fr/Powerboard-Hexa

3

LotharF
MikroKopter.de

Inhaltsverzeichnis

1 Hexa powerboard 1/15
1.1 Connections of the distribution boards 1/15
1.2 Arrangement of the BL-Ctrl's 3/15
1.3 Molex-Socket 4/15
1.4 Placing wire bridges 4/15
1.5 Checking for shortages 4/15
1.6 Soldering the Elkos on BL-Ctrl 2,4,6 ..... 5/15
1.7 Connecting the I2C-Bus to the BL-Ctrl's 2,4,6 ..... 6/15
1.8 Soldering the Elkos for BL-Ctrl's 1,3,5 ..... 6/15
1.9 Connecting I2C-Bus to the BL-Ctrl's 1,3,5 ..... 7/15

2 Connection cable of the distribution-board 8/15
2.1 Battery cable / Supply of the FlightCtrl 8/15
2.2 Mounting the BL-Electronic onto the frame 8/15
2.3 Connecting the LED-cable to the distribution-board 9/15
2.4 Connecting the motor-cables to the BL-Ctrl's 9/15

3 Opportunities to switch the LEDs 11/15

4 Connecting the FlightCtrl 12/15
4.1 Direct connection 12/15

5 Supply 13/15

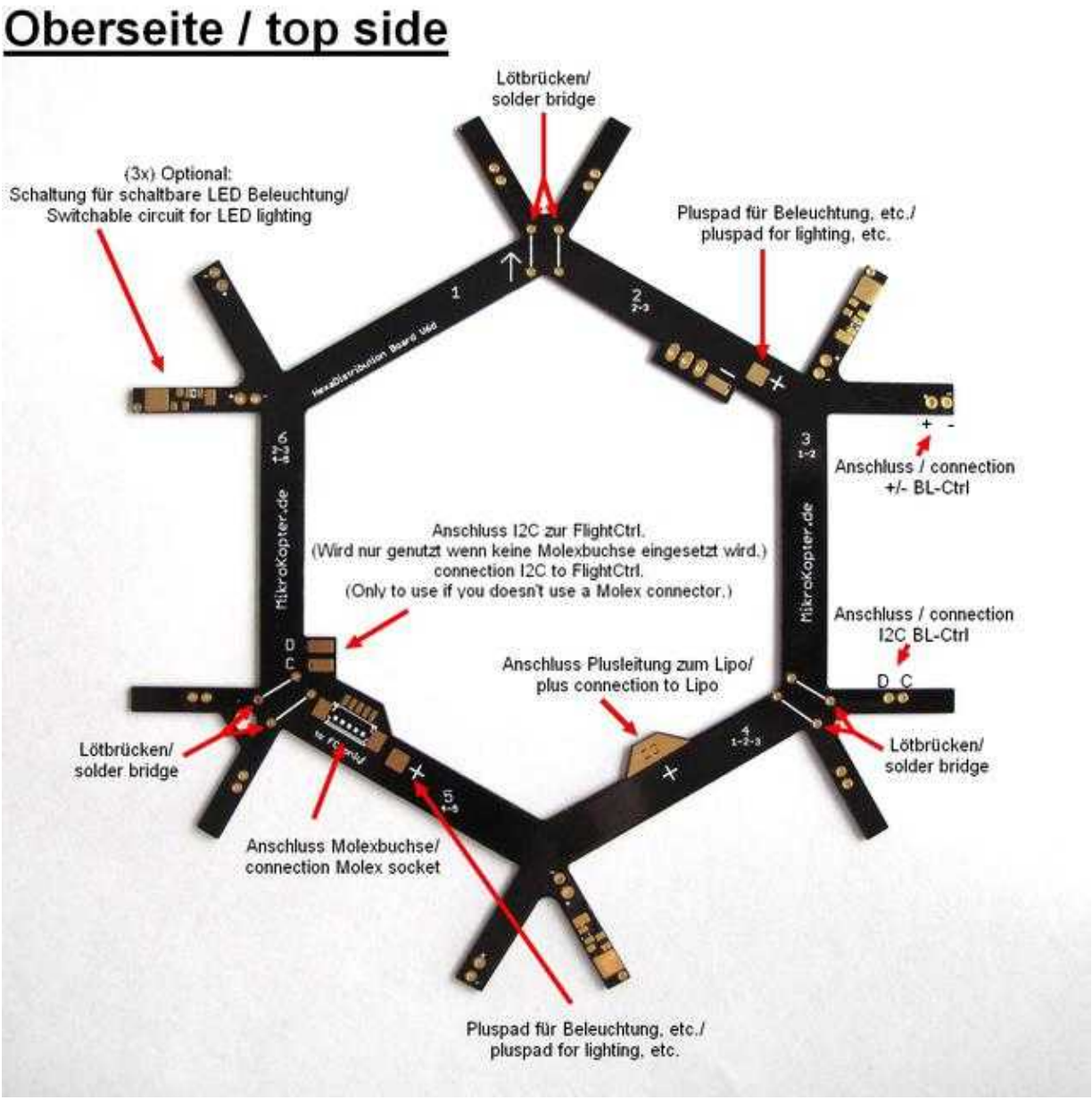
6 Connecting the buzzer 14/15

7 Connecting I2C to the distribution-board 15/15

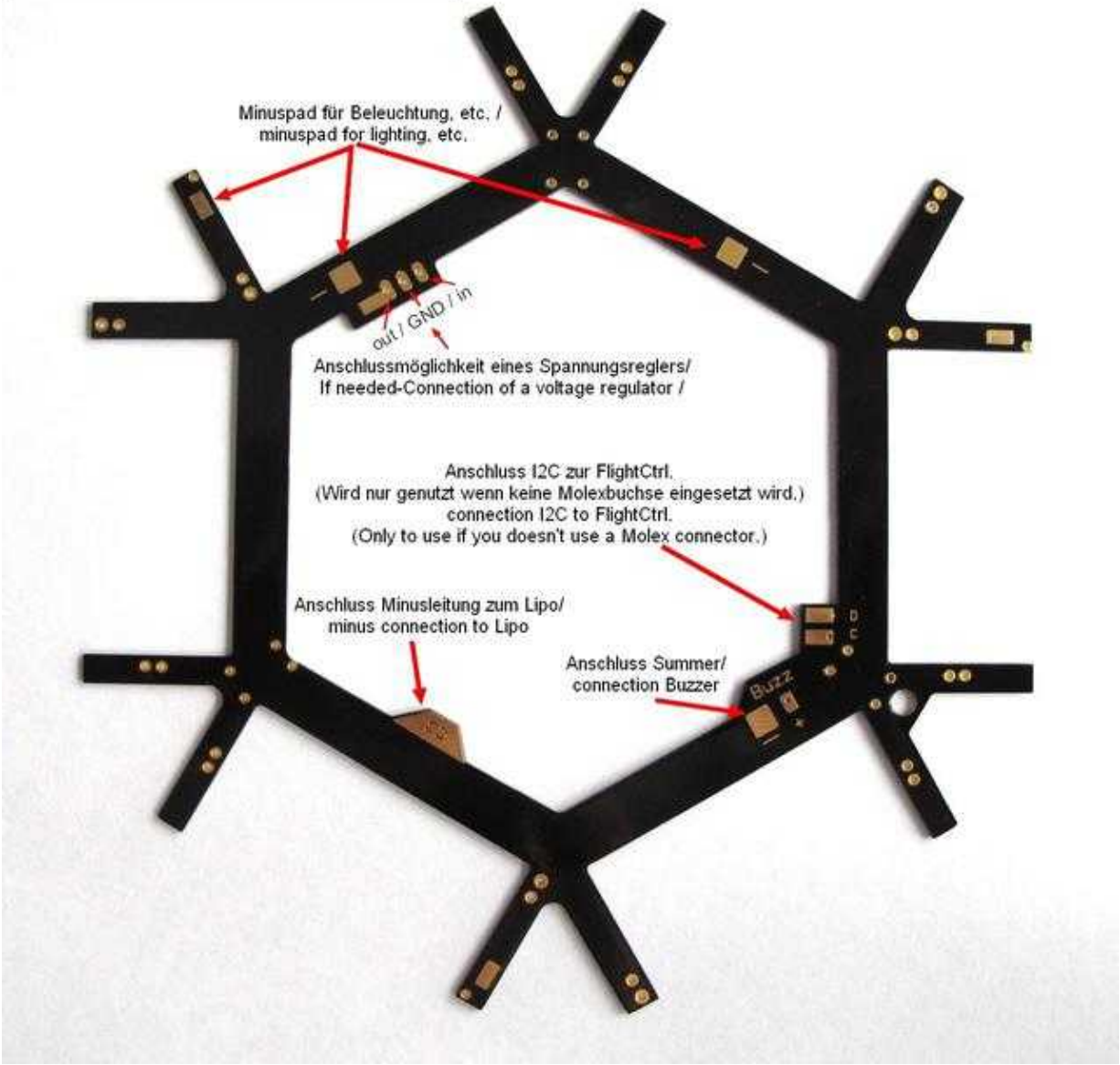
1 Hexa powerboard

The BL-Hexa distribution board supplies the controller with power and connects the I2C bus for communication.
Over the Molex-cable the connections for the supply, the I2C-bus and the buzzer will be passed on to the FlightCtrl. Soldering other cables to the FlightCtrl is not necessary.

1.1 Connections of the distribution boards



Unterseite / Bottom



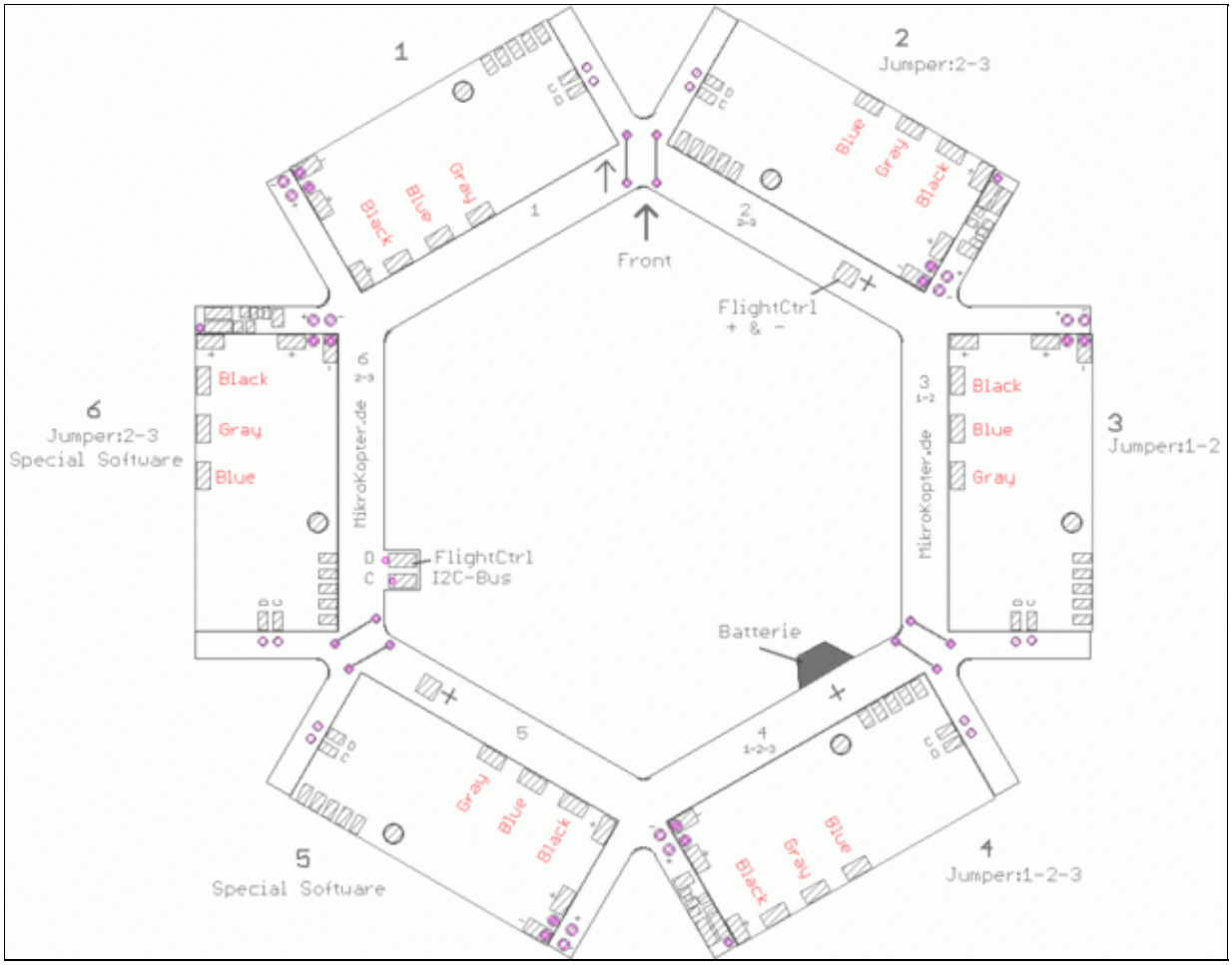
1.2 Arrangement of the BL-Ctrl's

The BL-Ctrl's are placed in the designated spots on the distribution-board and connected via wire jumper.

⚠ **The TOP-side of the distribution-board is marked with a +.**

⚠ This arrangement applies to the Hexa-outrigger where the **holes for the motor-cables are on the left side** of the rigger (oval hole). This arrangement makes sure that later on the Molex-socket and the 10pole socket of the FlightCtrl are not getting in their ways.

(ALL actual sets are in that way!)



The BL-Ctrl's are arranged into the distribution board as shown.

The processors and also the solder connections for the motor-cables on the FET's must show UP on all controllers.

In this graphic the cable colors are already set up (Black = Schwarz; Blue = blau; Gray = grau).

At the **older outriggers** the drill holes for the cables were on the right side. And there is the following assignment:

old assignment

1.3 Molex-Socket

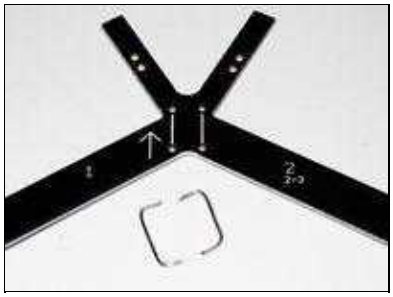
INFO

With the FC v2.1 comes a 5-pole Molex-cable and a Molex-socket for the distribution board.
In that way the solder work for the FlightCtrl, the connection for the I2C and the buzzer can be reduced throughout the Molex-plug.
Alternatively you can connect the FC v2.1 of course over single cables to the distribution board.

The Molex connector is listed as an SMD component and need to be soldered down carefully to the distribution-board. This requires a little bit of sensitive feeling while soldering. Work economically with the solder and check afterwards your solder joints with magnifying glasses for shorts.

1.4 Placing wire bridges

On the distribution board you need to place six wire bridges. They are made out of silver wire. Also here use the solder economically otherwise you'll get solderbridges between PLUS (+) and the I2C-Bus.



1.5 Checking for shortages

The bridges may not have contact against each other or against *PLUS*(+) or *MINUS*(-).



To measure with a multimeter: All points must have a high impedance to each other --> higher than 100kOhm respectively the multimeter doesn't show anything. (The BL-Ctrl's are not soldered in at this point)

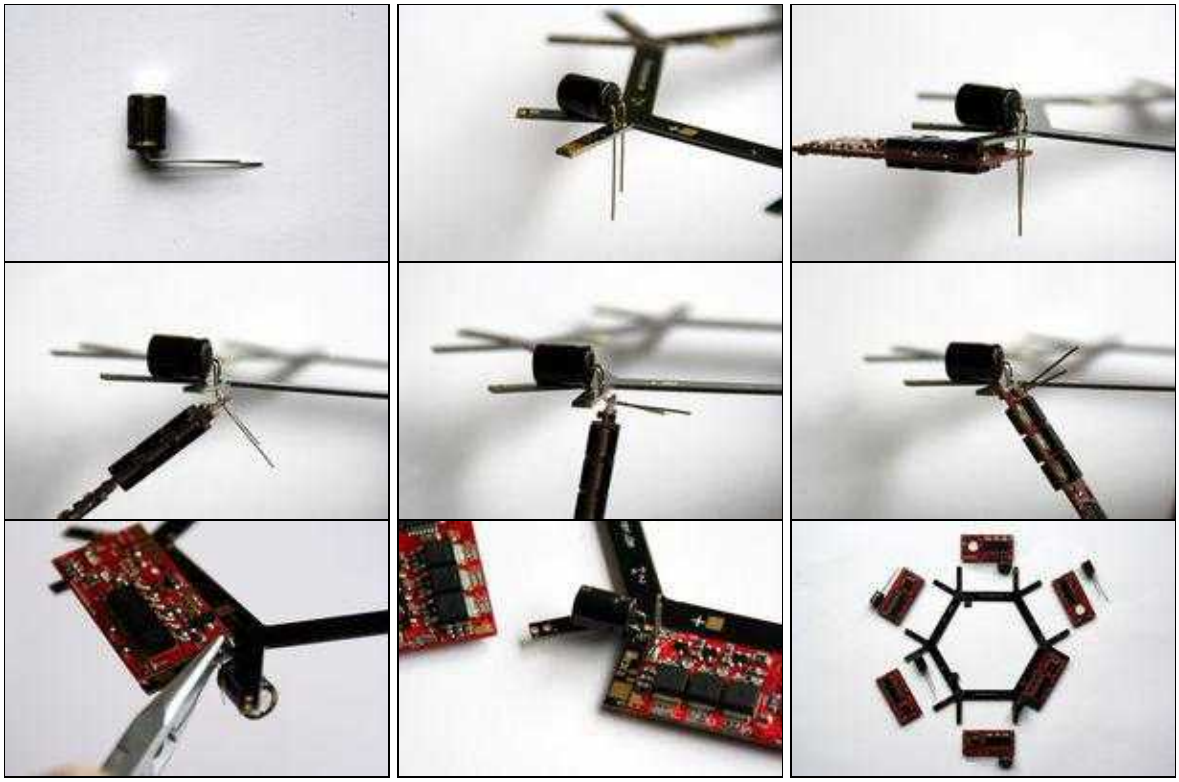
1.6 Soldering the Elkos on BL-Ctrl 2,4,6

⚠ **N O T E S** : The following pictures show the old version of the distribution-board where the BL-Ctrl #6 is on the left next to the arrow!
In the new distribution-board is the BL-Ctrl #1 on the left next to the arrow (as shown in the drawing above)!
For that reason that the Elkos for 1,3,5 are placed outside you should start with 2,4,6 as described.

The voltage supply of the BL-Ctrl is connected through the wires of the capacitors. The capacitors are mounted horizontally on the top of the distribution board.

The leads of the Elkos are bended 90° and been installed right in polarity through the solder holes *PLUS*(+) and *MINUS*(-) on the distribution board. From the bottom-side you attach the BL-Ctrl's to the leads of the Elkos and bend it. Squeeze it with your pliers and solder it down.

⚠ **MINUS** (marked on the Elkos) is for the inner Elkos *inside* and for the outer Elkos *outside*.

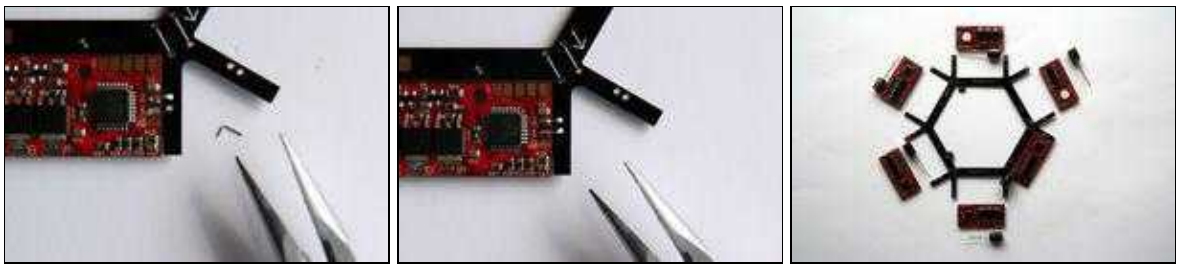


⚠ You need to solder all Elkos carefully and with alot of heat otherwise you'll get pretty quick a cold solder-joint. The distribution-board is covered with 70µm copper so that more heat can be discharged to the sides.

Over this solder-joints goes a bunch of current and for that reason you need to solder those connections from **both sides of the distribution board**.

1.7 Connecting the I2C-Bus to the BL-Ctrl's 2,4,6

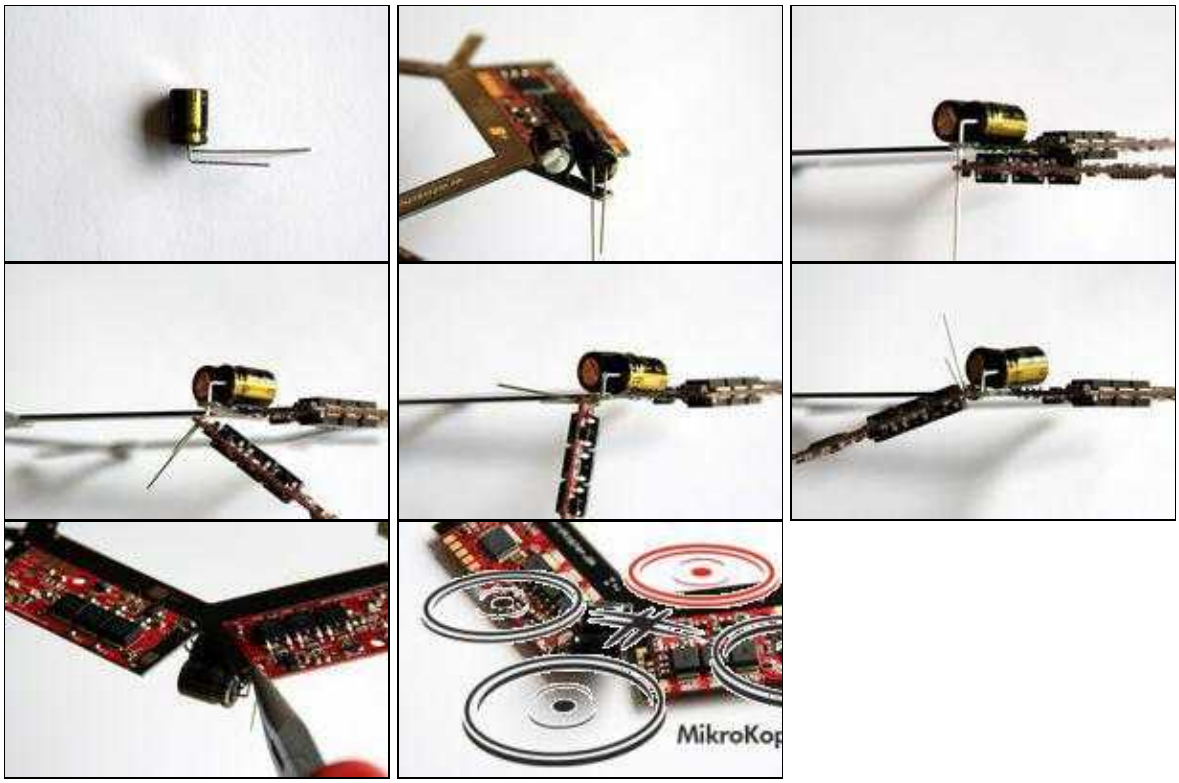
The I2C-Bus (**C and D**) will be connected over two small peaces of silver wire (i.e. the cutted leads from the Elkos).



The silver wire will be stuck in the holes of the distribution-board and bent over. After that the ends of the wires will be soldered to the "C" and "D" connection pads of the BL-Ctrls.

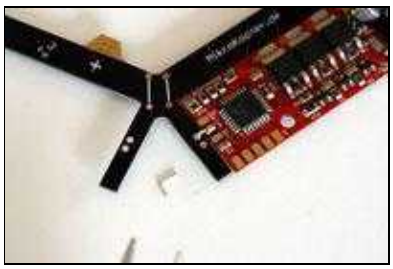
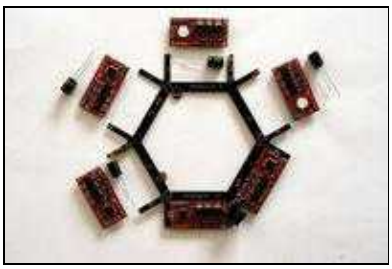
1.8 Soldering the Elkos for BL-Ctrl's 1,3,5

For the BL-Ctrl 1,3,5 the leads of the capacitors are bended 90° as shown. From the capacitor body to the kink the MINUS lead has a length of 4mm and the PLUS lead a length of 1mm. The capacitors should be stuck right in polarity through the solder holes *PLUS*(+) and *MINUS*(-) on the distribution board. From the bottom-side you attach the BL-Ctrl's to the leads of the Elkos and bend it. Squeeze it with your pliers and solder it down.

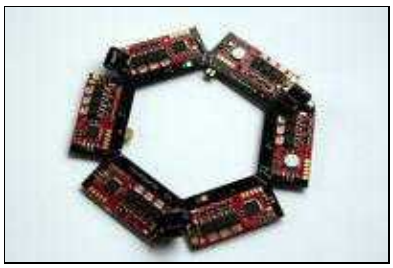


1.9 Connecting I2C-Bus to the BL-Ctrl's 1,3,5

The I2C-Bus (**C and D**) will be connected over two small peaces of silver wire (i.e. the cutted leads from the Elkos).

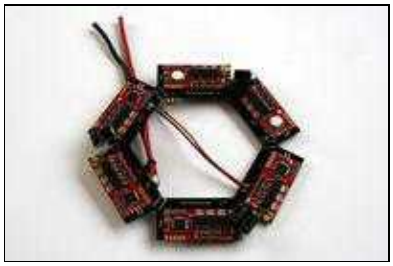
The distribution-board should look in that way:



2 Connection cable of the distribution-board

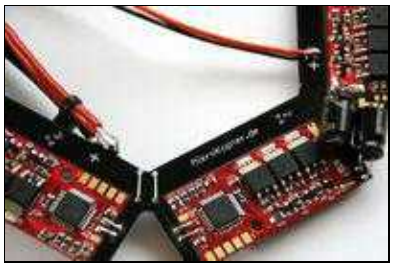
First at all connect following cables to the distribution-board:

- Battery Plus and Minus (2,5mm² + = Red and - = black)
- Power supply FC (0,5mm² + = Red and - = black)



⚠ **N O T E S** : In that way the solder work for the FlightCtrl, the connection for the I2C and the buzzer can be reduced throughout the Molex-plug.
Before mounting the BL-Electronic to the frame you need to solder the cables for the buzzer (right in polarity) to the bottom-side of the distribution-board before, because if it is mounted, it's almost impossible.

2.1 Battery cable / Supply of the FlightCtrl



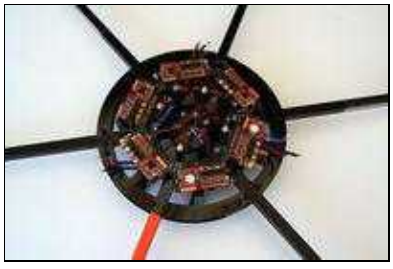
Battery cable: Silicon wire ca. 15cm / 2,5mm²

The supply for the FC is taken from the small + and - pads of the distribution-board. Supply cable of the FC: Silicon wire ca. 5cm / 0,5mm²

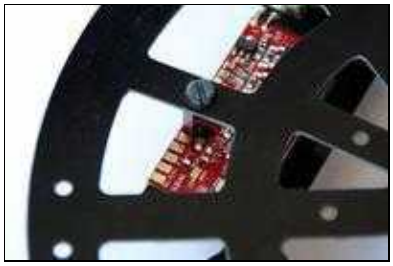
⚠ **ATTENTION**: Tin the ends pretty well so that no fine parts of the wires can get loose.

2.2 Mounting the BL-Electronic onto the frame

Place the BL-Electronic on the 10mm bolts.
⚠ **ATTENTION**: Motor 1 to the front!

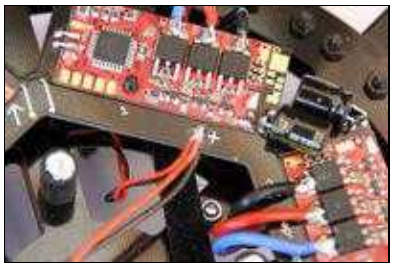


⚠ **ATTENTION**: The 10mm spacers on which the BL-Ctrl's are screwed tightly must be rotated so that the standoffs fully rest on the board of the respective BL-Ctrl. Please do not pinch the SMD capacitor C7!



2.3 Connecting the LED-cable to the distribution-board

To those +/- pads of the distribution-board for the power supply of the FC the cable for the LED-stripe of the front rigger will be soldered down there and of course right in polarity.



To those +/- pads of the distribution-board for the power supply of the FC the cable for the LED-stripe of the front rigger will be soldered down there and of course right in polarity.

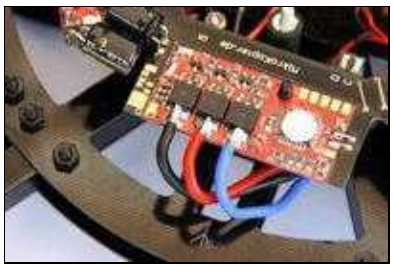


2.4 Connecting the motor-cables to the BL-Ctrl's

Now the motor-cables will be soldered down to the solder pads of the BL-Ctrl's.

If the motors are MK2832/35 or Roxxy 2827/35 the connection sequence can be choosen fix.
Motor connection **A = gray cable, B = blue cable, C = black cable** on the odd motor addresses (rotating clockwise).
Motor connection **A = blue cable, B = gray cable, C = black cable** on the even motor addresses (rotating anticlockwise).
If the motors are Typ AXI with long cables the connection sequence can be choosen fix, too.
Motor connection A = yellow cable, B = red cable, C = black cable on the odd motor addresses (rotating clockwise) (Pad C = near/close to the Elko).
Motor connection A = red cable, B = yellow cable, C = black cable on the even motor addresses (rotating anticlockwise).

If they are different motors the connection sequence doesn't matter. If testing the motors maybe two colored cables need to be changed.



The cables of the engines for the BL-Ctrl 2,4,6 will be shortened accordingly, stripped, tinned well and soldered down from the "inside " to the respective BL-Ctrl. The connecting sequence doesn't matter right now. Maybe the sequence need to be switched for the start-up.



3 Opportunities to switch the LEDs

The Hexa distribution-board has an integrated circuit to drive and switch the LEDs.

 It can also be subsequently connected and is not really essentially necessary to fly.

Describtion here

4 Connecting the FlightCtrl

The FlightCtr2.1 will be connected over the Molex-cable to the power distributor.

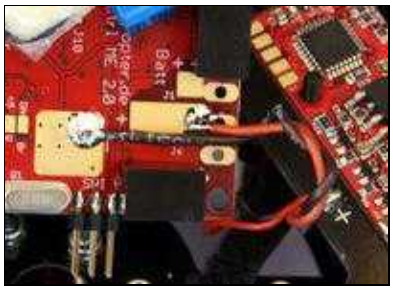


4.1 Direct connection

If you like to connect the FlightCtrl directly feel free to do so. Get information out of the following pictures:



5 Supply

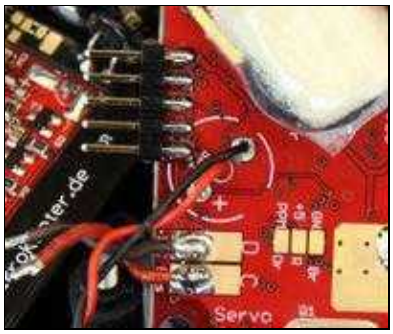


PLUS(+) must be connected behind the switch because the switch is not assembled on the Hexa (is not included in the delivery).

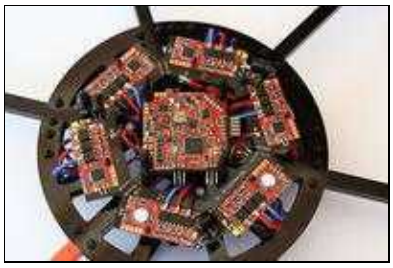
The Hexa will be switched on/off later through connecting/disconnecting the battery.

The wires should be twisted slightly so that the compass gets njo interference later on.

6 Connecting the buzzer



= Assembling of the FC = You can screw plastic nuts on the threads of the vibration damper so that the FC comes higher approx. 3mm. The FlightCtrl will be mounted in the way that the small arrow points to the front. The FC will be tightened with four 15mm distance bolts.



7 Connecting I2C to the distribution-board

The two pre-assembled cables of the FC for the I2C bus will be now soldered to the corresponding connection pads of the distribution board (C = Red and D = black).

