Figuoo

# CineRace20 DJI O3 HD Manual

video guide: https://youtu.be/LkkEtJFXelw



# 1/ drone introduction

The CineRace20 O3 edition is currently the smallest cinewhoop of FLYWOO that is equipped with the DJI O3 Air unit module, measuring only 2 inch in size.

It features neon LED lights, offering a variety of color options for added fun during races or other events.

A specially designed GM10 Nano V3 GPS module is tailored to fit the CineRace20, providing minimal weight but the ability to search up to 30 satellites.

Use TPU soft material to prevent jelly effect. Pilots can quietly enjoy the fun of shooting a video without jelly

This is a truly innovative duct design. It is designed to block certain winds, increasing the thrust of the drone. The duct completely surrounds the propeller, making flying safer.

- Sub250 (even with battery)
- Support 4K\60fps recording
- GPS up to 30 satellites
- No Propellers in view, NO Jello flight Footage, stable flight picture
- Neon LED, various options. buzzer alarm
- Built-in SanDisk Extreme microSD card 128GB
- Innovative duct design

## Specifications :

Model: CineRace20 HD DJI O3 2inch Brand: FLYWOO Frame: CineRace20 O3 (Different fromCineRace20 V1.2\V2 frame ) FC and ESC : GOKU GN 405S 20A AIO GPS: GOKU GM10 Nano V3 GPS Buzzer : 5PCS Active Alarm Buzzer VTX: DJI O3 Air Unit Camera: DJI O3 Propeller: D51-5 51mm Antenna: DJI O3 antenna Motor: NIN V2 1203PRO 4850Kv Weight: 139g **Recommended Battery:** Exploer 450mah 4S (flight time 5mins) Explorer 750mah 4S (flight time 6mins) CineRace 20 LED O3 Double duct design, New concept cinewhoop Sub250 | 4k 1080p | GM10 GPS V3 | Neno LED camera, you need to buy an adapter cable)





## **Real Duct design**

This is a truly innovative duct design. It is designed to block certain winds, increasing the thrust of the drone. The duct completely surrounds the propeller, making flying safer.



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## Super Compact Design

CineRace is double duct design , not a simple guard . It can fly as flexible as a racing drone, and as stable as Cinewhoop. Flywoo's classic compact design allows the CineRace20 and DJI O3 Air unit to be closely integrated.



## Ultra-Light Weight Sub250

2 inch CineWhoop below 250g even if you connect with the battery, meet the current requested of FAA rules. It can fly as flexible as a racing drone, and as stable as Cinewhoop





## Designing with a Focus on User Experience

Multiple careful designs, convenient for your daily use Easy to adjust flight controller settings Built-in SanDisk microSD 128GB Easy to upgrade and read SD card function



### GOKU GM10 NANO GPS V3.0

Up to 30 satellites can be searched, making the rescue function more reliable. More assured flight, you can see the data of latitude and longitude, altitude, speed, distance



## Race neon LED, Buzzer alarm

Allows you to control an LED light, turning it on or off as desired. It also offers a variety of color options, making it more fun to use during competitions or other events. (Changing the LED color requires soldering by yourself. If you can't solder, it is not recommended to try)



# In the Box :

- 1 x CineRace20 HD DJI O3
- 8 x D51-5 props
- 2 x Battery strap 9x150mm \ 9x200mm
- 1 x Set of screws
- 1 x SanDisk Extreme microSD Card 128GB
- 1 x 90° USB Type-C



# 2/ Configuration and wiring diagram description



## Flight control wiring diagram

## **PID** and filter settings

Lighter battery 4S 450MAH / 4S 750MAH

	Proportional	Integral	D Max	Derivative	Feedforward
Basic/Acro	- / /		1	1	
ROLL	99 🜲	119 ‡	99 💲	66 🜲	113 🌲
РІТСН	109 💲	126 🜲	109 韋	71 🛊	120 🌲
YAW	108 🜲	126 🌲	0 🜲	0 🗘	113 🌲

Heavy battery 4S 900MAH or equipped with an action camera

	Proportional	Integral	D Max	Derivative	Feedforward		
Basic/Acro			1	1 1	/		
ROLL	85 🜲	102 🗘	85 💲	56 🜲	97 💲		
PITCH	94 🜲	108 💲	94 🌲	61 🜲	103 ‡		
YAW	92 💲	108 💲	0 \$	0 💲	97 🌲		

## Default serial port settings

Identifier	Configuration/MSP	Serial Rx	Telemetry Output	Sensor Input	Peripherals
USB VCP	115200 🗸		Disabled V AUTO V	Disabled V AUTO V	Disabled V AUTO V
UAR <mark>T</mark> 1	115200 🗸		Disabled V AUTO V	Disabled V AUTO V	Disabled V AUTO V
UART2	115200 🗸		Disabled V AUTO V	Disabled V AUTO V	Disabled V AUTO V
UART3	115200 🗸		Disabled V AUTO V	GPS V 115200 V	Disabled V AUTO V
UART4	115200 🗸		Disabled V AUTO V	Disabled V AUTO V	Disabled V AUTO V
UART5	115200 🗸		Disabled V AUTO V	Disabled V AUTO V	Disabled V AUTO V
UART6	115200 🗸		Disabled V AUTO V	Disabled 🗸 AUTO 🖌	Disabled V AUTO V

UART1: ELRS/TBS/R9M/XM+/DSMX/SBUS receiver(Only open RX1)

UART2: NULL

UART3: GM10 NANO GPS (baud rate is 115200)

UART4: DJI O3 UNIT OSD

UART5: DJI O3 SBUS RX (Only use DJI remote control to turn on, and turn off RX1)

UART6: NULL

## 3/ Receiver binding

#### BNF DJI RX:

- 1/ Open the UART RX4 serial port
- 2/ Set SBUS receiver protocol
- 3/ The goggles set the SBUS standard protocol



https://www.youtube.com/watch?v=LkkEtJFXelw&t=88s&ab\_channel=flywoofpv

#### TBS NANO 915:

When the USB is connected, the green light of the receiver flashes, and then bind according to the picture operation.



https://www.youtube.com/watch?v=-iNkVcOLITM&ab\_channel=Danimal3D



#### ELRS 2.4G RX:

	Ports	-					WIKI
	Note: not all corr	ntinations are valid. When th	le flight controller firr	mware detects this the serial port cor	nfiguration will be reset.		
ZORRO	Note: Do NOT as	Jable MSP on the first series p	Jort unless you know	what you are doing. You may have to Teleopetry Output	a reflach and erate your configuration if you o	As Parapherals	
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Bind procedure:

- Supply power to the EL24E/EL24P rx, wait until the LED on the RX is off, immediately turn off the power, and then repeat again the above steps. When the RX is powered on for the third time, the LED light will start to double-flash, which means that the RX enters the binding mode

- Insert the 2.4G ELRS TX to Radio transmitter, and choose External RF mode to CRSF protocol, then you can find ELRS menu from the Radio systems(Need to copy the ELRS.LUA file to the SD-Card tools first), Enter into ELRS and press [Bind], the LED on the RX module will getting to be solid if bind successfully.

- Receiver LED status meanings:

EL24E/EL24P RX: LED solid means bind successful or Connection established; LED double-flash means in bind mode; LED flash slowly means no signal connection from the TX module; LED flash fast means in WIFI hotspot mode, you can connect the WIFI of the RX and upgrade firmware of the RX via visit 10.0.0.1 from the web browser(password: expresslrs)

#### Updating Firmware Tutorial via BETAFLIGHT

https://www.youtube.com/watch?v=yhPw\_3ODHBw&t=5s&ab\_channel=flywoofpv Notice

The ELRS version of the remote control and receiver must be consistent before they can be bound

1/ ELRS 2.X.X versions can be bound to each other

2/ ELRS 3.X.X versions must be consistent, for example, both must be version 3.0.0

#### XM+ receiver:

1/ Press the XM+ receiver button, USB power supply, the red and green lights are always on

2/ The remote control turns on the binding mode, the green light flashes to indicate successful binding, turn off and restart



#### Notice (Other open TX remotes)

Receiver 1.x firmware just select FrskyX D16 in the remote control Receiver 2.x firmware just select FrskyX2 D16 in the remote control

3-1/ Then set the corresponding serial port and receiver protocol to ensure the normal output of each channel of the receiver.

🗲 Setup	Deseiver		
🖌 Parts	Receiver		
Configuration	Please read receiver chapter	of the documentation. Configure serial port	(if required), receiver (
Power & Battery	when TX is off or out of range	rrange on TX so that all channels go from ~1	000 to ~2000. Set mid
👽 Failsafe	IMPORTANT: Before flying re	ad failsafe chapter of documentation and c	onfigure failsare.
	Roll [A]	1500	0
a PID Tuning	Pitch [E]	1E00	A
Receiver	Yaw [R]	1500	
	Throttle [T]	885	'St
B Modes	AUX 1	1500	
It Adjustments	AUX 2	1350	
	AUX 3	1500	RC
🖬 Servas	AUX 4	2000	
L CPS	AUX 5	1500	
	AUX 6	1200	R
Motors	AUX 7	15:00	
= 05D	AUX 8	1500	
<b>2</b> .050	AUX 9	1500	
	AUX 10	100	1 -
E TED Color	AUX 11	100	
* LED Strip	AUX 12	1500	
		1.24	
Tethered Logging			

# 4/ Goggle binding:

Use tweezers or a toothpick to press the O3 UNIT binding button, when the red light flashes, then press the goggles binding button to complete the binding. A video guide can be viewed



## 5/ Mode setting:

Set the ARM switch and flight mode switch, AUX\* corresponds to the remote control switch, and the yellow area mark is turned on.



# 6/ Motor test:

Before installing the propeller, test the rotation direction of the motor, turn on the safety switch, and test the rotation of the motors one by one

		2000							RESET	gyro
QUAD X 🗸		1000							Refresh:	20 ms
Motor direction is reversed	0	0							Scale:	2000
		-1000							х:	0.24 ( -2.44
4 2		-2000							Y:	
1			-100	-50	0	50	100	150	Z:	0.00 ( -2.6
		Voltage:	0.02 V	Amperage:	0.00 A	Amp. drawn:	0 mAh		RMS:	0.99
			2	2		Motors		~		
reversed		1	- 4	3	4	2	0	/	0	
Reorder motors Motor direction										
ESC/Motor Features		1000	1000	1000	1000					
DSHOT300 V ESC/Motor protocol	0	R: 0	R: 0	R: 0	R: 0					
MOTOR_STOP Don't spin the motors when armed		E: 100.00%	E: 100.00%	E: 100.00%	E: 100.00%					
ESC_SENSOR Use KISS/BLHeli_32 ESC telemetry over a separate wire										
Bidirectional DShot (requires supported ESC firmware)	0									
12   Motor poles (number of magnets on the motor bell)	0	1000	1000	1000	1000	1000	1000	1000	1000	
		1000	1000	1000	1000	1000	1000	1000	1000	Master
5.5 * Motor Idla ( % static)		Motor Test	Mode / Arml	ng Notice:			use the motors	to entre un		
5.5 🗘 Motor Idle ( %, static)		Moving the	cliders or ann	ing your craft	with the trans	contrar will co				
5.5 💲 Motor Idle (%, static)		Moving the In order to	sliders or arm prevent injury	remove ALL	with the trans propellers be	fore using this	s feature.	to spin up.		



# 7/ Install propeller

Install the propeller in the correct direction, otherwise you will not be able to fly and damage the device, and finally fix the propeller with M2\*6 screws





- 8/ USB upgrade O3 UNIT and export DVR video (built-in 128G
- SD card)



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# 8/ Filter installation (optional purchase)



# 8/ Flight firmware upgrade and write default CLI

#### 1/ Activate DFU mode

Target: FLYWOOF4	11HEX(STM32F411)		lode Firmware
2020-12-24 @ 21:59:32 – Unique c 2020-12-24 @ 21:59:32 – Craft nar 2020-12-24 @ 21:59:32 – Arming l 2020-12-24 @ 21:59:32 – Arming l 2020-12-24 @ 21:59:32 – Runawa	ievice ID: <b>0x1c00403439510436383737</b> ne: Disabled Enabled Y Takeoff Prevention temporarily Dis	abled	
🗡 Setup	Catuo		
🖌 Ports	Setup		
Configuration	Calibrate Accelerometer	Place board or frame on leveled surface, proceed with calibration, ensure platform is not moving during	g calibration period
🖾 Power & Battery	Calibrate Magnetometer	Move multirotor at least <b>360</b> degrees on all axis of rotation, you have 30 seconds to perform this task	
🗇 Failsafe	Reset Settings	Restore settings to default	
႕ PID Tuning	Backup Restore	Backup your configuration in case of an accident, CLI settings are not included - use the command 'diff	all' in CLI for this.
📥 Receiver	Activate Boot Loader / DFU	Reboot into <b>boot loader / DFU</b> mode.	
🖀 Modes			
tt Adjustments	Heading: 352 deg Pitch: 22.9 deg	Reset Z axis, offset: 0 deg	Arming Disable RX F
🛨 Servos	Roll: 100.7 deg		Flags:
* CDC			Battery voltage:
le ero			Capacity drawn:
🛓 Motors			Current draw:
📼 OSD			RSSI:
(ቀ) Video Transmitter			GPS
🗍 LED Strip			3D Fix:
-/⊢ Sensors		No. 1	Latitude:
📾 Tethered Logging		<u> </u>	Longitude:
: Blackbox			

2/ BF Configurator will display to enter DFU mode. If it does not enter DFU mode, it may be that the driver is not installed. The driver can be installed using IMPULSE RC software

C BETAFL	лант			EFU : 3 Butto Correct Lipitan Correct	H ImpulseRC Driver Fixer X			
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	Power off     Enabling for endoors requerery were     Enabling for endoors requerery, enable     Unitipe the BOOT priso or host BOO     Prover on sectivity LED well NOT the     Install all CTM22 showers and Zadig     Close configurator. Coole all numme     Pawasee BOOT builtion if your FC ha	Die Turi drag erasel. Of button en if done correctly) if done correctly) if done isse USB Fashing ng chrome instances. Close all as one.	Landon of Bandlige nervous. Chrone yes, Strast Configurate.		Installing DFU driver			

#### Driver software:

https://impulserc.blob.core.windows.net/utilities/ImpulseRC\_Driver\_Fixer.exe

3/ Then load the local HEX firmware and wait for the flashing to complete. A green progress bar is displayed to indicate completion, and DFU will become a COM port

4/ Factory CLI settings https://flywoo.tawk.help/article/cinerace20-o3-cli-configuration