ISDC testing log

* If some disconnect option is there in QGC, press it and discard changes. Then wait for a couple of seconds for the Pixhawk to show up, otherwise the changes made to parameters and all won’t reflect on the Pixhawk.
* If it is not arming, check whether kill is engaged or high throttle is there.
* There is a parameter COM\_POWER\_COUNT and if it is set to 1, the drone won’t arm when a laptop is not connected. So set it to 0.
* If the big light on the Pixhawk is red, it won’t arm. So, find a way to make it blue.
* To set the motor numbers to be the same as seen by QGC, go to the actuators section on the left menu -> PWM MAIN -> Identify & Assign Motors -> a motor will rotate, identify the correct motor number and click the corresponding motor on the model QGC drone. Also check the direction if needed.
* When we gave the same minimum throttle to all motors in QGC, some motors did not rotate. And the speeds were not same (apparently) for the same throttle. We did some switching between ESCs, channels and motors, and narrowed down the issue to the ESC (debugging video on ISDC group). But, since an ESC was brand new, we concluded that it couldn’t have gone bad and are assuming that it is a calibration issue.

# When drone flew

## ESC calibration

Nitin disabled some PPM on the RC controller to make the calibration work. We did it ESC by ESC, connecting the wires to channel 3 (I think white was on top, but if you connect it ulta, ESC starts heating up, so you will know that it is wrong).

*ESCs cannot die just like that apparently*, you need to oppose the motor for it to die.

Just like the video, we powered battery when throttle was up, 2 beeps came. Then we put throttle down and 3 beeps followed by a long beep came. Be patient for the beeps as they may take a while to come.

The RC receiver was still connected to the Pixhawk when we calibrated (Pixhawk connection need not be removed). Also the Pixhawk had no buzzer, the ESC makes the sound from a buzzer in the motors actually. Also when the battery was plugged in when throttle was low, a continuous beeping was there, we used that to check if ESC was alive (we didn’t know ESCs were that resilient), but that came only after a good while (like 20 secs).

For 1 motor, the 1st 2 beeps came, but the last one didn’t come when we put throttle down. So we just waited and redid it, then it came.

## Ardupilot instead of PX4

We uploaded ardupilot on mission planner (but QGC is better I feel) and then moved to QGC after a lot of failed efforts to calibrate ESCs on mission planner.

Then a lot of pre-arming things stopped us from arming, so we disabled all pre-arming parameters (don’t really remember what exactly we did, but I think we un-ticked all BRD\_SAFETYOPTION parameters and all ARMING\_CHECK parameters).

The motors section doesn’t work as well/ consistently as PX4’s actuators, because even when we gave all motors, 2 of the motors didn’t spin, but when we gave from RC, all spun equally well (and Kavin gave pitch and roll, which worked nicely only).

Once we gave using both QGC and RC, but the motors were not spinning even though it was armed and QGC displayed flying (lol). They just started working when we unplugged everything and plugged it back.

Also there was an error that RC controller didn’t get detected, but that got resolved when Nitin turned on the PPM mode (he had turned it off for calibration to give PWM).

## Actual flying

Also I think that you have to run it in ‘stabilize’ mode instead of ‘manual’ of PX4.

I realized that the ‘assign motor numbers’ in PX4 is bull, because before flying, if we just make sure that 2 are clockwise and 2 are anti, we are sorted.

The drone actually took off and we screamed, everyone came and enjoyed, but Anurag and Darshan said only flying drone is L.

It was shaking a bit, but PID balanced it out decently well. Raaghava could control it (pitch and yaw and all), but at the end when he landed, he said he released throttle too fast, so it toppled (he had landed successfully a couple of times before that).

# Using RC to change flight modes, and throttle sensitivity

## Throttle sensitivity

Raahgava said there was some delay in the throttle; what actually happened was – even if he gave half throttle, the drone did not lift off, even though it happened the previous day it seems. TLR fixed it by finding tuning -> minimum throttle slider in the vehicle setup.

## RC couldn’t change flight modes

Initially, it wasn’t working because channel 7 was mapped to 2 things in the RADIO menu.

Later, even if he was changing the flight mode, it wasn’t reflecting in the home screen of QGC, and some error saying RC5\_ parameter was conflicting, so we set it to “Do nothing” and it worked.

Later, altitude hold and autonomous land worked.

## Wasn’t working when cable disconnected

In safety, we had enabled an option called Ground Station Failsafe in Safety which caused this problem.