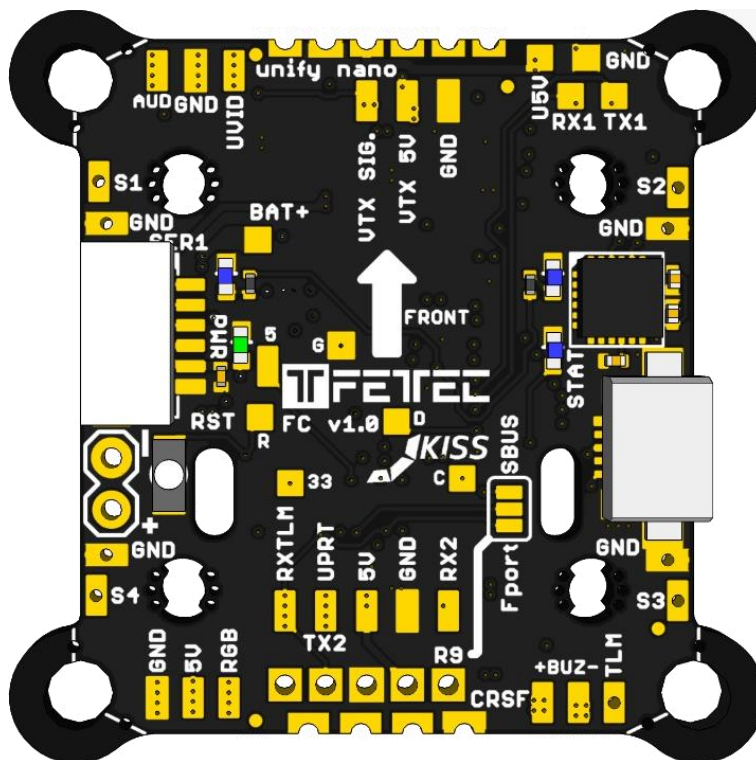




FETtec FC F7

Manual



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Introduction

Thank you for purchasing the FETtec FC F7. This is a KISS licensed F7 Flight-controller

Features

- KISS FC v2 firmware (FETtec Alpha FC firmware flashable)
- F7 Processor
 - STM32F7RET6 @ 216MHz
 - MPU6000
- Supply voltage 6-27V (2S-6S Lipo)
- Dedicated onboard 5V BEC for VTX (max 600mA)
- 8 pin connector for solder free ESC connection
 - Connector 1: ESC signal 1-4, telemetry, VCC, GND
 - Connector 2: ESC signal 5-8 (depending on UAV type 1-4), telemetry, VCC, GND
- 5 UART serials
 - UART 1 free
 - UART 2 used for Receiver
 - UART 3 free
 - UART 4 free
 - UART 5 used for ESCs / TLM / Onewire
- Build-in real Pit-Mode for unify nano (via VTX Pin and 5V on SER1)
- 4 ESC solder pads (Signal/GND) in each corner
- Direct places for RX and VTX (unify nano, CRSF nano, FrSky R9)
- Buzzer pads
- Supported ESC protocols
 - PWM, Oneshot125, Oneshot42, Dshot150/300/600/1200/2400, FETtec Onewire
- Dimensions 35x30mm without 30x30 corners
 - 20x20mm (with breakable holes M2 to M3)
 - 30x30mm hole distance useable (breakable 30x30mm corners)
- Overall height: 7,9mm
- Weight: 5,37g
- Connector type: JST-SH-1mm



Safety warning

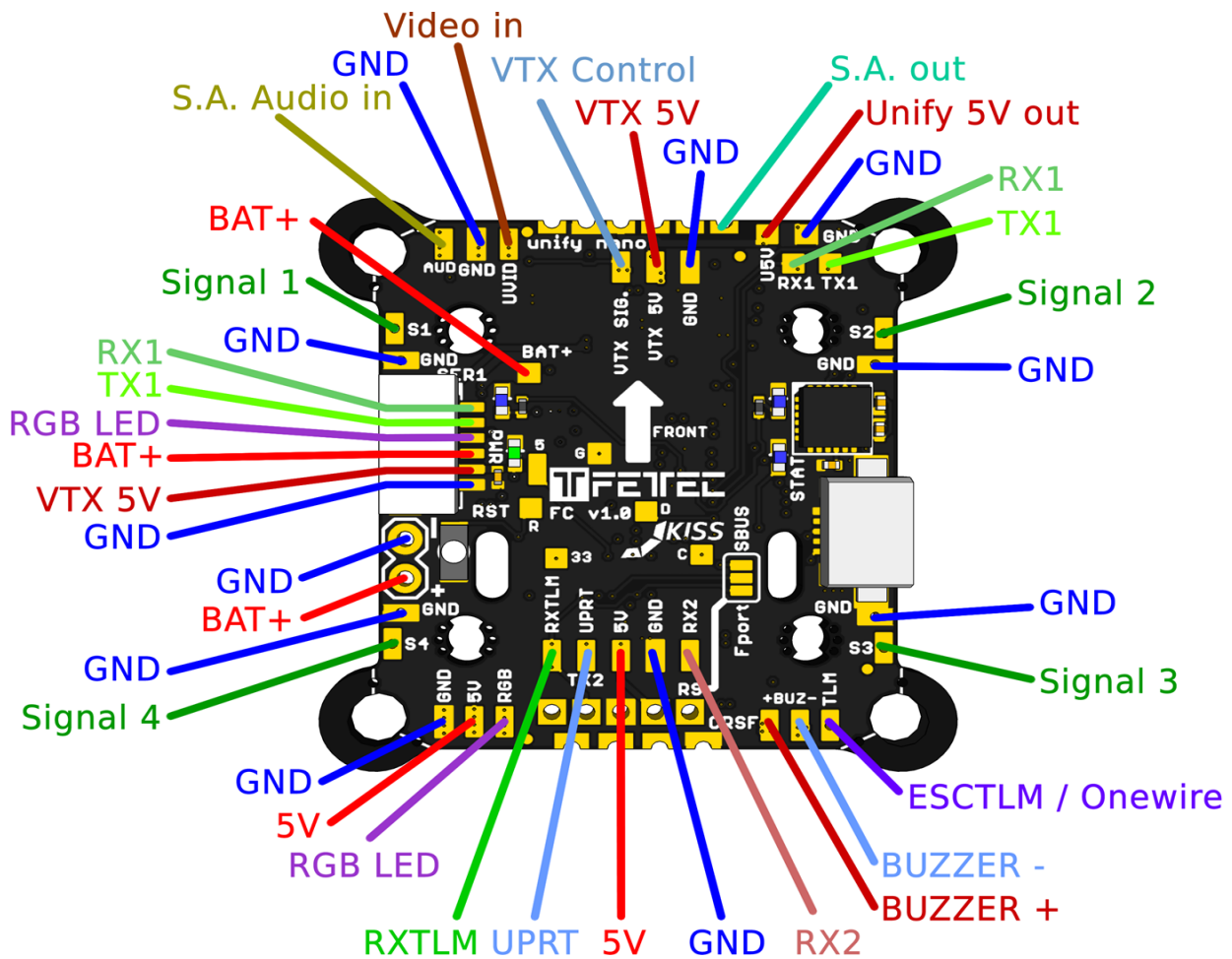
- Remove propeller before flashing and configuration
- always flash latest firmware before operation
- keep distance from your quad when you arm it after you changed something
- don't fly close to people!

Recommended steps for installation of the FETtec FC F7

- Connect to FETtec Configurator and update to the latest firmware (see FC configuration)
- Install the FC in your copter (see Connection diagrams for correct wiring and installation)
- Make sure everything is connected properly and check without propellers
- Connect to FETtec Configurator to proceed with final configuration of the FETtec FC F7



Connection layout top



6 pin connector (SER1):

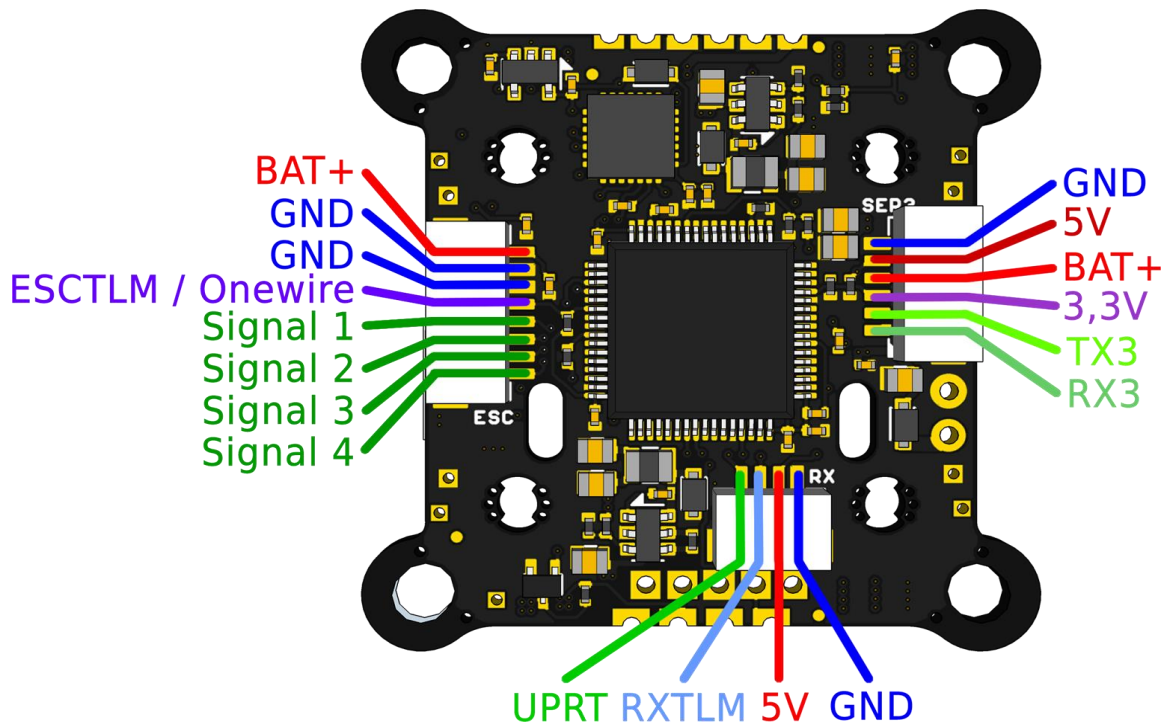
- RX1: for digital FPV systems or other functions configurable in GUI (same for VCS/TX3)
- TX1: for smart audio / tramp configuration or TX for digital FPV systems
- RGB LED: PWM signal pin to control WS2812 LEDs or similar (configurable in GUI)
- BAT+: Battery voltage
- VTX 5V
- GND

Signal1-4	- Motor Signal 1-4
ESCTLM	- Telemetry (Serial)
GND	- Reference Signal Ground
UPRT	- Receiver signal port (SBUS / F-Port / PPM / Crossfire TX)
RXTLM	- Receiver telemetry (sPort / Crossfire RX)

Serial connectors (SER1&SER3) are JST-SH-1mm 6-pin



Connection layout bottom



8 pin ESC connector:

- BAT+: Battery voltage out to supply FC power
- GND
- ESCTLM/Onewire: ESC Telemetry signal to FC or Onewire signal pin (depending on configuration)
- Signal 1-4: ESC signal output for each ESC

Receiver connector:

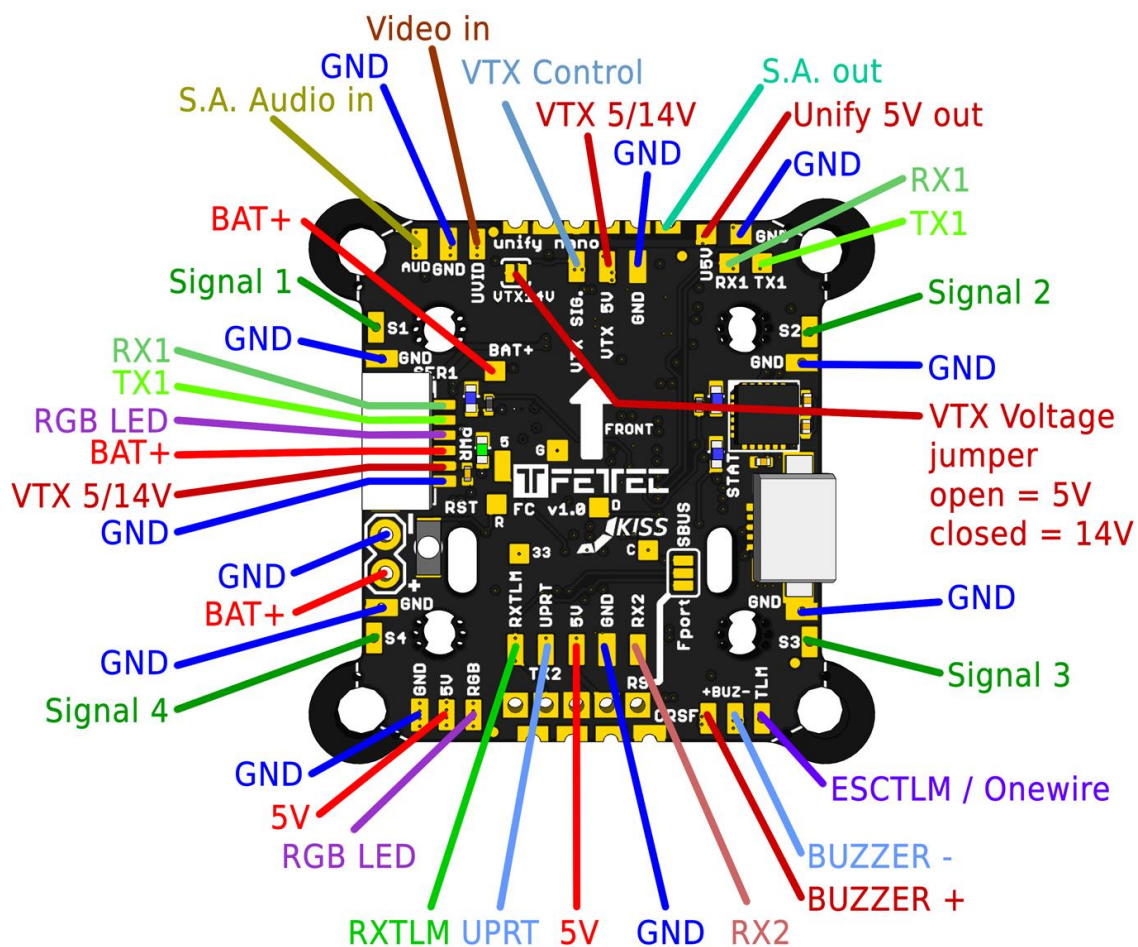
- UPRT: Receiver signal to FC (see page 10 receiver connection diagram for further information)
- RXTLM: Telemetry signal to receiver (see page 10 receiver connection diagram for further information)
- 5V
- GND

6 pin connector (SER3):

- RX3: function configurable in GUI
- TX3: function configurable in GUI
- 3,3V
- VCC: Battery voltage
- 5V
- GND



FETtec FC F7 version 1.2



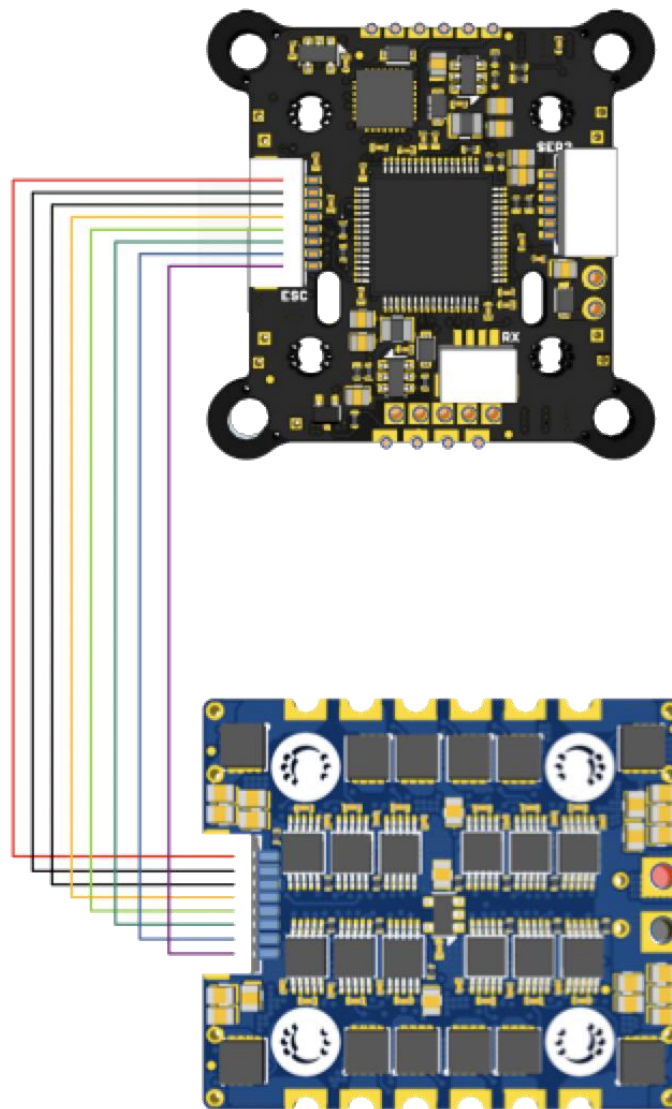
ESC connection diagram

ESC connection via 8 pin connector

For easy ESC connection via 8 pin cable

FETtec FC F7 to FETtec 4in1 ESC 35A (same for FETtec 4in1 ESC 45A), cable included with FETtec ESCs.

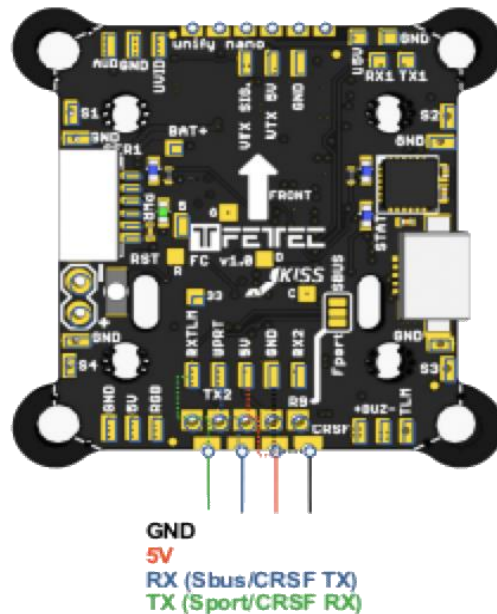
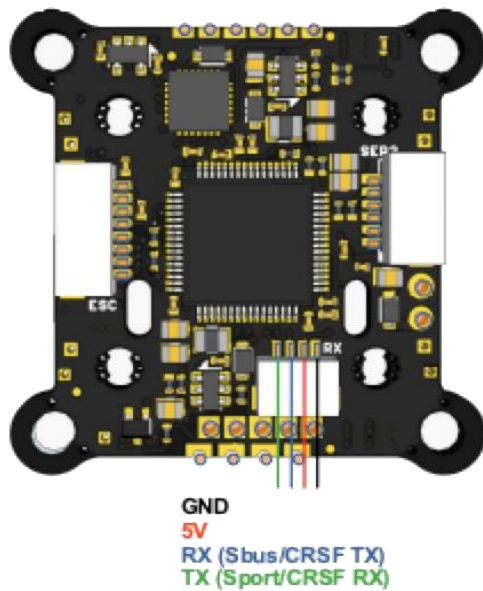
Any other ESC is usable (please make sure the signal pinout is correct, otherwise change accordingly)



Receiver connection (RX)

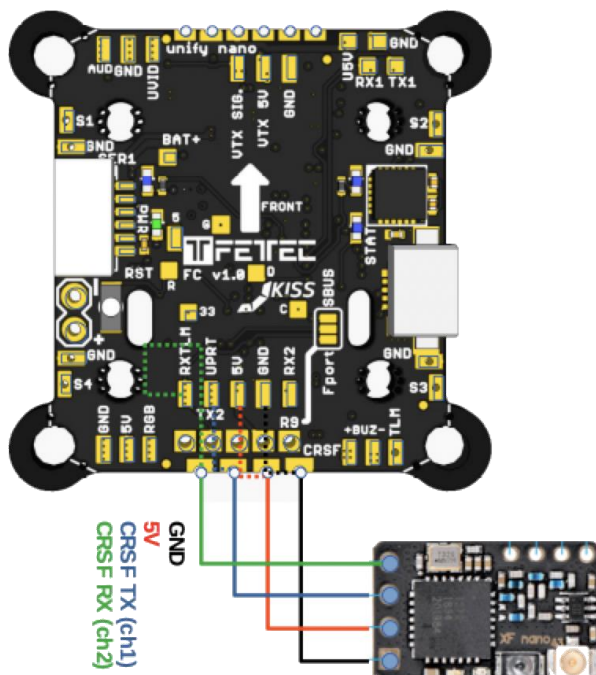
Top & Bottom connectors for receivers (bottom connector JST-SH-1mm 4-pin)

TBS Crossfire

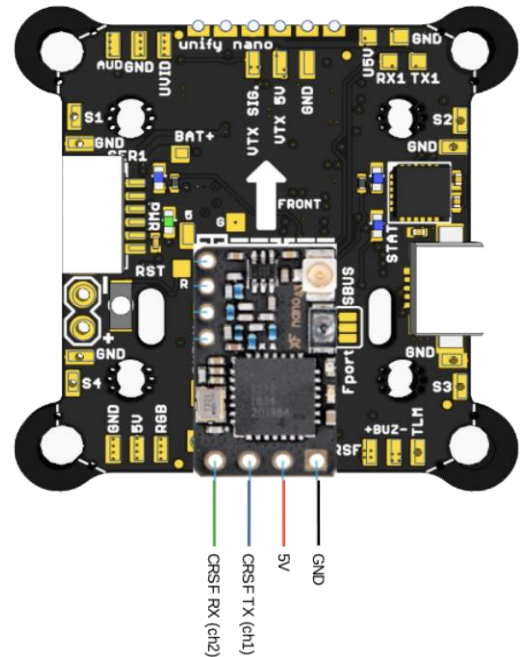


Crossfire nano connection

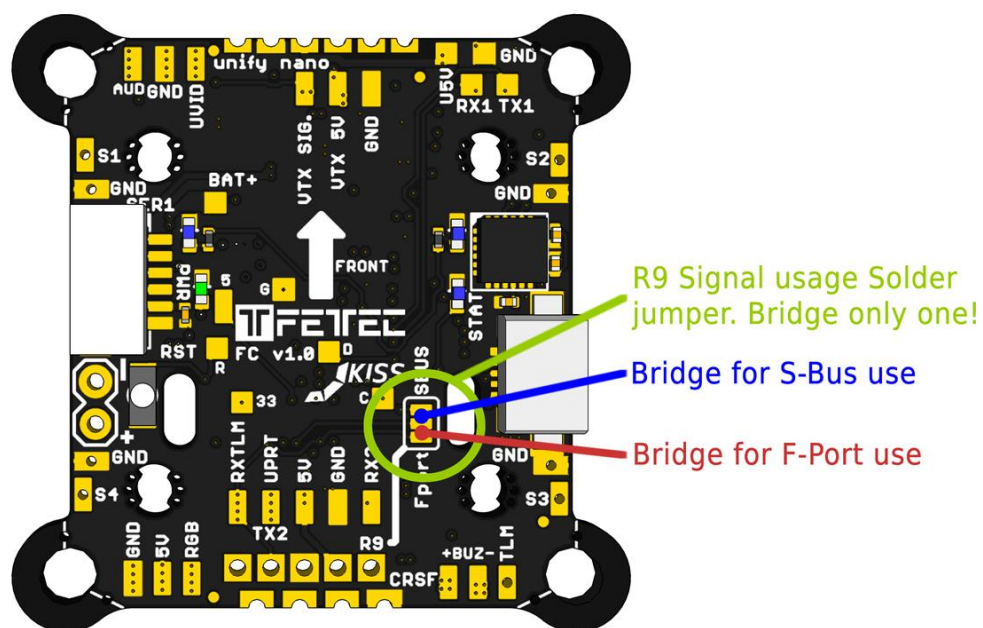
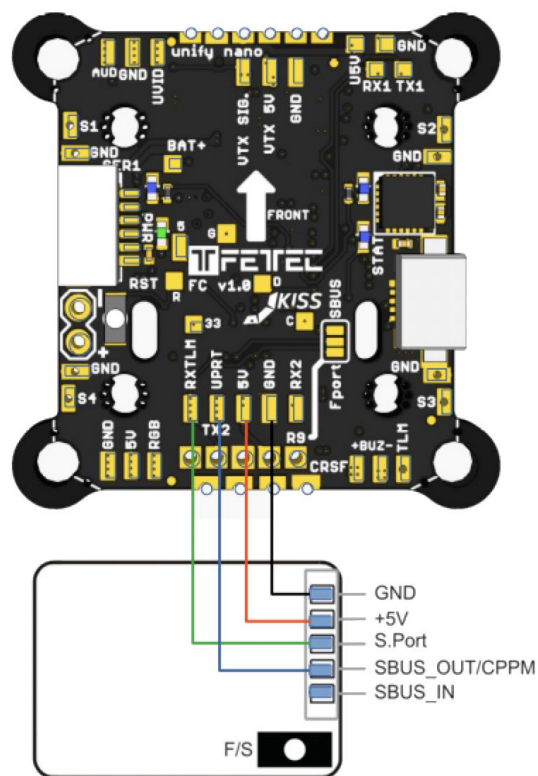
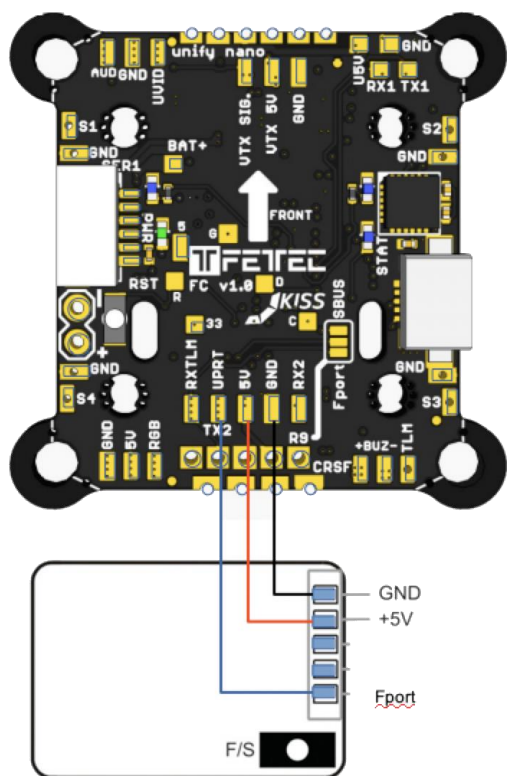
cable connection



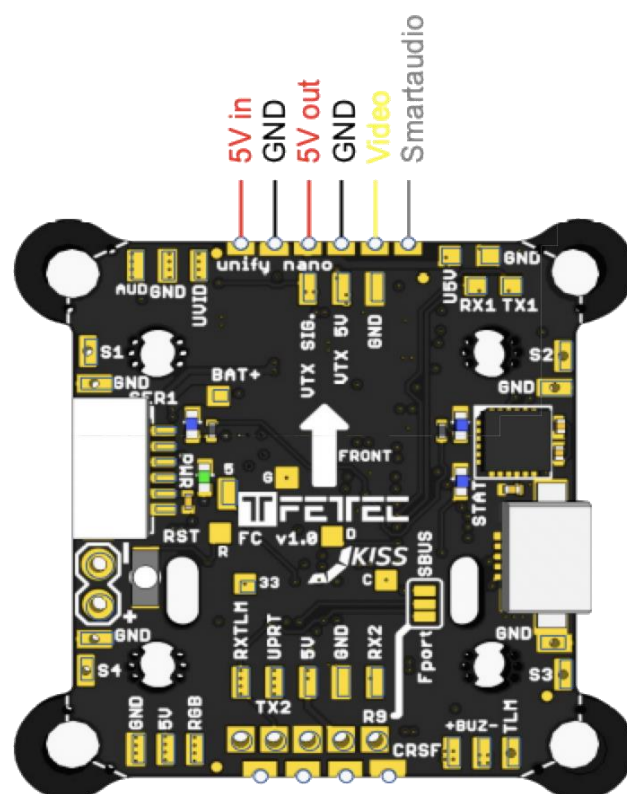
2,54mm pinheader connection



SBUS receiver / FrSky R-XSR



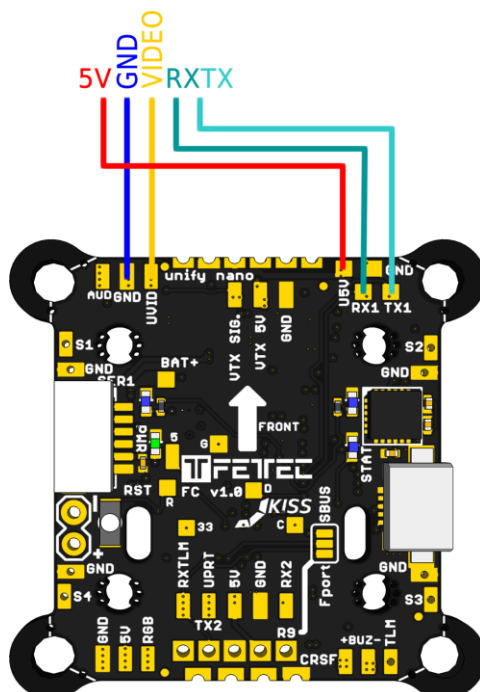
VTX connection (Unify nano)



Camera connection

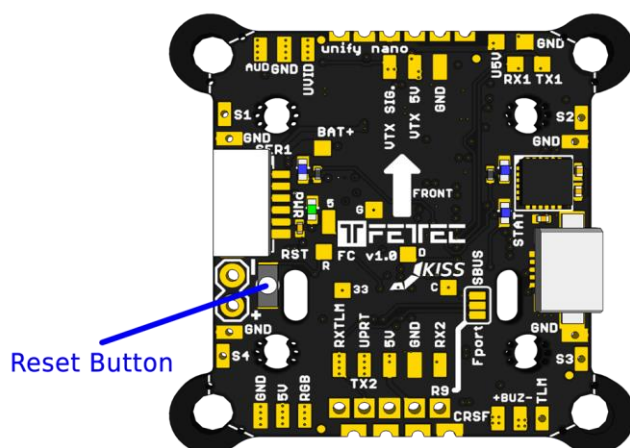
Notes:

- RX and TX connection is only for cameras that support serial
- 5V (U5V) and Video (UVID) are only for use with a mounted unify PRO nano or unify PRO nano 32



Resetbutton

Resets the FC to the preflashed bootloader

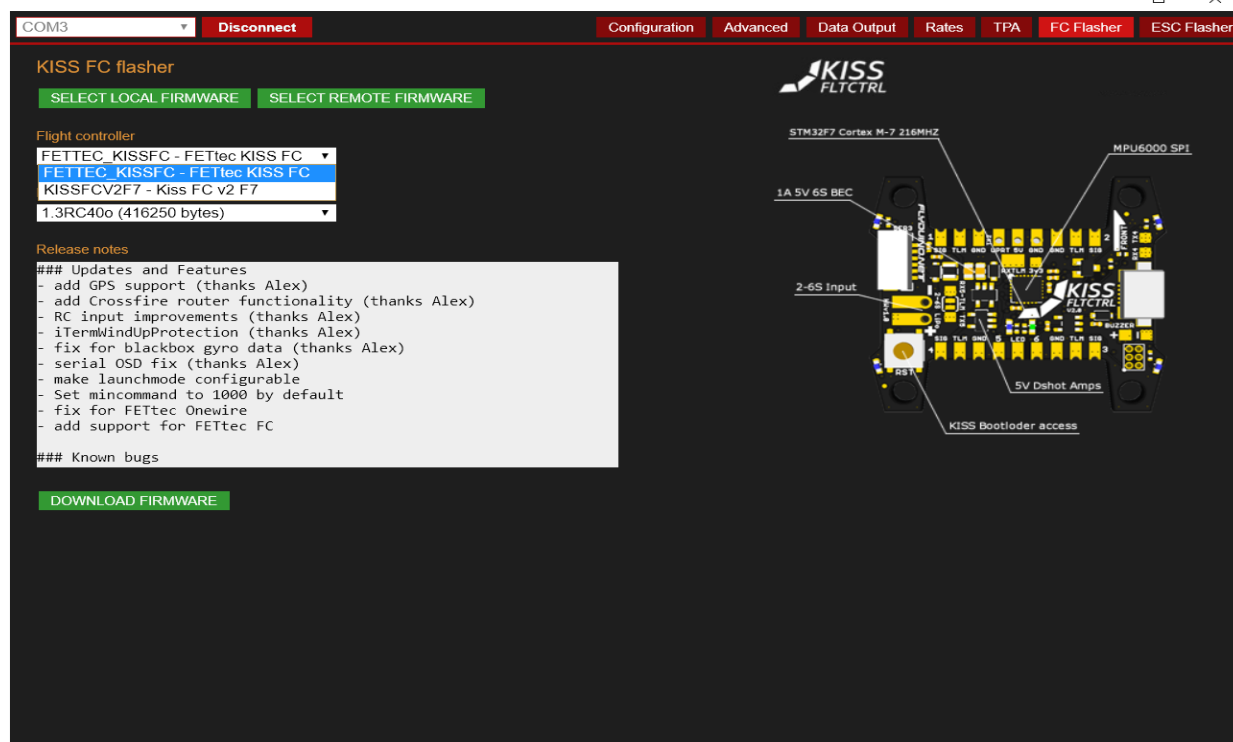


FC configuration

KISS FC Firmware

For the latest KISS FC firmware and GUI please visit <https://github.com/flyduino>

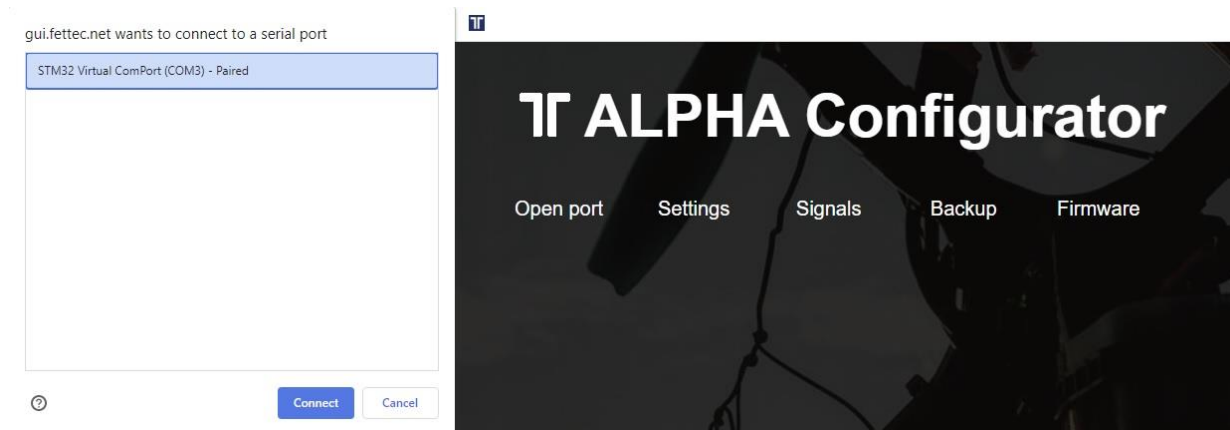
- Install KISS GUI
- Connect COM port
- To update the FETtec FC firmware please use the KISS GUI and choose FETTEC KISS FC
- Configuration can be made in the KISS GUI, settings are in the advanced tab



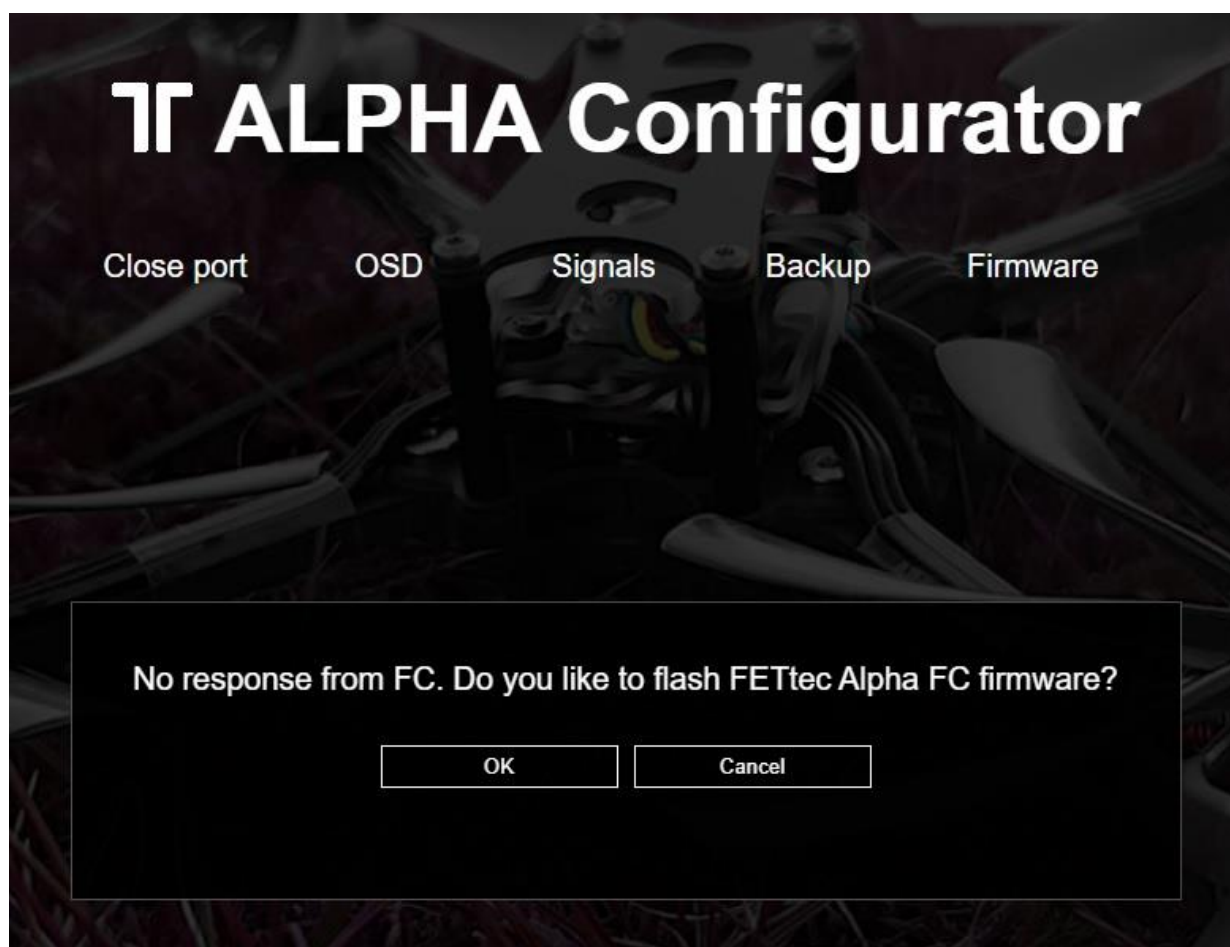
FETtec Alpha FC firmware

The FETtec FC F7 is compatible with FETtec Alpha FC firmware.

1. Open FETtec Toolset <https://gui.fettec.net> and choose ALPHA Configurator.
2. Connect the FETtec FC via USB.
3. Open the ALPHA Configurator and select open port. Choose the serial port on which the FC shows up and press connect.



4. If you have KISS FC firmware running on your FC, you will get a warning if you want to flash FETtec Alpha FC firmware. Press "OK"

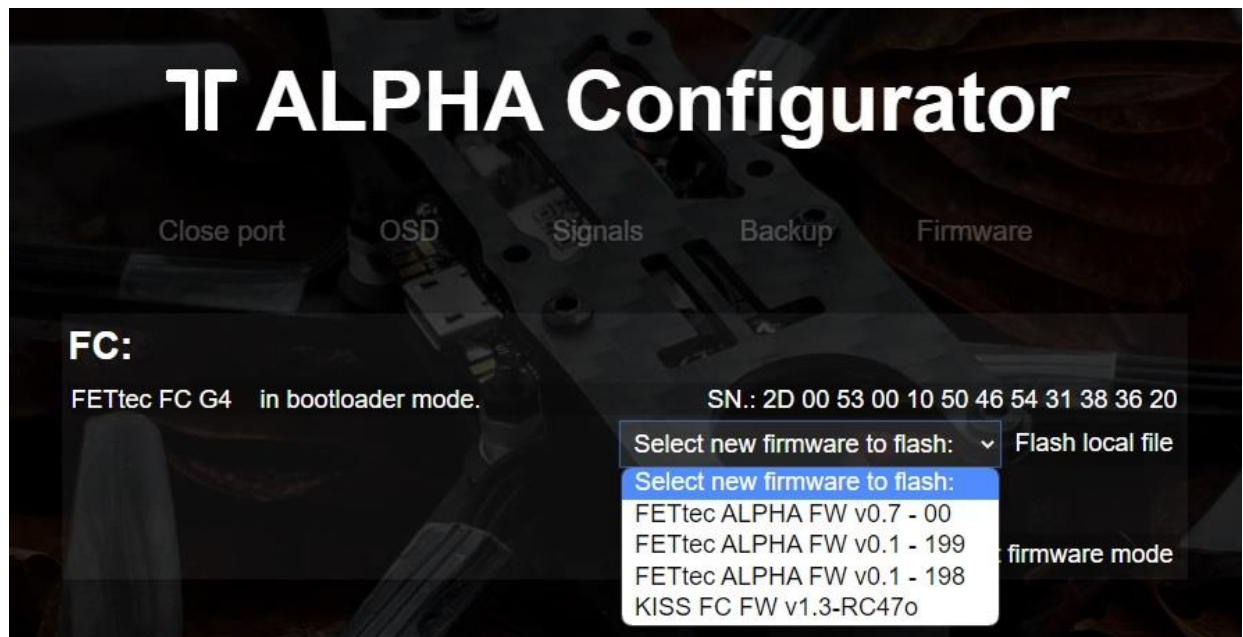


Select serial port again

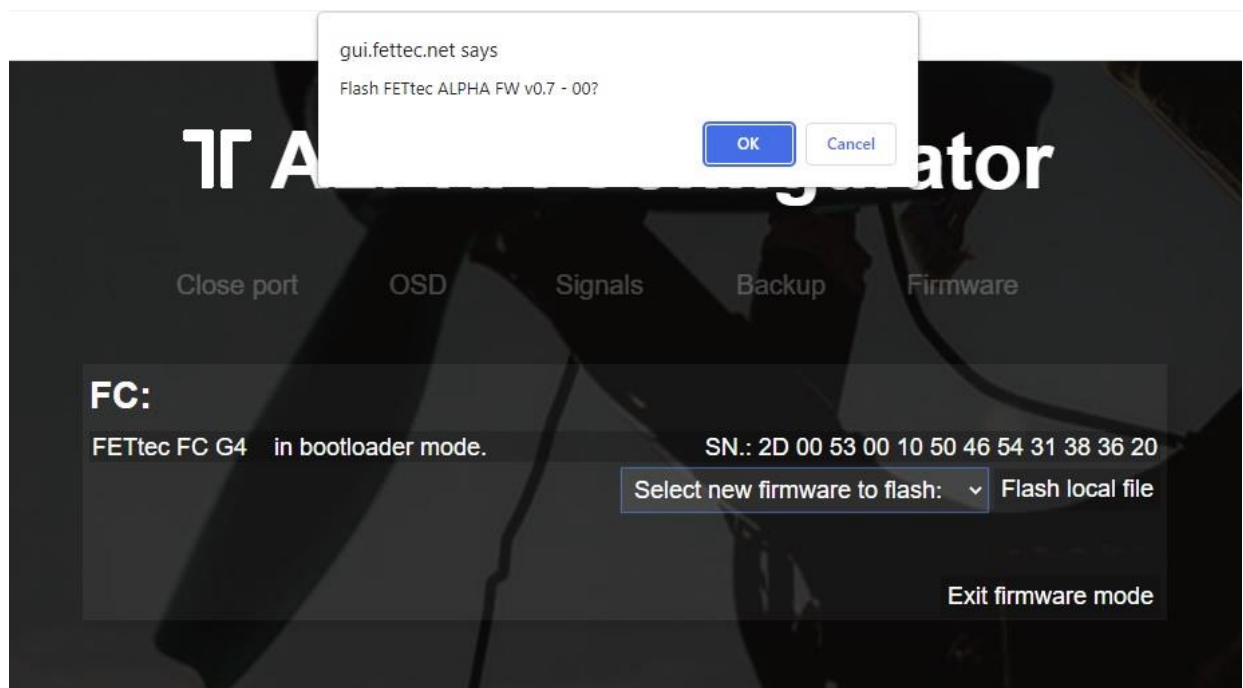


5. "Select new firmware to flash".

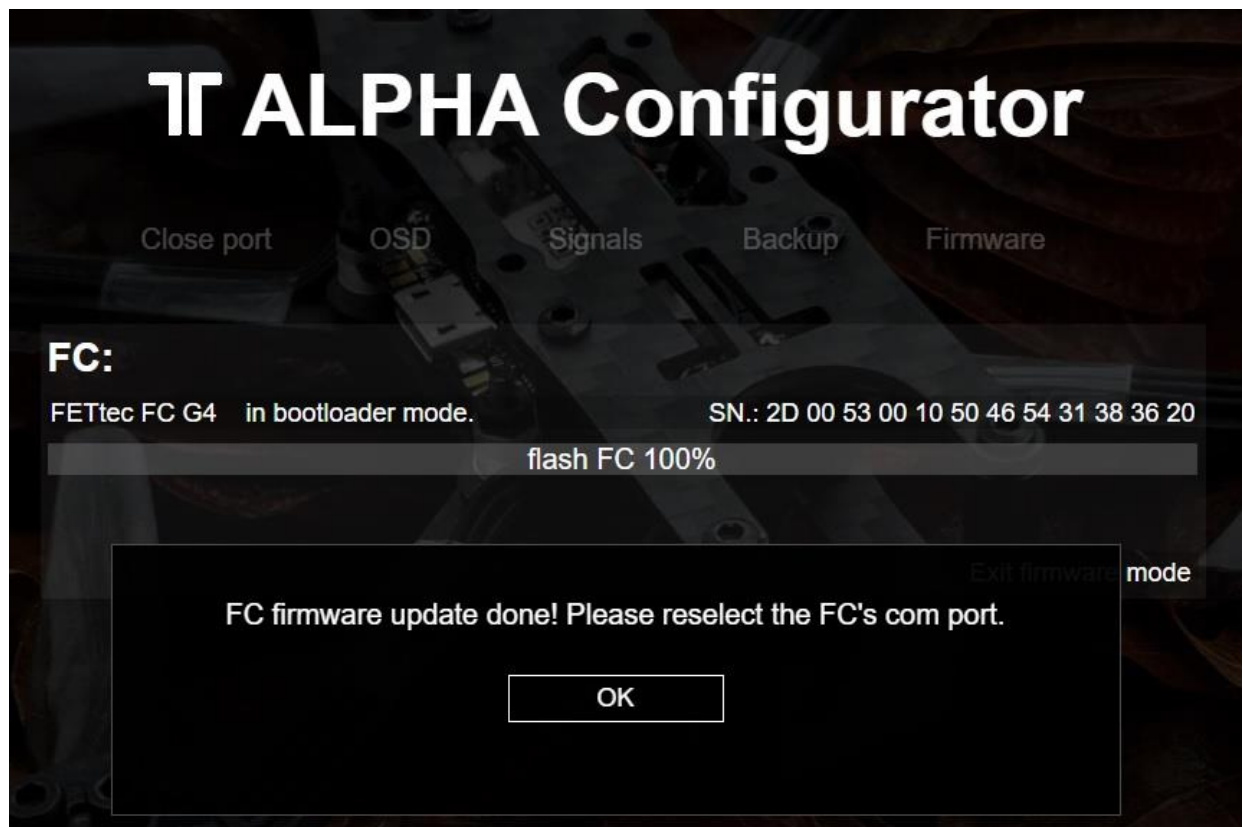
We always recommend flashing the latest available firmware.



6. Confirm to flash FETtec ALPHA firmware by pressing "OK"



7. FC firmware update is done!



The FC needs a restart after that, therefore the com port is requested to be selected and connected again

Now you can customize everything in the GUI according to your wishes.

Please connect everything like described in the manual of the FC.

A unit's transmit signal (TX) must match the corresponding receiver (RX) at the other end. It must therefore be wired crosswise in order to transmit a signal.

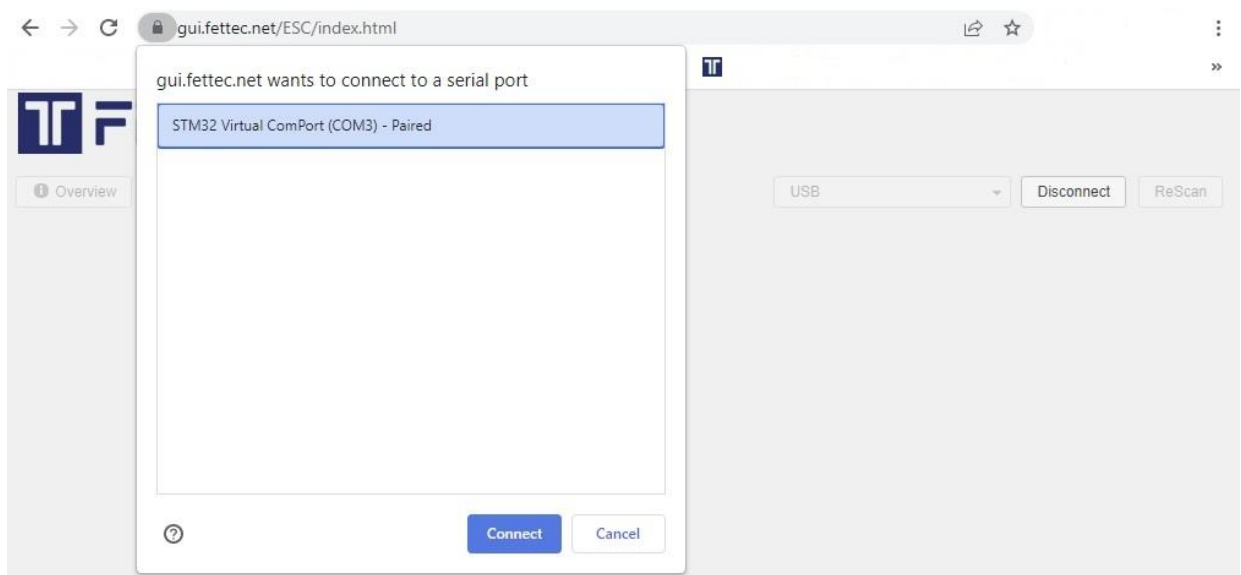
The receiver signal will get auto detected (supported systems are Frsky Sbus+S-Port, CRSFv2 and CRSFv3 and Ghost).



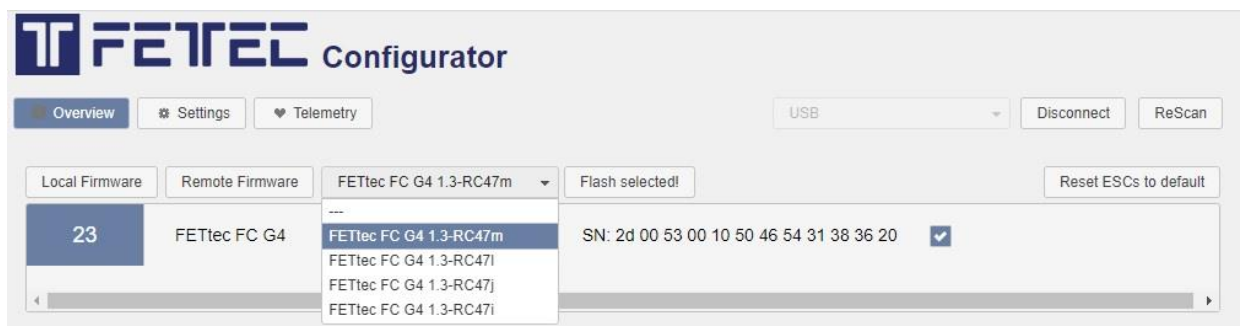
Get back to KISS

If the FETtec Alpha FC firmware is flashed on your FC and you want to get back to KISS firmware, follow these steps:

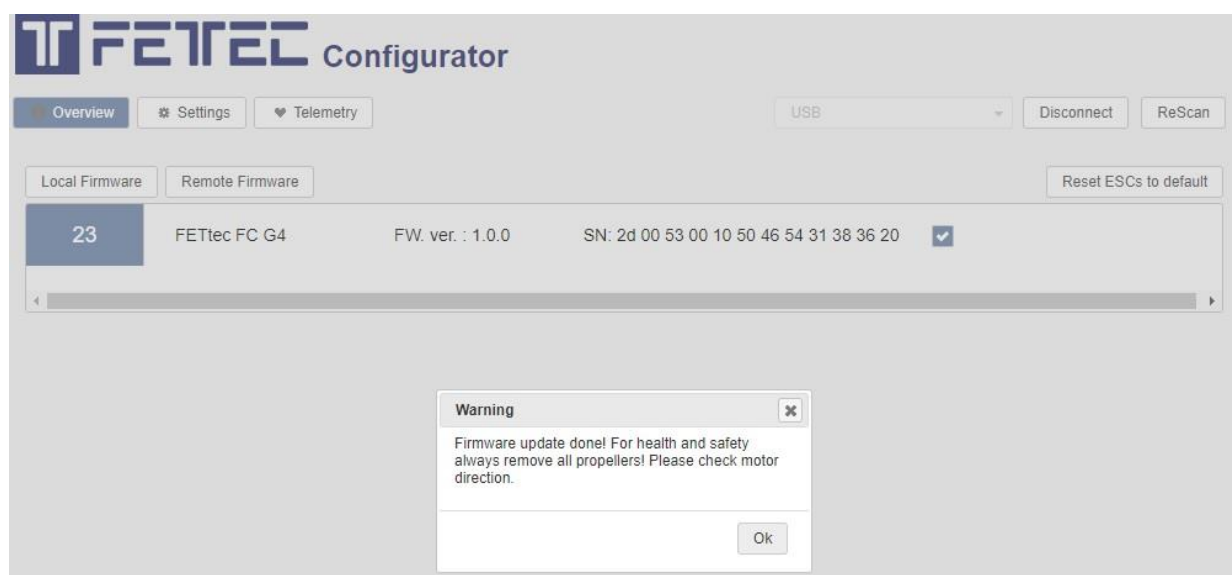
1. Open FETtec Toolset <https://gui.fettec.net/>
2. Connect the FETtec FC via USB.
3. Press the reset button once
4. Open the FETtec **ESC** Configurator and select “USB” and connect.
5. Choose the serial port on which the FC shows up and press connect.



6. Now the FC shows up and you can select KISS Firmware (FETtec FC G4 1.3-RC47m) in “Remote Firmware” and press “Flash selected!”

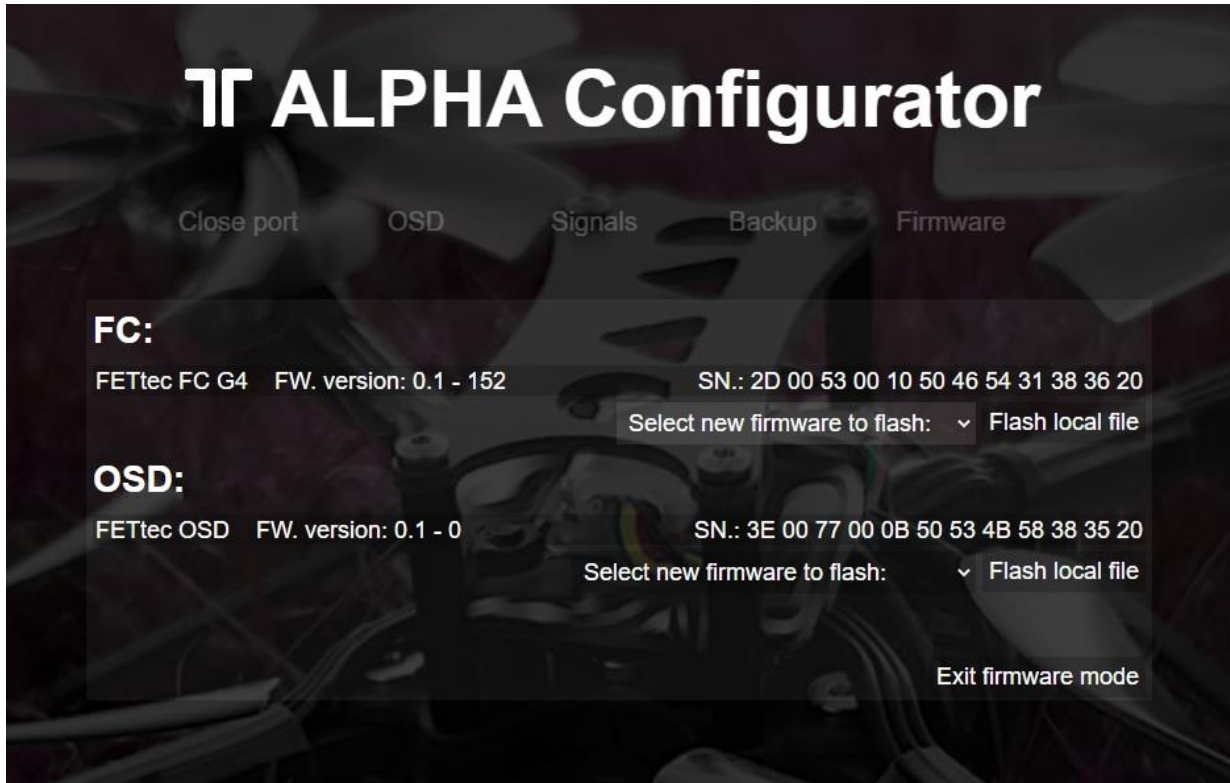


7. Flashing to KISS FC firmware done.



Firmware updates on FETtec Alpha FC firmware

For firmware updates it is the same procedure as flashing the FETtec Alpha FC firmware. Connect FC via open port and choose “Firmware”.



Now you can flash the latest firmware update via “Select new firmware to flash” or choose “Flash local file”.

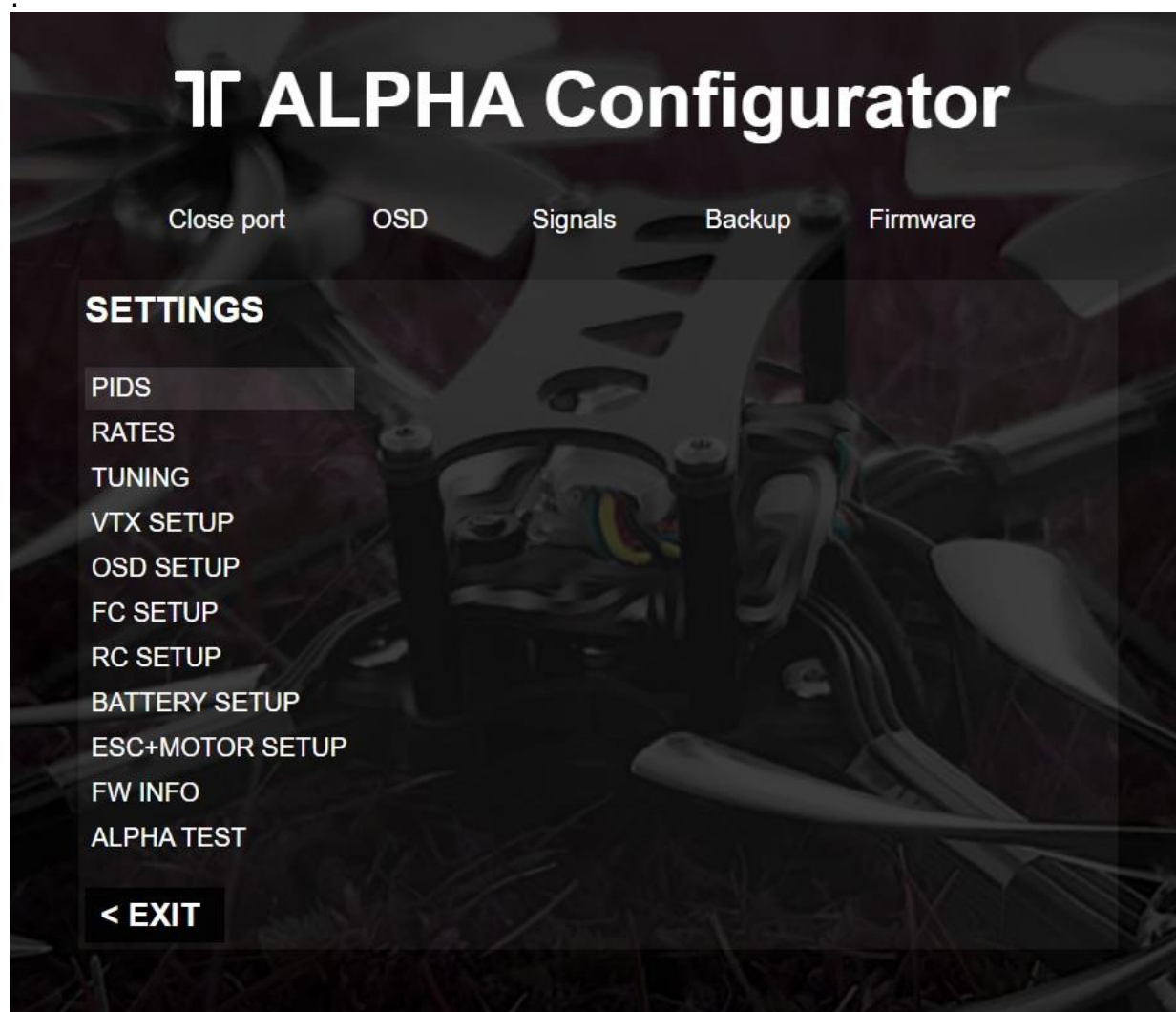
We always recommend to use the latest available firmware to get the best user experience.

If you like to try new features and firmware developments you can join our Discord channel to be always up to date (<https://discord.gg/pfHAbahzRp>).



Settings in FETtec Alpha FC firmware

You can set up the FC according to your wishes in the ALPHA Configurator.



All functions are explained in the respective category.

For more information and help use the FETtec Alpha FC firmware manual available at www.fettec.net/download



Display connection

I2C O-LED to FETtec FC F7

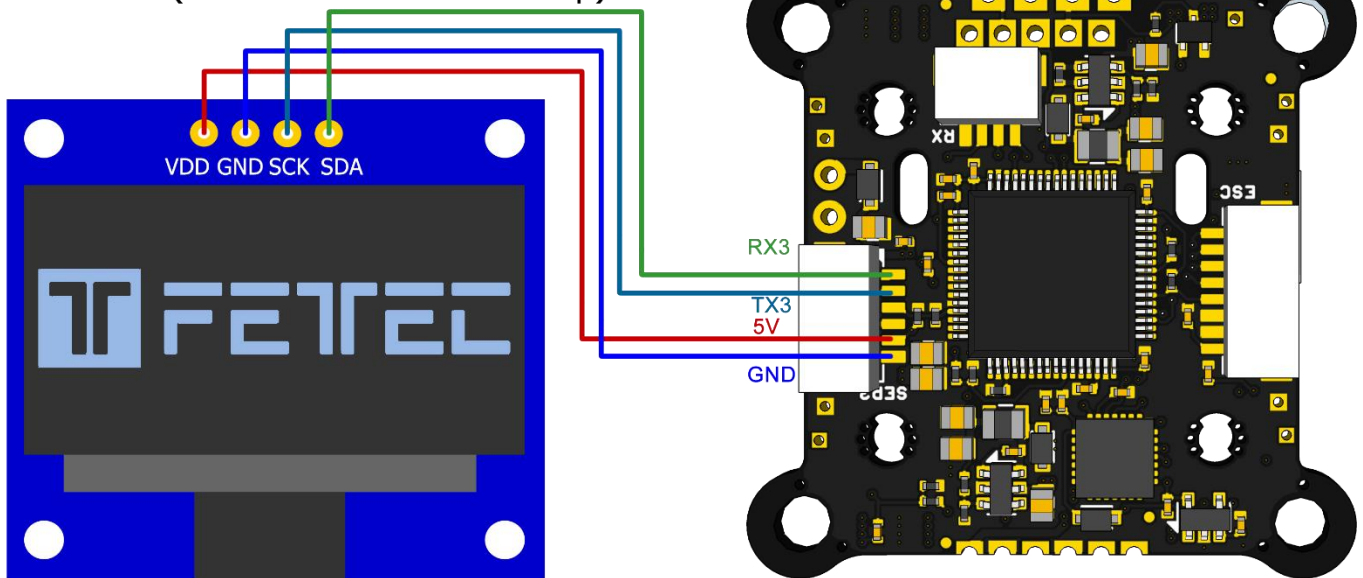
I2C O-LED display can be used to show the OSD menu and telemetry in order to be able to set up settings without computer or FPV goggles (FPV OSD).

The I2C connection will block serial 3 which is mostly used for digital OSD or analog VTX control (VCS).

The O-LED must be connected on power up to initialize but can be unplugged after set up is done.

Supported display types:

I2C OLED (SSD1306 or SSH1106 chip)

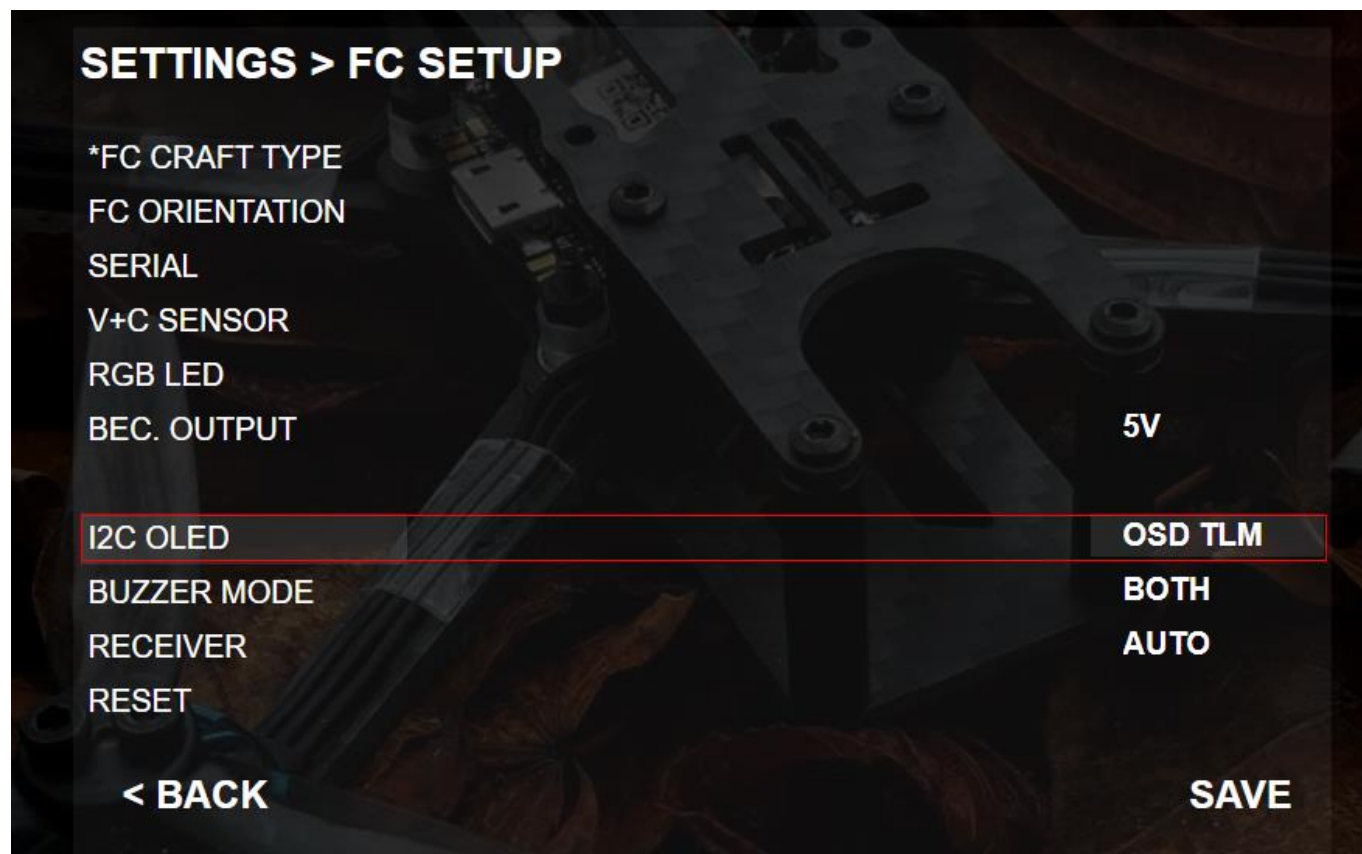


Required resolution 128 x 64px

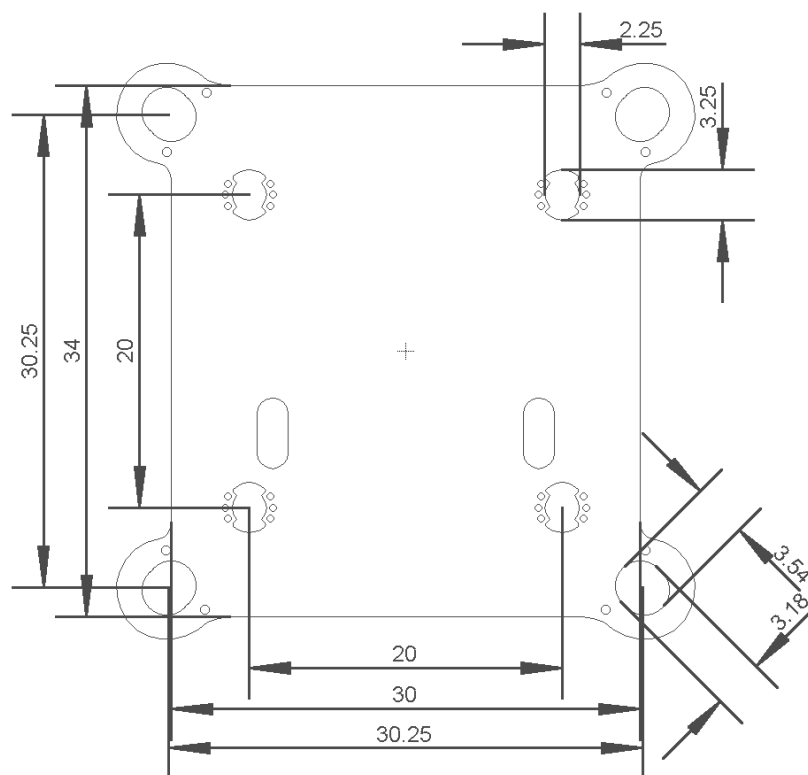
We recommend the 1,3" (SSH1106) version as the text size will be very small on the 0,96" (SSD1306) display.



Activation in FETtec Alpha FC firmware



Dimension (in mm)



Dimensions 35x30mm without 30x30 corners

- 20x20mm (with breakable holes M2 to M3)
- 30x30mm hole distance useable (breakable 30x30mm corners)
- Overall height: 7,9mm
- Weight: 5,37g
- Connector type: JST-SH-1mm

Do not file the mounting holes as this may cause damage!

