

ACE III GPS

GPS Core Module for Embedded Applications

Key Features and Benefits

- Power consumption less than 0.5 Watt
- Next-generation RF technology
- Reliable performance from -40°C to $+85^{\circ}\text{C}$

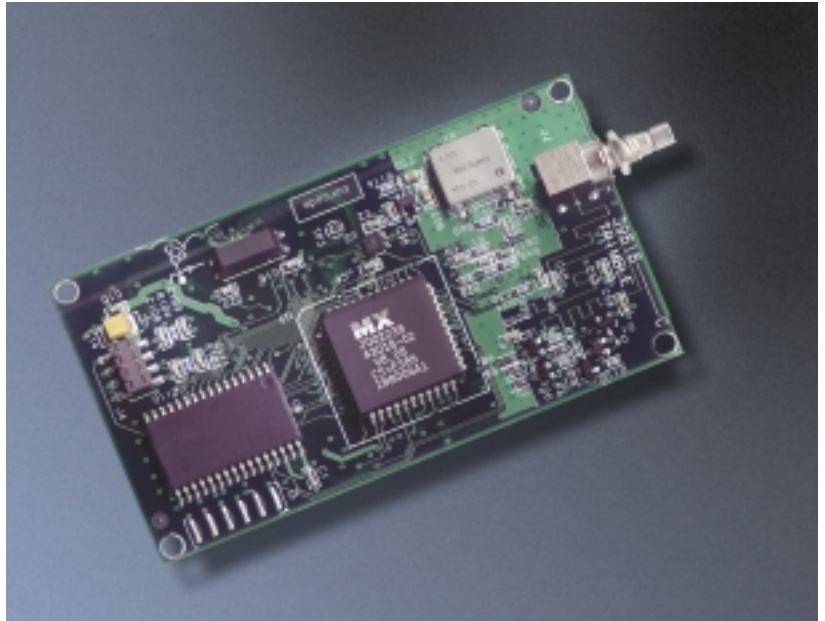
Continuing the Trimble tradition of delivering outstanding performance for a variety of embedded GPS applications, the ACE III GPS™ module provides a powerful 8-channel architecture in the popular core module form factor (3.25" L x 1.83" W x 0.45" H).

Power Saving and Reliable

Navigation, tracking, data collection and other battery-powered applications will benefit from the power savings and improved reliability provided by the ACE III. The module is backward compatible with the ACE II, but uses recent advances in silicon technology to deliver robust performance and reduce power consumption to less than 0.5 Watt. Higher integration of the RF section cuts component count by 25 percent, improves reliability, and delivers rapid startup over the entire operating temperature range of -40°C to $+85^{\circ}\text{C}$.

Easy Integration

Flexibility and easy integration are ensured with the ACE III GPS module's user-configurable dual serial input/output (I/O) ports. The ports can be configured either to TSIP binary data protocol for maximum control or to the easy-to-use TAIP protocol designed for tracking



ACE III GPS Core Module

applications. The ACE III I/O ports also can be configured to output standard NMEA data messages and to receive RTCM SC-104 differential corrections for 2-meter accuracy.

The user can configure the NMEA or TAIP message output rate as needed. TSIP data packets are output once each second. TSIP commands are used to configure and permanently store configuration and message selections in non-volatile memory.

Trimble offers a selection of high-sensitivity and robust noise-rejection GPS antennas for use with the ACE III GPS module. These include magnetic-

mount, through-hole permanent mount, and pole-mount antennas. The ACE III GPS module can report antenna status to assure proper system operation.

Starter Kits

The ACE III GPS Starter Kit makes it simple to evaluate the exceptional performance of ACE III GPS modules. The kit includes the ACE III GPS module installed inside a durable metal enclosure, a magnetic-mount antenna, an AC power adapter, a serial interface cable, a reference manual and GPS software useful for application development.

ACE III GPS

GPS Core Module for Embedded Applications

PERFORMANCE SPECIFICATIONS

General	L1 frequency, C/A code (SPS), 8-channel, continuous tracking receiver, 32 correlators
Update rate	TSIP @ 1Hz; NMEA @ 1Hz; TAIP @ 1Hz
Accuracy	Position: 25m CEP (50%) without SA Velocity: 0.1 m/sec without SA (1 sigma)
1 PPS	±95 nanoseconds (over-determined clock mode)
DGPS accuracy	Position: 2m CEP (50%) Velocity: 0.05 m/sec (1 sigma) Time: ±500 nanoseconds (nominal)
Acquisition	Cold start: <160 seconds (90%) Warm start: <45 seconds (90%) Hot start: <20 seconds (90%) Cold start requires no initialization. Warm start implies last position, time and almanac are saved by back-up power. Hot start implies ephemeris also saved.
Reacquisition after signal loss	<2 seconds (90%)
Dynamics	
Acceleration	4g (39.2 m/sec ²)
Motional Jerk	20 m/sec ³
Operational limits	Altitude <18,000m or velocity <515 m/sec Either limit may be exceeded but not both.

ENVIRONMENTAL SPECIFICATIONS

Operating temperature	-40°C to +85°C
Storage temperature	-55°C to +100°C
Vibration	0.008 g ² /Hz 5Hz to 20Hz 0.05 g ² /Hz 20Hz to 100Hz 3dB/octave 100Hz to 900Hz
Operating humidity	5% to 95% R.H. non-condensing, @ +60°C
Altitude	-400m to +18,000m

PHYSICAL CHARACTERISTICS

Prime power	+5V DC, ±5%
Power consumption (nominal)	GPS board only: 95mA, 0.47W With antenna: 120mA, 0.60W
Back-up power	+3.2 to +5V DC 2µA @ +3.5V, +25°C (nominal)
Serial ports/1PPS	CMOS TTL levels
Protocols	TSIP @ 9600 baud, 8-Odd-1 NMEA 0183 v2.1 @ 4800 baud, 8-None-1 RTCM SC-104 @ 4800 baud, 8-None-1
NMEA messages	GGA, VTG, GLL, ZDA, GSV, GSA and RMC messages selectable by TSIP command; selection stored in non-volatile memory
Antenna power	5V at 25mA available Short-circuit protection Feedline fault detection

PHYSICAL CHARACTERISTICS

Dimensions	3.25" L x 1.83" W x 0.451" H (82.6mm x 46.5mm x 11.5mm) without connectors
Weight	1.0 oz. (28.3 g) without optional shield
Connectors	RF: SMB; I/O: 8-pin (2x4), 2mm header

ACCESSORIES



GPS antenna Compact, active micropatch antenna with 5-meter cable and magnetic mount.
47mm L x 40.5mm W x 13.3 H mm (1.85" x 1.58" x 0.52" high)



Hard mount antenna Compact, hard mount, active micropatch antenna with single-hole 0.75" threaded mount and TNC connector. 2.46" diameter x 0.75" high (62.6mm x 19.0mm)



Rooftop antenna Bullet™ antenna with 22-meter cable and SMB adapter

ORDERING INFORMATION

You may visit our website for current information, part numbers, and ordering information at <http://www.trimble.com/aceiii.html>

Module

TSIP (binary) protocol and NMEA 0183 (ASCII) protocol, DGPS ready

Antennas

29 dB magnetic mount antenna, 5-meter cable
26 dB hard mount antenna, TNC connector
35 dB rooftop Bullet antenna, 23-meter cable

Starter Kit

Includes ACE III board, interface motherboard in durable metal enclosure with dual DB9, RS-232 interface, AC/DC power converter, magnetic mount antenna, TSIP and NMEA protocols, interface cable, 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
Corporate Headquarters
645 North Mary Avenue
Sunnyvale, CA 94086
+1-408-481-7920
www.trimble.com

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
+61-7-3216-0044

Trimble Korea
27th Fl., Korea World Trade Center
Suite 107
159-1, Samsung-dong, Kangnam-gu
Seoul 135-729
Korea
+82-2-551-2730

