H101 Brushless Mod

(be aware that this build log is about one age old, a few things in Silverware have changed now and are much easier to set up (the esc driver for example)

PID section and BLHeli settings will be updated someday

For Silverware using Brushless ESCs refer to -> Brushless setup

Some pictures of the end-result







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Here you see the flashing port (machine pins female) for Silverware and on
the left the 5 pin Plug (I used 2mm pitched socket boards) for the 4 ESC
servo wires and GND
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Facts:



- 94g AUW with 2S 350mAh (Quad alone weights 69g)
- Flight Time over 6min with the above batteries
- Inverted flight capability
- FPV ready

Part List:

- H101 or H8S (at least the Board)
- DYS BE 1104 5400 kV
- Tarot 120mm Frame Kit
- Power Distribution Board I cut away 4 of the 8 Solder pads
- Sunrise Cicada 10A BLHeli_S ESCs (or similar sized ESCs, For 3S, 6A ESCs are a bit undersized)
- HQ 3030 props, they need to be cut down a little. I used a Dremel with a Line and Circle Cutter. With them, you're able to fly upside down!
- Eachine 3020 props for normal flying
- 2S or 3S batteries between 300 and 500 mAh, maybe these or these ~~(I use 1S 350 Walkera lipos at the moment and put them in a row using 2mm banana plugs. 2S is more than enough power IMHO)~~
- Currently I use 3S 450mAh 30C batteries from here
- 2mm banana plugs
- 4 Resistors (I used SMD ones) 0.2 - 1K Ohm (doesn't matter which value, just use one in between)
- ST Link V2 for flashing Silverware
- BLHeli-Box (The shielded UNO can be flashed to a BLHeli-Box using BLHeli-Suite) for flashing the ESCs and configure them in the field. (Can be USB powered) For using a Laptop, you need at least an Arduino Nano (or the box of course). Of course you can use a supported USB Linker Tool, too - watch here
- Some wires, maybe Jumper Wires or an old IDE 40/80Pin Cable
- Time and patience

How I built it (sorry I did no pictures - in case I have to disassemble the quad sometimes, I'll hand them in later)

- *Preparing the Quad*

1. Assemble the Feet on the Main Plate

2. Desolder all wires from the ESCs
3. Mount the power distribution board (PDB) on the main plate (didn't use that reinforcing plate)
4. Mount all 4 motor
5. Mount all ESCs on the arms
6. Cut down the motor wires to the required length (or wind them around somewhere. Cut down wires are a pain to solder as they used enameled copper wire
7. Solder motor wires to the ESCs
8. Solder Power wires to the PDB
9. Take 5 adders from the IDE cable and solder 4 of them to the ESC's Servo signal point
10. The 5th adder is for GND, I soldered it directly to GND on the PDB (Can cause problems, if yes, use direct GND wires for each ESC)
11. Solder the other end to the plug /socket boards you selected

- *Preparing the FC*

1. Disassemble the H101/H8S, Desolder the Motors. You can later use the Top Shell for your individual Quad's Style
2. Solder wires to CLK, DAT and GND
3. Solder the Flash Plug to the Wires
4. Desolder all 4 Caps on the motor arms
5. ~~replace them with the resistors~~ Solder the resistors at the motor pads (better pad distance)
6. I desoldered the Battery plug and used one with wires like H8 green board has, because I use My 1S Walkera Lipos. You can power up the FC with a step down at 4V (Causes Low power flashing/telemetry voltage not to work) or simply use GND and the Wire next to GND from the Balancer Port of your 2S/3S battery
7. Take another 5 IDE wires and solder them to GND, and all 4 Motor “-” Pads of the FC
8. The other end to the correponding Plug which plugs the ESCs later
9. Power up the FC
10. Flash Silverware with this drv_pwm file (replace the original one) or use The complete prepared Silverware Version I used (May need some changes for your individual feeling and may not be up-to-date, it includes my PIDs though)
11. Mount The FC on top of the PDB, use some tape to cover the cunducting parts of the PDB before (I used 3 sites of double sided Tape, for a little bit of vibration protection. Attend to mount it flat and perpendicular to the quad's roll and pich axis

- *Finish*

1. Solder 5 Jumper wires to another, same sized plug that the FC has for plugging in the ESCs
2. Prepare BLHeli Box (Just flash it using BLHeli Suite (click on “make interfaces” and select Arduino Uno LCD 1602 version)
3. Plug in the ESCs to the Jumper wires, plug the other end to the BLHeli-Box I used this wiring.
4. Check every wiring - for safety use something like this current limiter
5. Power Up the ESCs
6. Flash latest BLHeli_S version (All 4 ESCs together)
7. Set up ESCs like This ~~(You can play with the values of course, atm I use “High” Timing)~~ For better motor revesing, use “medium” timing and Set startup power to at least 1.25
8. Unpower the Quad
9. Plug ESCs to FC
10. Assemble Top Plate

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