

Alice loggers...

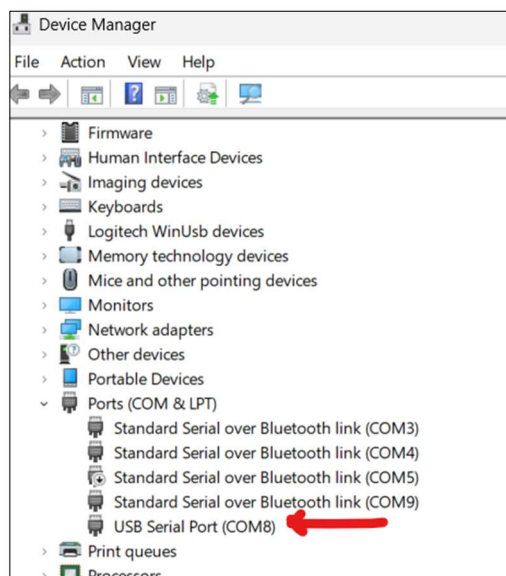
To use these loggers, they must first be connected to the comm's board and configured with the Alice configuration app. You will require a **USB 3.0 port** for this (typically has a blue edging inside the socket), more for the final data transfer from the device to your laptop.

Do not connect a non-rechargeable battery to an Alice logger as the comm's board will attempt to recharge it, which may result in a fire/explosion.

Steps are:

1. When a battery is first connected to Alice, you'll notice 4 sets of coloured LEDs pulsing. This is it checking communications on-board to the sensors and storage chip. Then, the device will enter sleep mode, indicated by a dim/brief yellow LED pulse, every 2-3 seconds
2. Connect the USB cable to the comm's board, and then connect this to the PC / laptop. A COM port should be generated

You can verify this by right-clicking on the Windows Start button and selecting **Computer Management**, and then **Device Manager**. Under **Ports**, you should see a **USB Serial Port (COMx)**:

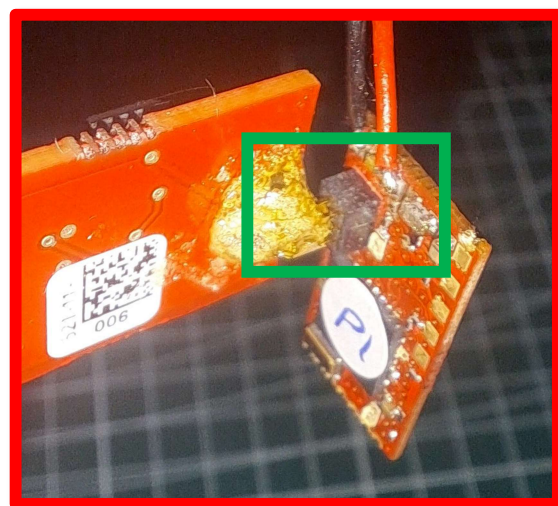
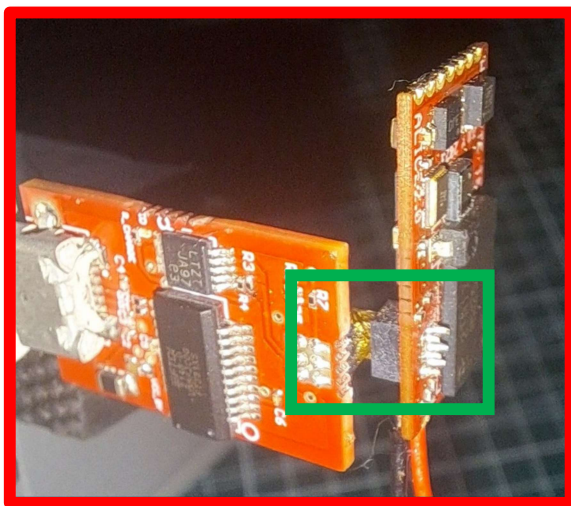


If this Serial Port is not present, please go to this link and download the driver for Windows:

<https://ftdichip.com/drivers/>

You may need to reboot your computer for the driver to be assigned to the item.

3. You can now connect the comm's board to Alice. **Please note the orientation in the photo below**



When the connector (6-pins) is pushed into place, you must bring a magnet to the side of Alice until a steady yellow LED lights for 2-3 seconds. Remove the magnet, and you should then see the will sense its presence and switch to a rapid flashing of the green and yellow LEDs, indicating it is listening for instructions. If not, bring the magnet for another few seconds and repeat

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4. **Battery charging:** If it's a small battery (40-100 mAh), please give it a good hour to fully charge. The current draw on these devices is so low, the comm's board finds it difficult to sense it charging. I've found that larger capacity batteries, such as a 100 mAh/3.7 V cell makes the red LED on the comm's show brightly while charging, otherwise it is just dim. Checking the battery voltage at the battery connection/sock with a multi-meter, while the logger is in sleep mode, is a good time/place to check. Expect around 4.18-4.20 V when fully charged. Please note that the new Alice2.0 app battery voltage check button does not function correctly with the current comm's boards, as there is no switch to disconnect charging. This will be resolved in the next iteration of the comm's board.
5. **Communicating with Alice:** Run the Alice app, select the same COM port number as on the Device Manager, and click the **Connect** button. This might turn green, it might not! It opens the communication port in the Alice app):

6. The app shows the current time on the PC / laptop. To set the time on Alice, click **Send current Date / Time to logger**
To verify the time on the logger at any time from this point on, as long as the battery does not become disconnected, click **Connect** and then **Request current logger time value** and it will be displayed there. Note that the logger time is only updated at the time of the request button. Then, to ensure that the clock crystal is functioning, please press for another time request. Th time should once again update / reflect the current time compared to the laptop
7. For deployment / to use the logger, the next step after setting the logger's clock, is to **Erase memory**. Clicking the **Erase memory** button will produce a popup with a random value between 1 and 99. Click **Ok** and enter this value into the text box beside the **Erase memory** button and click **Set**, and the erase procedure will begin. Depending on how much data there is on the memory chip will determine the erase time. a full memory chip could take several minutes (Alice 1GB takes only a few seconds

regardless of how much memory has been used previously – for this logger, the yellow and green LEDs will flash on for a couple of seconds twice, while it erases the two memory die). While the erase procedure is running, the yellow/green LEDs will flash. Once the erase is complete, a pop indicating *Erase complete* will appear. Note that this random value helps to prevent accidental erasure of the logger. The user must purposely enter the correct number, verifying they want to erase potentially valuable data

8. Select the g-range for the up-coming deployment; default +/- 16 g (**omitted for now**)
9. Select the sampling frequency for the accelerometer (10, 20, 40, or 80 Hz); default 40 Hz
10. Click **Prepare device for deployment**. This imprints the g-range, and sampling frequency in the first page of its memory
11. A green LED will flash a few times, follow by a 2 second flash, and then it will return to rapid flashing of the yellow and green LEDs
12. You can now disconnect the comm's board from the logger. Please ensure you use a firm grip and pull directly *normal* to the board, not at an angle, else you might pull the connector off of the logger. (This did not happen to me in over 100 connect/disconnects)
13. The logger, once the comm's board is disconnected, will return to sleep mode; yellow LED flashing every 2-3 seconds
14. **To start the logger logging data**, swipe a magnet near it, and it will flash briefly yellow, and possibly followed by a green LED for about a second
15. Logging is indicated by a very brief green LED (as usual) for every ~ 30 data points, so at 40 Hz, this will be > 1 Hz
16. The green LED will be more visible for the first 3 minutes, after which, it will dim dramatically to save power
17. **To terminate logging**, bring a magnet to the logger so that the yellow LED illuminates, and hold for about 5-10+ seconds, until the green LED illuminates. Now remove the magnet
18. The logger is now in sleep mode (intermittent / brief flash of yellow LED)
19. Connect the comm's board to the logger as indicated in the photos above (**correct orientation is critical**)
20. Click **Connect**
21. Verify the time on the logger by clicking **Request current logger time value** (assuming that the battery connected to the logger is still good. If not, the returned time/date will be incorrect)
22. To extract the data from the logger, you must first instruct it to count the data (pages used in memory). Click **Count data in logger** and wait. This could be a minute or more if the deployment is over several days. When it has counted, it will display the number of data points and pages used (a page = 30 data points), and the % of the memory used (of 256 MB for Alice 2, 1 GB for Alice 1GB)

The screenshot shows a software interface for data extraction. It has a pink header bar with the title 'Data extraction'. Below the header, there are several controls: a green button labeled 'Count data', a text input for percentage, a checkbox labeled 'Transfer all (single shot)', and a text input for 'Export filename:'. Below these are 'Mem usage:' and 'Export directory' text inputs, with a green button 'Set export directory'. At the bottom, there are two rows of data: 'Data' and 'Pages', each with a '-' button and a text input. To the right of these are three buttons: 'Transfer' (green), 'Resume' (green), and 'Stop' (red). A 'Progress' bar is also present.

23. Set a working directory for the exported data
24. Click **Transfer data to file on PC**. If nothing happens after a few seconds, please click it again as the logger missed the command, else, you'll see the transfer begin. Note that the transfer is in blocks of 64 pages, so if the logger only used 61 pages, it would transfer 64 pages to file, or if 100 pages were used, it would transfer 128 pages to file.
25. It's important to use a laptop with USB3 for this data transfer, and also for the laptop to not be in power save mode, or be running on battery, as this will interrupt the transfer. If the transfer pauses at all, please click the **Resume** button.

26. Additionally, there is a new feature. Unchecking **Transfer all** reveals:

The screenshot shows the 'Data extraction' window. It has a pink header. Below the header, there's a row with a green 'Count data' button, a text input for percentage, a checkbox for 'Transfer all (single shot)', and an 'Export filename' field with a 'Filename' label. The next row contains 'Mem usage' with a text input, 'Snapshots' with a value of 3, a red 'Validate' button, an 'Export directory' field, and a green 'Set export directory' button. Below that, there's a row with a '-' button, 'Data', 'Data width' with a value of 100, and a 'Progress' label. The final row shows a '-' button, 'Pages', '(multiples of 16384)', a green 'Resume' button, a red 'Stop' button, and two empty text input fields.

Snapshots allow snippets of data, evenly distributed within the recorded area of the memory, to be quickly downloaded. The minimum number of snapshots is 2 i.e., the start and end of the recorded memory. Any number greater than 2 will be spread throughout the memory, so 3 would add a snapshot at the centre of the memory, 4 would be start, stop, 1/3 in, and 2/3 in. The quantity of data downloaded is the **Data width**; this must be in multiples of 16384. The app will correct user entry in these two boxes when the **Validate** button is clicked. The user can then click **Transfer** to initiate the transfer of the selected snapshot data. The benefit of this feature is that the user can rapidly determine if the data in memory is worth downloading as, a full memory can take 3-4 hours (Alice2.0, 11-12 hours for Alice 1GB). Note that time/date information will be incorrect. This feature can be used to test battery consumption; obtaining perhaps 100 snapshots for a full memory allows battery voltage to be determined over the course of the recording in only a matter of seconds.

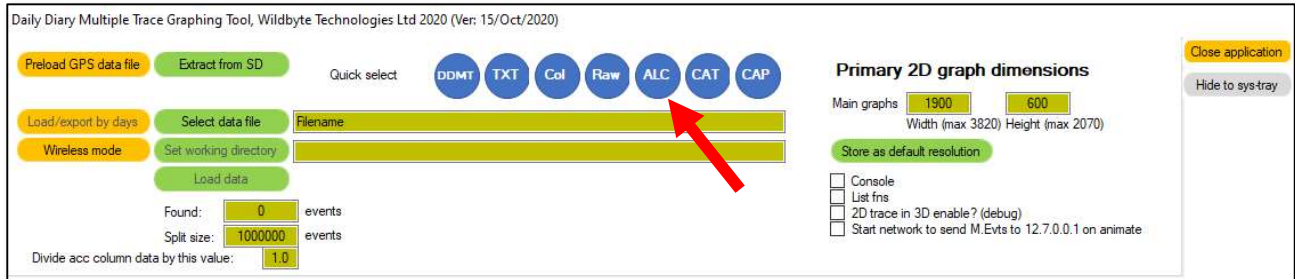
27. To reuse the logger:

- you can either request current time to ensure it is correct, or just set the time (I always verify the logger time after)
 - erase its memory
 - click the prepare for deployment button
- ❖ Any attempt to start the logger logging data, i.e., not comm's board, and bringing it out of sleep with a magnet, without erasing previous data, will result in a rapid flashing of the red/yellow LEDs.
- ❖ To rectify this situation, simply bring a magnet to the device to put it back to sleep, and follow from step #27 above

DDMT (*DDMTddmmmyyyy.zip*), these instructions (*Alice 2 loggers instructions.pdf*), and Alice2 comm's app (*Alicecomms_2c.zip*) are all available to download on GitHub:

<https://github.com/DDMT-Software/DDMT>

To load the data into DDMT, click the ALC button on the front panel:



The short version

For deployment:

- Connect comm's board to USB, and plug into PC
- Power up the logger with a battery and connect to the comm's board, wake the device with a magnet for 2-3 seconds until rapid green/yellow LEDs flash (listening for instructions)
- Run the Alice app and click connect
- Erase the memory, and click prepare for deployment

To get to the data:

- Connect to the comm's board, wake the device with a magnet, and click connect
- Request the logger time to check for drift (compare the laptop time)
- Count data in logger
- Set export directory
- Transfer data to file on PC