Lassen iQ GPS Module

Low-power, high-quality GPS solution for your mobile products

Key Features and Benefits

- **Ultra-low power: 86 mW**
- **Trimble quality at low cost**
- **Aided GPS through TSIP for faster acquisition**
- **Dual sensitivity modes with automatic switching**
- **12-channel simultaneous operation**
- **Supports NMEA 0183, TSIP, TAIP and DGPS**

Trimble's Lassen® iQ module is one smart buy. It adds powerful, 12-channel GPS functionality to your mobile product in a postage-stamp-sized footprint with ultra-low power consumption and extreme reliability—all at a very economical price.

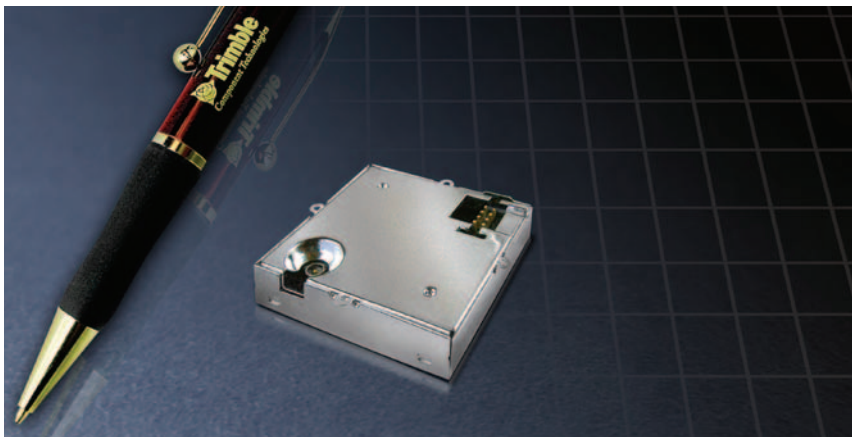
Designed for portable handheld, battery-powered applications such as cell phones, pagers, PDAs, digital cameras, and many others, the module is also ideal for standard GPS applications such as tracking.

The 12-channel Lassen iQ module is fully compatible with Trimble's popular Lassen SQ module. Using Trimble's breakthrough, patented FirstGPS® architecture, the module delivers complete position, velocity and time (PVT) solutions for use in the host application.

Powerful Performance

The Lassen iQ module features two GPS signal sensitivity modes: Standard and Enhanced. With Enhanced mode enabled, the module automatically switches to higher sensitivity when satellite signals are weak.

The module also supports TSIP download of critical startup information for fast acquisition. This aided GPS (A-GPS) startup provides hot start performance for each power-up.



Lassen iQ GPS receiver with metal shield

The Lassen iQ module is the only stamp-sized GPS product that supports the four most popular protocols: DGPS (RTCM), TSIP (Trimble Standard Interface Protocol), TAIP (Trimble ASCII Interface Protocol) and NMEA 0183.

The Lassen iQ module combines Trimble performance and quality with low cost. With an MTBF (mean time between failures) figure of 60 years, it is one of the most reliable GPS receivers on the market.

Hardware

A metal shield encloses the module for protection and ease of handling. The package has a small form factor, (approximately 26 mm x 26 mm, including the shield). It typically requires less than 90 mW of power at 3.3 VDC.

The highly integrated module is a miniature board containing Trimble GPS hardware core based on our Colossus® RF ASIC and IO-TS digital signal processor (DSP), a 32-bit RISC CPU and flash memory.

Antennas

The Lassen iQ module is compatible with active, 3.3-VDC antennas. Three such antennas are available from Trimble and are recommended for use according to your application; see the reverse side for antenna details.

The module provides both antenna open and short detection plus antenna short protection.

Starter Kit

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

Trimble

Lassen iQ GPS Module

Low-power, high-quality GPS solution for your mobile products

KEY FEATURES

- 12-channel simultaneous operation
- Ultra-low power consumption: less than 90 mW (27 mA) @ 3.3 V
- Dual sensitivity modes with automatic switching
- Aided GPS through TSIP
- Antenna open and short circuit detection and protection
- Compact size: 26 mm W x 26 mm L x 6 mm H
- Supports NMEA 0183, TSIP, TAIP, DGPS protocols
- Trimble quality at low cost

PERFORMANCE SPECIFICATIONS

General L1 (1575.42 MHz) frequency, C/A code, 12-channel, continuous tracking receiver

Update Rate TSIP @ 1 Hz; NMEA @ 1 HZ; TAIP @ 1 Hz

Accuracy

Horizontal:	<5 meters (50%), <8 meters (90%)
Altitude:	<10 meters (50%), <16 meters (90%)
Velocity:	0.06 m/sec
PPS (static):	±50 nanoseconds

Acquisition (Autonomous Operation in Standard Sensitivity Mode)

Reacquisition:	<2 sec. (90%)
Hot Start:	<10 sec (50%), <13 sec (90%)
Warm Start:	<38 sec (50%), <42 sec (90%)
Cold Start:	<50 sec (50%), <84 sec (90%)

Cold start requires no initialization. Warm start implies last position, time and almanac are saved by backup power. Hot start implies ephemeris also saved.

Operational (COCOM) Limits

Altitude:	18,000 m
Velocity:	515 m/s

Either limit may be exceeded, but not both

INTERFACE CHARACTERISTICS

Connectors I/O: 8-pin (2x4) 2 mm male header, micro terminal strip
ASP 69533-01
RF: Low-profile coaxial connector
H.FL-R-SMT (10), 50 Ohm

Serial Port 2 serial ports (transmit/receive)

PPS 3.3 V CMOS-compatible TTL-level pulse, once per second

Protocols TSIP, TAIP, NMEA 0183 v3.0, RTCM SC-104

NMEA Messages GGA, VTG, GLL, ZDA, GSA, GSV and RMC
Messages selectable by TSIP command
Selection stored in flash memory

ELECTRICAL CHARACTERISTICS

Prime Power +3.0 VDC to 3.6 VDC (3.3 V typ.)

Power Consumption Less than 90 mW (27 mA) @ 3.3 V

Backup Power +2.5 VDC to +3.6 VDC (3.0V typ.)

Ripple Noise Max 60 mV, peak to peak from 1 Hz to 1 MHz

Antenna Fault Protection Open and short circuit detection and protection

ENVIRONMENTAL SPECIFICATIONS

Operating Temperature –40° C to +85° C

Storage Temperature –55° C to +105° 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, at +60° C

PHYSICAL CHARACTERISTICS

Enclosure Metal enclosure with solder mounting tabs

Dimensions 26 mm W x 26 mm L x 6 mm H
(1.02" W x 1.02" L x 0.24" H)

Weight 6.5 grams (0.2 ounce) including shield

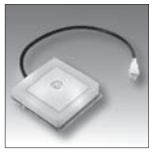
ORDERING INFORMATION & ACCESSORIES

Module Lassen iQ module, in metal enclosure with solder mounting tabs

Starter Kit Includes Lassen iQ module mounted on interface motherboard in a durable metal enclosure, AC/DC power converter, compact magnetic-mount GPS antenna, ultra-compact embedded antenna, serial interface cable, cigarette lighter adapter, TSIP, NMEA, and TAIP protocols, software toolkit and manual on CD-ROM

Antenna Transition Cable, MCX
RF cable for connecting antennas with MCX connector to on-module H.FL-RF connector.
Cable length: 10 cm

Antenna Transition Cable, SMA
RF cable for connecting antennas with SMA connector to on-module H.FL-RF connector.
Cable length: 12.9 cm.



Ultra-Compact Embedded Antenna
3.3V active miniature unpackaged antenna
Cable length: 8 cm
Dim: 22 mm W x 21 mm L x 8 mm H
(0.866" x 0.827" x 0.315")
Connector: HFL; mates directly to on-module RF connector

Compact Unpackaged Antenna
3V active micropatch unpackaged antenna
Cable length: 11 cm
Dim: 34.6 mm W x 29 mm L x 9 mm H
(1.362" x 1.141" x 0.354")
Connector: MCX; mates through the optional RF transition cable to on-module RF connector

Compact Magnetic-Mount Antenna, MCX or SMA
3V active micropatch antenna with magnetic mount
Cable length: 5 m
Dim: 42 mm W x 50.5 mm L x 13.8 mm H
(1.65" x 1.99" x 0.55")
Connectors: MCX or SMA, mates through the optional RF trasition cable to the module RF connector

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.

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