3D Printer

BY HIRANMIE PADINJATIYADUTH
TEAM MEMBER(S)

• Hiranmie Padinjatiyaduth
  • Firmware
  • Electronics for the 3d printer
  • Calibration
  • Integrate the heat bed
REQUIREMENTS

• 1. Fixing/Upgrading electronics for 3D Printer
• 2. Get the printer working smoothly
• Bonus:
  • Set up remote printing/job monitoring
  • Integrate micro SD card reader shield
    • To Print without direct connection to a computer
### FIXING/UPGRADING ELECTRONICS FOR 3D PRINTER

- Completing the electronics for the existing printer
  - Bill of Materials:

#### What We Have:

<table>
<thead>
<tr>
<th>Item</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arduino Mega 2560</td>
<td>1</td>
</tr>
<tr>
<td>Power Supply</td>
<td>1</td>
</tr>
<tr>
<td>A4988 Stepper Drivers</td>
<td>8</td>
</tr>
<tr>
<td>Driver Connectors</td>
<td>16</td>
</tr>
<tr>
<td>Motors</td>
<td>8</td>
</tr>
<tr>
<td>Motor Connectors</td>
<td>8</td>
</tr>
<tr>
<td>Endstop Connectors</td>
<td>3</td>
</tr>
<tr>
<td>Endstops</td>
<td>3</td>
</tr>
<tr>
<td>Thermistor Connectors</td>
<td>3</td>
</tr>
<tr>
<td>100K O @ 25°C Res Thermal</td>
<td>3</td>
</tr>
<tr>
<td>MOSFET</td>
<td>3</td>
</tr>
<tr>
<td>R16 Res1 4k7</td>
<td>3</td>
</tr>
<tr>
<td>R1 Res1 10K</td>
<td>5</td>
</tr>
<tr>
<td>Resistor 1K</td>
<td>14</td>
</tr>
<tr>
<td>580 ohm resistor</td>
<td>3</td>
</tr>
<tr>
<td>LED</td>
<td>3</td>
</tr>
<tr>
<td>Diode</td>
<td>3</td>
</tr>
<tr>
<td>Capacitor 10 μF</td>
<td>3</td>
</tr>
<tr>
<td>Capacitor 1000 μF</td>
<td>1</td>
</tr>
<tr>
<td>Heater Blocks</td>
<td>2</td>
</tr>
<tr>
<td>Heat Bed</td>
<td>1</td>
</tr>
<tr>
<td>Power Supply Connector</td>
<td>1</td>
</tr>
<tr>
<td>Logic Power</td>
<td>1</td>
</tr>
</tbody>
</table>
PROGRESS...
BASE PLATE CAD
BASE PLATE

• To Be 3D Printed
  • Or Laser Cut

• Abs Plastic Strength – Rigid
  • Acrylic or Plywood

• Requirements:
  • Clean look: No loose cables
  • Modular Components
  • Strong enough for the power supply
SOFTWARE

• Marlin or GRBL
  • 3D Printer Firmware for Arduino

• Printing:
  • Repetier Host:
    • Generates g-code
  • Integrated Slicer:
    • Slic3r
      • Slices models to create g-code
Changes Since PDR

- Added Connectors to most of the schematic
- Pin numbers
- Connections between the driver board and Arduino
- Changed motor driver model number
- Labels for all individual circuits
- Added “Edited by:” to the title block
- Motor connections for signal
3D PRINTER CIRCUIT DIAGRAM

Old Arduino

Updated Arduino
3D PRINTER CIRCUIT DIAGRAM (Old) CONT.

Old X-axis and Y-axis Drivers

New X-axis and Y-axis Drivers
3D PRINTER CIRCUIT DIAGRAM CONT.

Old Extruder Motor Drivers

Updated Extruder
3D PRINTER CIRCUIT DIAGRAM CONT.

Old Z-axis Motor Drivers

New Z-axis Motor Drivers
Old Bed and Extruder Heaters

New Bed and Extruder Heaters
3D PRINTER CIRCUIT DIAGRAM CONT.

Old Temperature Monitors

New Temperature Monitors
3D Printer Circuit Diagram Cont.

Old Motor Power

- +12
- C1 1000μF
- GND

New Motor Power

- +12
- C1 1000μF
- GND
Software

- Using existing firmware from previous year.
  - Downloaded from GitHub - Based on Marlin Firmware
THANK YOU

Questions?