

“PISKYTRACKER” SET UP AND INSTALLATION GUIDE





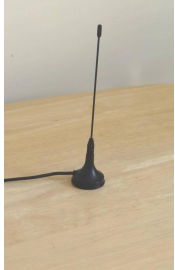








Version 1.1

Sept 2013

1. Identify Components

Identify the components as follows:

		
(A) Raspberry Pi (RasPi) and Camera	(B) USB 4-Port Hub	
		
(C) Receiver Dongle	(D) Wireless LAN USB Dongle	
		
(E) Antenna / Aerial	(F) USB Hub Cable	(G) USB Power Cable
		
(H) USB HUB Power Supply	(J) Memory Card	
		
(K) Network Cable (RJ45)	(L) RasPi Wired Network Port	

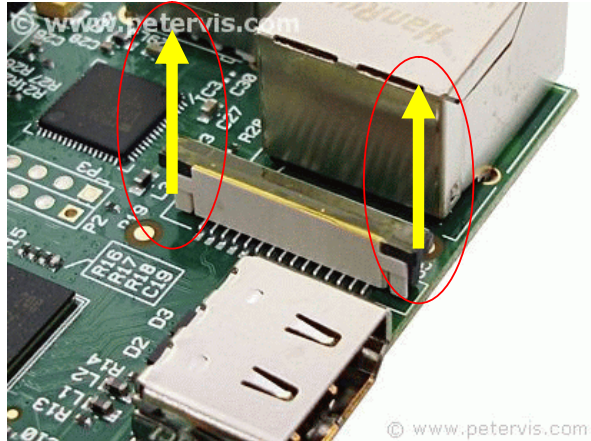
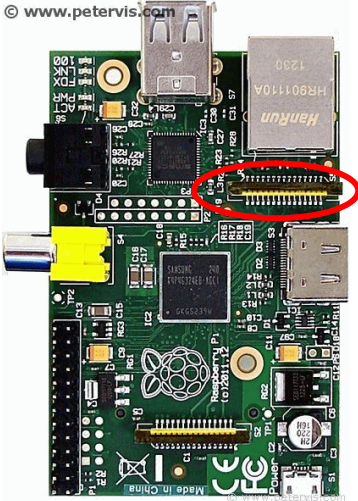
Camera Installation / Attachment

Disregard this section if your PiCamera is already attached.

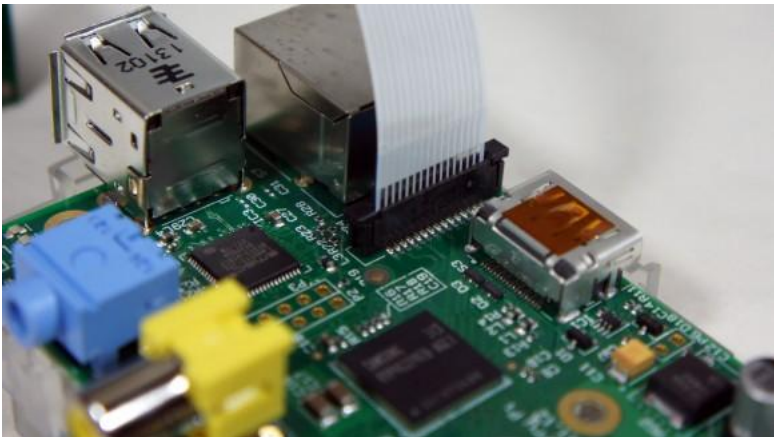
If your tracker came with the camera separated from the RasPi, please follow this short guide. You may need to remove the RasPi from its case.

http://www.youtube.com/watch?feature=player_embedded&v=GImeVgHQzSE

The dedicated camera bus is the ribbon connector closest to the USB and Ethernet port. It's a zero insertion force (ZIF) design; pull up the two side clips to release the retaining bracket.

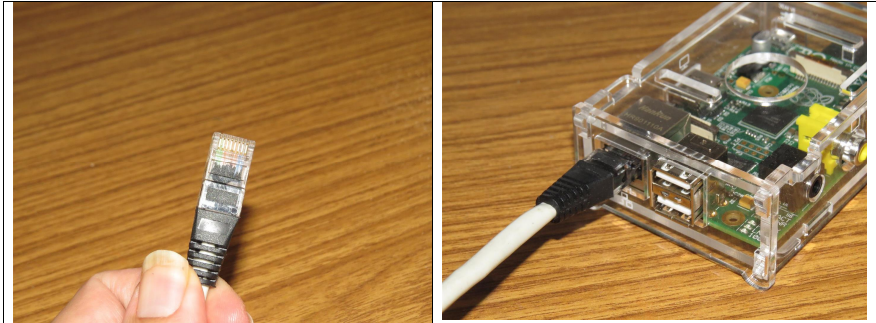


You need to place the ribbon with the conducting edge-connection pointing away from the USB port – the blue tape at the end is on the same side as the USB port.. Hold the ribbon square in place and push the clips down to fix the ribbon in position.



Using PiTracker with a Wired Network Connection

It is somewhat easier to get things going with a Wired Network connection – and in any case, some people do not like having Wireless Networks in their house. If you have a Model B Pi, you can therefore connect the RasPi to your router or switch with an RJ45 cable.



Connect the RasPi to a free port on your Router or Switch.

2. Using PiTracker with a Wireless Connection - Prepare The Memory Card

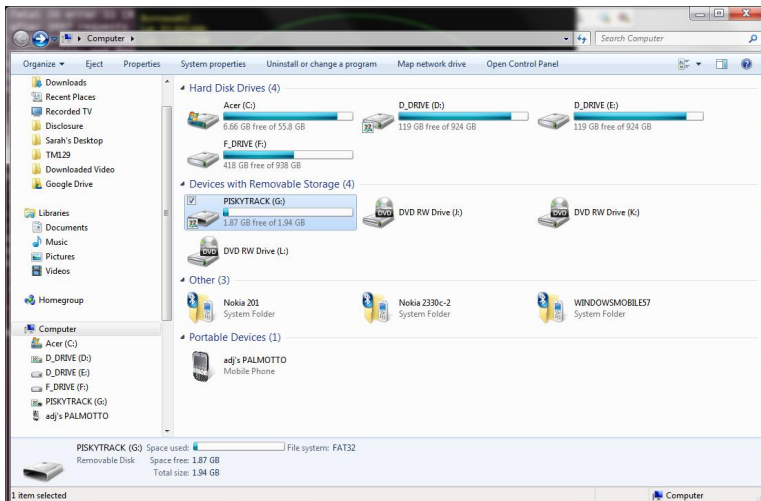
If you are **NOT** using a wireless connection, but are using a direct connection to your router, using a cable, please skip to **Section 3 - Assembling the Kit**.

NOTE: If your computer was made before about 2006 or 2007, then it may not be able to read the Memory Card Used in RasPi and you will need to obtain a USB Memory Card Reader compatible with SDHC Memory Cards.

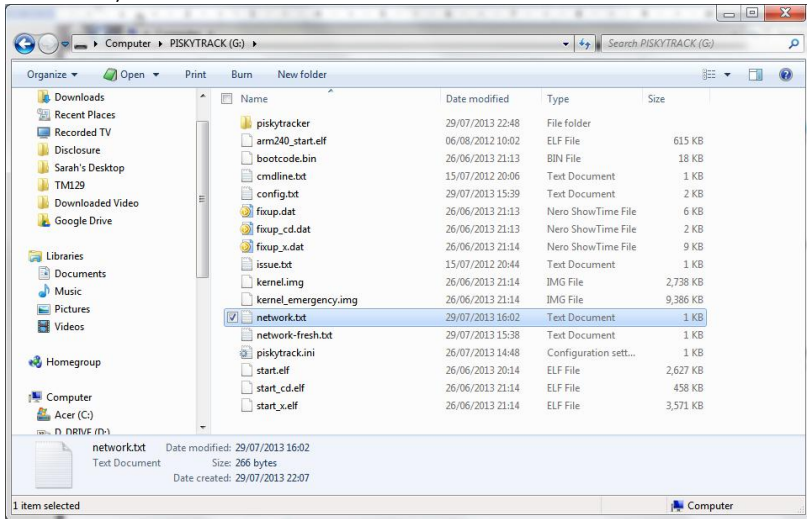
- 1) Take the Memory Card (J) and insert it into your PC's card reader slot, or external card reader.



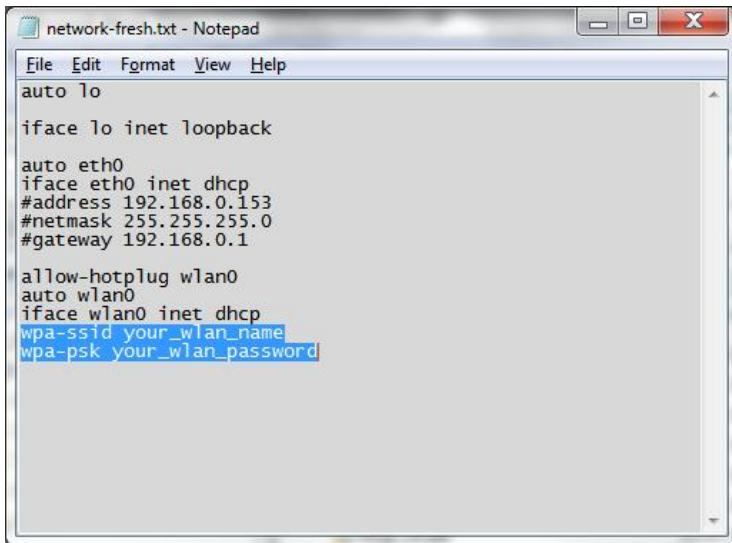
- 2) Open Windows Explorer or the Macintosh Equivalent and locate the icon/disk for the card – which should be denoted by a letter in the range D: - Z:



- 3) Double-click on the icon for the memory card drive/reader (which should show the name “PISKYTRACK”) next to it.



- 4) Look for a file on the card called “network” or “network.txt”.
- 5) Double-click on this to open it (it is a text file with some settings in it)
- 6) You should see a display similar to the one shown below.



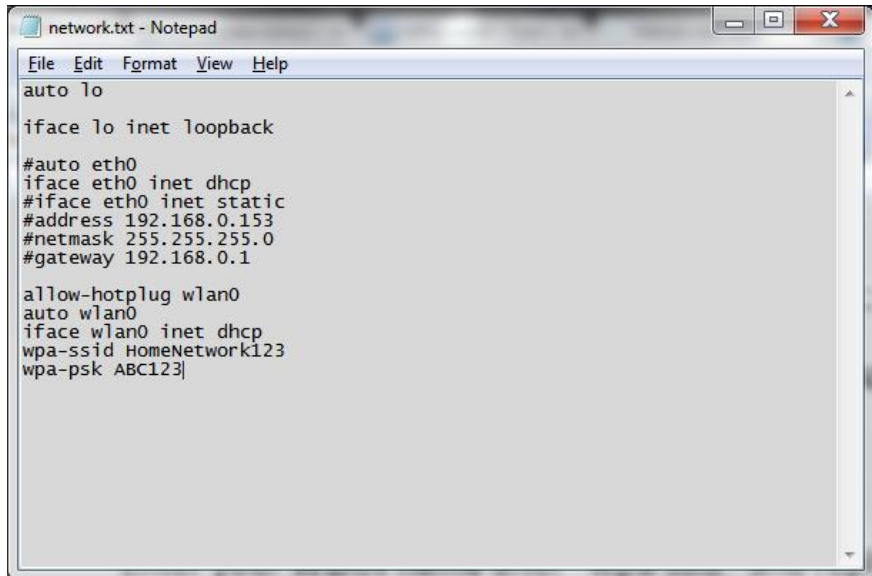
- 7) To allow the RasPi to connect to your Wireless LAN, you must tell it
 - (a) Your **Wireless LAN Name**
 - (b) your **Wireless LAN Password**

Enter your **WLAN name** after “wpa-ssid” and replace the text shown there.

Enter your **WLAN Password** after “wpa-psk” and replace the text shown there.

Example: If your wireless LAN is called **HomeNetwork123** and your WLAN password is **ABC123**, the lines should appear as follows.

PLEASE NOTE WIRELESS NETWORK NAMES AND PASSWORD ARE CASE-SENSITIVE

A screenshot of a Notepad window titled "network.txt - Notepad". The window contains the following text:

```
auto lo

iface lo inet loopback

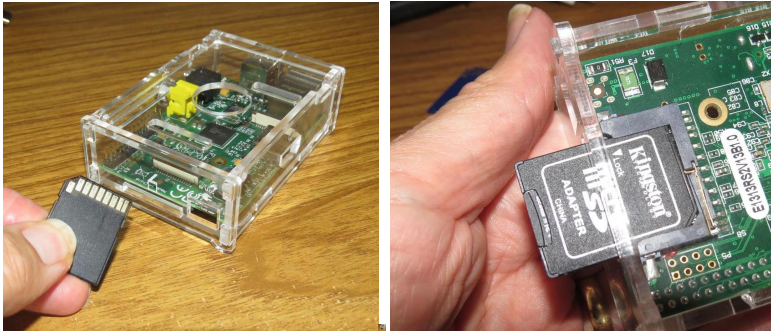
#auto eth0
iface eth0 inet dhcp
#iface eth0 inet static
#address 192.168.0.153
#netmask 255.255.255.0
#gateway 192.168.0.1

allow-hotplug wlan0
auto wlan0
iface wlan0 inet dhcp
wpa-ssid HomeNetwork123
wpa-psk ABC123
```

- 8) Select “File / Save” from the menu and then reload the file to check the changes have been saved (repeat step 7 if necessary).

3. Assembling the Kit

- 9) Remove the memory card from your computer and turn it upside down. Insert it into the RasPi as shown



- 10) Turn the RasPi the right way up and insert the USB Hub Cable (F) into the RasPi's USB Port.



- 11) Plug the other end of the USB Hub Cable (F) into the USB Hub itself



12) Take the Wireless LAN dongle (D) and plug it into the USB Hub



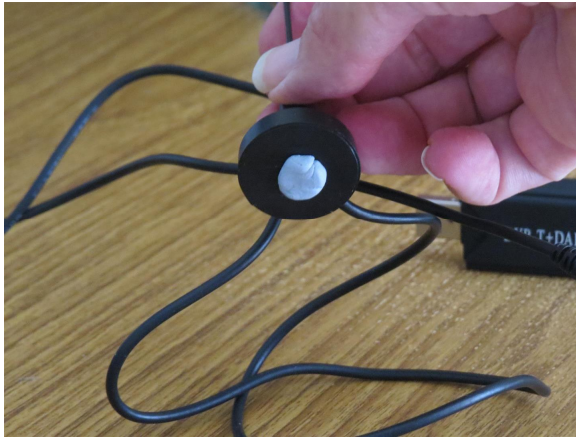
13) Take the Receiver Dongle (C) and plug the Antenna (E) into it



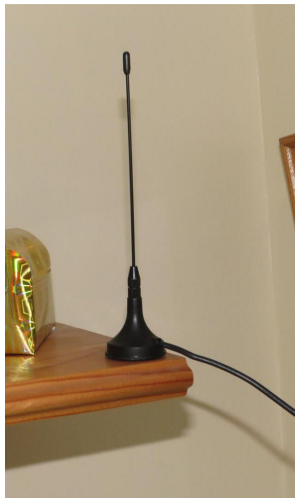
14) Take the Receiver USB Dongle (C) and plug it into the USB Hub



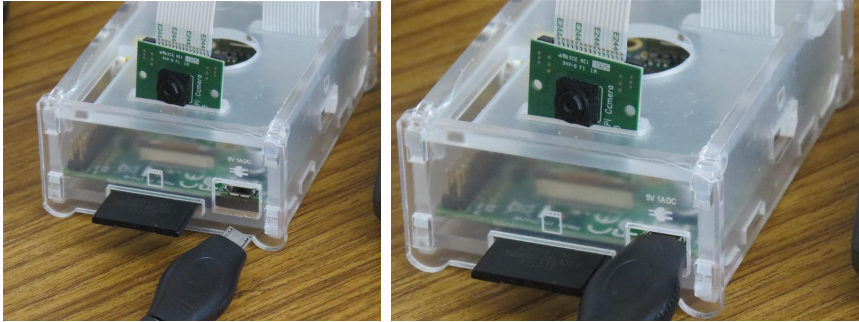
15) Take the Antenna (E) and put some blu-tack on the base (this base cover may come off, but don't worry if it does, you can still stick blu-tack onto it).



16) For best reception of the signal, it's best to have the antenna high on shelf or bookcase – ideally in an upstairs room if possible. You will need to set this up carefully, due to the other dangling cables that connect the kit together.



17) Insert the thin, small end of the USB power cable (G) into the power connector of the RasPi, near the memory card slot. (Connector's appearance may differ slightly from that shown in the photo.)



18) Insert the other end of the USB Power Cable (G) into an empty port on the USB Hub.



19) Insert the round plug connector of the USB Hub Power Supply (H) into the USB Hub



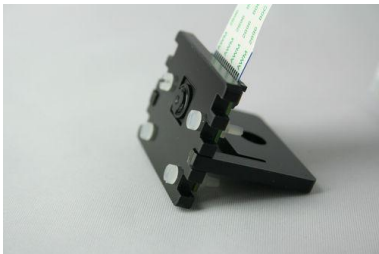
DO NOT PLUG IN THE POWER SUPPLY JUST YET

Assembled Kit



The speakers are optional, as is the white connector cable coming out of the RasPi (this is an HDMI connector which you can connect to an HDMI TV).

Camera Mount

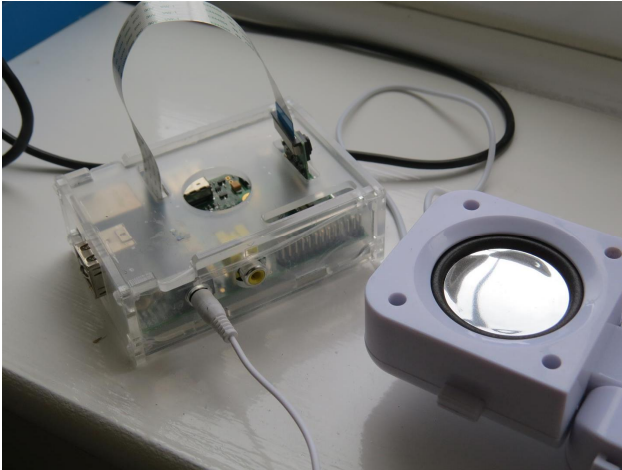


You can attach the “leg” to the camera mount, if one was supplied, so that that camera points at the required angle. The top slots may work best. Don’t be afraid to blu-tack the camera in an appropriate position. You can use your web browser to look at photos taken (see below).

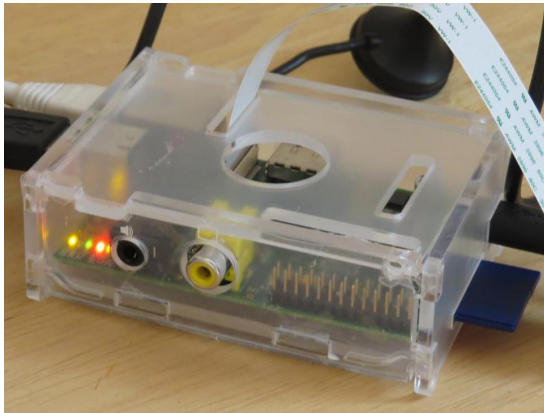
Starting the Kit Up

You could move the kit to where you want to use it, or you can try it out first, wherever you have set it up.

- 1) Insert speakers or earphones/headphones into the 3.5mm plug on the RasPi



- 2) Plug the USB Power Supply into the mains.
- 3) LEDs inside the RasPi should now light up. You should see a steady RED LED and a flashing YELLOW LED. You will see a green LED and possibly another LED



- 4) Listen for “announcements” from the RasPi. If all is well, you should hear **“Wireless LAN is Connected”** or **“Wired Network is Connected”** and then **“My I-P Address is....”** and then some numbers. These numbers should be repeated several times and if possible, make a note of these numbers. They should be something like **192.168.1.7**. **If it announces Zero, make sure you use the digit 0 and not the letter ‘o’ or ‘O’.** (You may see additional LEDs flash either in the RasPi or on the Wireless LAN Dongle.)

- Note, the RasPi will read these numbers out as “one hundred ninety two dot one hundred, sixty-eight dot 1 dot 7”, so you may have to listen 2 or 3 times to write or note them down correctly.

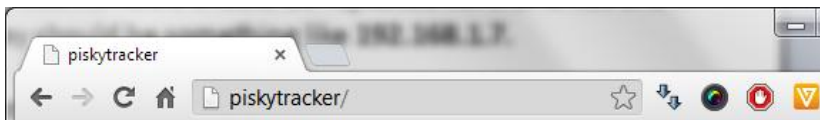
If no numbers are heard

- If you do not hear any numbers read out, **wait about 1 or 2 minutes** until the **yellow light stops flashing**, then unplug the power supply.
- Take out the memory card from your RasPi and go back through Section 2, “Preparing the memory card”, checking each step carefully.
- Re-insert the card and try powering up the RasPi again.

4. Checking the PiSkytracker is Running

If numbers were heard being read out, then congratulations, your RasPi is running – now we need to check that it is, indeed tracking!

- Go back to your computer and open a browser window.
- In the browser address bar simply enter **piskytracker** (yes, simply this!) Google chrome will let you do this, but FireFox and Internet Explorer will try and turn it into a full .com URL etc



- If all is well, you should see the following display – the **PiSkytracker Home Page**:

 A screenshot of the PiSkytracker web application. The page features a map of the Midlands region of the UK, centered on the area around Burton and Derby. On the right side, there is a summary panel for a specific flight:

- PISkyTracker - 19:08:06 UTC**
- Upstairs, DE72 3QW**
- 12 planes on the map. 27 planes in the grid.
- Temp 38C, Wind 23, W
- Charting/Counting planes: Range: 25 miles, 24000 feet or above. Pressure: 1015 mb.
- Follow Plane

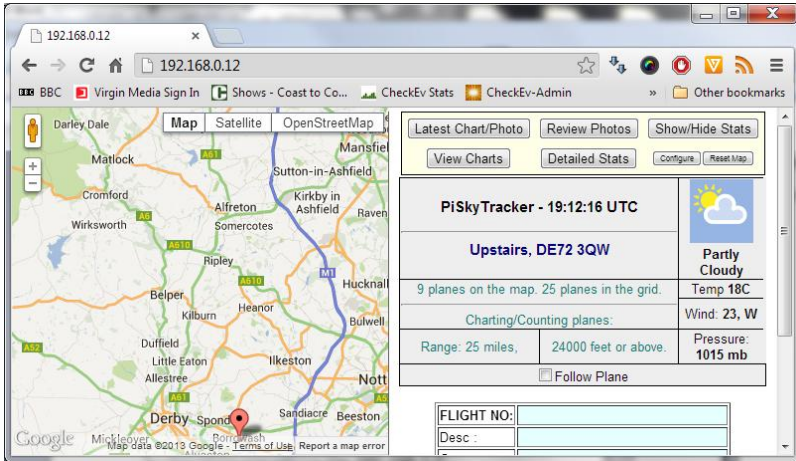
 Below the summary panel is a table for flight details:

FLIGHT NO:	Desc:	Owner:	Coordinates:	Distance:	Altitude:	Speed:	Reg:	Type:	ICAO:	Squawk:	Messages:	Last Msg Seen
40a211	ES227M		Not Available	Not Available	10000	360	006	0			0	
40a687	BC1252C	EI-B2N	24750	469	140	0	0	1			0	
40f014	CF8763	0-L22V	92200	0	0	0	0	1			0	
40f744			0	0	0	0	0	1			0	
40a478	NS26AD	NS26AD	3400	0	0	0	0	1			0	
40a238	R3870D		200	32	267	158					0	
40a870	0500000		-800	0	0	0					0	
40a612	BC1235	EI-B2F	20000	229	256	65					0	
40a348	BE210B	0-TRE2	4800	0	0	0					0	
40b048	05210F	0-DC2F	3319	31000	494	186	2				0	
40b060	ES19207	0-E219	A319	24000	341	923	1				0	
40a181	DM220C	0-E239	A319	16000	393	331	1				0	
40a198	052113	0-M77A	A319	17800	315	306	1				0	
40b265	0524631	0-PT18	A319	20000	408	533	1				0	

If you don't see the PiSkytracker Home Page

If you do not see the home page, then

- 1) Get your note of the “192” numbers (the RasPi’s IP address) that you wrote down.
- 2) Go back to your browser address bar and enter these numbers as the browser address. E.g. on my network, I wrote down **192 . 168 . 0 . 12** so I entered these thus:



If the page does not appear, or the browser gets “stuck” please go back through this guide and check again. Also check that the TV receiver dongle is correctly inserted.

If you get the page, but no current plane tracking information is shown, check that you have the antenna/aerial suitably placed. (It’s just possible there are no planes currently in range, in which case leave things running for a couple of hours.)

Spoken Flight Announcements

Another feature is that you can leave your speakers or earphones plugged in and listen for flight announcements – every 30 seconds or so, RasPi will announce any new flights that have come into range (a range which can be configured – as described later in these instructions).

5. Configuration

It is possible that your Raspberry Pi may have come with all the configuration set, in which case, you can ignore this section. However, it may be useful to make yourself aware of some of the available options.