



COLOR UPGRADE V3.3

January 2021



This tutorial shows how to install upgrade to LetB Color Clock. Version 3.2 is known as last stable version. This V3.3 upgrade is optional for better performance and the following features:

- Increased reliability
- Improved audio quality
- Added volume control
- Added feature preserving settings after power down
- Updated Bluetooth interface
- Added intro
- Added rainbow mode
- Upgraded hardware to accommodate for the possible future upgrade with a WiFi module.

Requirements:

- Upgrade Kit (to be purchased separately)
- Computer with Windows OS
(it is possible to use a computer with macOS; however, it is out of the scope of this tutorial)
- MicroSD card adapter
- Mini USB cable
- Soldering iron
- Utility knife
- Multimeter (optional)
- Double-sided tape (optional)

The upgrade is divided into two parts – Hardware and Software. Overall installation time takes approximately 15 – 25 minutes.

Hardware

Follow the next steps to upgrade the hardware of your clock.

1. Disconnect LetB from the power supply
2. Pry open black holders at the back of the clock (Pic 1.)

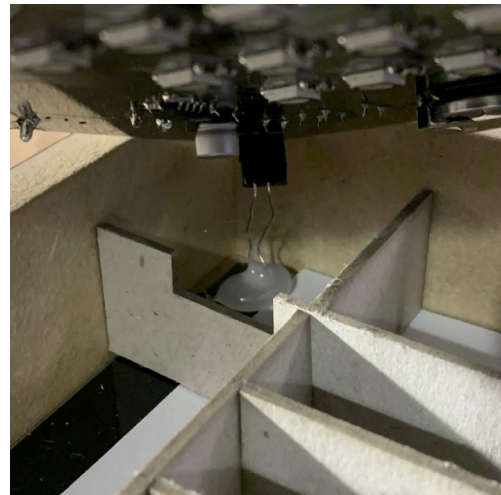


Pic 1.

3. Remove the mainboard (hold with a piece of glue). While lifting the mainboard, be careful about the connection to the light sensor (Pic 3.) This will have to be connected back during the assembly, otherwise, automatic brightness feature will not work properly.

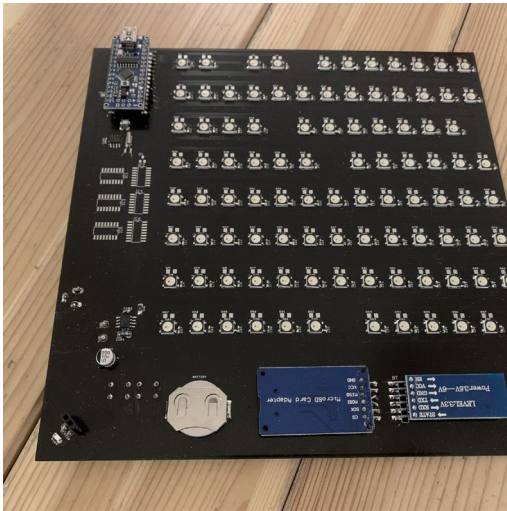


Pic 2.



Pic 3.

4. Take the board out of the frame and remove the backup battery. This slides out as shown on Pic 5.

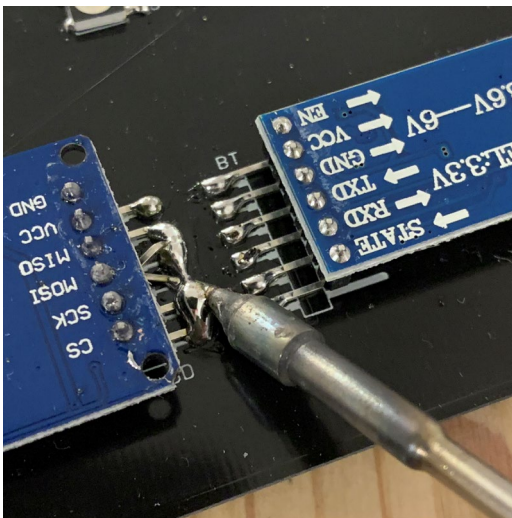


Pic 4.

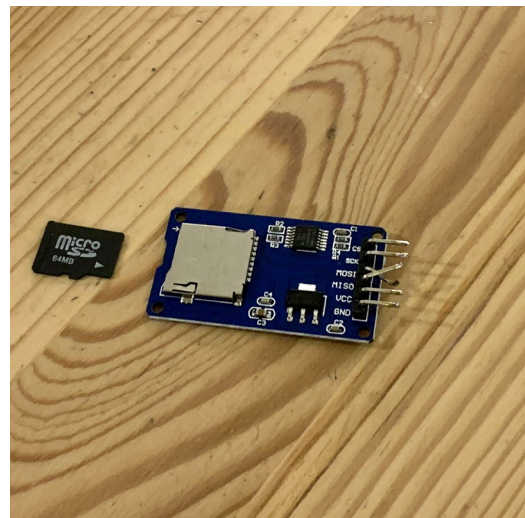


Pic 5.

5. Desolder blue board on the left marked as Micro SD Card Adapter. Using an excessive amount of solder may help to heat all the pads at the same time (Pic 6). And remove micro SD card by pressing it in (Pic 7).

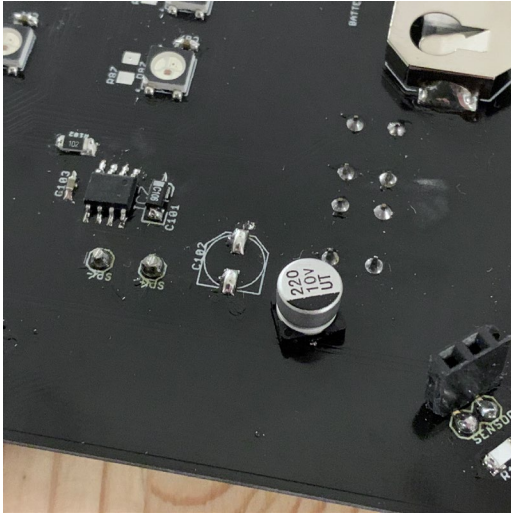


Pic 6.



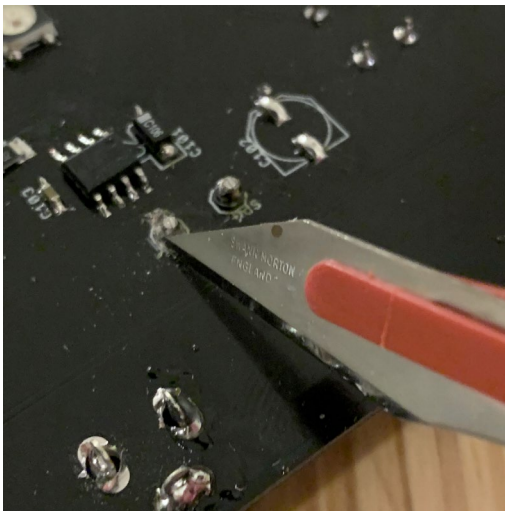
Pic 7.

- Desolder silver capacitor, marked on board as C102. The same tip applies – using an excessive amount of solder may help here.

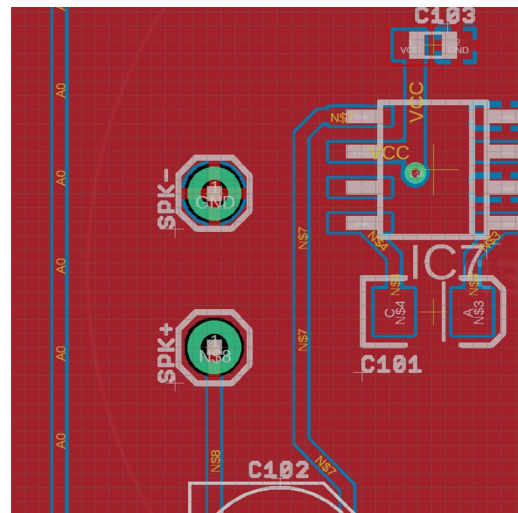


Pic 8.

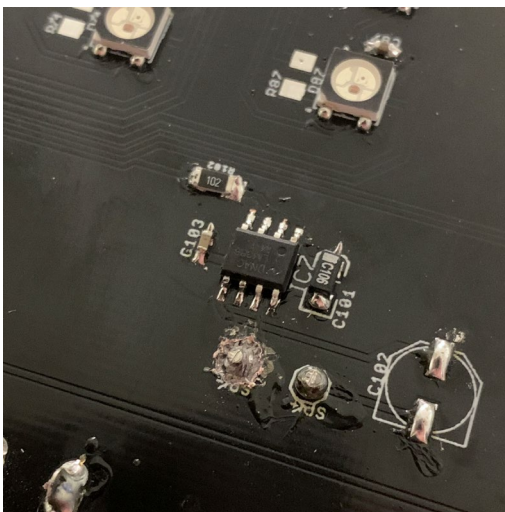
- Using a knife, cut the four traces connecting to **SPK-** terminal. Be careful not to cut any neighbour traces. See Pic 10 for the reference. The final result is shown in Pic 11.



Pic 9.

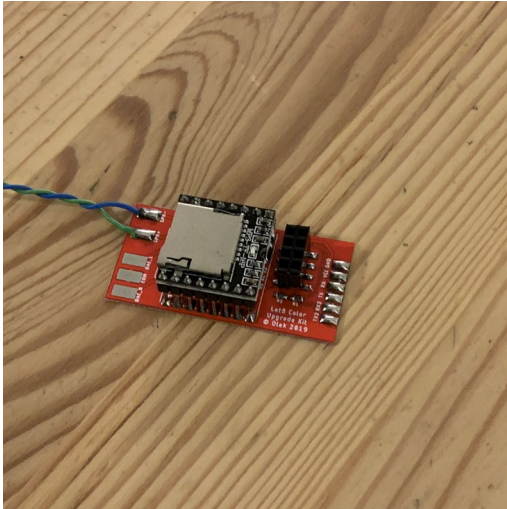


Pic 10.

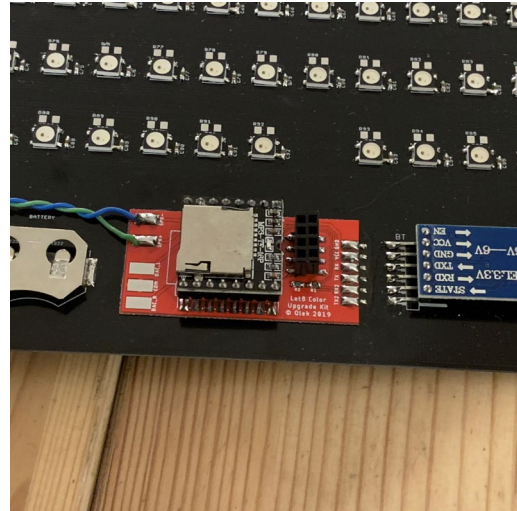


Pic 11.

8. Stick the upgrade board (Pic 12) to the mainboard using double-sided tape in the place of the desoldered blue board. Pay attention to align the pads of the boards together (Pic 13).

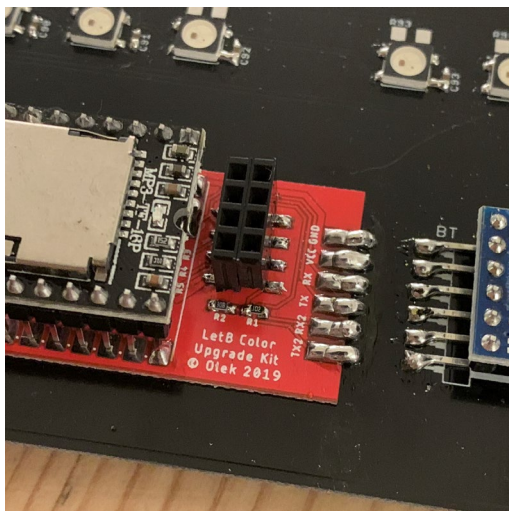


Pic 12.



Pic 13.

9. Solder two boards together

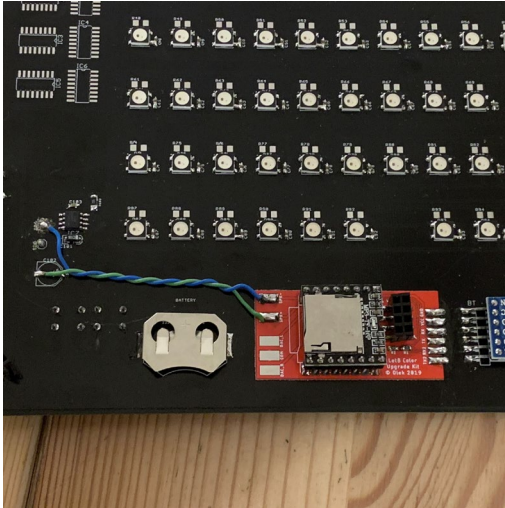


Pic 14.

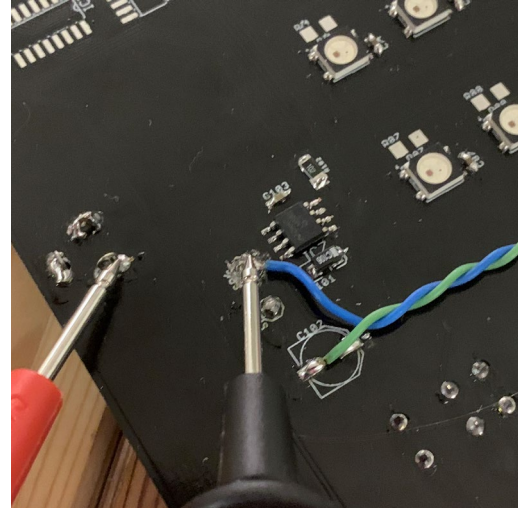
10. Solder the wires from the red board to the black mainboard in the following order:

Red Board	Black Board
SPK-	SPK-
SPK+	C102 (left pad)

Using a multimeter, make sure there is no connection between shown on Pic 16 terminals. Otherwise, go back to step 7 to properly cut the traces.



Pic 15.



Pic 16.

11. Using knife kut the notch in the inside frame as shown on Pic 17 to fit the new wires. This is in the right bottom corner, next to the light sensor.



Pic 17.



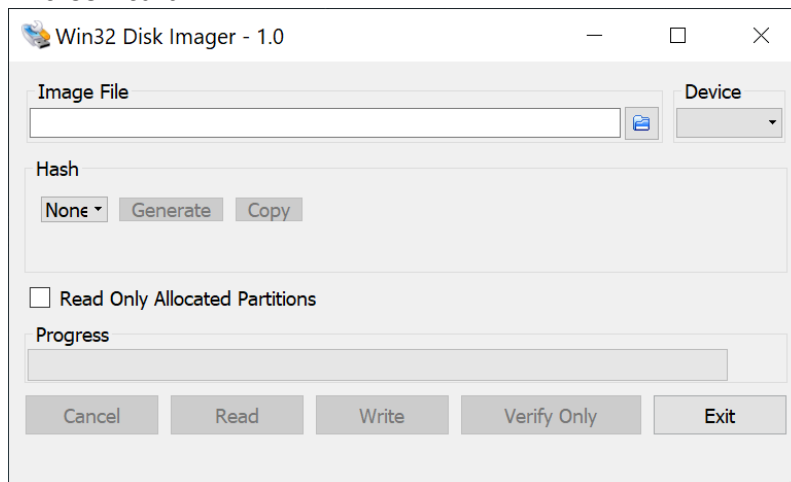
Pic 18.

This concludes the hardware upgrade of LetB Color Clock. Before assembly, proceed with the software part of this tutorial.

Software

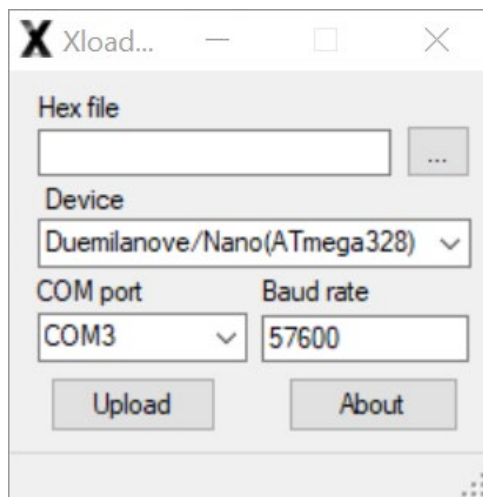
Follow the next steps to upgrade the software of your clock. All the required software is included in the files of this Upgrade under the *Software* directory.

1. Connect the removed from the clock MicroSD card to the computer.
2. Download and install [Win32 Disk Imager](#) (also included in Upgrade files)
3. Select the included LetB_Audio_Upgraded.img file and your microSD card in the program. Then press Write and wait for the process to finish. At the end safely eject MicroSD card.



Pic 19.

4. Install CH340 driver
5. Connect the mainboard with the USB cable to the computer.
6. Open XLoader.exe app from the XLoader folder and choose the following options shown on Pic 20. The correct hex file is included in the upgrade files.
NOTE: COM port number may vary depending on your computer setup.



Pic 20.

7. Click the **Upload** button and wait for the software to be uploaded.
8. Disconnect the cable from the computer and insert microSD card into the slot on the red board.
9. Now your LetB Color has the newest software with upgraded hardware.
10. Follow the 1 – 4 steps of **hardware** part in reverse to assembly the clock. Make sure the battery is inserted with the right polarisation.
11. To confirm the whole process was successful, at the power-up you should see the intro rainbow sequence alongside the intro sound. Your clock will require a new time set during the first bootup after the upgrade.