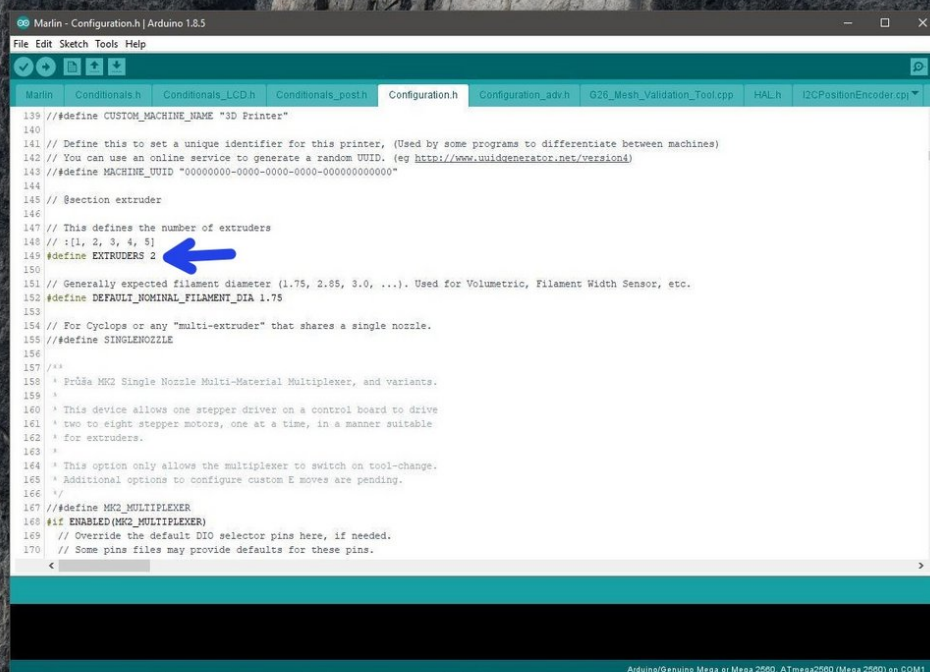


Makertech

DSE Only - Stage 08: Firmware

Written By: Makertech



```
139 // #define CUSTOM_MACHINE_NAME "3D Printer"
140
141 // Define this to set a unique identifier for this printer, (Used by some programs to differentiate between machines)
142 // You can use an online service to generate a random UUID. (eg http://www.uuidgenerator.net/version4)
143 // #define MACHINE_UUID "00000000-0000-0000-0000-000000000000"
144
145 // Section extruder
146
147 // This defines the number of extruders
148 // :{1, 2, 3, 4, 5}
149 #define EXTRUDERS 2
150
151 // Generally expected filament diameter (1.75, 2.85, 3.0, ...). Used for Volumetric, Filament Width Sensor, etc.
152 #define DEFAULT_NOMINAL_FILAMENT_DIA 1.75
153
154 // For Cyclops or any "multi-extruder" that shares a single nozzle.
155 // #define SINGLENOZZLE
156
157 /**
158  * Průša MK2 Single Nozzle Multi-Material Multiplexer, and variants.
159  *
160  * This device allows one stepper driver on a control board to drive
161  * two to eight stepper motors, one at a time, in a manner suitable
162  * for extruders.
163  *
164  * This option only allows the multiplexer to switch on tool-change.
165  * Additional options to configure custom E moves are pending.
166  */
167 // #define MK2_MULTIPLEXER
168 #if ENABLED(MK2_MULTIPLEXER)
169 // Override the default DIO selector pins here, if needed.
170 // Some pins files may provide defaults for these pins.
```


Step 1 — Marlin Firmware



- i** The Dual Switching Extruder has been tested to work with the latest version of the Marlin Firmware.
- i** Other firmwares may be compatible but have not been tested.

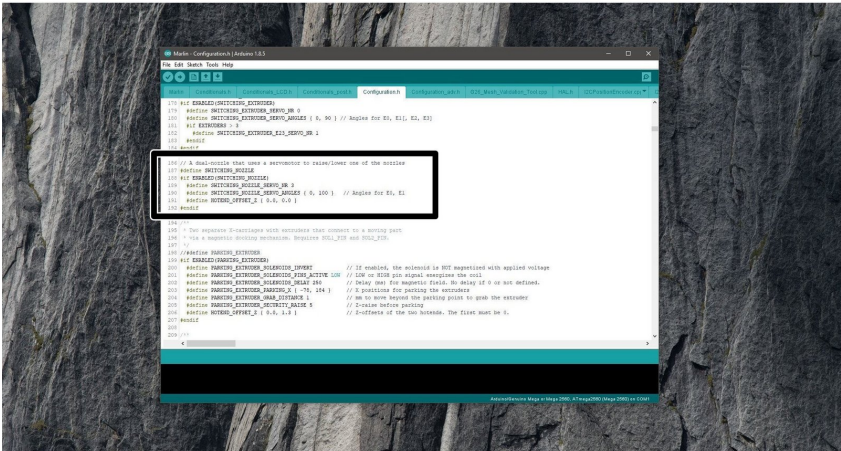
Step 2 — Configuration.h

```
137 // Marlin CUSTOM_MACHINE_NAME "3D Printer"
138
139 // Define this to set a unique identifier for this printer. (Used by some programs to differentiate between machines)
140 // The use of the same identifier to generate a random ID. (By default, the identifier is the machine name)
141 // Marlin MACHINE_ID "000000-0000-0000-0000-000000000000"
142
143 // Section extruder
144
145 // This defines the number of extruders
146 // (1 to 4, 5 to 8, 9 to 12)
147 #define EXTRUDERS 2
148
149 // Generally expected filament diameter (1.75, 2.35, 3.0, ...). Used for Volumetric, Filament Width Sensor, etc.
150 #define DEFAULT_FILAMENT_DIAMETER 1.75
151
152 // The Cytron or any "multi-extruder" that shares a single nozzle.
153 // Marlin SINGLENOZZLE
154
155 //
156 // * Enable M3 Multi-Extruder Multi-Nozzle, and variants.
157 //
158 // * This device allows one stepper driver on a control board to drive
159 // * two or eight stepper motors, one at a time, in a manner suitable
160 // * for extruders.
161 //
162 // * This option only allows the multiplexer to switch on tool-change.
163 // * Multiplexing active on toolchange means it never goes printing.
164 //
165 // Marlin M3_MULTIEXTRUDER
166
167 #if ENABLED(M3_MULTIEXTRUDER)
168 // Provision the default 200 micron gcode line, if needed.
169 // Some gcode files may provide defaults for these pins.
170 #define M3_DEFAULT_GCODE "M3 200"
171 #endif
```

- i** Changes that need to be done to the marlin firmware are all in the Configuration.h file.

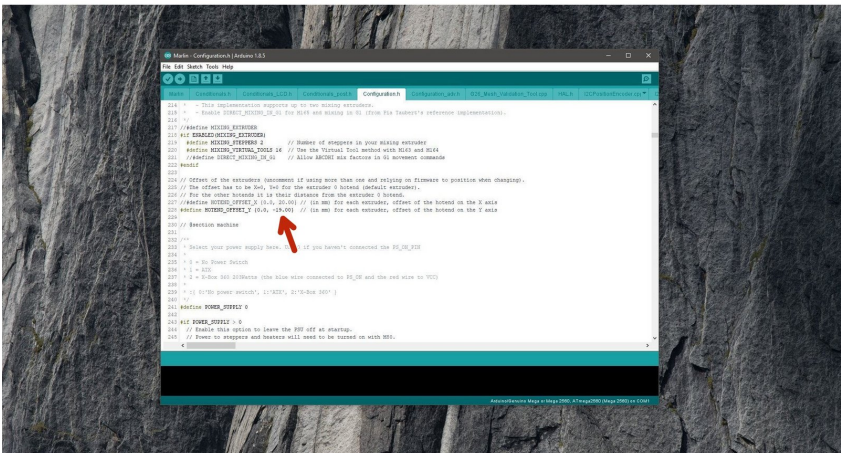
- Line 149:
- Set Extruders to 2


Step 3 — SWITCHING_NOZZLE



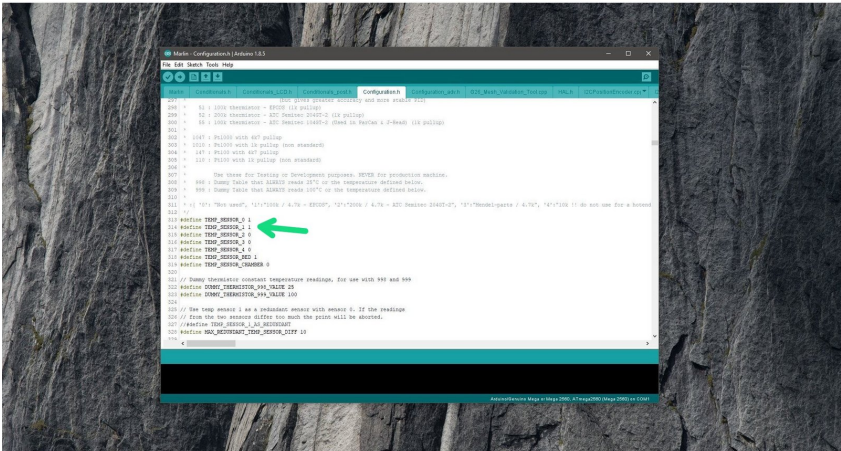
- Line 187:
 - #define SWITCHING_NOZZLE
- Line 189:
 - 3**
- Line 190:
 - { 0, 100 }

Step 4 — HOTEND_OFFSET_Y or X



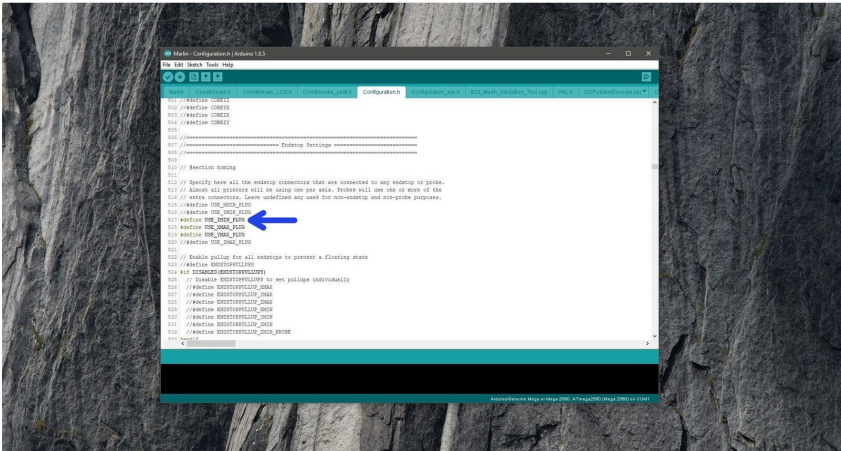
-  Depending on the direction the hotends are switching in on your printer:
- **HOTEND_OFFSET_Y {0.0, -19.00}**
 - **HOTEND_OFFSET_X {0.0, -19.00}**

Step 5 — TEMP_SENSOR_1



- Set the thermistor for the the second hotend.

Step 6 — USE_ZMIN_PLUG

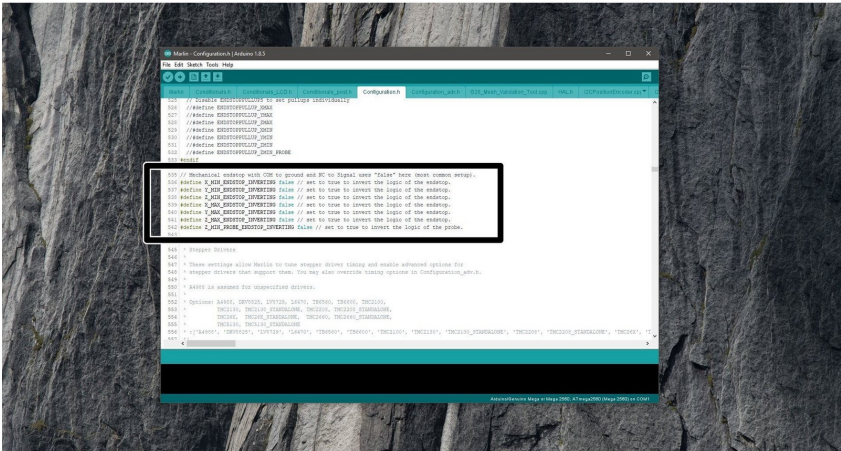


- Uncomment `USE_ZMIN_PLUG`



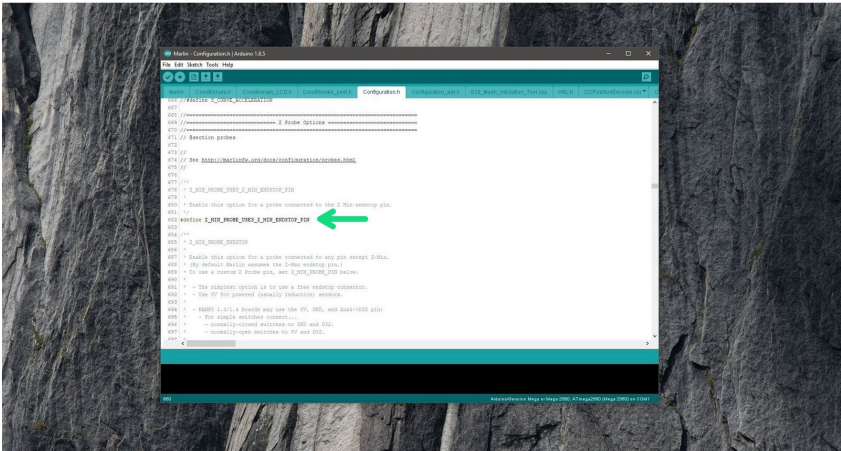
This is where the Probe signal will go.

Step 7 — ENDSTOP_INVERTING



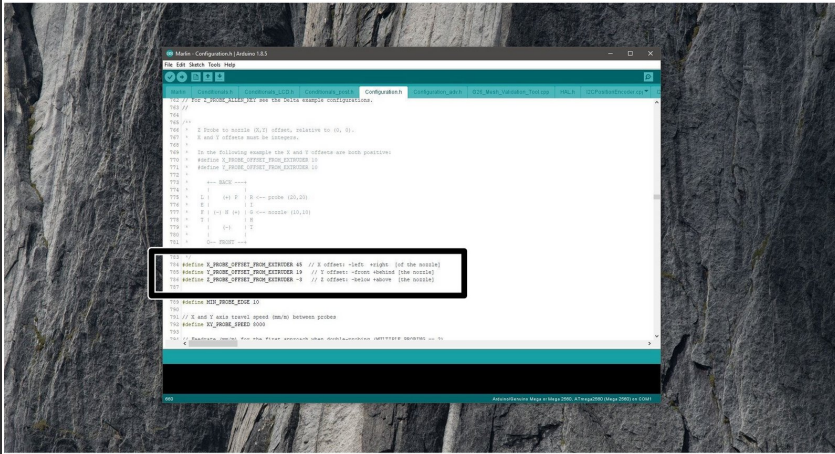
- ❗ Make sure both are set to false:
 - Z_MIN_ENDSTOP_INVERTING
 - Z_MIN_PROBE_ENDSTOP_INVERTING



Step 8 — Probe uses Endstop Pin



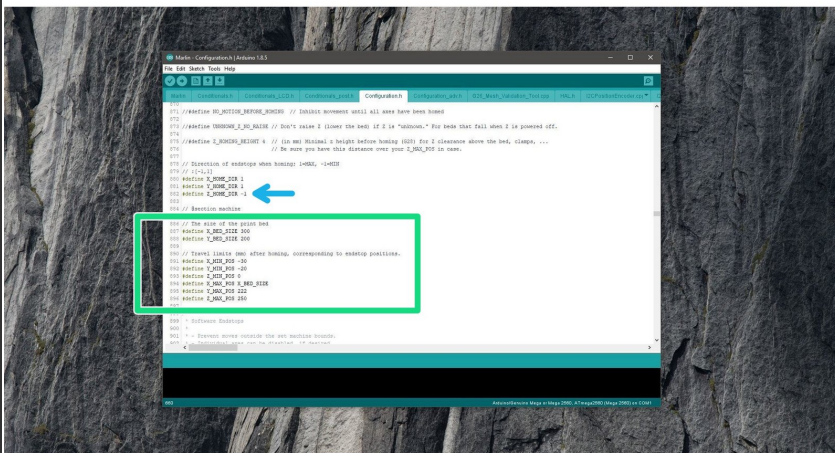
- ❗ Uncomment line 682:
- Z_MIN_PROBE_USES_Z_MIN_ENDSTOP_PIN

Step 9 — Probe offsets



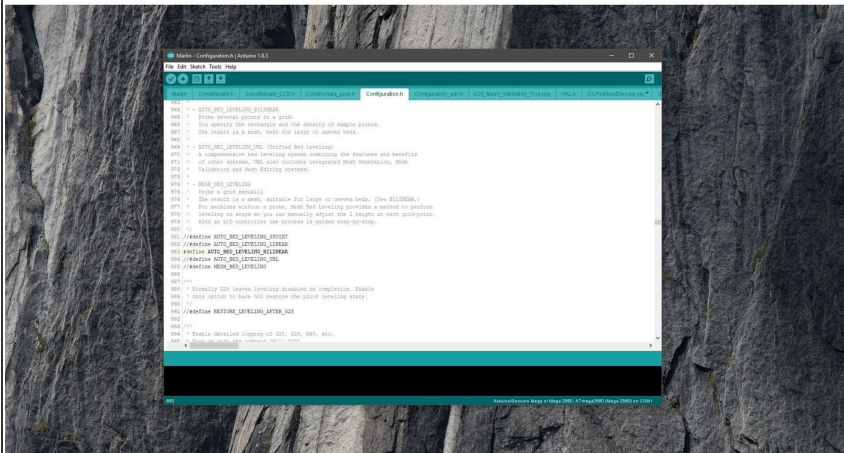
-  The Probe is offset from Hotend #1 (left Hotend). Lines 784-786.
-  You may need to swap the X/Y values around if your Hotends switch in the X-direction.
 - X Offset: **45**
 - Y-Offset: **19**
 - Z-Offset: **-3**

Step 10 — Z-Home Direction and Print Dimensions



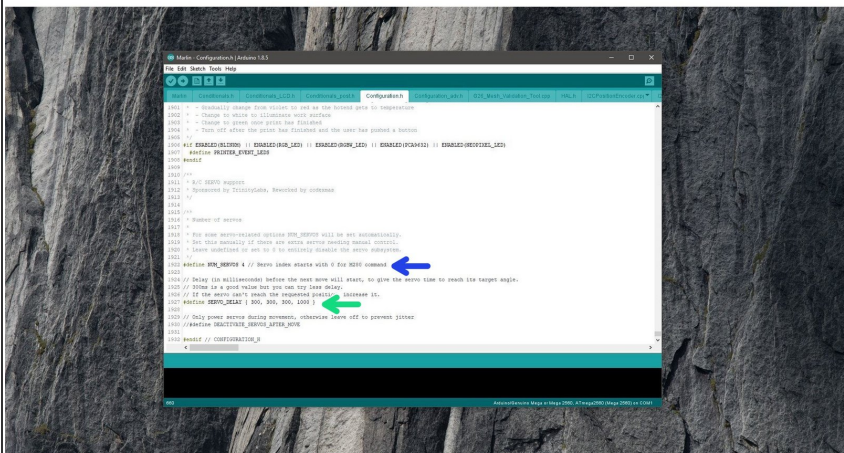
- Line 882:
 - Make sure the Z-homing direction is set to **-1**
- Lines 891-896:
 - Adjust your build platform size accordingly to fit the DSE assembly.
- Note, the Z-height will be reduced by approx. 50mm.

Step 11 — Auto Levelling



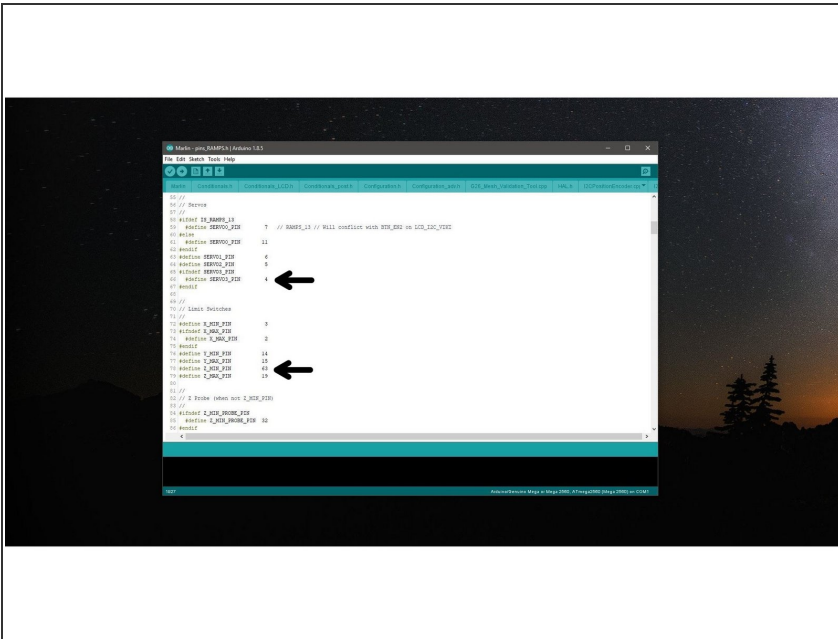
- Set the auto-leveling to:
 - AUTO_BED_LEVELING_BILINEAR

Step 12 — Servo Settings



- ★ Because of a bug in the current release of the marlin firmware we're setting the servo settings this way:
- i Line 1922:
 - NUM_SERVOS 4
- i Line 1927:
 - SERVO_DELAY { 300, 300, 300, 1000 }

Step 13 — Pins



- ❗ Make sure to correctly map the pins you have connected signal cables from the servo and probe to pin numbers in your specific board-pins config.
- The image shows the pins_RAMPS.h as an example.

Step 14 — Upload the firmware



- Once happy with the configuration, upload the firmware to your printer.
- Run through motion checks, enstop checks and homing.
- Check that the auto levelling (G28 G29) is working as expected.
- Also check that everything is heating up as it should.