

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 an earthed object such as a water tap or radiator. Failure to ground yourself can result in the destruction of the electronic parts.

WARNING: The M4 screws must be hand tightened, using a wrench or other tool may crack the acrylic.

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

A video assembly guide is located at <http://www.murobo.com/start.html#assembly>

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

The product serial number is located at the bottom of the motor. This serial number is required for certain ATLAS 3D features.

KIT ENCLOSURE ASSEMBLY INSTRUCTIONS

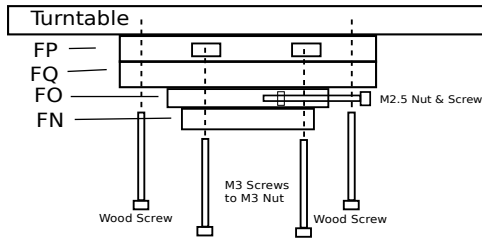
See the assembly video for a visual guide.

1. Check and ensure that you have all of the pieces on your paper and then begin peeling off the tape on both sides of all acrylic pieces.
2. Put the SD card into the SD slot of the Raspberry Pi.
3. Attach the 40 pin side of the ribbon cable to the Raspberry Pi **ensuring that the white stripe is closest to the SD card.**
4. Connect the included extension camera cable to the Raspberry Pi. Pull up on the plastic camera connector bar to open it and push down to close it. **The metal contacts on the cable must be pointing away from the USB slots (towards the SD card).**
5. Pull the other end of the camera cable out of the small rectangle cut above the Raspberry Pi on the FD piece.
6. Lay FB flat as illustrated. Slide FC into the groves of FB (make sure that the rectangle cutout is on the left hand side when looking from the motor) and then connect FC to FB using 3 of the M4 screws and nuts in bag A. Hold the nut in place with your fingers and screw in the fastener. Leave the screws a little loose for easier assembly.
7. Slide FD into the groves of FB (be sure that the small LED indication circle is at the bottom left hand side when facing the camera from the motor) and then put in the M4 fasteners from bag A but do not tighten yet.
8. Grab the 4 M2.5 18mm screws from bag H and put them into the 3 holes (by the rectangle) of the FC acrylic starting from the bottom. Place the FT spacers over the 4 mounting holes and sit the Raspberry Pi onto the three screws followed by the M2.5 nuts found in the H bag.
9. Pull the ribbon cable down through the hole in FC.
10. Using the M3 screws found in bag B, the nuts found in bag E, and 3 FU spacers, attach the electronics board to FJ running the screws up from the bottom. Ensure that the power plug lines up with the hole on the FD piece. If it does not then disconnect the electronics board from FJ, flip FJ and then reconnect the electronics board.
11. Once you connect the electronics board to FJ you can then attach the 2 rubber feet using the screws from bag B and the nuts from bag E.
12. Using the screws from bag B and the nuts from bag E attach the 2 remaining rubber feet to FI and sit aside.

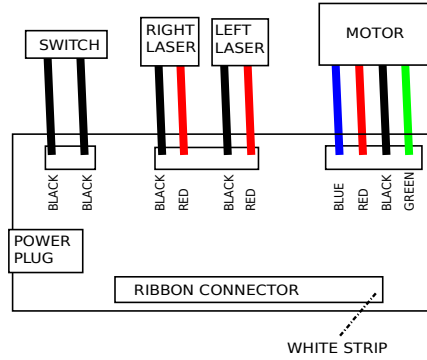
13. Unscrew the plastic cap on the button if not already unattached. Put the head of the button into the FV hard board. Screw the plastic cap back onto the button.
14. Attach the button into the side of FB using the screws from bag B and the nuts from bag E. Be sure to have the button on the inside of the frame.
15. Connect the button's cords to the electronics board where it says power.
16. Pull the laser cords through the same hole as the camera cable and then down the rectangular hole on the FC piece. Connect the laser wires to the electronics board where indicated on the electronics board. The wires should go red, black, red, black (see figure below).
17. Connect the motor wires to the electronics board in the following order: green, black, red, blue (see figure below).
18. Attach the motor to the FC section of the frame using M3 10mm screws found in bag G.
19. Connect the 26pin side of the black ribbon cable to the electronics board. **Ensure that the white portion of the ribbon cable is pointed toward the motor.** An incorrect connection of the ribbon cable may result in damage to the Pi, board, or both.
20. Pull FD out a little and sit FJ into the slots of FB and then push FD back into place.
21. Put FK into the slots of FB sitting above the Raspberry Pi. Put FH into the slots of FB at the back of the Pi. Put FI into the slot of FB in front of the motor with the feet facing down. Put FG in the front slot of FB in front of the motor.
22. Attach FA to the assembly ensuring that all of your slots fit into place. Put in 6 fasteners and nuts from the A bag. Hand tighten these fasteners.
23. Put in the last fastener on FB and hand tighten that one and the two connecting FD to FB.
24. Take FE and put it in front of FF and connect the horizontal holes of FE to the two end holes on FF using the screws from bag B and the nuts from bag E. Tighten using the wrench.
25. Put the laser arm into the laser holder and fasten down using the screws from bag B and the nuts from bag E. Do this to both laser holders, left and right.
26. Connect FF to FD using the screw from bag B. Only use 1 and you will put this screw in the first slot next to FE. Do this on both sides.
27. Connect the laser holders to FE using the screws from bag B and the nuts from bag E.
28. Insert the laser into the holder and put the screw from bag B and nut from bag E through the bottom of the holder to keep the laser in place.
29. Remove the default cable that is connected to the camera by pulling up on the plastic bar where the cable meets the camera.
30. Connect the longer cable, that was previously attached to the Pi, to the camera by inserting it into the slot and pushing down on the bar. **The metal contacts must be facing the same direction as the camera lens.**
31. Use the nylon screws in bag C and put them in the camera holes on FD. Attach the springs onto the screws followed by the nylon washer. Attach the camera onto the screws. (the camera cable will be coming up and then flip downward towards the Pi) Put the nylon nut on the screw and semi tighten.
32. Lay the wooden table down on top of the table liner and cut to the table size. Lay FP onto the table matching up the pilot holes. Put the nuts from bag E into the 4 slots in FP. Align FQ on top of FP. Attach FQ and FP to the table using the wood pointed tip screws in bag F. Be careful not to over tighten or you will strip the wood (see diagram below).
33. Lay FO on top of FQ. Lay the M2.5 screw and nut from bag F onto the side slot in FO. Align the 3D printed FN on top of FO and use the M3 18mm screws from bag F to connect FN to FP.
34. Sit the table onto the motor. Turn the table to see if it is turning level. If not then adjust the table on the motor until you get it turning level. Once you get the table turning level then tighten the small M2.5 screw in FO to affix the table to the motor shaft. It is important to make sure that the table is turning level before proceeding.
35. Stack the 3 FM pieces together and affix to the hard wood calibration item (FW) using the M3 25mm screws found in bag D and the nuts found in bag E.
36. The serial number is located on the bottom of the motor. You will need to enter your serial number and update your software.
37. To calibrate your camera you will need to tighten or loosen the nylon screws holding the camera.
38. Once your camera and lasers are calibrated use the screws from bag D and put them through the holes on

FD that are next to the camera. Put a FU spacer onto the screw. Put the remaining 2 screws in bag D into the lower 2 of the remaining holes on FD. Put 2 FU spacers on each of those two screws. Pull in the laser wires and then attach FL onto the 4 screws using the nuts from bag E (see diagram below).
 39. Put your table liner on top of your wooden table. Your ATLAS 3D kit is now assembled.

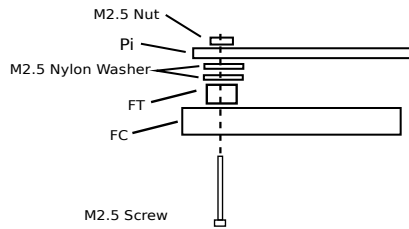
Turntable Assembly



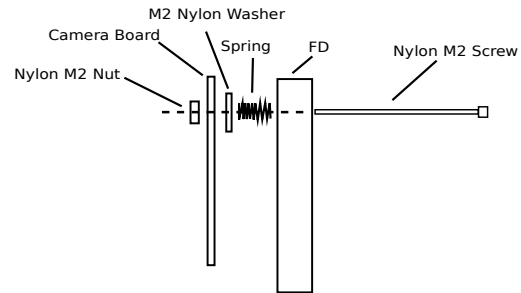
Electronics Board Wiring

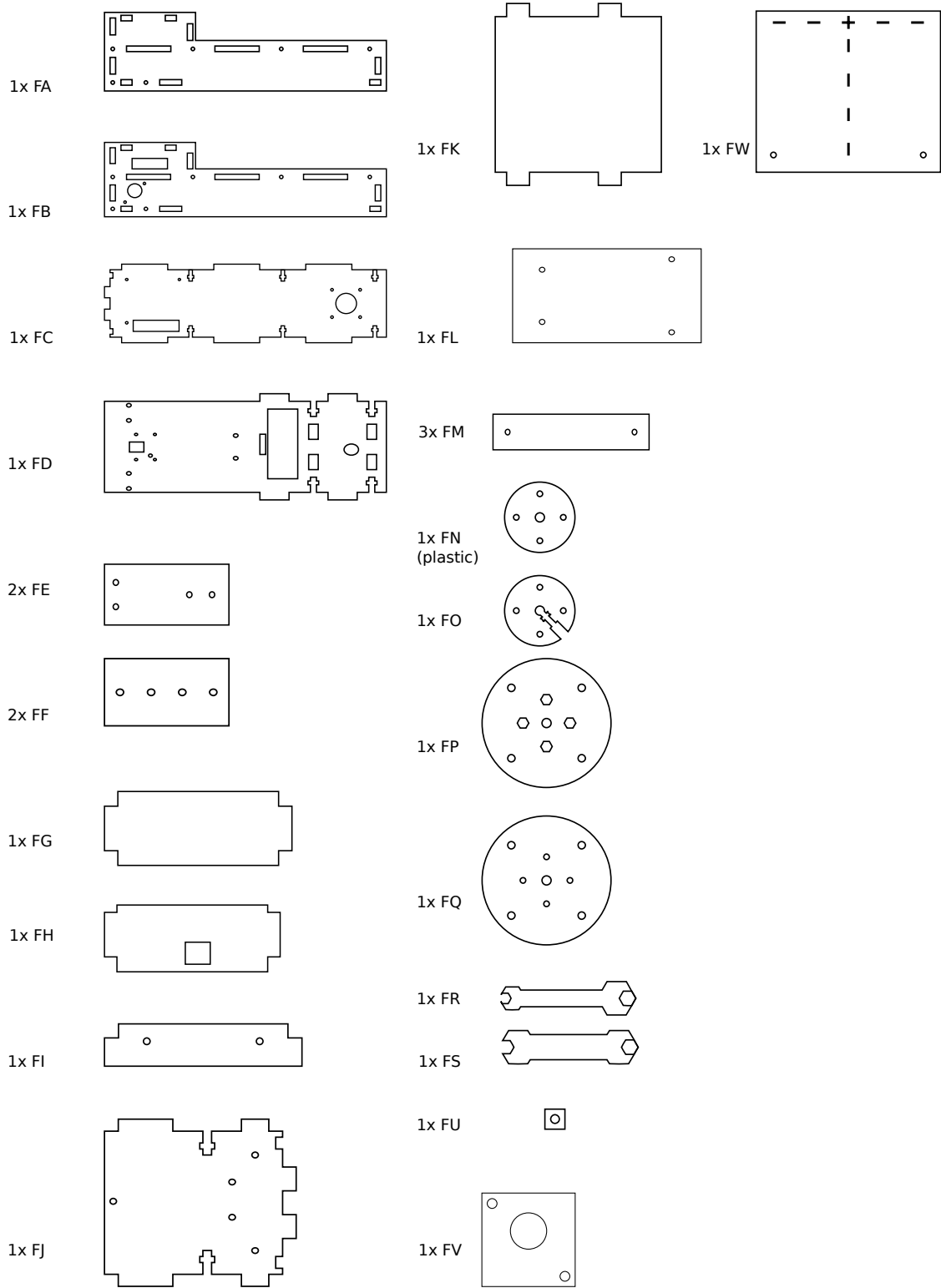


Pi Assembly



Camera Assembly



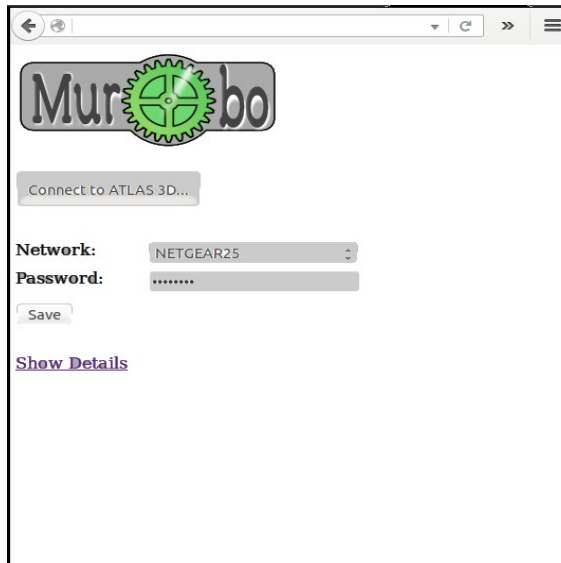


WiFi Setup and Connecting to the Scanner

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

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 corresponding lines.

```

ATLAS3D_cfg.txt (8.0 GB Volume /media/usb0) - gedit
ATLAS3D_cfg.txt x
SCANNER URL is http://192.168.0.122/

Detected the following 3 wireless networks:
HAIRULAND
KINGSLEY
BASEMENT

Enter the name and password of your WiFi network below and then insert USB drive into the ATLAS 3D scanner.
network=
password=

```

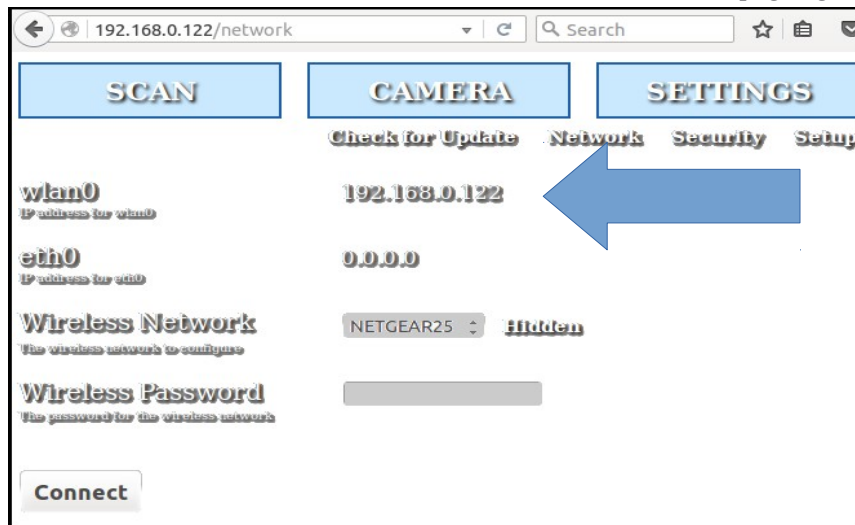
4. Save the file, insert it into the Raspberry Pi and wait for the lasers to turn on and off again.
5. Insert the USB flash drive back into your computer, double-click the ATLAS3D_Connect.html file and click *Connect to ATLAS 3D*.

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



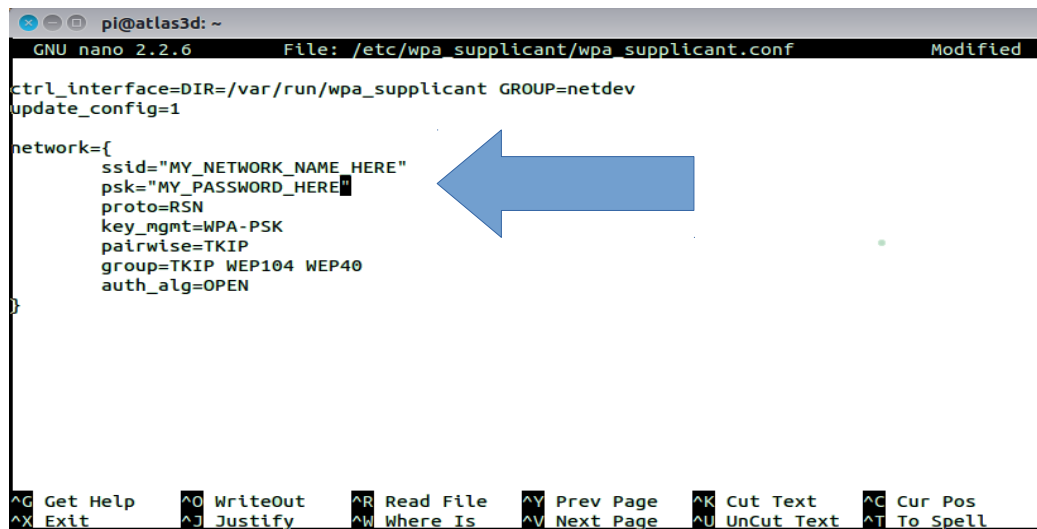
the page.

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  ^V Prev Page  ^K Cut Text   ^C Cur Pos
^X Exit      ^J Justify   ^W Where Is  ^N 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>