

***DRAGONFLY***

# **X-RACER** **F 303**

#1 Choice for Serious Racers

## X-RACER F303 FLIGHT CONTROLLER MANUAL



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## About:

The X-Racer F303 flight controller was designed for the serious racer. We have followed the idea of simplicity and kept the basic rugged design of servo style pinouts so you don't have to worry about the fragility of plastic connectors in a crash.

This flight controller only comes in one version...ACRO! This is not a flight controller that is designed to fit the needs of everyone, it is a flight controller designed to fit the needs of racers and free style flyers.

## Features:

- Built in high capacity black box featuring 16mb flash memory. This will allow you to store an entire days worth of flights while you are out in the field burning through multiple batteries and flights. Next generation F3 processor for efficient flight calculations and those lower loop time you've been reading about.
- The size of the flight controller follows the form that's so typical in all the others allowing you to mount to the majority of the frames out on the market without the need of changing mounting holes on most base plates.
- 8 PWM I/O lines for ESCs and added options you may choose.
- Supports Sbus, SumH, SumD, Xbus, PPM, PWM receivers but has a recommended and weight saving direct connection specifically for Sbus, which is our recommended connection for flight control.
- Buzzer port for audible warnings and lost model alarm audible location.
- Convenient pin outs for easy, reliable soldering.
- Only available in Acro.

## Software

The X-Racer flight controller runs on the open source Cleanflight software and it's compatible with the Boris B. Betaflight firmware.

## WARNINGS

Failure to adhere to these warnings will void your warranty and destroy your flight controller.

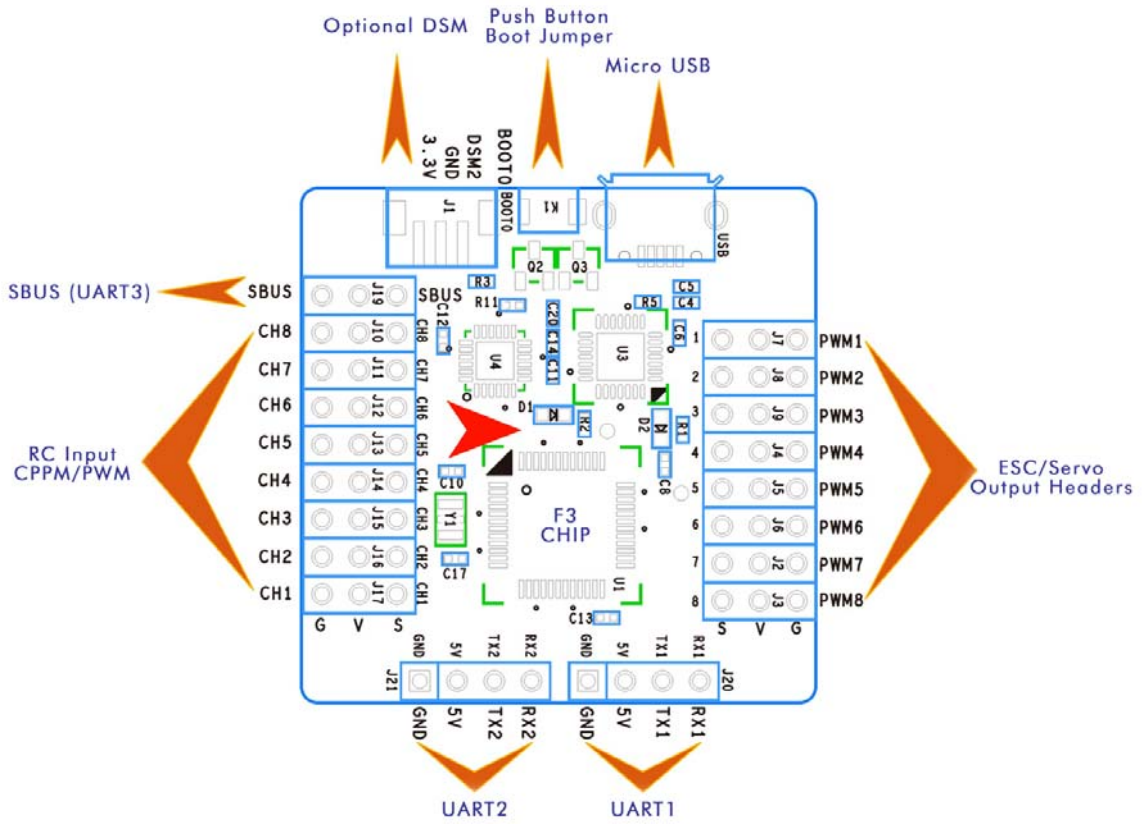
- Observe polarity at all times. **Double check** all connections before applying power. It is very common for users to accidentally reverse polarity, try not to let it happen to you.
- After double checking all connections it's a good idea to triple check connections...positive to positive, negative to negative.
- Make certain all channel inputs match corresponding outputs or else undesired flight characteristics will happen.
- Keep magnets away from flight controller.

## THINGS TO REMEMBER

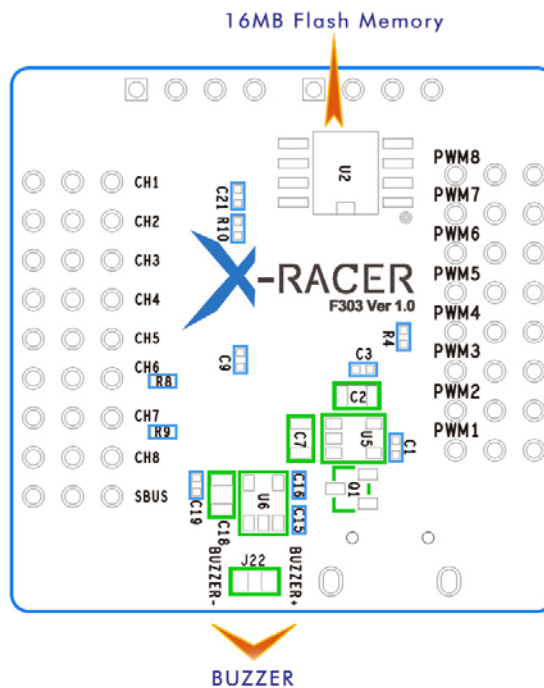
This hobby is supposed to be fun and there's a lot to learn. If you're having a difficult time, take a break and do some research. Don't be afraid to ask for help in Facebook groups, RC related forums, or send us a message directly. Building a racer/freesyle quad is fun but if you're new to the hobby it can be trying and at times frustrating. Other flyers advice can be your best source to ensuring your build is as good as it can be.

For those of you whom are not new to flying...remember you were once and any help you can give others is always appreciated. We see you guys out on the forums and Facebook groups offering your knowledge to others that don't have as much. Much respect! Thanks for the input.

## TOP



## BOTTOM



## QUICK START ADVICE

Before you complete your build or even install the flight controller you should verify it's operational status. This should be done with all RC related products i.e. motors, ESCs, cameras, VTX & RXs....

- Make certain all the latest Silicon Labs CP2102 USB to UART Bridge VCP Drivers are installed on your computer. Find them here: <http://www.silabs.com/products/mcu/pages/usbtouartbridgevcpdrivers.aspx>
- Install and launch the Cleanflight configurator tool found in Google chrome apps.
- With flight controller laying flat on level surface connect to the configuration software via USB cable.
- Select the correct comport.
- Click connect and verify that the connection is established.

**CLEANFLIGHT CONFIGURATOR 1.1.0**

2015-12-25 @ 11:58:19 -- Unique device ID received - 0x1c00224e33570120393730

**Setup** [DOCUMENTATION FOR 1.11.0](#)

- Calibrate Accelerometer** Place board or frame on **leveled** surface, proceed with calibration, ensure platform is not moving during calibration period
- Calibrate Magnetometer** Move multirotor at least **360** degrees on all axis of rotation, you have 30 seconds to perform this task
- Reset Settings** Restore settings to **default**
- Backup** **Restore** **Backup** your configuration in case of an accident, **CLI** settings are **not** included - See 'dump' cli command

Heading: 10 deg  
Pitch: -0.2 deg  
Roll: -2 deg

Reset Z axis, offset: 0 deg

**Info**

Battery voltage:	16.8 V
Capacity drawn:	0 mAh
Current draw:	0.00 A
RSSI:	0 %

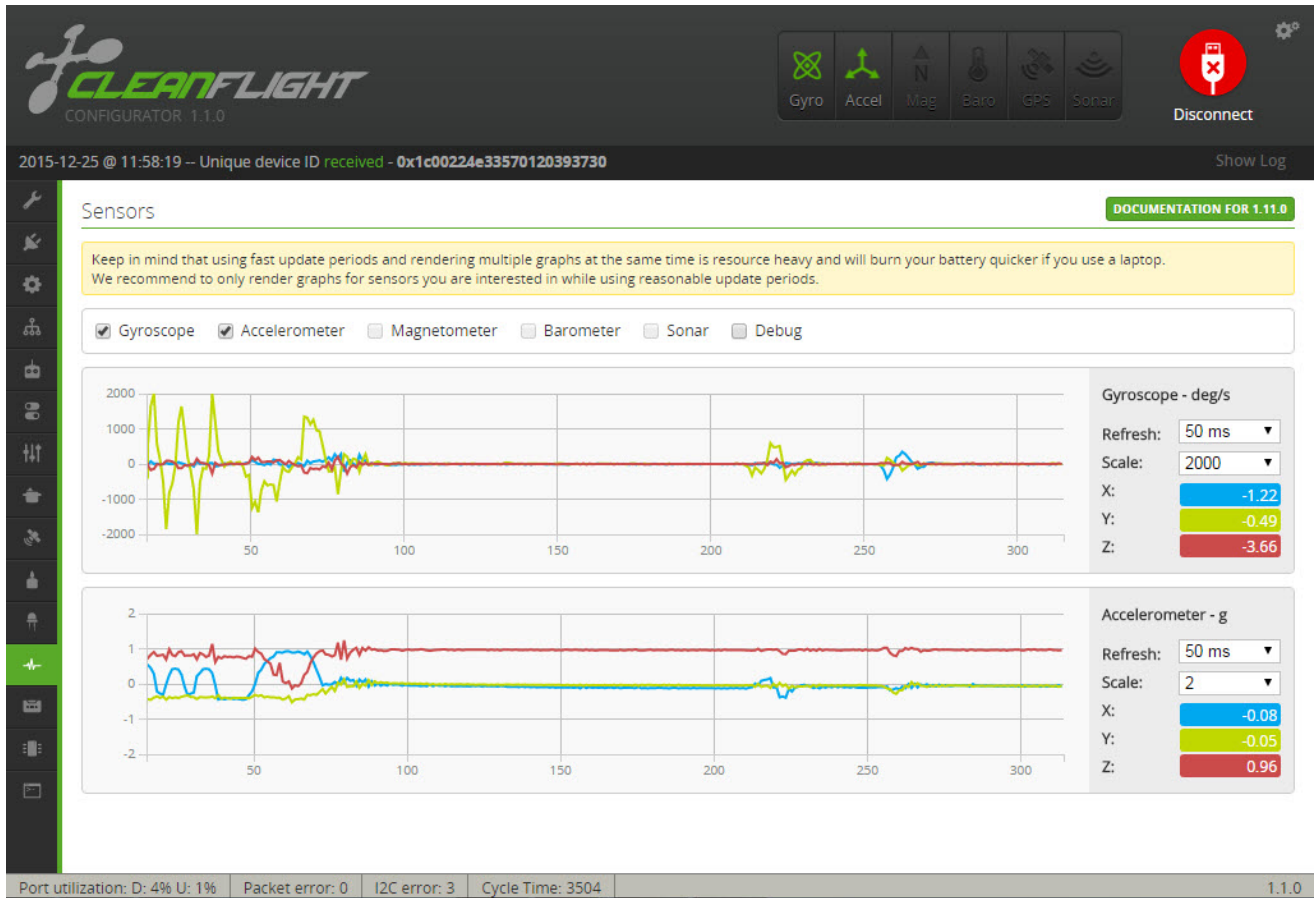
**GPS**

3D Fix: \_\_\_\_\_  
Sats: \_\_\_\_\_  
Latitude: \_\_\_\_\_  
Longitude: \_\_\_\_\_

**Instruments**

Port utilization: D: 4% U: 1% Packet error: 0 I2C error: 3 Cycle Time: 3501 1.1.0

Make certain all sensors on the board are giving correct readings.



Once everything is verified to be operational and have no issues disconnect by clicking "disconnect" tab in cleanflight, then move to upgrading to the latest firmware. The latest firmware is highly suggested as it has the most recent bug fixes and features. Choose the latest "stable" release.

## Basic setup process

- Choose the board alignment.
- Calibrate the sensors with board/frame on level surface and not moving.
- Configure ports.
- Choose model mode.
- Enable desired features.
- Configure rx and channel mapping.
- Set mid and end points.
- Configure voltage monitoring.
- Config/Test outputs.
- Tune PIDs.