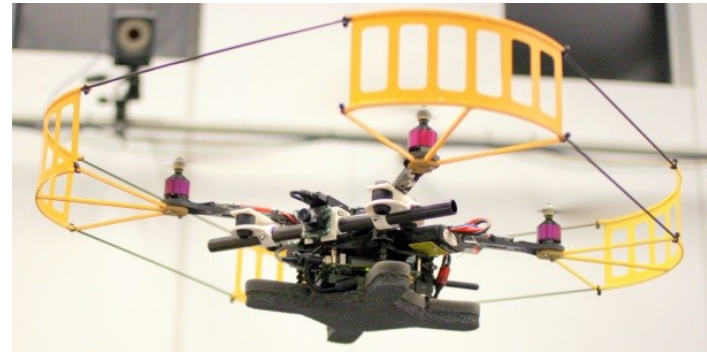


Introduction to Aerial Robotics Lab Tutorial



Linux Basis

Be familiar with command line and some common commands and tools

Be familiar with the package management system and the file management system on Linux

Install ROS and configure the environment on your laptop(go through with the tutorial on <http://www.ros.org>)

ROS Basis

The Robot Operating System (ROS) is a set of software libraries and tools that help you build robot applications. From drivers to state-of-the-art algorithms, and with powerful developer tools, ROS has what you need for your next robotics project. And it's all open source

ROS is a communication framework with many useful tools.

About the 1st lab session

Each group will be equipped with a Odroid-XU4 computer, which can be mounted on the quadrotor. The computer is running a linux OS and has all necessary packages such as ROS or Eigen.

The XU4 is connected with the router in the lab through an Ethernet cable. You can use “ssh XXX(host name)@xxx.xxx.xxx.xxx(host IP)” to remote login on XU4 form your laptop.

About the 1st lab session

We will provide you all the necessary code except the controller. You should write a controller which can be the same as the one you used in your simulator, but in C++.

Do not just let it go after you finished your controller. We will teach you how to test and debug with your code before you start a flight.

One group has only one quadrotor, be careful. And if it crash, you should try to repair it.

Project1 Phase 3:

1. Assemble quadrotor

- Flying under manual control

2. Hovering automatically

- Writing your controller

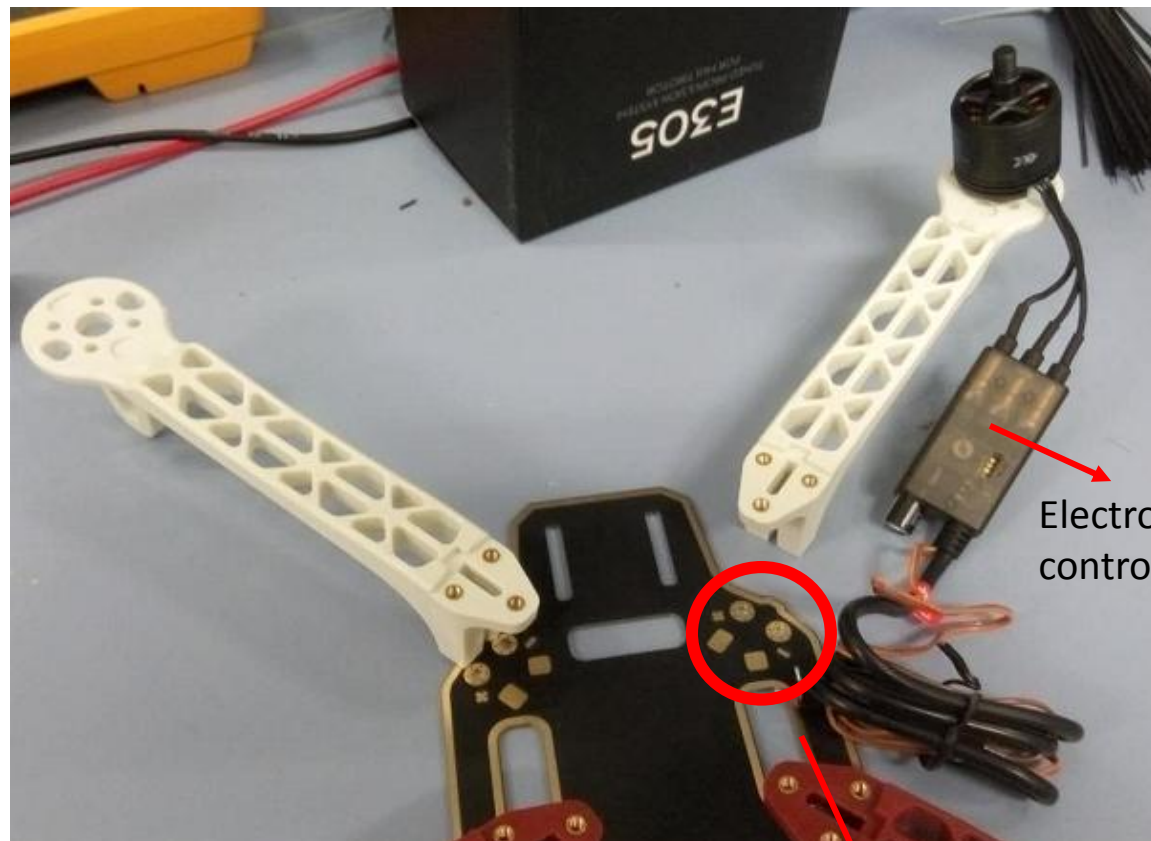
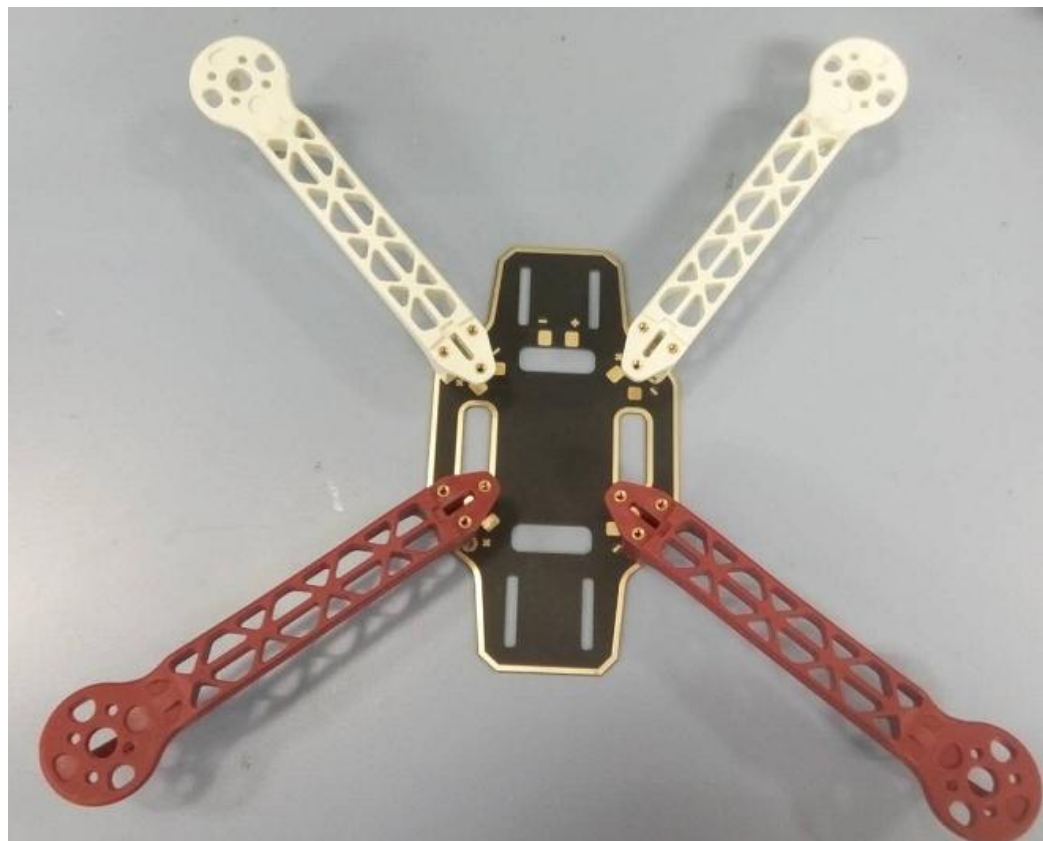
3. Following trajectory automatically

- Writing your trajectory

Components:

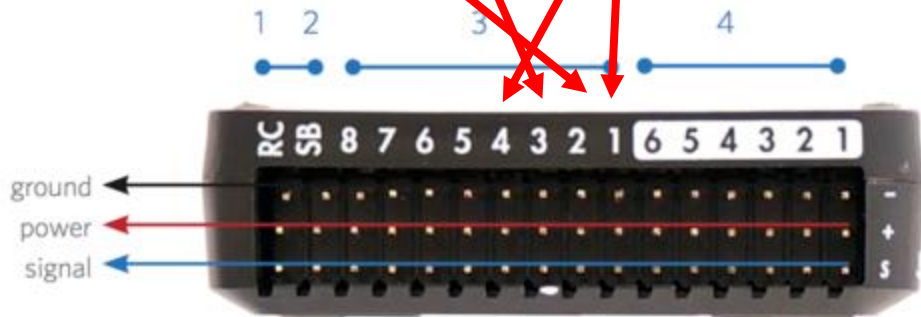
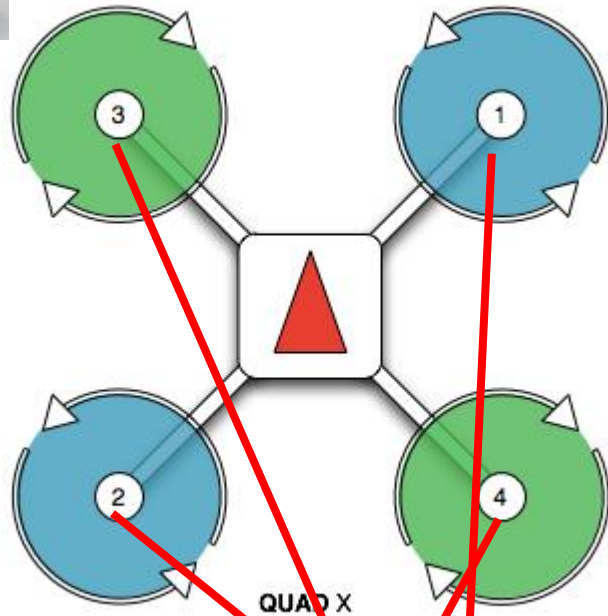
- 4 legs
- 4 motors
- 4 propellers
- 4 electric speed controller
- flight controller (pixhawk)
- receiver + encoder
- battery





Electronic speed
controller

Solder place



- 1 Radio control receiver input
- 2 S.Bus output
- 3 Main outputs
- 4 Auxiliary outputs



buzzer



Safety switch



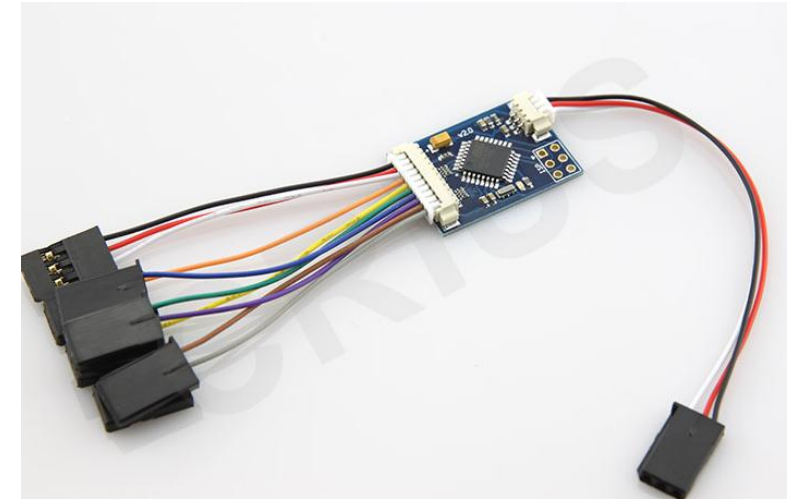
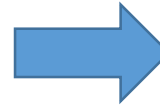
Power cable



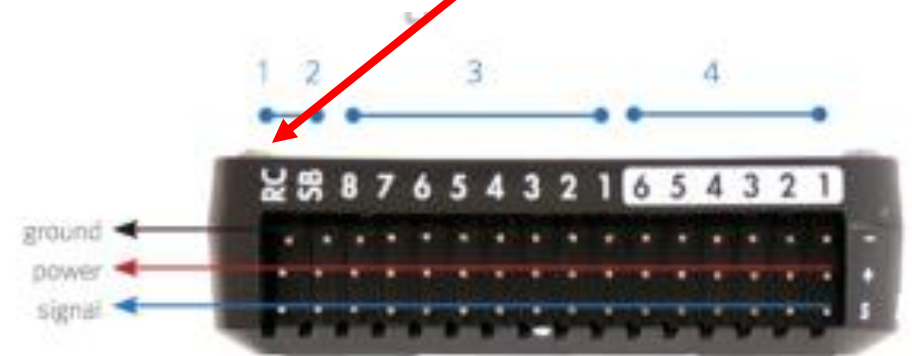
Remote controller



receiver



PPM encoder



Remote controller user manual

<http://www.moses-modellbau.de/mediafiles/Anleitungen/DEVO/Manual%20of%20DEVO-7.pdf>

