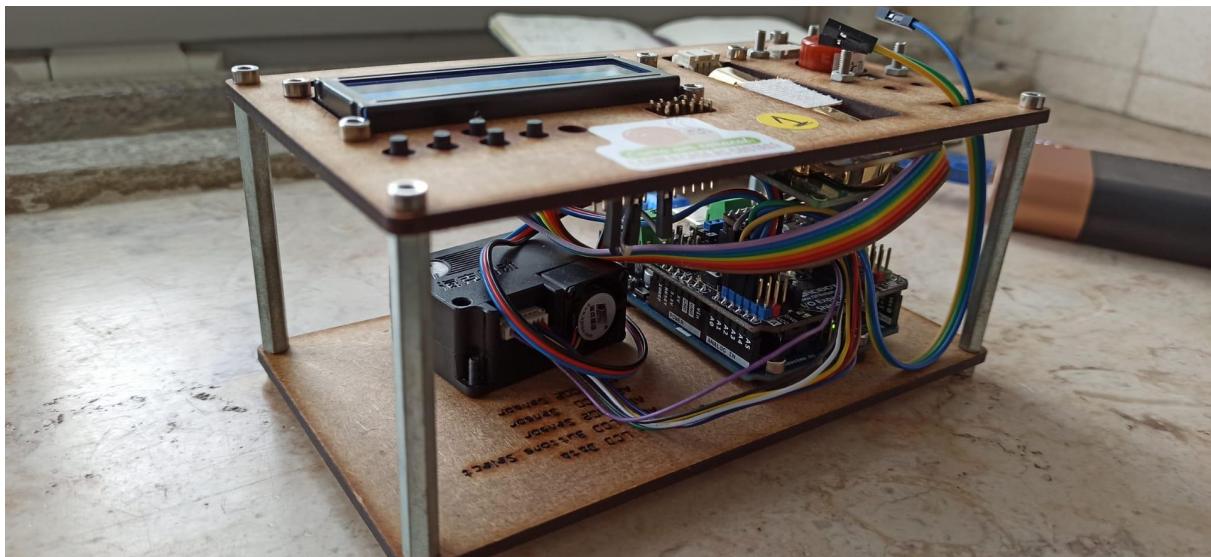


Instructions

Air Quality Station

Guide book on how to use an Air Quality Station from the Carbon Tree Project¹



¹ More information and code at github.com/MiguelLinan/CarbonTreeCode

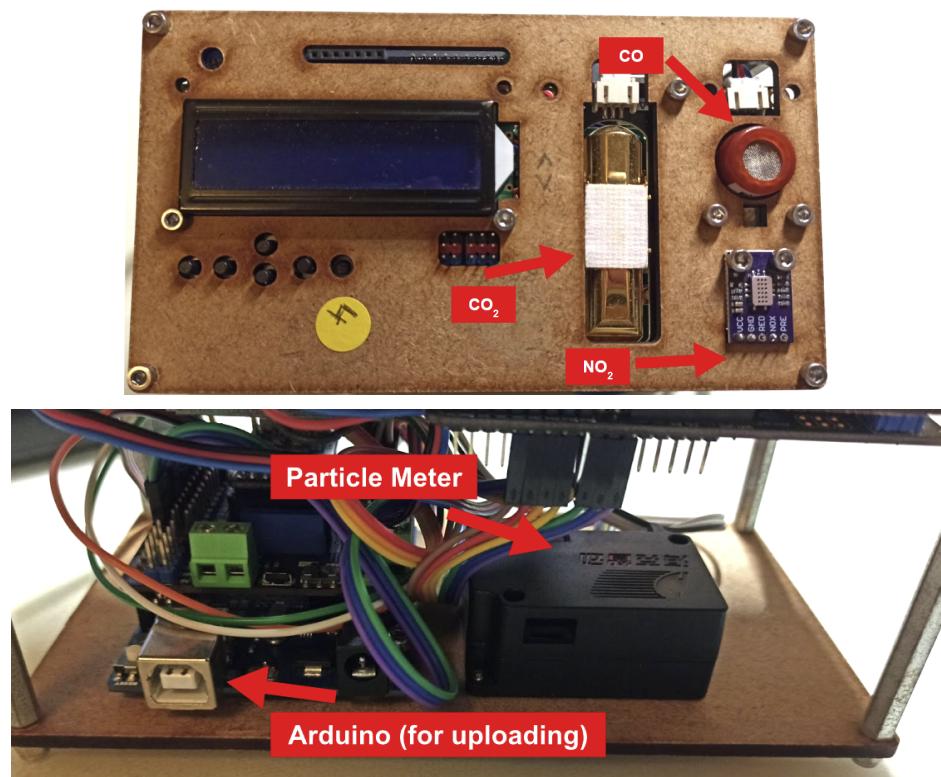
Station Anatomy

1. Button Mapping

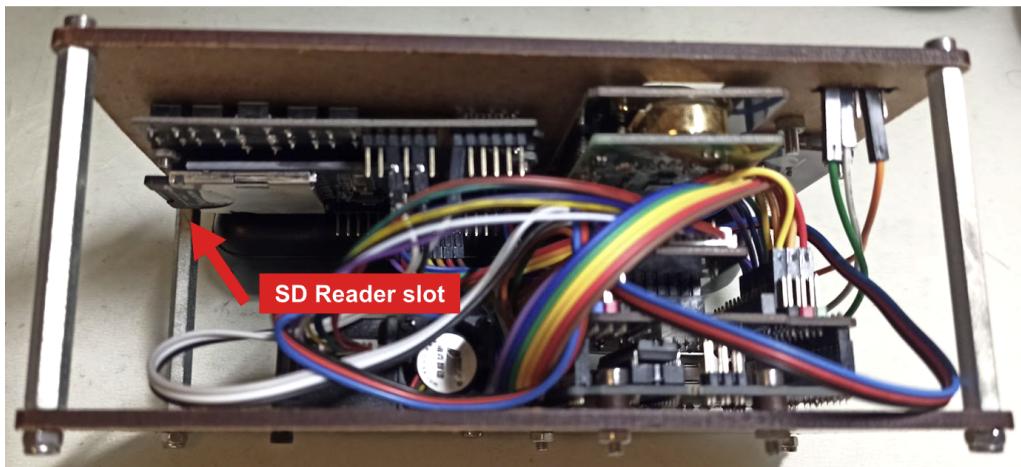
Throughout this document, the buttons under the screen will be referred to by their number.



2. Sensor Location



3. SD Reader Slot



Setup

4. Welcome Screens



When you first turn on the Station you'll be greeted by three welcome screens which will say " ***Carbon Tree** / Portugal 2022", " Ambient meter / v X.X.X ", "Wait 5 min / to stabilise" (X.X.X being the version of the code installed). If you wish to skip these messages you can just hold 5 until they disappear.

5. Timer



In this menu, if you click 1, "Endless", you'll have the station collect data for an endless period of time (actually 49 days). But if you rather just collect data for a specific amount of time click 2, "Set".



On this next screen, you can click/hold buttons 4 and 3 to increase/decrease time, and 1 and 2 to change between hours and minutes. If you wish to confirm your timer duration click 5 to apply it.

6. Frequency of Data Collection



In this following menu, if you click 1, "Default", the station will collect data every one minute (default time can be changed in code if needed). If you want to choose a specific interval click 2, "Set".



On this screen, you can click/hold buttons 4 and 3 to increase/decrease the interval, and 1 and 2 to change between hours, minutes and seconds. If you wish to confirm your interval duration click 5 to apply it.

7. Pick Sensors



If you want to collect data from all sensors click 1, "All". If you'd rather just save data from a few specific sensors click 2, "Choose".



Here, you can use buttons 3 and 4 to go up and down the list of sensors and button 1 as an on and off toggle. Once you've made your selection click 5 to confirm it.

8. Data File



If no SD card is inserted, a message saying “SD not connected” will appear. If you do not wish to save the data and just want to see the air quality values on the screen (LCD) just click 1 “Skip”.



Instead, if you want to save the data just slide in an SD card in the SD reader slot below the screen and a screen saying “Save file:” will appear (If the SD card was already inserted the “SD not connected” screen will not appear).

Click 1 “New” to save the data in a new file called DATAXX.CSV (XX being a number from 00 to 99), or click 2, “if you wish to save more data in an existing file (handy if, for some reason, the station loses power and you wish to continue the data collection process).



If you click 2, “On old”, you can choose a file from the existing SD card to add new data to.

!!Attention!! - The files in the SD card need to obey the 8.3 filename convention. Which means it cannot have more than 8 characters and it cannot have any special characters. More information [here](#)². However, you can have files inside folders if you wish, but the folder’s name must obey these rules too (If not, strange characters may appear on the screen and the file may get corrupted).

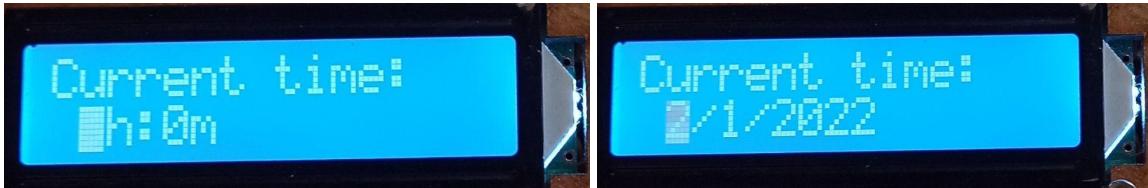
Use 3 and 4 to go up and down and click 5 to confirm your choice.

9. Save Date & Time



If you wish to skip this configuration click 2, “Skip” otherwise click 1, “Set” to go to a date and time configuration menu.

² en.wikipedia.org/wiki/8.3_filename



Here, similarly to previous menus, click/hold 4 and 3 to increase/decrease a value, 1 and 2 to go left and right, and 5 to confirm your choice in both the “time” and “date” menus.

Data Collection

1. Data Screens



After the Setup, you'll be shown a screen which displays the data from the sensors. Use 3 and 4 to go up and down through the several screens that show the various sensors (only the ones selected in the “Pick Sensors” step). The data on these screens updates according to the interval/frequency chosen in the “Frequency of Data Collection” step.

2. File Screen



There is one extra screen below the data screens which shows the status of the data collection process. At the top, it displays how much time is left (or it displays “Endless mode” if that's what you choose beforehand). It also provides the size of the data file in bytes.



One of the great features of the Station is the ability to save notes (by pressing button 5) in the data file for when something important happens (Ex. someone opening a door which can affect airflow). When button 5 is pressed a note is included in the data file as “--Note--” and

this signal appears  on the screen. After the next refresh of the data collection, according to the “Frequency of Data Collection”, this icon will disappear.

3. Ending the Data Collection

There are two ways of finishing the data collection process:



On the first one, the timer runs out and a message that says “time is over!” appears. You can either click 1, “repeat”, and go back and repeat everything all over again or you click 2, “end”, and a “Session completed” message shows. (And it stays there until the Station is powered off)

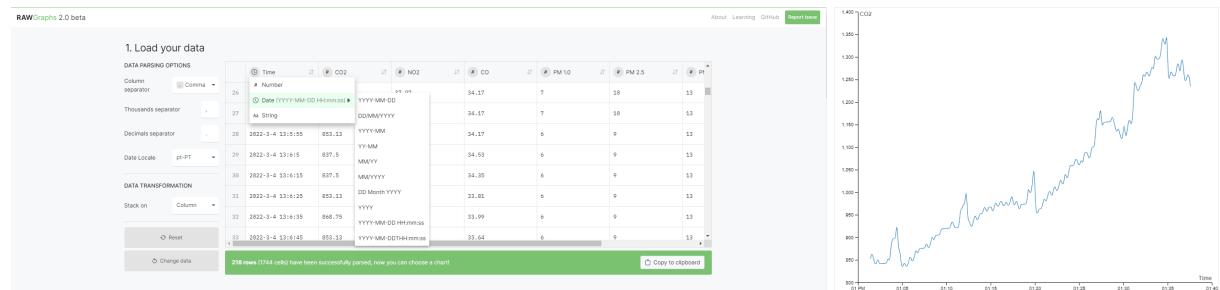


On the second one, you press button number 1 (at any time of the data collection process) for around 6 seconds and the “Session completed” message appears and you can safely take out the SD card.

Data Processing

The data files are saved in a .CSV (comma separated values) file format. This means they can easily be opened in Excel, Google Sheets or Libre Office. The data can be plotted into graphs in these programs, however, the use of special websites which make professional-looking graphs is also recommended, like <https://www.rawgraphs.io/gallery>.

To use this website in particular just upload your file here: <https://app.rawgraphs.io/>.



Then make sure the first column is set as a Date by clicking the “Aa” icon and selecting “Date” and then “YYYY-MM-DD HH:mm:ss”. Only then can you scroll down and choose your plot style.

THAT'S IT!

Congratulations! Now you know how to use an Air Quality Station!

Contacts and links:

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