ACE UTC GPS

GPS Core module for Embedded Timing Applications

Key features and benefits

- **1 PPS output accurate to UTC 50 nanoseconds (1 sigma)**
- **Optimized for timing applications**
- **User-selectable timing outputs**
- **T-RAIM integrity monitoring**
- **Power consumption <0.5 W**

The ACE UTC™ GPS module integrates the latest proven Trimble technology into our popular core module form factor (1.83" x 3.25" x 0.45") to deliver superior performance at low cost for GPS timing applications.

Top Timing Performance

The ACE UTC GPS module is specially optimized to provide highly accurate timing data that can be used to discipline quartz, rubidium, and cesium oscillators in a variety of precision timing applications.

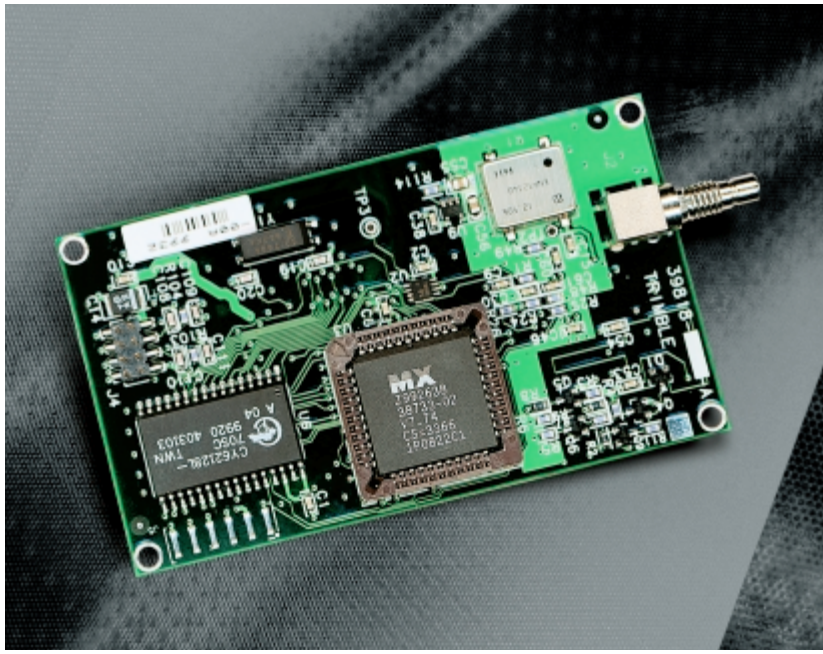
Using Trimble's 8-channel technology, T-RAIM (Time-Receiver Autonomous Integrity Monitoring) and an over-determined clock mode which reduces the effects of selective availability (SA), the module delivers a 1PPS output accurate to within 50 nanoseconds (1 sigma) of UTC.

The module makes extensive use of integrated circuits to offer outstanding performance and maximum reliability, with power consumption of less than 0.5 watt.

Easy Integration, and Flexibility Too

The ACE UTC GPS module is designed to be easy to integrate, but also offers powerful, flexible features for unique needs.

For standard installations, just plug it in and let it run. The module will do an auto-survey, and report only the most commonly used time packets. More demanding GPS users can program the unit to report data such as 1 PPS quantization error, alarm status, or customized timing packet.



ACE UTC GPS Module

The module uses the powerful Trimble Standard Interface Protocol (TSIP) binary data protocol for maximum data and control over the GPS receiver. TSIP commands are used to configure and store the configuration and message selections in nonvolatile memory.

Communication with the module is via an RS-232 serial data I/O port.

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

Getting Started

ACE UTC GPS starter kits make it simple for you to evaluate the module's exceptional performance. The kit includes the module installed inside a durable metal enclosure, a GPS antenna, AC power adapter, serial interface cable, reference manual, and software used to communicate with the module.

The Trimble ACE UTC GPS module offers exceptional timing accuracy, ease of integration with powerful customizable features, and is very competitively priced. It's the top timing choice for both performance and value.

ACE UTC 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: 1 Hz

Timing Accuracy: (1 PPS) <50 nanoseconds (1 sigma)
(with quantization granularity removed)
(1 PPS) <95 nanoseconds (1 sigma)
(with existing oscillator quantization granularity)

Position Accuracy: 25 m CEP (50%) without S/A

Acquisition Time (Time to First Fix: TTFF) (typical):
Cold start: <130 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 backup power. Hot start implies ephemeris is also saved.

Reacquisition after signal loss: <2 seconds (90%)

Dynamics:

- **Velocity:** 515 m/sec maximum
- **Acceleration:** 4g (39.2 m/sec2)
- **Motion jerk:** 20 m/sec3
- **Vibration:** 0.008 g2/Hz 5 Hz to 20 Hz
  0.05 g2/Hz 20 Hz to 100 Hz
  -3dB/octave 100 Hz to 900 Hz

ENVIRONMENTAL SPECIFICATIONS

Operating temperature: -40°C to +85°C

Storage temperature: -55°C to +100°C

Operating humidity: 5% to 90% R.H. non-condensing, @ +60°C

Maximum altitude: 18,000 m

TECHNICAL SPECIFICATIONS

Prime power: +5 VDC, ±5%

Power consumption (nominal): GPS board only: 95 mA, 0.47 W
With antenna: 120 mA, 0.60 W

Backup power: +3.2 to +5.0 VDC

Antenna power: Up to 25 mA @ 5V Short circuit protection; feedline fault detection

Serial ports: 1 PPS CMOS TTL levels

I/O protocols: TSIP (Trimble Standard Interface Protocol) (binary data)

PHYSICAL CHARACTERISTICS

Dimensions: 3.25"L x 1.83"W x 0.451"H
(82.6 mm x 46.5 mm x 11.5 mm)

Weight: 1 oz (28.3 g)

Connectors: RF: SMB; I/O: 8-pin (2 x 4), 2 mm header

ACCESSORIES

Rooftop antenna Bullet™ II or III antenna with 23-meter cable and SMB adapter

ORDERING INFORMATION

ACE UTC GPS Module Extended temperature, TSIP

Antennas

35-dB rooftop Bullet II antenna, 23-meter cable

35-dB rooftop Bullet III antenna, 23-meter cable

Starter Kit Includes ACE UTC GPS module mounted on interface motherboard in a durable metal enclosure with dual DB9, RS-232 interface, AC/DC power converter, magnetic-mount antenna, TSIP protocol, software toolkit for TSIP, interface cable and manual

Manual

ACE UTC GPS System Designer Reference Guide

All GPS receivers are subject to degradation of position and velocity accuracies under Department of Defense imposed Selective Availability (SA).

Like all current Trimble products, the ACE UTC GPS module is Y2K compliant.

Visit our website at: www.trimble.com/oem
Specifications subject to change without notice.

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