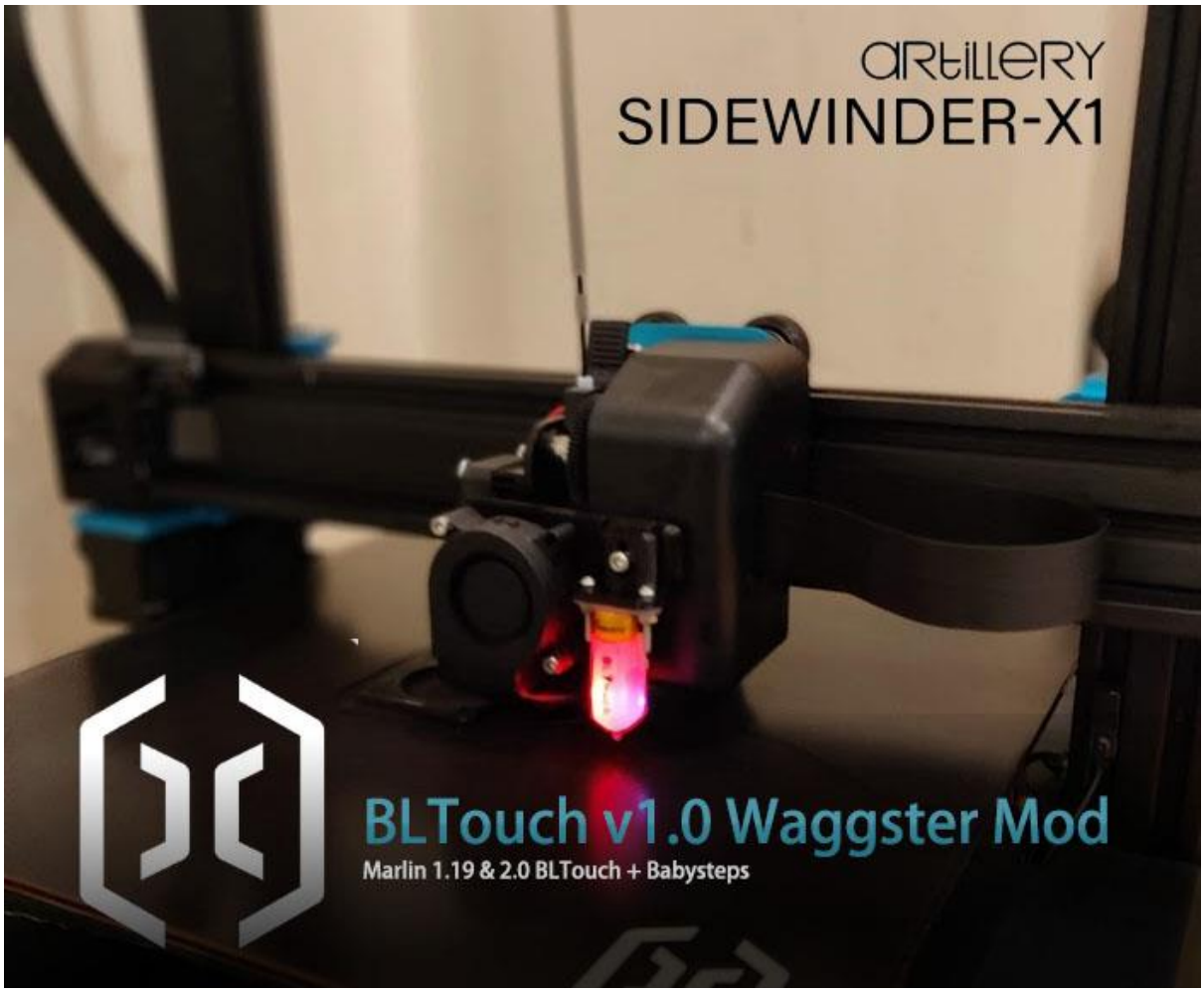
BLTouch v1.1 Waggster Mod



Includes

Wireless BLTouch wireless mod
MKS Gen L1.0 Marlin 2.0.2 Firmware
MKS 2.8 TFT LCD Firmware
PrusaSlicer Profiles

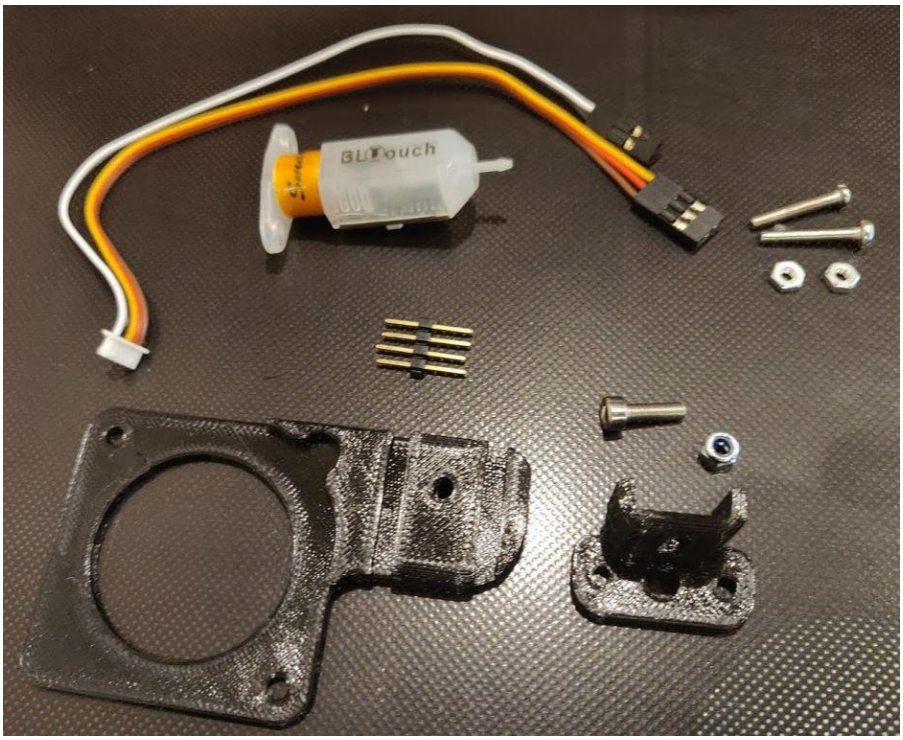
by Steve Wagg
(CdRsKuLL)

REMEMBER TO REMOVE THE POWER CABLE

What's this mod all about?

This mod will enable you to attach a BLTouch using the existing LCD pins on the Artillery Sidewinder Pro X1. You will need to take the printer apart and relocate two cables which are the 3 pin and a 1 pin cable.

Items required



3D parts, BLTouch, 2 x mounting screws, 1 x M3x10 caphead screw with nyloc nut, 4 pin connector

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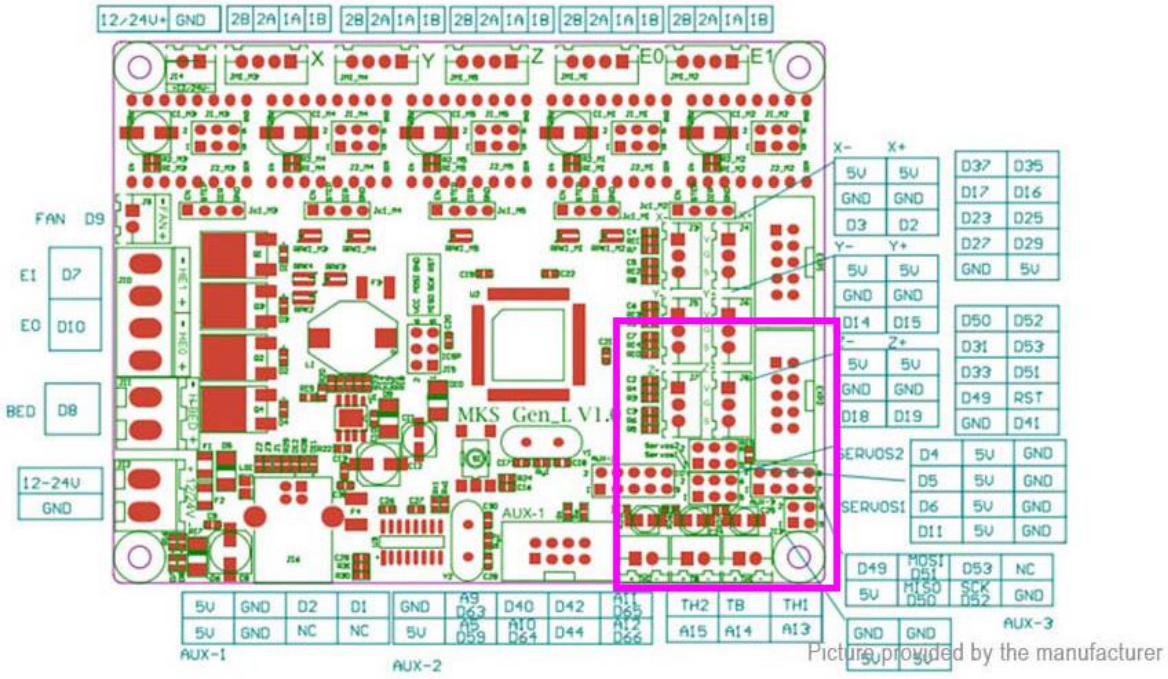
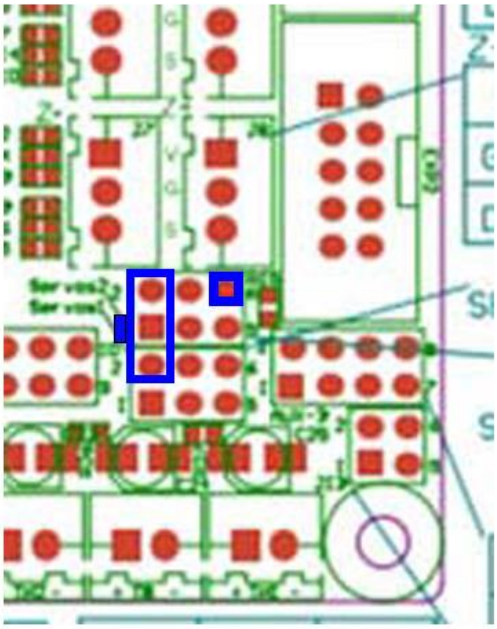
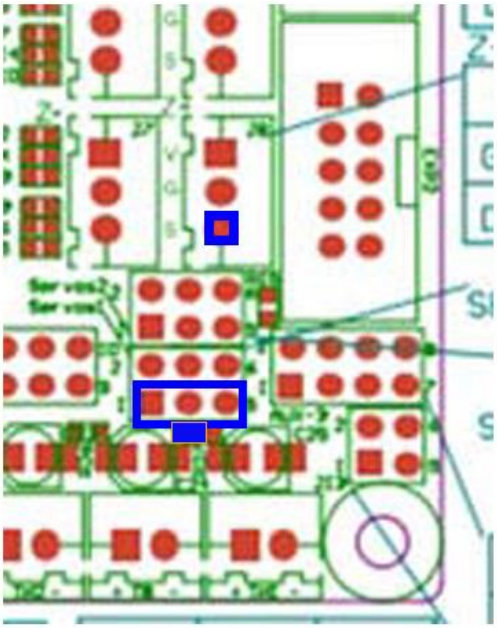
REMEMBER TO REMOVE THE POWER CABLE

Internal LED Cables





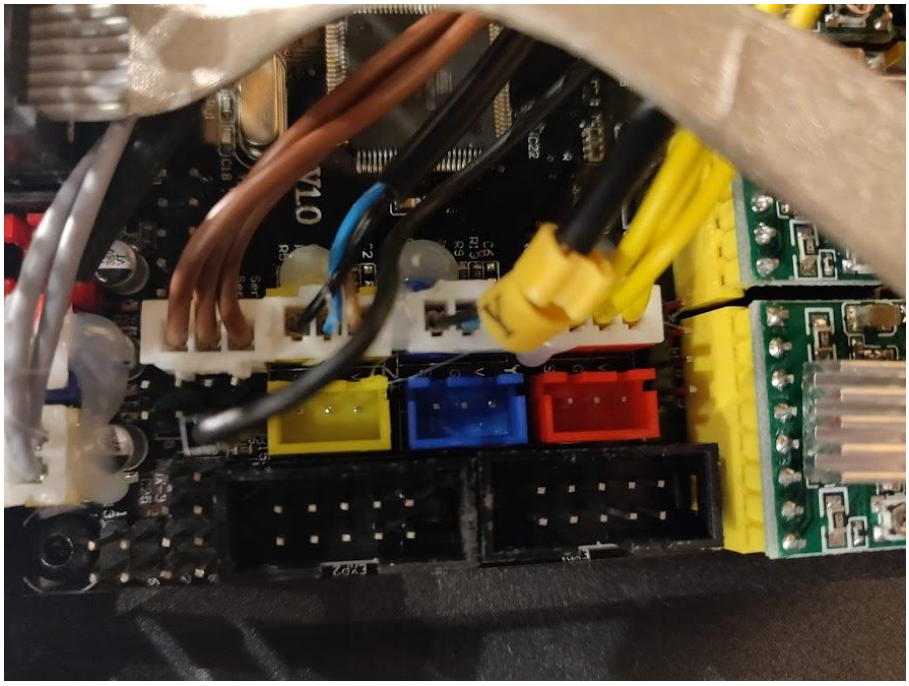
ORIGINAL POSITION



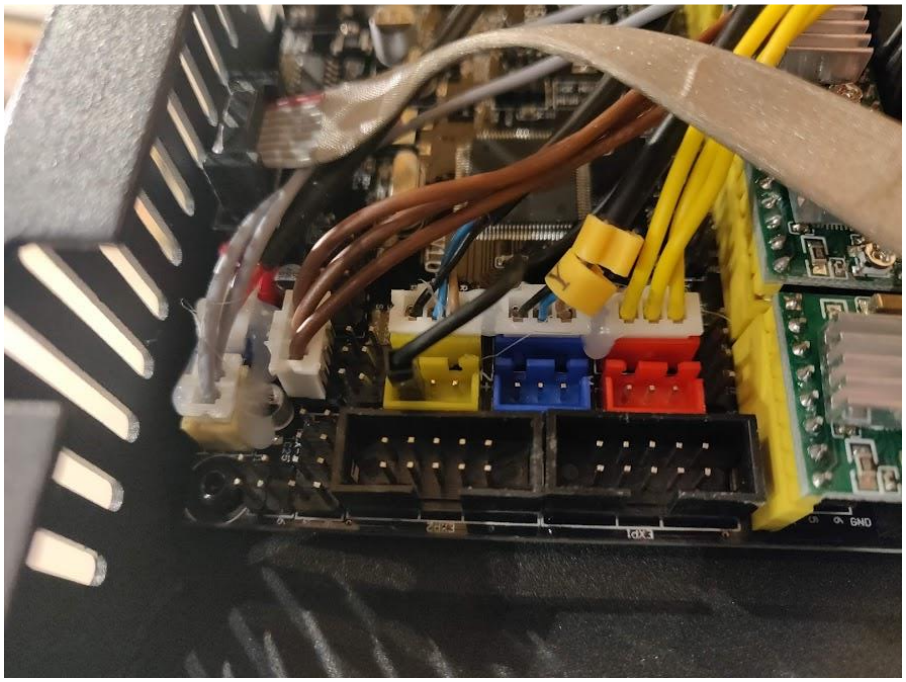
NEW POSITION

MOVE BOTH THE 3 PIN CABLE AND THE 1 PIN CABLE

Internal LED Cables



ORIGINAL POSITION

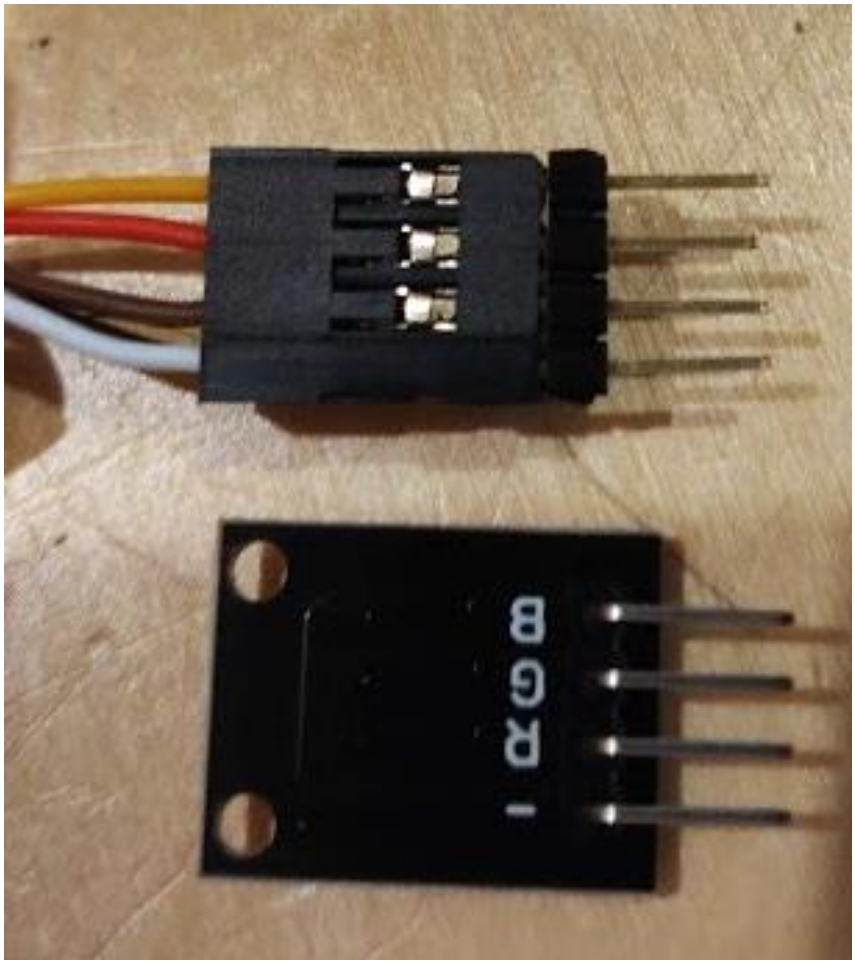


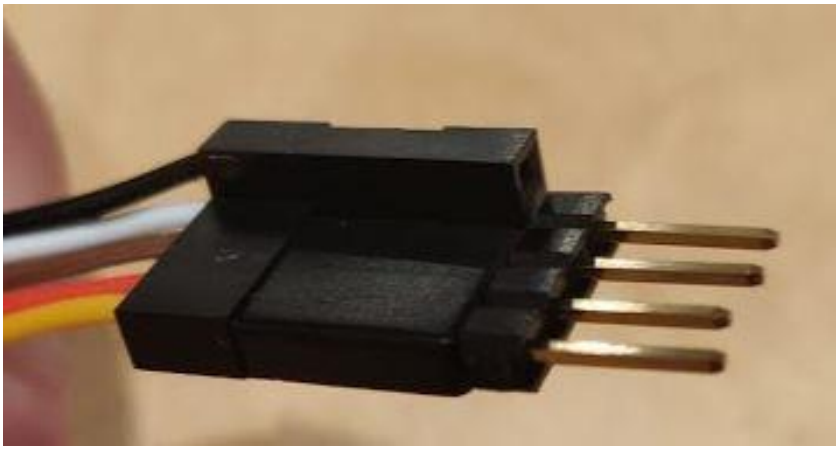
NEW POSITION for v3 - For v4+ you need to rotate this 3 pin connector 180 degrees

THE PLUG GOES ON THE 4th ROW OF PINS, NOT THE 3rd
KEEP THE BASE OFF, WE STILL NEED TO FLASH THE FIRMWARE

External LED BLTouch connection

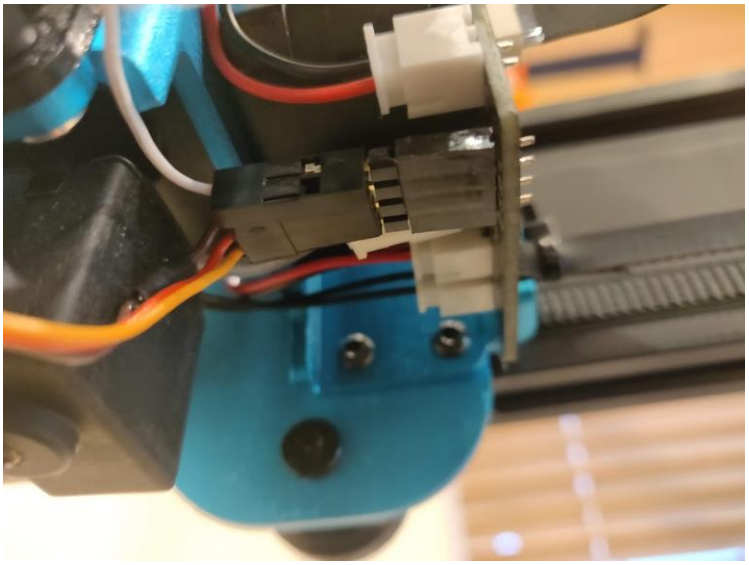
Connecting up the BLTouch to the LED socket. You will notice that you only connect the white wire and not the black from the sensor out cable.

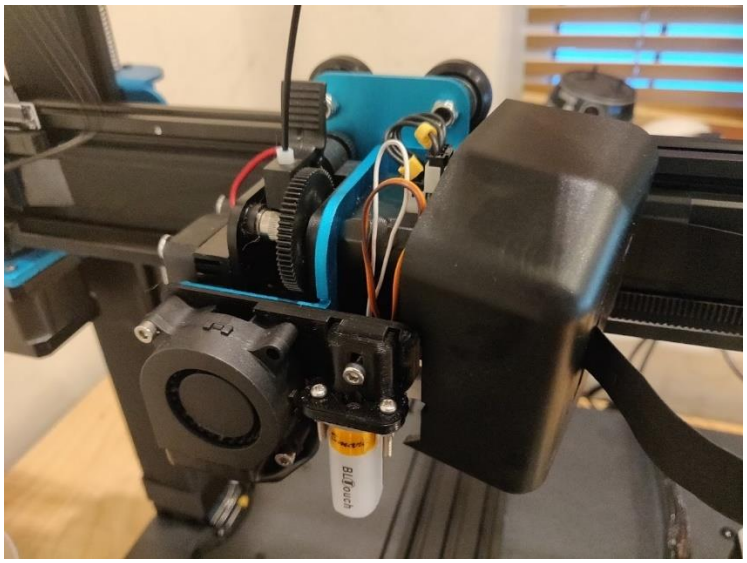


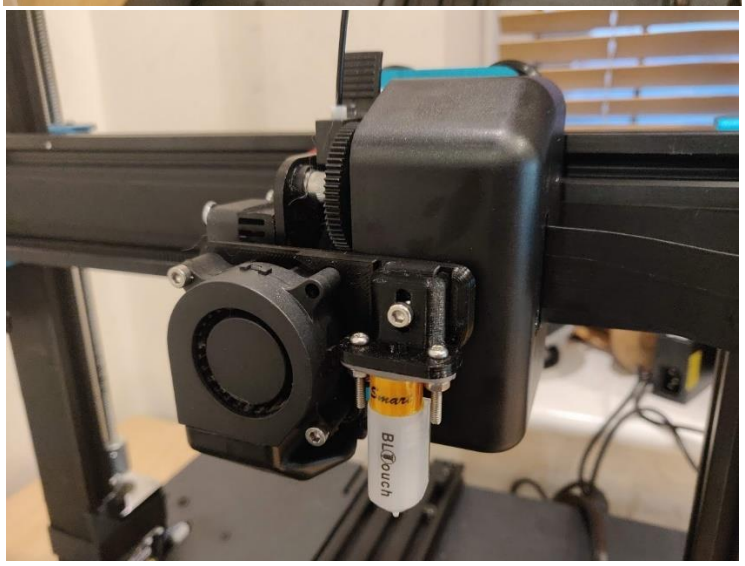


External LED BLTouch connection

Complete the installation



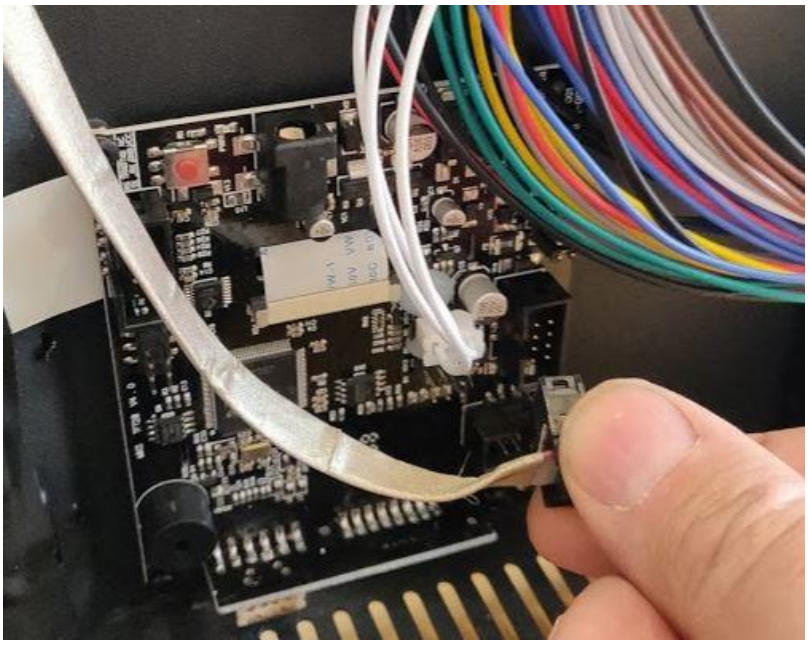




Flashing the mainboard firmware

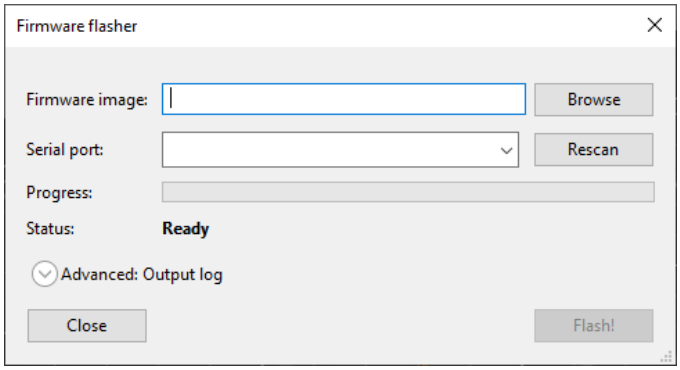
Download and install Prusa Slicer 2.0 from
https://www.prusa3d.com/drivers/
Click on the link that looks like this

Unplug the LCD screen from the mainboard



Connect your printer up via the USB lead, the printer power does NOT need to be on.

Start up Prusa Slicer 2.0 and select Configuration … Firmware Flasher and the below screen will appear.



Select the serial port and choose Marlin 2.0.2 HEX file from the folder ‘Firmware - Main Board’.

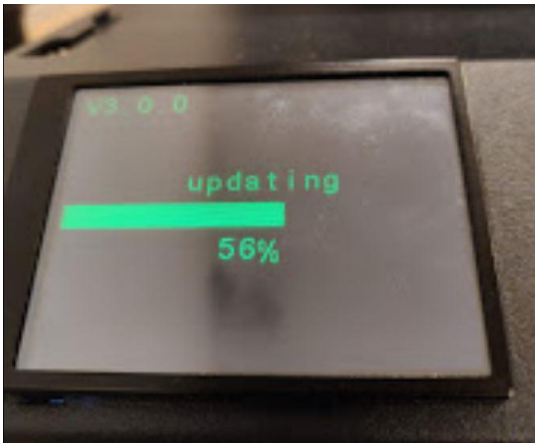
Flashing the LCD firmware

Once you have flashed the mainboard firmware then reconnect the LCD ribbon cable. Remove the USB cable and refit the base. Once back in one piece then plug the printer back in but do NOT turn it on yet.

Copy the files from the 'Firmware - LCD Touchscreen' folder into the root of a micro SD card.

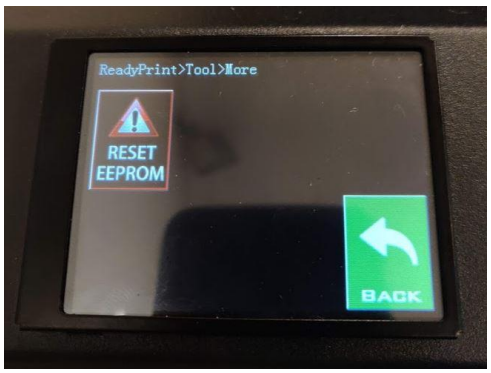
mks_font	✓	21/06/2019 23:14	File folder	
mks_pic	✓	21/06/2019 23:16	File folder	
mks_config.txt	✓	21/06/2019 23:17	Text Document	7 KB
mkstft28.bin	✓	23/12/2018 04:09	BIN File	228 KB
MksWifi.bin	✓	05/05/2018 03:45	BIN File	336 KB

Insert the card and turn the machine on. It will beep and start updating the LCD touchscreen. This takes about a minute and will look something like the below.



IMPORTANT - ONCE COMPLETE YOU MUST RESET THE EEPROM

Press Tools … More … Reset Eeprom



Don't forget to set the default FILE location back to USB…
Click 'SET'..'FILE'..'USB'

Setup and using

Make sure you have flashed the mainboard and the touchscreen firmware. Once happy then you will need to set the height of the BLTouch.

Setting the height of the BLTouch

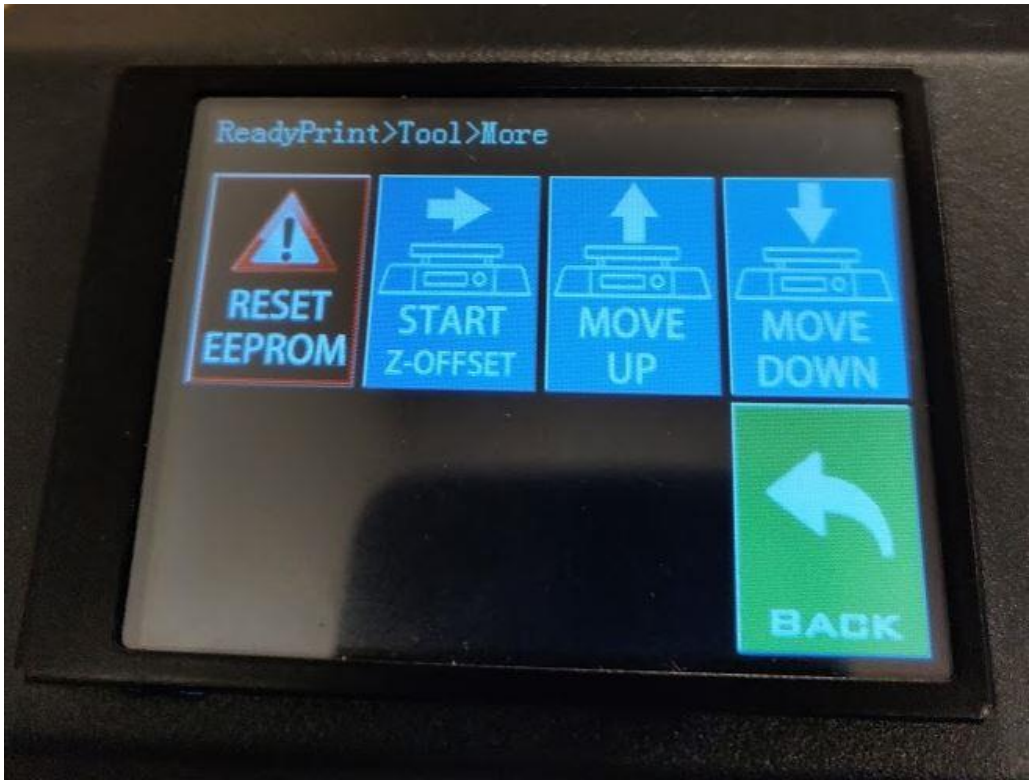
1. Move the BLTouch all the way down on its mount to start with (closer to the bed) and tighten up the height screw.
2. Power the machine on and select home from the LCD menu. (lower the Z axis)
3. Power off the machine, undo the BLTouch height screw and move it up to the top.
4. With the printer powered off, rotate both the Z axis motors and lower the nozzle until it touches the bed.
5. Put the 3mm calibration 3d printed part under the BLTouch and lower it until it touches the printed part.
6. Tighten up the height adjustment screw. Your BLTouch will now be 3mm above the nozzle when retracted. Then, raise the nozzle a few mm's away so you don't damage your bed by twisting the motors again.

Setting your Z-Offset (part 1)

I've tried to make this as easy as possible. You can set the Z-Offset completely from the touchscreen. After you have set the height of your BLTouch from the previous page you need to set the Z-Offset. This is the distance from the trigger point on the BLTouch to the bottom of the nozzle.

1. Turn the printer on.
2. Press 'Tools' then the 'More' button
3. If you haven't done already then press the 'RESET EEPROM'. You need to do this because you have updated the mainboard firmware, most likely to a different version.
4. Press the 'START Z-OFFEST'
5. Use a piece of paper and adjust the nozzle height by pressing the up and down buttons.
6. Once you can feel it grabbing the paper then remove the paper and press the 'MOVE DOWN' button **TWO MORE TIMES**. Press back

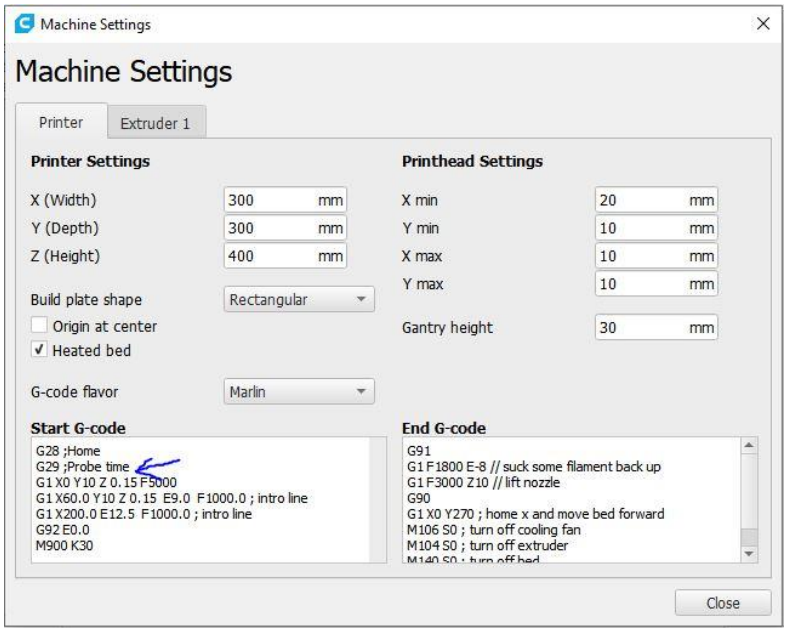
Your Z-Offset height will now be set.



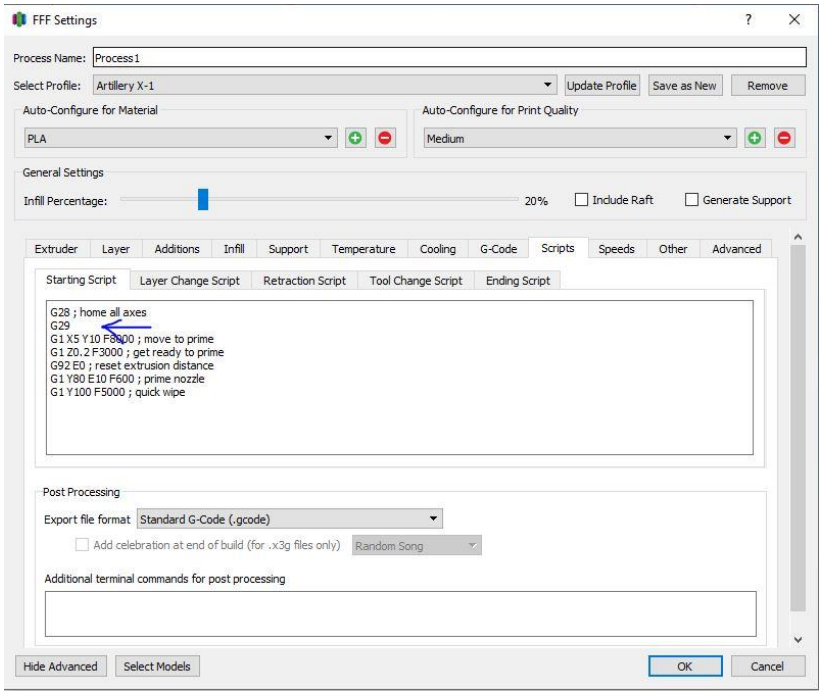
Autolevel (G29)

Now you have added a BLTouch you can run an autolevel routine before every print. This is quite easy to do with a simple G29 command. Depending which slicer you use you will need to edit the Start GCODE script. Make sure you add it AFTER the G28; If you are using the included Prusa profile, then this has already been done. You can also run this from the LCD menu and it will remember the mesh recorded.

In Cura you add the G29 in the Machine Settings page



In Simplify3D you add the G29 in the FFF settings



Babysteps -Live Z-Offset adjust (part 2)

Babysteps is a bit of a fancy name but we will be using it for live Z-offset adjust. This function allows you to alter your first layer height LIVE, as it's printing. It's really easy to use and it will save your settings ready for your next print so you will not have to do it each time.

1. Start a print with a large 1st layer. Make sure you have sliced it using the G29 auto level command as on the previous page.
2. When it starts printing press the 'OPTIONS' then 'MORE' button.
3. Adjust the Z-Offset height if you need to by the UP / DOWN buttons. It autosaves the position. Be careful not to lower the nozzle to much as it will damage your bed.

Babysteps adjustment