<u>**Setting up the Hobby King KK2 Flight Control Board**</u>

Make sure KK2 is mounted properly and all channels are connected to the proper spots on the receiver.
A single ESC should be plugged into Position 1 to provide power to the KK2 Board.

Step 1: Check Sensors
>Go to the Sensor Test Screen
>Check to make sure there are no error messages and all sensors are working OK

Step 2: Load Correct Configuration
>Go to the Load Motor Layout Screen and choose the correct configuration for your multi rotor
>Go to the Show Motor Layout Screen and plug your ESCs into the correct spots on the KK2 Board
>>Best to do this unpowered

Step 3: Receiver Setup
>Go to Receiver Test Screen
>Make sure that your controls are moving in the correct direction
>>Reverse channels on transmitter if they are not
>Make sure that the screen reads 0 for each channel (with the exception of the AUX channel)
>>Use your transmitter sub trim to adjust if screen is not reading 0
>Make sure that when you move a stick to the maximum that it reads 100 or -100
>>Use your transmitter travel menu to adjust till value reads 100 or -100

Step 4: ESC Calibration
>Remove the props from your craft
>Get some help
>Turn on Transmitter, place throttle at full
>Have one person hold down buttons 1 and 4 while the other plugs in the battery
>Buttons must be held down through entire process
>ESC will beep to acknowledge the high stick setting
>Lower throttle on transmitter to idle
>ESC will beep to acknowledge the low stick setting
>Release buttons
>Unplug battery

Step 5: Sensor Calibration
>Place multi rotor craft on level surface
>I used a program that I got for my Ipad to ensure that the craft was perfectly level
>>The application was called aFree Level! And is available on the app store
>When you have the craft level press the calibration button
>>in a moment you will get the Calibration Succeeded message
>If the flight control board is not level during this process it will cause drift in the craft

Step 6: Arming the Board

        You should be able to arm the board by moving your throttle to its lowest stick position

           And moving the rudder to the full right position

        The Flight Control Board Should Arm

        If you have the Peizo Buzzer connected it should beep every second or so while armed

Step 7: Check Prop Direction

        With the props removed put a piece of masking tape on each motor shaft

        Arm the board and increase the throttle until the motors spin up

        Check the motor direction using the tape

        Switch ESC wires if needed to reverse motor

Step 8: PI Settings

        Here is some information on Tuning the KK2 Board

ROLL & PITCH TUNING

Turn Height Dampening off
Make sure AIL, ELE channels zero out in flight control board
Set the gains and limits to the following values:

Roll/Pitch P-gain: 30
Roll/Pitch P-limit: 100
Roll/Pitch I-gain: 0
Roll/Pitch I-limit: 20

Yaw P-gain: 50
Yaw P-limit: 20
Yaw I-gain: 0
Yaw I-limit: 10

Now, Increase Roll/Pitch P-gain by 10 at a time, and test your aircraft response by hovering and move the left stick in short and fast movements.

As you increase the gain you will notice:
1: The aircraft reacts faster and feels more connected to the stick movement and wander less on its own.
2: The aircraft may oscillate for a short time. Usually a few oscillations, but may be more if gain is high. If it oscillates continually the gain is too high.
3: The aircraft may be harder to land, bounces back when touching down
4: The aircraft may climb.

When the aircraft has a good response and does not oscillate or climb when testing, P-gain is good.

Roll/pitch I Gain - tuning:

1: Trim it level.
2: Fly fast forward and center the stick.

If it level itself, increase I-gain.
If it stays in attitude, I-gain is good.

Alternatively setting I gain to 50-100% of P-gain does the trick.
Yaw P-tuning

Increase Yaw P-gain by 10 at a time, and test your aircrafts response by hovering, Move the Yaw
control stick until it has yawed about a quarter turn, and then center it:

As you increase the gain you will notice:
   1: The aircraft start and stops faster.
   2:The aircraft overshoots less.
   3: The aircraft may start to climb or descend.

When the aircraft has a good response, has a minimum of overshoot and does not climb or
descend, P-gain is good.

Alternatively, set it to 100% of Roll/Pitch P-gain

Yaw-I Tuning

Increase Yaw I-gain by 10 at a time, do the same testas above.

When the aircraft overshoots even less the I-Gain is good.
Alternatively, set it to 100% of Yaw P-Gain

It is generally good to keep the gain values in the low range. Excessive gain may introduce
vibration and control issues.

> What I am doing to tune mine is I started with some setting I found on You Tube of a guy
> who had a Y650. I backed off his settings by 20 and then worked up by 10 until I got
> oscillation.
>
> Here are my current setting. I have tested the Y650 with normal flying as well as in
> Auto-Level mode.

Y650 KK2.0 Settings

PI Editor

	AIL	ELE	RUD
P Gain.	150	150	120
P Limit	100	100	20
I Gain	40	40	20
I Limit	20	20	10

Receiver Test

Aileron 0

Elevator 0

Throttle 0

Rudder 0

AUX 1

Mode

Self Level	AUX
Arming	Stick
Link Roll/Pitch	Yes
Auto Disarm	Yes
CPPM Enabled	No

Stick Scaling

Aileron	30
Elevator	30
Rudder	50
Throttle	90

Misc

Minimum Throttle	10
Height Dampening	0
Height Dampening Limit	30
Alarm Volts	100
Servo Filter	0

Self Leveling

P Gain   40
P limit   20
Accelerate trim roll   0
Accelerate Trim pitch 0

Have not changed anything on the Mixer Menu