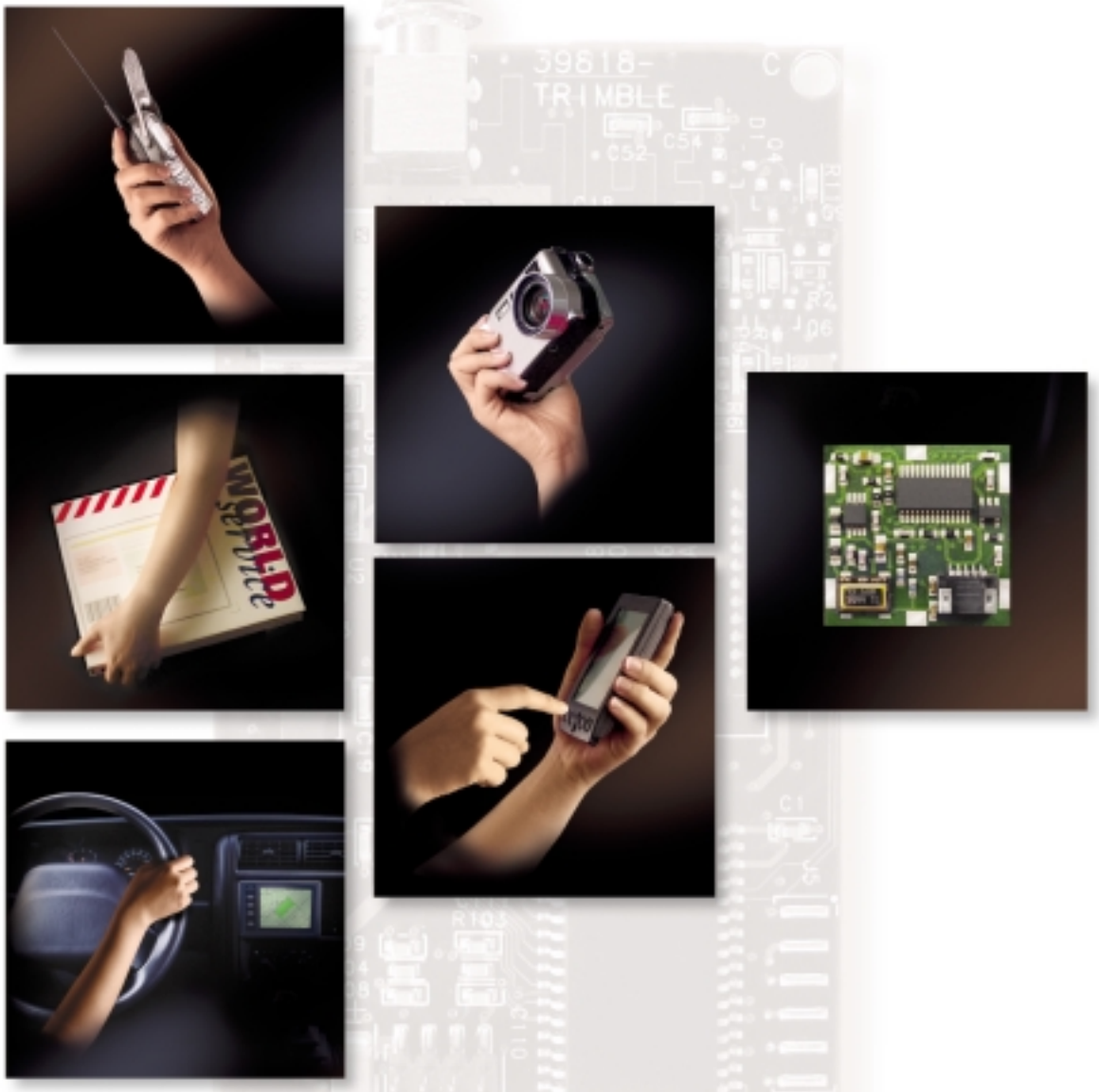
Miniature GPS Products for Portable Applications

From Trimble: the value leader in high-quality, innovative GPS technology



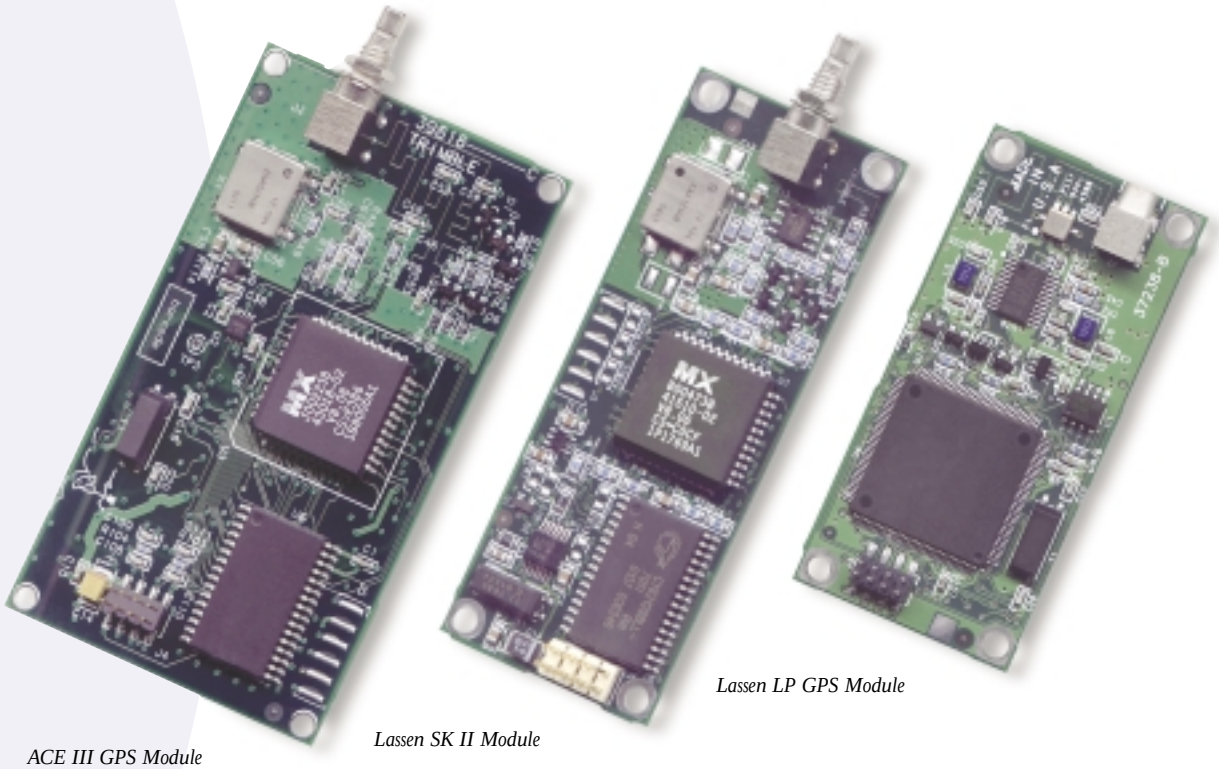
Trimble™

Boards and Modules

As a worldwide leader in GPS technology, Trimble provides GPS boards, modules, chipsets, and technology licenses to major electronics manufacturers around the world. Our customers use Trimble components and technology to add positioning functionality to their business and consumer products, including:

- automobile navigation systems
- PDAs and cell phones
- vehicle location and security systems
- instrumentation systems

The boards and modules described below are second- and third-generation products, and build on the proven records of their popular predecessors. Each is backward compatible with its predecessor and provides comparable or improved performance at reduced size and power usage. Each is built for tough environments (–40°C to +85°C at up to 95% humidity). All provide position, velocity, and time (PVT) solutions at a 1-Hz rate using TSIP, TAIP, or NMEA protocols. And all accept differential corrections for high-accuracy DGPS applications.



ACE III GPS Module

Lassen SK II Module

Lassen LP GPS Module

ACE III GPS™ Module

+5V GPS receiver module for high-performance navigation, tracking, data collection and other battery-powered applications.

- Dimensions: 82.6 mm L x 46.5 mm W x 11.5 mm H (3.25" x 1.83" x 0.45") without connectors
- Weight: 28.3 g (1.0 oz) without optional shield
- Power consumption: <0.5 watt without antenna

Lassen™ SK II Module

+5V GPS module for fast integration in automotive, navigation, tracking, data collection, and timing applications.

- Dimensions: 82.6 mm L x 31.2 mm W x 10.2 mm H (3.25" x 1.25" x 0.40")
- Weight: 19.6 g (0.7 oz) without optional shield
- Power consumption: 0.47 watt without antenna
- Good performance even in weak GPS signal areas
- Complete developer's Starter Kit available

FirstGPS Technology

FirstGPS: Flexible Integration of Real-Time Software Tasks. Trimble's revolutionary GPS receiver/processor architecture adds GPS location capability to OEM products with less power and less space.

Architecture

Trimble's patented FirstGPS™ architecture is a technology breakthrough that enables OEMs to integrate GPS location capability into their products using far less power and space than any other means. FirstGPS architecture is especially suited to mobile, battery-powered applications such as cell phones, pagers, PDAs, digital cameras, automobile navigation systems, and many others.

FirstGPS architecture consists primarily of two integrated circuits and FirstGPS software. It provides a GPS "measurement platform" that performs the processor-intensive GPS tracking and processing tasks. The measurement platform enables the host CPU and memory to calculate the actual position, velocity, and time (PVT) solutions at its own pace, without burdening the other applications running on the device.

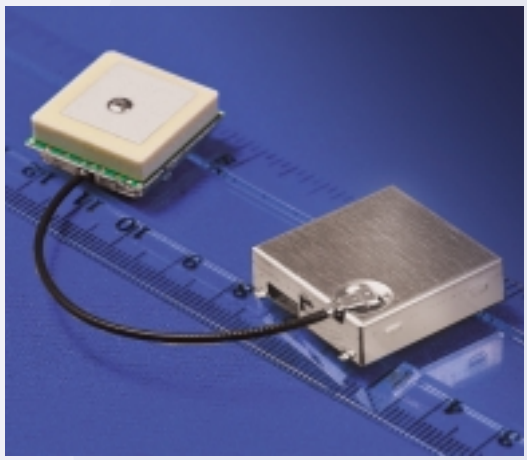
M-Loc™ MPM™ Module

Adds powerful GPS location capability to your mobile OEM product in a tiny space and with very low power usage.

Now you can get Trimble's breakthrough FirstGPS architecture in an ultra-compact, fully shielded module for top GPS performance and easy integration with your mobile product's CPU and memory. The M-Loc MPM module helps you get your product to market faster, with less risk and expense.

- Dimensions: 25.4 mm L x 25.4 mm W x 6.9 mm H (1" x 1" x 0.26")
- Weight: 5.7 g (0.2 oz)
- Power consumption: 34.7 mW (typical) without antenna

For more information on FirstGPS architecture, FirstGPS chipset, and the M-Loc MPM module, visit: www.trimble.com/mlocmpm.html



M-Loc MPM Module and Embedded Antenna

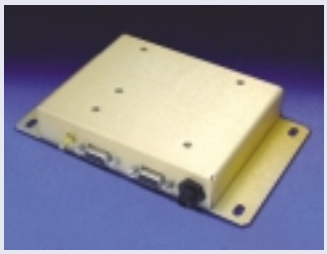
Lassen™ LP GPS Module

3.3V GPS low-power module for portable devices such as PDAs, personal communication systems, data terminals, recorders, and instrumentation units.

- Dimensions: 66.17 mm L x 31.75 mm W x 12 mm H (2.605" x 1.25" x 0.475")
- Weight: 0.4 oz (12.5 g)
- Power consumption: 0.182 watt without antenna
- Configurable power management modes
- Complete developer's Starter Kit available

SVeeEight Plus GPS™ Module

+9V to +32V plug-and-play module in tough metal enclosure for bolt-in mobile applications such as vehicle location and security.



SVeeEight Plus GPS Module

- Dimensions: 127 mm L x 102 mm W x 28 mm H (4.97" x 4.03" x 1.1")
- Weight: 0.26 kg (0.57 lb.)
- Power consumption: 0.95 watt (nominal) with antenna
- Packaging meets SAE and European CE requirements

Antennas

Trimble manufactures a variety of antenna styles and types to suit the most varied applications. All include a low-noise amplifier (LNA) to provide sensitive performance in the toughest environments (–40° to +85° C with high humidity).

Hardmount 5V GPS Antenna

Compact, active, micropatch GPS antenna used with Trimble's ACE III GPS, SveeEightPlus, and Lassen SK II GPS receiver boards for installation on or inside vehicles

- Dimensions: 63 mm dia x 40.5 mm H (2.48" x 1.6")
- Weight: 180 g (6.4 oz)
- Power consumption: 35 mA (max)
- Mounting: Single hole 0.75" threaded mount
- Standard TNC connector for ease of installation

Miniature 5V GPS Antenna

Compact, active, micropatch GPS antenna used with Trimble's ACE III GPS, SveeEightPlus, and Lassen SK II GPS receiver boards for installation on or inside vehicles

- Dimensions: 50.5 mm L x 42 W mm x 13.9 H mm (1.99" x 1.65" x 0.55")
- Weight: 60 g (without cable)
- Power consumption: 30 mA (max)
- Mounting: magnetic
- Cable: 5 meters with SMB or SMA connector
- Also available with SMA 35 dB preamplifier

Miniature 3V GPS Antenna

Compact, active, micropatch GPS antenna used with Lassen LP module for portable devices requiring low power consumption.

- Dimensions: 50.5 mm L x 42 mm W x 13.8 mm H (1.990" x 1.650" x 0.543")
- Weight: 115 g (without cable)
- Power consumption: 15 mA (max)
- Mounting: magnetic
- Cable: 5 meters with MCX connector

Miniature 3V GPS Antenna (unpackaged)

Same basic antenna as miniature 3V GPS antenna listed above, without the external packaging for greater flexibility in embedding in your application.

- Dimensions: 34.6 mm L x 29 mm W x 9 mm H (1.362" x 1.141" x 0.354")
- Power consumption: 15 mA (max)
- Cable: 110 mm with MCX right-angle connector

Embedded 3.3V GPS Antenna (unpackaged)

Ultra-compact, active GPS antenna used with M-Loc MPM module for demanding next-generation mobile product applications.

- Dimensions: 22 mm L x 21 mm W x 8 mm H (0.866" x 0.827" x 0.315")
- Weight: 20 g (typical)
- Power consumption: 13 mA (max)
- Cable: 80 mm with HFL right-angle connector

Focused on Innovation

Trimble is the first name in GPS, with more GPS-based products and patents than any other company. Through our continuing innovation, we are focused on providing the best value in high-quality, low-cost, low-power GPS technology. Trust Trimble as your one-stop shop for all of your location-based product needs.

For more information on any of our miniature GPS products, call us today or check out our web site at **www.trimble.com/oem**

Trimble
www.trimble.com

Trimble Navigation Limited
Corporate Headquarters
645 North Mary Avenue
Sunnyvale, CA 94086
+1-408-481-8940

Trimble Navigation Europe Limited
Trimble House
Meridian Office Park
Osborne Way, Hook,
Hampshire RG27 9HX U.K.
+44-1256-760-150

Trimble Navigation
Australia Pty Limited
P.O. Box 769
Spring Hill QLD 4004
Australia
61-7-3216-044

Trimble Japan
Shin-Ohashi Riverside
Bldg.101 3F, 4F
1-8-2 Shin-ohashi Kohtoh-ku,
Tokyo 135-0007 JAPAN
Tel: 81-3-5638-5018