A Loud Bluefly USB Backup Vario
www.50k-or-bust.com

These notes relate to the use of a Bluefly module. They are my best shot at the time of writing. I cannot guarantee they are correct or represent ideal solutions but will correct and update them as and when I can. Please inform me of any errors or better solutions you may find. The index for other Bluefly and Kobo/XCSoar notes can be found at:

http://www.50k-or-bust.com/Kobo XCSoar/Kobo XCSoar.htm

The standard PCB mounted speaker on the Bluefly varios is not loud enough for me. I wanted to make an audio only backup vario as loud as my main vario and with the same response characteristics. To do this I used a Bluefly USB V11 with a larger speaker.

Removing The Onboard Speaker

Early Bluefly modules had a pair of pads to connect an external speaker as well as a link to disable the onboard speaker. Later modules do not have the link and to use an external speaker it is necessary to remove the onboard one. This is best done using a hot air gun from underneath the board. Someone elsd did this for me but I am assured it is easy enough!

Speaker And Case

The speaker is an Ekulit LSF23M/N/G. This has a diameter of 28mm and an impedance of 16 ohms so can be connected directly to the Bluefly module.


This is probably the most efficient speaker for the job but a similar sized 8 ohm speaker with a series resistor to make the total impedance 16 ohms or more would probably be OK for most pilots. It is shown with the 3D printed

case and a ring to hold it in. The stl files to print them should be in the same location as this article. Note there are two files for the upper case. "Through" in which the speaker holes go right through. In the file "blind" the holes only go part way through. This is because on my 3D printer such small holes do print very tidily. I print the holes "blind" and drill them through with a 1.2mm bit which makes a better job. Use whichever method suits you best.

The speaker is placed in the top part of the case and the ring glued in to hold it.

This vario is very loud which may suit you but reducing the volume with the mark/space ratio Bluefly software volume setting tends to produce a harsh tone with larger speakers. I have the software volume on full and reduce the volume using a fixed resistor in series with the speaker. This is seen tucked into the cavity above the speaker in the following picture.
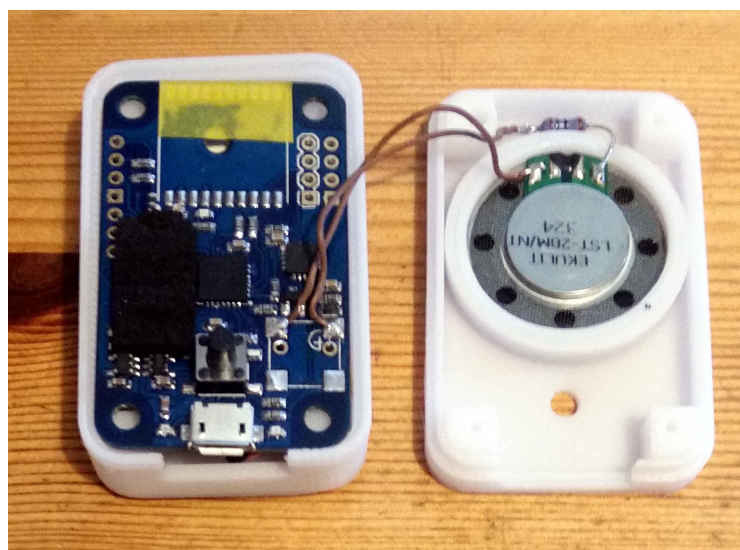

Values between about 10 and 100 ohms should be appropriate. Although it is probably not really necesssary, I cut a notch in the speaker mounting ring to recess the resistor wire soldered to the speaker to reduce the chances of its contacting the PCB. I also covered the unused GPS module connections of

the PCB with insulating tape (yellow in the picture). It may be necessary to gently remove roughness from the edges of the PCB by sanding to make it fit the case without force.

The black foam protecting the pressure sensor is quite thick and the speaker could make it press on the sensor too hard. I thinned mine to about 2mm (about half its original thickness) using a very sharp knife.

The two halves of the case were then stuck together using tape.
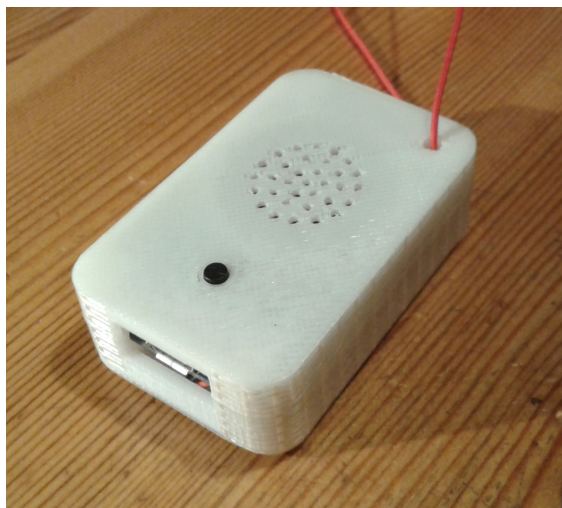
Settings of the Bluefly USB are the same as other Bluefly varios and can be made using a computer and micro USB cable with the BFVDesktop program from the Bluefly web site. My backup vario has the same settings as my main Bluefly vario and fits nicely beside it on my flight deck.

Note the vario is at the opposite end of the flight deck to my compass. The speaker has a strong magnetic field and will affect the compass if too close.

Copyright © - Nigel Page - February 2017 - www.50k-or-bust.com