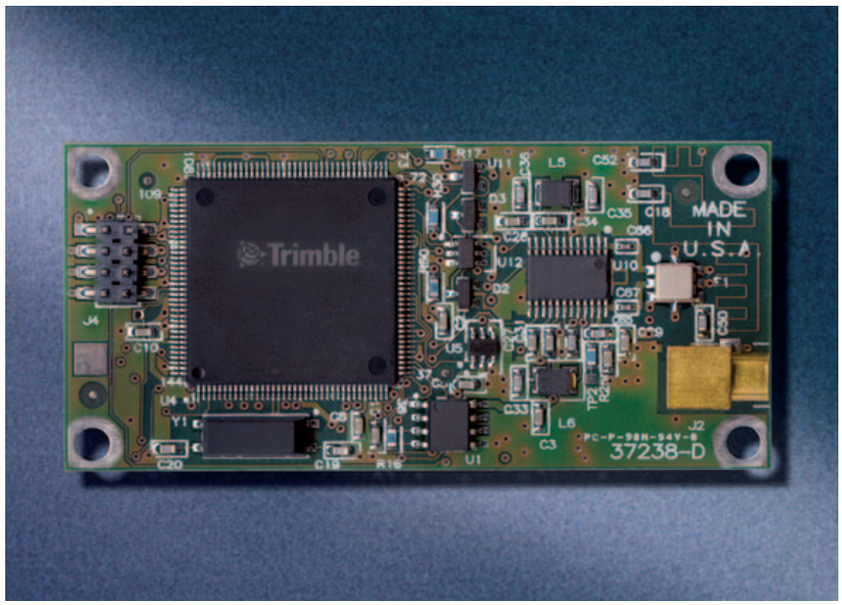
Lassen LP GPS

Low power module for portable applications

Key Features and Benefits

- **Programmable power management**
- **Sized for portable devices**
- **3.3 V for battery powered applications**

Trimble's Lassen™ LP GPS is a low power miniature GPS receiver module that is ideal for power-conscious portable applications. It is intended specifically for system designers and integrators who are developing the next generation of portable devices. This embedded technology gives the system developer the programming flexibility to achieve a significant reduction in power consumption.



Lassen LP GPS module

Power management

The Lassen LP GPS features a new set of power management tools that puts the power budget decision in the developer's hands. The developer now can determine the best balance between operational frequency and power conservation for a particular application.

In Schedule Track™ operating mode, the developer can program the unit to power up, quickly acquire satellites and output position to a schedule. After gathering satellite data and computing its location, the receiver may be directed to power down to a minimal mode of operation for a programmed interval or until awakened by a hardware interruption. Schedule Track provides hot start performance at a programmed interval or in response to a hardware event. Schedule Track mode provides an advantage over normal battery-backed fast start modes with automatic wakeup to maintain current satellite data for fastest possible acquisition. Schedule Track offers the lowest power consumption in a deep sleep mode but provides position data as quickly as possible when needed.

Ease of integration

Lassen LP GPS provides a choice of data protocols for maximum flexibility. The TSIP binary data protocol incorporates new power management features and provides maximum control over system operation. The TAIP and NMEA protocols are available where ASCII data is preferred. A secondary serial input port is available for RTCM SC-104 differential correction data for high accuracy applications.

The Lassen LP GPS also incorporates Trimble's antenna detection and protection circuit to monitor the condition of the antenna system. And high performance, miniature 3.3 V antennas are available for the Lassen LP GPS.

Getting started

The Lassen LP Starter Kit provides everything you need to get started integrating state-of-the-art GPS capability into your application.

Lassen LP GPS

Low power module for portable applications

PERFORMANCE SPECIFICATIONS

General	L1 frequency, C/A code (SPS), 8-channel, continuous tracking receiver, 32 correlators
Update rate	TSIP @ 1 Hz NMEA @ 1 Hz TAIP @ 1 Hz
Accuracy	
Horizontal:	<6 meters (50%); <9 meters (90%)
Altitude:	<11 meters (50%); <18 meters (90%)
Velovity:	0.06 m/sec
PPS:	±95 nanoseconds
DGPS accuracy	
Position	2 m CEP (50%)
Velocity	0.05 m/sec (1 Sigma)
Acquisition	Hot Start: < 15 seconds (90%) Warm Start: < 42 seconds (90%) Cold Start: < 130 seconds (90%) Cold start requires no initialization. Warm start requires last position, time and almanac saved in battery back-up memory. Hot start requires that the ephemeris also saved.
Reacquisition after signal loss	< 2 seconds (90%)
Dynamics	
Acceleration	4 g (39.2 m/sec^2)
Motional Jerk	20 m/sec^3
Operational limits	Altitude <18,000 m or velocity < 515 m/sec either limit may be exceeded but not both

ENVIRONMENTAL SPECIFICATIONS

Operating temp	–40°C to +85°C (standard)
Storage temp	–55°C to +100°C
Vibration	0.008 g^2/Hz 5 Hz to 20 Hz 0.05 g^2/Hz 20 Hz to 100 Hz –3 dB/octave 100 Hz to 900 Hz
Operating humidity	5% to 95% R.H. non-condensing, +60°C

TECHNICAL SPECIFICATIONS

Prime power	+3.3 V DC, ± 0.3 V
Power consumption	
Normal operation	GPS board only: 55 mA, 0.182 W with antenna: 67 mA, 0.221 W
Deep sleep	8 mA, board only
Backup power	+3.0 to +3.6 V DC 2–5 µA at +25°C (nominal)
Serial ports/1PPS	CMOS TTL levels
Supported Protocols:	TSIP @ 9600 baud, 8-Odd-1 (configurable) TAIP @ 4800 baud, 8-None-1 (configurable) NMEA 0183 v2.1 @ 4800 baud, 8-None-1 (configurable) RTCM SC-104 @ 4800 baud, 8-None-1
NMEA messages	GGA, VTG, GLL, ZDA, GSA, GSV and RMC messages selectable by TSIP command; selection stored in non-volatile memory.
Antenna power	3.3 V at 12 mA Open-circuit detection Short-circuit protection

PHYSICAL CHARACTERISTICS

Dimensions	2.605″ L × 1.250″ W × 0.475″ H (66.167 mm × 31.750 mm × 12 mm)
Weight	0.4 oz. (12.5 grams)
Connectors	RF: right angle MCX Power, I/O: 8-pin (2 × 4), 2 mm header

ACCESSORIES

Compact Magnetic-Mount 3V GPS Antenna

Compact, 3.3V, magnetic mount, active micropatch antenna with 5-meter cable and MCX connector.
1.65” x 1.99” x 0.55” high (42mm x 50.5 mm x 13.8 mm)

Compact Unpackaged 3V GPS Antenna

Same Basic antenna as compact magnetic-mount 3V GPS antenna listed above, without the external packaging. 3.3V, active antenna with 11-cm cable and right-angle MCX connector.
1.36” x 1.41” x 0.35” high (34.6mm x 29 mm x 9 mm)

ORDERING INFORMATION

Module

Lassen LP GPS Module, TSIP (binary) protocol, NMEA 0183 (ASCII) protocol and TAIP (ASCII) protocol, DGPS ready

Antennas

Magnetic-mount 3.3V antenna, 5-meter cable, MCX connector
Unpackaged 3.3V antenna, 11-cm cable, right-angle MCX connector

Starter Kit

Includes Lassen LP GPS module mounted on interface motherboard in a durable metal enclosure with dual DB9, RS-232 interface, AC/DC power converter, compact magnetic-mount GPS antenna, interface cable, TSIP, NMEA and TAIP protocols, software toolkit for TSIP and manual on CD-ROM.

Visit our website at www.trimble.com/oem

Specifications subject to change without notice

Trimble Navigation Limited is not responsible for the operation or failure of operation of GPS satellites or the availability of GPS satellite signals.

Trimble

www.trimble.com

Trimble Navigation Limited
Corporate Headquarters
645 North Mary Avenue
Sunnyvale, CA 94086
1-800-787-4225
1-408-481-7741

Trimble Navigation Europe Ltd.
Phone: 49-173-38-64-955

Trimble Export Ltd, Korea
Phone: 82-2-551-2730
korea_sales@trimble.com

Trimble Navigation Ltd, China
Phone: 86-21-6391-7814