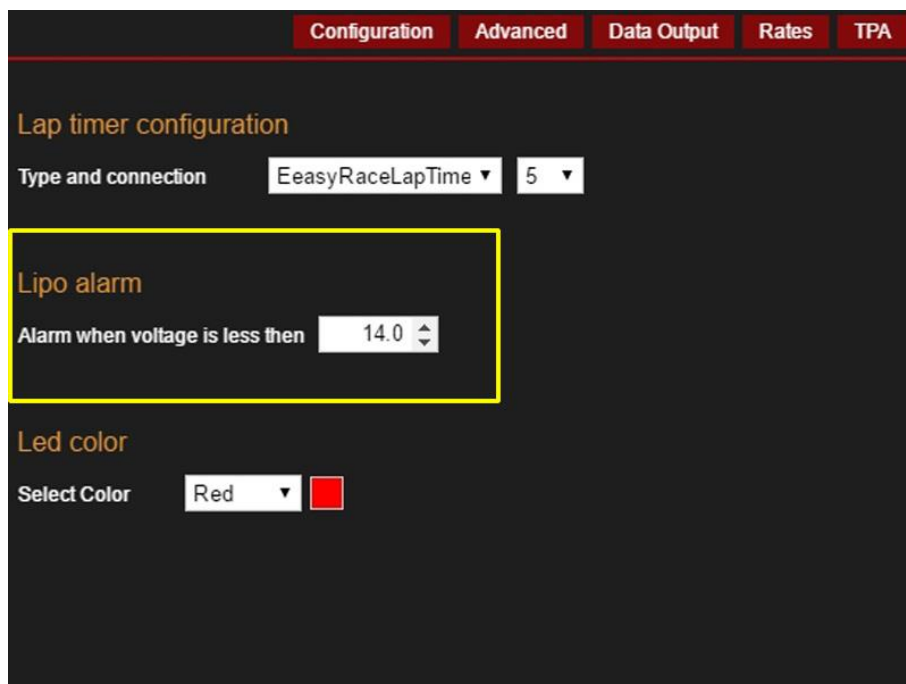# New KISS FC Goodies: Lipo Alarm, LEDs, Race Timer, Notch Filter

New release candidates and stable versions from **RC30** upwards offer new features like adjustable lipo alarm via buzzer, adjustable LED colors and an integrated infrared solution for race lap timers.
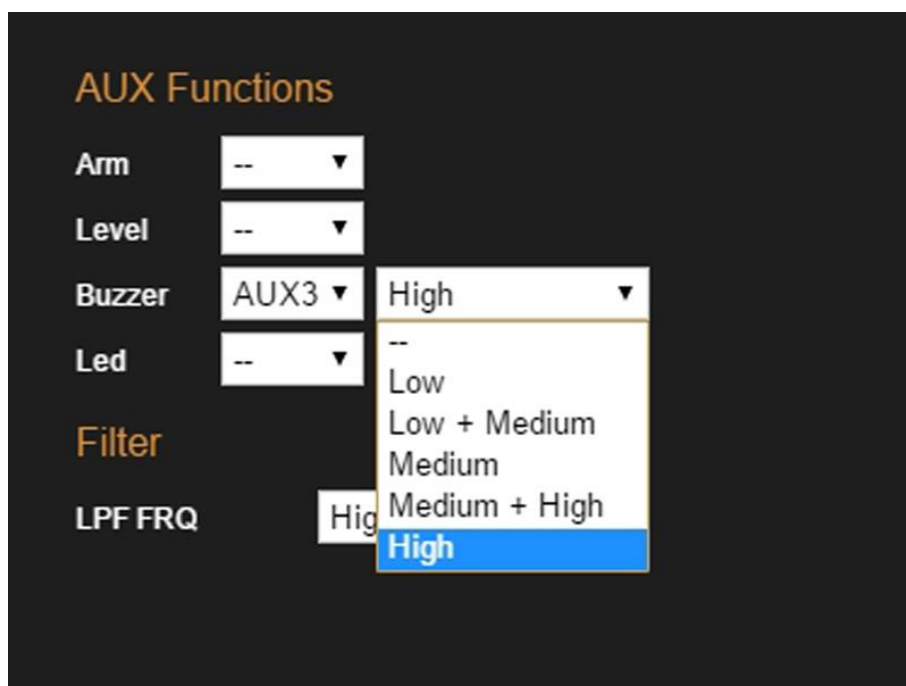You will need at least **GUI 1.14** to use them, "Advanced" tab.

Lipo Alarm via Buzzer

You can set the threshold for the buzzer to go off at a certain voltage.
The buzzer can still be used on a switch and automatically works as an alarm in a failsafe event

Beep Codes

1x Beep = armed
2x Beep = disarmed
3x Beep = Gyro calibration done
1x short, 1x long (repeating) = Failsafe
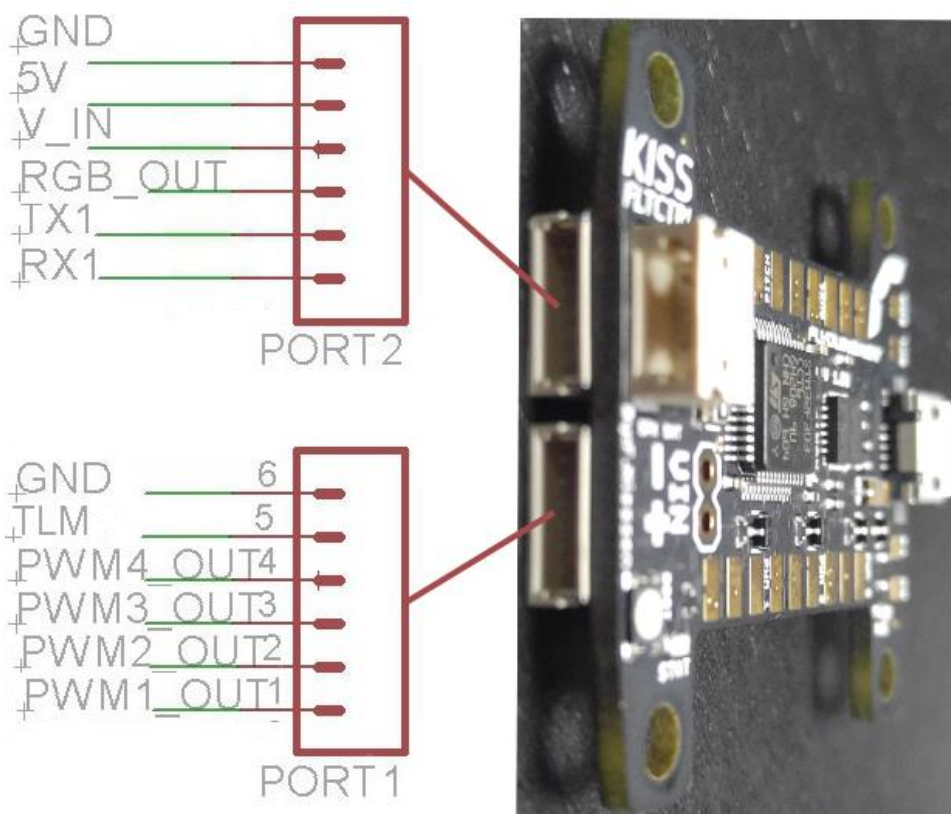3x short, 3x long, 3x short (repeating) = SOS, Lost Model Alarm

LED Support

You can use a WS2812 module like shown on the RGB LED pin on Port2
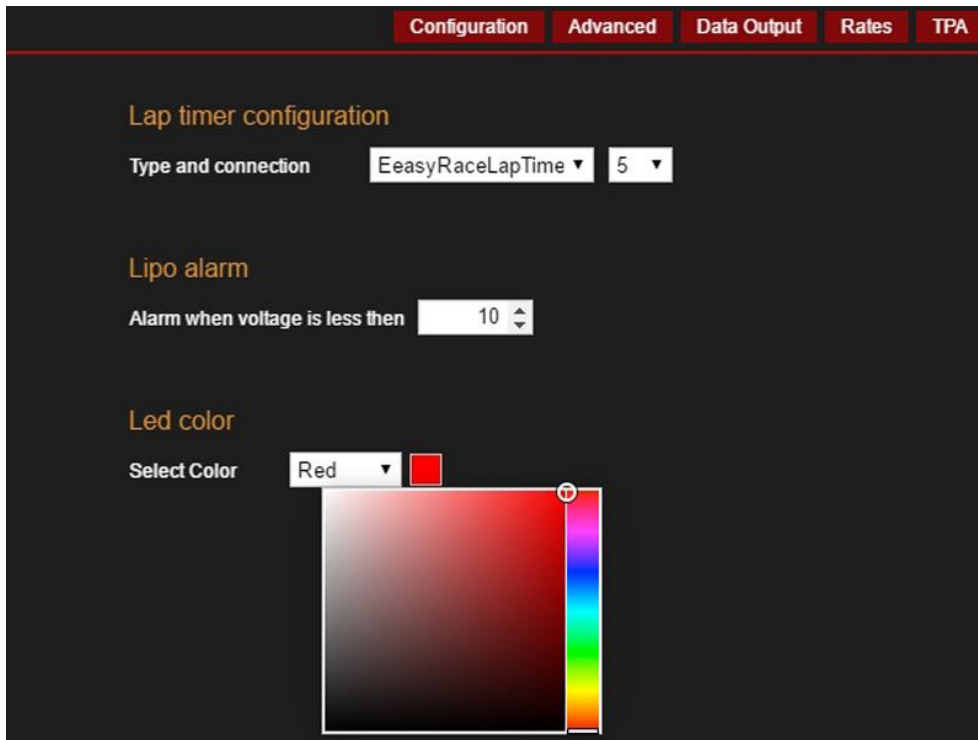**Attention:** the LDO only can feed up to 2 LEDs simultaneously. Better use an external power supply!
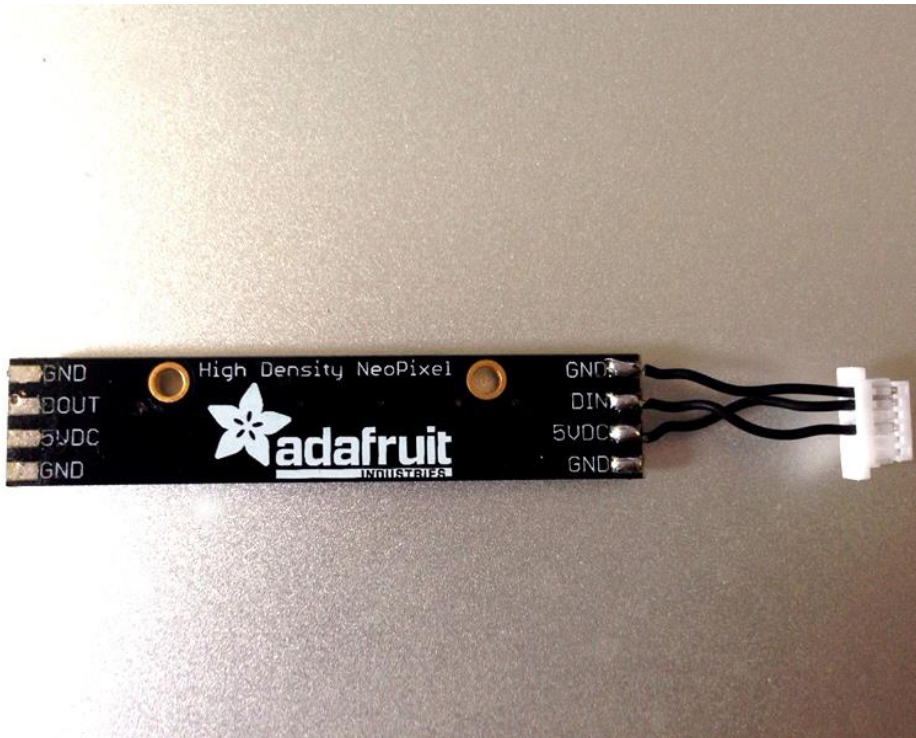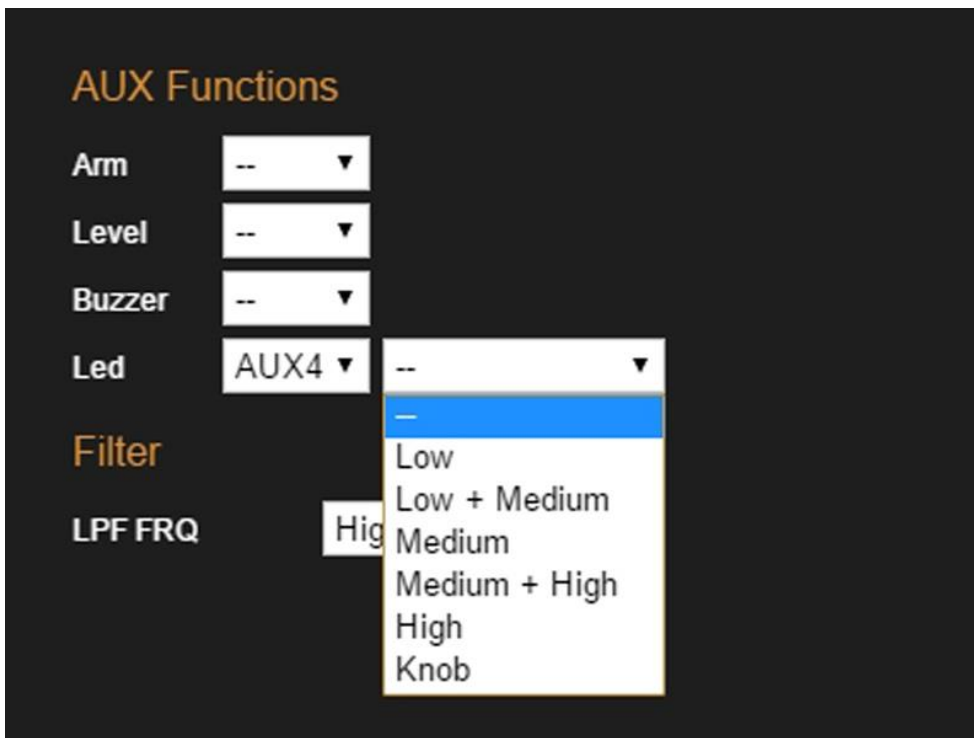

Connect DIN of the LED module to RGB OUT (pin 3) on Port 2

LED colors can be selected and adjusted in the GUI to your likings or for conformity of racing rules.
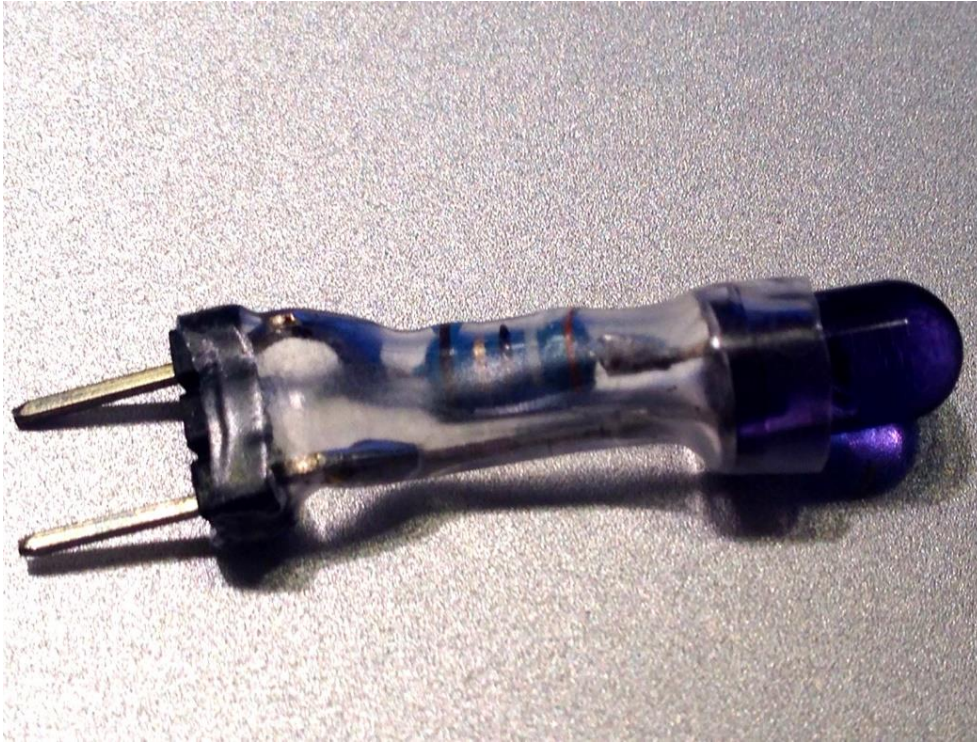

The LED toggle function can be selected via transmitter switch.

You can combine any AUX channel with a position of that switch.
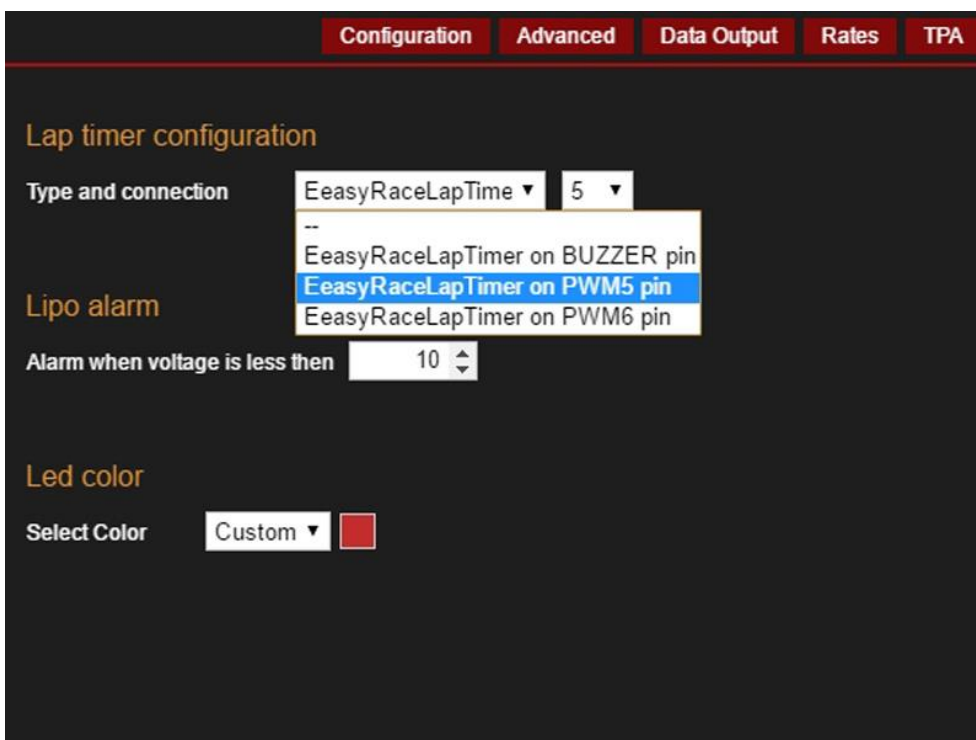When assigning a Knob (jog dial etc.) you can easily select the color.

Racelap Timer

You can connect it to the buzzer port or PWM 5 or 6 Pin
Connect a 30 Ohm resistor and an the IR LED's – to the PWM pin and the IR LED's + to 5V on the FC
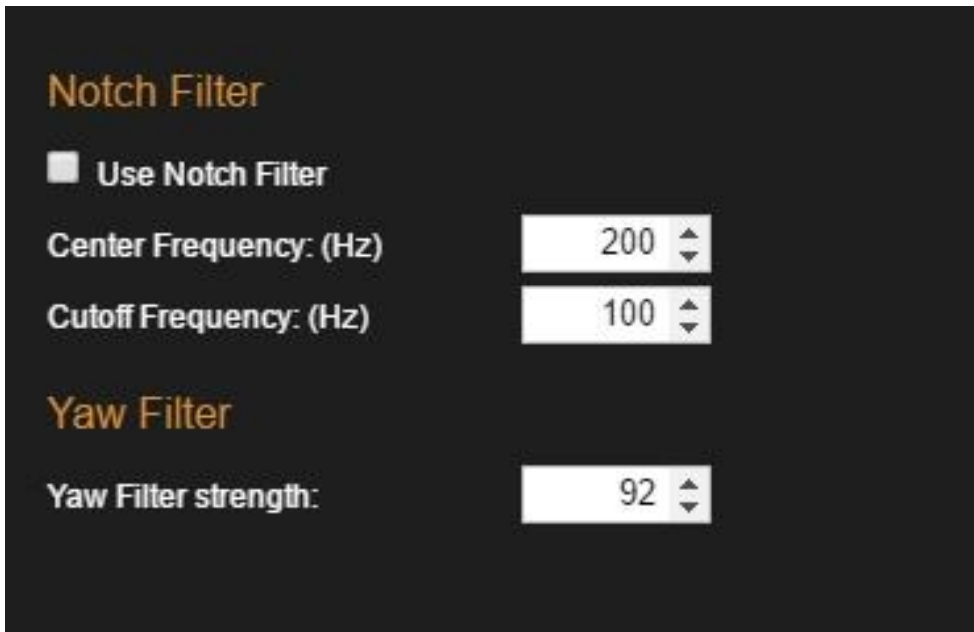
It's designed for lap timers by http://www.easyracelaptimer.com

Notch Filter

The Notch Filter is only needed to filter a certain small range of frequencies where vibrations might occur. Only then you should activate it and adjust it by **inspecting the BB log files**.

Center frequency is the center of the range you want to filter.

Cutoff frequency adjusts the frequency range above and below the center

center = middle freq.

cutoff = lowest freq.

range = lowest freq. to center minus lowest plus center

Example

center = 400Hz

cutoff = 300Hz

range = 300 to (400-300)+400=500, so range is 300 – 500Hz

YAW filter strength targets the amount of influence, the filter has on YAW.
This filter was introduced to get rid of grinding noises that might occur on certain setups.
It is independent from the main notch filter.
At 0 the filter is off. The filter acts exponentially so the higher the strength, the more filtering.
E.g. setting the filter from 92% to 97% will affect the filtering more than going from 50% to 60%

Mix value = old value x (0%) + new value x (100-0%)