Acutime 2000

GPS Smart Antenna for Precise Timing and Synchronization

Key Features and Benefits

- **Stratum 1 time source**
- **Network synchronization**
- **Timing pulse synchronized to within 50 nanoseconds (one sigma) of UTC**
- **Operating temp –40° to +85° C**
- **Waterproof and anti-corrosion housing**

Trimble

Trimble's new Acutime™ 2000 GPS smart antenna marks the integration of the latest GPS technology into a rugged self-contained unit that enables easy integration into any system. The Acutime 2000 is a pole-mounted GPS receiver and antenna in a single environmentally sealed enclosure.

The Acutime 2000 GPS smart antenna design continues Trimble's line of GPS smart antennas, which have been in production since 1991. The antenna is the perfect solution for precise timing and network synchronization needs, including broadband wireless applications. It provides an extremely cost-effective and independent (within the firewall) timing source for any application, such as fault detection systems and synchronization of wireless networks.

Once power is applied, the Acutime 2000 automatically tracks satellites and surveys its position to within meters. It then switches to overdetermined time mode and generates a pulse-per-second (PPS) output synchronized to UTC within 50 nanoseconds (one sigma), outputting a time tag for each pulse. The Acutime 2000 GPS smart antenna's T-RAIM (Time-Receiver Autonomous Integrity Monitor) algorithm ensures PPS integrity.

The Acutime 2000 is the premier time source for synchronization of wireless networks.

Designed for long-term reliability, the Acutime 2000 GPS smart antenna is corrosion-resistant and waterproof, and has a rounded top that facilitates run-off from the elements.

Options

The Acutime 2000 GPS smart antenna is available in a number of configurations to suit different applications and environments. The interface is available in either RS-232 or RS-422/485—ideal for long cable runs required by buildings or towers.

Getting started

The Acutime 2000 Starter Kit makes it easy to evaluate the exceptional performance of this GPS smart antenna and integrate state-of-the-art technology into your system. The Starter Kit includes the Acutime 2000 GPS smart antenna (RS-422/485), a 100' interface cable, user guide, RS-422 to RS-232 converter, and a Windows software tool for monitoring and communication.

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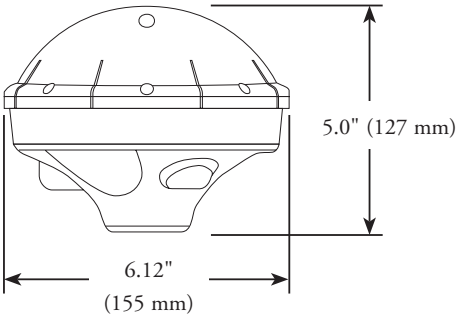
PHYSICAL CHARACTERISTICS

Dimensions: 6.12" D, 5.0" H (155mm x 127mm)
Weight: 12.8 oz (363 g)
Connector: 12-pin round, waterproof
Mounting: 1"-14 straight thread or 3/4" pipe thread
Mechanical drawing:



ENVIRONMENTAL SPECIFICATIONS

Operating temp: –40° to +85° C
Storage temp: –55° to +105° C
Vibration: 0.008 g^2/Hz 5 Hz to 20 Hz
0.05 g^2/Hz 20 Hz to 100 Hz
–3dB/octave 100 Hz to 900 Hz
Operating humidity: 95% RH, non-condensing @ 60° C
EMC: CE, FCC Class B

PERFORMANCE SPECIFICATIONS

General: L1 frequency, C/A code (SPS), continuous tracking receiver, static overdetermined clock mode (default).
Update Rate: 1Hz
Accuracy in dynamic tracking mode:

	SPS	DGPS
Position:	25m CEP	2m CEP
Velocity:	0.25 ms CEP	0.05 ms CEP

Time to First Fix (no stored position): Typical cold start: <120 seconds
Time to First PPS (stationary with stored position, e.g., recovery after power outage): <60 seconds
Re-acquisition after 60-second signal loss: <2 seconds (90%)
Dynamics
Velocity: 500 m/sec maximum
Acceleration: 4g (39.2 m/sec^2)
Jerk: 20 m/sec^3

PPS output
Physical Interface: RS-422/485
Width: 10 microseconds (default); user-programmable from 10 microseconds to 500 milliseconds
On-Time Edge: Rising edge on-time (default); user-programmable rising or falling
Resolution: 80 nanoseconds (quantization error reported through TSIP)
Accuracy (one sigma): UTC 50 nanoseconds (static)
UTC 300 nanoseconds (dynamic, TDOP ≤3)
External Event Capture
Interface: RS-422/485 or RS-232
Resolution: 320 nanoseconds
Minimum pulse width: 1 microsecond, rising edge on-time
Reporting mechanism: TSIP packet

ELECTRICAL SPECIFICATIONS

Prime power: +8 VDC to +36 VDC, reverse polarity protection
Power consumption: 110mA @ 12 volts, 1.3 watts (typical), <1.5 watts max

SERIAL PROTOCOLS

Port	*Interface*	*Protocols*	*Defaults*
TxB (primary)	RS-422/485 or RS-232	TSIP, NMEA	TSIP @ 9600, 8-odd-1
RxB (primary)	RS-422/485 or RS-232	TSIP	TSIP @ 9600, 8-odd-1
TxA (secondary)	RS-422/485 or RS-232	TSIP	TSIP @ 9600, 8-odd-1
RxA (secondary)	RS-422/485 or RS-232	Event/RTMC	Event

All ports support baud rates of 300–38,400; 8 data bits; even, odd, no parity

NMEA messages (default): ZDA
Available messages: GGA, GLL, VTG, GSV, GSA, ZDA, RMC

ORDERING INFORMATION

Please visit our website for updated information, part numbers and ordering information at:
www.trimble.com/timing

Specifications subject to change without notice

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