The Latest

Grid Square Finder

Up

Posted by AG6QV Frank
Tags:

When operating microwave radios in the field it is common to exchange Maidenhead grid squares that allow us to calculate the distance between the two stations. The Maidenhead grid square is a system of letters and numbers corresponding to a specific location. The larges squares are identified with two letters from A-R. The squares are 20x10 degrees. Adding two numbers makes the grid size 2x1 degrees. It is common to use 4 characters for most contacts on FT8, but for microwave contacts both stations might be in the same 4 character grid so we add more characters to be more precise with the location.

Grid squares can be calculated from the coordinates provided by a GPS receiver, but doing the calculations in the field is not practical, and you might not know the exact location you will be operating from ahead of time so I created a small device using an Arduino Nano, a GPS module, a LCD display and a 3D printed box to bring with the radio. The system will show the 10 character grid square, number of satellites and alternating date and time (UTC).

I found a small GPS module on Amazon based on the GT-U7 chip. It came in a two pack.

I mounted the Arduino Nano on an expansion board that will allow for both 12V and USB power options. These came in a package of 4 or 6.

The enclosure was created with TinkerCadÆ

The Arduino code is a combination of functionality found on GitHub and will work with Arduino Nano, Uno, Pro Mini and many other versions. When testing the system it can take a while for the GPS unit to lock on to satellites, especially indoors. I have had the unit sitting in the window sill for a couple of days and it constantly see 5-9 satellites. It will be interesting to see how fast it can lock in the field.

A view inside the assembled unit:

The GPS antenna is attached to the side of the box qith double sided tape.

And from the outside with power and GPS signal locked.

I added a button on the side to switch through 4, 6, 8 and 10 characters in the grid square. The code defaults to 8. The small size of the squares when 10 digits are shown makes it difficult to get a stable reading. Moving the box around will cause the last two characters to jump plus/minus on grid square in both directions, but with 10 characters each grid is about 20x20 meters.

The Arduino sketch can be downloaded here and the stl file for the box here.

Link to this Post

Previous 3Get Next 3

Get RSS feed

Sign Up

Recent Blog Posts

Blog Archives

May 2025 {1}

April 2025 {1}

March 2025 {1}

January 2025 {2}

October 2024 {5}

March 2024 {1}

August 2023 {1}

May 2023 {1}

April 2023 {1}

March 2023 {1}

January 2023 {2}

Tags

10 GHz {3}

2m {3}

GNU Radio {5}

HackRF One {4}

HAM {7}

HF {2}

PNW Microwave {2}

X-Band {1}

Calendar

June 2025

Su	Mo	Tu	We	Th	Fr	Sa
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					