How To Get Started With FPV Drone – The Ultimate Beginner's Guide

16th February 2023

Welcome to the world of FPV (First Person View) drones! This comprehensive tutorial is designed to guid

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The Short Answer

While I highly encourage you to explore the entire tutorial for an in-depth understanding, here's a concise roadmap to help you get started in the world of FPV drone flying.

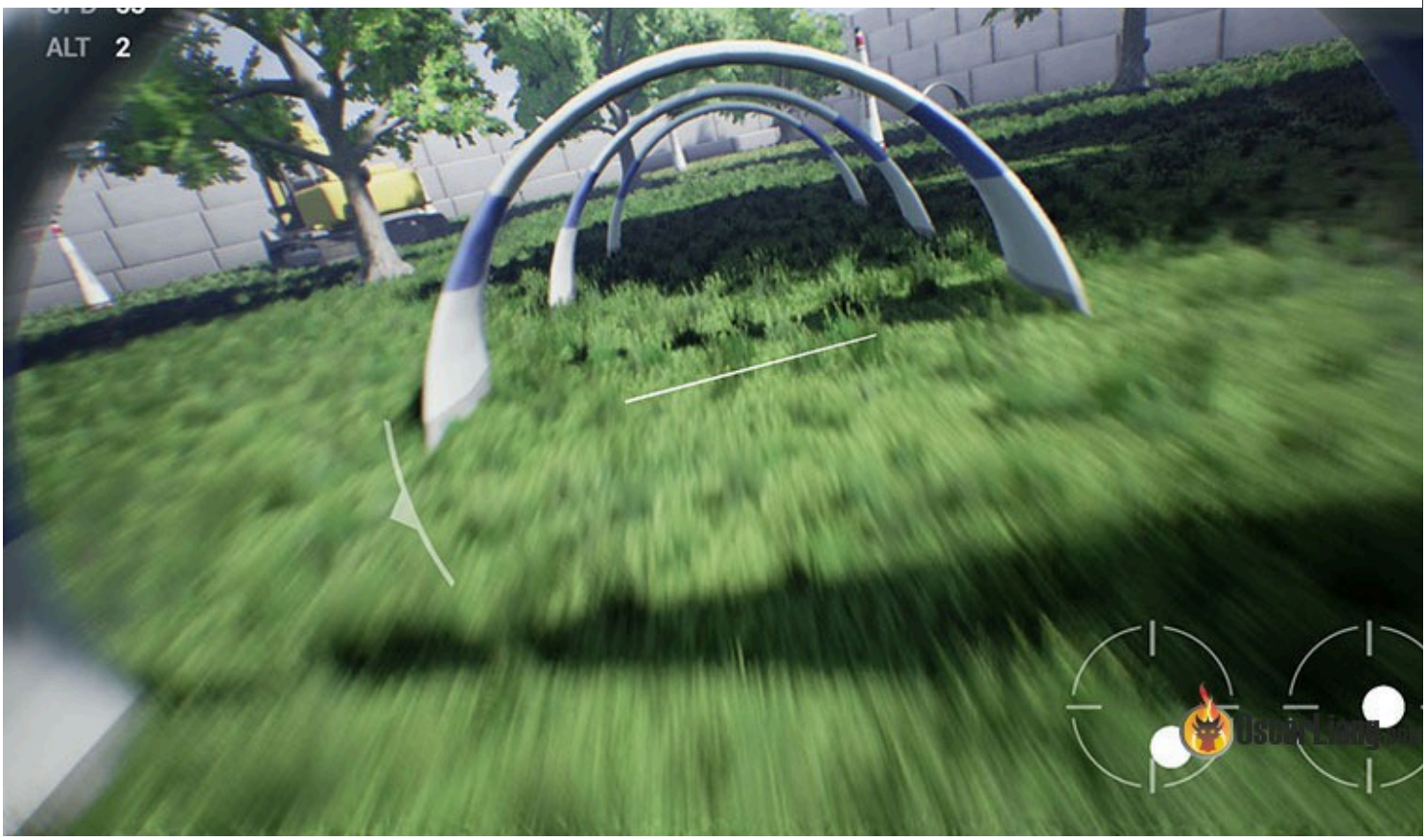
- Step 1: Purchase a radio controller compatible with FPV simulators (check out my top recommendat here)
- Step 2: Download your preferred FPV simulator and start practicing (explore my suggested FPV simulators here)
- Step 3: Dedicate 10+ hours to simulator training, master flying in Acro mode (aka manual mode). At same time, do some research on different types of FPV drone and flying styles to determine the bes

parts list before ordering can help you avoid costly mistakes and save money as you progress.

What Is An FPV Drone?

FPV stands for **F**irst **P**erson **V**iew.

An FPV drone is typically a quadcopter equipped with a camera that sends live feed the pilot who's contr the drone wearing a set of goggles. This real-time "first-person" view allows the pilot to control the drone they were in the cockpit, while remaining on the ground. Flying an FPV drone using goggles provides an immersive experience, allowing you to see the world through the drone's eyes.



FPV flying requires intense focus, and the speed and agility of an FPV drone make it a truly sensational experience. To fly an FPV drone, the pilot wears goggles to view the live video feed from the drone's cam while using a remote controller with joysticks for flight control. It's almost like playing a video game, excep crashing has real-world consequences – such as damaging an expensive FPV drone that can cost as mu as a new PlayStation!

While some FPV drone pilots fly professionally (racing, videography, etc.), the majority fly FPV on their da off as a hobby. The FPV drone community is supportive and enthusiastic, creating a welcoming environm for like-minded individuals to connect and share knowledge.

A group of friends racing together in a park

This guide will teach you how to build, maintain, and repair an FPV drone, as well as how to fly and tune optimal performance. Building and tuning an FPV drone is a rewarding technical endeavor, requiring skills electronics, mechanics, and software. The hobby offers a fantastic opportunity to learn new skills and eng in problem-solving.

How Much Does an FPV Drone Cost?

Getting into FPV drones is comparable in cost to DJI camera drones. Here's a rough breakdown of the expenses involved in building a basic FPV drone and acquiring all the necessary equipment:

affordable yet decent-quality builds you can achieve in 2025 in this post.

If the idea of building a drone from scratch seems overwhelming, there are complete ready-to-fly bundles available. These packages include all the parts needed to start flying, and while they may have lower qua and fewer features, they are a good way to get started without breaking the bank. I will discuss this optior greater detail later in this article.

Pick A Remote

Before buying a drone, invest in a decent radio and practice flying in a simulator. Simulators teach you th basics of flying without the risk of crashing expensive gear.

Select a remote that fits your budget and use it to practice in FPV drone simulators. The same remote ca later be used with a real drone, allowing your skills to transfer seamlessly to the real world.

There are a few things to consider when picking up a radio:

- Shape:
  - Full Size, Box style
  - Gamepad style
- Screen:
  - Black and White
  - Color (often touch screen)
- Price, color, ergonomics, etc…

Once you've decided on what shape and screen you like, you are usually down to 2 to 3 options which m it much easier to choose.

Drone: A Beginner's Guide

Choosing a radio transmitter for FPV drones can be overwhelming for beginners with so many options available. A radio transmitter is critical to controlling your drone in flight. This guide explains factors beyond price, such ... Continue reading

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Avoid using Xbox controllers or keyboards, as they won't provide the same benefits. Using a proper radio controller will help you build muscle memory and ensure you get the most out of your training.

Practice in Simulators

Get a taste of flying FPV without a real drone – try a simulator

Learning to fly an FPV drone in a simulator is a safe and cost-effective way to get started and improve yo skills without damaging your real drone or causing injury. I strongly recommend getting some flight time ir simulator (ideally 10+ hours) before buying or building your first drone.

Simulators can teach you the basic controls of an FPV drone and help you develop the muscle memory y hands need. The physics of modern FPV simulators are incredibly realistic, making the transition from a simulator to a real FPV drone relatively seamless. Additionally, simulators allow you to practice advanced maneuvers and techniques, such as flips, rolls, and acrobatics, without the risk of crashing your drone.

Here is a list of FPV simulators:

One of the most challenging aspects of getting into FPV drones would be learning how to fly. FPV drone simulators can help you practice and train without damaging your drone, even when the weather isn't ... Continue reading

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FPV sims are all excellent in their own ways. If you have a decent gaming PC I'd probably recommend Li and DRL, and if you have a low spec PC, then Velocidrone is more likely to work better. Sims like Liftoff a Velocidrone have built-in tutorials to help you learn how to fly and learn Acro mode, which is what you rea need.

Each FPV simulator has its own unique strengths. If you have a decent gaming PC, I'd recommend Liftoff DRL. If you have a lower-spec PC, then Velocidrone might work better for you. Sims like Liftoff and Velocidrone include built-in tutorials to help you learn how to fly and master Acro mode, which is essentia FPV flying.

Basic Drone Control

FPV drones are controlled using a remote control, which you might hear called a radio transmitter. This remote has two sticks, which is often referred to as "gimbals".

Left Stick (Throttle and Yaw):

- **Throttle:** This stick controls how fast the motors spin. Push it up, and the motors spin faster; pull it d and the motors slow down. It's all about controlling the speed of the drone's motors.
- **Yaw:** Moving this stick left or right makes the drone rotate left or right. Think of it as the drone turnin

The Types of FPV Drone

What is a drone?

The term “drone” has become synonymous with any unmanned aircraft with an onboard camera, and sometimes a camera is not even necessary for the title! Other than for military use, drones have historica been used for aerial photography and were large with a heavy payload capacity for carrying cameras anc equipment.

Here’s a list of commonly seen drones in the hobby.

What is a multirotor?

Multirotor (or multicopter) refers to any “copter” with more than one main motor or propeller. For example tricopter has 3 motors/rotors, a quadcopter has 4, a hexacopter has 6, an octocopter has 8, and so on. Tl all fall under the “multirotor” category.

Here are the different configurations of multirotors.

Drone Sizes

Drone sizes are determined by the maximum propeller sizes they can run. For instance, a 5-inch drone, t most popular size, accommodates 5-inch propellers. Each drone sizes have their pros and cons and can used in different applications.

5-Inch

5-inch FPV drones are versatile, with a great balance between power, efficiency, and agility. They are suit for freestyle, racing, and even long-range flying. Components are widely available and easy to work with. can carry an action cameras like GoPros. A typical 5″ FPV drone weighs around 500g-700g, including the battery, and has an average top speed of 120km/h.

I have a tutorial to show you how to build a 5″ FPV drone from scratch: How to Build an FPV Drone Tutor

Typical build specs: 4-6S lipos 1000mah-1800mah, 22xx-25xx motors 1600-2800kv

4-Inch

4-inch drones gained popularity due to the 250g weight limit introduced in some countries, because 4″ is biggest drone size that can achieve this weight limit without giving up too much performance.

Typical build specs: 3-4s lipos 600-900mah, 13xx-15xx or 18xx-22xx

2-Inch, 2.5-inch and 3-Inch

2-inch and 3-inch drones are popular because of their small size and decent performance. They can do n anything a 5-inch drone can do, except for carrying a GoPro.

Typical build specs: 2-4S lipos 300-800mah, 13xx-15xx

Tiny Whoops

Tiny Whoops are small, ducted FPV drones designed for indoor flying. They are lightweight (around 20g t 30g including battery), easy to fly, and relatively inexpensive. Their built-in prop guards (or “ducts”) protec people and objects from the propellers. On the flip side, the ducts make them heavier and reduces performance, making them less ideal for outside use and windy condition.

Here are what I think the best tiny whoops currently on the market.

Typical build specs: 1S LiPo 300-350mah, 06xx-08xx motors brushless or brushed motor

Ultralight (toothpick)

Ultralight drones are small, light, and designed for performance. Because their skinny frames look like a b of toothpicks tied together, these drones are also called “toothpicks”. They are not made for crashes, but pure performance by making them as light weight as possible. I have a tutorial explaining the considerati that go into choosing parts for a Toothpick build. You can buy one pre-built and I tested a bunch to find ou which is the best.

Cinewhoops

Cinewhoops are 3″ or smaller drones with propeller protectors (ducts) designed for capturing cinematic footage with an HD camera like a GoPro. They are meant for slow, smooth flights and not for freestyle or flying, and they are safe for indoor flying.

Learn more about cinewhoop in this post.

6 Inch and 7 Inch

6-inch and 7-inch drones can have a higher top speed and can carry more payload than a typical 5″ dron such as a larger battery, therefore they are suitable for long range. However they tend to carry more momentum and are not as agile as the smaller 5″, therefore they are not as popular for freestyle and raci

Typical freestyle build specs: 4-6S lipos 1000-1800mah, 6-7 inch props, and 22xx-25xx motor 1500-2400

Typical long range build specs: 4-6S lipos 1500mAh or li-ion 3000mAh, 22xx-23xx motor 1300-2100kv, equipped with GPS

X-Class and Beast Class

X-class and Beast class drones are the largest and most powerful in this list, and are not recommended f beginners due to their high cost, maintenance, and potential danger. X-class drones have frame sizes between 800mm-1200mm and use 9-13 inch propellers, while Beast class drones use sub-800mm frame Both classes are typically used for racing or high-performance flying.

Typically build specs: 8-12S lipos 4000-5000mah, 9-13 inch props, and 3xxx-4xxx motor.

Cinelifter

For beginners, a 5" FPV drone is highly recommended due to its versatility in flying style, it can do almost everything: freestyle, racing and cinemaphotography. It's powerful enough to carry a GoPro and is the most popular size, making it easier to find help and support online. Ultimately, the size of the drone you choose depend on your flying preferences and goals, as well as the regulations and restrictions in your area.

Identify Your Flying Style

Before choosing what type of drone you want to build or buy, it's essential to identify your goals in flying FPV and understand your flying style. The common flying styles in FPV are:

- Freestyle
- Racing
- Long range
- Cinematic (Cinemaphotography)

Freestyle

Freestyle is probably the most popular style of FPV. Freestyle flying is all about creativity, tricks, and maneuvers. There are no rules to how you can fly, so the sky is the limit (and the ground, so try not to cra

For freestyle flying, prioritize durability and responsiveness. Choose motors with high torque, ESCs with sufficient current handling capabilities, and frames with strong materials and a robust design.

It's also common to mount a GoPro on a freestyle drone to capture your flight, but it's not always necessa

Racing

FPV racing involves competing against other pilots on a designated course with gates and flags. Speed, agility, and durability are crucial in racing.

Opt for lightweight frames with minimalist design, powerful motors, and ESCs that can handle high currer Low-latency FPV system with adjustable power output are also crucial. Additionally, a high performance r link with low latency and high refresh rate are important to maintain precise and reliable control at high speeds.

Long Range

Long-range flying aims to cover great distances while maintaining a low-key, efficient cruising style. Efficie and reliability are key for this type of flying. Here are some tips to long range flying.

Choose motors with lower KV ratings for better efficiency, and use larger capacity LiPo or Li-ion batteries extend flight time. Consider deploying GPS and telemetry for navigation and real-time data monitoring. Lo range radio systems like Crossfire or ExpressLRS are recommended to ensure a strong signal even at gr distances.

Cinematic

Cinemaphotography, or Cinematic FPV flying focuses on capturing smooth, stable footage in epic locatio without too many acrobatic moves. The ideal build for cinematic flying depends on the specific job.

Consider using drones specifically designed for this purpose, such as Cinewhoops or 5″-7″ freestyle build carrying GoPro. Larger drones (5″, 6″, or 7″) can provide more stability and better wind resistance, while smaller drones can access tight spaces for unique shots. Cinewhoops are also a popular choice for both indoor and outdoor cinematic flights, but these tend to be slower and noisier.

Affordable FPV Drone Kits for Beginners

included radio controller to practice flying in FPV simulators like DRL, Liftoff, and Velocidrone. Once you'r comfortable in the simulator, you can try flying the Cetus micro drone in the house or local parks.

The Emax TinyHawk II Freestyle is another great option. This drone is more advanced, and offers excelle performance and value for mainly outdoor flying, and you can continue using the same FPV setup for futu builds.

It's important to note that while RTF kits provide a budget-friendly entry point, they often include lower-qu goggles and radio controllers with limited features. As you progress in the hobby, you may outgrow these components and need to invest in better equipment.

If you're confident that you'll stick with the FPV hobby and have the budget to do so, consider purchasing higher-quality goggles and radio controllers from the beginning. This way, you can avoid the need to repla them as you advance in the hobby, ultimately saving money and enhancing your flying experience from th start.

Build Your First FPV Drone?

Building your first drone has several benefits:

1. Experience and Skills: Gaining hands-on experience with drone components and assembly will enab you to diagnose, repair, and upgrade your drone in the future.
2. Budget: Building your own drone can be more cost-effective because you are not paying someone t build it for you. However, it's less appealing if you don't have the necessary tools like a soldering iro screwdrivers.
3. Customization: By choosing your own parts, you can tailor your drone to your specific preferences a needs. But it can be daunting if you have no idea what components to get.

While there are affordable DIY kits available such as the Eachine Tyro79, they may be lower in quality. If prefer higher-quality components, you can purchase parts separately and follow expert recommendations

Buy a Pre-Built FPV Drone?

If you'd rather spend more time flying and less time building, a pre-built drone might be a better choice. K in mind that the closer a pre-built drone is to "perfect," the more expensive it will be (not always true, but of the times it is). And if you break it, you'll likely need to learn how to solder and repair it anyway. With pr built drones, there's a risk of getting a subpar product. Some manufacturers might use outdated electroni save costs. Research is key here. You might think pre-built drones are the obvious choice for beginners, beg to differ. Building your own drone is a valuable skill, especially for making repairs or customizations. However, diving into building without any prior experience can be overwhelming.

In conclusion, building your first FPV drone can be a fun and rewarding experience that teaches you valu skills for maintaining and upgrading your drone. However, if you find the prospect of building a drone intimidating, a pre-built model will get you flying quickly and help you understand the basics.

Video
Receiving

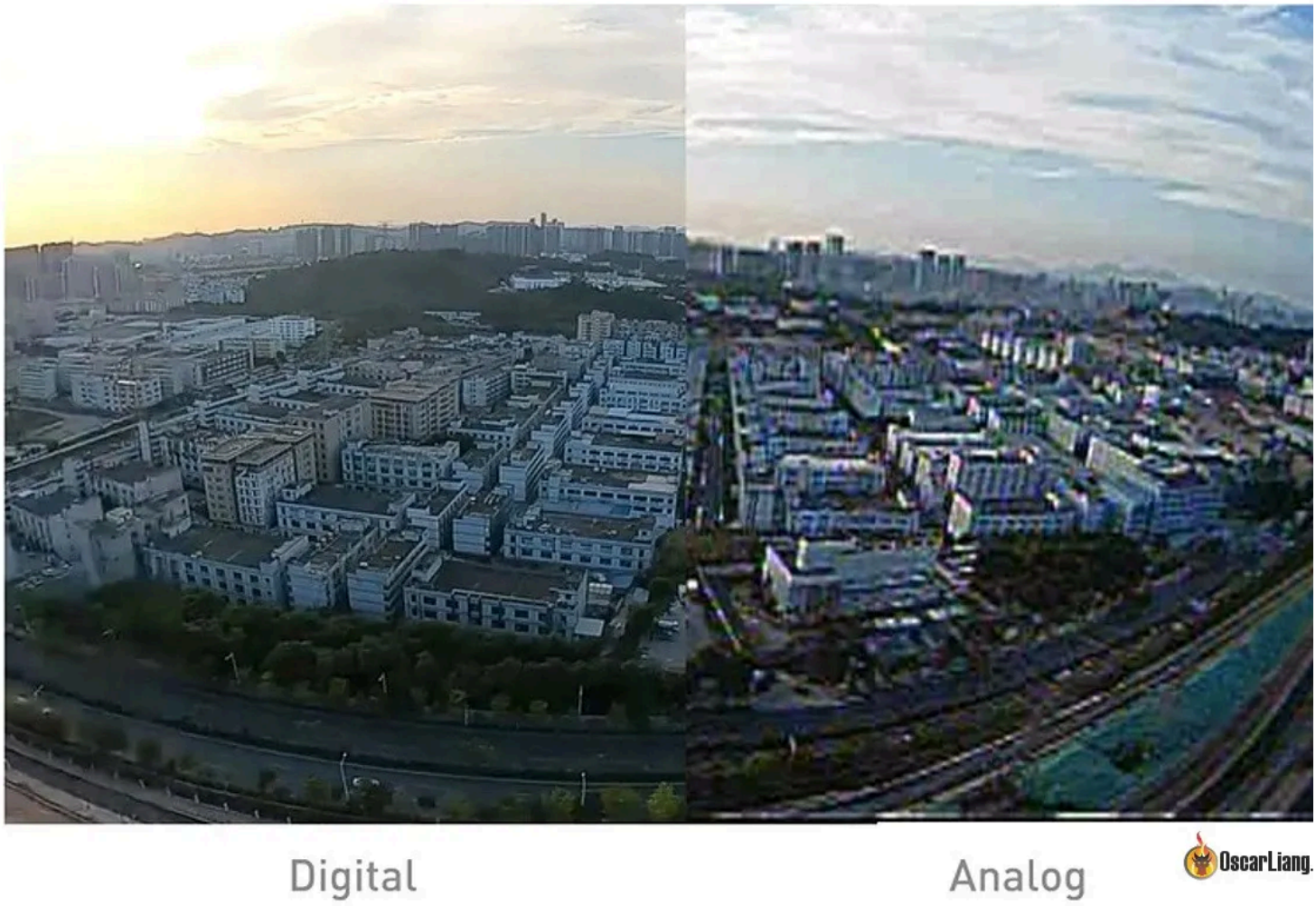
The FPV (First Person View) system is a crucial aspect of an FPV drone, providing the pilot with a real-tir video feed from the drone's perspective.

There are four main components involved in an FPV system:

1. FPV Camera: Mounted on the drone, the FPV camera captures the live video footage of the drone's

signal between the VTX and VRX. High-quality antennas can improve the range, signal quality, and reliability of your FPV system.

FPV System Options



There are 4 popular FPV systems available, come with their own set of advantages and drawbacks, inclu cost, image quality, and latency.

3. Walksnail: Often considered the alternative to DJI, slightly less expensive, but image quality is not as good as DJI. However they offer a wide range of camera and VTX for different types of FPV drones, including tiny whoops.
4. HDZero: Praised for its low latency, popular in Racing. But image quality is not as good as DJI and Walksnail.

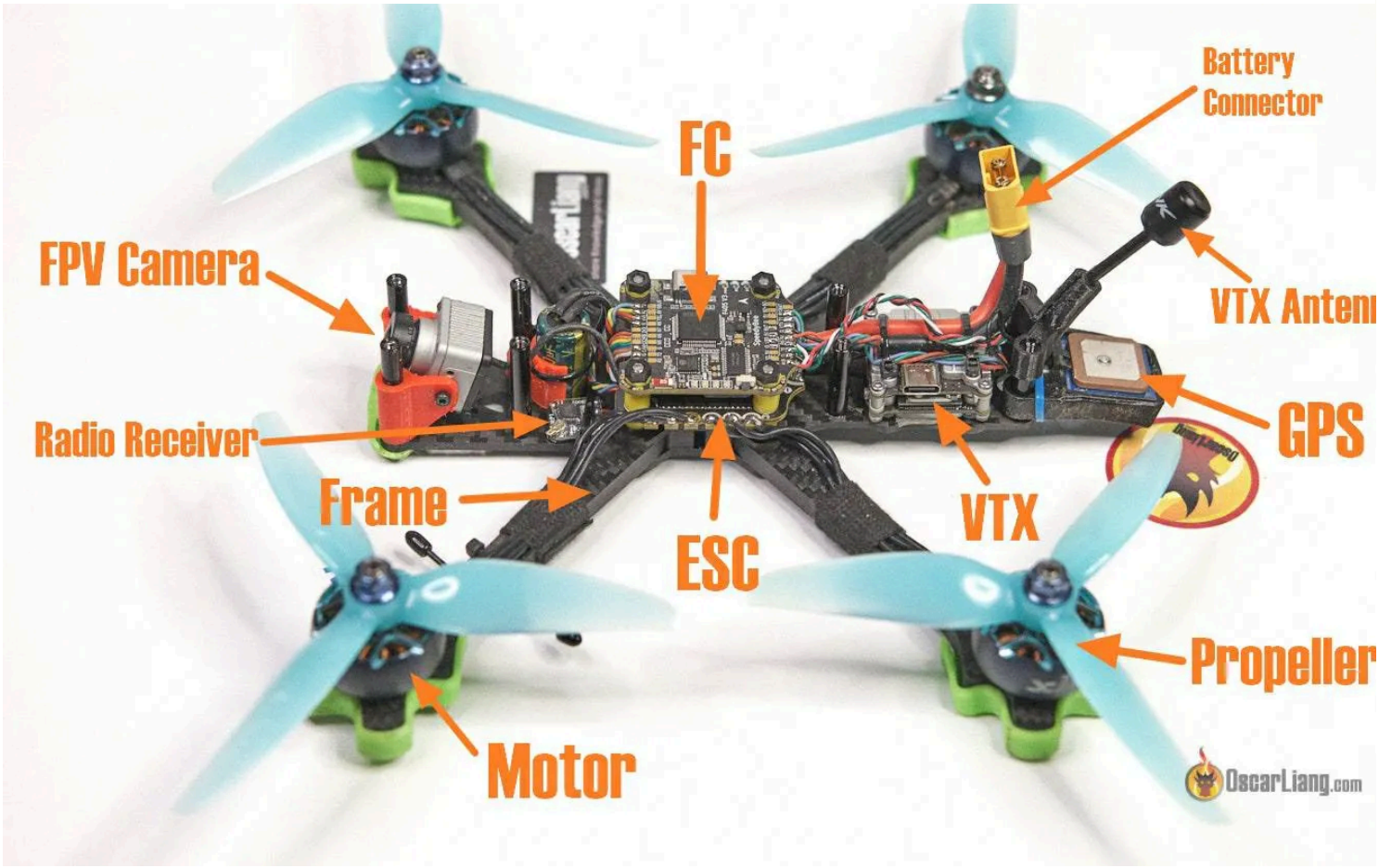
For more guidance on choosing the right FPV system, consult this dedicated post: https://oscarliang.com/fpv-system/

Parts and Equipment

Before diving in, make sure to read:

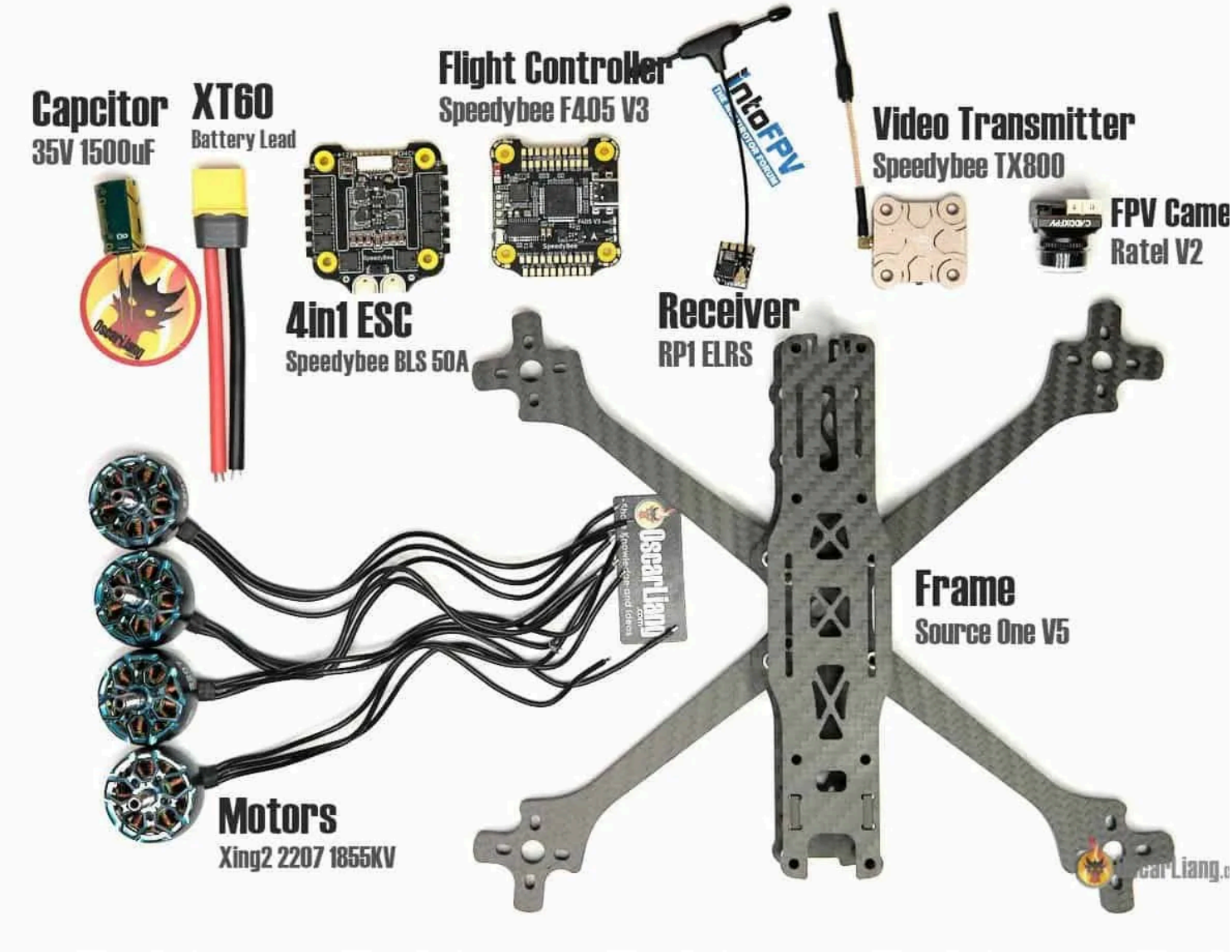
- **How to build an FPV drone – explains how to build a quadcopter from scratch**
- **FPV Acronyms – A list of common technical terms and acronyms used in FPV**

Here is the anatomy of an FPV drone:



An FPV drone consists of the following parts, with buyer's guides for each component:

- Frame: a structure where all the components sit on and provides protection to the electronics – how choose an FPV drone frame
- FC (Flight Controller): the brain of a drone, it has sensors that take measurements and a processor runs all the calculations – how to choose a flight controller
- 4x Motors – how to choose FPV drone motors
- 4x Props (Propellers) – 2x CCW and 2x CW rotations – how to choose propellers
- 4x ESC's or 1x 4in1 ESC (Electronics Speed Controller): it takes signal from the flight controller, and



To fly your quadcopter in FPV, you will also need the following equipment:

- Radio transmitter (TX) and receiver (RX) – how to choose a radio transmitter
- FPV Goggles – how to choose FPV goggles
- LiPo Charger – how to choose LiPo charger

- Wire Cutters
- Cable ties
- Electrical Tape
- Multimeter
- Smoke stopper

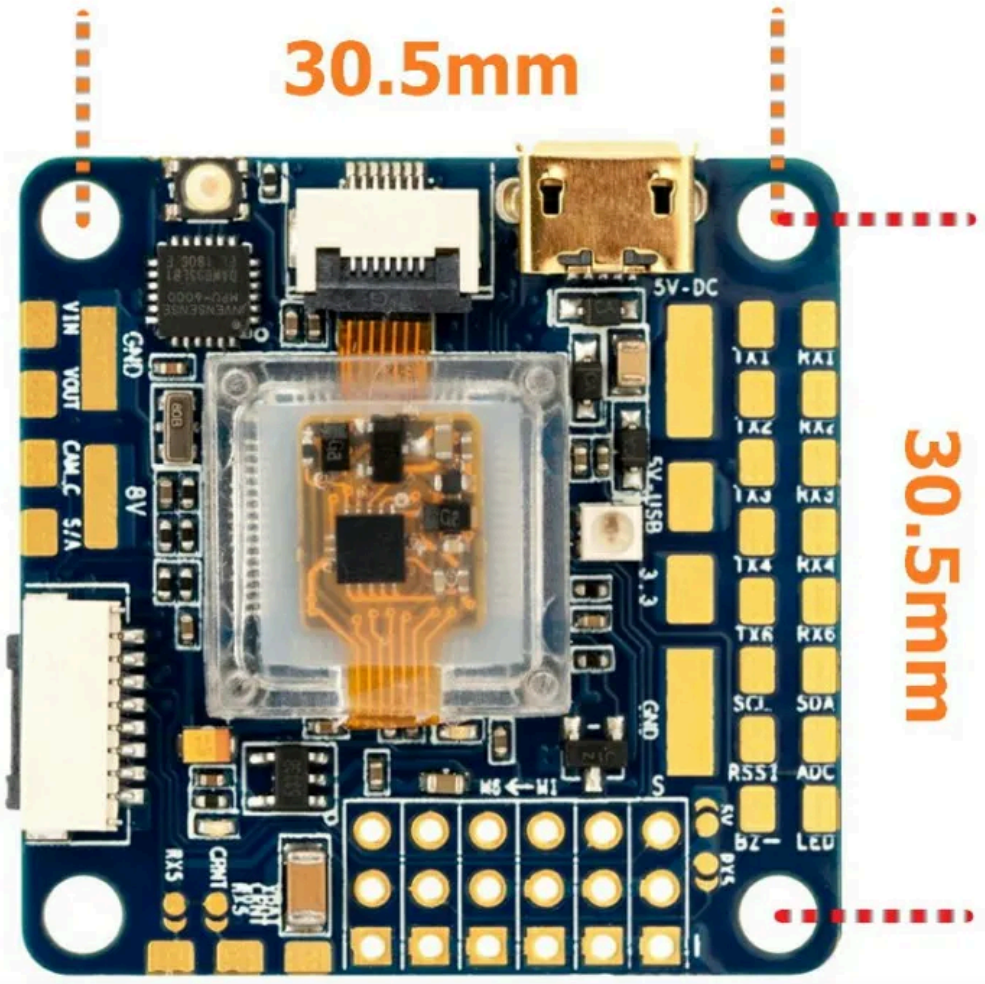
Choosing Components

and propellers.

FC/ESC Sizes:

Flight controllers (FCs) and electronic speed controllers (ESCs) come in three main sizes:

1. 30.5×30.5mm
2. 20x20mm
3. 25.5×25.5mm



1. Full size (28mm)
2. Mini (21mm)
3. DJI OG Cam (20mm)
4. Micro (19mm)
5. Nano (14mm)

The camera size you need depends on your frame's compatibility. You can mount other camera sizes usi 3D printed camera holders.

4. 9mm (3-4″ toothpicks)
5. Triangle pattern, 6.6mm spacing (whoops/tiny <2″ quads)

Propeller Mount Types:

For smaller components like radio receivers, video transmitters, buzzers, and capacitors, mounting is mo flexible and situational. Use materials like zip ties and double-sided tape to secure them in place.

Ensure electronic parts have compatible voltage ratings. Most components can handle either 5V or batter voltage (e.g., 7V – 36V or listed as a cell count like 2S to 6S). Overvolting can damage components and potentially cause a fire.

Invest in the Right Accessories

FPV flying requires more than just a drone, radio, and goggles. Accessories make a huge difference in yo experience.

Getting LiPo Batteries and Charger

For LiPo batteries, typically a 4S 1500mAh (or 6S 1100mAh) on a 5″ drone would give you 5 to 7 minutes flight time. You can start with a set of 4 batteries for practicing, but you will probably need more later on a improve and want to fly longer.

- Batteries Recommendation: https://oscarliang.com/lipo-battery-guide/#Battery-Recommendations
- Charger Recommendations: https://oscarliang.com/choose-lipo-battery-charger-power-supply/#T LiPo-Charger-Recommendations

Getting a Backpack

Protect your gear and keep everything organized. Brands like Torvol and Lowepro offer excellent options. also make it easier to carry your drones and all your gear for flying, consider getting a backpack designed specifically for FPV gear. These backpacks are designed with compartments and straps to securely hold drones, radio, goggles, batteries, and other accessories.

Backpack Recommendations: https://oscarliang.com/?s=fpv+backpack

configure them because they are running different firmware.

I have tutorials that dive into detail on how to do software setup. Just do a search on my blog, or follow instructions in one of my build guides. For example, this guide for Betaflight: https://oscarliang.com/betafl firmware-setup/

The most popular flight controller firmware is Betaflight, and the most popular ESC firmware is BLHeli_S BLHeli_32, depending on the hardware you have. You can't go wrong with these choices. Anyway, here I give you an overview of the firmware we use in the hobby.

FC Firmware

extremely well, and is updated frequently. It has a huge selection of flight controller available. Apart from freestyle and racing, Betaflight has added features geared for long-range such as GPS Rescue Mode (sir to Return to Home).

KISS (closed source) is another firmware that is easy to set up and flies well. You will need to purchase K specific hardware to use their firmware.

iNAV (open source) is also very popular with long-range and autonomous flyers. They do not support as r flight controllers. Apart from multirotor it also support fixed wing aircraft.

ESC Firmware

The most popular firmware which runs on 99% of all FPV quad ESCs are either BLHeli_S or BLHeli32. BLHeli32 is newer of the two and uses a faster processor. Flight performance-wise, there is very little difference, but BLHeli32 is more future-proof.

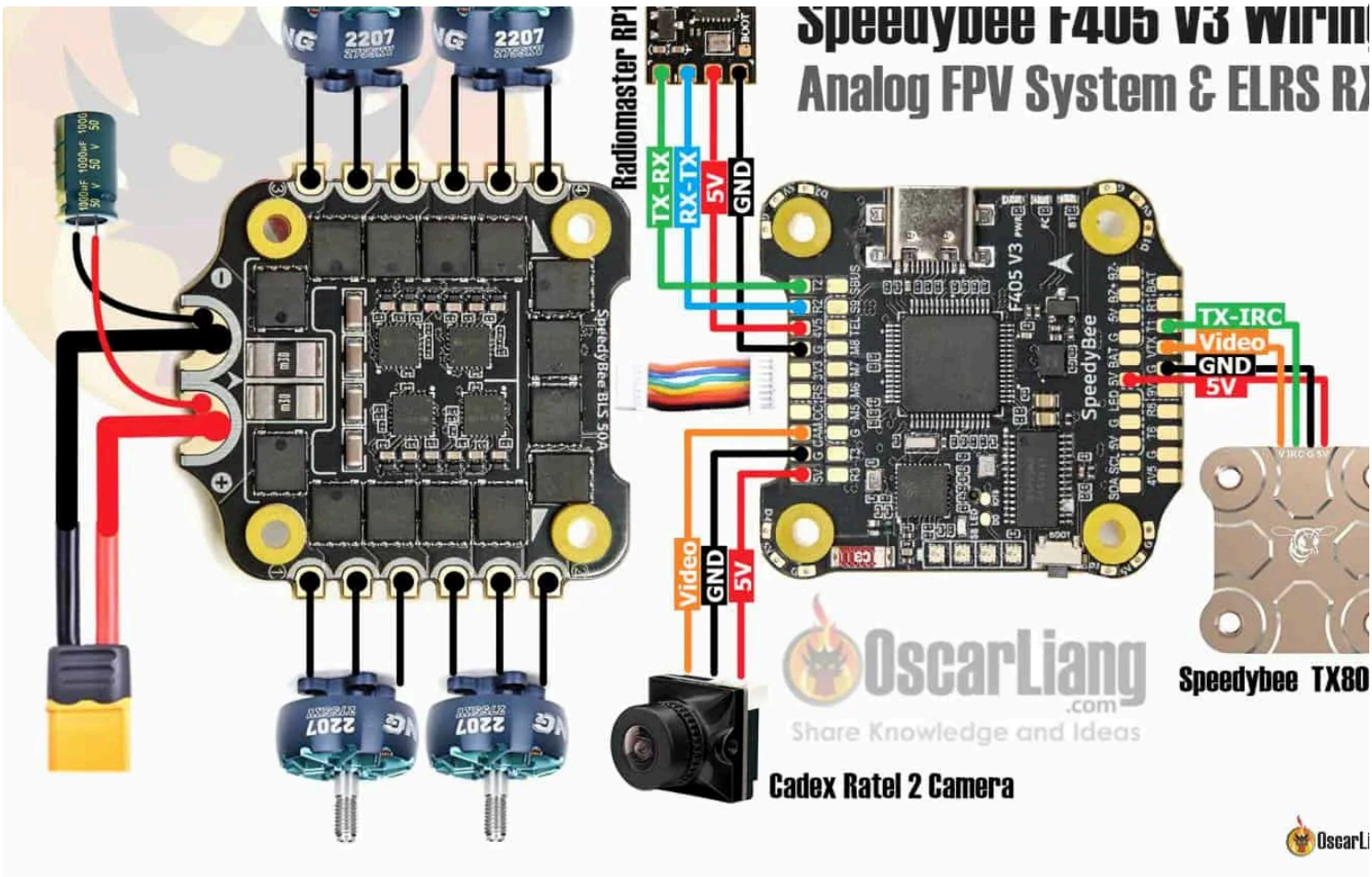
The main ESC protocol used today is DShot, more specifically, DShot300 and DShot600, with the numbe indicating the speed of the protocol.

Check out this post to learn more about ESC firmware and protocols.

How Does an FPV Drone Work?

Here's a brief overview of how the various components work together in an FPV Drone:

1. The pilot controls the drone using a radio controller with two joysticks. The stick commands are sent wirelessly to the radio receiver installed inside the drone.



Learning How to Fly FPV Drones

One might think that mastering line of sight (LOS) flying is necessary before attempting FPV, but this isn't always the case. LOS and FPV are two distinct flying styles. Nonetheless, being able to control your quad LOS is valuable, as your FPV system could fail, and having some LOS skills can help you regain control i emergency. Ultimately, it's up to you whether to start FPV without any LOS experience.

FPV simulators are incredibly beneficial for beginners, as they help you develop basic skills quickly and reduce the cost of broken parts due to pilot errors or attempting maneuvers beyond your ability. Check ou list of popular FPV simulators: https://oscarliang.com/free-quadcopter-simulator-drone-multirotor-trainer/

- https://oscarliang.com/learn-flying-fpv-multirotors/
- https://oscarliang.com/learn-fpv-flying-faster/

Avoid Auto-Level Mode

While self-level flight mode (such as Angle Mode and Horizon Mode) are easier and tempting to rely on, i want to get good with flying FPV drone, it's crucial to learn Acro Mode (aka manual mode).

This article explains the differences between Acro mode and self-level mode: https://oscarliang.com/rate-horizon-flight-mode-level/

Acro mode may seem challenging initially, but once you master it, you gain complete control over your qu Betaflight offers an Acro Trainer mode to help you get used to Acro without the risk of flipping or spinning of control.

Auto-level mode acts like a pair of crutches, helpful for balance but limiting in more dynamic situations. O you're comfortable with acro mode, auto-level mode will feel restrictive, and it can foster bad habits that a hard to unlearn.

Flying with Other People

When arriving at an FPV meetup, the first thing you should do is determine which video transmitter chanr are in use by other pilots.

DO NOT power on your quad before confirming your video channel, especially when there are other pilot the air! If they are in the air, wait until they land before you power on.

When two quads share the same VTX channel or have frequencies too close to each other, one can inter with their video feed. Interference can cause accidents, as the image in the goggles may disappear entire

With proper equipment and frequency management, up to eight pilots can usually fly simultaneously. However, having four pilots is more common for an interference-free race.

Safety Rules for Flying FPV Drones

Safety should always be your top priority.

Keep in mind that FPV drones are extremely fast and powerful, capable of causing serious injuries to pec and animals, as well as damaging property. Adhering to safety rules is crucial, as disregarding them not c affects the pilot and potential victims but also the reputation of the hobby itself.

1. Check your local rules and regulations regarding FPV, and RC model flying in general.
2. Obtain insurance coverage for your drone activities.
3. Use a spotter or fly with a buddy.
4. Choose your flying location sensibly, avoiding crowded or risky areas.
5. Never fly too close to or above people and animals.
6. Disconnect the battery immediately after retrieving a crashed quad.
7. Do not attempt to catch an FPV drone in mid-air.
8. Never use damaged LiPo batteries and dispose of them properly. Here's a guide on how to dispose battery: https://oscarliang.com/dispose-lipo-battery-safely/

For more information on FPV safety, refer to this detailed article: http://intofpv.com/t-safety-first-and-forem

Capturing Beautiful FPV Footage

If you've ever watched a breathtaking FPV video on YouTube and wondered how the pilot captured such quality footage, you should know that the secret lies in using a separate HD action camera.

Footage recorded in the FPV goggles is typically far from 1080p HD quality, let alone 4K. To capture the

Tuning your FPV drone helps optimize its performance and stability.

It's recommended to use "Blackbox" to tune your drone. Blackbox is a powerful tool that records flight dat during your drone's flight, providing valuable insights for tuning. By analyzing the data, you can fine-tune drone's PID settings and filters to achieve better performance. For a comprehensive guide on tuning usin Blackbox, check out this tutorial: https://oscarliang.com/pid-filter-tuning-blackbox/

If Blackbox seems too complicated, you can still manually tune your drone without Blackbox. Although yo may not achieve the same level of performance optimization as with Blackbox, you can still improve your drone's performance from the default settings. To manually tune your drone, follow these steps: https://oscarliang.com/fpv-drone-tuning/

Remember that tuning is a personalized process, and what works for one pilot may not work for another. takes time, patience, and practice to find the ideal settings for your FPV drone.

Conclusion

Throughout this comprehensive FPV drone tutorial, we've covered essential topics such as understandin drone components, choosing the right gear, building or buying your first FPV drone, and tips for flying saf and effectively. We've also delved into the different FPV systems, and the importance of proper tuning an software setup.

As you embark on your FPV journey, remember that practice, patience, and a commitment to safety are crucial. Consider starting with simulators and building your skills gradually, and never hesitate to ask for h from the FPV community. Stay up to date with the latest advancements in FPV technology, and most importantly, enjoy the incredible experience that FPV flying has to offer. Happy flying!

FAQ

The maximum speed varies based on the hardware used. Typically, a hobby-level 5-inch FPV drone can reach speeds up to 100 km/h or even higher. The world record for the fastest FPV drone, as of January 3 2023, is 360 km/h.

Edit History

- Sept 2015 – Article Created
- Dec 2016 – Article revised, added “The Origin of Drone Racing and the Types of Drones”
- May 2017 – Added “Buy a Radio First and Learn How To Fly”
- Aug 2017 – Updated
- Apr 2019 – Updated
- Aug 2020 – Rewritten
- Apr 2021 – Merged with FPV system guide
- Feb 2023 – Updated guide

BEGINNERS MINI QUAD RACING

PREVIOUS POST
How to Update/Install GoPro Labs on GoPro Hero 9 and 10 (Flywoo Naked GoPro GP9 GP10)

NEXT POS
Betaflight Modes Explained and How Set

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43 COMMENTS

PARITOSH

31st January 2025 - 5:30 am

Hi Oscar,

Like you've suggested, I'm planning to buy the RC first and then buy the components a few w later after I'm confident about flying. But I've not yet decided which type of drone to build (cinematic 3.5in or freestyle 5in). So I wanted to ask whether the the RC you need depends o type of drone you want to build later? I'm planning to buy the Radiomaster Pocket btw.

Thanks!!

OSCAR

5th February 2025 - 12:11 pm

Hi, the RC is pretty universal – you can use it to fly all sorts of models. The Pocket is pretty good choice, affordable and compact.

19th October 2024 - 10:13 pm

Can I use 8″ propellers with 28xx motors with a 7″ frame?

OSCAR

21st October 2024 - 6:37 pm

You'd need a 8″ frame to use 8″ props. On a 7″ frame you can only use 7″ props.

GEORGE

22nd January 2024 - 3:16 am

Wow, thank you so much for this. I've been researching this hobby for probably DOZENS of h now, after almost buying the first cool looking RTF kit that I found on amazon.. Then, stopping myself, literally just before clicking 'buy now', thinking I better just do an hour or so reading up look at a few options ..! Quickly realised that, if I wanna take the hobby seriously, which I do, t there's A LOT to learn before I make any hasty decisions..

I wish I'd found your site sooner because I think I've learned more from reading your guide tha my hours previous research combined. Gonna re-read this a few times and check out all your links.. I'm starting to think I may be able to start making some educated decisions soon.. Thar again, will definitely be returning to your site and subbing to your newsletter.. Can't wait to get started with this exciting hobby..

All the best from Lancashire, England!

Regards,

George

ANH TRUONG

20th July 2023 - 12:45 pm

PABLO

8th April 2023 - 3:05 pm

I rarely give comments about web pages, but this is one of the best, well-documented sites th I've ever found. Very informative, it contains a lot of information and is very detailed, if you wri book I'll buy it! I'm starting into this world, which is very difficult for beginners; this page has everything you need to know to begin your FPV journey.
Thanks again, Oscar!

TIMOTHY BOONE

22nd January 2023 - 6:24 pm

Outstanding site

KEVIN

4th January 2023 - 2:56 am

Just getting into quads, this was hands down one of the best articles I've found. Very informat Really appreciate this piece – Thank You!

MICHAEL TESTER

7th July 2022 - 12:01 am

I have a new quadcopter, I hope it helps me set it up

SAMMY

25th March 2022 - 1:30 pm

I am interested in low latency wireless video, but the project is not FPV related otherwise. Any advice would be appreciated, this site is amazing. Thanks Oscar!

MAZIKEEN H

16th April 2023 - 5:39 pm

bit late to this but yeah, you can buy just a receiver like the avatar or hdzero VRXs an link them to a screen or for analogue you can buy a receiver with a screen built in.

JAMES GRAYSON

18th July 2021 - 8:15 pm

hey oscar

ive been try to just link/bind with no luck, its become so frustrating that ive become exasperate with people trying to help and i know that's not right, now its seems no-one will touch my prob i'm really not unreasonable, but why in the world is this so damn difficult? never flown even a moment!

I have the freybott lumeniere and all the stuff to get it going, but I am just stuck and unbelieval humbled at my stupidity!

OSCAR

19th July 2021 - 12:44 am

What radio system are you using?

Also try joining our forum, lots of helpful people over there: https://intofpv.com

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FIIPPO

8th July 2020 - 11:03 pm

Join our forum if you have any questions, tons of helpful and friendly people there.
https://Intofpv.com
How to setup switches: How to Setup Switches in OpenTX Mixer/Inputs (Taranis, Nirv T16)

SANSKAR AGARWAL

27th January 2020 - 7:58 pm

Very beautifully explained!!
Language is clear!!

BON

11th May 2019 - 4:01 pm

Just check UKs OFCOM website and looks like the Ham radio license thing for over 25mw is r thing :(
"There is a belief that the use of higher power equipment can be authorised by applying for an Amateur Radio licence. This is wrong. Amateur Radio licence expressly prohibits use in any aircraft or airborne vehicle. This restriction is not relaxed for radio-controlled models, airplanes balloons."

HADI

24th December 2018 - 5:13 am

Thanks for sharing and keep updating this post oscar
really a lot of useful information here before we as a beginners to start
Thanks!

Me and my friends are just starting with Drone and we need a lot of knowledge regarding to h choose, how to play……

I want to translate the articles into Chinese to share with my friends.

is it allowable or not?

I'm just starting getting into drone flying and racing and this is a great article for beginners!

OSCAR

18th September 2018 - 5:51 pm

That's okay as long as you link back to the original article at the beginning of your translation :)

cheers.

SIGNSMILE

21st September 2018 - 2:02 am

Thanks a lot Oscar!

CAM

1st August 2018 - 8:16 pm

just found your blog today and it already helped me with so meany of my questions

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HITESH KHER

24th July 2018 - 2:15 pm

mind blowing article i was never seen this type detailed website or article , i am very proud yo

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FRANCIS

6th March 2018 - 12:10 pm

very good article, thank you!

WILLIAM B.

6th December 2017 - 8:07 am

Amazing article. I'm just starting getting into drone flying and racing and this is a great article f beginners!

FRANS STOOPMAN

24th October 2017 - 11:57 pm

Hello Oscar, I have a beecore F3 EVO board with a spectrum dx6 transmitter, I can see all the menus and adjust values in cleanflight. But I cannot see the motor menu. I can see the receiv menu and the bars move with the transmitter movement. When I plug in the motors they just r up and I have no control over them. The low throttle value is set at 500 to see if that would sto motors but it does not. Do you have any suggestions on how to fix this problem.
kind regards Frans

DAVID KNAPP

23rd September 2017 - 9:42 pm

Looks like the link to "How to choose mini quad motors" is incorrect as it ends up linking to a glossary page. Looks like the correct url is: https://oscarliang.com/quadcopter-motor-propeller

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I am an older guy who saw his first FPV race and am interested in learning to fly a drone. I ha been flying R/C planes for 30 years or so and have never flown an FPV drone. I have already bought a google/tx/rx/from a Chinese vendor and will hopefully try out the simulator programs my IMAC before crashing my wallet and first drone (LOL). Thank you for your very complete article.

Ron

OSCAR

21st August 2017 - 2:43 pm

Thanks Ron, keep us updated :)

by the way here is a great forum worth joining and sharing your progress and asking questions: http://www.intofpv.com

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CHRIS

10th July 2017 - 9:06 pm

This is an old thread so I'm hoping someone stumbles across it with an answer — my husban and I recently stumbled upon an ESPN special on drone racing and my husband's eyes lit righ he owns two drones that he flies both for work (aerial footage of solar arrays) and pleasure, sc has *some* experience, although I'm not sure how much that helps or does not help in this are Question is::: is there any way to gift him an experience, like one hour racing a drone through "course," much as you could purchase a Nascar driving experience, or does nothing like that e (yet)? I'd love to do something like this for his birthday. Thanks!!

OSCAR

12th July 2017 - 4:05 pm

things you get.

I would suggest getting a drone racing simulator, and a proper radio transmitter that h can use for the simulator, such as the Frsky Taranis QX7 or X9D Plus. He can use th exact same radio for his drone in the future.

I would suggest to let him do the research on an actual drone, then plan and buy the by himself. You would end up with a much better quality/value product, that he persor likes :)

CHRIS

13th July 2017 - 2:10 pm

Thank you for responding! Sounds like there's no such thing as renting a rac drone and/or buying a racing experience just for the day/couple hours. I'm nc looking to buy him a racing drone myself, for all of the points you brought up, to get him a sort of "test" experience. But if/when he's ready to do that on his this is certainly a great starting point. Thanks again!

OSCAR

16th July 2017 - 3:04 pm

No, there is no racing drone renting services yet as far as i know :)

But the closest thing is to find a local drone racing club, and join ther a session to see how things work, and possibly to get them let you h a go on their drones LOL :D Although people would normally be very reluctant to do that for beginners who's had no previous drone racing experience.

9th December 2016 - 4:59 am

Good writeup, a thought would be that the nighthawk etc are becoming outdated, and now you buy good arf racing quads (not sure which in particular, but there have been a few lately which a very good price/quality and are prebuilt).

EDGAR

5th June 2016 - 8:44 am

I Oscar, I found a small but interesting typo: 70 miles/hour = 110Km/hour (not 11) ;)

OSCAR

5th June 2016 - 9:59 pm

LOL you are right :) thank you for pointing it out!

RUI GARCIA

11th October 2015 - 6:43 pm

As someone else has said
to finish first, first you have to finish
