

58532A
GPS L1 REFERENCE ANTENNA

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58532A GPS L1 Reference Antenna

Information Note

1.0 Introduction

The 58532A GPS L1 Reference Antenna is one component of a complete line of GPS accessories for your GPS antenna system available from Symmetricom. These accessories are designed to deliver precise GPS signals over a wide temperature range and in harsh environmental conditions.

2.0 Description

The 58532A GPS L1 Reference Antenna delivers clean, accurate L1 carrier frequency signals to GPS synchronization modules and receivers. The antenna operates reliably in a wide range of environmental conditions, and it is characterized by durability, low noise, narrow bandwidth, and high gain.

Designed for outdoor locations, the 58532A Antenna features a threaded Type-N Jack connector that makes it easy to connect directly to the antenna cable. A mounting base (supplied) simplifies installation of the antenna to a mast.

The antenna requires a voltage of 5 Vdc, which is normally supplied from the GPS receiver via the connecting cable.

3.0 Installation

How an antenna is installed depends on a variety of local conditions. Symmetricom offers several methods for mounting the antenna. These solutions include a mounting bracket or clamp to attach a mounting mast to a pipe, wall, or tripod. Contact Symmetricom as described below for ordering information and additional technical recommendations for installation.

Installation Suggestions

1. Mount the antenna on a mast high enough above the surrounding surface to avoid standing water or snow.
2. A good location is one that is accessible, away from lightning rods, and one that provides a reasonably clear line of sight between the ground and satellites, from horizon to horizon.
3. Specific decisions on the optimum mounting location of the antenna and recommendations for proper lightning protection (such as lightning rods, arrestors, etc.) are unique to most installations and should be made by qualified personnel.



Parts Supplied

- Antenna
- Mounting Base

Mounting base contains:

1. Four captive cross-recessed pan head screws for attaching to antenna (use small “cross point” (Phillips) screwdriver.
2. Two hex set screws (4 mm) for tightening antenna assembly to a mast.

Optional Mounting Mast

A mounting mast is available as Option AUB to the antenna. If this option was not purchased with the antenna, it can be ordered from Symmetricom. The mast is 355 mm in length with an outer diameter of 42 mm and made of either anodized aluminum or stainless steel. The inner diameter can also accommodate insertion of the 58529A Line Amplifier with L1 Bandpass Filter or the 58530A GPS L1 Bandpass Filter inside the mast for protection from the environment.

Tools Required for Assembly

- Small “cross point” (Phillips) screwdriver for four cross-recessed pan head screws
- Hex wrench for 4 mm hex socket set screws

NOTE: If replacing a 58504A antenna with 58532A, a Type-N Plug to TNC Jack adapter can be ordered from Symmetricom.

4.0 Dimensions of Antenna and Mounting Base

Figure 1 shows the major dimensions of the antenna and mount assembly.

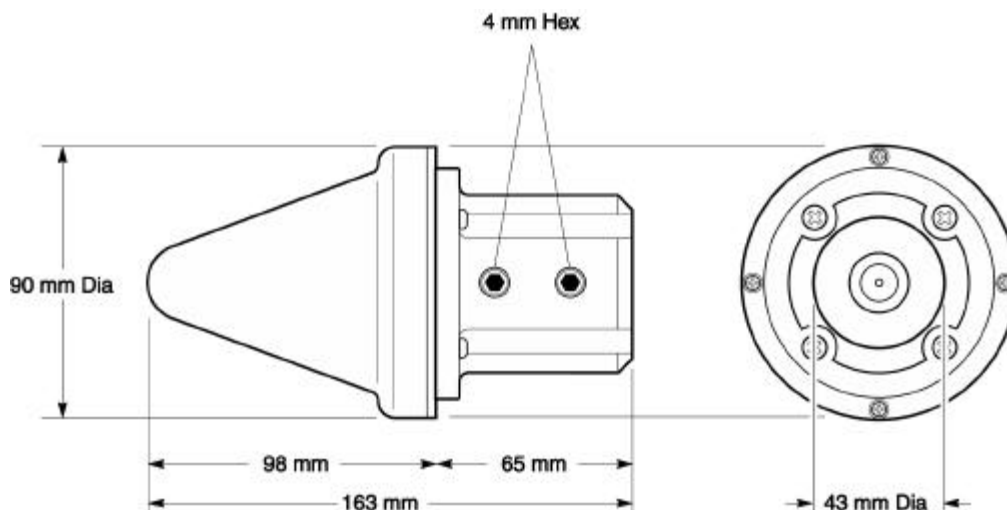


Figure 1. 58532A GPS L1 Reference Antenna and Mounting Base Dimensions

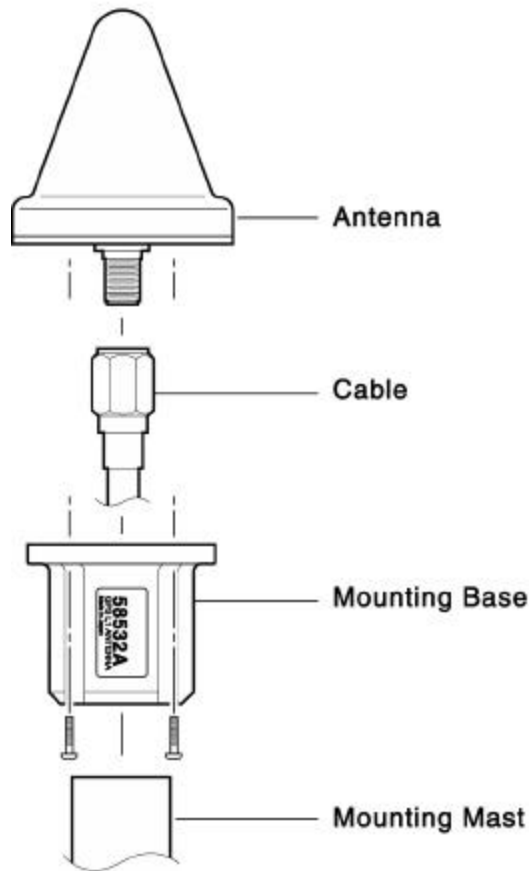


Figure 2. Antenna Assembly Drawing

5.0 Assembly Procedure (Refer to Figure 2 while following this procedure.)

1. Route the cable through the mast and the antenna mounting base.
2. Attach the cable to the antenna connector and tighten.

NOTE: It is recommended that all cable connections that are outdoors, or those connections exposed to wet or humid environments, be protected to prevent moisture condensation from entering the connectors. Consider wrapping the antenna-to-cable connection with a self-fusing insulating tape (for example, 3M Scotch™ 23 Rubber Splicing Tape).

3. Attach the antenna to the mounting base by tightening the four pan head screws into the antenna. Do not over-tighten.

NOTE: The gasket creates a very tight seal between the antenna and the mounting base. Consequently, extra pressure may be required to disassemble the antenna from the mounting base. Carefully use a flat-blade screwdriver as a wedge when disassembly is required.

4. Attach the antenna assembly to the mast by sliding the antenna assembly over the mast until the mast rests against the gasket at the top of the mounting base. Tighten the two

set screws in the mount against the mast so the antenna assembly is securely held in place on the mast.

6.0 Maintenance

The only periodic maintenance for the antenna is to keep it clean and free of debris. The best cleaner is soap and water. Do not use abrasive compounds or chemical cleaners.

It is recommended that all components of the antenna system that are exposed to weather be checked periodically and replaced, if necessary.

7.0 Technical Data

Table 1. 58532A Technical Characteristics

Electrical Characteristics	All values are defined at $25^{\circ}\text{C} \pm 15^{\circ}\text{C}$, unless otherwise noted.
Frequency Range (3 dB Bandwidth)	1575.42 MHz \pm 10 MHz (typical)
Polarization	Right-hand Circular
Impedance	50 Ω (typical)
Total Gain	> 30 dBi (38 dBi typical at elevation angle 90 degrees)
Out-of-Band Signal Attenuation	60 dB (typical) at 1575.42 MHz \pm 50 MHz
Noise Figure	< 2.2 dB (1.8 dB typical)
VSWR	< 2.5 (1.5 typical)
DC Power	
Operating voltage	5 Vdc \pm 0.5 Vdc
Operating current	< 27 mA (20 mA typical)

Table 1. 58532A Technical Characteristics (continued)

Physical Characteristics	
Dimensions	
Antenna without Mounting Base	90 mm Diameter x 128 mm Height (includes connector)
Mounting Base	43 mm Inner Diameter, 75 mm Outer Diameter x 65 mm Height
Mounting Mast (Option AUB)	39 mm Inner Diameter, 42 mm Outer Diameter x 355 mm Length
Weight	
Antenna without Mounting Base	187 g
Mounting Base	240 g
Mounting Mast (Option AUB)	250 g
Operating Temperature	-40° C to +85° C
Storage Temperature	-45° C to +90° C
Output Connector	Type-N Jack

Antenna Amplitude vs. Frequency Response

Figure 3 shows a relative amplitude vs. frequency response for the antenna as measured with a network analyzer. Note the steep roll-off characteristics of the filtering.

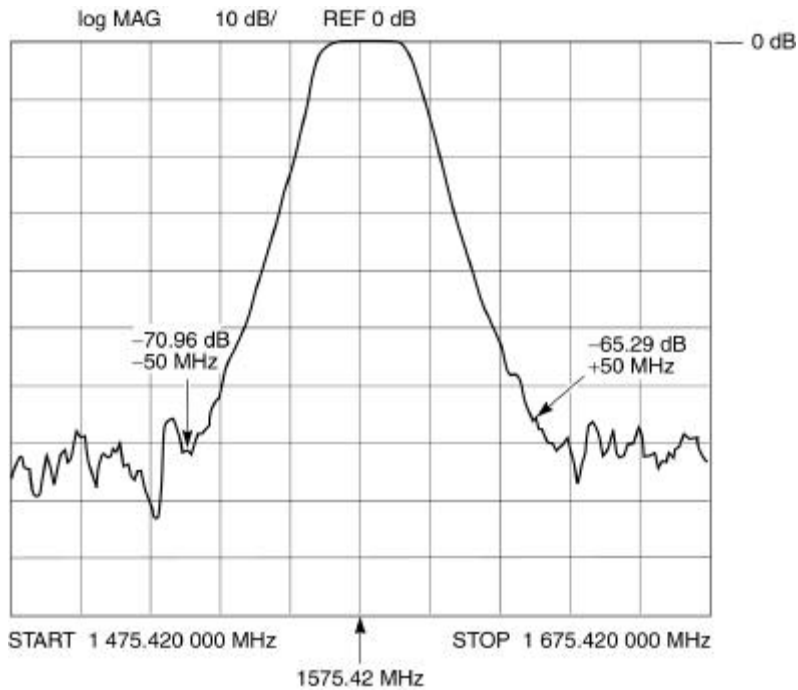


Figure 3. Amplitude vs. Frequency Response for 58532A GPS L1 Reference Antenna