Department of Physics
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Title

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Abstract

Design-Build-Test
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Contents

A Materials and blueprints

A.1 Floating platform

The floating platform is built up from the following parts:

- 1 main plate made from 22mm thick glulam wood, Observe that in the blueprint for this plate holes for cables, and screw holes for the propeller holder and circuit boards are not included. The front bumper, servo and containing straps for the batteries are screwed to this plate.
- 4 floating elements made from 70mm XPS
- 2 boards that goes below the floating elements.
- 4 250 mm M10 stainless steel threaded rods
- 8 70mm M6 stainless steel threaded rods
- 4 M10 Nuts
- 4 M10 Lock Nuts
- 16 M6 Nuts
- 8 M6 Wing Nuts
- 8 M10 Washers
- A 20mm plastic tube bent to a quarter circle with a radius of 403mm, with 100mm extra material to attach in each end.
- 2 straps to keep the battery in place
- 4 carry handles
- Self drilling screws, and washers used to attach electronics, battery straps, and bumper.

A.2 Electronics

The electronic components mounted on the platform are:

- 1 Arduino Leonardo
- 1 Dual VNH5019 Motor Driver Shield
- 2 Brushless Motors
- 2 ESC that matches the brushless motors
- 2 plastic propellers
- 1 15 kg Servo
- 1 R9D Radio Control Receiver

- 1 blue LED (mounted on the cover)
- 1 220 resistor
- 1 Power Switch (mounted on the cover)
- 1 0.1 F capacitor rated for at least 12V.(*)
- 1 22 F capacitor rated for at least 5V.(*)
- 1 L4940V5 Linear Regulator (*)
- protoboard to build the 5v psu on(*)
- A few meter Mains cable 2x1.50 mm unshielded,
- A few meter signal cable
- A few sensor cables and connectors (for servo, ESC, and power to RC receiver)
- Heatshrink to cover connections
- A few Blade receptacle 4.8 x 0.5 mm Fully insulated, Blade terminal red 4.8 x 0.8 mm, Ring cable lug 4.3 mm used to connect the cables together.
- A few 2.54mm pin headers for the connections to the arduino.

Note that the items marked with (*) can be replaced with a pre built 12V to 5V power supply. The electronic are connected according to the circuit diagrams, and the files in RBR_driver.zip is loaded onto the Arduino.