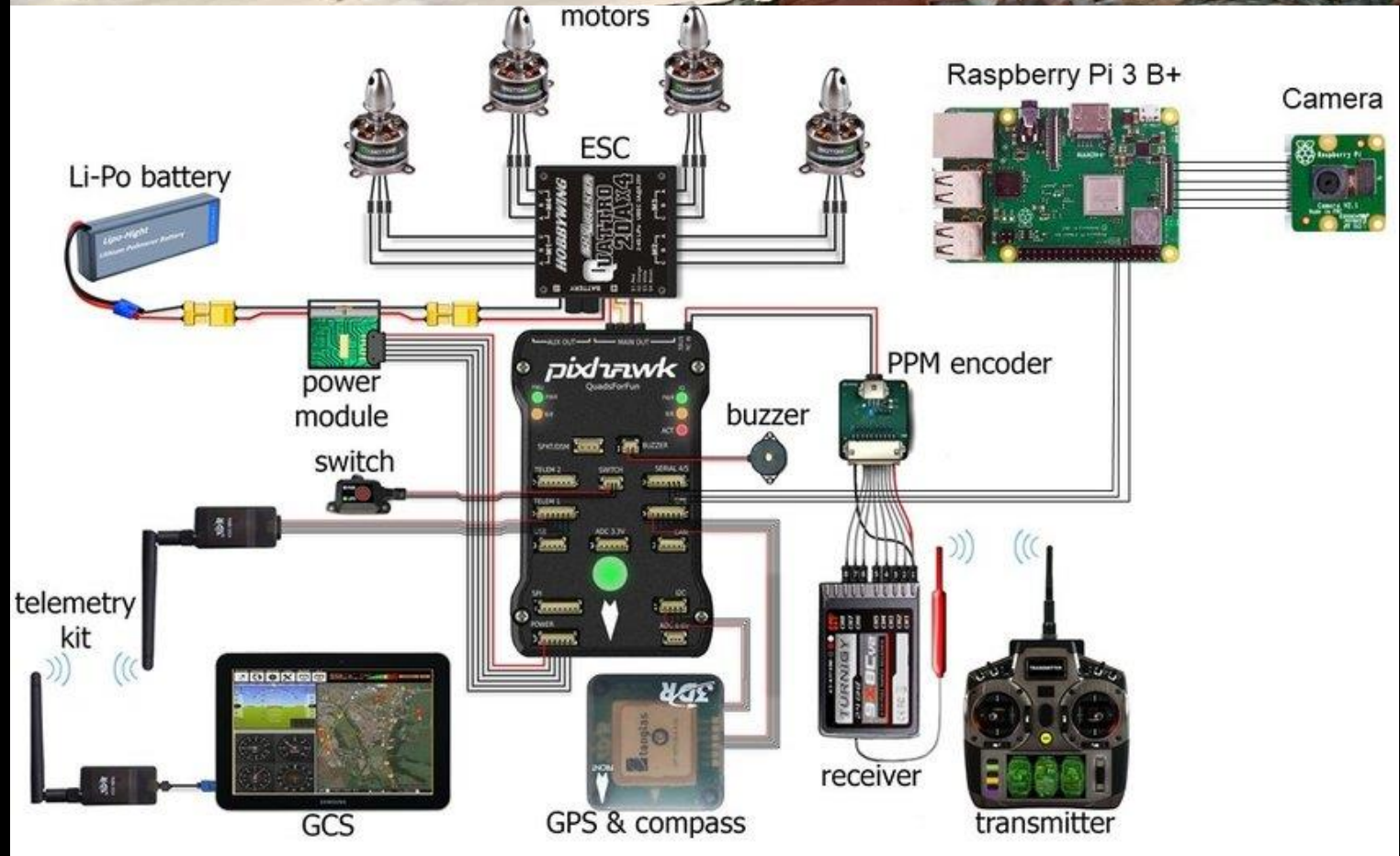
Hardware Intro & Explanation

Lab 00
T. Kogias,
K. Bailas,
N. Sapountzis

So, what are surface drones made of?

Anatomy of a surface drone

- Hull
- Controller
- Propulsion
- Sensors
- Telecommunications
- Power Supply



A bit more detail about our kit

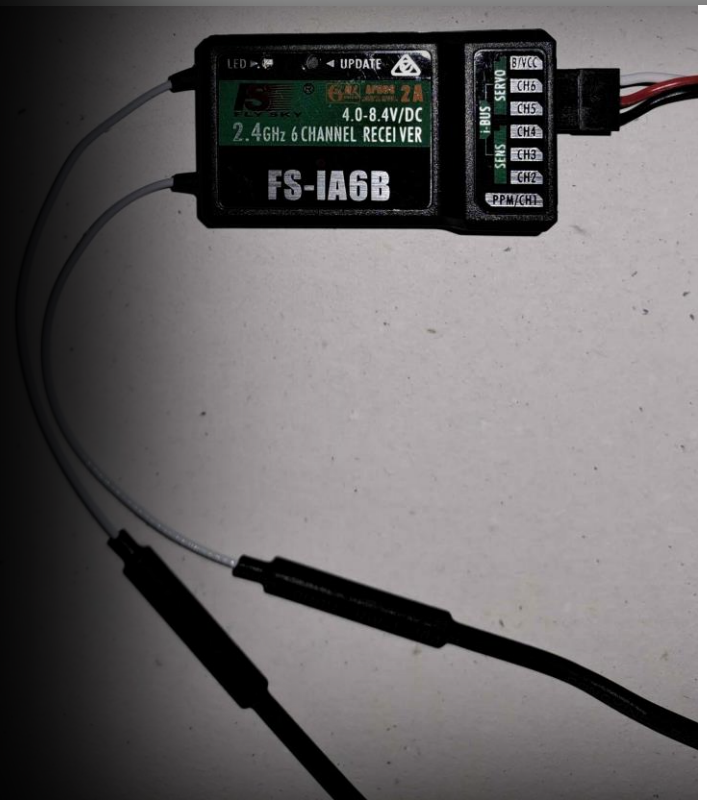
Power supply:
- 1x battery (8000 mAh 100C 3S1P or 11000mAh)

Propulsion:
- 2x brushless motors (1 clockwise, 1 counter-clockwise)
- 2x ESCs (Electronic Speed Controller)

Sensors/Avionics:
- 1x Pixhawk 2.4.8 (pilot)
- 1x GPS receiver/compass

Comms:
- 1x Radio Telemetry
- 1x RC receiver

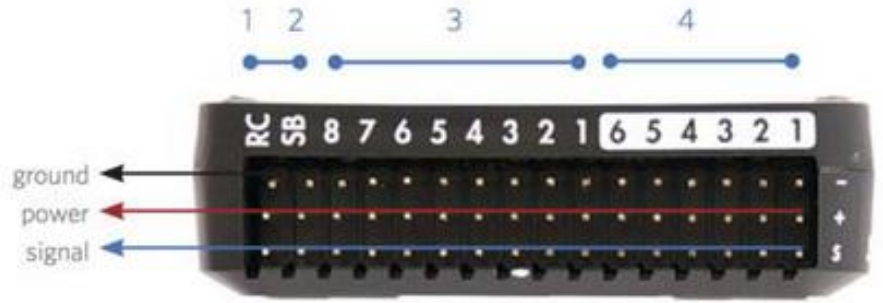
Firmware & software are for later labs!



Pixhawk 2.4.8

- “Brain” of the drone
- Handles flight computing
- Contains sensors (IMUs)
- Acts as a power distributor

1 Spektrum DSM receiver
2 Telemetry (on-screen display)
3 Telemetry (radio telemetry)
4 USB
5 SPI (serial peripheral interface) bus
6 Power module
7 Safety switch button
8 Buzzer
9 Serial
10 GPS module
11 CAN (controller area network) bus
12 I²C splitter or compass module
13 Analog to digital converter 6.6 V
14 Analog to digital converter 3.3 V
15 LED indicator



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

Comms

- Transmitting telemetry data to a GCS (Ground Control Station) <- this is your laptop
- Transmitting GCS commands to the drone (later lab)

- Transmitting Remote Control commands to the vessel (through the controller)