mA @ 3.0 V typ. 38 mA @ 2.7 V  Sleep mode: typ. 80 µA
<b>Backup Power</b>	1.5 V – 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

## Ordering Information

<b>TIM-4H-0-000-0</b>	TIM-4H – SuperSense® GPS Receiver Module
	<b>Delivery Packing</b> 0 = Single samples 1 = Tape on reel (100 pieces)

Parts of this product are patent protected.

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