4in1 ESC 45A

Manual

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Introduction

Thank you for purchasing the FETtec 4in1 ESC 45A.
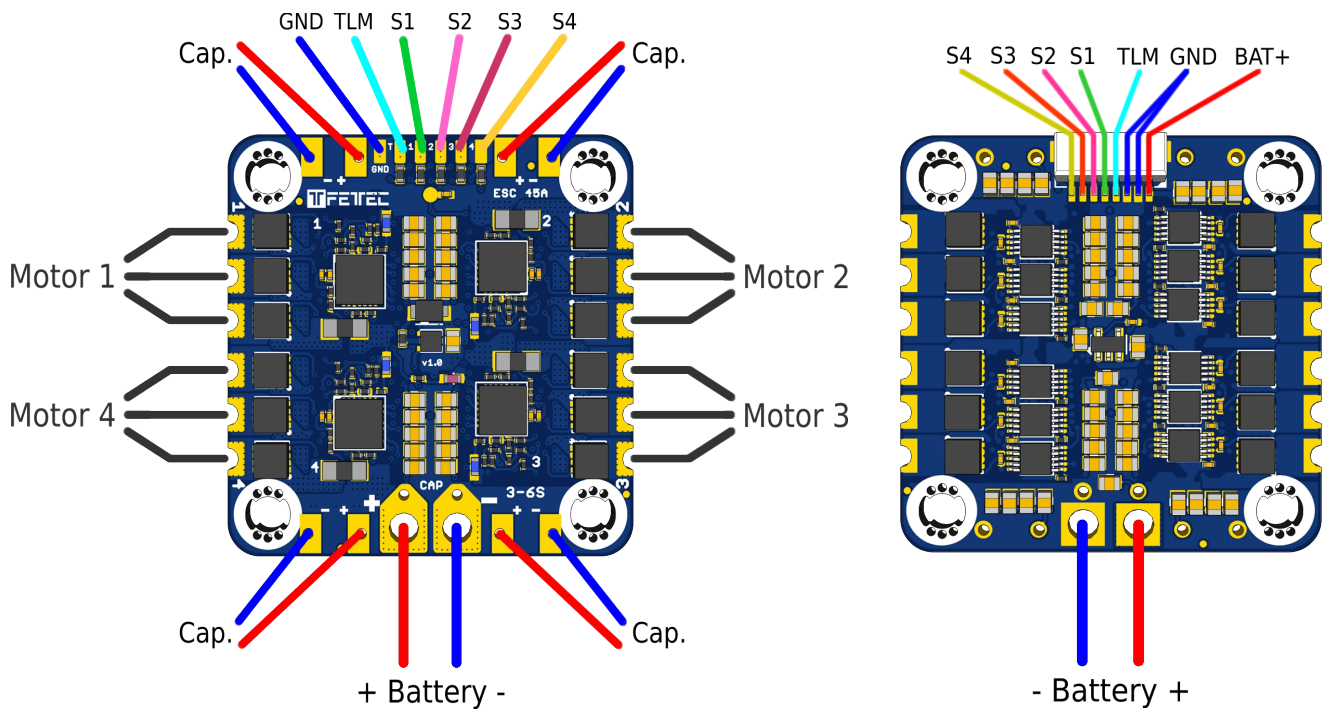
Features

- Active current limiting @ 45A
- Input voltage: 3S-6S
- High quality 40V MOSFETs
- STM32G071 @ 64MHz
- 128 kHz Motor PWM
- Automatic input signal detection
  - Dshot 300-2400
  - PWM
  - OneShot 42/125
  - Onewire
- Soldering holes for up to 5 additional capacitors *(required for 5S and 6S application)*
- KISS FC Passthrough
- Betaflight Passthrough

Safety warning

- Remove propeller before flashing and configuration!
- The ESC can heat up to 100°C and more
- Please ensure that there is enough space and airflow to prevent any damage because of overheating
- Please check periodically for firmware updates in the FETtec Configurator
- Do not file the mounting holes as this may cause damage

Connection Diagram

Top/Bottom Layout

Motor 1

Motor 4

Motor 2

Motor 3

Cap.

Cap.

Cap.

Cap.

GND TLM S1 S2 S3 S4

+ Battery -

S4 S3 S2 S1 TLM GND BAT+

- Battery +

S1 - S4 – Motor Signal 1-4
TLM – Telemetry (Serial)
GND – Reference Signal Ground

Basic Setup

4S

For 4S usage please note that on 5"and higher builds the use of the supplied capacitor is advised. On 4" builds the capacitor is not required.

6S

For 6S usage an additional capacitor with the following specification is required. You can use either a single capacitor or use multiple ones which can be connected on each corner of the ESC.
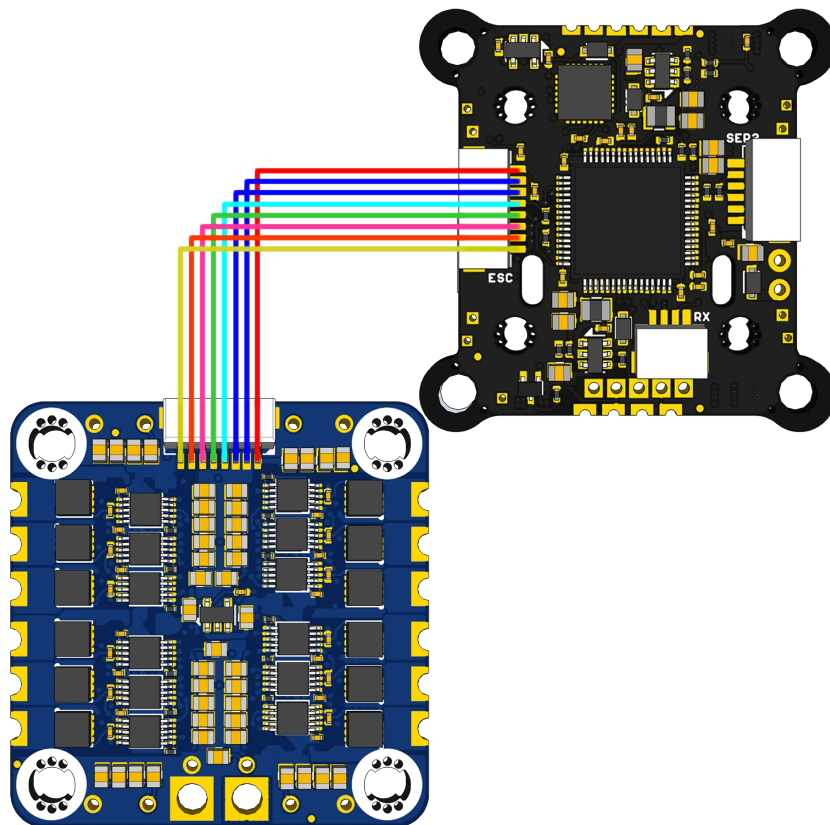
Minimum 470uF
50V
ESR < 1ohm

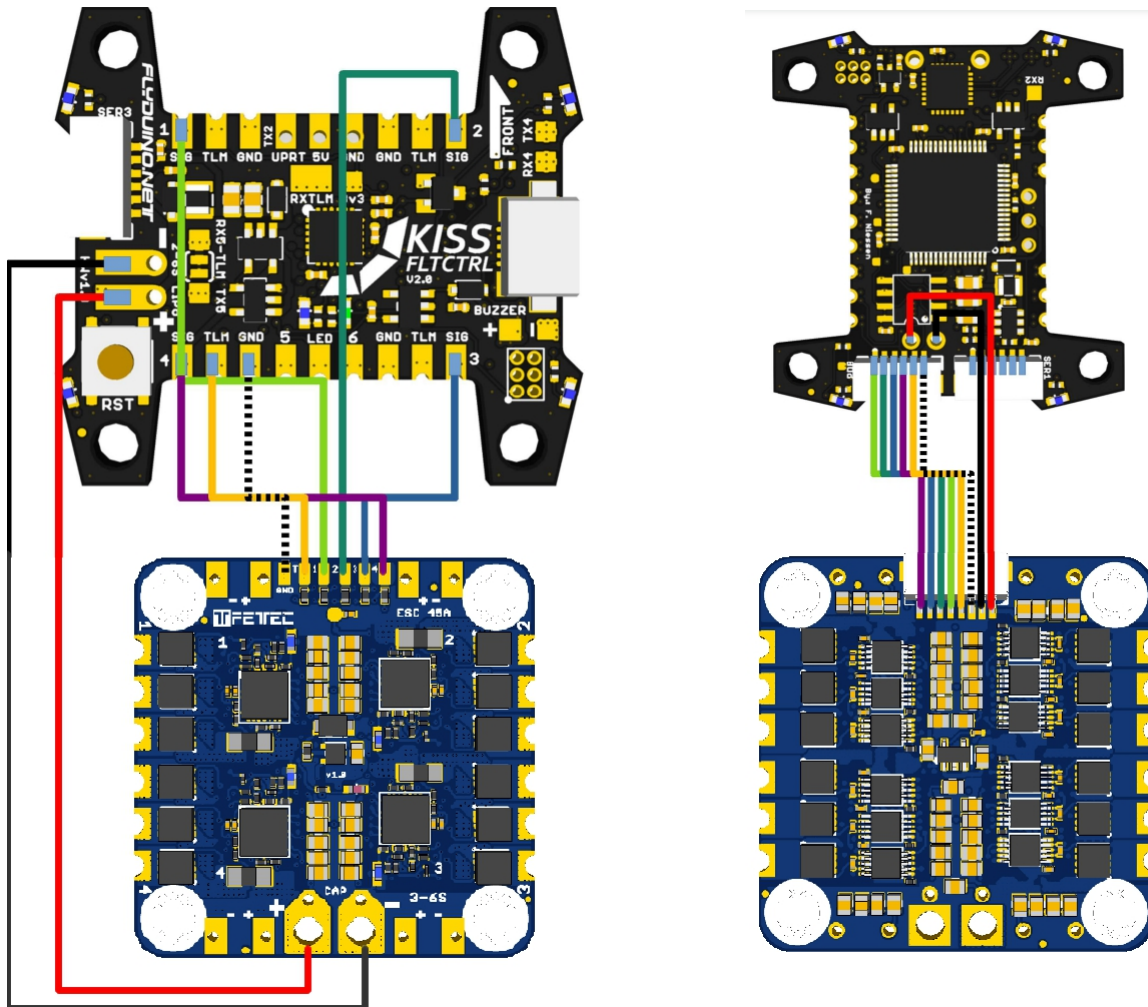We recommend to use the provided 470CKE050M capacitor.

FETtec FC

Use the 8pin cable which comes with the FETtec 4in1 ESC 45A to connect it to the FETtec FC
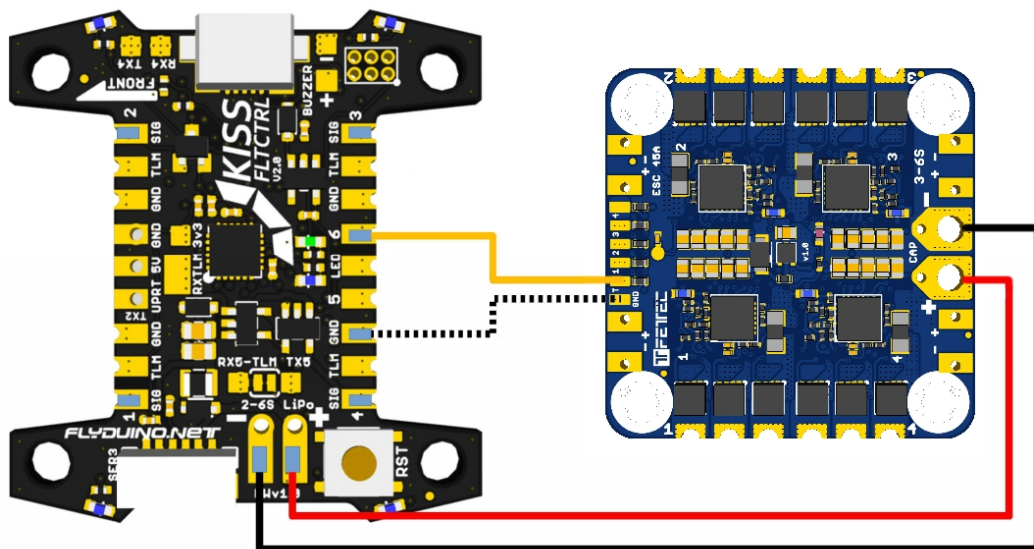
KISS-FC

Traditional ESC Connection

On KISS FC hardware motor signals are connected to the corresponding motor output and TLM is connected to one of the TLM pads. For GND you can choose the solid or dotted line.
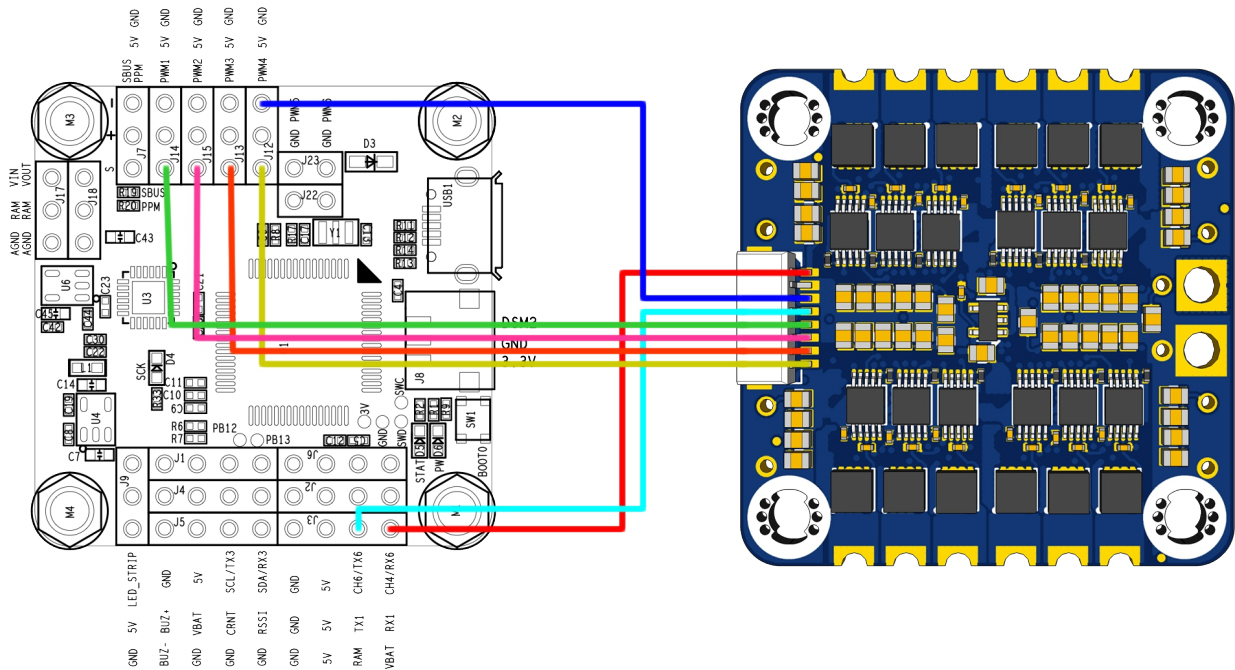
Onewire ESC Connection

On KISS FC v2 hardware and a firmware of at least 1.3RC38a the FETtec 4in1 ESC 45A can also be connected using Onewire protocol. This requires a different connectivity between FC and ESC. The ESC TLM pad has to be connected to the FC motor pin.

Betaflight

Connection

Signal 1 - 4 have to be connected to the corresponding FC Motor outputs. The TLM wire has to be connected to an available serial TX pin.

Configuration

In order to utilize ESC provided current and voltage sensor the following settings need to be applied to Betaflight. (Feature, motor protocol and meter can be configured through the GUI itself). In addition the correct serial port need to be selected and assigned to ESC sensor.

Ports

WIKI

Note: not all combinations are valid. When the flight controller firmware detects this the serial port configuration will be reset.
Note: Do NOT disable MSP on the first serial port unless you know what you are doing. You may have to reflash and erase your configuration if you do.

Identifier	Configuration/MSP		Serial Rx	Telemetry Output		Sensor Input		Peripherals	
USB VCP	⬤	115200	◯	Disabled	AUTO	Disabled	AUTO	Disabled	AUTO
UART1	◯	115200	◯	Disabled	AUTO	Disabled	AUTO	Disabled	AUTO
UART2	◯	115200	◯	Disabled	AUTO	Disabled	AUTO	Disabled	AUTO
UART3	◯	115200	◯	Disabled	AUTO	ESC	AUTO	Disabled	AUTO

```
feature ESC_SENSOR
set motor_pwm_protocol = DSHOT600
set current_meter = ESC
set battery_meter = ESC
set esc_sensor_halfduplex = ON
```

FETtec Configurator

Please update your ESC periodically with the current Firmware version.

The ESC configuration tool is available at https://github.com/FETtec/ESC-Configurator

The ESC firmware is available for download at https://github.com/FETtec/ESC-Firmware
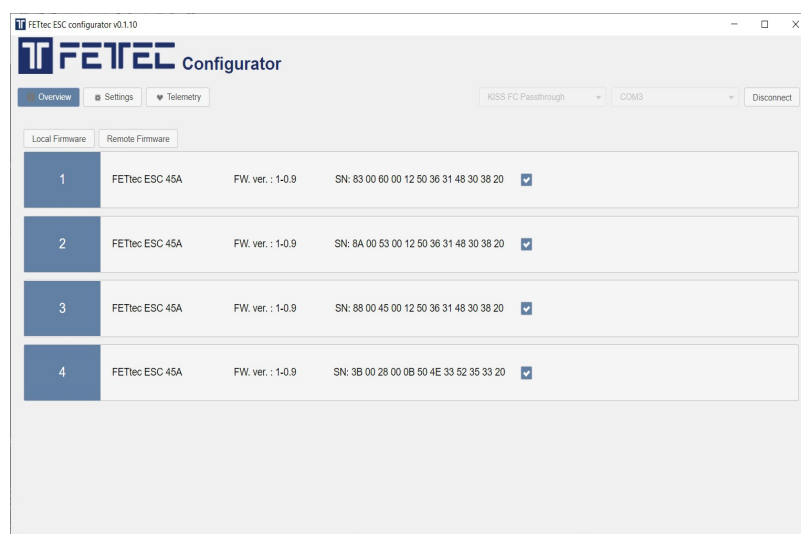
FC passthrough is available for the following platforms:

- KISS FC – Firmware 1.3-RC36j (or higher)
- Betaflight 4.1 firmware (Minimum requirement for Onewire is STM32F4)
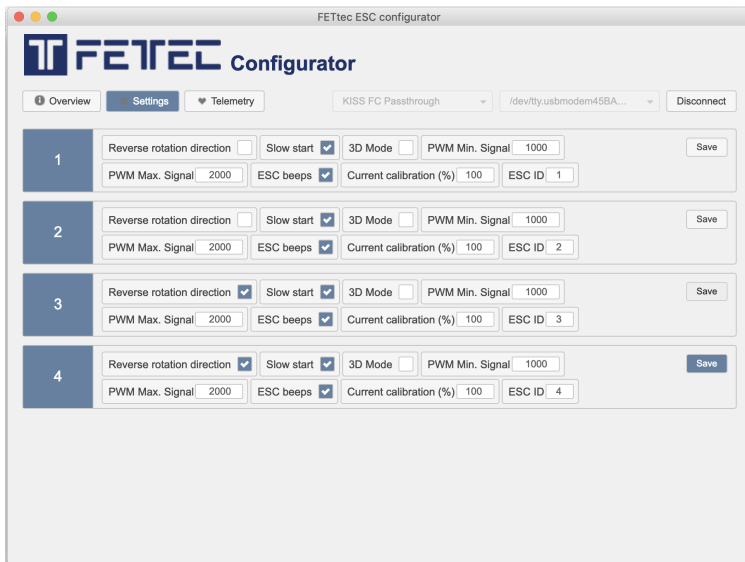-

Settings

Mainpage to connect to the ESC. Please select correct connectivity type and serial/COM port.
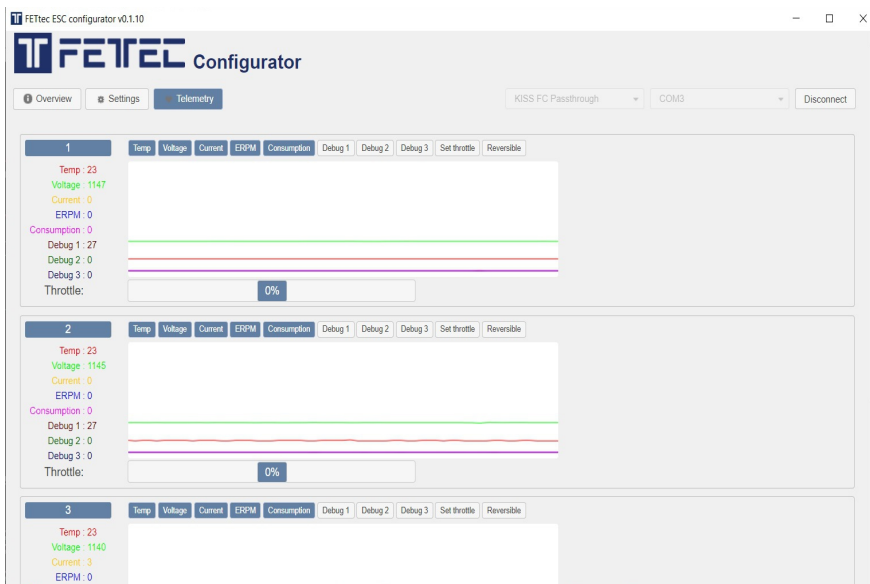

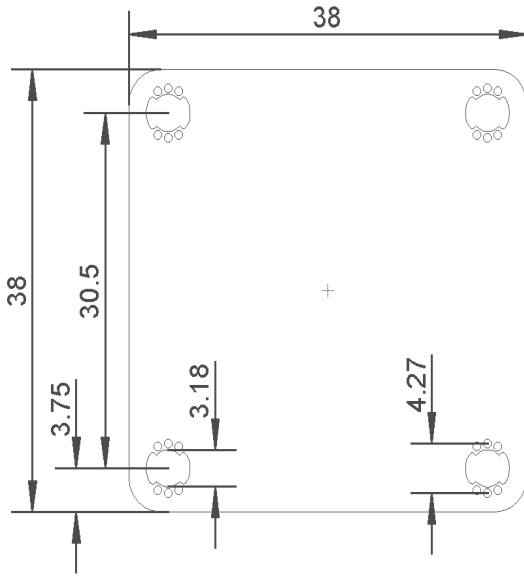The **Overview** page allows to flash individual ESCs

The **Setting** page allows to adjust all available ESC parameter

- Reverse rotation direction

- Slow start

- 3D mode

- PWM min & max signal

- ESC Beep enabled

- Current calibration

- Individual ESC ID (for use on onewire protocol)

In **Telemetry** page you can spin the motors, view and debug the Motor telemetry.

Dimension (in mm)

The FETtec 4in1 ESC 45A comes with a 30,5x30,5mm mounting hole layout designed for M3 and M4 screws. Original is for M3 while you can use a screw driver and force it into M4 by rotating it inside the hole carefully.
Do not file the mounting holes as this may cause damage