



ATmega 328 Datalogger altimeter Alti Multi Kit Console software user manual

Version	date	Author	Comments
1.0	10/11/2013	Boris du Reau	Initial version

Rocket Type

Micro-max	Model Rocket	Mid power	High power
No	yes	yes	yes

Category

Construction technic	Ground Support	Electronic	Other
		X	X

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Goal

The goal of this document is to explain how to use the datalogger altimeter kit (AltiMulti) that you just built with the altimeter console software. This is for Firmware version 1.4 and greater. The document assumes that you have already installed altimeters in a rocket payload bay.

Before your start

Remember that it is a kit and that you can modify the program and behaviour of your altimeter.

The country where you live might not even allow the use of such device. You have to assume total legal responsibility for any damages or claims including personal injury that results from the use of this device. I shall not be responsible for the above. If you disagree with that, please do not build it or use it.

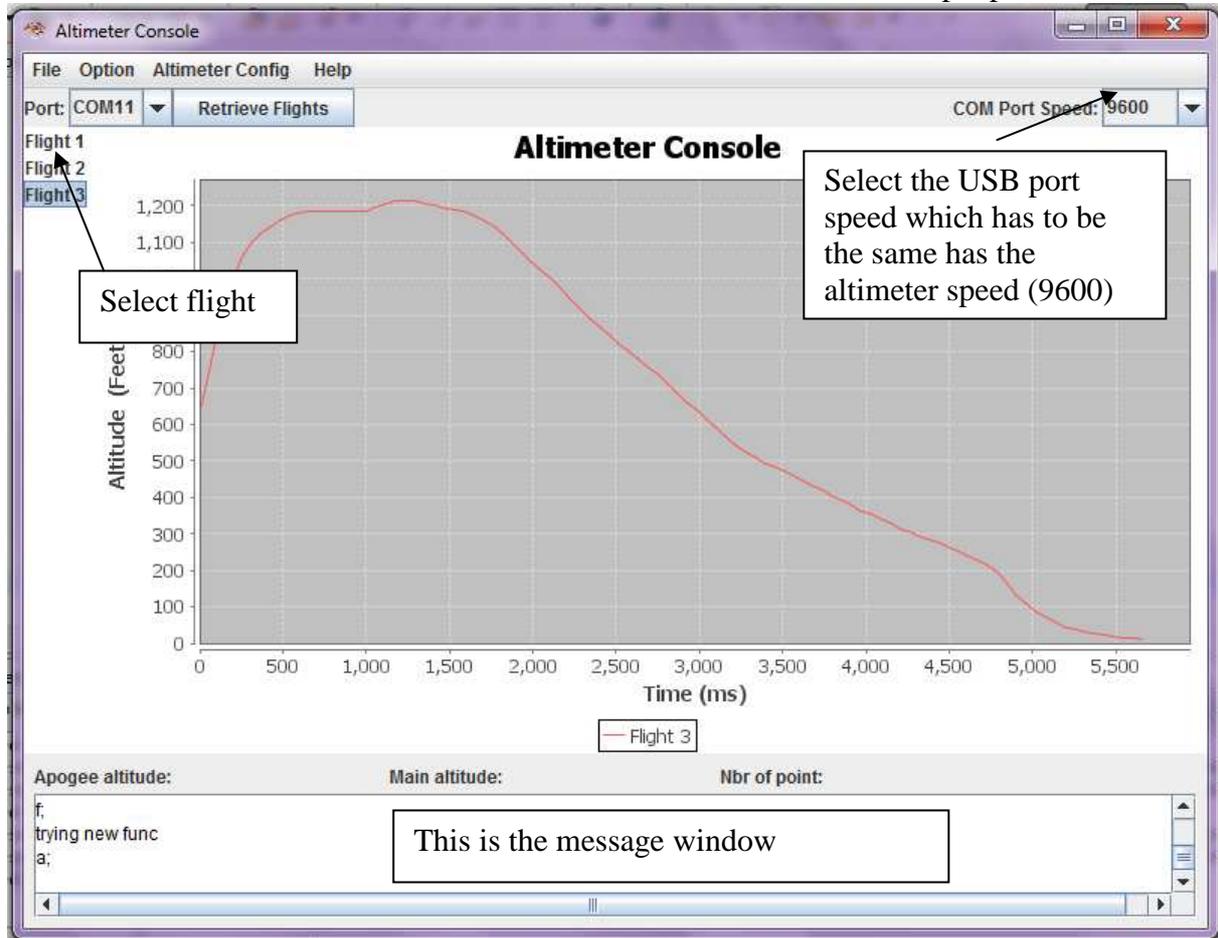
Related documentation

This document assumes that you have successfully built the Alti Multi kit altimeter and that you have read the kit building instructions. This will not cover things such as flashing the altimeter which will be discussed in another document.



Console overview

The altimeter console has been written in Java so that it can run on multiple platforms.



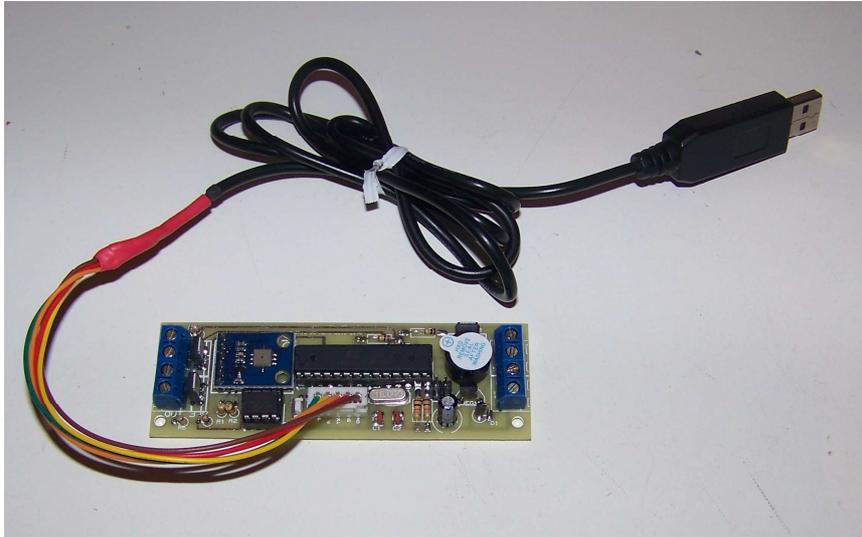
The console mainly does 3 things:

- Retrieve flight data
- Configure the altimeter
- Allow altimeter firmware upgrade without the need of a development environment



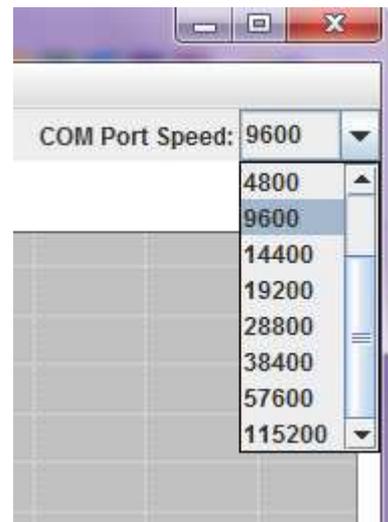
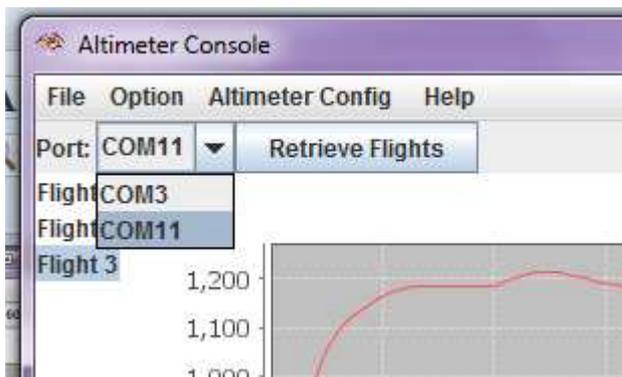
Quick start

Start the software on your computer and plug the altimeter to the computer using the USB cable.



The altimeter should be beeping away doing its continuity test. A beeping altimeter does not mean an established communication.

You need to choose the correct USB port and speed before you can connect to the altimeter.



Important notes:

If you use the USB cable you should never power the altimeter with a battery. However if you use the Bluetooth module to allow wireless data retrieval or altimeter config then you need to use a battery.

What you should not do:

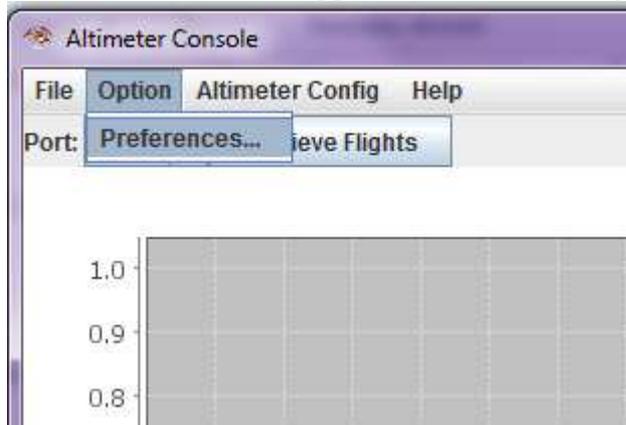
- **Never press the altimeter reset switch with pyro charges connected, this will do an ignition test and fire them.**
- **Never attempt to flash an altimeter with pyro charges connected it will fire them**
- **Never connect pyro charges or fly it without testing the altimeter on the ground.**

You should use Xmas bulbs to test the altimeter in a chamber after you have flashed it.

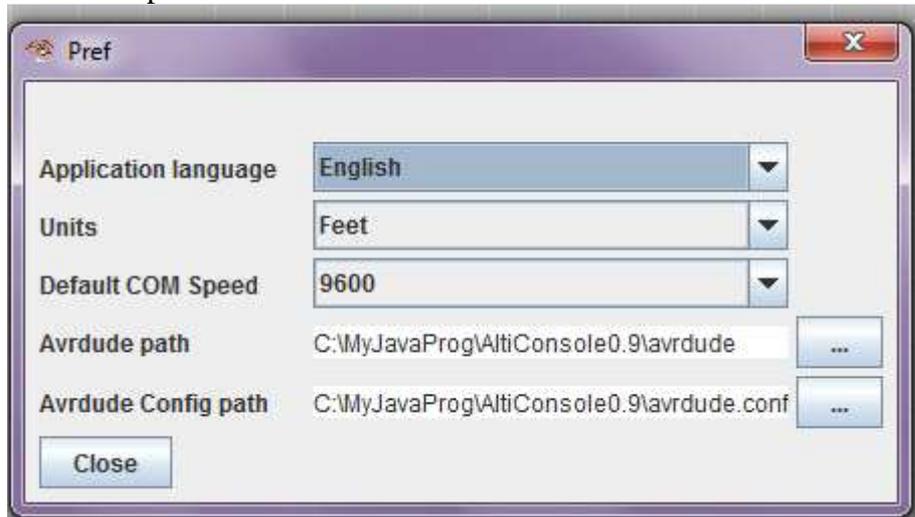


Application preferences

The Altimeter console application can be configured



This will open the screen below



Application language: by default the locale language will be used if it exists. If it doesn't then it will use English unless you overwrite it with another language.

Units: you can choose between feet or meters. Internally the altimeter is working in meters.

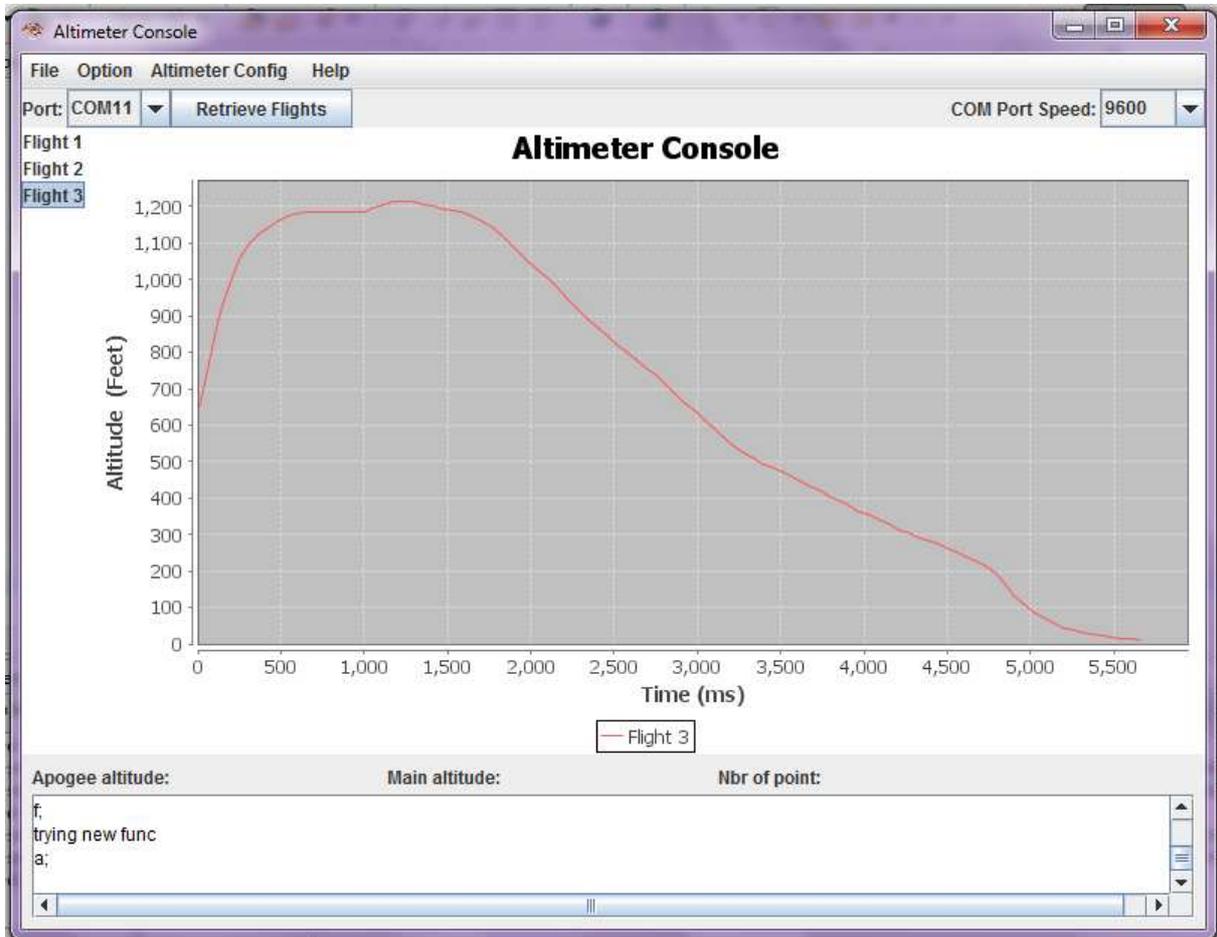
Default COM speed: you can choose a default speed so that whenever you restart the app it will default to it.

Avrdude path and config path: those are used to locate the **avrdude** program which is used to flash the firmware. You can change the path by clicking the ellipse () button.



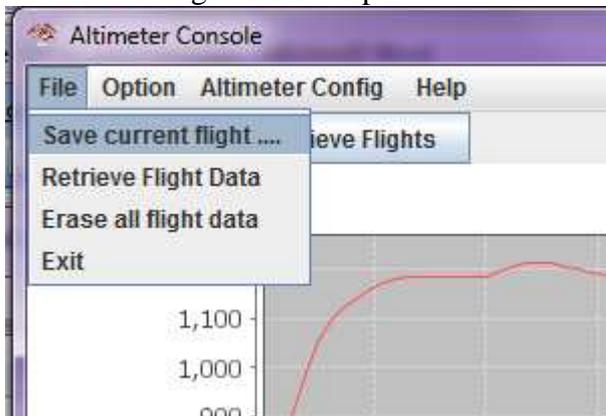
Retrieving the altimeter flight

When you click on the retrieve flight button or retrieve the altimeter config from the menu the altimeter will establish communication (providing that the correct com port and speed have been chosen).



Saving the flight:

The current flight can be exported and saved to a CSV file (coma separated file).



CSV files can then be imported on a database or an Excel file.

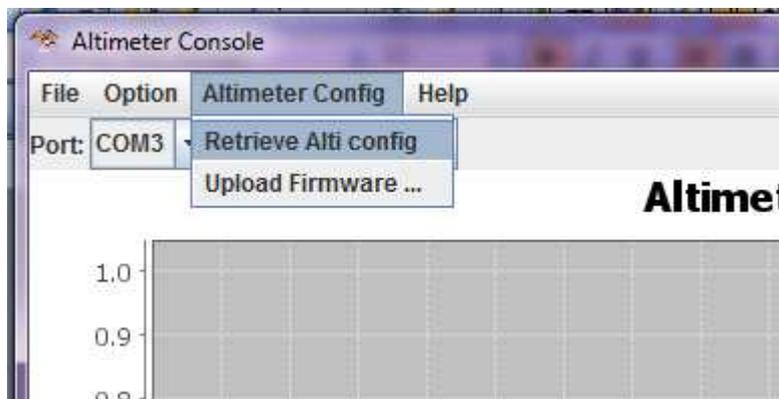


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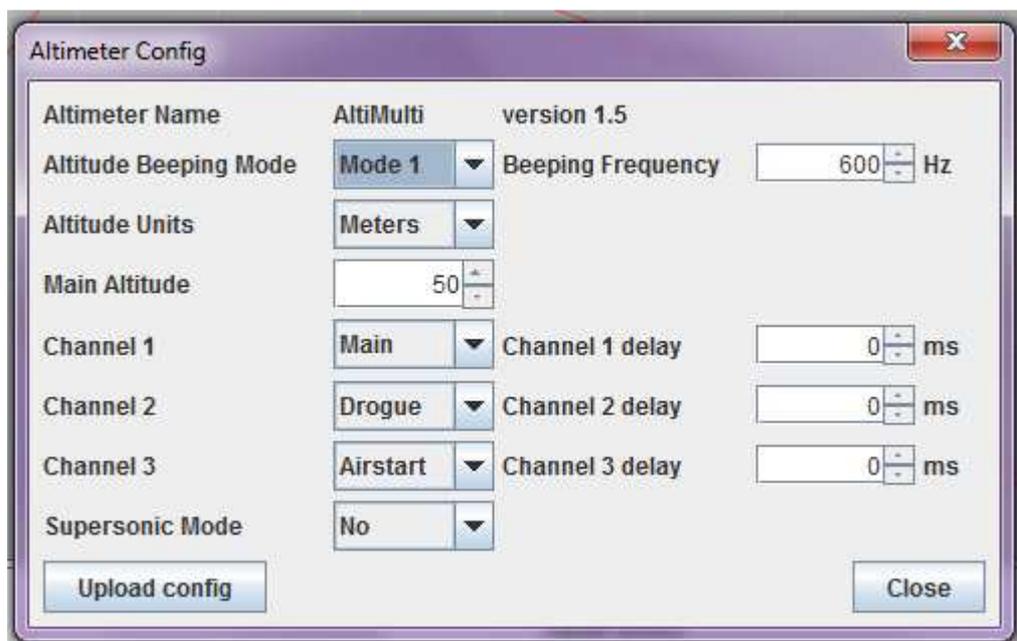
Changing the altimeter configuration

As of version 1.4 of the altimeter firmware, the entire altimeter config can be soft coded and stored in the EEPROM; you no longer need to use the jumper.

First you need to retrieve the current altimeter configuration. This can be done from the menu [Altimeter Config]-> [Retrieve Alti config]



Note that if the selected port is not connected to the altimeter it will timeout. If successful you will have the following window:



This retrieves for information the altimeter name and version (in the future it will be able to connect to different altimeter with some sort of plug-in mechanism).

Altitude beeping mode: you can choose between 2 different modes.

Mode 1 is: 1 long beep per hundred meter or feet and 1 short beep per meter or feet

Mode 2 is: will beep each digit after the other

Beeping frequency: you can choose your beeping frequency between 200hz and 1khz, this is for people who can not hear properly the default frequency and also in case you have several altimeter in your payload you might want them to beep differently so that you can identify them.

Altitude units: this is used when beeping the altitude after the flight; it will beep it in meters or feet.



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Main altitude: this is the deployment altitude for the main parachute. Note that it will use meter or feet depending on what units you have selected.

Channel 1 to 3: here you can define the function of each pyro output

Channel 1 to 3 delays: here you can define for each pyro output a delay in ms. This is useful when you have 2 altimeters and want to avoid both to fire exactly at the same time.

Modify the configuration and if you want to save it then send it back to the altimeter by clicking the [**Upload config**] button.

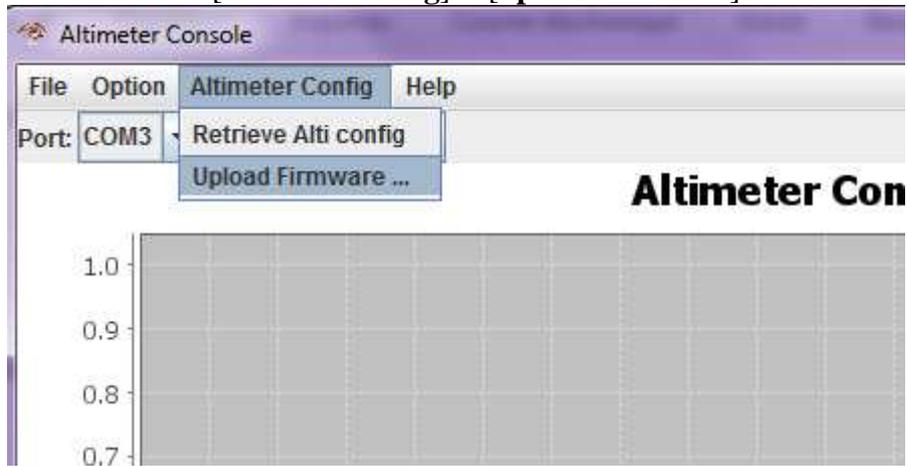
Supersonic mode: do not take into account the measure during the first seconds of the flight. This is to avoid premature ejection because the measures are not relevant at that speed.



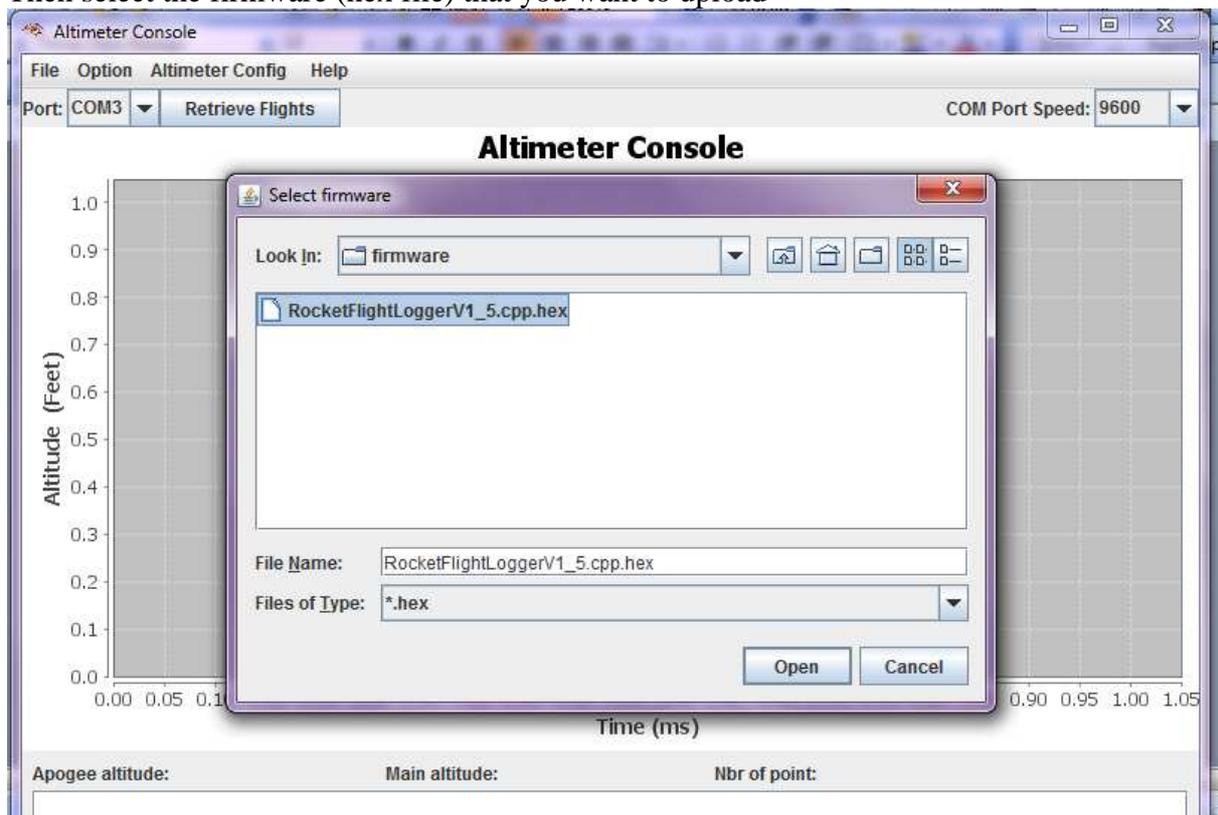
Upgrading the altimeter

If you do not know any C programming or do not want to use the Arduino development environment you can upgrade your altimeter firmware using the console.

From the menu **[altimeter config]**-> **[upload firmware]**



Then select the firmware (hex file) that you want to upload



Press the altimeter reset button and click on open just after that. The program then upload, make sure you check the message window for errors or success.



Wireless communication

Because you do not want to remove the altimeter from your rocket after each flight, replacing the USB cable with a wireless module will allow you to retrieve flight data from the rocket without opening the payload.

Compatibility table

The following table is a summary of all the version history

Front end type	Java Front end version (Altimeter console)	Altimeter program
Arduino serial monitor	Some will work with 0.5	> 1.3
Arduino serial monitor or Altimeter console	0.8	1.4
Arduino serial monitor or Altimeter console	0.9	1.5

Trouble shooting guide

This section will be completed to help people identifying problemes with their altimeter.

Flight data retrieval is always timing out what should I do?

- Make sure that you have selected the correct USB port and the correct speed

FAQ

Q: How can I identify which altimeter version I have?

A: When the altimeter is powered on it will beep its version. The long beep are for the major version and the short beep are for the minor version. For example, version 1.3 will be one long beep and 3 short beeps.

Q: Why is the altimeter beeping away when I power it on?

A: This is the continuity test. It does it to test the continuity on all the output. One short beep mean the charge is ok and a long beep mean the charge is not ok. Check the connection on the altimeter or if the ematch on the charge is ok.