iF Alpha A85 HD System
User Manual & Technical Specifications

Introduction

Thank you for purchasing our iFlight Alpha A85 FPV quad system. This versatile quad can be used by beginners or professionals. In order to ensure the correct and safe use of our product, please read this manual carefully before use. The information in this manual is subject to change without notice.

- Team iFlight

Safety notice

Many RC models are equipped with powerful motors or sharp propellers. When using or maintaining your models, proceed with caution. When performing assembly or maintenance, make sure to disconnect the power to the model and remove the propellers.

Do not operate the iF8 transmitter under the following conditions:
- In severe weather such as rain, hail, snow, storms or highly electromagnetic environments.
- In any situation where visibility is limited.
- In areas where people, property, high-voltage power lines, public roads, vehicles or animals may be present.
- If you feel tired or unwell or under the influence of drugs or alcohol.
- If the remote control or model seems to be damaged or not working properly.
- In areas with high 2.4GHz interference or where 2.4GHz signal is prohibited.
- When the battery voltage is too low.
- In areas where local regulations prohibit the use of aviation models.

Firmware

The A85 system comes with a basic PID- and Filter tuning was applied for a great flight experience. No Betaflight changes are required. Simply charge, bind and fly!
Visit **www.iflight-rc.com** to learn about optional hardware accessories to convert your A85 system.

Alpha A85 HD System

Alpha A85 Quad BNF Included Components and Parts
- Prebuilt and tested Quadcopter
- 1x Alpha 85mm Frame
- 1x Caddx Nebula Nano Digital HD System Kit
- 1x Albatross LHCP ipex 5.8g light antenna
- 2sets HQ 2 inch 4-blades (Set of 4 - Color May Vary)
- 1x iFlight Lipo Strap

🔍 Features

Let's welcome the iFlight Alpha series, a new way to fly FPV. Ever wanted to try Digital FPV on the smallest possible whoop size quad? We sticked the caddx Vista and the new caddx Nebula cam to one of our new 2inch whoop frames, did some tuning and tried to find the optimal ratio between weight and power. This is what we came up with to combine flight time efficiency with sufficient power.

- Butter smooth XING1303 5000KV, more torque and efficiency with longer flight times compared to 1105 motors
- Ducts to protect the sensitive environment or yourself
- Pre-tuned with smooth cinematic settings
- iFlight Albatross 5.8G light antenna upgrade (included)
- iFlight Albatross 900mhz light micro antenna upgrade (included with every Crossfire Nano RX)

PRE-TUNED & PRE-SETUP:
- Don't worry about tuning, we did that for you already! A basic PID- and Filter tuning was applied for a great flight experience!
To restore lost tunes or updates, please check our linked article on:
https://iflightrc.freshdesk.com/support/solutions/articles/48001148115-firmware-wiring-factory-dumps
- Angle-Mode (self balancing level mode) is enabled by default to make sure your first flight doesn't end in a mess!
Please check our linked article on **"How to disable Angle-Mode, activate Acro-Mode"**
https://iflightrc.freshdesk.com/a/solutions/articles/48001158403

🚁 Getting Started

1. Install the Betaflight Configurator to your computer and follow the instructions on the main screen to install the drivers, depending on your OS. https://github.com/betaflight/betaflight-configurator/releases
2. Is your receiver pre-installed? If not, wire it according to the Wiring Diagram above.
3. Prepare a charged battery; Make sure it's within specifications of your Quadcopter!
4. Bind the receiver to your radio; Get detailed instructions of the 3rd party receiver website or check for tutorials available. Make sure TX radio and RX receiver hardware and especially firmware is compatible. There have been several issues with Frsky firmware compatibility. https://iflightrc.freshdesk.com/support/solutions/articles/480008472 97-how-do-i-bind-my-radio-transmitter-
5. Digital video or Analog video transmission?
    1. Do you fly a DJI digital FPV system? If so, bind your DJI Air module to both Goggles and Radio. https://iflightrc.freshdesk.com/support/solutions/articles/480011491 92-how-to-link-activate-dji-fpv-components-
    2. If you fly analog, you don't need to bind your Goggles but search for signal when ready to fly.
6. Connect the Quadcopter to your PC and the Betaflight Configurator. Check for arming flags on the first screen. https://github.com/betaflight/betaflight/wiki/Arming-Sequence-&-Safety
7. Go into the "Receiver" Tab and check if your signal inputs are within tolerance (1000-2000), your channel map is setup correctly (Throttle=Throttle, Yaw=Yaw etc) and Radio switches trigger at least one AUX channel to arm your drone.
8. Go into the "Modes" Tab and setup your AUX 1 channel to arm. Various mode switches are available.
    1. For safety reasons, the "angle mode" is pre-set on every BNF to protect Beginners of unexpected crashes. This mode keeps your Quadcopter in a horizontal position until you either deflect your pitch or roll stick and sets automatically back when stick is centered but won't affect throttle or yaw! This mode can be deactivated or setup to an AUX channel.
9. Leave your props off, connect a battery and try to arm the Quadcopter with your radio. If necessary, verify the motor direction!
10. Disarm, unplug the battery and put on the propellers in correct direction. CAUTION: Our default Prop Configuration is inverted!

The most basic setup should be done. Take your drone to a place to safely arm and lift off!
Your drone is pre-checked, indoor pre-flown and has a factory setup pre-installed that can also include a filter setting and PID tune. Nonetheless, not every drone is the same and may cause the need for you to adapt minor changes for best handling and performance!

▣ Flight Controller

A85 comes with the SucceX-D 20A Whoop F4 AIO Board. Specifications for SucceX-D:

- Size：30.5*30.5mm
- Mounting pattern：25.5*25.5mm/φ3mm
- Weight: 8g
- Connector：Micro-USB
- MCU：STM32F4
- Gyro：MPU6000
- Blackbox：8MB
- BEC output: 5V 2A
- INA pad：nR2
- Barometer：yes
- Constant current：20A，25A（Burst）
- Input：2-4S
- Current sensor：yes
- BLHeli：BLHeli-S
- ESC Telemetry：no
- Firmware Target：IFLIGHT_F411_PRO
- ESC Firmware：Q-H-15

iFlight SucceX-D Whoop wiring diagram

Firmware Target: IFLIGHT_F411_PRO(IFRC)

Suggest to use the latest STM32F411 firmware.
All of the DJI Remote Controller,Goggles and
Air Unit Module need to be upgraded up to Latest version
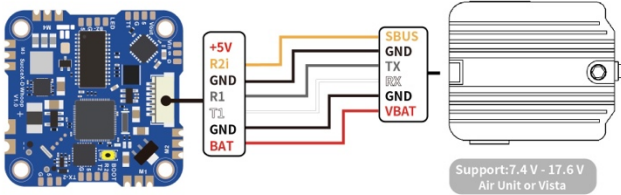
Either **SBUS** or **Sbus Baud Fast** protocol can be selected.
For **SBUS** by default,change the DJI Goggles setting to **Normal**.

For **Sbus Baud Fast**,use the latest Betaflight Configurator,
copy and paste " **set sbus_baud_fast=on** " into CLI and **save**,
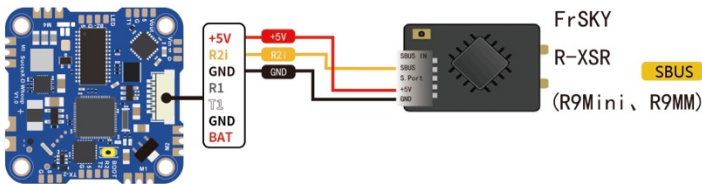and change the DJI Goggles setting to **Sbus Baud Fast**

+5V
R2i
GND
R1
T1
GND
BAT

SBUS
GND
TX
RX
GND
VBAT

Support:7.4 V - 17.6 V
Air Unit or Vista

Identifier	Configuration/MSP	Serial Rx
USB VCP	115200	
UART1	115200	
UART2	115200	

Receiver

Serial-based receiver (SPEKSAT, S ▼)   Receiver Mode

Note: Remember to configure a Serial Port (via Ports tab) and choose a
Serial Receiver Provider when using RX_SERIAL feature.

SBUS ▼   Serial Receiver Provider

Any other transmitter

+5V
R2i
GND
R1
T1
GND
BAT

SBUS
GND
TX
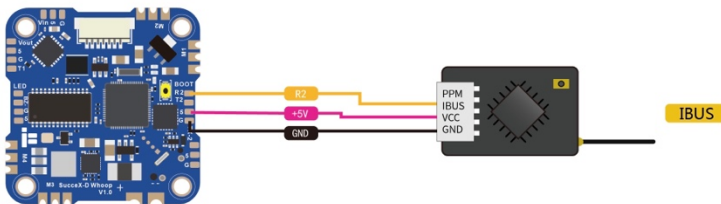RX
GND
VBAT

Support:7.4 V - 17.6 V
Air Unit or Vista
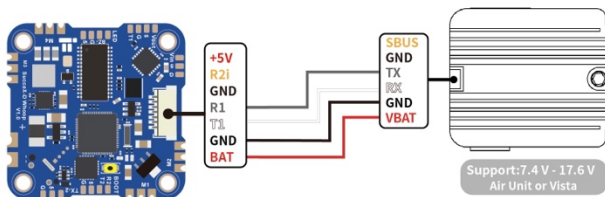
To free UART2 to use a 3rd party receiver,
do NOT connect the DJI Air Unit SBUS and
GND (as in the picture).
Please follow further instructions below.

Identifier	Configuration/MSP	Serial Rx
USB VCP	115200	
UART1	115200	
UART2	115200	

+5V
R2i
GND
R1
T1
GND
BAT

+5V
R2i
GND

SBUS IN
SBUS
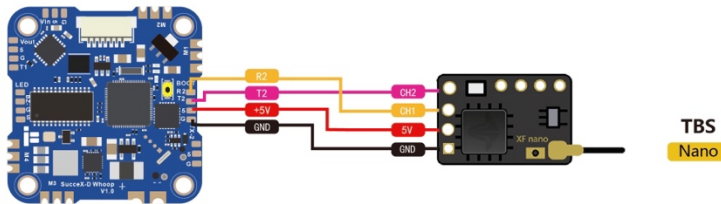S.Port
+5V
GND

FrSKY
R-XSR
(R9Mini、R9MM)

SBUS

Receiver

Serial-based receiver (SPEKSAT, S ▼)   Receiver Mode

Note: Remember to configure a Serial Port (via Ports tab) and choose a
Serial Receiver Provider when using RX_SERIAL feature.

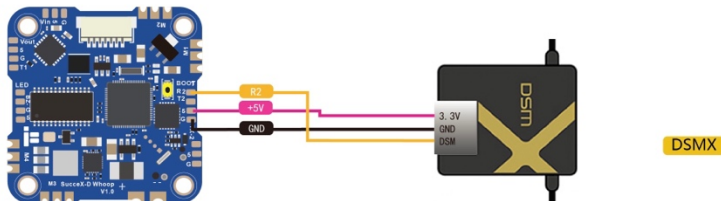SBUS ▼   Serial Receiver Provider

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	VTX (IRC Tran AUTO
UART2	115200		Disabled AUTO	Disabled AUTO	Disabled AUTO

R2
+5V
GND

PPM
IBUS
VCC
GND

IBUS

Receiver

Serial-based receiver (SPEKSAT, S ▼)   Receiver Mode

Note: Remember to configure a Serial Port (via Ports tab) and choose a Serial
Receiver Provider when using RX_SERIAL feature.

IBUS ▼   Serial Receiver Provider

R2
T2
+5V
GND

CH2
CH1
5V
GND

XF nano

TBS
Nano

Receiver

Serial-based receiver (SPEKSAT, S ▼)   Receiver Mode

Note: Remember to configure a Serial Port (via Ports tab) and choose a
Serial Receiver Provider when using RX_SERIAL feature.

CRSF ▼   Serial Receiver Provider
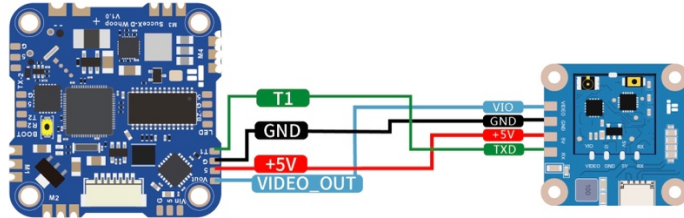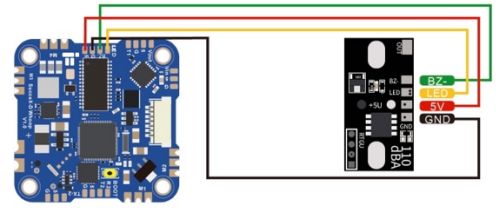

R2
+5V
GND

3.3V
GND
DSM

DSM

DSMX

Receiver

Serial-based receiver (SPEKSAT, S ▼)   Receiver Mode

Note: Remember to configure a Serial Port (via Ports tab) and choose a
Serial Receiver Provider when using RX_SERIAL feature.

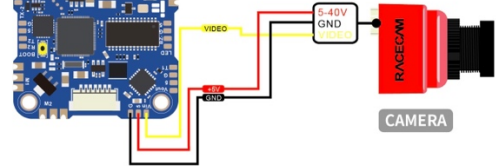SPEKTRUM2048 ▼   Serial Receiver Provider

VTX

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	VTX (IRC Tran) AUTO
UART2	115200		Disabled AUTO	Disabled AUTO	Disabled AUTO

T1
GND
+5V
VIDEO_OUT

VIO
GND
+5V
TXD

LED/BUZZER

BZ-
LED
5V
GND

CAM

VIDEO
+5V
GND

6-40V
GND

RACECAM

CAMERA

XING 1303 5000KV FPV Micro Motor

Your A85 Quad System comes with super durable and ultra-light XING 1303 5000KV Micro Motor.

Feautres:

- XING 1303 brushless motors are customized for 2~4S brushless whoop drone.
- Shaft Diameter: 1.5mm, Weight: 6.5g
- Compatible with 2-4S lipo battery

iFlight XING 1303 5000KV

Technical Datas	
KV	5000
Configu-ration	12N14P
Stator Diamter	13mm
Stator Length	3mm
Shaft Diameter	2mm
Motor Dimension(Dia.*Le	Φ17.58*11mm
Weight(g)	6.5
Idle current(10)@5V(A)	≦0.44
No.of Cells(Lipo)	4S
Max Continuous Power(W)60S	98.1
Internal Resistance	0.386Ω
Max Current (60S)	6.13A

Prop (inch)	Voltages (V)	Throttle (%)	Load Currency (A)	Pull(g)	Power(W)	Efficiency(g/W)	Temperature (in full throttle load 1min)
2540	16	50%	2.22	98	35.5	2.759	45
		60%	3.04	119	48.6	2.447	
		70%	4.12	139	65.9	2.109	
		80%	5.02	171	80.3	2.129	
		90%	5.41	181	86.6	2.091	
		100%	6.13	198	98.1	2.019	
2X2X4	16	50%	1.62	75	25.9	2.894	40
		60%	2.49	107	39.8	2.686	
		70%	3.07	117	49.1	2.382	
		80%	4.12	147	65.9	2.230	
		90%	5.01	169	80.2	2.108	
		100%	5.39	180	86.2	2.087	
■Airplane		□Helicopter			■Vtol		

M2 x 8Screw

Accessories list for Alpha A85

	M2 x 3 Screw	2		M2 x 6 Screw	24		M2 x 8 Screw	4
	M2 x 16 Screw	1		M2 x 22 Screw	3		M2 Nylon Nut	4
	M1.6 x 16 Screw	4						

⚙️ A85 Quadcopter Specifications

- SucceX-D 20A Whoop F4 AIO Board
- A85 Carbon Fiber Frame
- HQProp T2x2x4 Props
- XING 1303 5000KV FPV Micro Motor
- Wheelbase: 85mm
- Body size: 125*125mm
- Ducted propeller size: 2 inch
- FC pattern: 25.5*25.5mm
- FPV cam spacing: 14mm
- Maximum Takeoff Weight: 198g
- Weight without battery: 76.5g
- Flight time: 5-7 min cruising (4S 450mAh)

🎧 Warranty and Support

If there is any problem with your hardware, please keep the proof of purchase and contact the retailer where you purchased the system. Technical support can be found at https://www.iflight-rc.com

Or join our Facebook group for community support https://www.facebook.com/ iflightrc

CE EU Simple Declaration of Conformity

iFlight declares the radio equipment is in compliant with EU directives.Directive 2014/53/EU. Full text of the declaration of conformity is available at the following website www.iflight-rc.com.

Manufactured by
iFlight Innovation Technology Ltd.
Address: Floors NO.3, Shenghua Road,Zhongkai Hi-tech Area,Huizhou,CN

FCC Information

This equipment has been tested and found to comply with the limits for Part 15 of the FCC rules. This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Full text of the declaration of conformity is available at the following website www.iflight-rc.com

⚠ CAUTION

Changes or modifications not approved by the party responsible for compliance could void the user's authority to operate the equipment. This product contains a radio transmitter with wireless technology which has been tested and found to be compliant with the applicable regulations governing a radio transmitter in the 2.400GHz to 2.4835GHz frequency range.

www.iflight-rc.com