

ARIN SWAP



USER MANUAL

Revision 1.2

For questions go to www.avariaero.com or call 513-828-0860.

PREAMBLE - DISCLAIMERS & SAFETY

Chapter 0.1 - Trademark

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Chapter 0.2 - Copyright Warning

Duplication, reproduction or replication of this user manual in any form or by any means, is not authorized by OhioDroneLLC, and may result in legal action. This includes, but is not limited to; photocopying, recording, mechanical or electronic retransmission. All are strictly forbidden without written permission and consent. Please contact the Sales department of OhioDroneLLC for further inquiries.

Chapter 0.3 - Patent Information

This product is obtained according to US patent laws and procedures. Patent numbers are as follows:

US16/830,395

Chapter 0.4 - Disclaimer

The “User Manual” included with your **Arin** also functions as the FAA approved “Operations Manual” used for all commercial and industrial uses. This is in compliance with FAA laws and regulations. Please see APPENDIX for additional information.

All OhioDroneLLC products come with strict safety and operational requirements in order to ensure safe and successful flight operations of your **Arin** aircraft.

All drones are meant for adult (18+) use, and are not recommended for use when unsupervised or if the pilot(s) are untrained in the use of said equipment.

In the event the client or consumer fails to adhere to mandatory safety and security guidelines or instructions, OhioDroneLLC is not liable for, and provides no warranty coverage against injury. This includes, but is not limited to; property damage or personal injury that may occur during use, be it indirect or direct, legal, incidental, special or otherwise. Do not use aftermarket or 3rd party equipment for unapproved repairs or modifications to the aircraft in any way. In the event of any damage to the aircraft, only OhioDroneLLC approved repair technicians are authorized to service the aircraft. Any tampering or “self repair” may void any and all warranties.

These safety instructions are available anytime on our website at www.flyohd.com and will be updated to the latest version when available.

Never jeopardize the safety of yourself, other people or property when planning or performing a flight operation.

Chapter 0.5 - Battery Safety Instructions

WARNING / CAUTION / SAFETY / DANGER

Only use batteries and charging devices that came with the aircraft or are sold by OhioDrone LLC for use with the **Arin**. Do not tamper with the battery pack or it's charger.

Battery materials and electrolytes are highly corrosive. If any internal battery materials come in contact with your skin or your eyes, immediately flush the affected area with clean running water and seek immediate medical attention.

1. Battery Usage
 - 1.1. Always turn off the aircraft before installing or removing the battery.

- 1.2. The **Arin** is powered by a lithium-ion battery. This misuse of Li-Po/Li-Ion batteries can be hazardous. Make sure to strictly follow all the battery usage, charging, storage and disposal instructions listed below.
- 1.3. Only use batteries and charging devices that came with the aircraft or are sold or authorized by OhioDrone LLC for use with the **Arin**. Using unapproved batteries or charging devices may result in fire, explosion, leakage, or other hazards. OhioDrone LLC will not be liable for any consequences resulting from the use of third-party batteries or charging devices.
- 1.4. Do not disassemble, open, crush, bend, deform, puncture, shred, or otherwise intentionally cause damage to the battery. Doing so may result in fire, explosion, leakage, or other hazards.
- 1.5. Do not charge or use the battery if it starts to swell, smoke, leak, or shows any signs of damage. Stop using or charging it immediately and seal in a secure storage lockbox and drop off at your nearest approved battery recycling facility.
- 1.6. Do not expose the battery to temperatures below -10°C (14°F) or above 40°C (104°F). Exposing the battery to extreme temperatures will reduce its lifespan and may result in fire, explosion, or other permanent damage.
- 1.7. Temperatures below 5°C (41°F) will cause the battery to discharge faster, and result in variables in flight performance.
- 1.8. Do not use the battery in strong electrostatic or electromagnetic environments.
- 1.9. Do not expose the battery to fire, explosions, or other hazards.
- 1.10. If the aircraft becomes submerged, remove the battery immediately after you retrieve it. Leave the battery in an open area, away from flammable objects, and maintain a safe distance until it is completely dry. Don't use the battery again. Contact our customer support team for a replacement.

2. Battery Charging

- 2.1. Only use OhioDroneLLC supplied or OhioDroneLLC approved batteries, chargers and accessories.
- 2.2. Do not use a damaged battery charger or damaged battery.
- 2.3. When the charger is not in use, disconnect it from the aircraft battery and the power source.
- 2.4. Wait until the battery has cooled down to room temperature before charging it. If you connect the battery to the charger immediately after flight, overheat protection will prevent charging.

3. Battery Storage

- 3.1. Do not allow the battery to come in direct or close contact with moisture or heat sources. Store the battery in a dry and well ventilated area at room temperature — ideally 22°C to 28°C (72°F to 82°F). Additional information:
- 3.2. Keep the battery out of reach of children and pets. OhioDroneLLC advises this is an 18+ product for adults, and only to be used while under direct supervision.
- 3.3. Do not store the battery in direct sunlight or near sharp items, moisture, metal, or reactive chemicals.

- 3.4. Storing the battery at extreme temperatures will reduce its lifespan. If the battery is left unused for over 6 days, store it at a temperature between -10°C (14°F) and 30°C (86°F). Otherwise, battery damage or failure may result.
 - 3.5. Over time, some reduction/degradation in battery life is expected.
4. Battery Disposal
 - 4.1. Completely discharge the battery prior to disposal/recycling.
 - 4.2. Dispose of the battery properly at an approved battery recycling location.
 - 4.3. DO NOT dispose of batteries in public garbage/sanitation.
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Chapter 0.6 - Flight Safety Instructions

1. Flight Environment
 - 1.1. Comply with all local regulations on flying drones. Only fly within designated drone flying areas, and set compliant distance and height limits during all flight missions. Users are responsible for checking all air-traffic prior to operations.
 - 1.2. Do not fly in hazardous situations or severe weather conditions, such as tornadoes, rain, hail, or snow.
 - 1.3. Do not fly the aircraft near facilities that could produce electromagnetic interference (EMI), cellular towers, power transmission lines, power substations, power plants, or high-voltage machinery.
 - 1.4. Fly in an open and safe area, and clearly designate the area of operations prior to flight. Avoid obstacles that can interfere with the GPS signal, such as buildings and trees.
 - 1.5. Exercise caution when flying in environments over 6000 meters (18,000 feet) above sea level, as the aircraft's battery and power system performance may be affected.
2. Before Flying
 - 2.1. Always check the following before engaging the rotors or powered flight:
 - 2.1.1. Ensure all devices are powered on, and at full charge. This includes, but is not limited to; the remote control, the battery, and any mobile device, tablet, or laptop/PC using OhioDroneLLC software or applications
 - 2.1.2. The propellers are correctly installed and not damaged.
 - 2.1.3. The physical body and legs of the **Arin** are not damaged or separated in any way.
 - 2.1.4. The aircraft's motors, emergency kill switch, and remote control work properly when the aircraft is powered on.
 - 2.1.5. All warnings and error messages displayed on the website or app have been addressed.

- 2.2. Only use accessories that came with the aircraft, or are sold or authorized by OhioDrone LLC. Using unapproved parts will void the product's warranty, and OhioDroneLLC assumes no responsibility or liability for damage to people or property using non-OEM items/components.

3. While Flying

- 3.1. During takeoff and landing, keep the aircraft away from people, vehicles, and other moving objects.
- 3.2. Keep the aircraft in your visual line of sight at all times. (VLOS)
- 3.3. Do not fly the aircraft close to water surfaces or water features.
- 3.4. If the aircraft gets a low battery signal, quickly and safely land the aircraft in a secure, non-populated area.
- 3.5. If the Arin emits a warning message or warning beeps, quickly and safely land the aircraft in a secure, non-populated area.
- 3.6. Do not fly the aircraft if you are dizzy, fatigued, under the influence of alcohol or drugs, or experiencing any other condition that may impair your ability to safely operate the aircraft.

4. Storage and Maintenance

- 4.1. Carefully check every part of the aircraft after any crash or collision. Keep the aircraft and its accessories stored out of the reach of children and pets.
- 4.2. Store the aircraft and its accessories in a cool, dry place.
- 4.3. Keep the aircraft away from moisture and heat sources, both direct and indirect.
- 4.4. The recommended storage temperature for the aircraft is 22°C to 28°C (72°F to 82°F).

TABLE OF CONTENTS

PREAMBLE - DISCLAIMERS & SAFETY	2
TABLE OF CONTENTS	7
CHAPTER 1 - BEFORE YOU BEGIN	9
CHAPTER 2 - GETTING TO KNOW THE ARIN	12
CHAPTER 3 - PRE-FLIGHT PREPARATIONS	16
CHAPTER 4 - FLIGHT OPERATIONS	20
CHAPTER 5 - MAINTENANCE AND SERVICE	23
CHAPTER 6 - APPENDIX	28

- 0. Preamble Disclaimer & Safety**
 - 0.1. Trademark
 - 0.2. Copyright Warning
 - 0.3. Patent Information
 - 0.4. Disclaimer
 - 0.5. Battery Safety Instructions
 - 0.6. Flight Safety Instructions

Table of Contents

- 1. Chapter 1 - Before You Begin**
 - 1.1. Legend
 - 1.2. Before Your First Flight
 - 1.2.1. Included Documentation
- 2. Chapter 2 - Getting to know the Arin**
 - 2.1. Aircraft
 - 2.1.1. Description of usage
 - 2.1.2. LED Indicators
 - 2.1.3. Aircraft Indicators (serial #)
 - 2.2. Remote Control
 - 2.2.1. Description of usage
 - 2.2.2. Wire-frame view /w controls
- 3. Chapter 3 - Preflight Preparations**
 - 3.1. Battery Preparation

- 3.1.1. Installation
 - 3.1.2. Removal
 - 3.1.3. Charging
 - 3.2. Remote Control Preparation
 - 3.2.1. Overview
 - 3.2.2. Powering/Charging Controller
 - 3.2.3. Status Indicators
 - 3.2.3.1. LED Lights
 - 3.2.3.2. Audio Queues
 - 3.2.4. Pairing Controller to Aircraft
 - 3.3. Aircraft Preparation
 - 3.3.1. Condensed Pre-Flight Inspection
 - 3.3.2. Propellers Installation
 - 3.3.3. Leg installation
 - 3.3.4. Testing E-Kill functionality
 - 3.3.5. Other calibration
 - 4. Chapter 4 - Flight Operations**
 - 4.1. Preflight Checklist
 - 4.2. Remote Control & Flight Operations
 - 4.2.1. Re-testing E-Kill functionality
 - 4.2.2. Motor Start & Aircraft Takeoff
 - 4.2.2.1. Command Stick Controls
 - 4.2.3. Landing & Motor Shutdown
 - 5. Chapter 5 - Maintenance & Service**
 - 5.1. Troubleshooting Tips
 - 5.2. FAQs
 - 5.3. Storage & Maintenance
 - 5.4. Warning on invasion of privacy
 - 5.5. Warranty
 - 5.6. Customer Service
 - 5.6.1. Technical Support
 - 5.6.2. Repair Service
 - 6. Chapter 6 - Appendix**
 - 6.1. Regulatory Compliance & Flight Restricted Areas
 - 6.1.1. Compliance & Advisory
 - 6.1.2. Flight Restricted Area Illustrations
 - 6.2. Specs (public facing)
 - 6.3. Registered trademarks
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CHAPTER 1 - BEFORE YOU BEGIN

Chapter 1.1 - Legend

Thank you for purchasing the **Arin**. Please use this manual to get an in-depth look at **Arin's** features, and how you can safely operate the remote control and aircraft. Please read all documentation in its entirety, including warranty information in the box, before flying your **Arin** for the first time. Keep the manual on hand for quick reference during any flight operations with your new aircraft. OhioDroneLLC is not liable for any negligence that may result from not reading or following the proper operating procedures of the aircraft or pilot operator error.

The following icons/labels call special attention to important information throughout this manual.



WARNING: Signals or indicates a potentially or currently hazardous situation or scenario.



INSTRUCTIONS: Guides you to the section containing relevant information for the referenced instructions.



IMPORTANT: Critical information that should be followed before any other steps or procedures.



DISCONNECT: Indicates to disconnect any connectors or external sources prior to proceeding.

Chapter 1.2 - Before Your First Flight

Inside your **Arin** box, you will have the following items to help you get started for the first time.

1. **Packing List:** Contains a list of all items that should be shipped or included in your box with the purchase of an **Arin** aircraft. If any items are damaged, missing or otherwise unusable, please contact OhioDroneLLC customer support for assistance. Do not attempt to operate the aircraft with items missing. (Fig 1.2A Below)



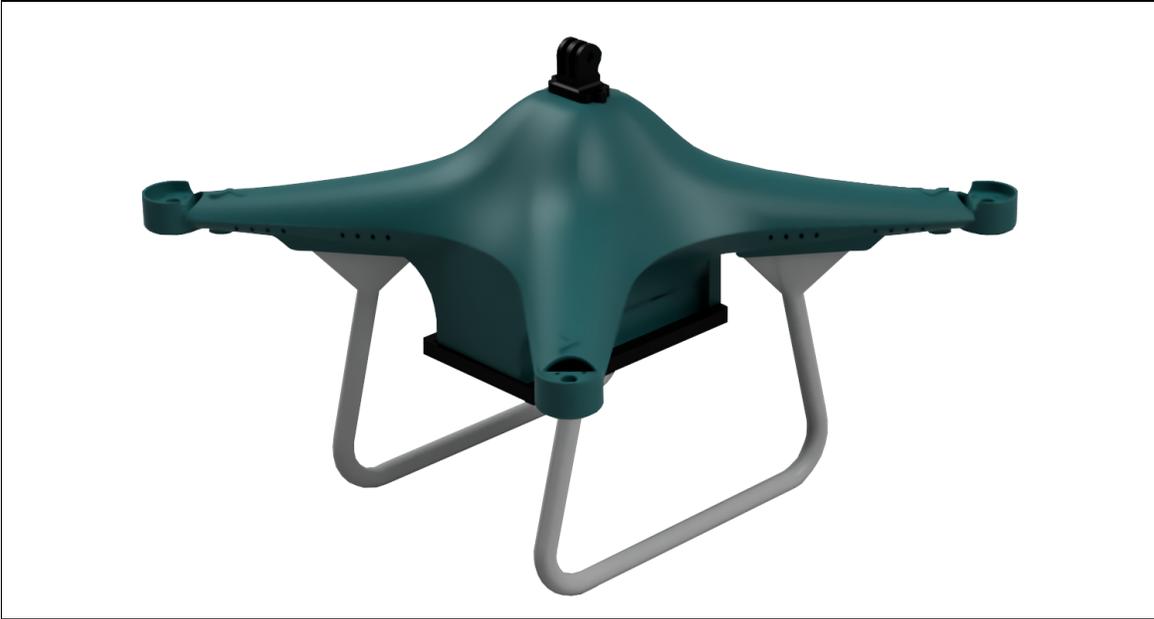
(Fig 1.2A)

2. **User Manual :** Contains all safety guidelines, pre-flight materials, during/post flight materials, and general product and operational information. For any additional information, please contact Customer Support by phone or [using the website](#).
3. **FAA Quick Guide:** 5"x7" card including the FAA serial number of your **Arin** aircraft, and information on where and how to register your product. (Fig 1.2B Below)



(Fig 1.2B)

4. **Arin aircraft:** One (1) **Arin** aircraft complete assembly. Included with one (1) pair (qty 2) legs. (Fig 1.2C Below) For specialty colors and pricing, please contact the Sales department of OhioDrone LLC.



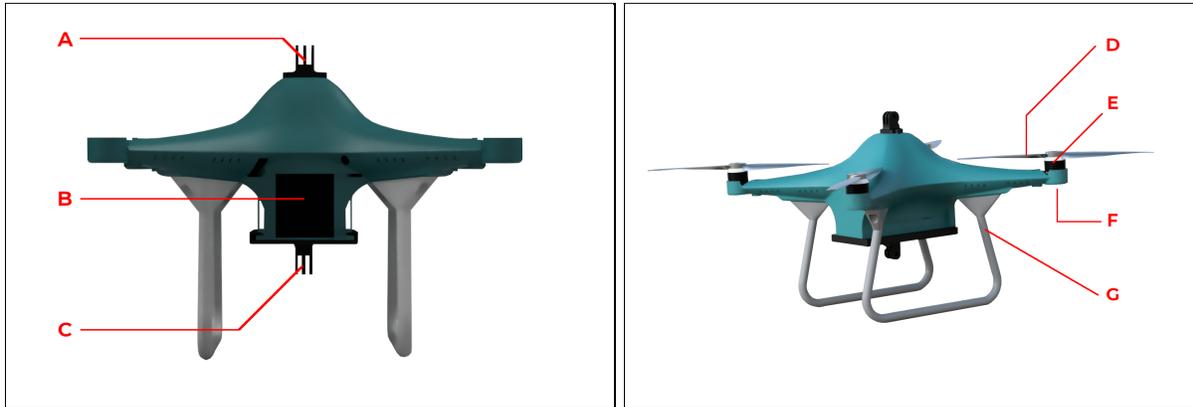
(Fig 1.2C)

5. **Propellers with Prop Nuts:** Please reference the User Manual for the proper way to attach your propellers with prop nuts (qty x4 - 1 full set). Improper installation or use of the **Arin** propellers could result in injury.
6. **EZ Swap Camera Slide Tray:** One (1) Camera Slide Tray with mounting bracket system.
7. **EZ Swap Slide Box:** One (1) EZ Swap Slide Box.
8. **Controller:** One (1) FlySky FS-I6X Controller with four (4) AA batteries.

CHAPTER 2 - GETTING TO KNOW THE ARIN

Chapter 2.1 - Aircraft

The **Arin** is a multi-function quadcopter with options for a diverse payload.



- A) Top Camera Mount
- B) Battery Tray Slot
- C) Lower Slide Tray Camera Mount

- D) Rotor / Prop
- E) Brushless Motor
- F) Mounting Holes Motor Undercarriage
- G) Replaceable Landing Skids / Legs

Included with the **Arin** are four (4) LED Indicator lights, and one (1) larger anti-collision light. These are for use mainly during sunset and civil / nautical twilight operations, for the PIC to retain visual sight of the aircraft during reduced or low-light scenarios. Ohio Drone LLC does not recommend any flights or operations past astronomical twilight, even with indicator lights.

With your kit, Ohio Drone LLC will provide you with an identifying tag, which will allow the aircraft to be identified by Ohio Drone and the customer in the event of needing repair, service, or claiming a warranty.

When applying any identification to the aircraft, section 48.205 of *Doc. No. FAA-2015-7396; Amdt. No. 48-1; 80 FR 78645, Dec. 16, 2015, as amended by Doc. No. FAA-2018-1084, 84 FR 3673, Feb. 13, 2019*, states that there are three key criteria that must be met:

1. The unique identifier must be maintained in a condition that is legible
2. The unique identifier must be affixed to the small unmanned aircraft by any means necessary to ensure that it will remain affixed for the duration of each operation.
3. The unique identifier must be legibly displayed on an external surface of the small unmanned aircraft.

Chapter 2.2 - Remote Control

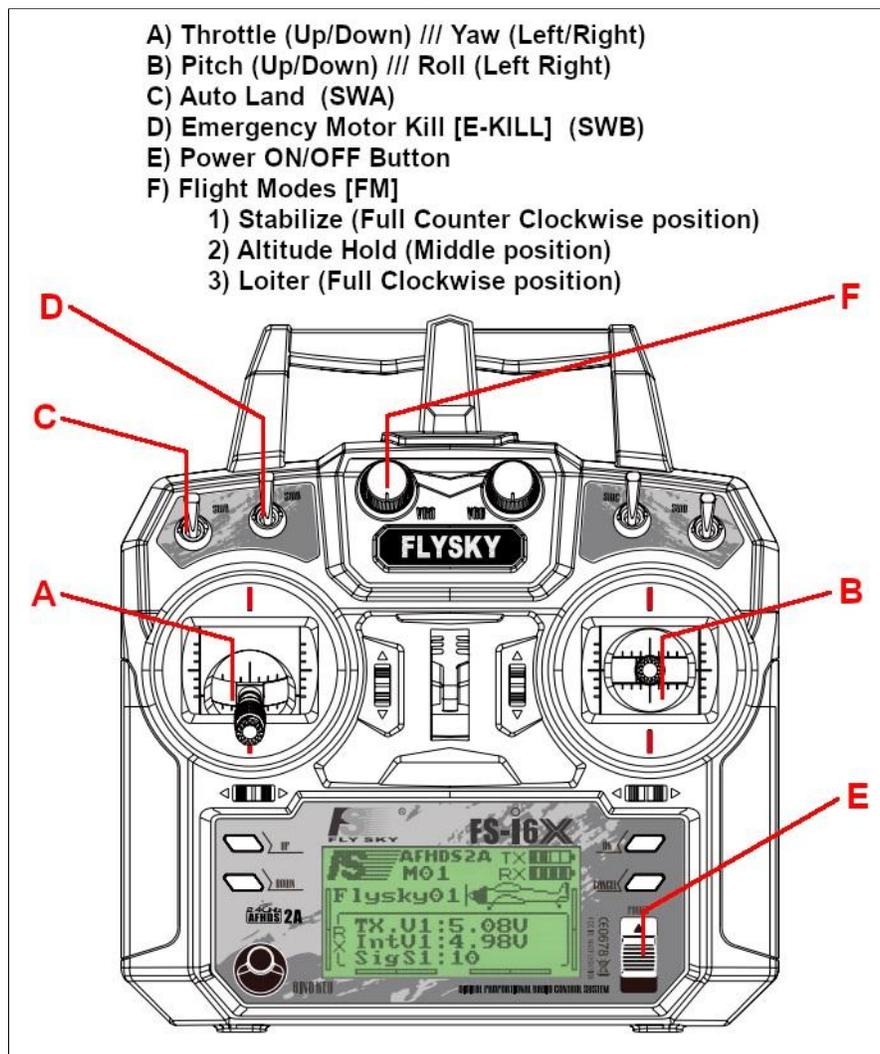
The **Arin** uses a FlySky FS-I6X controller, and has an unobstructed transmission range of up to 500M under optimum conditions. The remote control supports 2.4 GHz AFHDS 2A. It's default configuration (Fig 2.2A below), pilots/users can expect an average of 10 hours of continuous use before expecting to replace the controller batteries. OhioDroneLLC does not warranty replacement batteries.



All users should note the neutral Throttle position (zero, 0) is at 6 o'clock (straight down) on the left stick. See Section 4.2 - Remote Control & Flight Operations for more detailed instructions.



Fig 2.2A



CHAPTER 3 - PRE-FLIGHT PREPARATIONS

Chapter 3.1 - Battery Preparation

1. Battery Installation

- 1.1. Ensure the battery has a full charge before connecting to the **Arin** aircraft. Secure the battery inside the lower battery tray housing. Users can opt to use either the battery housing cover, or a velcro system to secure the battery.
- 1.2. Only use batteries that are approved by OhioDroneLLC. We do not recommend using 3rd party or aftermarket parts in combination with OEM **Arin** components.



*NOTE: If the battery appears to be swollen, or does not fit properly (should be snug, but not need to be forced in) inside the housing, do NOT attempt to use the battery for flight operations. Quarantine the battery in question, use the replacement provided in the box with your **Arin**, and contact Customer Service at [Ohio Drone's website](#) for assistance.*



2. Battery Removal

- 2.1. Following the black/red wiring leads, pinch the white connectors to disconnect the battery from the **Arin**.



Please disconnect the battery after all props have been disengaged. Do not attempt to disconnect the battery if there appears to be physical damage to the battery itself, if the housing is smoking, emitting sparks, or any loud audio queues are present.



3. Charging

- 3.1. The aircraft battery can be charged using a standard 4-cell battery charger.
 - 3.1.1. Battery Level Indicators
 - 3.1.1.1. Please use the display on the charging station you are using to check on current battery status.
 - 3.1.1.2. Do not overcharge the battery on a charging station that does not utilize an "auto shutoff" feature (aka, charging overnight). This is to prevent damage to the battery.
 - 3.1.2. During Charging
 - 3.1.2.1. Do not disconnect the battery during a full-cycle charge. Disconnecting the battery prematurely can cause damage to the overall lifecycle of the battery, resulting in a reduced number of overall flights or missions the battery can withstand before replacement is required.



If the battery is below 12V, the charger may prevent the battery from charging, and display an error. This is a safety feature, as a LiPo battery with less than 3V per cell may indicate damage internally. **DO NOT FORCE A CHARGE.** Quarantine battery, and diagnose issues before further use.



Chapter 3.2 - Remote Control Preparation

1. Overview
 - 1.1. The controller provided with the Arin has an unobstructed transmission range of up to 500 Meters under optimum conditions, using 2.4 GHz AFHDS 2A.
2. Powering/Charging Controller
 - 2.1. The controller takes four (4) AA batteries to fully power.
3. Status Indicators
 - 3.1. LED Lights
 - 3.1.1. Pixhawk will initially flash Red and Blue for a few seconds upon startup.
 - 3.2. Audio Queues
 - 3.2.1. Use [the ArduPilot website](#) for the correct audio queue for the **Arin** when the Pixhawk is booting up. [PixHawk audio queues](#) can be referenced directly on their website for additional assistance. If there are any other audio queues or sounds, please contact customer support.



Your **Arin** aircraft should come pre-paired to the controller in the box, and should not require any additional setup or configuration. If you choose to alter or change the setup/config in any way, OhioDroneLLC is not liable for any damages that may occur thereafter, be it directly or indirectly. Please see the Warranty/Liability section for more details.



4. Pairing controller to aircraft
 - 4.1. Using a binding plug (female to female), and the 915 receiver, connect the bottom and top ports of the B/VCC channel.
 - 4.2. Turn the drone on. Do not engage props.
 - 4.3. Ensure the RED LED is flashing on the 2.4 GHz receiver.
 - 4.4. On the controller, push and hold the “BIND” key and hold up on “POWER” for a minimum of 3 seconds.
 - 4.5. You will receive an audio queue from the controller, confirming the connection
 - 4.6. Test the newly established connection using E-Kill after arming the drone

Chapter 3.3 - Aircraft Preparation



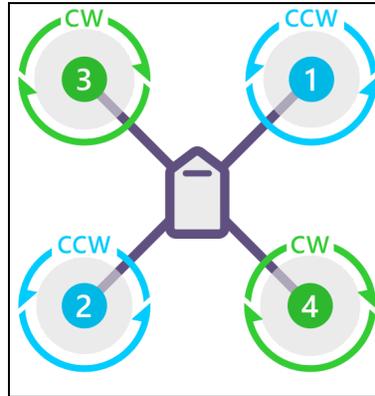
You can find an in-depth, detailed pre-flight checklist [on our website](#). The checklist below is a condensed version, for civilian use only, not commercial. **If you choose to use the condensed version, OhioDroneLLC is not liable for any damages that may occur thereafter.**



1. Follow the following steps for a brief, condensed pre-flight Inspection:
 - 1.1. Ensure there are no cracks or damage to the housing of the aircraft
 - 1.2. Check the landing gear of the aircraft, that it is secure and has full structural integrity
 - 1.3. Perform a visual inspection, ensuring there are no hairline cracks, surface corrosion, pitting, fatigue or erosion of the rotors or props
 - 1.4. No wiring is protruding from the aircraft
 - 1.5. Ensure all motors appear to be level, no significant deviation (larger than 5 degrees) from horizontal plane
 - 1.6. In addition to the pre-flight inspection, please ensure all steps listed in section “4.1 - Pre-flight Preparation” are followed properly.

2. Propellers Installation
 - 2.1. Prior to takeoff, ensure the blades on each motor are installed correctly, using figure 3.3A below.
 - 2.2. Rotors 1 & 2 should always rotate counterclockwise, while rotors 3 & 4 should always rotate clockwise.
 - 2.3. Be sure to install the plastic bushings (small plastic o-rings) inside the center of the prop, prior to installation on the motor. This will ensure a proper fit.
 - 2.4. The included thinner washers should be installed onto the motor collets first, followed by the propellers. Next, you as the customer may choose to use either the included collet cones or washers and nyloc nuts to secure the propellers to the motor collets. Please be aware that while it is unlikely, collet cones may come off in flight if not tightened down properly and cause damage to the vehicle or surrounding area. If you choose to use collet cones please ensure they are tightened down by interesting a small allen key or screwdriver through the holes present on the cones and twisting until completely tight. If nyloc nuts are chosen to secure the propellers, start by placing one thicker washer onto each of the threaded collet rods over the propellers. Following this, use a ratchet to firmly and completely secure a nyloc nut onto each threaded collet rod until completely tight. You will have to hold the motor in place to completely tighten these nuts. OhioDroneLLC is not liable for any damages that may result from the use or loss of collet cones or nyloc nuts in flight or otherwise.

- 2.5. Improper installation can result in damage to the motors/props, the frame of the aircraft, internal components, or the PIC/flight crew. OhioDroneLLC is not liable for any damages that may result from improper orientation.



(Fig 3.3A)

3. Leg Installation
- 3.1. Legs should come pre-assembled
- 3.1.1. In the event legs are not assembled, OhioDroneLLC recommends using a non-corrosive polyurethane adhesive. Secure the two (2) halves of the legs together using either a vice grip, C-clamp, or zip-ties. Let the solution cure per manufacturer's recommendations.
- 3.2. Ensure the side with the antenna recess in the leg correctly lines up with the antenna receiver on the **Arin** aircraft.
4. Testing E-Kill Functionality
- 4.1. Only the PIC is authorized to test functionality of E-Kill prior to flight operations.
- 4.2. Ensure the test is conducted prior to any flights, or after swapping any parts/pieces of the aircraft during flight operations.
- 4.3. To initiate E-Kill, activate switch SWA (see section "2.2 - Remote Control")
- 4.4. After E-Kill has been activated, the **Arin** aircraft will deactivate all motor functions, and terminate all power to the motors.
- 4.4.1. Ensure the area under the aircraft is as free from obstructions as possible
- 4.4.2. Ensure the safety of personnel above all else, followed by the aircraft and the mission, followed by property or equipment.
- 4.4.3. Try to reduce altitude to a minimal distance from the ground prior to engaging the E-Kill function, as there is no way to deactivate the E-Kill once engaged.
- 4.4.4. E-Kill is meant as a last resort function, to prevent injury to persons or property. In most scenarios, damage to the aircraft is an acceptable loss. OhioDroneLLC is not liable for damages caused while using E-Kill.
5. Other calibrations
- 5.1. OhioDroneLLC pre-calibrates all **Arin** aircraft prior to delivery to the customer/consumer. Only licensed technicians that are approved by

OhioDroneLLC **Arin** are authorized to repair or perform maintenance (be that physical or digital) on the **Arin** aircraft.

- 5.2. OhioDroneLLC is not liable for any damages that may result from improper calibrations of any device/software associated with the **Arin** aircraft.

CHAPTER 4 - FLIGHT OPERATIONS

Chapter 4.1 - Pre-Flight Preparation



You can find an in-depth, detailed pre-flight checklist [on our website](#). The checklist below is a condensed version, for civilian use only, not commercial. **If you choose to use the condensed version, OhioDroneLLC is not liable for any damages that may occur thereafter.**



Follow these steps to carry out a shortened preflight checkup:

- Flight plan is filed, AirMap is checked, local Air Traffic Controller notified.
- Verify that your flight area is open and unobstructed. Appropriate signage or high-visibility equipment is laid out, and the pilot area is cordoned off for security purposes.
- Fully charge the aircraft battery, remote control, and your mobile device/tablet/laptop.
- Drone is inspected for body damage, loose wires, or ill-fitting screws/pieces/accessories.
- Verify that the propellers are in proper condition and are correctly attached.
- Ensure the battery is connected and secured properly.
- Ensure all flight crew are alert, not under the influence of any substances, and of able body and mind to correctly and safely operate the aircraft.
- All crew are wearing the correct PPE.
- Camera is charged and the MicroSD card has ample storage for flight capture.
- Check the weather, including air temperature and wind speed.
- Verify that the aircraft's camera lens and sensors are clean.
- Pair the aircraft and remote control.
- Make sure you are familiar with the flight controls.
- Ensure emergency kill function for all rotors works prior to take-off of main flight operations. (See Section “3.3.4 - Testing E-Kill Functionality”)
- Double check all equipment and mission logs/statements prior to final takeoff and mission engagement.

Chapter 4.2 - Remote Control & Flight Operations

Follow these steps to carry out a shortened remote control and flight ops checklist before takeoff:

- Place aircraft on level ground
- Ensure prop rotation will have a clear rotation path

- Slide transmitter power switch on FlySky controller to the “UP” position.
- Announce, “CONNECTING BATTERY” to everyone within 50ft of aircraft site
- Connect LiPo battery to aircraft and secure battery in lower compartment
- Pixhawk will initially flash Red and Blue for a few seconds
- [This audio queue](#) will play for correct boot-up
(https://download.ardupilot.org/downloads/wiki/pixhawk_sound_files/PX4_StartUpOk.wav)
- Pre-arm checks will run automatically
- Check/verify flight mode prior to takeoff
 - Stabilize and Alt Hold do not require GPS
 - LOITER DOES REQUIRE GPS. (This mode is not advisable without a GPS signal)



Use of STABILIZE flight mode should only be reserved for expert level pilots. Engaging STABILIZE will disable many of the limiters that are specifically in place to help keep the aircraft easily controllable. Please consult with Ohio Drone LLC before using STABILIZE flight mode.



- Ensure there is a minimum of 50ft clear take-off space with no foreign obstructions (people, animals, objects)
- Announce, “Going to Flight Mode” to everyone within 50ft of aircraft
- Reach down to safety switch on aircraft, press and hold (< 3 seconds)
- You should hear “3 bees and then 1 individual beep”
- Announce, “In Flight Mode” to everyone within 50ft of aircraft operation site
- Walk to a safe distance away (minimum 3 meters) before continuing



Never turn your back to the aircraft or the surrounding area of the aircraft, in case of any unforeseen issues, or external factors beyond your control. Any visual observers or non-critical personnel should remain outside the 50ft takeoff area. All personnel should have high visibility PPE.



- Announce, “Arming” to everyone within 50ft of aircraft
- Arm Motors
 - At the same time
 - Left stick: Hold down and right
 - Right stick, hold down and left
 - Hold for 2-3 seconds
 - Release the stick after you hear [this sound](#)
(https://download.ardupilot.org/downloads/wiki/pixhawk_sound_files/Armed.wav)

*****CAUTION*****



If you hold the right stick down and right longer than 15 seconds, then you begin the AutoTrim feature, which could cause damage to the internal programming of the controller.



- Once armed, the LED on the Pixhawk will go from flashing (red/blue) to Solid (and the propellers will begin to spin, if programmed)
- Prepare to initiate/glide throttle (left thumb) stick to take-off 5ft or eye level altitude

Follow these steps to carry out a shortened remote control and flight ops checklist for Landing / Disarming Motors with Landing Switch (SWA)

- Gently guide aircraft over to original Take-off or predetermined landing position
- Hover at 10ft
- Announce, “LANDING” to everyone within 50 ft of aircraft site
- With left index finger, flip SWA (please see Chapter 2.2 - Remote Control)
- Observe the drone decent at 3-4 feet per second
- Do not touch stick controls unless you observe abnormal flight characteristics by aircraft
- Once the drone has landed safely, slide throttle (left thumb) stick to zero, or the lowest neutral range it can go
- After throttle has been moved to zero position for 15 seconds, you should receive [this audio queue](https://download.ardupilot.org/downloads/wiki/pixhawk_sound_files/Disarmed.wav) (https://download.ardupilot.org/downloads/wiki/pixhawk_sound_files/Disarmed.wav)
- Once disarm sound has played from aircraft, announce, “DISARMED” to everyone within 50ft of aircraft
- PIC will approach aircraft for final disarm

*****WARNING*****



Only the PIC is authorized to approach the aircraft until the battery is disconnected.



- Press and hold the safety switch to put the drone in a ground safe position.
 - Please note the “flashing” safety switch
- Announce, “GROUND SAFE” to everyone within 50 ft of the aircraft.
- Disconnect the LiPo battery
- Announce, “BATTERY DISCONNECTED” to everyone within 50 ft of the aircraft
- Turn OFF transmitter/controller

CHAPTER 5 - MAINTENANCE AND SERVICE

Chapter 5.1 - Troubleshooting Tips



OhioDroneLLC does not condone or support the use of 3rd party repairs or aftermarket parts. As our drones observe strict FAA regulations, we strongly recommend and reserve the right to operate all repair and maintenance in-house. Please see the Warranty page for more information.



1. **If the motors fail to engage (and no audio queues from the aircraft), verify the following:**
 - The E-Kill switch is deactivated and not currently engaged.
 - The remote control and the aircraft are paired properly.
 - The remote control is calibrated correctly.
 - The battery of the aircraft is fully charged and has a secure connection.
 - The battery of the controller is fully charged and has a secure connection.
2. **If Takeoff fails after starting motors, verify the following:**
 - The aircraft is on a flat, level surface.
 - There is not any FOD inside the aircraft motors.
 - The battery of the controller is fully charged and has a secure connection.
 - There is not a major nearby source of electrical or magnetic interference. OhioDroneLLC does not recommend using or operating near large or powerful magnets.
3. **If the flight time of the aircraft is significantly shorter than expected:**
 - The most common cause of reduced flight time is a low environmental temperature.
 - High wind speed.
4. **If the camera powers off while recording video:**
 - Ensure the camera is secure within it's housing and not loose.
 - The battery of the camera is fully charged, and has ample room on the microSD card.
5. **If camera lens is dirty:**
 - Wipe the lens gently with an approved glass cleaning cloth. OhioDroneLLC does not recommend using common household items or products such as clothing or paper towels to clean sensitive lenses, as they may be scratched or marred.
6. **If the camera is no longer recording video:**
 - Ensure the battery of the camera is fully charged, and the microSD card has ample room to store any videos or pictures.
7. **If the aircraft does not respond to the remote control during the pairing process:**
 - Verify that there are no metal objects, mobile devices or other remote controls nearby.

8. **If the aircraft does not respond as expected during flight in either ALT-HOLD or STABILIZE:**
 - Ensure there is not a major nearby source of electrical or magnetic interference. OhioDroneLLC does not recommend using or operating near large or powerful magnets.
 - Ensure there is no damage to the shell or housing of the aircraft, that could cause disconnects in wiring.
 - If motors are engaged in extended flight operations, ensure that the motors are not over the temperature of 93° C (over 200° F) , to ensure the motors are not beyond their tolerance limits, therefore preventing mechanical failure.
9. **If “Auto-Land” on the controller fails to operate as originally intended or is unresponsive:**
 - Pilot/maneuver the drone over a flat, empty space to the drone to (eventually) land in.
 - Ensure there is minimal drift/crosswind and decrease throttle power by 5% every 10 seconds, until the drone is decelerating towards the ground at a rate no faster than 1 foot per second.
 - Once the drone is less than 10 feet above the ground, begin slowly increasing throttle again to compensate for the deceleration.
 - Safely land the drone and disengage the battery.
10. **I don’t have access to the pre-flight checklist in a digital format, what should I do?**
 - OhioDroneLLC ensures all our pilots are equipped with a paper copy of any relevant documentation that may be required in the field. This includes, but is not limited to; flight plans/logs, SOPs, a printed paper checklist, and emergency contact information. If you are a customer or a pilot certified by Ohio Drone LLC, please use [this link here](#) to access forms and checklists we make available for customer or pilot documentation.
11. **E-kill is non-functional, and I had a “flyaway” incident, what do I do next?**
 - Immediately contact your supervisor to notify them that your aircraft is currently uncontrolled, and on a “runaway” trajectory. Contact local air care and law enforcement (Air Sheriff) with directional headings.

Chapter 5.2 - FAQs

1. **I need a replacement part for my Arin. Where can I purchase more?**
 - We have a variety of options and accessories available for the **Arin**. Please contact the Sales or Customer Service department of OhioDroneLLC for pricing and availability (see section 5.6 - Customer Service).

2. What does your drone come with?

- Included in our packing list is the following;
 - One (1) Arin drone (pre-assembled)
 - One (1) back-up set (pair of 2 units) of legs for the Arin Swap frame
 - Four (4) APC 11x4.5 multi-rotor (2 CW, 2 CCW) propellers
 - Four (4) lock collets (prop nuts)
 - Eight (8) sets of plastic brushings (fitting inserts for APC propellers)
 - One (1) FlySky FS-I6X remote controller
 - Four (4) AA batteries to power the FlySky controller
 - Two (2) 4-cell (4S) 6000 mAh batteries
 - One (1) “EZ Swap” camera-mount slide tray
 - One (1) “EZ Swap” slide accessory box
 - One (1) Top-mounted camera attachment
 - Four (4) Universal Night Strobe Lights
 - One (1) Strobe Anti-Collision Light
 - One (1) universal power supply
 - One (1) power supply adapter for 4S batteries
 - One (1) FAA Drone Registration card
 - One (1) Arin Swap user manual
 - One (1) packing list

3. Do you offer training for piloting the Arin?

- OhioDroneLLC uses a proprietary training suite for all pilots internally. We also have a mandatory training course for all customers or new pilots to ensure compliance and safety standards are met. Additional training is available through OhioDroneLLC, please contact our Customer Service team for more information (see section 5.6 - Customer Service).

4. What type of warranty does the Arin come with?

- Please see section “5.5 - Warranty” for more information.

5. I think I may have a defective part or piece. Who do I contact?

- Please contact the Customer Service department of OhioDroneLLC (see section 5.6 - Customer Service). We will verify the warranty of the part in question, and assist in either a replacement part, or will service the vehicle at one of our certified repair facilities.

6. I need additional information or help with the PixHawk audio queues!

- Please use either [this link](#) or use the website listed on the line below
- <https://ardupilot.org/copter/docs/common-sounds-pixhawkpx4.html>

7. For any additional questions, please see section “5.6 - Customer Service” for further contact information.

Chapter 5.3 - Storage & Maintenance

The optimal storage temperature for PLA, ABS and Nylon hybrid materials is between 15 °C and 25 °C (59° F to 77° F). Humidity of below 50% is recommended for PLA, ABS and Nylon hybrids. If these materials are exposed to a higher humidity the quality of the material can be affected.

Do not expose to direct sunlight for extended periods of storage, as extended exposure to extreme temperatures can cause damage to the body and the interior electronic components of the aircraft. Store in a dark, cool, secure environment, preferably under 50% humidity, and in a sealed, environment controlled lock-box or secured storage container.

OhioDroneLLC adheres to *Safety Alert for Operators (SAFO) 10017*, recommending the proper storage and fire protection and prevention strategies for all lithium-ion batteries. This includes, but is not limited to; *Container construction materials to have a significant effect on the total fire load and energy release rate of the fire, the time it takes for a fire suppression system to detect a fire originating from within the container and said container may be*. Please adhere to all FAA and ISO 9001 safety requirements for fire suppression.

Chapter 5.4 - Warning On Invasion Of Privacy

Recording and circulating an image or video, of an individual or group, may constitute an infringement of their image and privacy for which you could be liable. Ask for authorization before filming or photographing individuals, particularly if you want to keep your recordings and/or circulate images on the Internet or any other medium of your choice. OhioDroneLLC and its affiliates are not liable for any legal actions that result from improper or illegal use of any of our products.

The use of any OhioDroneLLC for surveillance or espionage is strictly forbidden and could result in your prosecution under the law. Check that your use of the cameras on board any of our platforms complies with the legal provisions on the protection of privacy within your local municipality.

Chapter 5.5 - Warranty

OhioDroneLLC warrants to the original retail purchaser of this product, that this product or any part thereof during normal expected consumer usage and conditions, be proven defective in material or workmanship that results in product failure within the valid warranty period from the purchase date, such defects(s) will be repaired, or replaced (with new or refurbished parts or products) at the Company's option, with Proof of Purchase, without charge for parts or labor directly related to the defect(s). Limitations on duration of warranty vary depending upon the state of purchase, please refer to the Customer Service or Sales department to determine the length of your warranty based upon Original Date of Purchase.

OhioDroneLLC shall not be liable for any incidental or consequential damages arising from the use, misuse, or mounting of the aircraft or any peripheral device. The extent of OhioDroneLLC's liability under this warranty is limited to the repair and replacement provided above and, in no event, shall its liability exceed the purchase price paid by purchaser for the product. Visit www.FlyOHD.com for details of the limited periods warranted for the different parts of this product.

This warranty does not apply to:

- Batteries that have been put through a full charging cycle more than 200 times under normal temperature conditions or more than 100 times in high temperatures;
- Batteries that have been stored for more than 1 month at temperatures of higher than 40°C (104°F);
- Products subjected to abnormal use or environmental conditions, accident, mishandling, neglect, unauthorized alteration, misuse, improper installation or repair, or improper storage;
- Products with signs of tampering or altering of the serial number label, waterproof mark, etc.
- Damage resulting from connection to, or use of any accessory or other product not approved or authorized by the Company;
- Defects in appearance, cosmetic, decorative or structural items such as framing and non-operative parts.
- Products damaged from external causes including but not limited to; fire, water, dirt, sand, battery leakage, blown fuse, theft or improper usage of any electrical source.

Chapter 5.6 - Customer Service

If you have any questions or concerns regarding our products, please contact Ohio Drone LLC customer support:

- Telephone: 513-828-0860
 - Please allow 24-48 hours for telephone service requests
- Email: CustomerService@OhioDroneLLC.com
- In person: local distributors or authorized retailers

CHAPTER 6 - APPENDIX

Chapter 6.1 - Regulatory Compliance & Flight Restricted Areas

FCC Warning Message

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance 20cm between the radiator & your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on. For additional information and support, please contact our Customer Service department at [Ohio Drone's website](#).

This equipment complies with ISEDC RF radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FAA AC 20-30 B - Aircraft Position Light and Anti Collision Light Installations

OhioDroneLLC sets forth acceptable means, but not the only means, of showing compliance with the Federal Aviation Regulations (FAR) applicable to installed position lights and anti-collision lights. [AC 20-30B](#)

FAA Requirements for Remote Identification

OhioDroneLLC adheres to all laws and regulations in 86 FR 4390, released January 15th, 2021 regarding the remote identification of unmanned aircraft. FAA Docket No.: FAA-2019-1100, Amdt. Nos. 1-75, 11-63, 47-31, 48-3, 89-1, 91-361 and 107-7.

California Prop 65 Warning

Lithium-ion Batteries and/or products that contain Lithium- ion Batteries can expose you to chemicals including cobalt lithium nickel oxide, and nickel, which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information, go to www.P65Warnings.ca.gov

Local Bylaws

OhioDroneLLC is centrally located in Hamilton County, in the City of Cincinnati, Ohio. OhioDroneLLC adheres to all local Bylaws regarding drone operations and flight, in addition to any other local or federal laws and restrictions. OhioDroneLLC advises all customers to check their local bylaws regarding UAVs, as they can vary from county to county, even if the city municipality is the same. OhioDroneLLC is not liable for any damages, fines, fees, or other incidental costs that may arise from not complying with proper bylaws and procedures.

Example: Great Parks of Hamilton County (Ohio) Bylaw 131.17: Aircraft and Hot Air Balloons: No person shall voluntarily bring, land, or cause to descend, or alight up on or adjacent to park land or water, any helicopter, airplane, balloon, parachute, hang glider, or other apparatus for aviation, without specific written permission from the Chief Executive Officer. Penalty, see §130.99.

Chapter 6.2 - Specs

The Arin Swap™

Product Overview

The Arin Swap by Ohio Drone, LLC is a range of American Engineered and Manufactured Part 107 Quadcopter sUAS Drones designed for non-commercial and recreational users.

Options	Product Class	Flight Time	Range	Max Speed	Payload
Arin Swap	Group 1	25 minutes*	2 miles**	50 MPH*	2.4 lbs*

* Values provided are dependent upon on-board configuration/customization and payload.

** Cannot be flown more than 500 meters away from the controller under optimum conditions

Physical Characteristics

Arin Swap	
Height	5.25"
Width	13.5" (bladeless)
Depth	13.25" (bladeless)
Loaded Weight	8 lbs



Easy swap attachments



Smart Flight Capabilities



GPS



25 Minute Flight Time

Performance Details

Controlled via a local controller the Arin Swap supports VLOS flight operations with precision landing capabilities. For standard applications the Arin Swap drone can carry up to 2.4 lbs payload - standard applications include photography, videography, and other recreational use.

Contact Ohio Drone for Pricing and Availability.

DR-AR-121

Arin



Product Specifications

Overall Dimensions (Inches)	5.25" x 22" x 22"	
Unloaded Weight (LBs)	5 lbs 3 oz*	
Fully Loaded Weight (LBs)	7 lbs 5 oz*	
Easy Swap™ System Inc'l	Yes	
Flight Time (Minutes)	25 (Standalone)*	20 (Loaded)*

Features & Benefits

Sensor- Flir Firefly
Processor - PixHawk
Material - PLA
System - ArduPilot
Multi-purpose Application Adaptable

Performance Specifications

Power Source	Capacity	Recharge Time	Max Flight Speed	EMI Resistant	GPS
HRB 4S 14.8v	6,000 mAh	60 min.	50 mph*	N/A on Base	Yes (+/- 50cm)

* Values provided are dependent upon on-board configuration/customization and payload.

Contact Ohio Drone for Pricing and Availability.
Ask us about our 501(C)3 and Government discounts.