P1 ESCs Guidelines

Purpose

The purpose of this document is to document and plan the future implementations needed once the hardware is connected and the electronics system is in place.
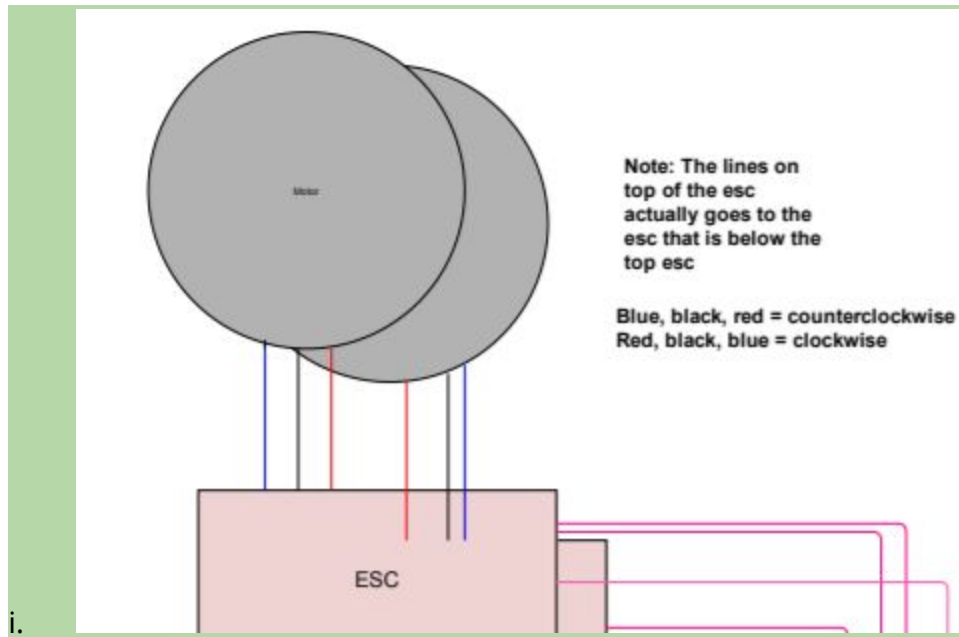
Component Details

The purpose of *ESCs* is to regulate and control the speed of an electric motor.

To meet the overall & subsystem requirements, the things *ESCs* needs to do are:
1. Use the following diagram and connect them as the following

a.

b. Connect the motors to its corresponding motor like so:

Note: The lines on top of the esc actually goes to the esc that is below the top esc

Blue, black, red = counterclockwise
Red, black, blue = clockwise

ESC

i.

2. Throttle Range Calibration
   a. Turn on transmitter, push the throttle, stick to the top position
   b. Connect receiver to batter and ensure the transmitter and receiver are well bound, turn on esc
   c. When the motor emits two short "beep-beep", push the throttle stick to the bottom position within 3 seconds and motor emits are long "beep"

Timeline

Low Priority
Medium Priority
High Priority

Additional Details and Notes

PROTECTIONS

This ESC is specially designed for multi-rotors.

1、 **Start-up Protection:** The ESC will shut down the motor when it fails to start the motor normally in 2 seconds by increasing the throttle value. In this case, you need to move the transmitter throttle stick back to the bottom position and restart the motor.(Possible causes: poor connection or disconne-ction between ESC and motor wires; propellers are blocked etc.)

2、 **Throttle Signal Loss Protection:** When the ESC detects loss of signal for over 0.25 second, it'll cut off the output immediately to avoid greater loss which may be caused by the continuous high-speed rotation of propellers or rotor blades. ESC will resume the corresponding output when normal signals are received.

3、 **Motor Lock-up Protection:** The ESC will try to restart the motor (thrice) when motor lock-up is detected; if it fails, it will cut off the output and stop attempting. To restart the ESC and resume its output, you need to push the throttle stick to the bottom position and then start again.

4、 **Over-load Protection:** The ESC will cut off its output immediately when the peak current gets close to 340A (short-circuit current). Please regain its normality by powering it on.

TROUBLE SHOOTING

Trouble	Warning Tone	Possible Cause	Solution
The esc was unable to start the motor	"Beep beep beep…" (the motor beeped rapidly)	The throttle stick was not on the bottom position or the throttle range was too narrow	Move the throttle stick to the bottom position or recalibrate the throttle range
The esc was unable to start the motor	"Beep、beep、beep…" (time interval is 1 second)	No output signal emitted from the throttle channel on the receiver	Check if the transmitter and receiver are well bound Check if the throttle wire has been properly plugged into the channel into the receiver
The esc was unable to start the motor	"Beep beep、beep beep…" (these tones are plaed circularly)	The voltage was below 18.6v	Change another battery with normal voltage(18.6-55v)
The esc was unable to start the motor	"beep beep beep、beep beep beep…"(these tones are played circularly)	The voltage was above 55v	Change another battery with normal voltage (18.6-55v)

If you encounter any problems using FLAME ESC, please feel free to contact our distributors or T-MOTOR directly.

Supporting Documentation (For Reference)

Concept of Operations
Allocation Requirements

SDR - Internal Version
Design Logic