

STEMFlight Drone Kit

Introducing the STEMFlight Drone Kit

The Ultimate All-Inclusive Drone Kit for STEM Education

Brief Description:

Elevate your classroom or after-school program with drone curriculum, coding, and hands-on science projects.

Ideal for teachers, parents, and educational programs.

What's Inside the Box?

List of Components:

- Carbon Fiber 'cinewhoop style' DRONE Frame with customizable lower mounting plate, and gaurds (Made in Michigan)
- SpeedyBee F7 V3 BL32 50A 30x30 Stack with GPS or CrossFlight ArduPilot Controller
- Tmotor 2203.5 Brushless Drone Motor
- Propellors- Cinewhoop Frame Style 3.5"
- RadioMaster Boxer Remote ExpressLRS
- RP3 V2 ExpressLRS 2.4ghz Nano Receiver
- WalkSnail Avatar HD Pro FPV Kit or FPV Kit with EMAX FPV Goggles, SpeedyBee TX800, and RunCam Racer Nano 2 V2
- STEMFlight Activity Board, Electrical Parts and Supplies
- Universal LIPO Battery Charger
- Apache 4800 Case, Precision Screwdriver Set, and Soldering Iron Premium Kit

Why Choose STEMFlight Drone Kit?

Customizable: Adapt the kit to fit your curriculum or program.

Educational: Integrates coding, physics, and engineering concepts.

Quality: High-grade components designed for durability and performance.

All-Inclusive: Comes with all the tools and accessories you need.

The All NEW- STEMFlight DRONE and the STEMFlight DRONE Test Station

Announcing Preorders for the STEMFlight Drone Kit: Your Comprehensive Educational Drone Solution!

Also packaged for the TSA Competition with custom accessories upon launch of next competition.

Competition packages will be available at launch of new competition with option for upgrade kits, and competition only upgrades.

We're thrilled to announce the commencement of preorders for our STEMFlightDrone Kit - an all-inclusive, customizable educational drone package that perfectly complements your STEMFLIGHTDRONE Test Station!

Select between the high-speed performance of the SpeedyBee F7(V3) or the versatile ARDUPilot Controller, tailoring your STEMFlight Drone Kit to match your educational objectives.

The standard kit includes a Camera System, FPV Goggles, an RC Controller, and a 3.5" Carbon Fiber "cinewhoop" style frame with flexible attachment points. Also included are integrated corner guards, assembly tools, a robust storage case, batteries, charger, and more - everything you need to start your flight journey.

But the journey doesn't stop there! Enhance your STEMFlight Drone Kit with an array of additional features:

- Upgrade your flight vision with digital FPV goggles.
- Equip a 3-axis robotic arm for intricate manipulations.
- Personalize your drone with an array of vibrant color combinations.
- Boost your data analysis with enhanced sensors, including LiDAR (coming in 2024) and ultrasonic sensors
- Install enhanced cameras with integrated object recognition for advanced flight missions (coming in 2024)
- Include 360-degree obstacle avoidance capabilities for more intricate and safer flight paths.

The first wave of STEMFlight Drone Kits will start to take off in October 2023.

Don't miss this chance to elevate your drone education journey. Remember, stocks are limited, and we will fulfill orders on a first-come, first-served basis.

Preorder your STEMFlight Drone Kit today, and propel your journey into the exciting world of drone education!

Designed for versatility and compact utility, the uniteSTEM|STEMFlight DRONE Test Station is a cutting-edge educational tool tailored for the scientific exploration of drone dynamics.

With a small footprint, this test station suits a variety of educational environments, from classroom tabletops to research labs. Its open platform design encourages users to experiment, create, and innovate without restrictions.

The Test Station's X, Y, and Z rotational axes offer comprehensive investigation of quadcopter drone physics. Teachers and students can examine drone balance, thrust, pitch, yaw, and roll in a controlled environment, providing an essential understanding of drone mechanics and the physics that govern them.

Built to accommodate a broad range of drone sizes, the adjustable platform ensures this testing station can house and accurately measure from the smallest micro-drones to larger educational models. The bearings incorporated into the design enable smooth rotations, ensuring accurate readings and minimizing external influences.

For those seeking to further expand the drone's potential, the STEMFlight Station offers customizable features. Users can add a camera module for visual feedback and data analysis or a sensor module for detailed calculations on thrust and dynamic changes with integration of the robotic arm or custom end effector. These additional features can further enrich the learning experience and provide more in-depth insights into the world of drone flight.

Whether it's a basic introduction to drone mechanics or an advanced exploration of drone technology, the uniteSTEM | STEMFlight DRONE Test Station is a robust, adaptable, and user-friendly tool, perfect for fostering curiosity, innovation, and learning. Empower the drone pioneers of tomorrow with this essential educational platform today.

Announcing Preorders for the STEMFLIGHTDRONE Test Station!

We are thrilled to announce that the STEMFLIGHTDRONE Test Station, our state-of-the-art Gyroscopic Quadcopter Drone Test Station, is now available for preorders! This is the ultimate educational tool for the drone enthusiasts and the scientists of tomorrow.

Engineered to blend advanced features and ease of use, the STEMFlight provides a comprehensive solution to investigate the physics of drone flight. With its adjustable size, X, Y, and Z rotational axes, and a compact design, the STEMFlight ensures an enriching educational experience without occupying much space.

Elevate your learning journey further by customizing STEMFlight with additional features such as cameras and sensors for more detailed data analysis. Explore beyond the basic drone mechanics to a world of in-depth drone technology.

Don't miss the chance to be among the first to experience the STEMFLIGHTDRONE Test Station. Our first batch of shipments will start rolling out in October 2023.

Reserve your STEMFlight today, and get ready to take your educational or hobbyist drone explorations to new heights!

Don't wait, preorder your STEMFLIGHTDRONE Test Station today, and experience the future of drone education!

Preorder now and be the pioneer in drone learning!

Teacher Notes

Betaflight vs Ardupilot: A Comparison for Teachers and Educators

When it comes to drone technology in educational settings, two popular flight controller software options are Betaflight and Ardupilot. Below is a brief comparison of the two, focusing on aspects that might be most relevant for teachers and educators.

Betaflight

- **Focus:** Betaflight is primarily designed for multi-rotor craft and fixed-wing craft. It emphasizes flight performance and supports a wide range of flight controllers¹.
- **User-Friendliness:** Betaflight offers a configurator that can run on multiple operating systems like Windows, MacOS, Linux, and Android. It also has an active Discord server for community support¹.
- **Safety Features:** Betaflight has implemented several safety features to prevent dangerous situations, such as preventing arming when the drone isn't leveled¹.
- **Data Logging:** It allows flight data to be logged into a blackbox for later analysis¹.

- Community and Development: Betaflight is open-source and has a very active GitHub repository. It has multiple repositories for configuration tools, log viewers, and even Lua scripts for configuring Betaflight from your transmitter².

Ardupilot

- Versatility: Ardupilot is more versatile than Betaflight, supporting a wide array of vehicle types including multi-copters, traditional helicopters, fixed-wing aircraft, boats, submarines, and rovers³⁴.
- Community Support: Ardupilot also has a strong community and is used by large institutions like NASA, Intel, and Insitu/Boeing³.
- Advanced Functionality: Ardupilot offers advanced data-logging, analysis, and simulation tools. It also allows real-time communication with operators³.
- Documentation: Ardupilot has extensive documentation available through its Wiki, making it easier for first-time users to set up their hardware and software³.
- Language and Platform: Written in C++ and Python, Ardupilot is cross-platform and its source code is stored and managed on GitHub⁴.

Summary

- Betaflight is more focused on flight performance and is generally easier for beginners to set up.
- Ardupilot is more versatile and offers advanced functionalities, making it suitable for a wide range of applications beyond just flying drones.

Both are excellent choices, but your selection may depend on the specific educational goals you have in mind.

Comparison

| Betaflight | Ardupilot |
|--|---|
| <ul style="list-style-type: none"> - Primary Focus: Designed for multi-rotor and fixed-wing craft. - User-Friendliness: Configurator runs on multiple OS (Windows, MacOS, Linux, Android). - Community Support: Active Discord server for real-time help. - Safety Features: Includes safety measures like preventing arming when the drone isn't leveled. - Data Logging: Blackbox feature for flight data analysis. - Development: Open-source with an active GitHub repository. | <ul style="list-style-type: none"> - Primary Focus: Versatile, supports multi-copters, traditional helicopters, fixed-wing aircraft, boats, submarines, and rovers. - Community Support: Strong community, used by large institutions like NASA. - Advanced Functionality: Offers advanced data-logging, analysis, and real-time communication. - Documentation: Extensive Wiki for first-time setup and troubleshooting. - Development: Open-source, written in C++ and Python, and cross-platform. |

Summary

Betaflight: Easier for beginners, focused on flight performance.

Ardupilot: More versatile, suitable for advanced applications.

Which one is better for STEM Education?

Betaflight

Ease of Use: Betaflight is generally easier to set up and use, which could be beneficial for younger students or beginners in drone technology.

Safety Features: The built-in safety features can be a plus point for educational settings where safety is a primary concern.

Community Support: The active Discord community can be a great resource for students and educators alike to troubleshoot issues or learn new tips and tricks.

Focused Learning: If the educational goal is to give students a straightforward, hands-on experience with drone technology, Betaflight's focus on flight performance can be an advantage.

Ardupilot

Versatility: Ardupilot's support for a wide range of vehicles—from drones to boats to rovers—can offer a more comprehensive STEM education experience.

Advanced Features: The advanced functionalities in Ardupilot can provide a deeper, more technical educational experience, suitable for older or more advanced students.

Real-world Applications: Given its use by large institutions like NASA, lessons using Ardupilot can be tied to real-world applications, adding an extra layer of educational value.

Extensive Documentation: The availability of extensive documentation can be a valuable educational resource, helping students to understand both the practical and theoretical aspects of unmanned vehicles.

Summary

- Betaflight may be more suitable for beginner-level courses or younger students, focusing on ease of use and safety.
 - Ardupilot may be better suited for advanced courses or older students, offering a broader range of functionalities and real-world applications.
-

KIT ONE

DRONE Kit Components

4mm Carbon Fiber Upper Frame

2mm Carbon Fiber Lower Frame

1.5mm Carbon Fiber Bumper Guard Mounts
SpeedyBee F7 V3 BL32 50A 30x30 Stack
BZGNSS BZ-181 GPS Module
Ultrasonic Sensor
Tmotor 2203.5 Motor
Propellers - Cinewhoop Frame Style 3.5"
Fastener Kit with Organizer

Radio Controller Kit

Boxer Remote ExpressLRS
RP3 V2 ExpressLRS 2.4ghz Nano Receiver
6200mah 2S Lipo Transmitter Battery
Trainer Cable Set

FPV Kit

EMAX FPV Goggles
SpeedyBee TX800
RunCam Racer Nano 2 V2

Accessories

STEMFlight Activity Board
SpeedyBee Programable 2812 Arm LEDs (4 Pcs)
I2C Expansion Board
SG90 9G Micro Servo Motor
Servo Extension Cable
CNHL 1500mAh 4S Lipo Battery 14.8V 100C
Universal Lipo Charger
Battery Bag
Battery Lipo Strap
Electronics Supplies with Organizer

Tools and Storage

Apache 4800 Case
Precision Screwdriver Set
Soldering Iron Premium Kit

KIT TWO

DRONE Kit Components

4mm Carbon Fiber Upper Frame
2mm Carbon Fiber Lower Frame
1.5mm Carbon Fiber Bumper Guard Mounts
SpeedyBee F7 V3 BL32 50A 30x30 Stack
BZGNSS BZ-181 GPS Module
Ultrasonic Sensor
Tmotor 2203.5 Motor
Propellers - Cinewhoop Frame Style 3.5"
Fastener Kit with Organizer

Radio Controller Kit

Boxer Remote ExpressLRS
RP3 V2 ExpressLRS 2.4ghz Nano Receiver
6200mah 2S Lipo Transmitter Battery
Trainer Cable Set

FPV Kit

Walksnail Avatar HD FPV System with Pro Camera

Accessories

STEMFlight Activity Board
SpeedyBee Programable 2812 Arm LEDs (4 Pcs)
I2C Expansion Board
SG90 9G Micro Servo Motor
Servo Extension Cable
CNHL 1500mAh 4S Lipo Battery 14.8V 100C
Universal Lipo Charger
Battery Bag
Battery Lipo Strap
Electronics Supplies with Organizer

Tools and Storage

Apache 4800 Case
Precision Screwdriver Set
Soldering Iron Premium Kit

KIT THREE

DRONE Kit Components

4mm Carbon Fiber Upper Frame
2mm Carbon Fiber Lower Frame
1.5mm Carbon Fiber Bumper Guard Mounts
CrossFlight Flight Controller
GPS Module
Ultrasonic Sensor
Tmotor 2203.5 Motor
Electronic Speed Controller
Propellers - Cinewhoop Frame Style 3.5"
Fastener Kit with Organizer

Radio Controller Kit

Boxer Remote ExpressLRS
RP3 V2 ExpressLRS 2.4ghz Nano Receiver
6200mah 2S Lipo Transmitter Battery
Trainer Cable Set

FPV Kit

EMAX FPV Goggles
SpeedyBee TX800

Accessories

STEMFlight Activity Board
SpeedyBee Programable 2812 Arm LEDs (4 Pcs)
I2C Expansion Board
SG90 9G Micro Servo Motor
Servo Extension Cable
CNHL 1500mAh 4S Lipo Battery 14.8V 100C
Tenery TB6-B Balance Charger Discharger
Battery Bag
Battery Lipo Strap
Electronics Supplies with Organizer

Tools and Storage

Apache 4800 Case
Precision Screwdriver Set
Soldering Iron Premium Kit

KIT FOUR

DRONE Kit Components

4mm Carbon Fiber Upper Frame
2mm Carbon Fiber Lower Frame
1.5mm Carbon Fiber Bumper Guard Mounts
CrossFlight Flight Controller
GPS Module
Ultrasonic Sensor x6
Tmotor 2203.5 Motor
Electronic Speed Controller
Propellers - Cinewhoop Frame Style 3.5"
Fastener Kit with Organizer

Radio Controller Kit

Boxer Remote ExpressLRS
RP3 V2 ExpressLRS 2.4ghz Nano Receiver
6200mah 2S Lipo Transmitter Battery
Trainer Cable Set

FPV Kit

EMAX FPV Goggles
SpeedyBee TX800

Accessories

STEMFlight Activity Board
SpeedyBee Programable 2812 Arm LEDs (4 Pcs)
I2C Expansion Board
SG90 9G Micro Servo Motor
Servo Extension Cable
CNHL 1500mAh 4S Lipo Battery 14.8V 100C
Tenery TB6-B Balance Charger Discharger
Battery Bag

Battery Lipo Strap
Electronics Supplies with Organizer

Tools and Storage

Apache 4800 Case
Precision Screwdriver Set
Soldering Iron Premium Kit

KIT FIVE

DRONE Kit Components

4mm Carbon Fiber Upper Frame
2mm Carbon Fiber Lower Frame
1.5mm Carbon Fiber Bumper Guard Mounts
CrossFlight Flight Controller
GPS Module
Ultrasonic Sensor x 6
Tmotor 2203.5 Motor
Electronic Speed Controller
Propellers - Cinewhoop Frame Style 3.5"
Fastener Kit with Organizer

Radio Controller Kit

Boxer Remote ExpressLRS
RP3 V2 ExpressLRS 2.4ghz Nano Receiver
6200mah 2S Lipo Transmitter Battery
Trainer Cable Set

FPV Kit

Walksnail Avatar HD FPV System with Pro Camera

Accessories

STEMFlight Activity Board
SpeedyBee Programable 2812 Arm LEDs (4 Pcs)
I2C Expansion Board
SG90 9G Micro Servo Motor
Servo Extension Cable
CNHL 1500mAh 4S Lipo Battery 14.8V 100C
Tenenergy TB6-B Balance Charger Discharger
Battery Bag
Battery Lipo Strap
Electronics Supplies with Organizer

Tools and Storage

Apache 4800 Case
Precision Screwdriver Set
Soldering Iron Premium Kit

DRONE ARM KIT

Brushless Gimbal Motor

MG99S Servo Motor
Robot Arm End Effector
Robot Arm Upper
Robot Arm Lower
Robot Arm Frame Mount

STEMFlight Test Station

Test Station
Drone Mount Platform
Easy to Assemble