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

The Trimble® 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.

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 and DGPS (RTCM SC-104).

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 V DC.
### 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, RTCM SC-104 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
Reacquisition .......... <2 sec. (90%)
Cold Start .......... <10 sec (50%), <13 sec (90%)
Warm Start .......... <38 sec (50%), <42 sec (90%)
Cold Start .......... <50 sec (50%), <86 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
- Velocity: 515 m/s

### Interface Characteristics
Connectors, I/O ............... 8-pin (2x4) 1.27 mm male header, micro terminal strip
Connectors, RF ............... Low-profile coaxial connector
Serial Port ............... 2 serial ports (transmit/receive)
PPS ................... 3.3 V CMOS-compatible TTL-level pulse, once per second
Protocols ............... TSIP, TAIP, NMEA 0183, RTCM SC-104
NMEA Messages ............ GGA, VTG, GLL, ZDA, GSA, GSV, RMC
Messages selectable by TSIP command
Selection stored in flash memory

### Electrical Characteristics
Prime Power ............... +3.0 V DC to 3.6 V DC (3.3 V typ.)
Power Consumption ........... Less than 90 mW (27 mA) @ 3.3 V
Backup Power ............... +2.5 V DC to +3.6 DC (3.0 V 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/Hz ...... 5 Hz to 20 Hz
- 0.05 g/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
- Dimensions: 26 mm W x 26 mm L x 6 mm H
- Weight: 6.5 grams (0.2 ounce) including shield

### Ordering Information & Accessories
- 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, USB interface cable, cigarette lighter adapter, TSIP, NMEA, and TAIP protocols, software toolkit and manual on CD-ROM
- RF cable for connecting antennas with MCX connector to on-module H.FL-RF connector.

### Specifications
- Parts of this product are patent protected.
- Trimble has relied on representations made by its suppliers in certifying this product as RoHS compliant.
- 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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