



Hubsan X4 107L Flight Controller Replacement

The Hubsan X4 107L is a rugged, entry level...

Written By: Evan Noronha



INTRODUCTION

The Hubsan X4 107L is a rugged, entry level quadcopter ideal for RC amateurs learning to fly. This is a complete teardown guide for the X4.

TOOLS:

Phillips #00 Screwdriver (1)

Flush Cutter (1)

Propeller Removal Tool (1)

Tweezers (1)

Soldering Iron (1)

Spudger (1)

Step 1 — Disconnect and Remove Battery



- Firmly grasp both sides of the battery connector and pull them apart.
- Grip the battery and slide it out of the quadcopter body.

 Do not pull on the wires. This could damage the battery or flight controller.

Step 2 — Remove Shock Absorbers



- Orient the quadcopter so the propellers are on the bottom.
- Remove the rubber shock absorbers from the motor mounts by hand.

Step 3 — Remove Propellers



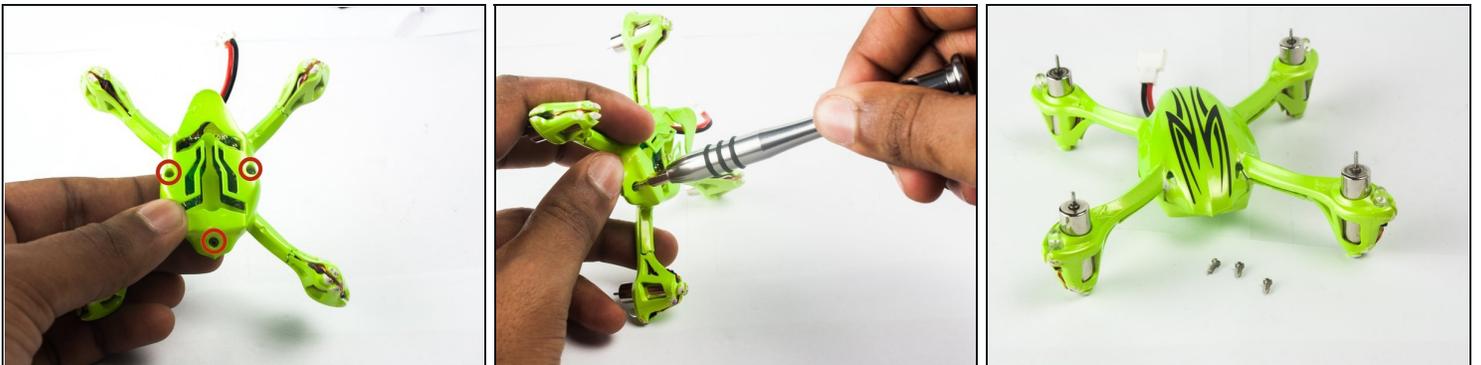
- Use the prop removal tool to pry the propellers off the motors.
- ⓘ Each propeller and motor arm is labeled either "A" or "B" corresponding to whether the motor spins clockwise or counterclockwise. With the quad oriented with the front facing towards you:
- "A" propellers are on the front left and back right motors.
 - "B" propellers are on the front right and back left motors.

Step 4 — Remove Aftermarket Fasteners



- Use the wire cutter to remove any customized or aftermarket modifications holding the body together.

Step 5 — Remove PH000 Screws



- Use a Phillips #000 screwdriver to remove the three screws securing the lower body to the frame.

Step 6 — Snap Lower Body Out of Place



- Carefully apply upward pressure on one of the motor arms while bending the body downwards to snap the lower body armpiece out of place.
 - Repeat this step for all four arms. The lower body will separate from the main frame after snapping the fourth arm out of place.
- ⓘ You may need to bend the arm quite a bit to snap it out. This is a durability feature that allows the X4 to "crumple" in a crash without breaking.

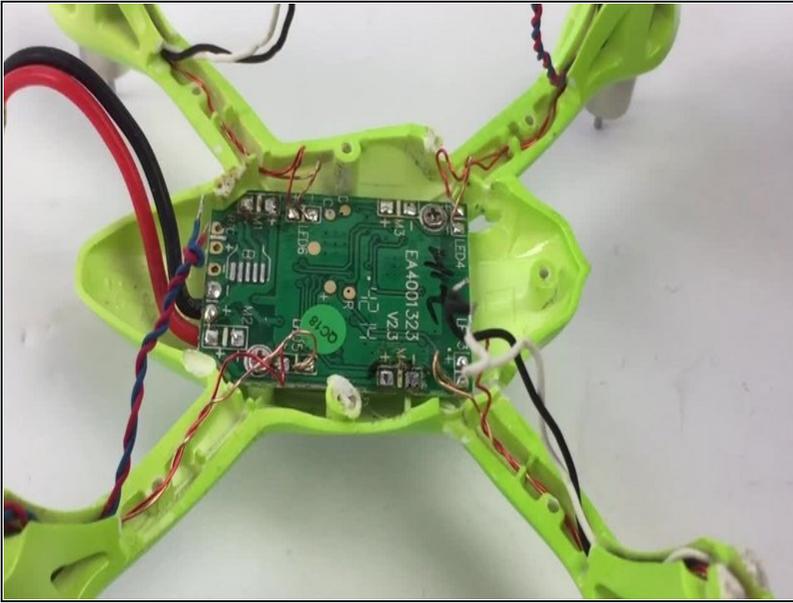
Step 7 — Desolder Motors from Flight Controller



- Use a soldering iron and solder wick to desolder the four motors from the control board.
 - If the connection holds even after removing the solder from the joint, gently pull up on the wire while applying heat to the joint until the wire separates from the PCB.
- ⓘ The motor wires are in either black-white or red-blue pairs.

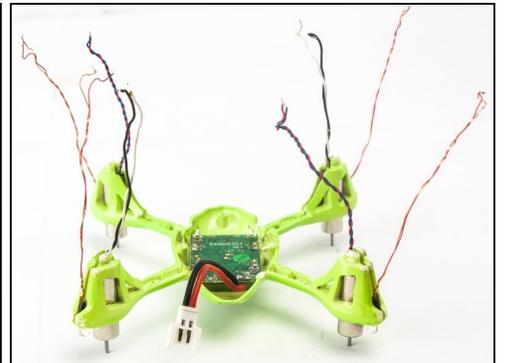
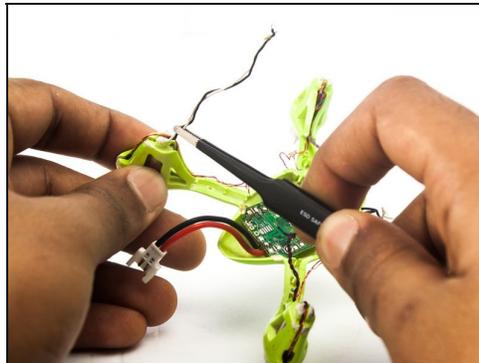
⚠ CAUTION: Overheating the PCB can damage the traces, making it difficult or impossible to reconnect the components later on. Do not apply too much heat to the board; these traces are especially delicate due to their small size.

Step 8 — Desolder LEDs from Flight Controller



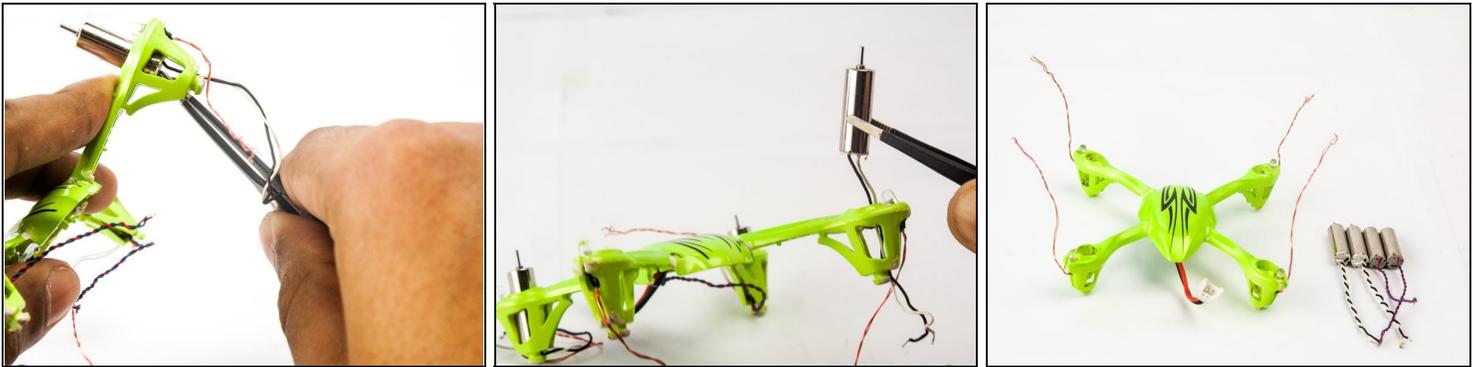
- Using a technique similar to desoldering the motor wires, disconnect the LEDs from the control board.
- ⓘ The LED connections use less solder than the motor joints, so solder wick is optional but not required for this step.
- ★ When reassembling the quadcopter, remember the LED's have red positive leads and bronze negative leads.

Step 9 — Unthread the Wires from the Frame



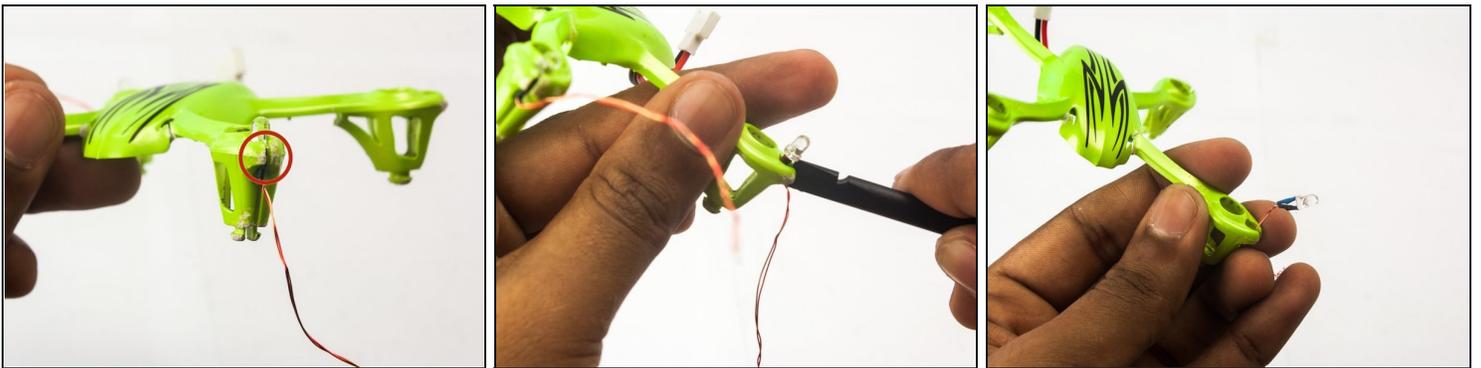
- Use the [tweezers](#) to unthread the motor and LED wires from the quadcopter arms.
- ⓘ After unthreading all eight bundles of wires, the LEDs and motors are ready to remove.

Step 10 — Remove Motors



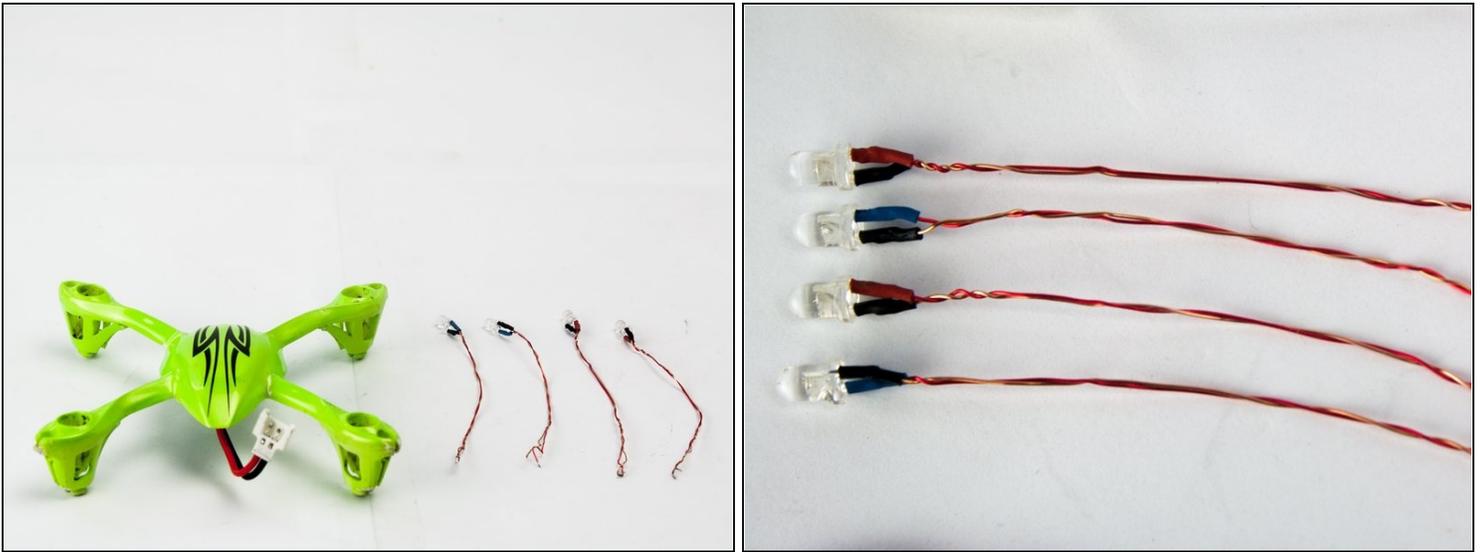
- Use the tweezers to push the motors out of their housings.
 - ⓘ Both the motor mounts and motors themselves have a small size variance. If it's difficult to push a motor out, ensure the wires are not caught on the frame and gently apply more force from the bottom until the motor begins to slide.
- Once the motor is mostly out of the motor mount, grip it from the top and pull it straight out.

Step 11 — Remove LEDs



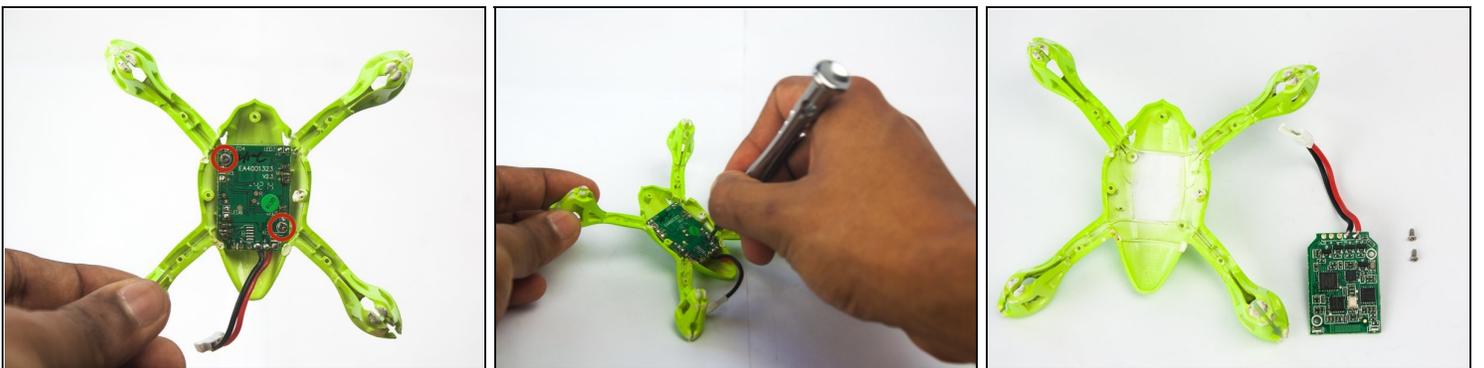
- Remove the LEDs using the spudger to widen their housing and nudge them up.
- To free an LED from its housing, insert the spudger into the top section of the gap in the plastic revealing the side of the LED.
- Simultaneously twist the spudger to widen the housing while pushing the LED up and out of the frame.

Step 12 — Check out the LEDs



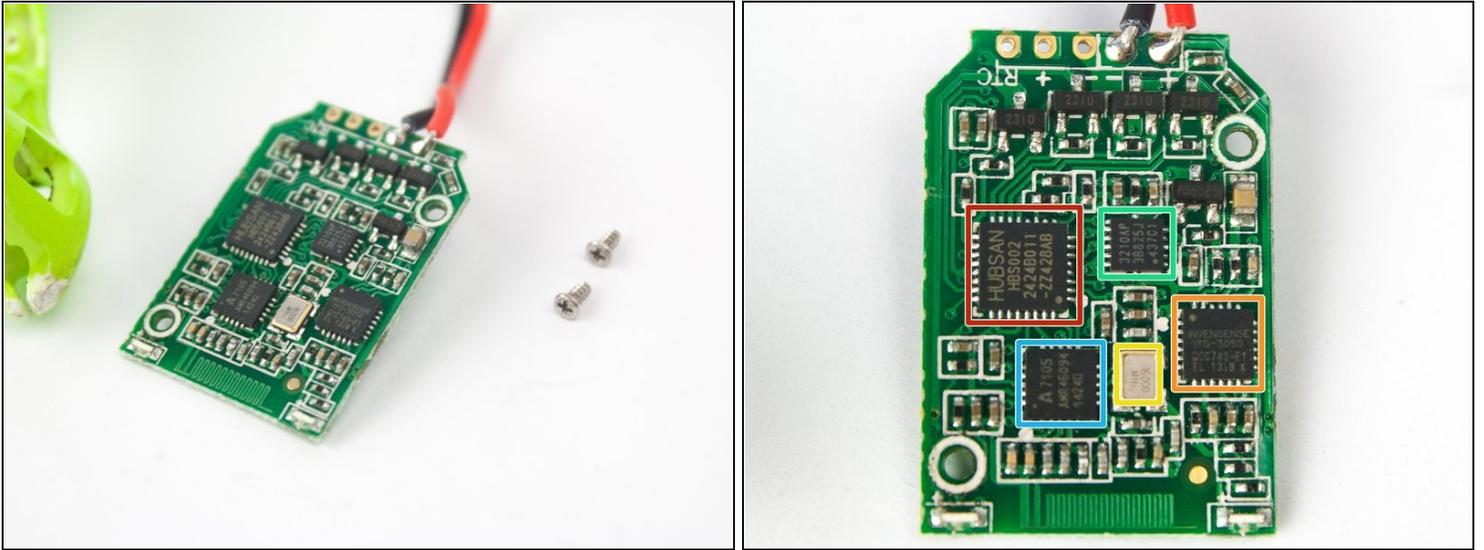
- ⓘ Unlike the motors which had colored wiring to differentiate between CW and CCW spin, both the blue and red LEDs have a red positive leads and a bronze negative lead. Upon closer inspection, it looks like the heat shrink on the positive lead matches the LED color.

Step 13 — Remove Flight Controller



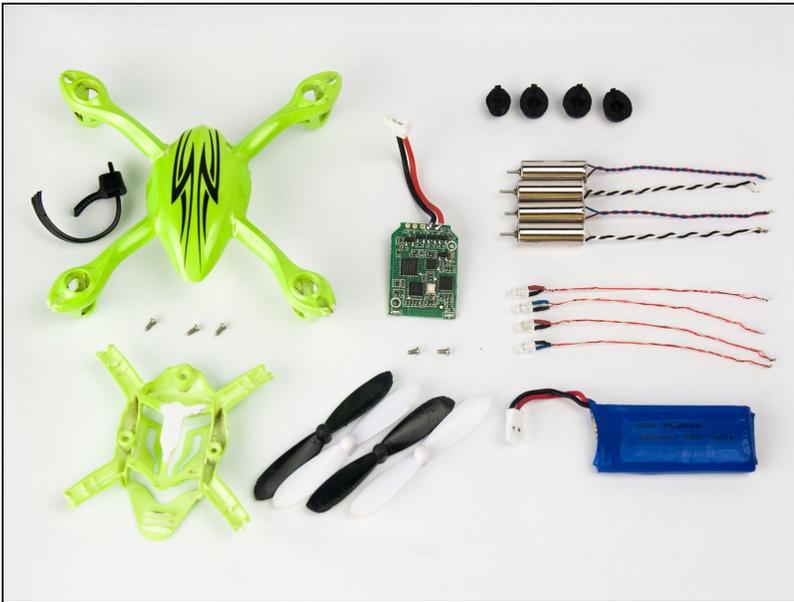
- Use the PH000 driver to remove the two screws securing the flight controller to the frame.
- ⓘ After removing both screws, the flight controller drops freely out of the frame .

Step 14 — Check out the Flight Controller



- The Hubsan X4's Flight Controller (aka Control Board) has a handful of neat components that keep the quadcopter in the air:
 - Hubsan HBS002 Processor
 - Invensense ITG-3050 Integrated Triple-Axis Gyroscope
 - 16.000 MHz Quartz Crystal Oscillator
 - 3210AP 3-Axis Accelerometer
 - A7105 2.4GHz Wireless Module

Step 15 — Parts Overview



- All done! To reassemble your X4, follow these steps in the reverse order.
- ⓘ This is a good opportunity to test all your LEDs and motors and switch out any faulty components.

To reassemble your device, follow these instructions in reverse order.