ATLAS 3D Instructions

WARNING: The included components can be damaged by static electricity. Before touching or removing them from their bags you must ground yourself by touching a earthed object such as a water tap or radiator. Failure to ground yourself can result in the destruction of the electronic parts.

CAUTION: LASER RADIATION – DO NOT STARE INTO BEAM OR VIEW WITH OPTICAL INSTRUMENTS.

See the Getting Started page at http://www.murobo.com/start.html

Links to the 3D printed parts can be found at http://www.murobo.com/printables.html

The product serial number is located at the bottom of the motor.

Assembly Instructions

A step-by-step video of the assembly can be found at https://www.youtube.com/watch?v=awtLSCLJ3qs

1. Print the 3D printable parts.
2. Use a frame connector to connect two frame section 2 parts with A-screws and B-nuts.
3. Add a frame connector to the end of a frame section 2.
4. Use another frame connector to connect the frame section 3 to the opposite end of the frame.
5. Follow the above instructions to assemble the other side of the frame.
6. Attach four cross bar parts to the center of one the frame section 2 parts for one side of the frame.
7. Attach the motor to frame section 3 using D-screws and C-washers.
8. Place tape over the nuts of the cross bar to prevent them from falling out.
9. Use the cross bars to join the two frame sides with A-screws.
10. Use D-scews and C-washers to attach the other side of the frame to the motor.
11. Attach the power button onto the electronics board by pushing down on the top button and inserting the wires into the side.
12. Attach the top Raspberry Pi case to the camera tower with A-screws and B-nuts.
13. NOTE: Remember to cut and remove the printed support structure between the cable carrier of the upper Raspberry Pi case.
14. Feed the laser wires through the side holes on the Raspberry Pi case and through the rectangular cutout in the camera tower.
15. Attach the lasers to the electronics board. The order of the wires from back to front (where the barrel plug is) is left laser red, left laser black, right laser red, right laser black. This is also written on the PCB.
16. Attach the electronics board to the camera tower with a D-screw, two C-washers and a B nut.
17. Unscrew the fastener for the power button and insert the power button into the power cutout in the camera tower. Screw the fastener back on to hold the power button in place.
18. Connect the motor to the electronics board. The back to front order is green, black, red, and then blue.
19. Connect the ribbon cable to the electronics board. Ensure that the white strip faces towards the back of the board.

20. Insert nuts into the unconnected frame connectors and place taper over them to prevent them from falling out.
21. Join the camera tower to the frame with A-screws on the bottom and sides, and D-screws and C-washers on the top.
22. Attach the camera shaft to the camera tower with D-screws, C-washers and B-nuts.
23. Attach both laser arms with D-screws, C-washers, and B-nuts.
24. Place nuts in the remaining cross bar and use it to attach the back feet to the scanner. Use a D-screw, C-washer, and B-nut for each foot.
25. Use a D-screw, two C-washers, and a B-nut for the front side feet (the side closest to the camera).
26. Attach the laser holders to the laser arm using a D-screw, C-washer and B-nut.
27. Insert the lasers into the laser holder. Use a D-screw, C-washer, and B-nut to hold the laser in place.
28. Attach the Raspberry Pi to the bottom Raspberry Pi case with E-screws, F-nuts, and H-washers. Tweezers can help to hold the nuts in place.
29. Insert the SD card into the Raspberry Pi with the metal contacts pointing up.
30. Attach the camera bracket to the camera arm using D-screws, C-washers, and B-nuts.
31. Attach the front camera case using D-screws, C-washsers, and B-nuts.
32. Attach the camera bracket, camera arm, and front camera case to the camera shaft.
33. Connect the four cable carriers by snapping them together.
34. Snap on the cable carrier to the upper Raspberry Pi case.
35. Insert the camera into the front camera case.
36. Feed the camera cable through the cable carrier.
37. Connect the cable carrier to the front camera case.
38. Snap on the back camera case.
39. Connect the camera cable to the Raspberry Pi. Open the CSI connector by pulling up on it. Insert the camera cable with the metal contacts pointing down and push down on the CSI connector to close it. Ensure that the cable sits evenly in the connector.
40. Connect the ribbon cable to the Raspberry Pi with the white strip pointing down.
41. Snap the lower Raspberry Pi case to the upper Raspberry Pi case.
42. Attach the camera tower front plate.
43. Insert the Wifi dongle.
44. Tighten all of the screws of the frame.
45. Place the turntable upside down onto the table liner and run a sharp knife around the table to create a circular cutout. Be careful not to cut yourself.
46. Insert four B-nuts into the bottom of the table coupler. Use tape to hold them in place.
47. Place the coupler on the motor shaft with the big end pointing up.
48. Insert two B-nuts into the top of the table coupler and two D-screws into the sides to hold the coupler onto the motor shaft.
49. Snap the turntable onto the table coupler.
50. Use G-screws to attach the table to the coupler.
51. Place the table liner onto the turntable.

WiFi Setup and Connecting to the Scanner

To recommended way of establishing an initial connection to the scanner is to use a USB flash drive to assist in the setup and connection. The instructions below describe this process.

Microsoft Windows

ATLAS 3D Instructions

1. Insert the WiFi dongle into the Raspberry Pi
2. Insert a USB flash drive into the Raspberry Pi (wait for the lasers to turn on and turn back off).
3. Insert the flash drive into your PC and run the program called *ATLAS3D_Windows.hta* that was written to the flash drive.
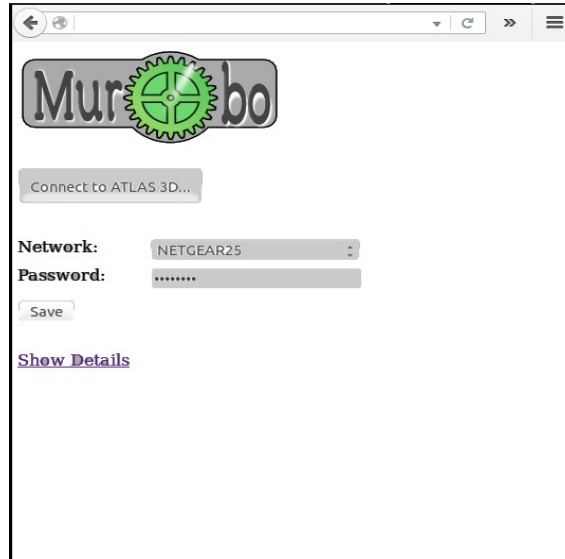

4. Select your WiFi network, enter the password and click save.
5. Insert the USB flash drive back into the Pi (wait for lasers to turn on and turn back off)
6. Insert the USB flash drive back into your computer, run the ATLAS3D_Windows.hta program and click *Connect to ATLAS 3D*.

Once connected, following the getting started guide at http://www.murobo.com/start.html

Mac and Linux
1. Insert the WiFi dongle into the Raspberry Pi
2. Insert a USB flash drive into the Raspberry Pi (wait for the lasers to turn on and turn back off).
3. Edit the file named ATLAS3D_cfg.txt and enter your WiFi network and password on the cooresponding lines.
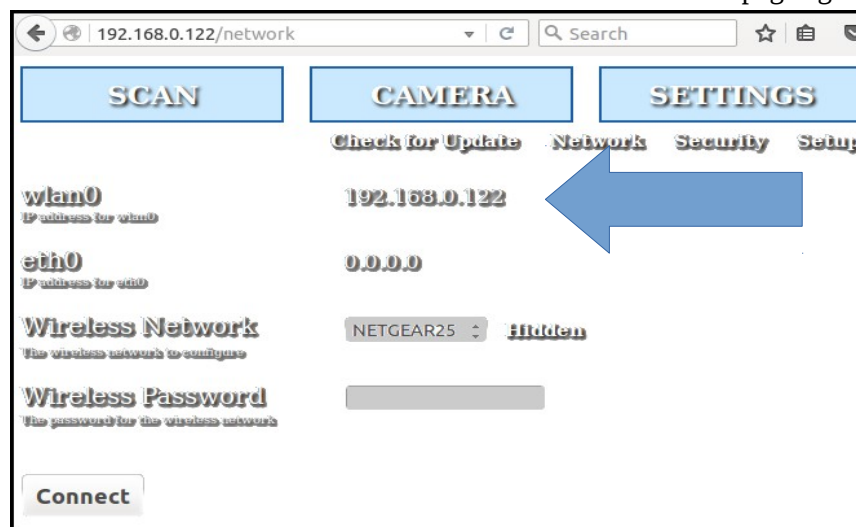
ATLAS 3D Instructions
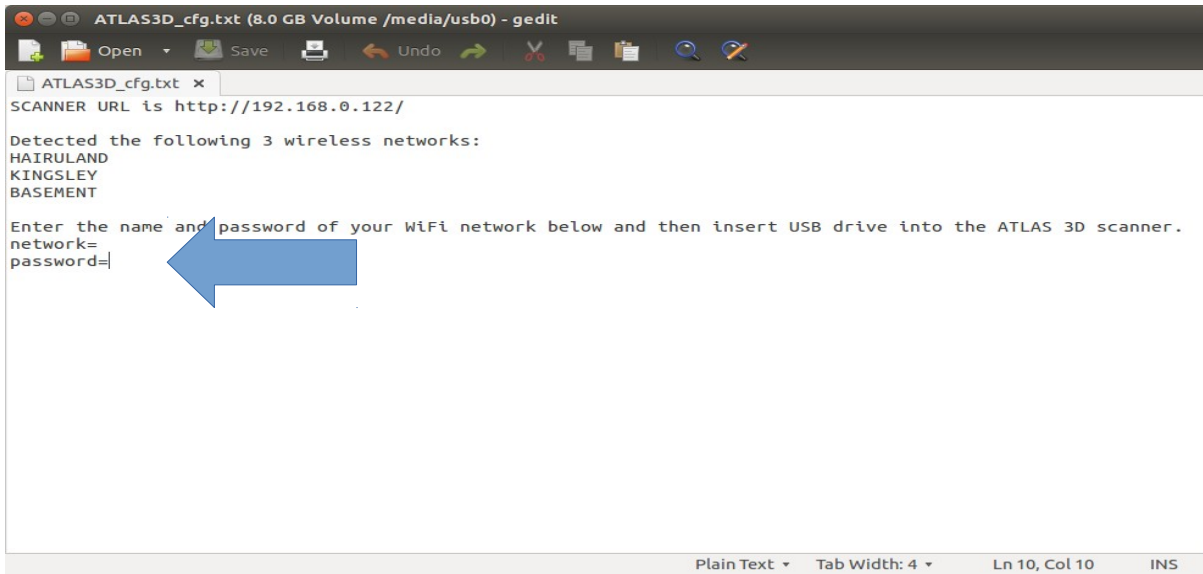
4. Save the file, insert it into the Raspberry Pi and wait for the lasers to turn on and off again.
5. Insert the USB flash drive back into your computer, double-click the ATLAS3D_Connect.html file and click *Connect to ATLAS 3D*.

Once connected, following the getting started guide at http://www.murobo.com/start.html

No USB Flash Drive

It is strongly recommended to use a USB flash drive, but if one is not available, you can connect with the following instructions.
1. Attach an HDMI monitor, USB keyboard, and USB mouse to the Raspberry Pi.
2. Power on the scanner and login with *pi* as the username and *raspberry* as the password.
3. Type *startx* and press the *Enter* key to start the GUI.
4. Click the globe icon at the top left of the GUI to screen to start the web browser.
5. Enter http://127.0.0.1/ into the location bar and press the Enter key to access the ATLAS 3D software.
6. Click *SETTINGS* and then *Network* to access the network setup page.
7. Select your WiFi network, enter your password, and press *Connect*.
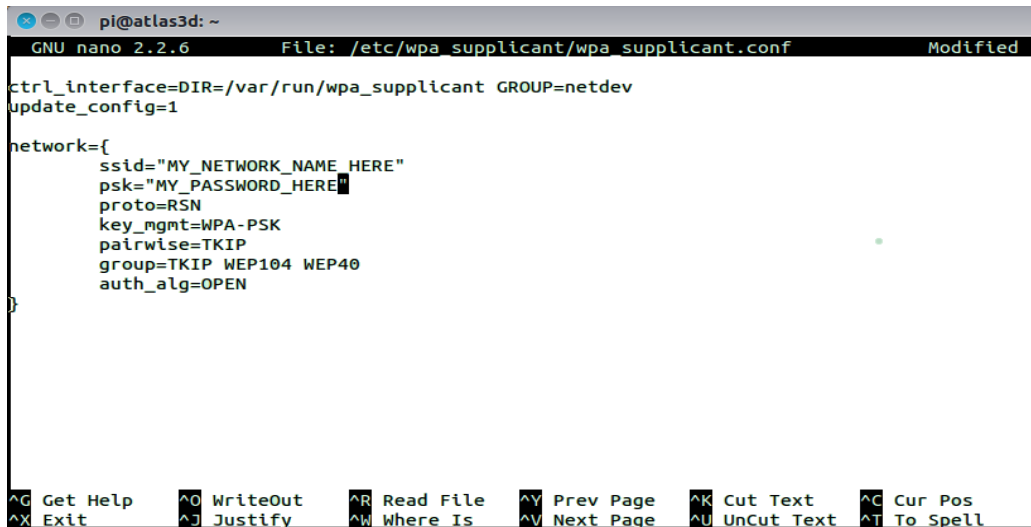8. Wait 30 seconds for the scanner to connect to WiFi and click the Network page again to refresh the page.

9. The number to the right of wlan0 is the WiFi IP address for the scanner.
10. From your desktop PC, open Firefox, Chrome, Safari or any modern web browser and enter http://IP_ADDRESS/ into the location bar, where IP_ADDRESS is your WiFi IP address. For example, in the example above it would be http://192.168.0.122/

Once connected, following the getting started guide at http://www.murobo.com/start.html

Command Line Only – Advanced Users Only

1. Attach an HDMI monitor, USB keyboard, and USB mouse to the Raspberry Pi (alternatively, you can attach via Ethernet, discover the IP address and shell in with SSH).
2. Power on the scanner and login with *pi* as the username and *raspberry* as the password.
3. Type *sudo nano /etc/wpa_supplicant/wpa_supplicant.conf* to edit the WiFi configuration file.
4. Enter the network name on the *ssid* line and password on the *psk* line. Note that the double quote **"** characters before and after the password and network **are required**.

```
  pi@atlas3d: ~
    GNU nano 2.2.6          File: /etc/wpa_supplicant/wpa_supplicant.conf          Modified

ctrl_interface=DIR=/var/run/wpa_supplicant GROUP=netdev
update_config=1

network={
        ssid="MY_NETWORK_NAME_HERE"
        psk="MY_PASSWORD_HERE"
        proto=RSN
        key_mgmt=WPA-PSK
        pairwise=TKIP
        group=TKIP WEP104 WEP40
        auth_alg=OPEN
}



^G Get Help    ^O WriteOut    ^R Read File   ^Y Prev Page   ^K Cut Text    ^C Cur Pos
^X Exit        ^J Justify     ^W Where Is    ^V Next Page   ^U UnCut Text  ^T To Spell
```

5. Press CTRL+X, save the file and type *sudo ifdown wlan0* followed by *sudo ifup wlan0*. Wait 30 seconds and type *ifconfig* to see if wlan0 has an IP address.
6. From your desktop PC, open Firefox, Chrome, Safari or any modern web browser and enter http://IP_ADDRESS/ into the location bar, where IP_ADDRESS is your WiFi IP address. For example, in the example above it would be http://192.168.0.122/

Once connected, following the getting started guide at http://www.murobo.com/start.html