



SKYNET 3D V2.1

<https://www.facebook.com/skynet3ddevelopment>

<https://www.facebook.com/groups/OFFICIALAnet3DprinterSupportGroup/>

[skynet3ddevelopment@gmail.com](mailto:skynet3ddevelopment@gmail.com) – (FACEBOOK IS THE BEST WAY TO CONTACT ME)

<http://www.ebay.co.uk/usr/skynet3dmods>

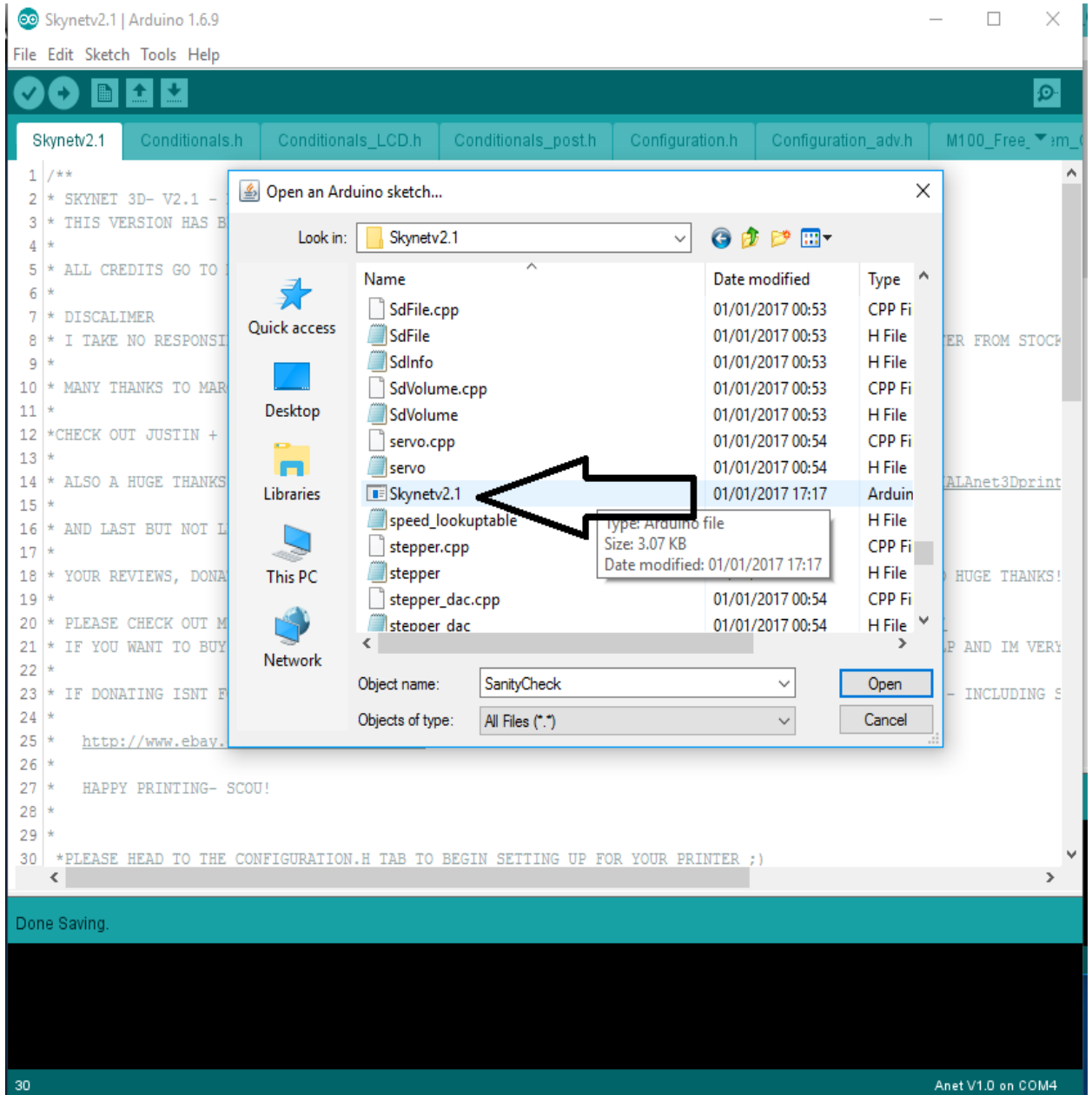
**\*\*disclaimer\*\*** I (scou) am totally not responsible if “you” kill your printer when you modify it from its stock form.. you do so at your own risk.. if you hurt yourself or kill your neighbours cat.. that’s on you too ;) otherwise .. have fun !

This guide will deal with the firmware aspect of the install process. If you need help with wiring your sensor please see the wiring diagrams within the skynet download. If you need anymore help – head over to the facebook group (2<sup>nd</sup> link at the top of this page). This guide also assumes that you have already had your printer set up with the default anet firmware prior to installation. It also assumes that you have already done some printing on your machine prior to install. This rules out any mechanical problems when people contact me with questions

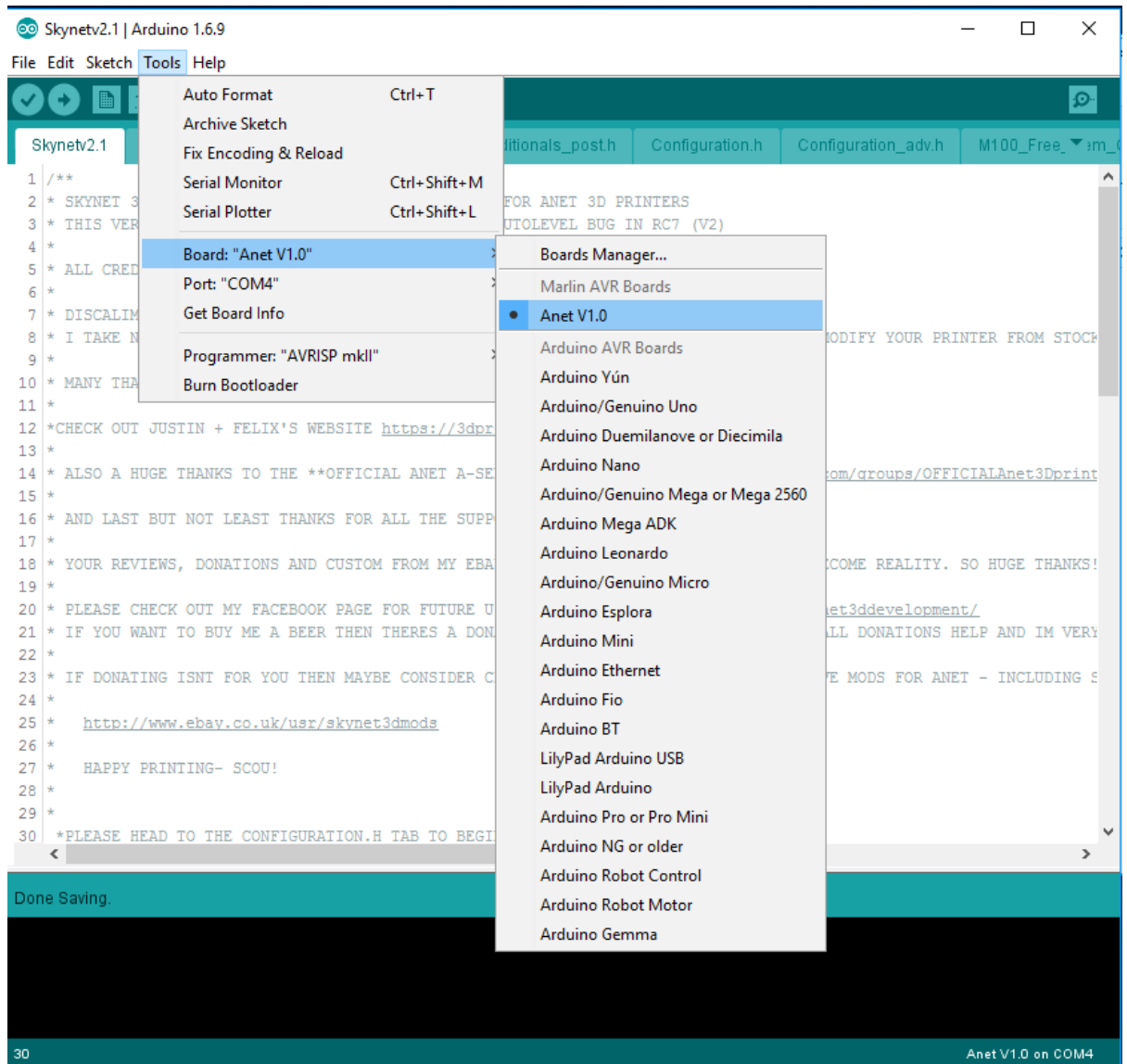
First were going to assume that you have already downloaded the firmware package. So drag this to your desktop to make the process easier and unzip the entire contents into their respective folders.

- First unzip all files within the download
- Open Arduino 1.6.9 slim folder and then open “arduino.exe”
- Go to “File” “Open”

- Browse to the firmware folder and open “Skynetv2.1”

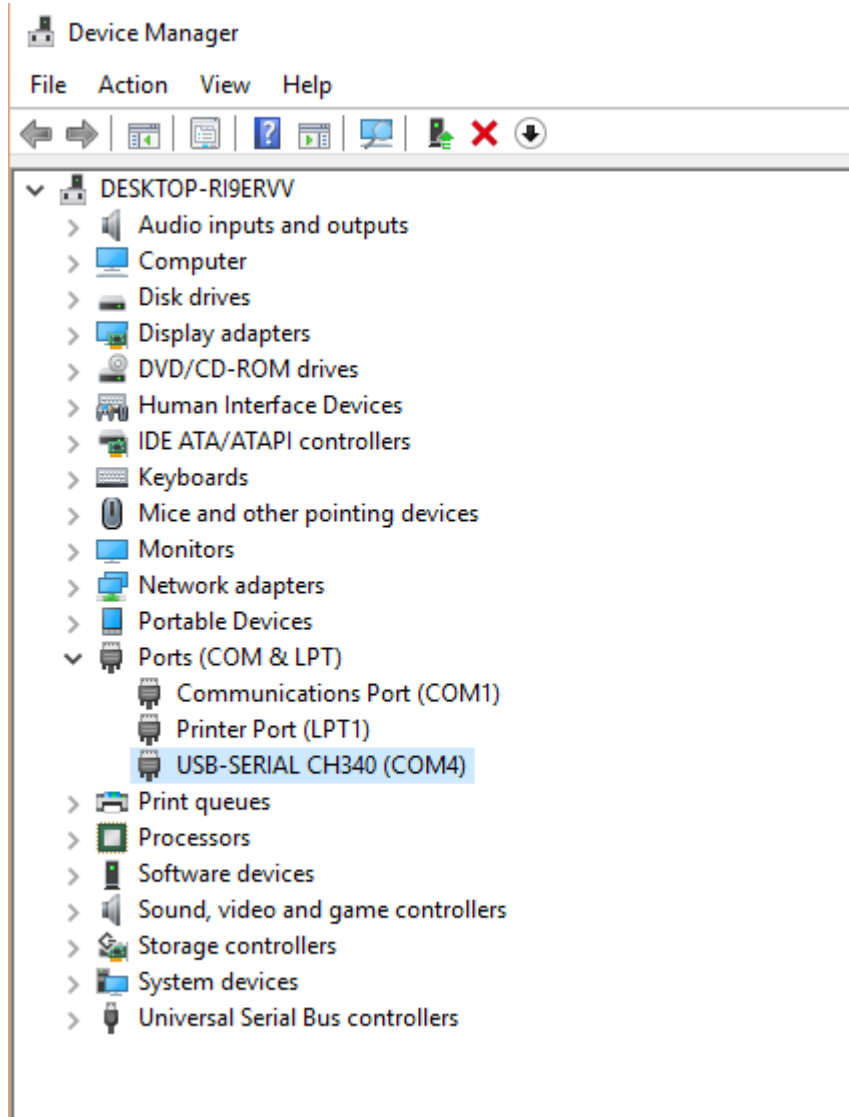


- Go to “Tools” “Board” and select “Anet V1.0”



- Go to “Tools” “Port” and Select the relevant com port for your printer, mine is com4
- go to “Tools” “Programmer” and select “AVRISP mkII”

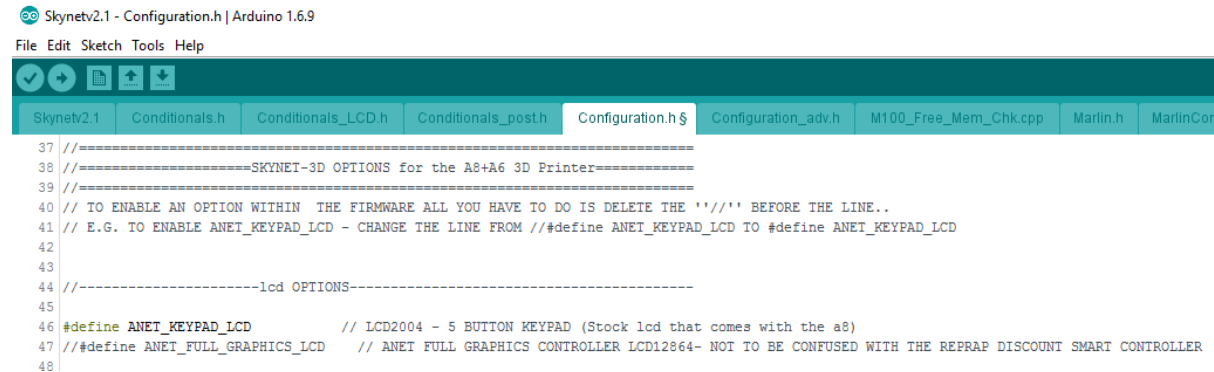
you can check your com port if you go to “device manager” and under “Ports (COM & LPT)” you should have “ USB-SERIAL CH340” as shown below



**This step is very important.** If you miss this step then the firmware wont compile and upload!

with skynet v2.1 its easier than ever to switch between configurations- because ive added a config section at the top of the configuration.h to make this process as trouble free as possible. just select your lcd and your probe configuration by uncommenting the correct sections

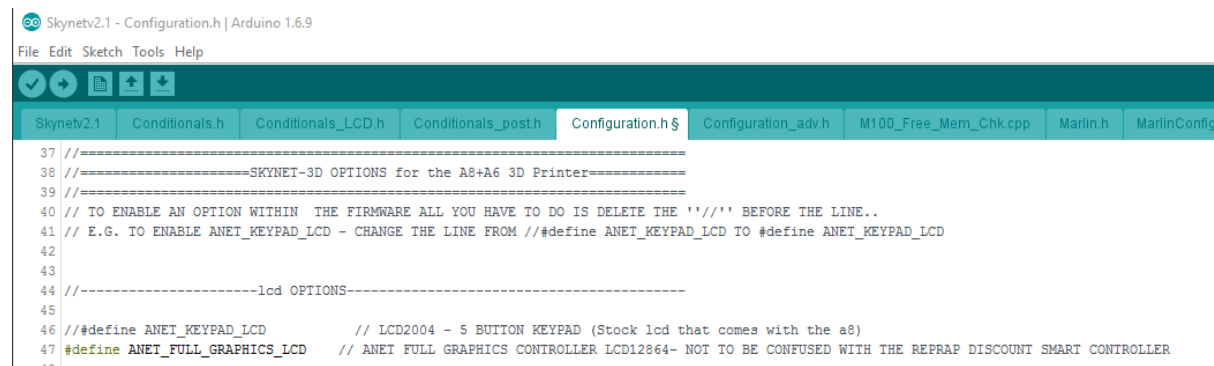
first you select the correct lcd – if you have a stock a8 select the ANET\_KEYPAD\_LCD by removing the “//” (uncommenting) in the line `//#define ANET_KEYPAD_LCD`



```
37 //=====
38 //=====SKYNET-3D OPTIONS for the A8+A6 3D Printer=====
39 //=====
40 // TO ENABLE AN OPTION WITHIN THE FIRMWARE ALL YOU HAVE TO DO IS DELETE THE '//' BEFORE THE LINE..
41 // E.G. TO ENABLE ANET_KEYPAD_LCD - CHANGE THE LINE FROM //#define ANET_KEYPAD_LCD TO #define ANET_KEYPAD_LCD
42
43
44 //-----lcd OPTIONS-----
45
46 #define ANET_KEYPAD_LCD          // LCD2004 - 5 BUTTON KEYPAD (Stock lcd that comes with the a8)
47 //#define ANET_FULL_GRAPHICS_LCD // ANET FULL GRAPHICS CONTROLLER LCD12864- NOT TO BE CONFUSED WITH THE REPRAP DISCOUNT SMART CONTROLLER
48
```

If you have the a6 printer or an a8 with one of my frame mods you would uncomment the line

`//#define ANET_FULL_GRAPHICS_LCD`



```
37 //=====
38 //=====SKYNET-3D OPTIONS for the A8+A6 3D Printer=====
39 //=====
40 // TO ENABLE AN OPTION WITHIN THE FIRMWARE ALL YOU HAVE TO DO IS DELETE THE '//' BEFORE THE LINE..
41 // E.G. TO ENABLE ANET_KEYPAD_LCD - CHANGE THE LINE FROM //#define ANET_KEYPAD_LCD TO #define ANET_KEYPAD_LCD
42
43
44 //-----lcd OPTIONS-----
45
46 //#define ANET_KEYPAD_LCD          // LCD2004 - 5 BUTTON KEYPAD (Stock lcd that comes with the a8)
47 #define ANET_FULL_GRAPHICS_LCD // ANET FULL GRAPHICS CONTROLLER LCD12864- NOT TO BE CONFUSED WITH THE REPRAP DISCOUNT SMART CONTROLLER
48
```

Now you need to select the correct probe configuration depending on what setup you have.. stock a8 with front left tubular sensor- stock a8 with official rear sensor – a6 printer (link to mount included)

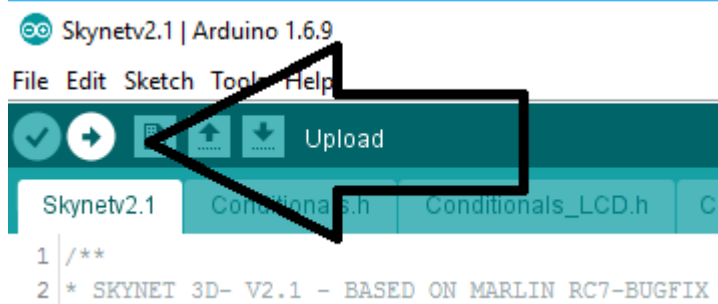
Just uncomment every `#define` line from that given section like so....

Skynetv2.1 - Configuration.h | Arduino 1.6.9

File Edit Sketch Tools Help

```
37 //=====
38 //-----SKYNET-3D OPTIONS for the A8+A6 3D Printer-----
39 //=====
40 // TO ENABLE AN OPTION WITHIN THE FIRMWARE ALL YOU HAVE TO DO IS DELETE THE '//' BEFORE THE LINE..
41 // E.G. TO ENABLE ANET_KEYPAD_LCD - CHANGE THE LINE FROM //define ANET_KEYPAD_LCD TO #define ANET_KEYPAD_LCD
42
43
44 //-----lcd OPTIONS-----
45
46 //define ANET_KEYPAD_LCD          // LCD2004 - 5 BUTTON KEYPAD (Stock lcd that comes with the a8)
47 #define ANET_FULL_GRAPHICS_LCD    // ANET FULL GRAPHICS CONTROLLER LCD12864- NOT TO BE CONFUSED WITH THE REPRAP DISCOUNT SMART CONTROLLER
48
49
50 //----- SENSOR POSITION OPTIONS-----
51
52 // THIS SECTION IS HERE SO YOU CAN EASILY SWITCH BETWEEN THE STOCK REAR MOUNTED SENSOR AND THE TUBULAR FRONT-LEFT MOUNTED SENSOR-
53 // I RECOMMEND FOR THE A8 THAT YOU USE THE FRONT MOUNTED SENSOR (8MM) BECAUSE THEY GIVE GREATER SENSING DISTANCE!
54 // REMEMBER TO UNCOMMENT EVERY LINE IN A GIVEN SECTION.
55
56 //-----STOCK A8 with front left tubular sensor-----
57
58 #define X_PROBE_OFFSET_FROM_EXTRUDER -28 // X offset: -left +right [of the nozzle]
59 #define Y_PROBE_OFFSET_FROM_EXTRUDER -45 // Y offset: -front +behind [the nozzle]
60 #define Z_PROBE_OFFSET_FROM_EXTRUDER 0 // Z offset: -below +above [the nozzle]
61
62 // Set the boundaries for probing (where the probe can reach).
63 #define LEFT_PROBE_BED_POSITION 15
64 #define RIGHT_PROBE_BED_POSITION 190
65 #define BACK_PROBE_BED_POSITION 170
66 #define FRONT_PROBE_BED_POSITION 15
67
68 // Travel limits after homing (units are in mm)
69 #define X_MAX_POS 220
70 #define X_MIN_POS -33
71 #define Y_MAX_POS 220
72 #define Y_MIN_POS -10
73 #define Z_MAX_POS 240
74 #define Z_MIN_POS 0
75
76 //-----STOCK A8 With Official Rear sensor-----
77
78
79 //define X_PROBE_OFFSET_FROM_EXTRUDER -1 // X offset: -left +right [of the nozzle]
80 //define Y_PROBE_OFFSET_FROM_EXTRUDER 3 // Y offset: -front +behind [the nozzle]
81 //define Z_PROBE_OFFSET_FROM_EXTRUDER 0 // Z offset: -below +above [the nozzle]
82
83 // Set the boundaries for probing (where the probe can reach).
84 //define LEFT_PROBE_BED_POSITION 15
85 //define RIGHT_PROBE_BED_POSITION 190
86 //define BACK_PROBE_BED_POSITION 150
87 //define FRONT_PROBE_BED_POSITION 15
88
89 // Travel limits after homing (units are in mm)
90 //define X_MAX_POS 220
91 //define X_MIN_POS -33
92 //define Y_MAX_POS 220
93 //define Y_MIN_POS -10
94 //define Z_MAX_POS 240
95 //define Z_MIN_POS 0
96
```

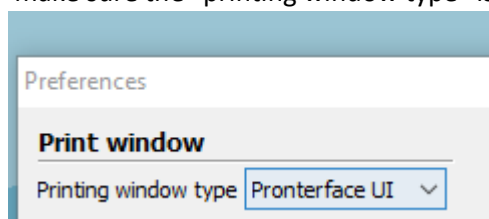
- Click the “upload” Button in arduino and wait for Skynet to compile and upload to your printer



And that’s it!! Once Arduino says “done uploading” and you have the Marlin logo on your printers screen youre done! Well youre done installing you need to carry on to set your z-offset.

Now we configure youre z offset – this is the distance the printer has to travel below zero in order to print because with induction sensors you will home to z and your nozzle will be no where near the bed

- In the Skynetv2 download folder- unzip and install Cura 15.04.6- once installation is complete open it.
- Go to “file” “preferences”
- make sure the “printing window type” is set to “Pronterface UI”



- Go to “Machine” “Machine settings” and copy the setting exactly as below apart from “serial port” which you would set to the same as the previous steps (mine Com4)

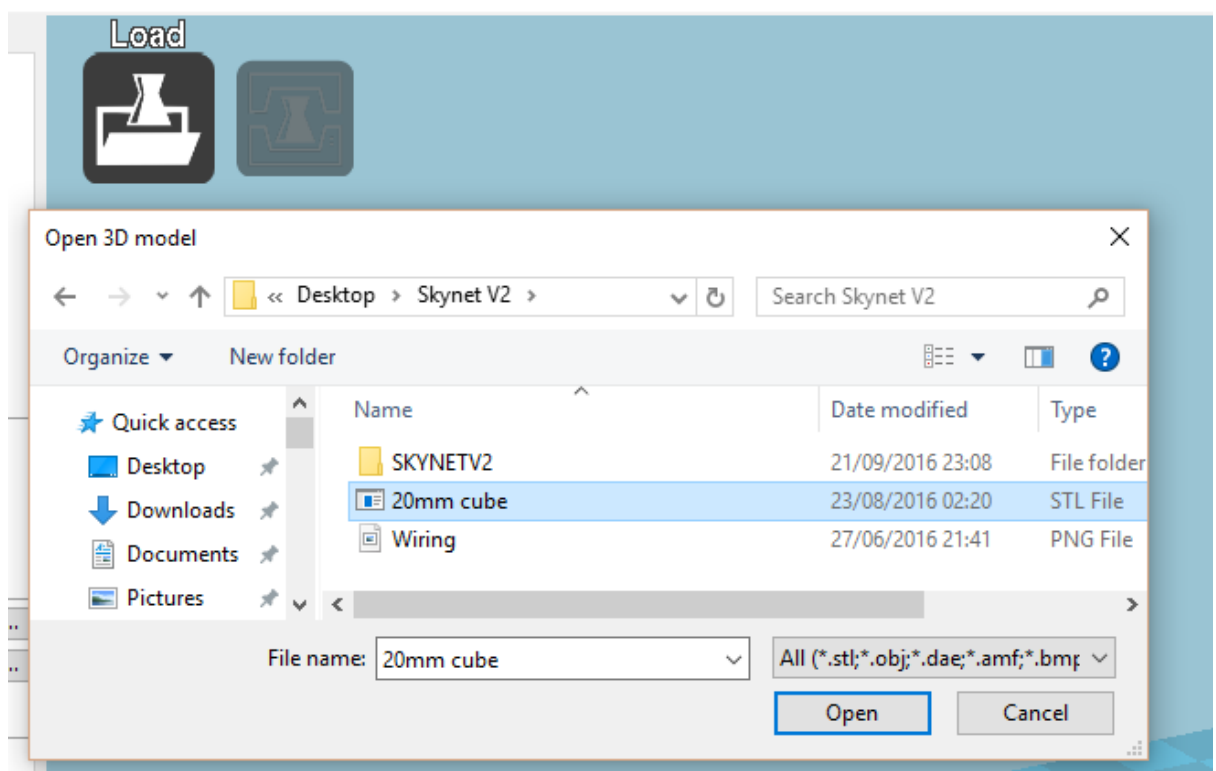
**Machine settings**

Prusa Mendel I3

Machine settings		Printer head size	
E-Steps per 1mm filament	0	Head size towards X min (mm)	0.0
Maximum width (mm)	220	Head size towards Y min (mm)	0.0
Maximum depth (mm)	220	Head size towards X max (mm)	0.0
Maximum height (mm)	240	Head size towards Y max (mm)	0.0
Extruder count	1	Printer gantry height (mm)	0.0
Heated bed	<input checked="" type="checkbox"/>	<b>Communication settings</b>	
Machine center 0,0	<input type="checkbox"/>	Serial port	COM4
Build area shape	Square	Baudrate	115200
GCode Flavor	RepRap (Marlin/Sprinter)		

Ok Add new machine Remove machine Change machine name

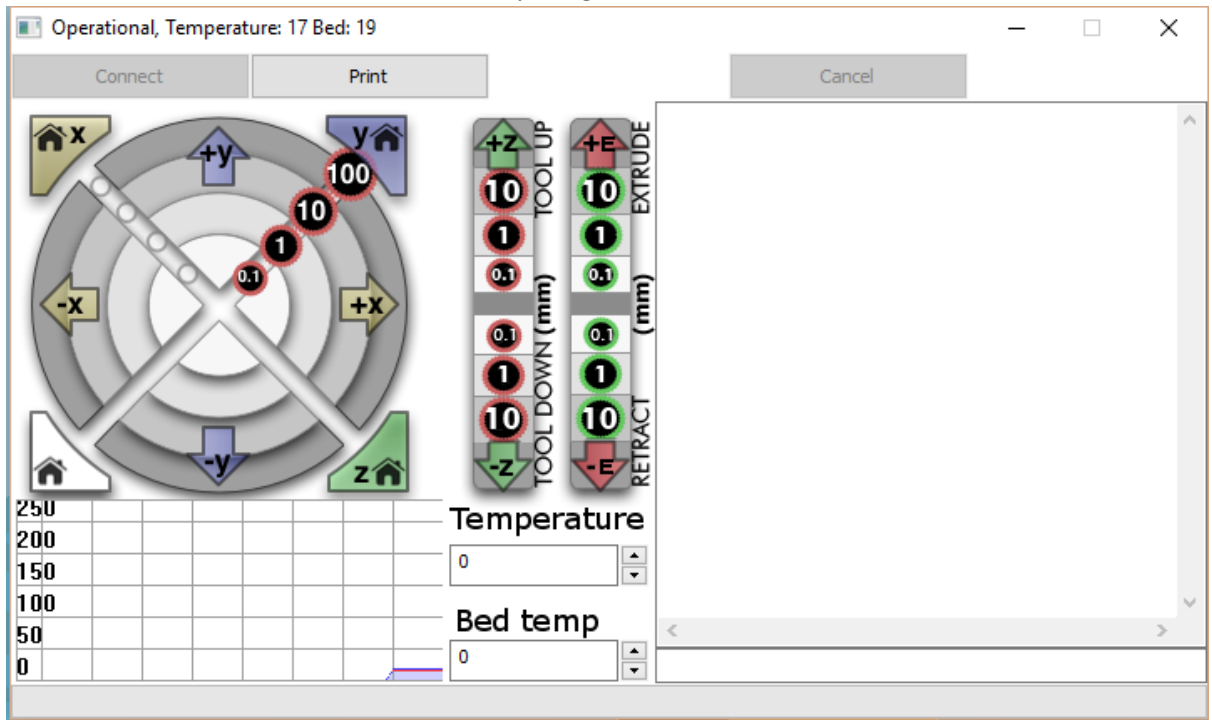
- Now Click on the “load” button and load the “20mm cube.stl”



Now you want to set your settings for your chosen material on the left side of cura (printing temps / speed/ infil etc...)



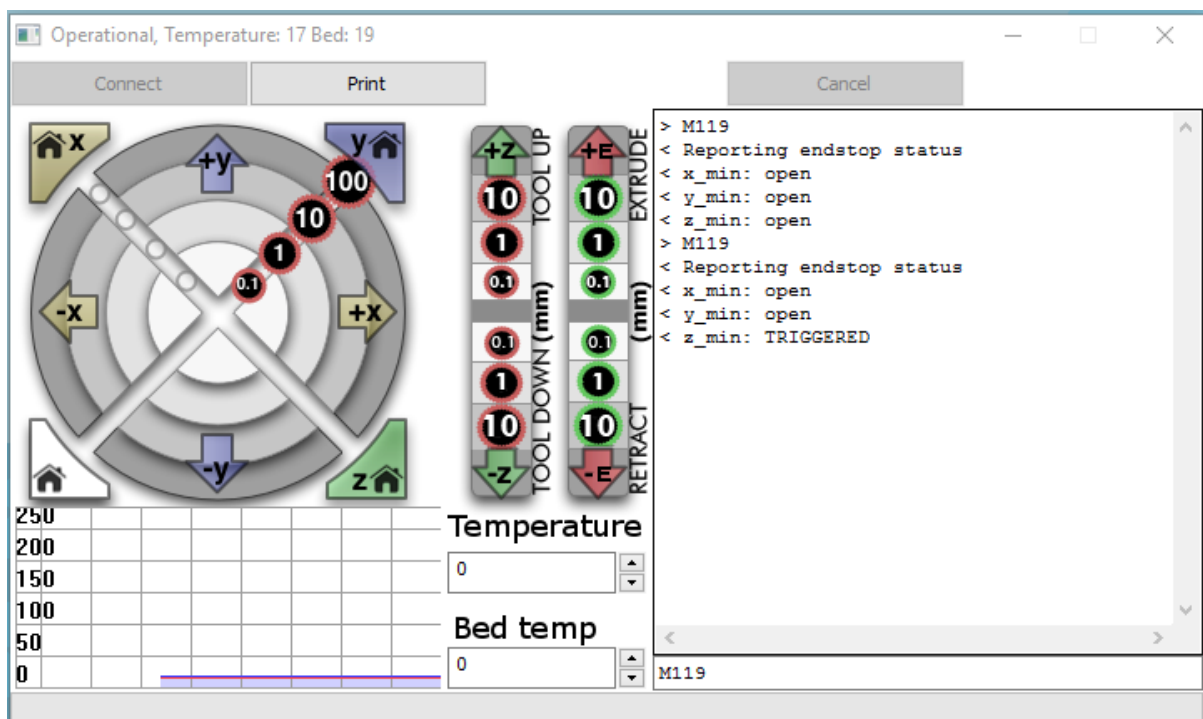
- Click the “Print” button next to “load” and youll get the “Pronterface UI” window



If you don't have “operational” in this window then you may have set the wrong baudrate or comport in the “machine settings” – just go double check they are right.

- From the pronterface window you can now start controlling your printer via usb!

In the command window type M119 and hit “enter” on your keyboard to check if your Zprobe is “Triggered” below you can see I ran that comand twice – first without a metal object below the sensor and secondly with a metal object below the sensor



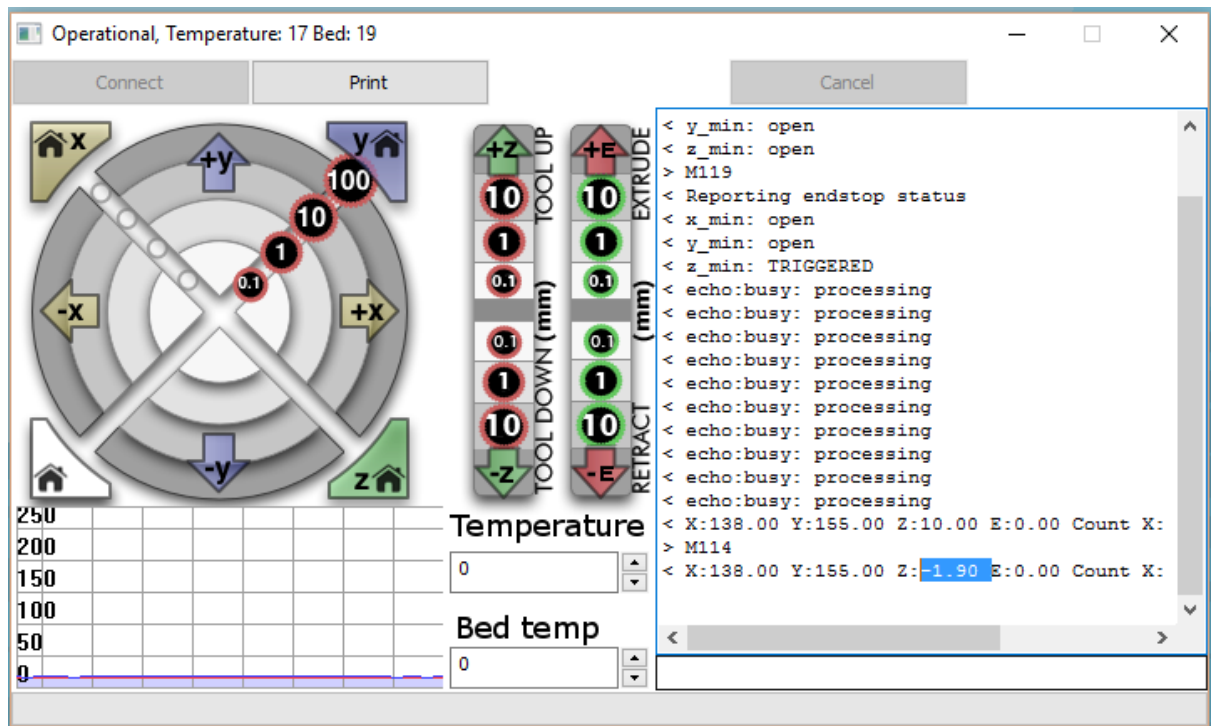


- Now hit the white “home” button to home all axis.

You will notice that the printer will home X and Y and then move the sensor to the center of the bed and lower itself until it is triggered then it will raise to z10..



- No hit the “-z 10” button to bring the nozzle down to Z0
- Place a sheet of a4 copy paper between the bed and the nozzle and lower the z axis in 0.1 increments using the button until there is just a little bit of friction when moving the paper around.
- Now run an M114 command in Pronterface UI



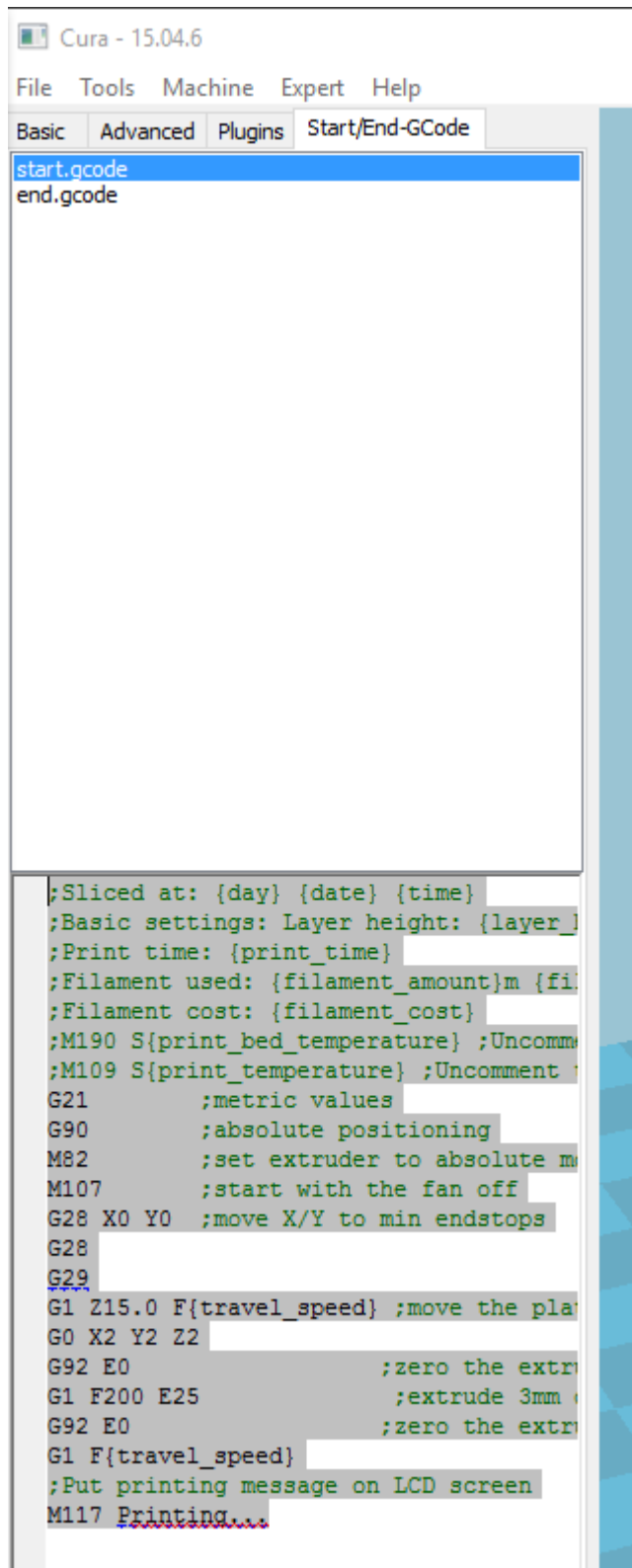
You have now found your offset value – as you can see mine is z: -1.90

- On your printer input pannel press the center button (Select/menu button)
- Go down to “control” -select “motion” -select “Z offset : 0.00” -select and then in the z offset menu press the down button or rotate knob until it reads the desired offset value (mine is -1.90) and press select.
- Then go to “menu” “control” “store memory”

Congratulations – you have now set your z offset value and you are now ready to print!

- Go to the “Start/End-Gcode” tab in cura and copy this gcode (the G29 is the autolevel)

```
;Sliced at: {day} {date} {time}
;Basic settings: Layer height: {layer_height} Walls: {wall_thickness} Fill: {fill_density}
;Print time: {print_time}
;Filament used: {filament_amount}m {filament_weight}g
;Filament cost: {filament_cost}
;M190 S{print_bed_temperature} ;Uncomment to add your own bed temperature line
;M109 S{print_temperature} ;Uncomment to add your own temperature line
G21      ;metric values
G90      ;absolute positioning
M82      ;set extruder to absolute mode
M107     ;start with the fan off
G28 X0 Y0 ;move X/Y to min endstops
G28
G29
G1 Z15.0 F{travel_speed} ;move the platform down 15mm
G0 X2 Y2 Z2
G92 E0      ;zero the extruded length
G1 F200 E25 ;extrude 3mm of feed stock
G92 E0      ;zero the extruded length again
G1 F{travel_speed}
;Put printing message on LCD screen
M117 Printing...
```



Go back to pronterface and hit “print” – allow your hotend and heatbed to get to temperature and watch in awe as you never have to touch those god forsaken bed screws ever again!!

If you are still not getting the desired first layer go back to the z offset menu in the printer and adjust accordingly until you achieve the desired “squish” – just remember to go back and “store memory” so that your printer remembers your new offset

I hope all that was easy enough to follow.

Thanks to all of you who use and support skynet. If you feel the need to buy me a beer, there is a donate button on the side of my facebook page where you can donate. Every little helps and also if giving away money isnt for you then you may opt for choosing one of my frame modifications – sensor or other goodies at my ebay shop <http://www.ebay.co.uk/usr/skynet3dmods>. All donations and mod sales all help go towards funding this project and spreading and growing skynet into something beautiful..

Happy printing

Pete @SkyNet3D