GPSDO Base Station Antenna

By Adam Maurer, VK4CP Rev 1.0 May 2011

Introduction

This document describes the installation of an external GPS antenna, using a TV antenna bargemount, and a plastic plumbing fitting, for your in-shack GPS Disciplined Oscillator.

GPS Antenna

The ***Thunderbolt*** (the GPSDO system in use here) requires an external active antenna, and it's antenna socket has 5V appearing on it to power such active antennas.

Active antennas like this one can be obtained from outlets that sell GPS equipment, eBay, and other online sources.

This particular active antenna is waterproof, has a 5m lead fitted with a BNC (m) connector.

It was sourced from ***RF Supplier***, a Chinese based supplier of RF connectors and other goodies. USD$28.

Antenna mount is a standard 3/4" (20mm) plumbing thread, so a wide range of plastic, brass and galvanised steel plumbing fitting are available from Bunnings and other plumbing and hardware stores to fabricate your own custom mount.

Bargeboard Antenna Mount

A TV antenna bargeboard mount is used, and these can be obtained for around $20-$25 new.

Look for one that has a galvanised coat, and a 1" tube outside diameter. (I think most are, but double check)

This mount was originally 1.8m long, but cut down to about 60cm with a hacksaw. (Don't forget to spray the cut end with cold gal or something similar, to prevent a rust spot). This provides a clear view of the sky, whilst minimizing the coax length. (Not forgetting GPS operates at 1500MHz). You will probably need to extend the run of coax into your shack anyway.

The author was going to weld a suitable mount together out of scrap steel, but cost of the steel and mucking around simply wasn't worth it. A ready made galvanised TV antenna mount is a much easier solution.

Two holes, suitable bolts and washers... that's all. The rest is screw on.

To attached our GPS antenna, we use a "pipe end" plumbing adapter.

This connect a 1" hose to a standard 3/4" plumbing thread. The 1" hose side is a screw-up clamp arrangement.

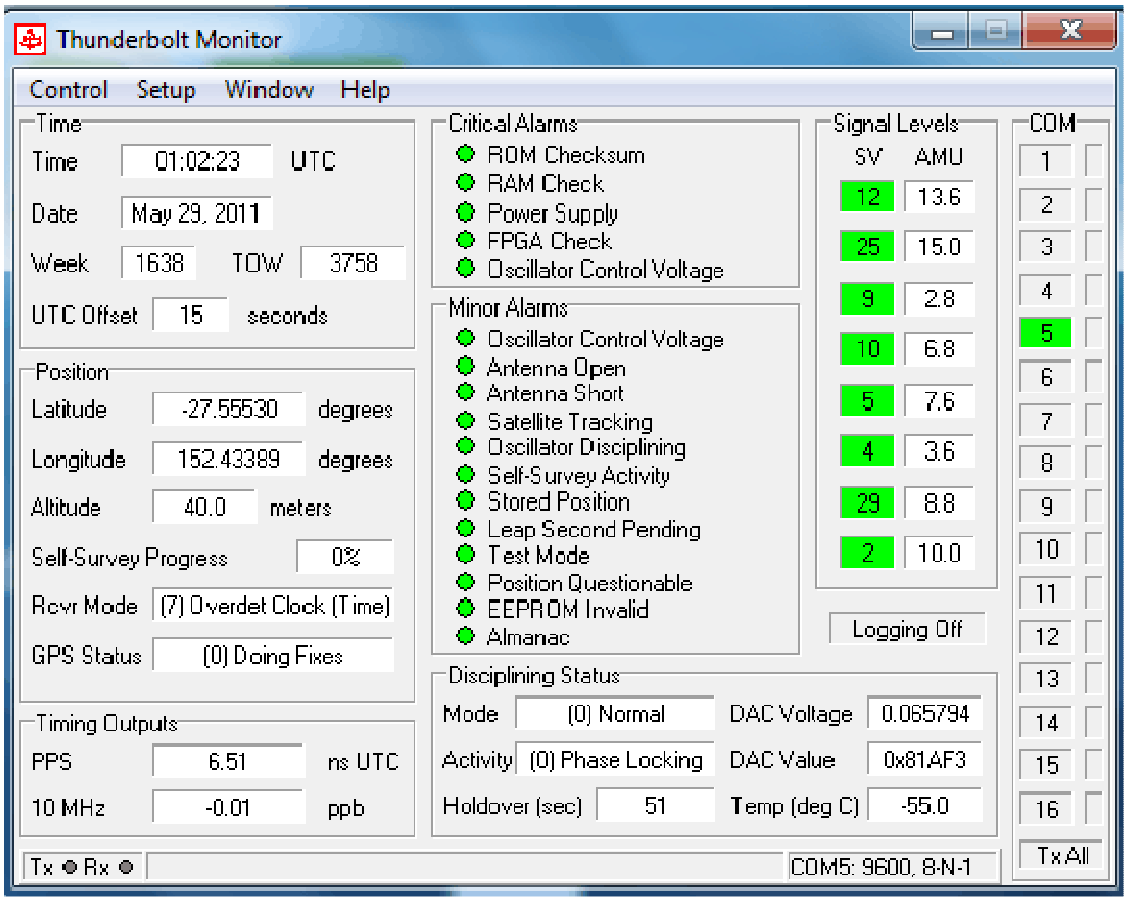
$4.32 from Bunnings.

It just clamps onto the barge mount, and the antenna screws in!

This makes a sturdy antenna mount, and yet the antenna is easily removable, should you want to take it away for Field Day use.

In Use

Choose a position that has a reasonably clear view of most of the sky.



Good signal levels received, and 10MHz output error of 0.01 ppb easily obtained.

Miscellaneous Notes

- GPS Antenna from: ***RF Supplier*** http://www.rfsupplier.com
- Thunderbolt GPS supplied by eBayer: ***Flyingbest*** http://stores.ebay.com/flyingbestsequipment
- Thunderbolt Antenna Connector is "F" (f)

  You will probably want an F(m) to BNC (f) adapter (also available from ***RF Supplier***)