

# 58534A

## GPS Timing Antenna

### 58534A

GPS Timing Antenna

### 58531A

GPS Timing Receiver Analysis and Control Software

### 58522A

Twisted Pairs Interconnect Cable

### 58534A GPS Timing Antenna

*GPS antenna and receiver all in one rugged, weatherproof package*

The 58534A GPS Timing Antenna is a highly reliable, user-friendly, super-low-cost source of precision GPS time. An antenna, GPS receiver, system interface, and power supply are all integrated into one rugged, weatherproof, easy-to-install package. A one-pulse-per-second (1 PPS) signal synchronized to the GPS system within 110 ns is automatically provided when the 58534A is locked to the GPS satellites.

### *Up to 150-meter cable runs with minimal power consumption*

The 58534A conveniently operates on a wide range of input voltages and consumes minimal power, yet it can support long cable runs.

Less than 1.5 watts will power the unit. RS-422 drivers inside the 58534A allow it to operate 150 meters of interconnect cable easily. Please consult Symmetricom for installations requiring longer cable lengths.

### *Fast reacquisition time following power loss*

If power is lost, the Random Access Memory (RAM) which stores the navigation and satellite data continues to be powered by a super-capacitor for up to 2 hours (typical). This lets the 58534A reacquire satellites within 20 seconds after power is restored.

### *Excellent immunity to noise interference*

The 58534A is engineered for reliable operation in the toughest environments. Outstanding immunity to RF interference is imparted by three robust dielectric bandpass filters incorporated in the design. Furthermore, 2-bit A/D conversion, as opposed to 1-bit in competing products, is used to digitize the GPS signal to reduce noise interference. Corrupt satellite data is rejected and multipath is mitigated by the 58534A's Time Receiver Autonomous Integrity Monitor (T-RAIM) algorithm.

### *Durable and easy to install*

The waterproof enclosure includes a high-rise dome constructed of molded, high-impact, UV-stabilized polycarbonate. Snow and debris buildup is minimized by the smooth, sloped dome. The bottom housing is durable cast aluminum treated with a polyester powder coat for corrosion resistance. The cable, composed of bundled twisted pairs, is much more flexible and easier to route than heavy RF coaxial cables. Interconnect cables are available in convenient lengths through the 58522A Twisted Pairs Interconnect Cable series. Mounting of the 58534A is easy; a high quality glass-filled nylon clamp built into the mounting hub easily secures the unit to the top of a mast. In addition, the cable connector is sheltered from the environment inside the optional mounting mast (Option AUB).

### *Mounting hardware kit available: Option AUB.*

Option AUB provides a mounting hardware kit, complete with a galvanized stainless steel mounting mast, mounting brackets, and hardware.

### *User-friendly evaluation kit with 58531A GPS Timing Receiver Analysis and Control Software: Option 001*

Analysis and control of the 58534A are simple tasks with the 58534A GPS Timing Antenna Evaluation Kit. When you order the 58534A Option 001 you will receive a copy of the 58531A GPS Timing Receiver Analysis and Control Software, an RS-422 to RS-232 PC interface module, a 50-meter length of interconnect cable that is terminated on both ends in order to mate with the 58534A and the PC interface module, mounting hardware, and an operating manual diskette.

The 58531A GPS Timing Receiver Analysis and Control Software is a PC Windows®-based program (for Windows NT® 4.0 or Windows 95) that controls the 58534A and processes and displays information received from it. The program has tools to help analyze the receiver data, and it can log the information to a file for analysis using other tools.

The 58531A program includes these features:

- Convenient configuration of the software and 58534A
- Real-time information update
- Control and query the 58534A via menu-driven commands
- Generate a data log file for analysis
- Generate an error log file for analysis
- Plot instant or average position in real time
- Plot satellite history, such as PRN (pseudo random noise), C/N (signal strength), elevation, DOP (dilution of precision)
- Calculate and display average or maximum C/N and associated elevation and azimuth angles

## Interconnect Cables Available Through 58522A

The 58522A series of interconnect cables provides a length of cable composed of bundled twisted pairs. Each 58522A cable connects to the 58534A output connector. The remaining end is unterminated. Choose from a selection of convenient lengths.

## 58534A Technical Specifications and Characteristics

<b>ELECTRICAL</b>	
Receiver Architecture	8 parallel channels L1 1575.42 MHz C/A code (carrier aided tracking) 2-bit A/D conversion SAW filtering
Antenna	Active micro strip patch High jamming immunity: triple dielectric bandpass filtering
Update Rate	1 Hz
Absolute Timing Accuracy (1 PPS), with Selective Availability (SA)	<110 ns with respect to UTC (USNO MC) –95% probability when unit is properly installed and locked to GPS. Timing output valid with one satellite acquired in Position Hold mode.
Jitter	40 ns (1 $\sigma$ typical) in Position Hold Mode 110 ns (1 $\sigma$ typical) in Survey Mode
Position Accuracy	25 m SEP without SA (See Note 1.) 100 m SEP with SA
Acquisition Time to First Fix (TTFF)	Cold Start: <2 minutes typical
Reacquisition	<20 seconds typical after loss of power (See Note 2.)
<b>POWER</b>	
	+8 Vdc to +36 Vdc <1.5 Watts Reverse Voltage Protection, <300 V Backup power provided by super-capacitor to GPS data RAM, 2 hours (typical)
<b>SERIAL COMMUNICATIONS</b>	
Interface	9600 Baud RS-422 Input/Output proprietary protocol based on NMEA language
Extended Cable Support	RS-422 differential pair capable of supporting 150 meters of cable

Note 1. Spherical error probable

2. Almanac <1 month old and Ephemeris <4 hours old

---

**MECHANICAL**

Dimensions	58534A (without cable and connector): 16.5 cm H × 15.0 cm D Mounting mast (Option AUB): 457 mm L × 31.5 mm ±0.125 OD
Mounting	Quick-fit clamp (glass-filled, high modulus nylon for secure clamp)
Weight	684 g
Cable and Connector	30.5 cm cable (12 conductors, 6 twisted pairs, shielded) 12 pin round, waterproof connector (Deutsch MMP 21C-2212P1)

---

**ENVIRONMENTAL**

Operating Temperature	Standard: -40°C to +80°C
Storage Temperature	-40°C to +85°C
Shock	Half sine waveform, velocity change 404.5 cm/s, <3 μs duration
Waterproof/Humidity	Operating: <95% R.H. @ 40°C Non-Operating: <90% R.H./24 hrs. @ 65°C
Altitude	Operating: 4.6 km @ -5°C to +60°C Non-Operating: 4.6 km @ -40°C
Vibration	Operating: 5-500 Hz, 0.0001 g <sup>2</sup> /Hz Survival: 5-500 Hz, 0.5 g Swept Sine 5-500 Hz, 0.015 g <sup>2</sup> /Hz Random
EMC	CE marked CISPER 11/22 Conducted and Radiated Emission Standards IEC 801-2 (ESD Immunity, 8 kV air discharge) IEC 801-3 (Radiated Immunity, 3 V/m) IEC 801-4 (Fast Transient/Burst Immunity, 500 V)

---

---

**ORDERING INFORMATION (CONTACT SYMMETRICOM FOR AVAILABILITY AND PRICING)****58534A GPS Timing Antenna**

Option 001: GPS Timing Antenna Evaluation Kit  
Option 1GK: Extended Operating Temperature Range

---

**58531A GPS Timing Receiver Analysis and Control Software****58522A Twisted Pairs Interconnect Cable (Cable must be ordered with a length option.)**

Option 005: 5-meter Cable  
Option 010: 10-meter Cable  
Option 050: 50-meter Cable

---

**Related Symmetricom Literature**

GPS and Precision Timing Applications – Application Note

---



Symmetricom  
2300 Orchard Parkway  
San Jose, CA 95131, USA  
tel: 408-433-0910  
fax: 408-428-7897  
e-mail: [info@symmetricom.com](mailto:info@symmetricom.com)  
<http://www.symmetricom.com>

Symmetricom Limited  
2 The Billings  
Walnut Tree Close  
Guildford, Surrey  
GU1 4UL, England  
tel: 44-1483-510300  
fax: 44-1483-510319

MS Windows and Windows NT are U.S. registered trademarks for Microsoft Corporation.

©2000 Symmetricom  
Specifications subject to change without notice.  
DS/58534A/D/0500/2M