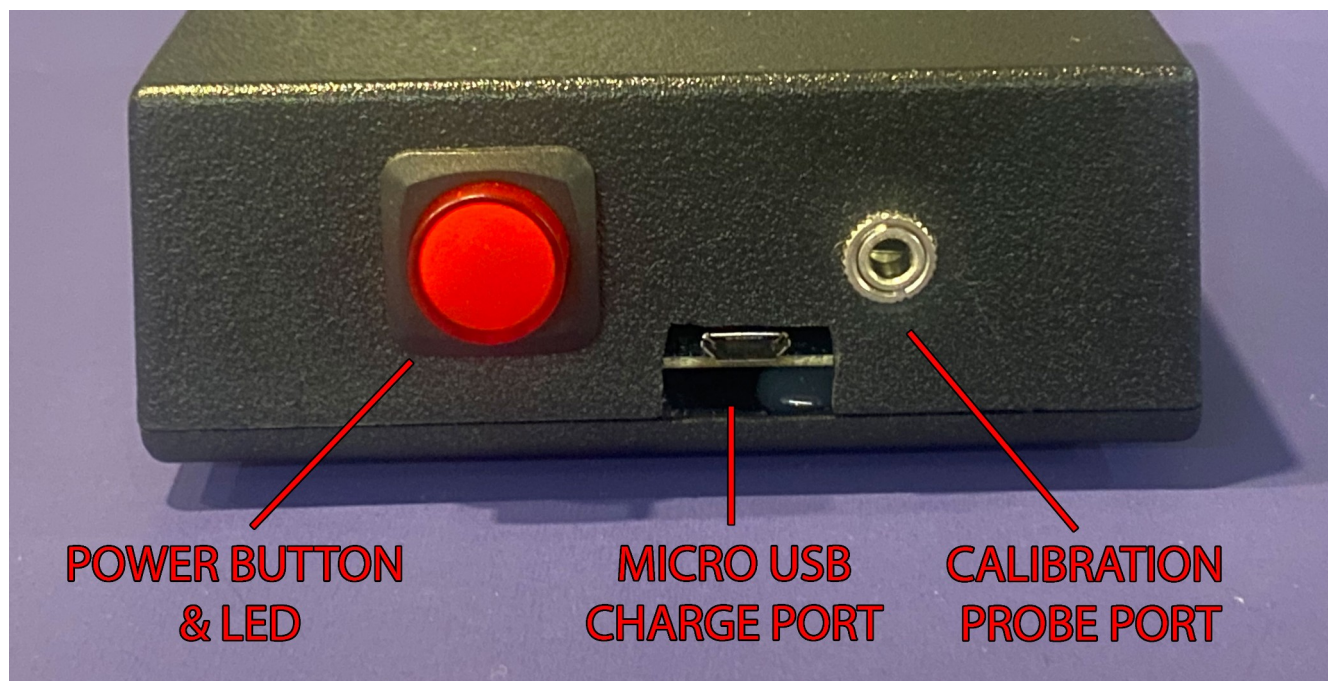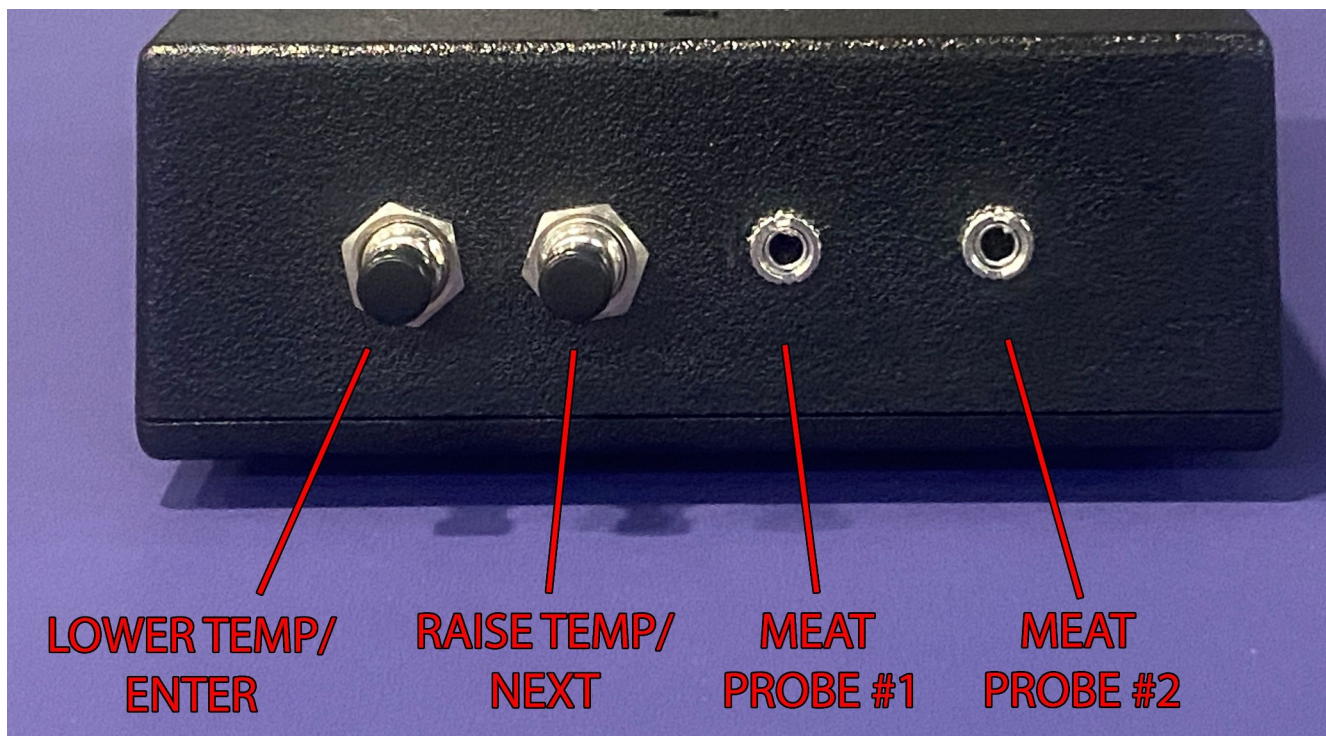# Mr Meat Pro

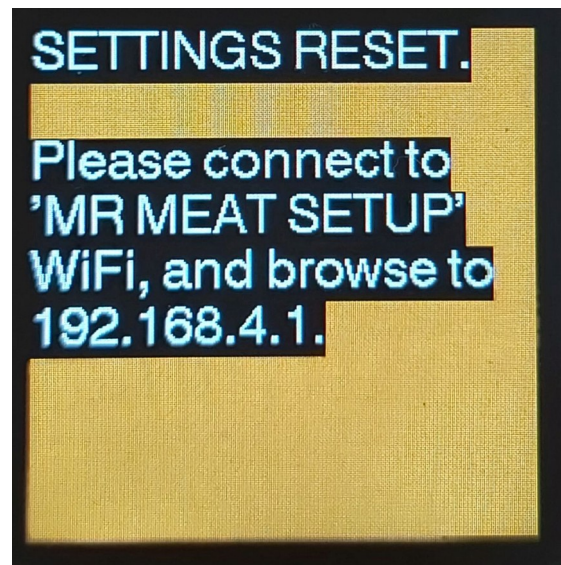*Advanced Home Meat Thermometer*
By Joevial Industries

Features:

- Powered by the ESP32, with 2 Tensilica LX6 cores, clocked at up to 240 MHz, 512 kilobytes SRAM, and 802.11bgn WiFi in a single microcontroller chip.

- Two 2.5mm inputs for the most commonly available home meat thermometer types

- Texas Instruments ADS1115 16-bit ADC, to measure the meat thermometer probes with maximum accuracy and precision

- Calibrate ANY off-the-shelf meat thermometer that fits in the socket, using the factory-calibrated DS18B20 digital calibration probe.

- Advanced Mr Meat ETA algorithm to estimate how long until your cook will reach your desired temperature, using AI-driven machine learning enhanced dynamic adaptive algorithms.

- Web interface to chart temperatures over time, view progress from your phone, does NOT require any apps or frustrating Bluetooth pairing!

- 6 watt-hour 3.7v rechargeable lithium ion battery with micro USB charging port, for an estimated 24+hrs battery life on a single charge.

- 1.3" 240x240 IPS Full Colour TFT display with backlight, and user customizable colour settings

- 0.4W, 8Ω speaker driven by LM386 amplifier, with variable volume, and several alarm songs to choose from

- Degrees Celsius, degrees Farenheit, and Kelvin modes

LOWER TEMP/
ENTER

RAISE TEMP/
NEXT

MEAT
PROBE #1

MEAT
PROBE #2

POWER BUTTON
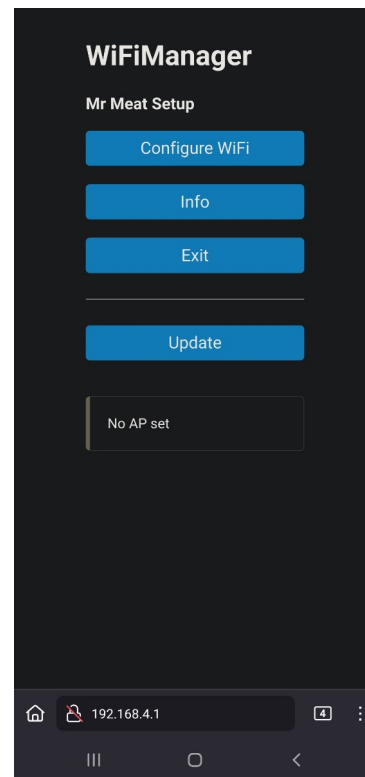& LED

MICRO USB
CHARGE PORT

CALIBRATION
PROBE PORT

(1) To begin with a brand new device, press and hold both front black buttons while turning on the power with the rear red button. This will **RESET ALL SETTINGS**, including WiFi, probe calibration, and configuration settings.
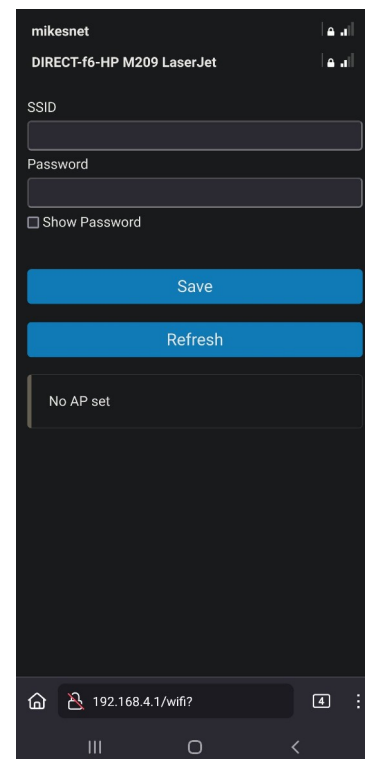
(2) When presented with this screen, follow the instructions and use your mobile phone or laptop to connect to "MR MEAT SETUP" WiFi access point, and then once connected, browse to "192.168.4.1" in your browser.

(3) When presented with this screen in your mobile phone's browser, tap the top "Configure WiFi" button.

(4) In the next screen, tap on the name of your desired WiFi at the top of the screen, and this will copy the name into the "SSID" field. Then enter your WiFi's password, and tap "Save".

(5) Wait a few seconds, and eventually you should be greeted with a green "CONNECTED!" screen, the device will reset, and you are now connected to your home WiFi! You will never have to follow these steps again unless you reset all settings to connect to a new WiFi network.
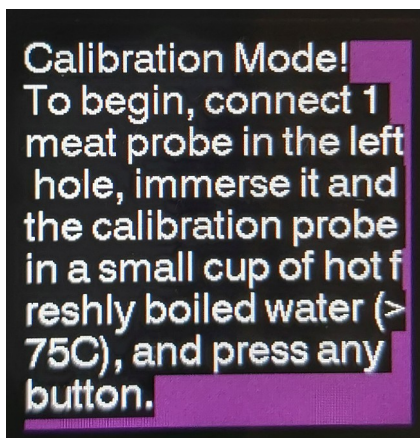
(6) The default calibration is set for a Weber 10kOhm probe, but you may wish to **recalibrate** to your probes.

　　To do so, turn the device off with the big red button, then insert the calibration probe into the jack next to it, then power the device back on with the calibration probe connected. This is the only way to enter calibration mode.
DO NOT insert or remove the calibration probe while the device is powered on, this will short out the device. You may however insert and remove meat thermometer probes on the front ports with the power on.

(7) Following the instructions on screen, connect one meat thermometer probe (the calibration will apply to both probe inputs), boil some water, pour about one inch into a cup or mug, and immerse your probes and the calibration probes into the mug.

Calibration Mode!
To begin, connect 1 meat probe in the left hole, immerse it and the calibration probe in a small cup of hot f reshly boiled water (> 75C), and press any button.

　　Then place the mug somewhere cool and wait for the water to cool down. The device
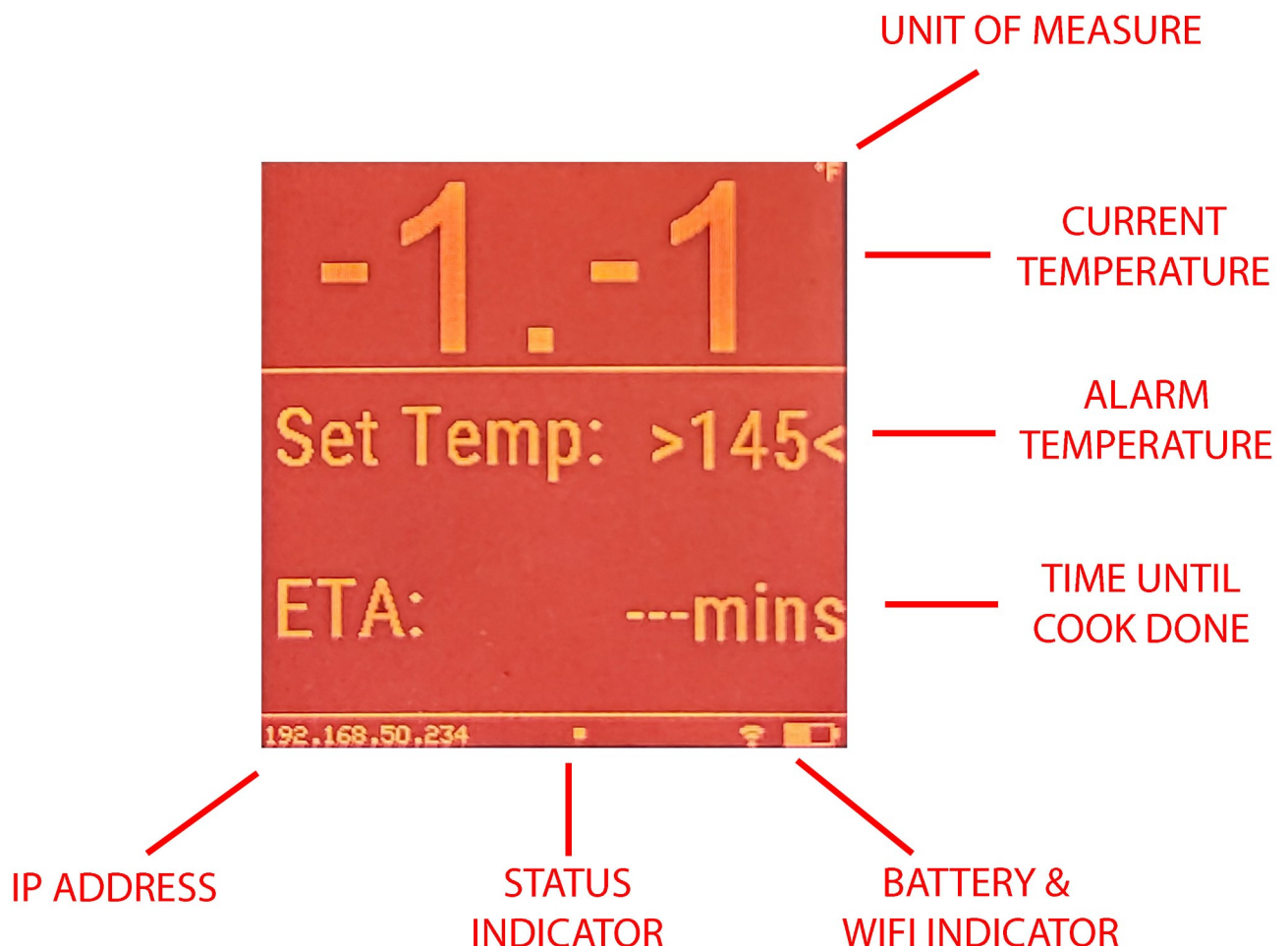
will measure the raw values of your probe at 75C, 50C, and 30C as indicated by the digital calibration probe.

You do not need to worry about placement in the mug or whether they are touching the sides, just as long as they are at least 1 inch deep, and the water is hotter than 75C.

(8) After the device has measured your probes at 75C, 50C and 30C according to the calibration probe, it will display a green <mark style="background-color:#00ff00">"CALIBRATION COMPLETE!"</mark> message. You may then power the device off with the big red power button, then power it on again, and you are ready to cook with your own probes!

MAIN SCREEN

UNIT OF MEASURE

CURRENT
TEMPERATURE

ALARM
TEMPERATURE

TIME UNTIL
COOK DONE

IP ADDRESS

STATUS
INDICATOR

BATTERY &
WIFI INDICATOR

(9) If you would like to change the alarm song, units of measure, volume, colours, or other settings, please press both buttons at the same time from the main screen to access the settings menu.

- The icons setting will allow you to see the raw WiFi dB strength and battery voltage.
- There are 4 LED modes for the power button – off, dim, bright, and the 4th setting makes the LED get brighter as the measured temperature approaches your set temperature.
- You may also test the alarm song with "**>Test Spk<**".
- You may change the foreground and background colour of the main display, but please note the device will not allow both to be the same colour and render the device unreadable.

- Settings are permanently saved to flash memory using the "**>SAVE<**" function, they will be retained after reboot. After pressing save, you will be returned to the main screen.
- Please note that issues with the DAC hardware may prevent your volume selection from being fully realized until after reboot.

10. To access the **web interface**, simply use any mobile device or PC to browse to the IP address indicated on the bottom left corner of the device's main display. Just type it in like it was a web page URL.
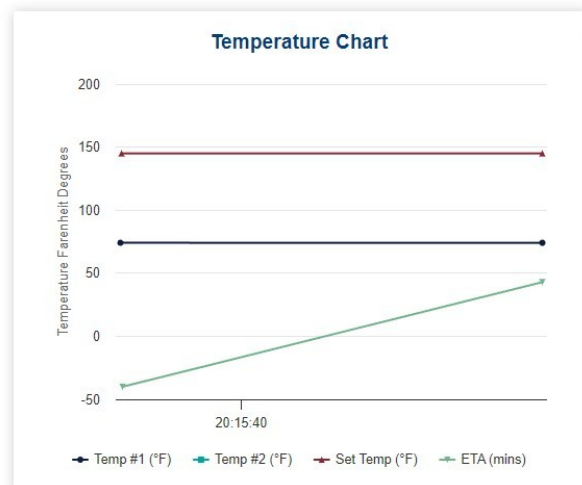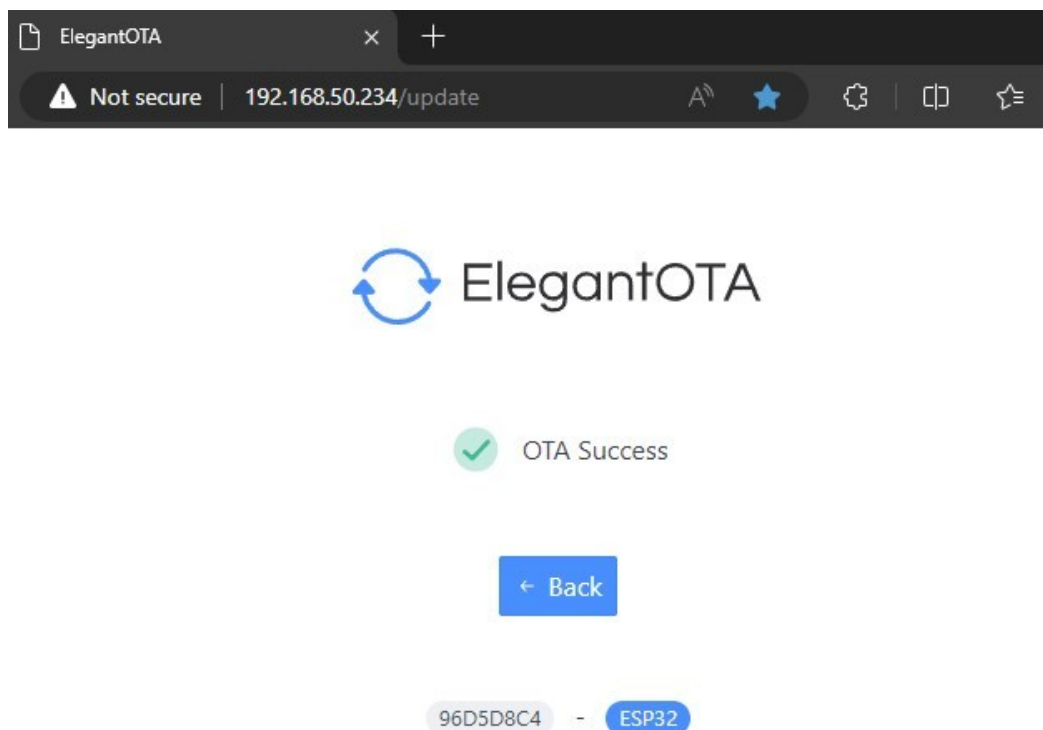
The device will update the chart every 10 seconds, and you can hide chart elements by clicking on their

labels on the bottom legend. The chart will not start updating until you browse to it, and it will not keep its history if you close your browser.
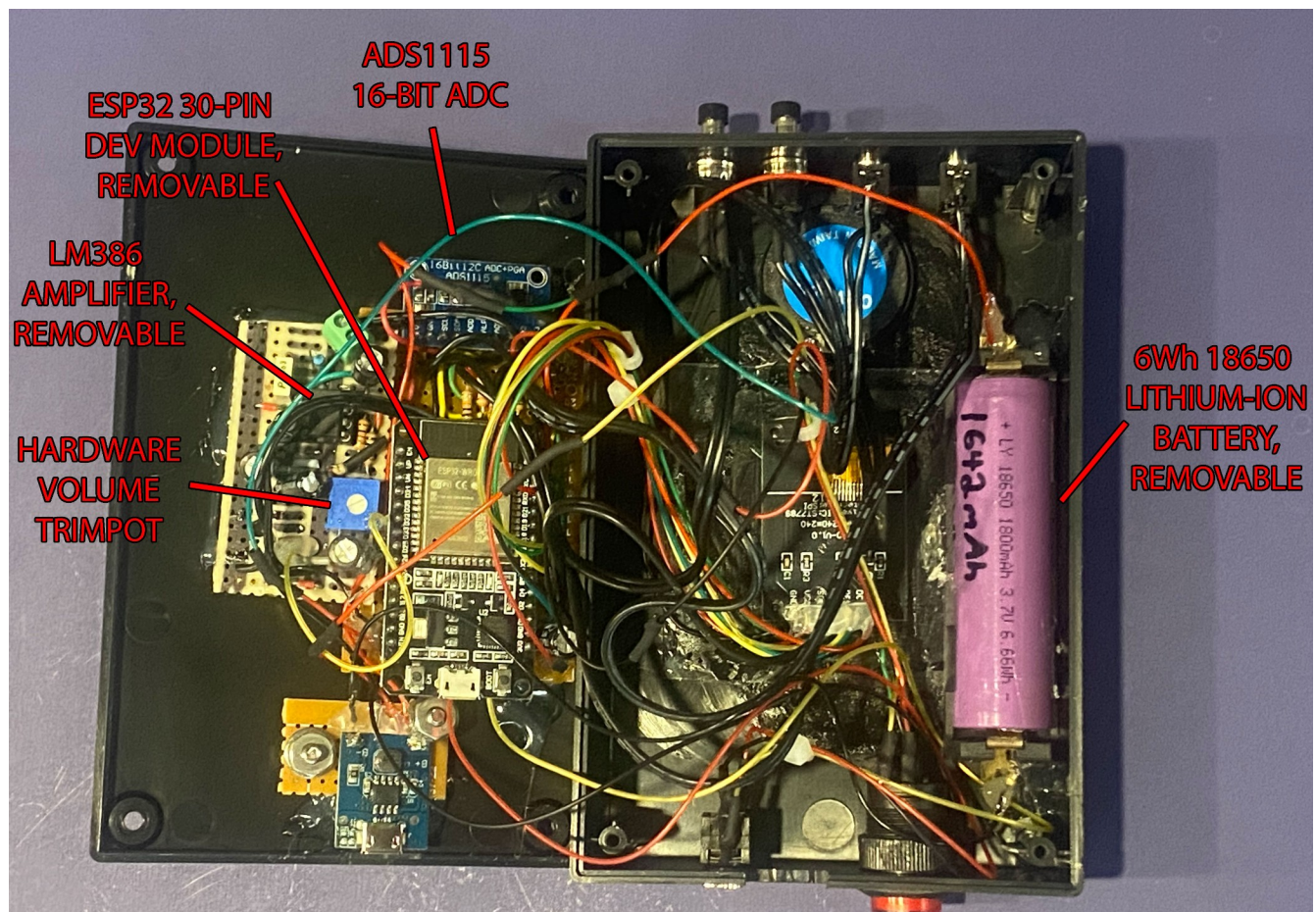
11. To install **software updates**, simply browse to the IP address again but with **/update** added at the end:

Select whether you are installing a firmware or filesystem (web interface) update as indicated by the software developer, then browse to the .bin file with the "choose file" button, and wait up to 1 minute as the

firmware is loaded to temporary memory and verified. If the update fails or power is interrupted, don't worry, the device will revert to its previous firmware.

INSIDE

Should you need to service your Mr Meat Pro, you are only 4 Phillips screws away from user-serviceable components and battery.

Thank you for taking the time to read through your Mr Meat Pro manual. Should you have any questions, concerns, or bug reports, please don't hesitate to write to:

Joseph Sullivan
Software Development
- *joecsul@gmail.com*