

# Solderless GPD Win 4 60Hz fix

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5/31/2023 - GPD has provided a software method of updating the LCD firmware. That guide is: [LINK](#)

Before starting, there is one absolute rule to follow:

## **NEVER ATTEMPT TO SOLDER TO THE TEST PADS.**

This is unnecessary in *\*every\** case and has an extremely high risk of ripping off a pad and making it impossible to fix or recover your Win4 in future. It's happened multiple times now to people who didn't listen. Don't join the list.

If you follow this rule, it is essentially impossible to permanently brick your screen.

**NOTE: it appears that new units (the ones that will come pre-flashed, dont know if they are already in the wild) are not affected by the black screen issue even when using the previous fw (20230426v1), no idea what's different in new units**

**GPD recommends TO NOT FLASH this new fw in new units or the ones that have no black screen or issues, it is untested and may cause issue. Verify using CRU or testufo before flashing if you are not sure.**

**If you've set custom refresh rates using CRU, it's recommended to clear those out prior to flashing. Run reset-all.exe in the CRU folder. If you don't know what this is talking about, you can disregard**

## Standard parts

(you may have these on hand or have things that can be substituted)

- **Dupont cables:** standard 2.54mm spacing, I recommend the ribbon style ones so they stay straight -

<https://www.amazon.com/ELEGOO-Breadbord-Jumper-Wires/dp/B01EV70C78>

- **Pin header blocks:** <https://www.amazon.com/MCIGICM-Header-2-45mm-Arduino-Connector/dp/B07PKKY8BX>

- **0.48mm pogo pins:** do a search for “P50-B1”

<https://www.amazon.com/Yosoo-Spring-Pressure-P50-B1-0-68mm/dp/B019FGHZBG>

Alternatively you can buy a pre-made 3P, single row, 2.54mm programming cable on AliExpress:

<https://www.aliexpress.us/item/3256802885515922.html>

**Programmer:** There are many different variations of the CH341a programmer. The easiest way to identify them is by PCB color, although there are several different versions of the black PCB CH341a that I know of.

Black, Green, and Blue PCB versions should all work, however you may need to adjust the wiring connections to match the programmer you’re using. (Green PCB programmers seem like they’re difficult to find now). Any CH341a based programmer should work as long as it has I2c connections

Example black CH341a: <https://www.amazon.com/HiLetgo-Programmer-CH341A-Burner-EEPROM/dp/B014VSGH4Y>

Example blue CH341a: <https://www.amazon.com/NOYITO-CH341A-Serial-Parallel-Converter/dp/B082KQ75QM>



## Drivers

Although the screen fix ZIP contains drivers for the CH341a, **they do not work correctly**. The correct drivers are the CH341**PAR** driver from the link below (thanks pelrun!)

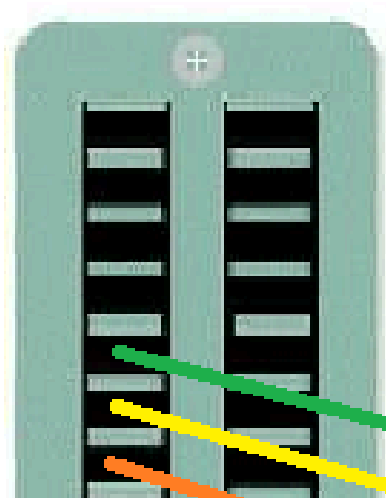
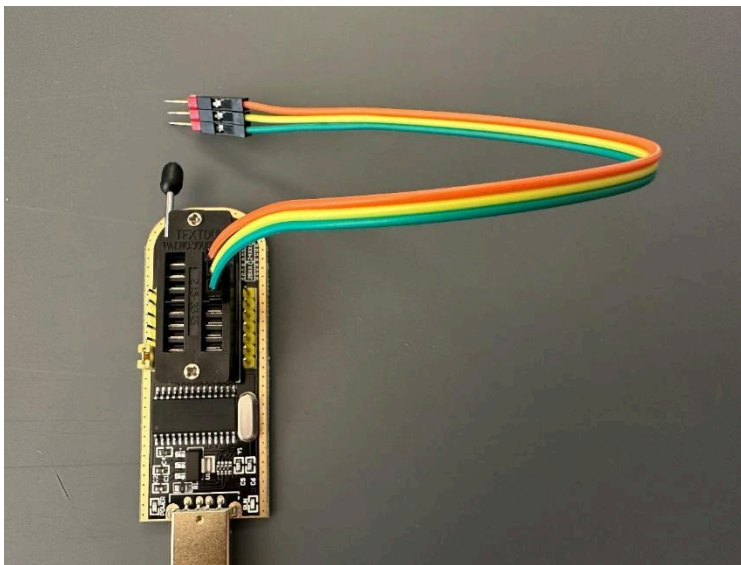
CH341PAR - [https://www.wch.cn/downloads/CH341PAR\\_EXE.html](https://www.wch.cn/downloads/CH341PAR_EXE.html)

If things do not work even after installing this driver, check the jumper on your programmer board. It must be on pins 1-2 for the black programmer, and on the I2C position for the blue one.

## Assembly

1. Tear off 3 strands of dupont cables. We will want to end up with male on one side and female on the other side. If you only have female to female, you can break off a set of 3 pin headers to make it a male end
2. Break off a block of 3 pin headers. Remove the metal pins from the plastic block. Try not to crush the plastic.
3. Push the 0.48mm pogo pins through the 3 block of plastic. This should be a snug fit, be careful not to bend or crush the pogo pins as it may damage their spring actuation.
4. Once all 3 pogo pins are in place, push them into the female end of the dupont cables
5. Latch down the other (male) end of the cable in the CH341a into pins 13, 14, and 15 (see diagram). I have not used a blue CH341a programmer, however I included what should be the correct connections below

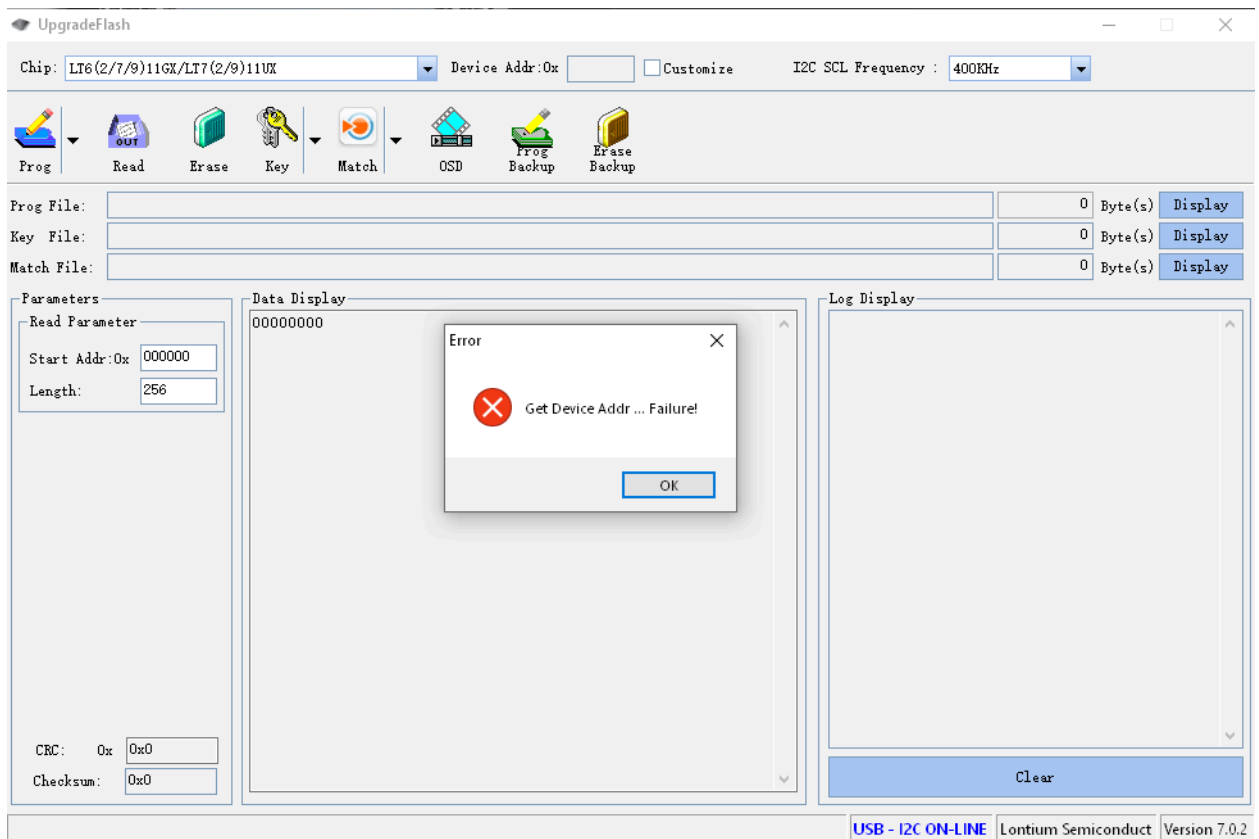
(wiring colors for the picture and diagram match)



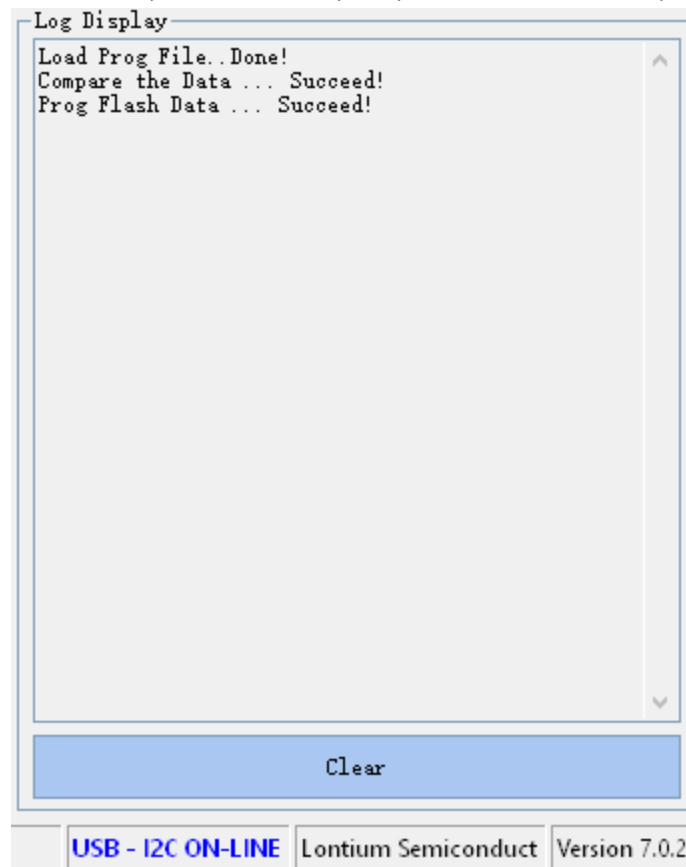


## Programming:

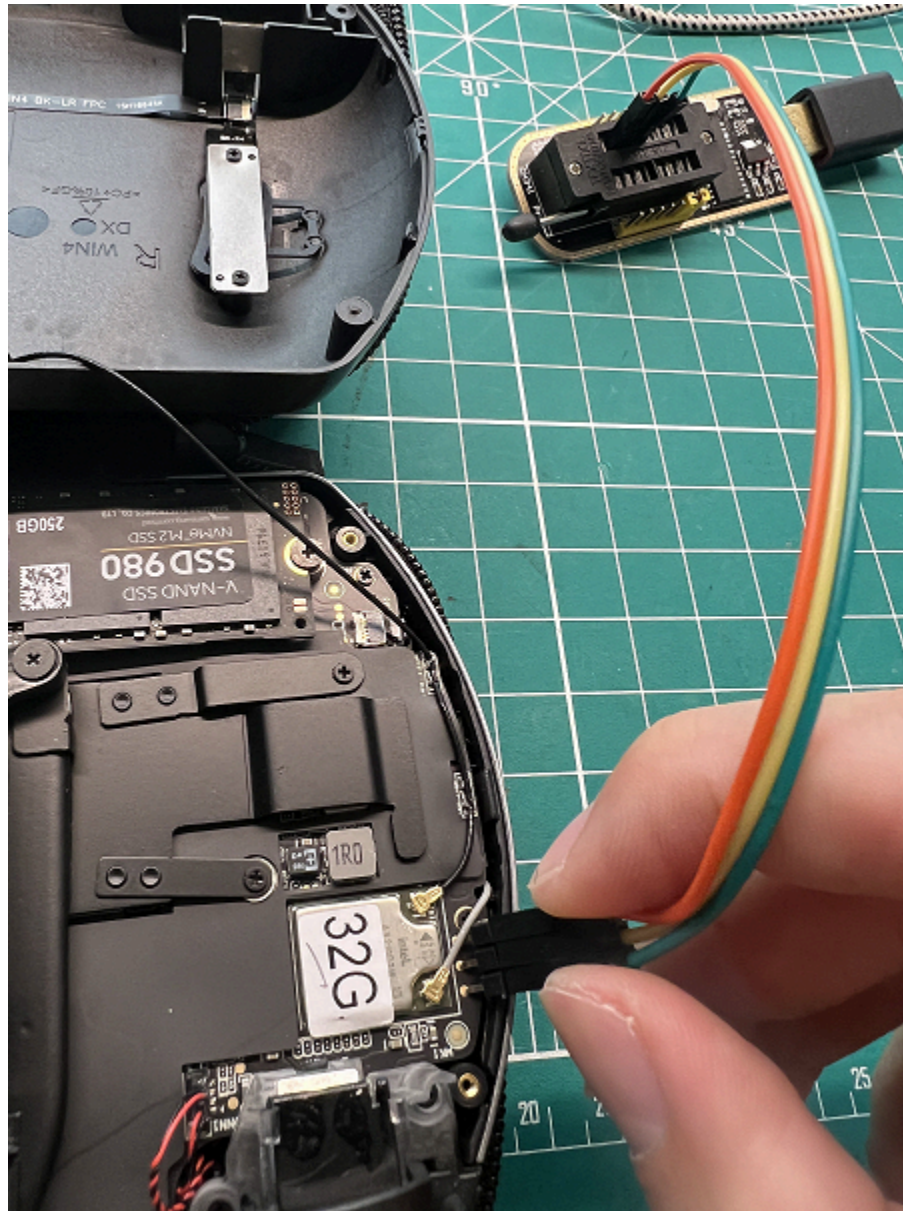
1. Download the IC software package: This mega link contains the software plus the correct drivers and has been re-packaged (thanks \_^\_!) to prevent confusion while flashing  
<https://mega.nz/folder/f1slhTAZ#qQvF8eZFWuFlhtSG3r7TMg>
2. Verify CH341 connectivity: Open the “Upgrade\_V7.0.2.exe” application. If you open the application with the CH341a plugged in, you should see a blue “**USB – I2C ON-LINE**” on the bottom right corner, as well as an error message Get Device Addr ... Failure! – this is normal. If the bottom right does not say USB-I2C ON-LINE, check your drivers



3. Connect the CH341a and program: Note, you will need to have your Win 4 powered on and the screen turned on, to flash successfully. You may want to increase your screen timeout in Windows or boot into the BIOS during the procedure.
- Press the 3 pogo pins in the correct order against the debug pads as shown above.  
**\*\*\* You must maintain consistent contact with all 3 debug pads with the pogo pins through the entire flashing process \*\*\***  
Open the flash app again, if there is good connectivity, this time you should **not** get the “Get Device Addr ... Failure!” error message. Check to make sure “USB – I2C ON-LINE” is blue at the bottom right.
  - Click the down arrow next to Prog and select load file. Find the file **win4-LCD\_1080x1920\_20230511v2.hex**. You should now see data in the Data Display box.
  - Hit the Prog button. Programming should only take about 5 seconds, there are two progress bars but they go quickly. Once complete, you should see the following in the Log Display. If the process fails, make sure the screen is still powered on, check for any error messages, and then hit Prog again. You can do this as many times as necessary - only the final successful attempt matters.



Example flashing setup (thanks tson!)



**You're all done!!! Reboot and now 60Hz should be smooth.**

Unfortunately, there doesn't seem to be a way to confirm the IC firmware version directly. An easy way to check is to use one of the many tests at [www.testufo.com](http://www.testufo.com) to confirm proper 60Hz operation. After the IC fix, you should see the same stock 60Hz and 45Hz refresh options in the Windows Display options.

If things have gone wrong, DON'T PANIC, just read down to the EMERGENCY RECOVERY INSTRUCTIONS section and follow that.

## Adding 40Hz and additional CRU information:

Custom Resolution Utility (CRU)

- If you had any previous CRU entries, reset them by running **reset-all.exe** in the CRU folder. This should result in the default 60Hz and 45Hz options being available in Windows display settings
- You can check if the firmware update was successful using CRU. After running reset-all.exe above, open CRU and hit edit on the first entry for 60Hz. You should see the below confirming refresh has been fixed:

The screenshot shows the 'Detailed Resolution' window in Custom Resolution Utility (CRU). The window has a title bar with a close button (X) in the top right corner. Below the title bar, there is a 'Timing:' dropdown menu set to 'Manual', and three buttons: 'Copy', 'Paste', and 'Reset'. The main content area is divided into two sections: 'Parameters' and 'Frequency'.

**Parameters Section:**

	Horizontal	Vertical
Active:	1920 pixels	1080 lines
Front porch:	72 pixels	14 lines
Sync width:	8 pixels	3 lines
<input checked="" type="radio"/> Back porch:	16 pixels	13 lines
<input type="radio"/> Blanking:	96 pixels	30 lines
<input type="radio"/> Total:	2016 pixels	1110 lines
Sync polarity:	+ v	+ v

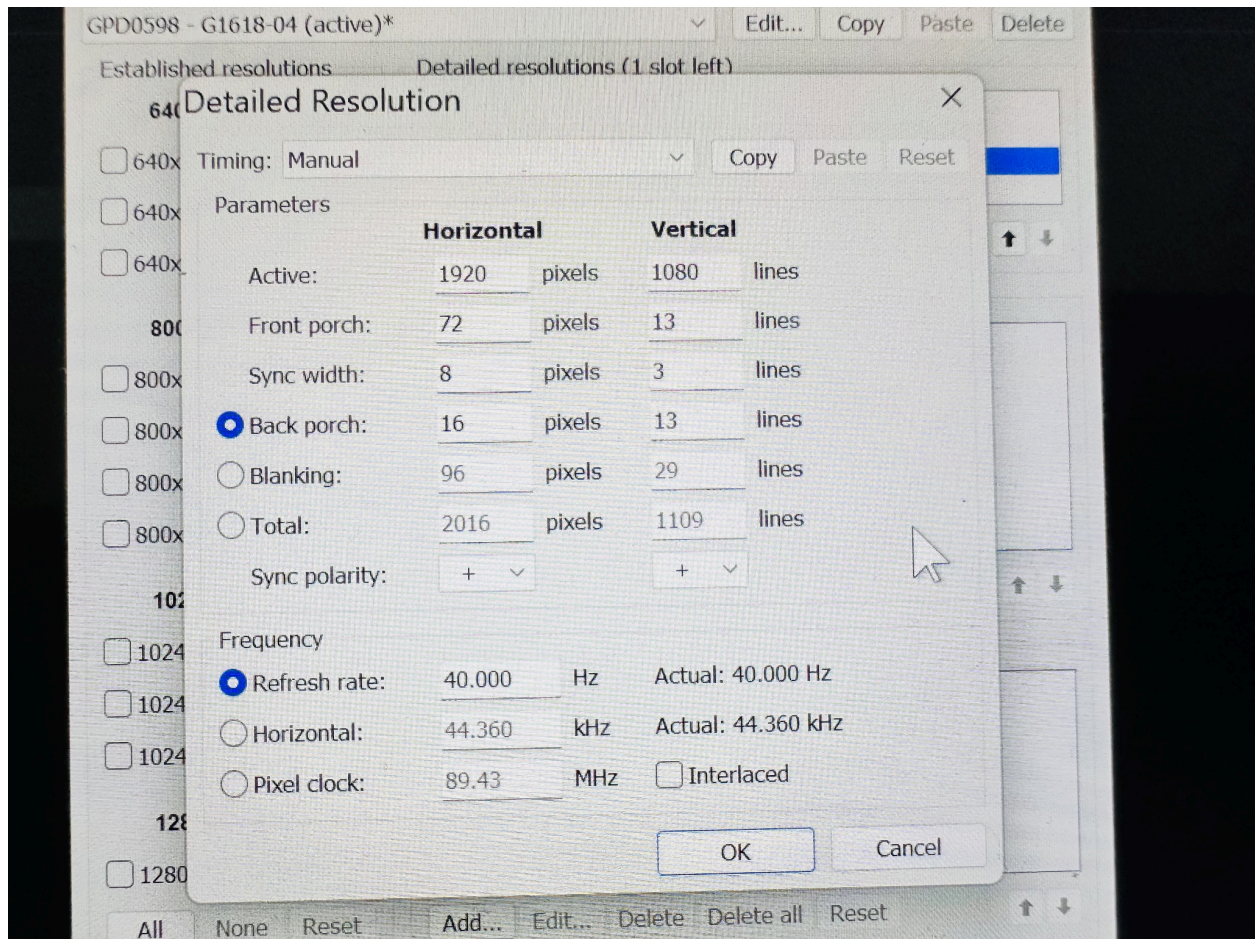
**Frequency Section:**

<input checked="" type="radio"/> Refresh rate:	59.997 Hz	Actual: 59.997 Hz
<input type="radio"/> Horizontal:	66.597 kHz	Actual: 66.597 kHz
<input type="radio"/> Pixel clock:	134.26 MHz	<input type="checkbox"/> Interlaced

At the bottom right of the window are two buttons: 'OK' and 'Cancel'.



- Additionally, you can add 40Hz (or any other refresh rate) using the settings below. (Thanks G Cat!) 60Hz, 45Hz, and 40Hz should all function stutter free after the firmware IC flash.



## EMERGENCY RECOVERY INSTRUCTIONS

So you got a partial flash and then rebooted anyway, and now the screen won't turn on?

First, **DON'T PANIC**. You cannot permanently brick the screen unless you physically damage something, for instance soldering to the pads and ripping one off. So don't do that.

The programmer hardware is everything you need to recover from a corrupted firmware, or even a completely blank chip.

Above all else, **DO NOT SOLDER TO THE PADS**.

1. Boot the win4 and enter the bios by hitting DEL. If you have an external monitor then you can confirm this, otherwise you will have to do it blind. This will ensure the win4 is powering the panel bridge IC even though the screen will still appear completely blank.

2. Repeat the flashing instructions from the previous section. If it fails, do it again. You can hammer the program button as many times as needed, as you only need it to succeed once.
3. If you still have problems then check all your wires and reposition the pins on the header to try and get a better connection. It *\*will\** work when you get it right.