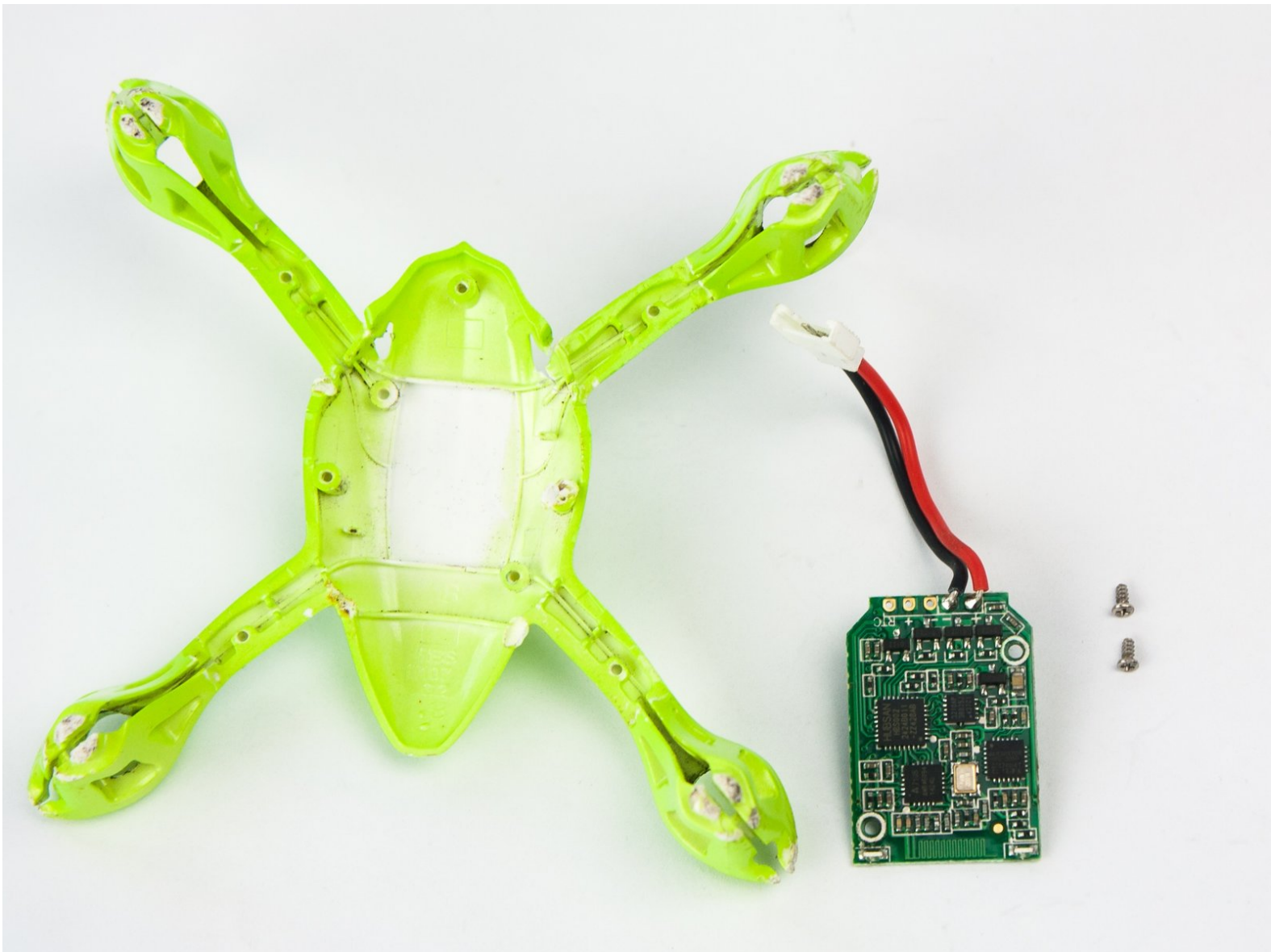




# Hubsan X4 107L Flight Controller Replacement

This is a step by step guide to completely disassembling an X4 107L micro quadcopter.

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## 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.

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### TOOLS:

- [Phillips #00 Screwdriver](#) (1)
  - [Flush Cutter](#) (1)
  - [Propeller Removal Tool](#) (1)
  - [Tweezers](#) (1)
  - [Soldering Iron](#) (1)
  - [Spudger](#) (1)
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## 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.
- i** 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.

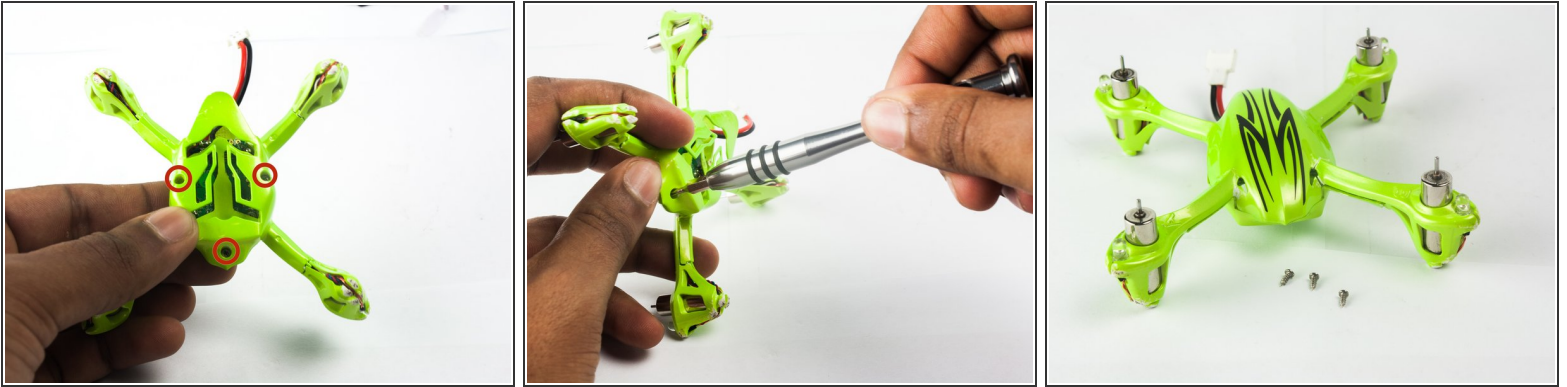
### Step 4 — Remove Aftermarket Fasteners



- 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



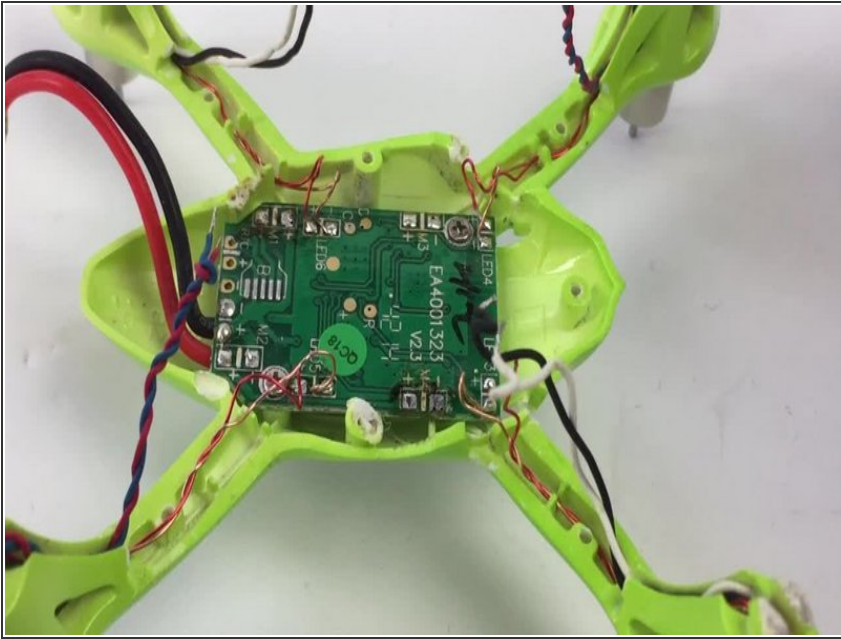
- Carefully apply upward pressure on one of the motor arms while bending the body downwards to snap the lower body armpiece out of place.
  - Repeat this step for all four arms. The lower body will separate from the main frame after snapping the fourth arm out of place.
- i** You may need to bend the 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



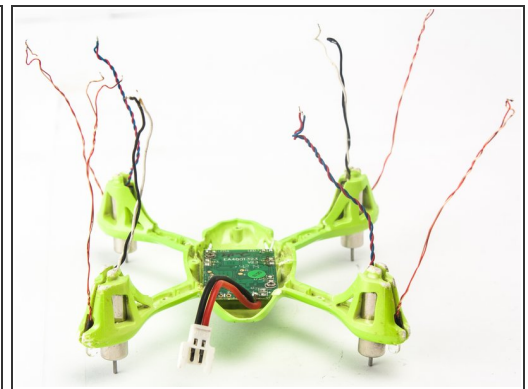
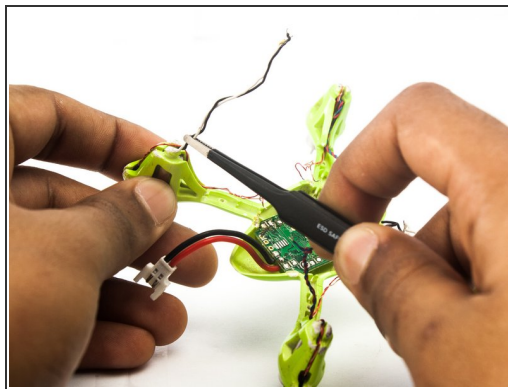
- Use a soldering iron and solder wick to desolder the four motors from the control board.
  - If the connection holds even after removing the solder from the joint, gently pull up on the wire while applying heat to the joint until the wire separates from the PCB.
  - ① The motor wires are in either 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.

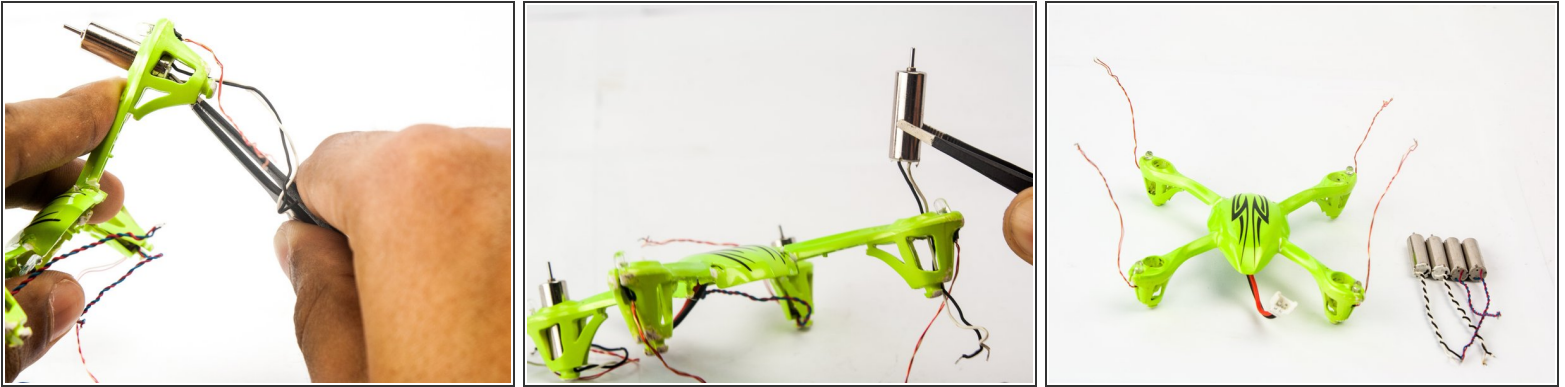
## Step 9 — Unthread the Wires from the Frame



- 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.

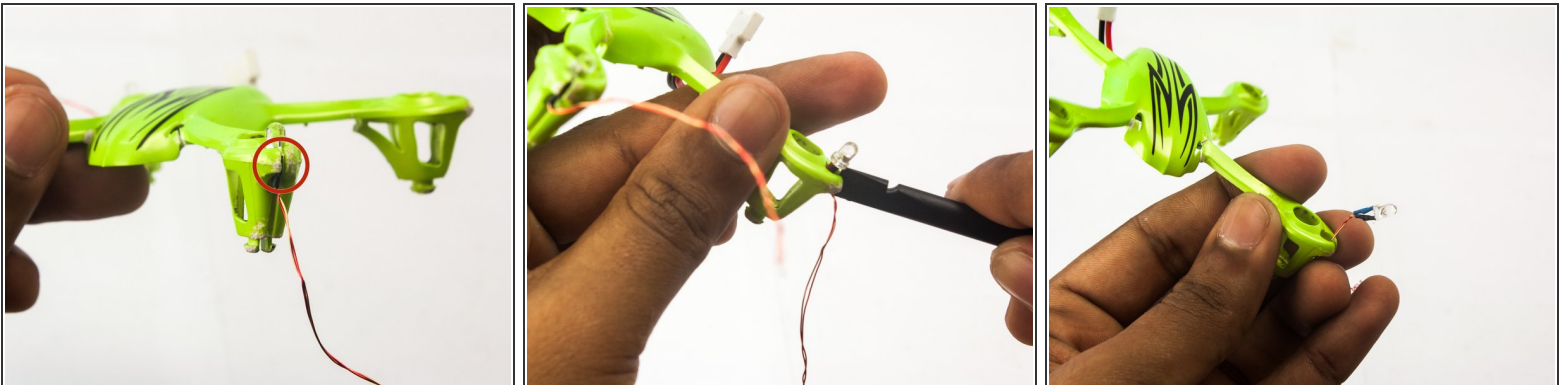


## Step 10 — Remove Motors



- 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.

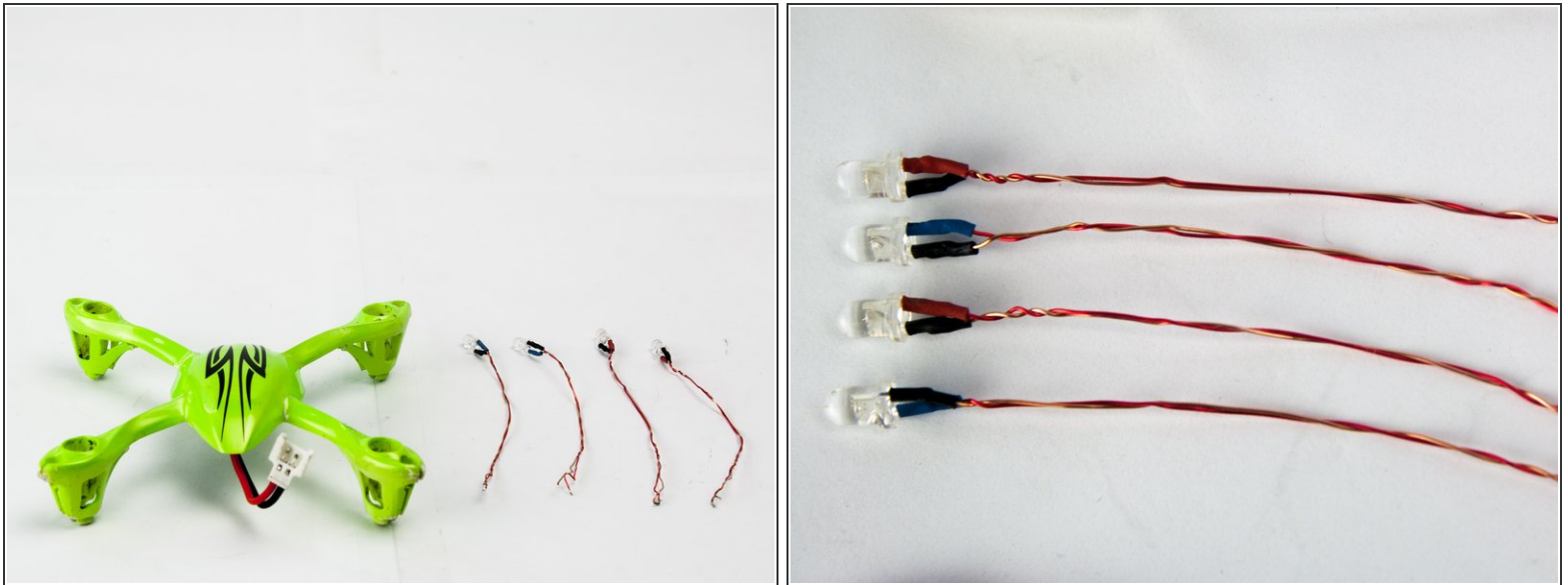
## Step 11 — Remove LEDs



- 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.

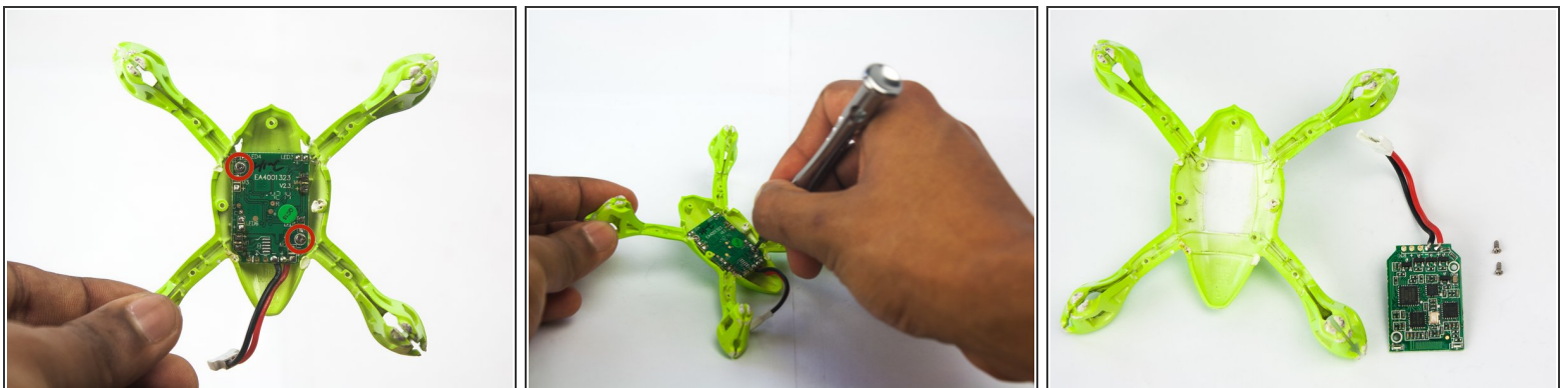


## Step 12 — Check out the LEDs



- i** 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.

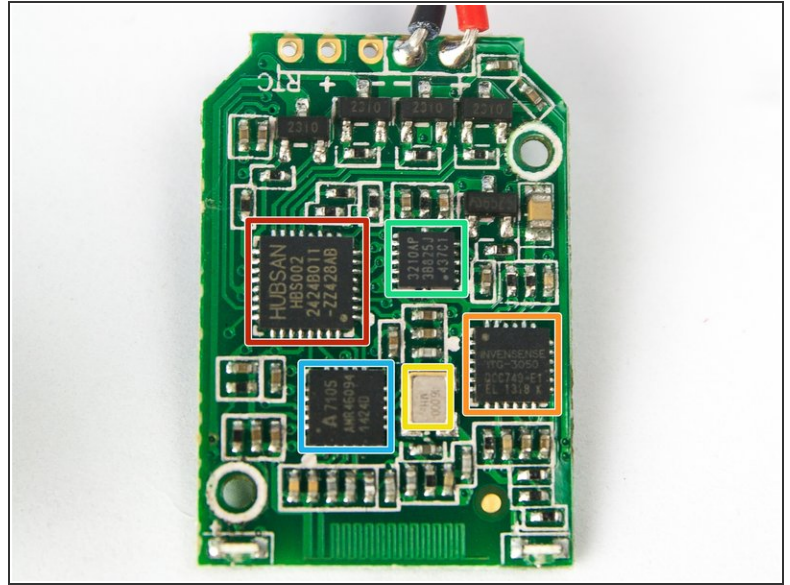
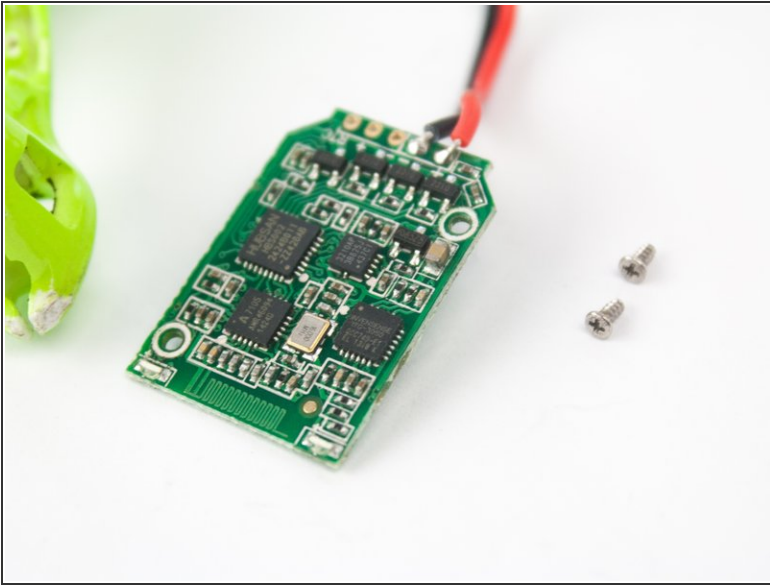
## Step 13 — Remove Flight Controller



- Use the PH000 driver to remove the two screws securing the flight controller to the frame.

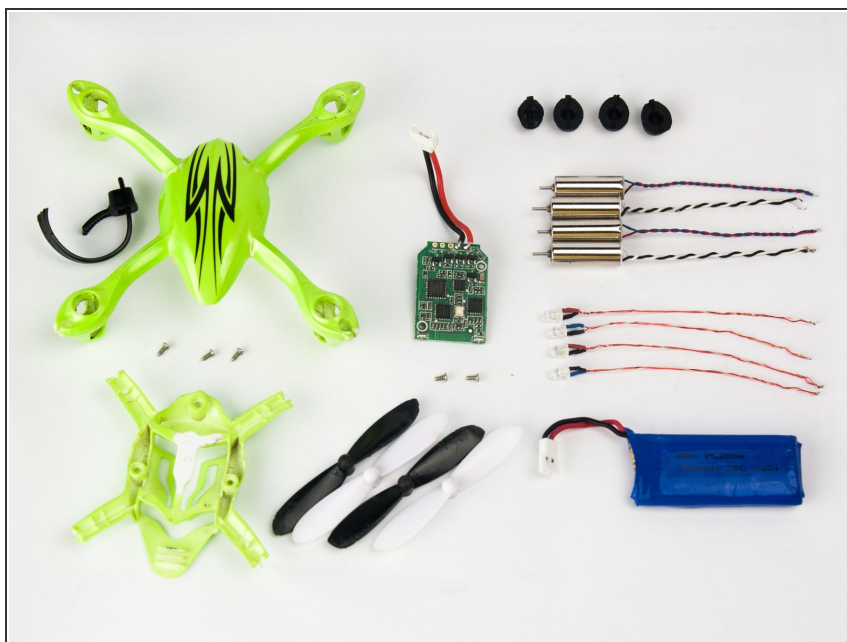
- i** After removing both screws, the flight controller drops freely out of the frame .

## 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.