

QDrone 2 – Hardware Test

Motors

What to expect in the Motor Tests?

This document will guide you through running the tests to confirm props are set up properly and that all motors are spinning correctly and in the right direction.

QDrone 2 Props

QDrone 2 has two different types of props since they need to turn in different directions. With the main camera looking away from you as shown in figure 1, the top right and bottom left should say 7x4.5 on one of the props (red arrows in figure 1). Those motors should be turning anti clockwise. The top left and bottom right motors should say 7x4.5R (blue arrows in figure 2) and should turn clockwise.

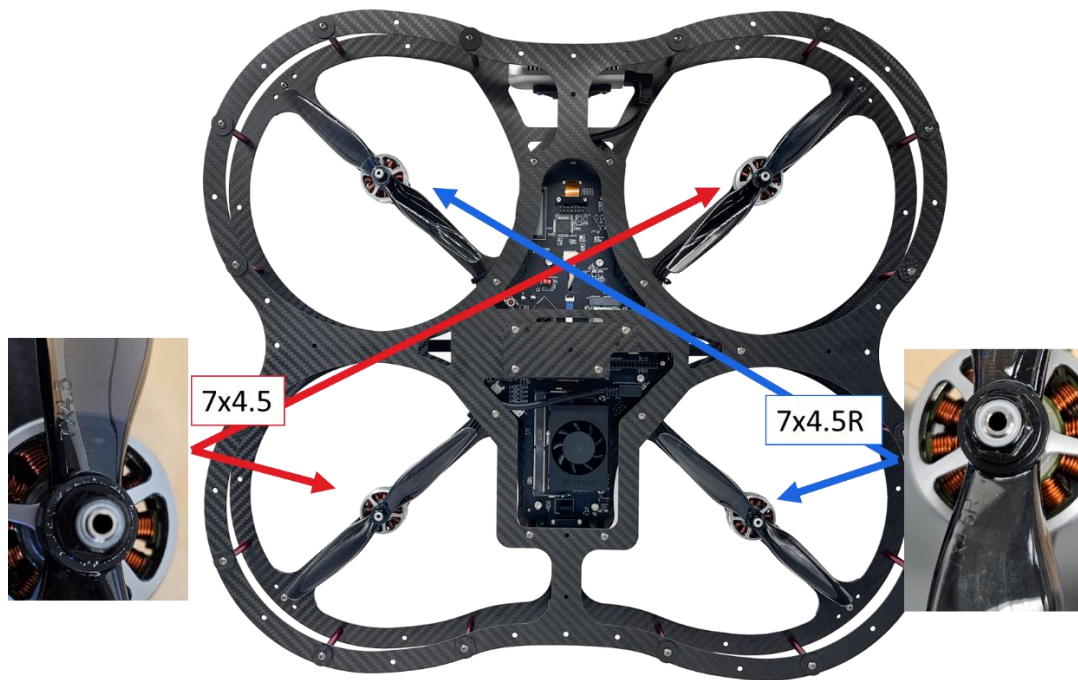


Figure 1. Prop position in QDrone 2

Motor Test – MATLAB/Simulink

Open the QD2_motors_2021a.slx file from the same folder containing this file.

Quanser Autonomous Vehicles Research Studio
QDrone 2 Motor Testing

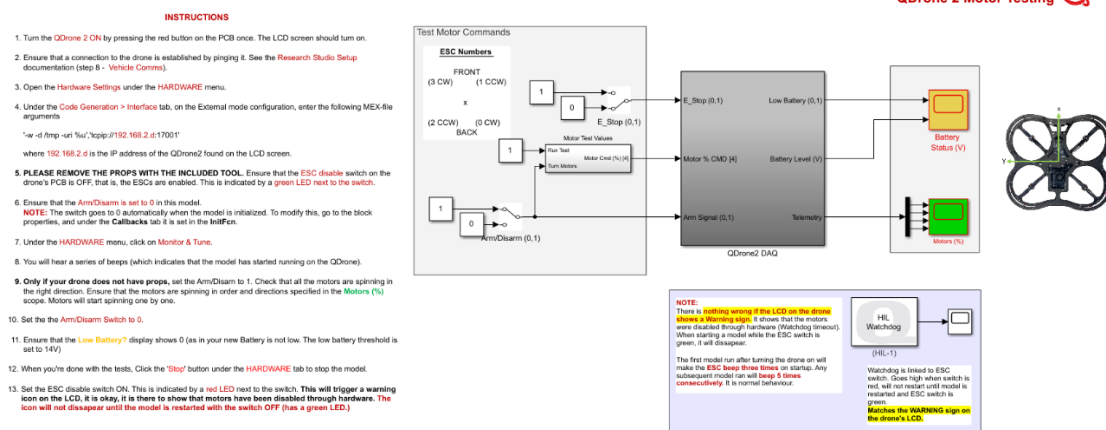


Figure 2. Motors Measurement model

Run this test either by placing the drone inside its flight/safety area or remove the props for this test. Follow the instructions on the left of the the Simulink model (figure 2). Motors should start spinning one by a clockwise order to the correct orientation as pictured in the model (two motors should turn clockwise and two should turn counterclockwise). Look at the output of the Motors (%) scope. The output should look like figure 3. It shows the command and the motor measurement using the ESC. It is expected that there is a small bump at the beginning of each of the motor movements and that there is a small vertical offset when the motors are not moving.

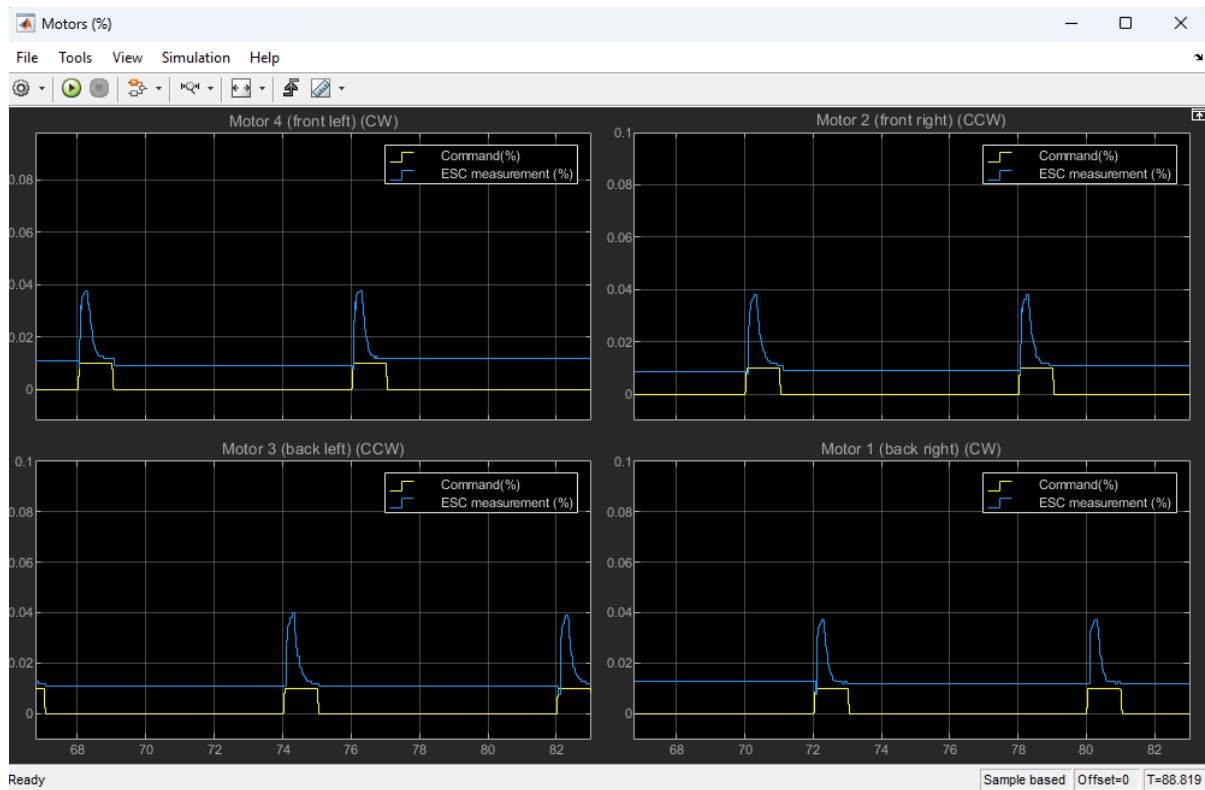


Figure 3. Motor scope