![u-blox logo]

TIM-LH
SuperSense® GPS Receiver Module
ANTARIS® Positioning Engine

The TIM-LH with SuperSense® provides unparalleled high sensitivity at ultra low power consumption. With –158 dBm tracking sensitivity, it is optimally suited for indoor GPS and other weak signal environments where no GPS reception was possible before. The TIM-LH is the best choice for a wide range of consumer and professional products with tight power budget and required to operate in weak signal environments.

Overview

The SuperSense technology heightens tracking sensitivity to -158 dBm while power consumption stays low regardless of the strength of the received signals. SuperSense provides excellent GPS coverage in challenging locations where conventional GPS receivers cannot navigate.

SuperSense creates new application benefits like:

- Indoor GPS (buildings, garages, airports, etc.)
- Urban canyons, dense foliage, short tunnels
- Covert antenna applications
- One-box in-car navigation devices
- Use of small antennas with lower performance

The 16 parallel channels in the ANTARIS GPS Engine can also track SBAS signals (WAAS, EGNOS) that add to further accuracy and coverage. The low power consumption makes SuperSense the best choice for battery-operated consumer and professional products.

Benefits

- Unprecedented Sensitivity
  - -158 dBm tracking
  - -148 dBm acquisition & reacquisition
  - -142 dBm cold starts
- Ultra-low power consumption
- Excellent GPS performance
  - Excellent navigation accuracy, even at low signal levels
  - Active multipath detection and removal
  - Fast Time-To-First-Fix (TTFF)
- Highly integrated GPS module
  - Automatic pick-and-place assembly
  - Reflow solderable
- Maximum flexibility
  - Extensively configurable
- Fully EMI shielded
- Passive and active antenna support

Features

- 16 channel GPS receiver
- 8192 simultaneous time-frequency search bins
- 4 Hz position update rate
- ANTARIS Positioning Engine
  - ATR0600 RF front-end IC
  - ATR0620 Baseband IC with ARM7TDMI inside
  - ATR0610 Low noise amplifier IC
- FLASH memory
- TCXO (Temperature Compensated Crystal Oscillator)
- DGPS and SBAS (WAAS, EGNOS) support
- FixNOW™ power saving mode
- Operating voltage 2.7 to 3.3 V
- Battery supply pin for internal backup memory and real time clock
- Industrial operating temperature range –40 to 85°C
- Small size: 25.4 x 25.4 x 3 mm, weight: 3g

Support Products

ANTARIS SuperSense EvalKit

Use the ANTARIS SuperSense EvalKit to experience the performance of SuperSense™ weak signal tracking.

your position is our focus

Specifications

Receiver Performance Data

Receiver Type	16 channel, L1 frequency, C/A code
Max. Update Rate	4 Hz
Accuracy	Position 2.5 m CEP [1] DGPS / SBAS 2.0 m CEP [2]
Start-up Times	Hot start <3.5 sec [1] Cold start 34 sec [1]
Signal reacquisition	< 1 s [1]
Sensitivity	Tracking: -158 dBm Acquisition & Reacquisition: -148 dBm [3] Cold starts: -142 dBm
Dynamics	Signal levels: Strong: typ. 4 g Weak: typ. 1 g
Operational Limits	COCOM restrictions apply

[1] Depends on signal strength
[2] Depends on accuracy of correction data of DGPS or SBAS service
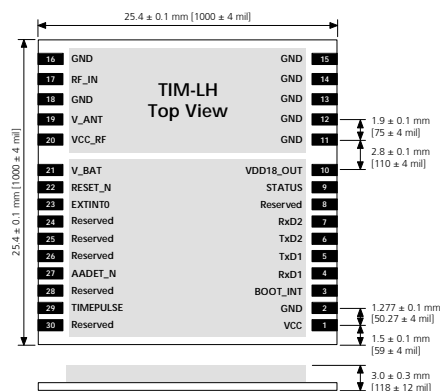[3] Also applicable for assisted GPS (A-GPS)

Electrical Data

Power Supply	2.7 – 3.3 V
Power Consumption	typ. 170 mW @ 3.0 V typ. 154 mW @ 2.7 V
Backup Power	1.95 V – 3.6 V
Serial Ports	2 USARTs @ 3 V levels 5V TTL compatible inputs
Digital IOs	TIMEPULSE @ 1.8 V
Protocols	NMEA, UBX binary, RTCM Interleaving multiple protocols via same serial interface is supported
Interface	30 pin leadless chip carrier reflow solderable
Antenna Power	External or Internal VCC_RF
Antenna Supervision	Integrated short-circuit detection and antenna shutdown Open circuit detection is supported with 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

TIM-LH Top View

25.4 ± 0.1 mm [1000 ± 4 mil]
25.4 ± 0.1 mm [1000 ± 4 mil]

Pin	Left		Right	Pin
16	GND		GND	15
17	RF_IN		GND	14
18	GND		GND	13
19	V_ANT		GND	12
20	VCC_RF		GND	11
21	V_BAT		VDD18_OUT	10
22	RESET_N		STATUS	9
23	EXTINT0		Reserved	8
24	Reserved		RxD2	7
25	Reserved		TxD2	6
26	Reserved		TxD1	5
27	AADET_N		RxD1	4
28	Reserved		BOOT_INT	3
29	TIMEPULSE		GND	2
30	Reserved		VCC	1

1.9 ± 0.1 mm [75 ± 4 mil]
2.8 ± 0.1 mm [110 ± 4 mil]
1.277 ± 0.1 mm [50.27 ± 4 mil]
1.5 ± 0.1 mm [59 ± 4 mil]
3.0 ± 0.3 mm [118 ± 12 mil]

Ordering Information

TIM-LH-0-000-0 TIM-LH – SuperSense GPS Receiver Module

This product contains one single-usage license of the ANTARIS SuperSense Firmware

Delivery Packing
0 = Single samples
1 = Tape on reel (100 pieces)
5 = Tape on reel (500 pieces)

AEK-LS-2-000-0 ANTARIS SuperSense EvalKit

Parts of this product are patent protected.

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