XDYNAMICS

EVOLVE 2

USER MANUAL **v1.0**

2020.06

ABOUT THIS MANUAL

WHAT IS IN THE DOCUMENT

Welcome to the Evolve 2 user manual. This user guide is designed to give you a detailed overview of each element of our product. It provides information on how to set up your Evolve 2 and optimise its use for safe flight.

Please read it carefully before you begin.

If you encounter any issues at any stage, visit the "contact us" section of our website at www.xdynamics.com/contactus to get in touch with us. Thank you.

LEGEND

Within this manual the following Legends are used:

 Safety Warning

 Important

 User Hints and Tips

 Reference

REQUIREMENTS BEFORE THE FIRST FLIGHT

Read the following information before using the EVOLVE 2

1. EVOLVE 2 User Manual
2. Quick Start Guide

PRODUCT SUPPORT

Store Website

Please visit the fly safe page and download information related to the EVOLVE 2 here -

https://store.xdynamics.com/fly-safe/

Support Website

Find more information, tips, and troubleshooting and browse our comprehensive articles at -

https://store.xdynamics.com/support/

Tutorials

Browse our tutorials at -

https://store.xdynamics.com/tutorials/

SECURITY DISCLAIMER

Security of information for aircraft products has become a major concern for UAS operators that do not wish for their flight information and collected imagery to be accessed by outside entities or governments. Most leading aircraft manufacturers do not have the ability to secure this type of information. A typical consumer aircraft sends all the metadata information, such as aircraft position history and copies of all video and photography files, to unsecured cloud accounts. Some aircraft manufacturers require the operator/owner of the aircraft to create an online cloud account before the aircraft can be activated. This cloud account downloads all the information and history from the aircraft every time the system is connected to the internet or when a firmware update is performed regardless of whether the operator/owner gives consent. This raises serious security concerns for UAS operators that fly their aircrafts near secure and sensitive locations, such as military installations and airports.

XDynamics uniquely offers secure aircraft products not available by many other aircraft manufactures. We understand the need for secure aircraft systems and will never download secured or private metadata information without the consent of our customers. XDynamics believes in guarding our customers privacy and will continue to strive for more secure aircraft products in the future.

DISCLAIMER AND WARNING

This product is not a toy, and should only be operated by persons over the age of 18. Please keep it out of reach of children, and pay particular attention to the possible scenarios of children's unexpected appearance during flight operation. It is highly recommended that any pilot using this product have a Small Unmanned aircraft Systems' Remote Pilot Airman Certificate.

Be sure to read this document carefully before using the product to fully understand your legal rights, responsibilities and safety instructions. Failure to do so, may cause property damage, safety accidents and personal safety risks. Once this product is used, it is deemed that you have understood, recognized and have accepted all the terms and conditions of this statement. The user is responsible for all the consequences of his/her actions and consequences. The user agrees to use the product for his/her sole & legal purpose, and agrees with the terms & conditions of this agreement, and other relevant policies & guidelines that may be specified by XDynamics LLC.

Under the maximum permission by law and approved circumstances, XDynamics LLC is exempt of liability for any indirect, punitive, consequential, special or criminal damages, including the purchase cost, or for loss of income due to the loss of use of the aircraft.

**XDynamics LLC is exempt from the user's liabilities for damage(s) to person/s or property, or injuries incurred directly or indirectly from the use of this product in the following conditions:*

- Damage(s) or injuries incurred when the user/s are under the influence of alcohol, drugs or medication.
- Any malfunction caused by operators' failure to follow the guidance of the manual to assemble and set up, or operate the aircraft as described, and designed.
- Damage(s) or injuries that may occur due to failure to study the tutorial videos, and the user manual before flying the aircraft.
- Damage(s) or injuries caused to a person/s or property, due to failure in correctly calibrating the UAV as outlined in the manual, prior to flight.
- Damage(s) or injuries incurred as a result of the use or installation of any unauthorized third party accessories or counterfeit parts - which were not provided and approved of by XDynamics.
- Damage(s) or injuries as a result of flying the aircraft out of eyesight range, or more than 300m away from the Ground Station.
- Damage(s) or injuries caused by flying the aircraft in areas of magnetic fields & radio interference.
- Damage(s) or injuries caused by flying in a NO-FLY ZONE that is regulated by local laws & rules.
- Damage(s) or injuries including crashes, loss of control or water ingress caused by abusing or modifying the original aircraft structure.
- Damage(s) or injuries caused by using broken & ageing components.

**XDynamics LLC reserves all the rights for final interpretation.*

INTELLIGENT FLIGHT BATTERY SAFETY GUIDELINES

All instructions and other collateral documents are subject to change at the sole discretion of XDynamics LLC. For up-to-date product information, visit http://www.xdynamics.com and click on the product page for this product.
Read the ENTIRE user manual to become familiar with the features of this product before operating. Failure to operate the product correctly can result in damage to the product or personal property and cause serious injuries. This is a sophisticated product. It must be operated with caution and common sense and requires some basic mechanical abilities. Failure to operate this product in a safe and responsible manner could result in injury or damage to the product or other property. This product is not intended for use by children without direct adult supervision. DO NOT use with incompatible components or alter this product in any way outside of the documents provided by XDynamics LLC. These Safety Guidelines contain instructions for safety, operation and maintenance. It is essential to read and follow all of the instructions and warnings in the user manual prior to assembly, setup or use, in order to operate the product correctly and avoid damage or serious injuries.

WARNING

To avoid fire, serious injuries, and property damage, observe the following safety guidelines when using, charging, or storing your batteries.

CONTENTS

Contents

PRODUCT PROFILE

PRODUCT DESCRIPTION

Within this section, the EVOLVE 2 aircraft and Ground Station are explained and the individual components are listed. The EVOLVE 2 aircraft and Ground Station form a powerful system offering a XXXX low latency FPV video downlink with 4K local video recording, combined with an out the box, ready to use fully integrated dual touch-screen Ground Station.

KEY FEATURES

Dual-screen Ground Station

Aerial photography and filming experience with XDynamics EVOLVE 2 begins at your fingertips. Drawing inspiration from handheld game consoles, the foldable Ground Station holds two separate high brightness touch-sensitive screens in the palm of your hand, an 8" FPV viewfinder and a 5.5" control panel, which is complemented with uncluttered buttons and tactile gimbal control.

Removable Antennas

With removable antennas, the EVOLVE 2 can be used with not only it's internal antenna, but external as well. The external antennas, that come standard, give the user flight distances up to XXX_miles.

Smart Pilot System (SPS)

The EVOLVE 2 by XDynamics boasts the world's most advanced dual-screen pilot assistant system, an integrated system which combines all the required assistant functions under a single interface.

- Aircraft Radar: know where your aircraft is.
- Alert Center: fully understand your aircraft's status.
- Map Preloading: ensure you can view your map at flight.
- Dual-Screen Editing: retouch your aerial images and edit your footages more conveniently.

Ultra-Precise Positioning System

Combined with algorithms and a comprehensive suite of positioning tools, including a GNSS module that supports GPS/QZSS, GLONASS and BeiDou navigation systems that cover 99% of the world, as well as advanced optical flow and LiDAR sensors. With these features, EVOLVE 2 provides position tracking with higher precision than general aircrafts with ultrasonic or visual sensors.

4K M 4/3 Camera

Equipped with a __mm __ lens and a CMOS image sensor, with effective pixels of 12MP, the EVOLVE 2 supports video capture at 4K@30/25fps, FHD1920p@120/60/30fps, HD1280@240/120/60/30fps, (Need final specs) accommodating to various scenarios and themes, from peaceful landscapes to dynamic sport shorts. It supports RAW image file outputs (DNG format) and records videos at __Mbit/s, preserving data for post-production editing.

Removable Lens

With a mount built for removable lenses, the EVOLVE 2 is truly a filmmaking tool. Quickly swap lenses on the go from a range of several M4/3 options.

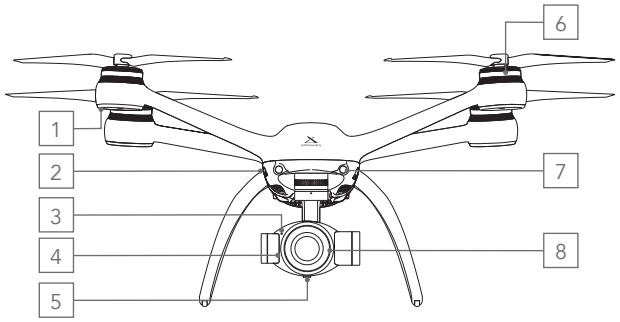
CFast / Pro-Res (coming soon)

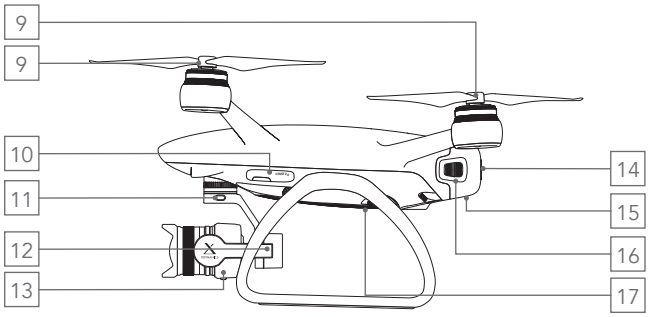
Build into the EVOLVE 2 is a CFast card slot. This will enable users to record up to 500 Mbits/s. A future firmware release will give users access to ProRes.

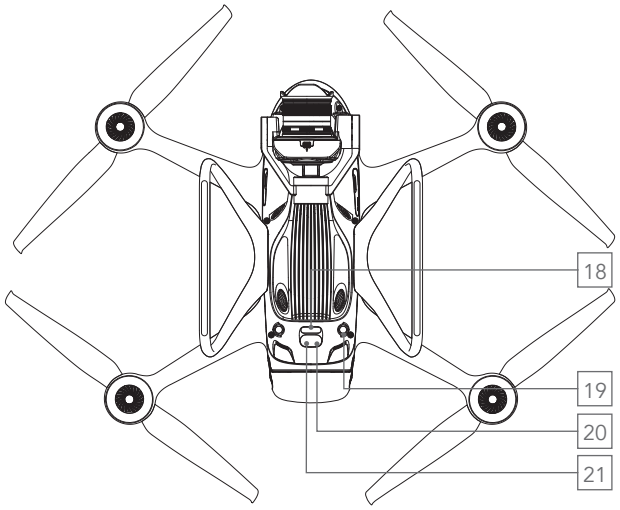
AIRCRAFT ANNOTATED DIAGRAM

Detailed Schematic of the EVOLVE 2 aircraft

1. LED Light
2. Camera Micro SD Port / TypeC / Pairing Button
3. Camera LED Status
4. Camera
5. Lens Button
6. Motor
7. Forwarad Vision System
8. Lens
9. Propellers – 2 CW and 2 CCW
10. Camera CFast Port
11. Gimbal Button
12. Gimbal
13. Camera
14. Battery Display
15. Battery
16. Battery Release Latch (Side)
17. Magnesium Undercarriage
18. Bottom LED Light
19. Bottom Vision System
20. Optical Flow Camera
21. Lidar (Altitude Sensor)



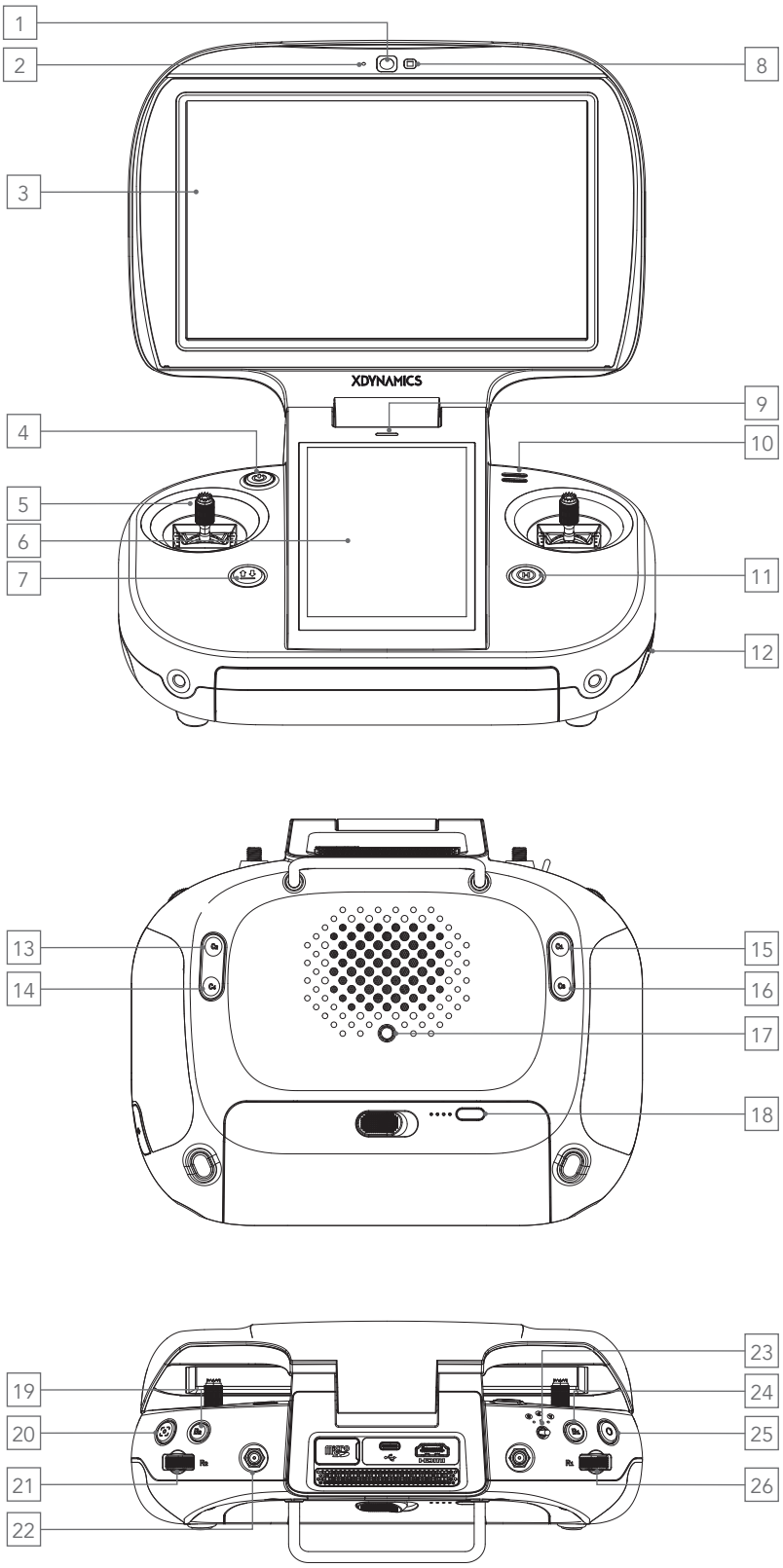




GROUND STATION ANNOTATED DIAGRAM

Detailed Schematic of the EVOLVE 2 Ground Station

1. Front Camera
2. Microphone
3. 8 inch Touch Screen
4. On/Off Button
5. Control Sticks
6. 5.5 inch Touch Screen
7. Landing / Take-off Button
8. Light Sensor
9. Signal LED
10. Speaker
11. RTH Button
12. Battery Charging Port
13. Customizable Button C2
14. Customizable Button C4
15. Customizable Button C1
16. Customizable Button C3
17. Triport
18. Battery Level Checking Button
19. Customizable Button B2
20. Photo Button
21. Roller (R2)
22. Antenna
23. Flight Mode Switch
24. Customizable Button B1
25. Record Button
26. Roller (R1)



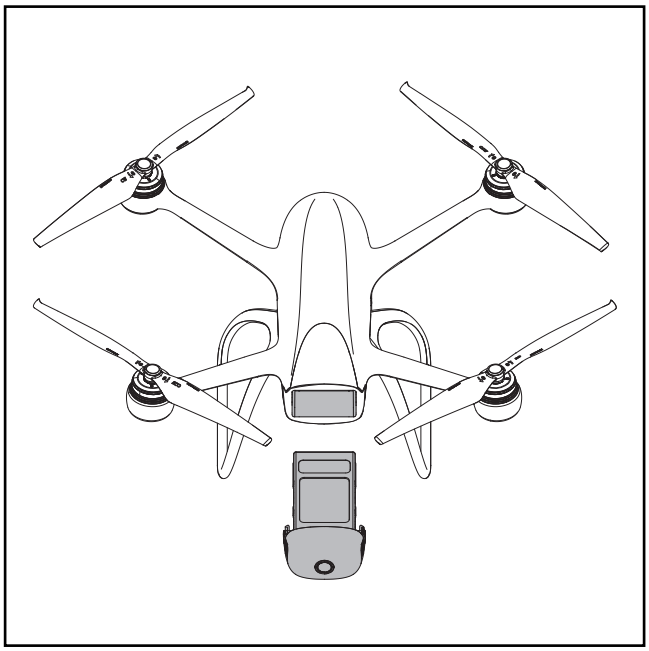
AIRCRAFT

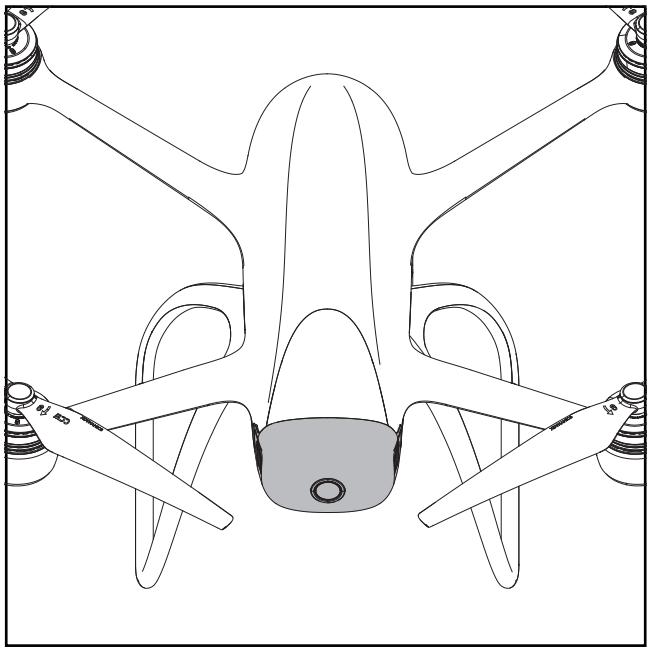
INSERTING THE AIRCRAFT BATTERY

Be sure that the aircraft battery is fully charged (Refer to Charging the aircraft Battery Section)

The aircraft battery contains a contact lubricant suitable for electronic connectors.The grease is white in appearance and can be seen on the aircraft power connector and aircraft battery. The lubricant is designed to last for full lifetime of the aircraft and improve electrical performance. The white appearance is normal. The user MUST not attempt to replace the grease with any other products. No attempts should be made to remove the lubricant.

See diagram for battery installation intructions





Steps for aircraft battery installation:

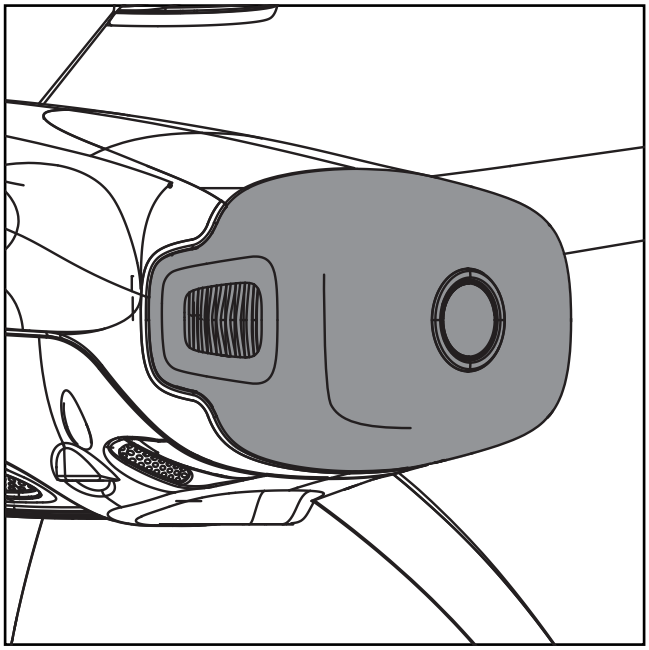
1. First ensure the battery is turned OFF .
2. Then ensure the orientation of the battery is correct, the OLED display should be pointing upwards. Battery detail facing upwards
3. Insert by pushing the battery gently into the aircraft until the two latches of the battery engage into the aircraft.

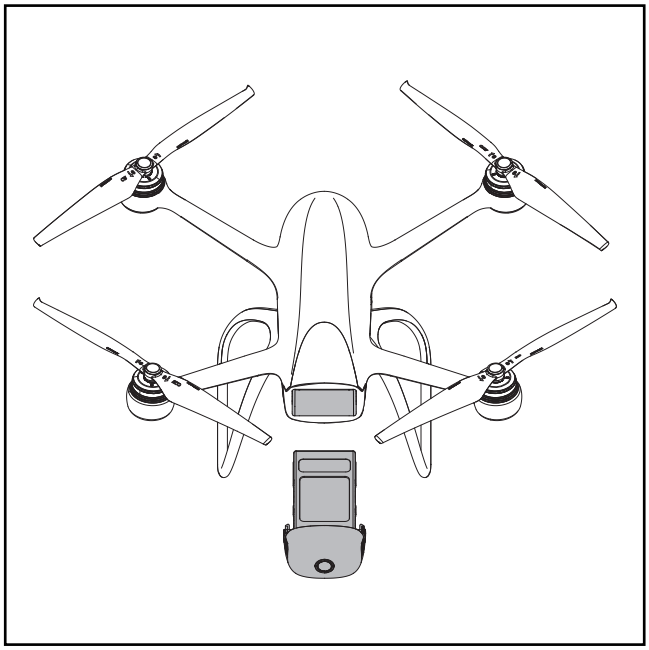
REMOVING THE AIRCRAFT BATTERY

Remove the battery by squeezing the battery mechanical latches and pulling the battery out of the aircraft.

Ensure the aircraft battery is turned OFF before inserting or removing it from the aircraft or battery charger. When removing the battery from the aircraft allow the battery to cool to room temperature before charging the battery with the supplied charger.

See diagram for removing the aircraft battery below





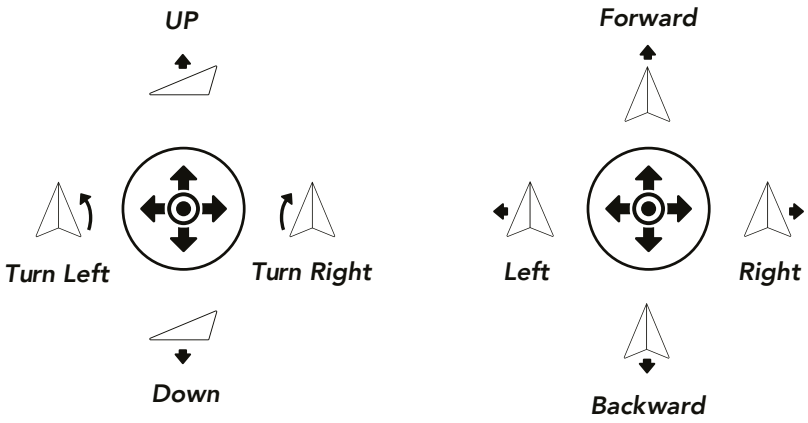
Steps for removing the aircraft battery:

1. First ensure the battery is turned OFF.
2. Squeeze the side latches to disengage the lock.
3. Remove by firmly gripping and pulling the battery from the aircraft.

AIRCRAFT FLIGHT CONTROL

Flight control of the EVOLVE 2 is accomplished by manipulating the control sticks on the Ground Station. Proper orientation must always be considered when flying the aircraft. A basic rule of thumb when remote piloting a aircraft is to realize that when the aircraft's nose, or front end, is facing the pilot the control inputs for roll and yaw are backwards. This disorientation is the leading cause of all aircraft accidents that are due to pilot error. Therefore, it is very important to practice piloting in the proper orientation. This includes

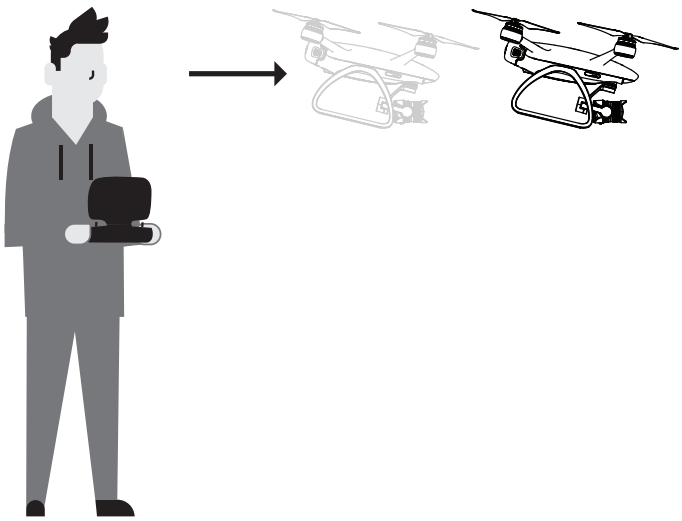
- Positioning the aircraft's nose, or front end, away from the pilot.
- Be sure to stand at least 6ft directly behind the aircraft and keep the nose pointed away from you.
- Fly in an open area free of obstacles such as trees, power lines, and buildings.
- Make sure you are flying in GPS mode. (The aircraft will automatically hold position when the control sticks are released)
- Ensure that all spectators are standing behind you.



(MODE 2)

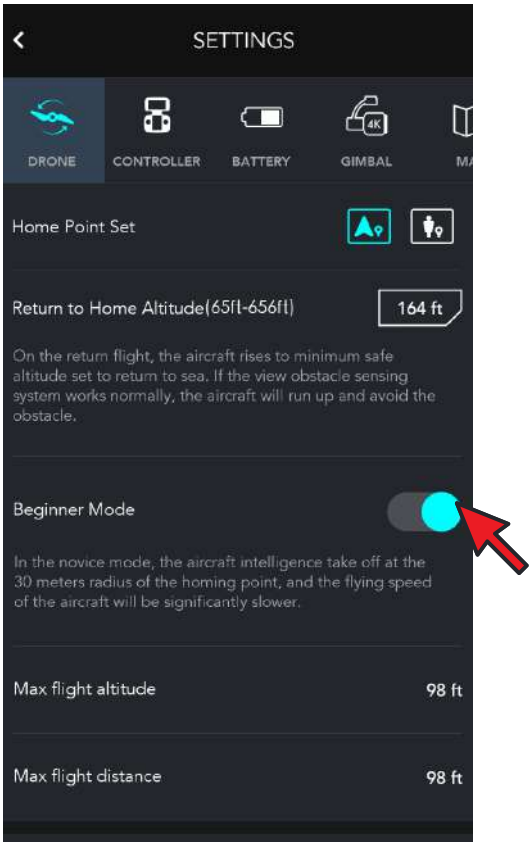
AIRCRAFT AND PILOT ORIENTATION

Ensure that thr operator and aircraft are both facing the same direction prior to launch.



BEGINNER MODE

User may enable Beginner Mode at the Settings Page. After enabling the Beginner Mode, the aircraft can only be flown within a spherical radius of 30m from the take-off point.



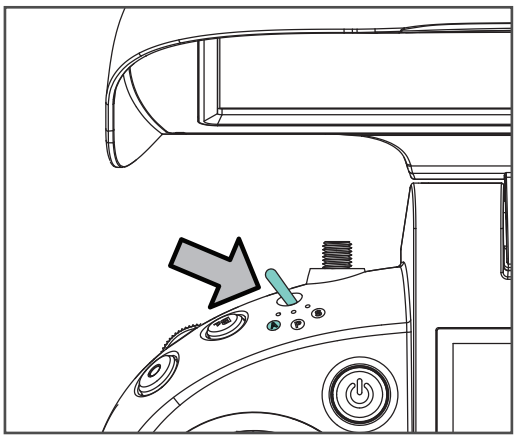
FLIGHT MODES

The EVOLVE 2 aircraft has 3 flight modes that the operator can choose from. The modes are selected by a 3-position switch located on the top left of the Ground Station. Below is a description of each:

1. Altitude Mode

(Left position on the 3-position Switch)

In this mode, the aircraft will hold its altitude when the control sticks are released, but not its position. This results in the aircraft drifting in the direction the wind is blowing and the operator must control position at all times. This mode is only recommended for experienced operators and it is meant for smoother breaking reactions and camera panning while filming.

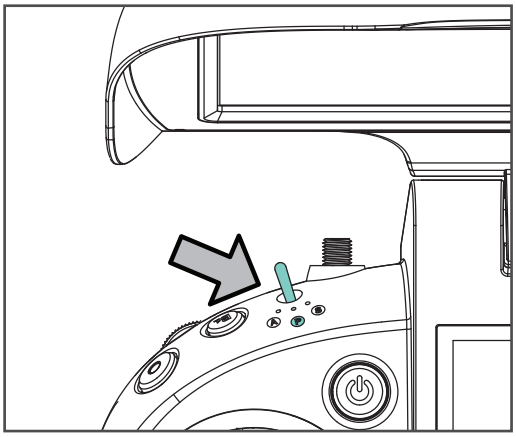


Position 1 – Attitude Mode

2. Position Mode

(Center position on 3-position Switch)

In this mode, the aircraft will hold position using the GPS and/or optical flow. When the control sticks are released the EVOLVE 2 will hold its position in the air. This mode is suggested for beginner operators and is also used most frequently by professional users.

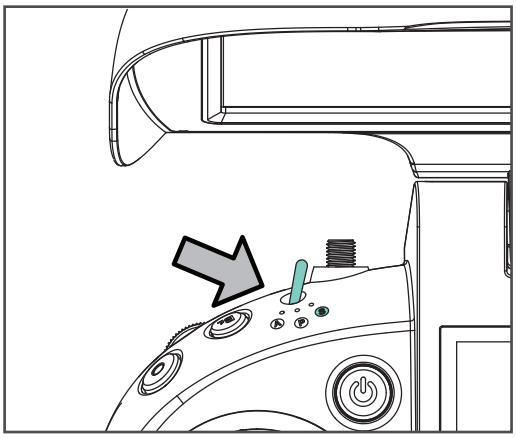


Position 2 – Position Mode

3. Sport Mode

(Right position on 3-position Switch)

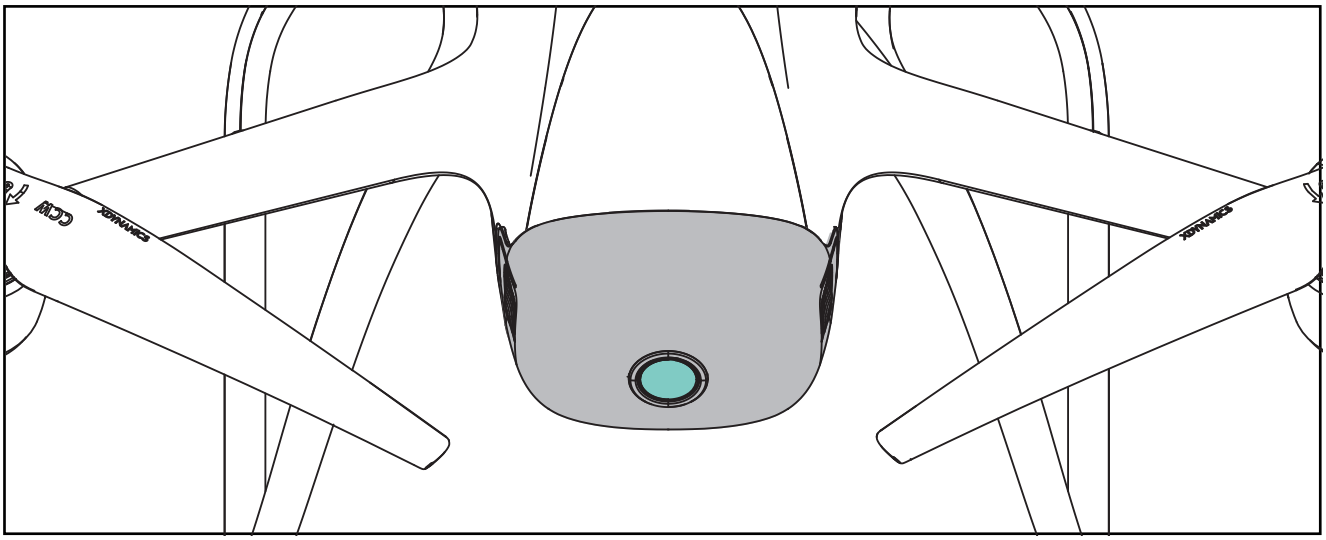
In this mode, the user gets full access to the EVOLVE 2's maximum speed and maneuverability. Increased yaw, roll and thrust give the user the ability to get the drone on target in the shortest possible time. This mode is recommended for experienced users who want to follow high-speed subjects and capture action packed videos.

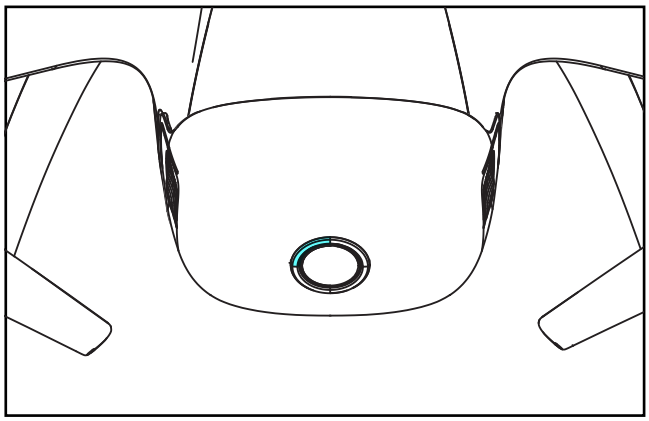


Position 3 – Sport Mode

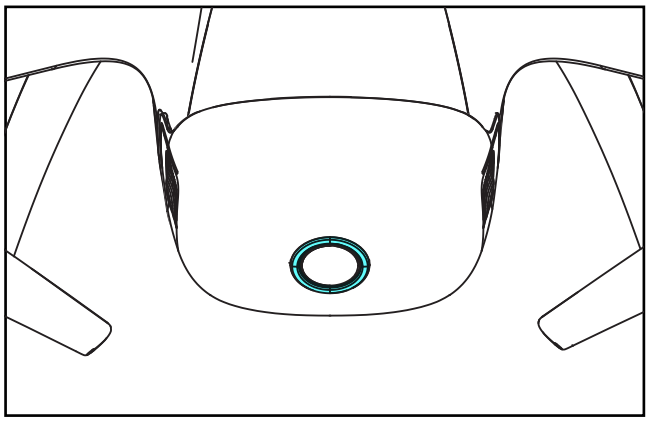
TURN ON THE AIRCRAFT

The battery has a dual press feature to avoid the user accidentally turning on the battery with a single button press.





Press and release the battery switch then press again and hold battery switch (short press, long press) until the 4 lights appear in succession, then release.

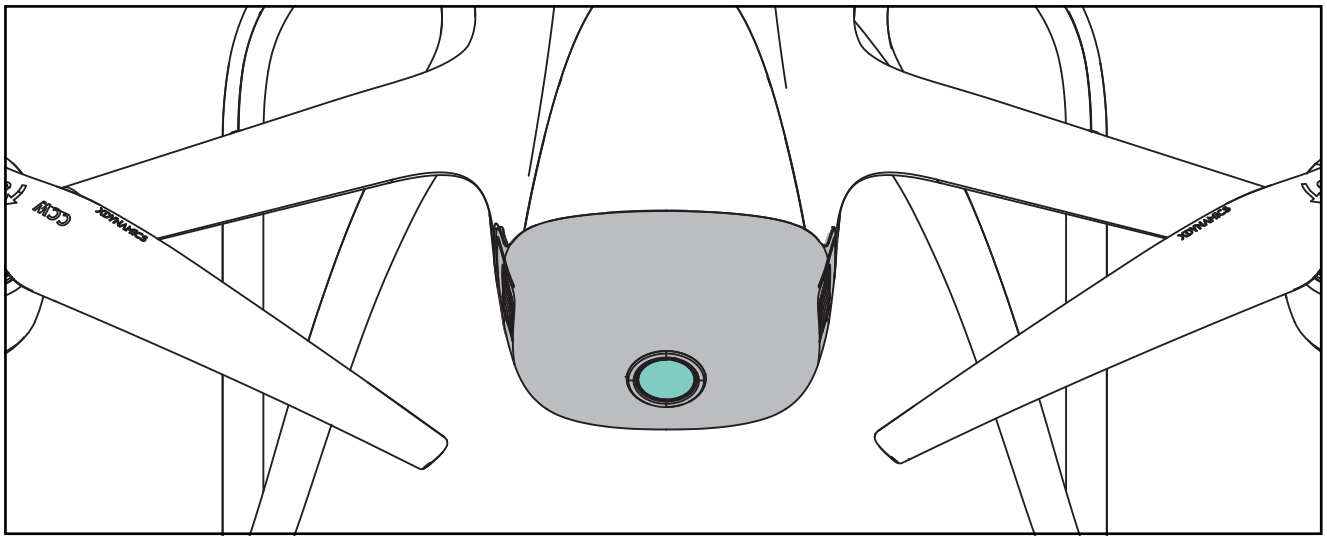


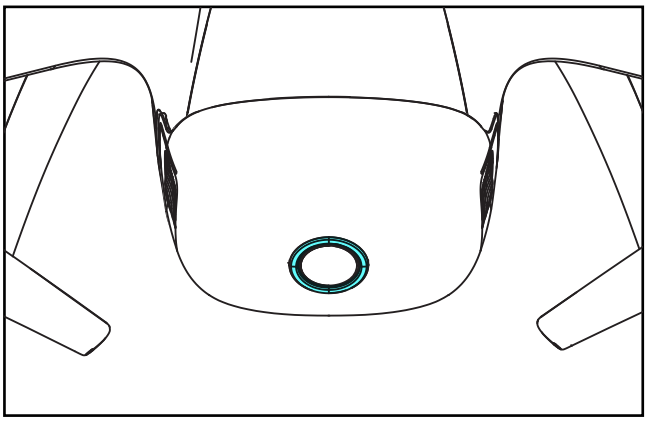
The aircraft is powered off when the all four lights have turned on.

The battery will turn on regarless of whether it is installed in the aircraft or not.

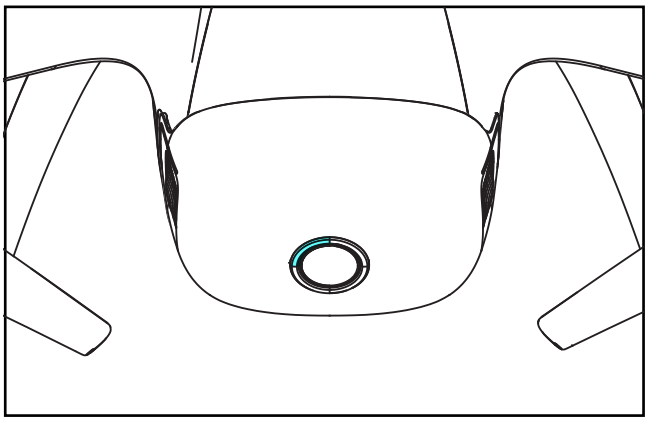
If the battery is still turned on when removed from the aircraft, ensure the battery connect terminals are left unobstructed to prevent short circuiting.

TURN OFF THE AIRCRAFT





Press and release the battery switch then press again and hold battery switch (short press, long press) until the 4 lights disappear in succession, then release.



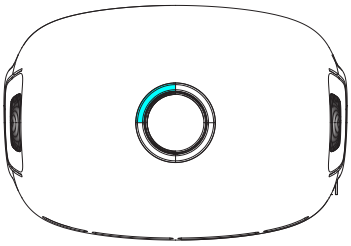
The aircraft is powered off when the all four lights have turned off.

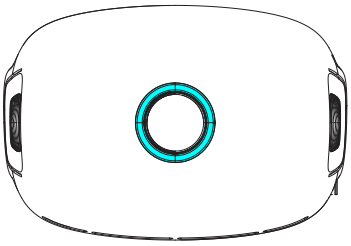
TURNING ON/OFF AIRCRAFT BATTERY

Turning the battery on when not plugged into the aircraft

Press and release the battery switch then press again and hold battery switch (short press, long press) until the 4 lights appear in succession, then release.

Note: Never short out any of the pins of the battery or try to connect to any other equipment other than the EVOLVE 2 aircraft and the supplied charger.

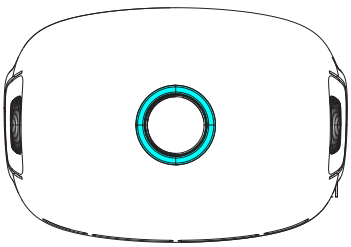


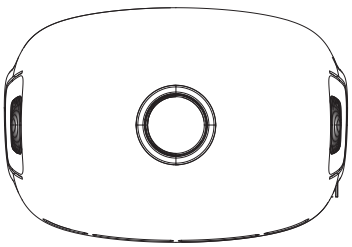


Turning the Battery Off When not Plugged into the aircraft

The aircraft is powered on when the all four lights have turned on. (note: if fewer that four light remain on it is an indication that the battery is not fully charged)

Note: Never short out any of the pins of the battery or try to connect to any other equipment other than the EVOLVE 2 aircraft and the supplied charger.



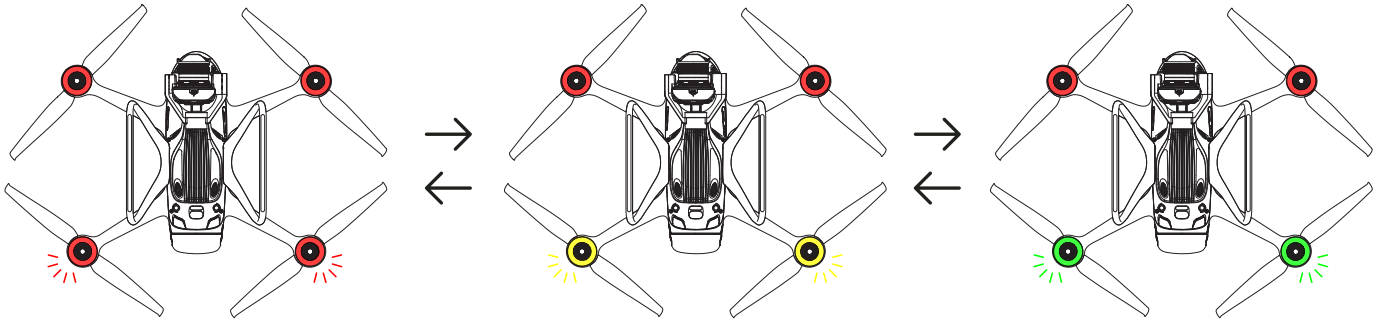


AIRCRAFT LED INDICATORS

The aircraft LED indicators are located under each motor and at the rear of the aircraft. The LED indicates the current state of the aircraft. See diagrams below for indications.

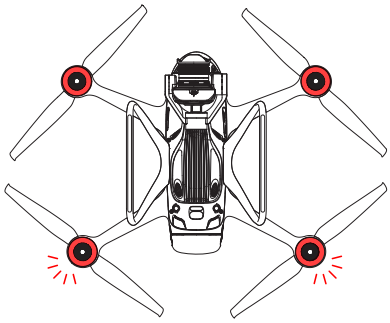
Initializing / Waiting for RC Signal

(Front : Solid Red LED ,Rear : Red / Green / Yellow alternating fast blinking LED)



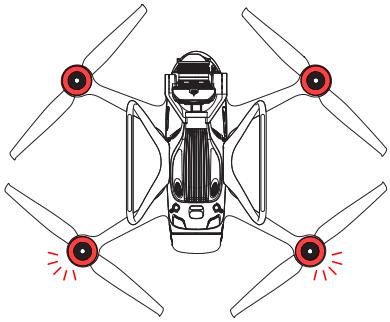
Error State

(Front : Solid Red, Rear : Red Fast Blinking LED) - Refer to Troubleshooting Section



Unsuccessful Arm

(Front : Solid Red, Rear : LED Fast Blinking 3 times)

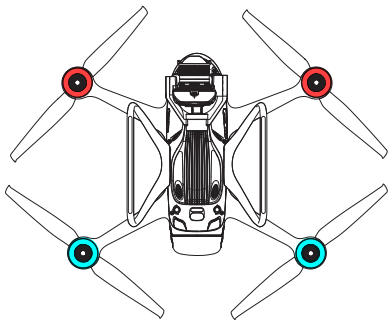


AIRCRAFT LED INDICATORS

The aircraft LED indicators are located under each motor and at the rear of the aircraft. The LED indicates the current state of the aircraft. See diagrams below for indications.

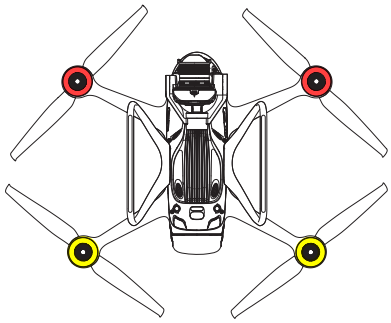
Ready for Flight (GPS Mode)

(Front : Solid Red, Rear : Solid Blue) – Ready for Smart Pilot App Launch



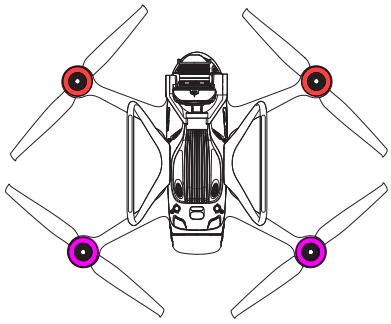
Altitude Mode (Can be flown in GPS Mode)

(Front : Solid Red, Rear : Solid Yellow) - Sets home position



Sport Mode

(Front : Solid Red, Rear : Solid Purple) - All systems functional

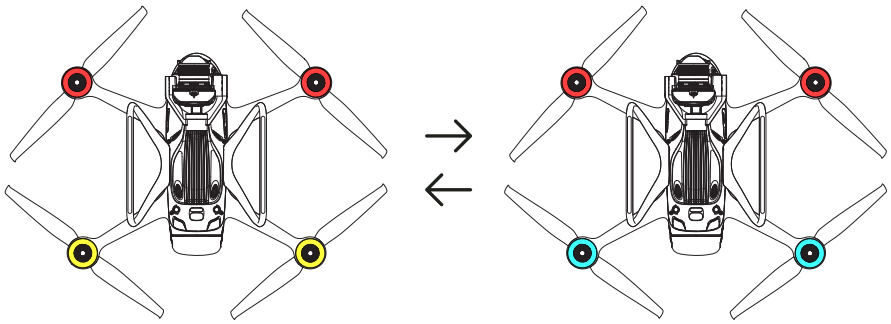


AIRCRAFT LED INDICATORS

The aircraft LED indicators are located under each motor and at the rear of the aircraft. The LED indicates the current state of the aircraft. See diagrams below for indications.

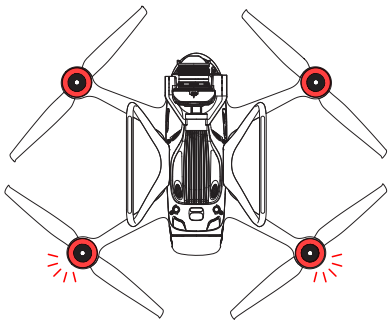
Landing Mode

(Front : Red Front, Rear : Blue Solid) – Make Sure Landing Zone is Clear



Malfunction During Flight

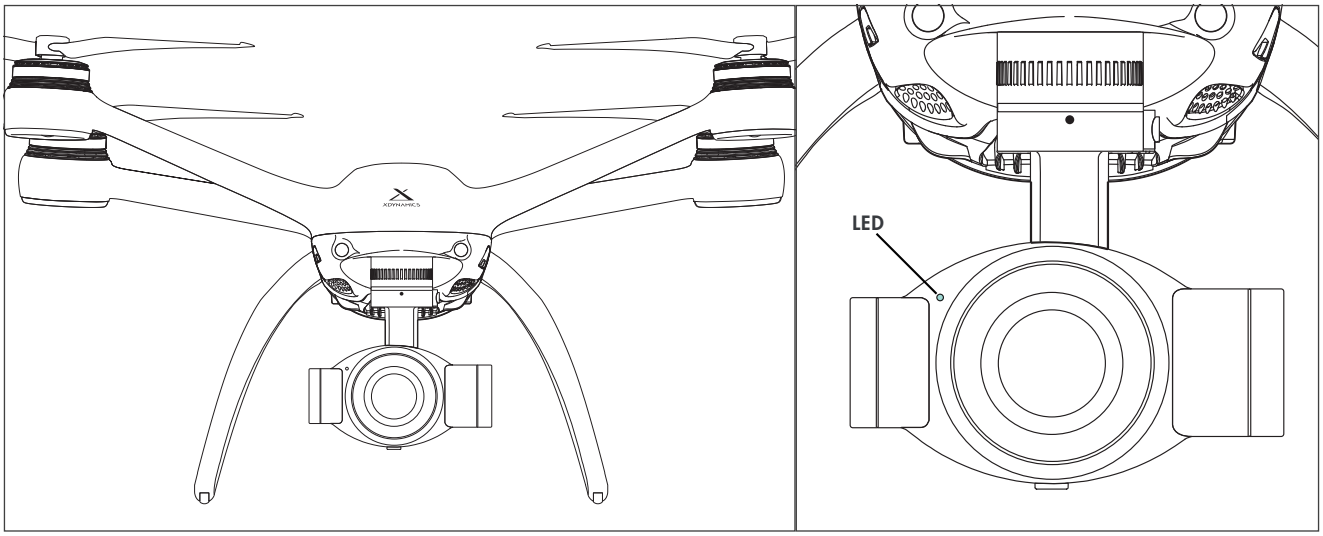
(Consult Smart Pilot / Troubleshooting for More Details)



If the 'Malfunctioning During Flight' LED warning is showing land aircraft immediately.

CAMERA INDICATORS

The camera system has an LED indicator located below the base of the mount. This indicator states the status of the camera. This is a visual reference for the operator to confirm the state of the camera such as taking video or taking still photography.

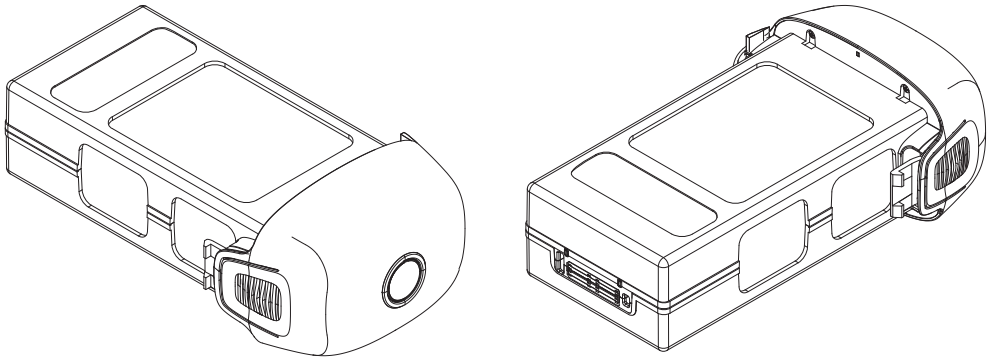


Camera LED	Status
GREEN on	Normal, Idle
GREEN toggles	Single Shot
GREEN toggles rapidly till shots complete	Burst
GREEN toggles gently	Video Recording
RED toggles rapidly	System Start Up
RED toggles gently	SD Card Failure
RED on	High Temp / SD Card Missing
RED & GREEN toggles alternately	Firmware Upgrading

AIRCRAFT BATTERY

Battery overview

Below is a diagram identifying the different components of the aircraft battery:



Components of the aircraft battery:

1. Power Button
2. Battery Connector

Critically Low Battery Auto-Landing

Important – Monitoring the battery level during flight is crucial to safety and flight planning.

During flight, you can monitor the aircraft's battery level on the top right corner of the top screen using both battery icon and charge percentage located beside each other.

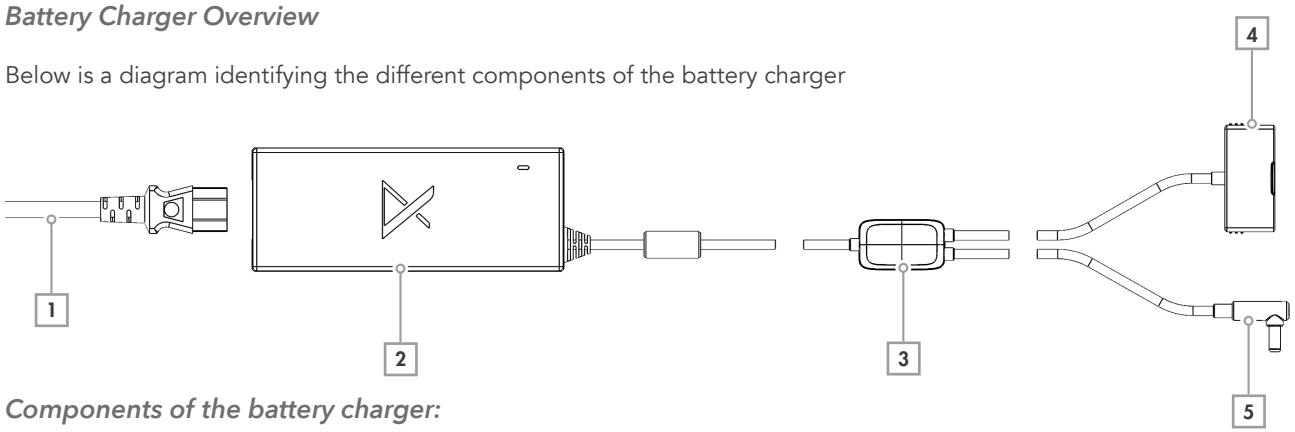
- The flight mode and environmental conditions should be considered while flying the aircraft and the battery level should be monitored.
- The aircraft's battery level icon is found at the top right of the top screen on the Ground Station.

When the aircraft battery reaches 10% charge, a Force Landing will be activated.

CHARGING THE AIRCRAFT BATTERY

Battery Charger Overview

Below is a diagram identifying the different components of the battery charger

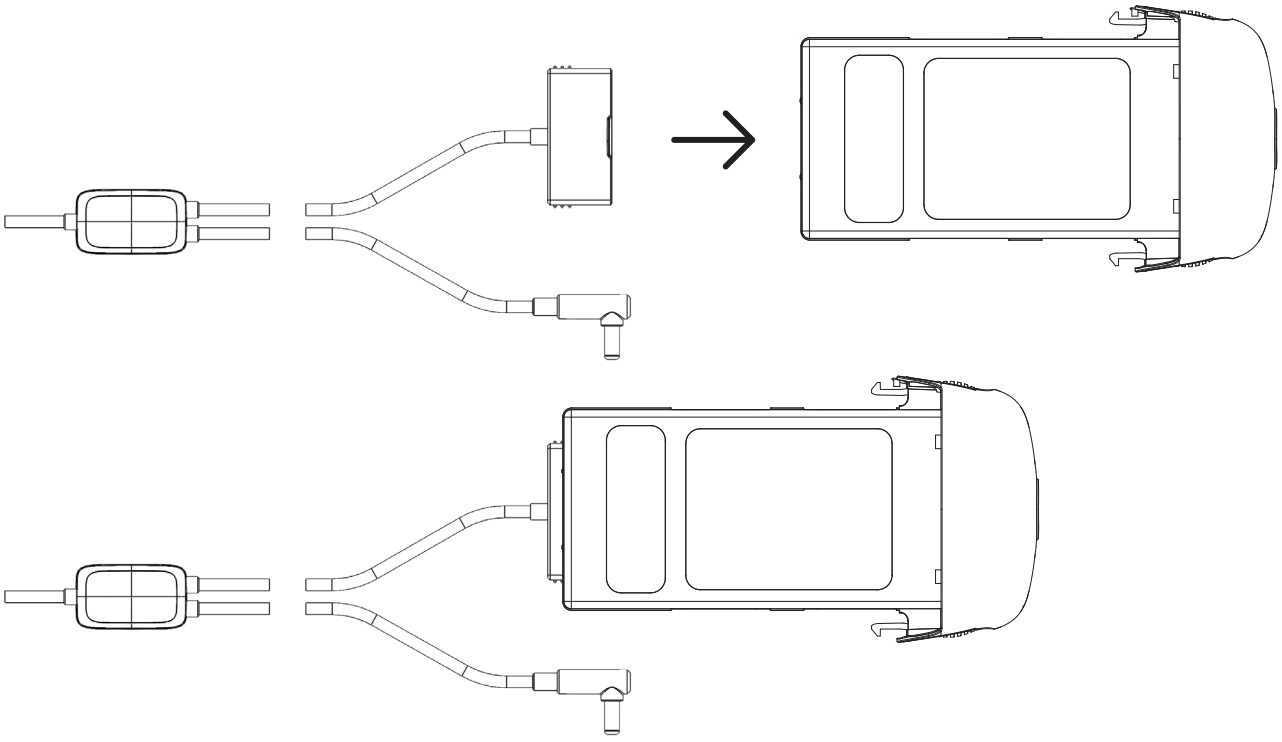


Components of the battery charger:

1. AC Power Cord/Cable
2. Adaptor
3. Charger Spliter Block
4. Aircraft Battery Connector
5. Ground Station Battery Connector

Follow the steps below to charge the aircraft battery:

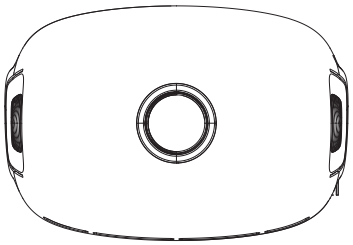
1. Connect charger to a power source.
2. Connect Aircraft Battery to the charger's Aircraft Battery Connector.
3. The Aircraft Battery is fully charged when all of the Battery Status LEDs turn off.



CHARGING THE AIRCRAFT BATTERY

Power status range indications

When determining the estimated flight time and distance range of any aircraft flight, the operator needs to have an idea of how much flight time is remaining according to the current power percentage left. Below describes the estimated flight times for battery percentages.



Status when charging

BATTERY LEVEL	LED1	LED2	LED3	LED4
0%-12%	◎	◎	◎	◎
13%-37%	●	◎	◎	◎
38%-62%	●	●	◎	◎
63%-94%	●	●	●	◎
95%-100%	●	●	●	●

Status when switch on

BATTERY LEVEL	LED1	LED2	LED3	LED4
0%-12%	◎	○	○	○
13%-24%	●	○	○	○
25%-49%	●	◎	○	○
50%-62%	●	●	○	○
63%-74%	●	●	◎	○
75%-94%	●	●	●	◎
95-%100%	●	●	●	●

Battery Warming Signal

Consider the following battery levels for decision making:

20%-30%

low battery warning, RTH

10% - Land Immediately

The battery failsafe mode is triggered and RTH happens

Warning: Never drain the battery to 5% or less, this may damage battery or make the battery unreliable on next charge.

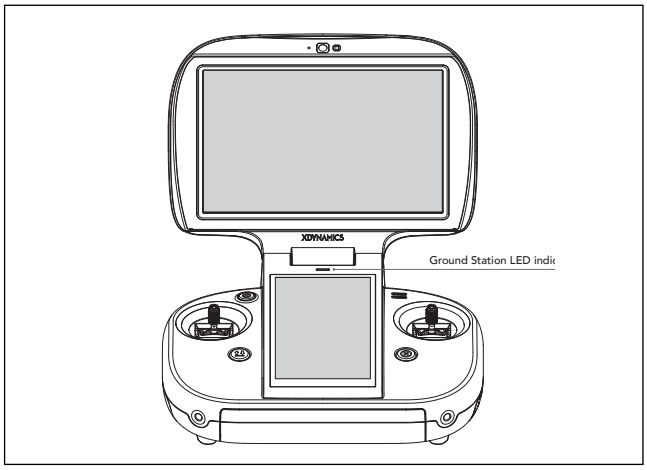
GROUND STATION

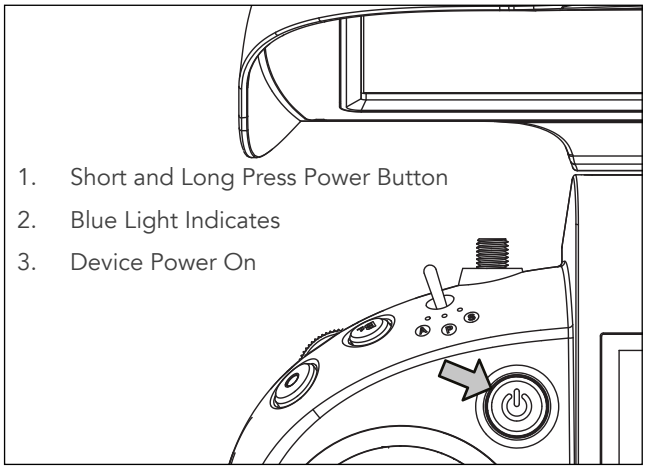
TURNING ON THE GROUND STATION

When powering on the Ground Station, be sure to provide at least 3 to 6ft (1 to 2m) of space between the Ground Station and the aircraft. (If the Ground Station and aircraft are too close together the system may not properly connect).
Press and release the power switch and then press and hold the switch until the Ground Station screens come on (this double press procedure assures that accidental power ups will not happen). While the Ground Station is initializing, power on the aircraft battery (Refer to Turn On/Off aircraft).

It is important to power on the Ground Station and then the aircraft, in that specific order, to achieve a proper RC connection.

See diagram for turning on the Ground Station below





See diagram for Ground Station screen below

Press ' START HERE ' on the EVOLVE 2 home screen to complete the connection as instructed by the upper screen notice.

GROUND STATION LED INDICATORS

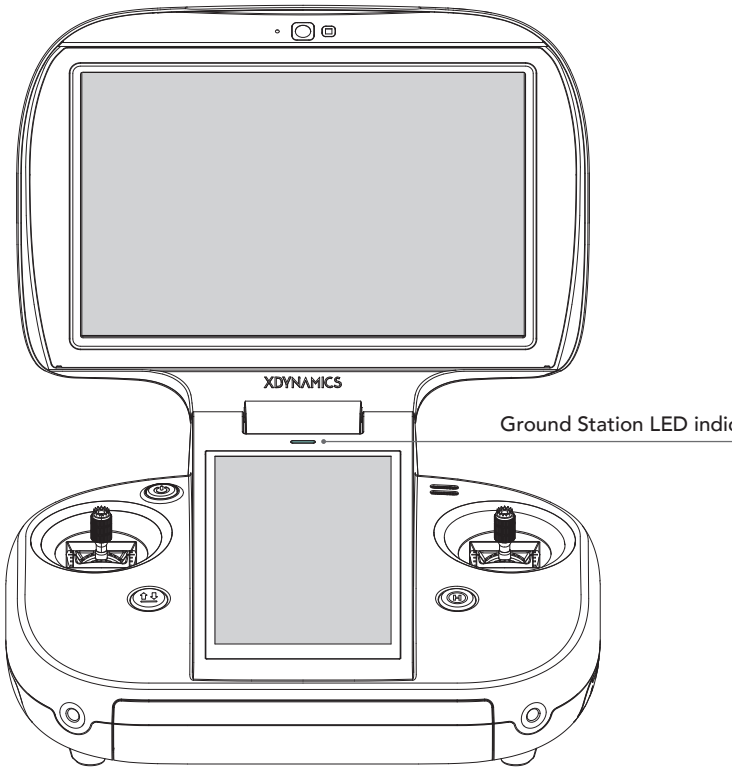
The Ground Station LED indicator is located below the bottom screen. The LED indicates the current state of the Ground Station battery.

When on charge, the Ground Station LED will be blinking Red, until the battery is fully charged and the LED stops

blinking (constant off).

During normal operation, the LED will be displayed in constant blue. When the Ground Station battery level has dropped to a point requiring immediate recharge, the LED will turn to Red.

It is not recommended to start a new flight with an amber indication on the LED.

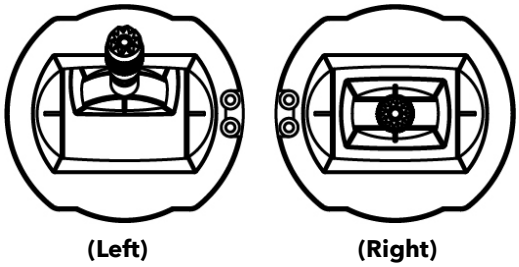


FLIGHT MODE (MODE 2)

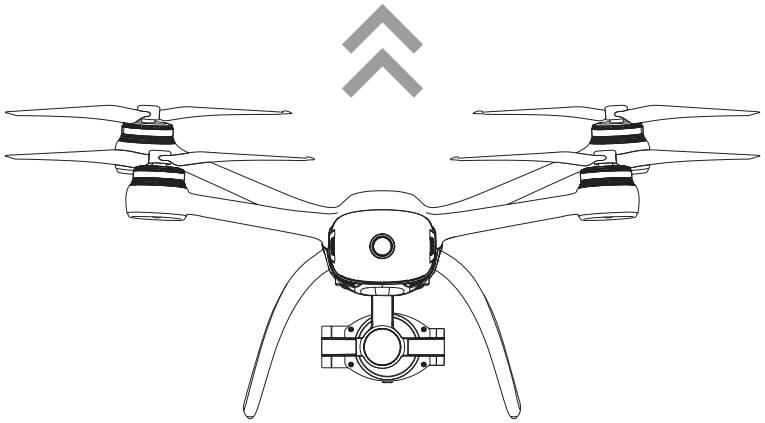
Throttle – Increase (Aircraft rises up)

Move left thumbstick up

Keep right thumbstick centerd



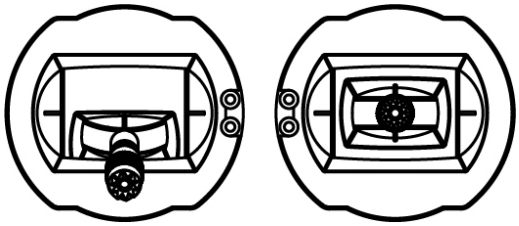
(Left) **(Right)**



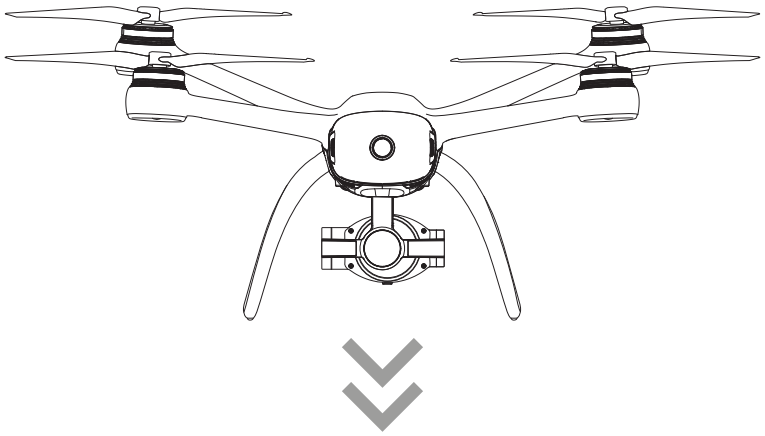
Throttle – Decrease (Aircraft lowers down)

Move left thumbstick down

Keep right thumbstick centerd



(Left) **(Right)**

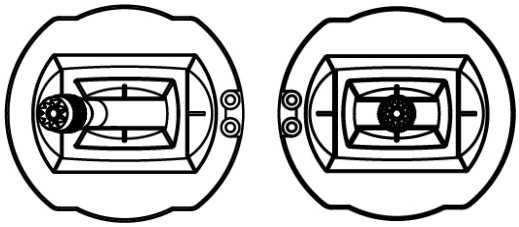


FLIGHT MODE (MODE 2)

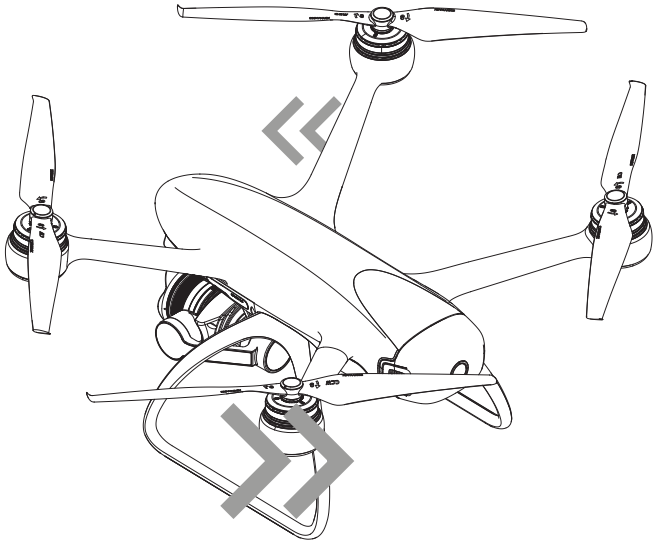
Yaw Counter Clockwise (Aircraft rotates CCW)

Move left thumbstick left

Keep right thumbstick centerd



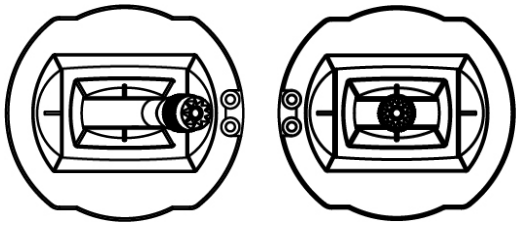
(Left) **(Right)**



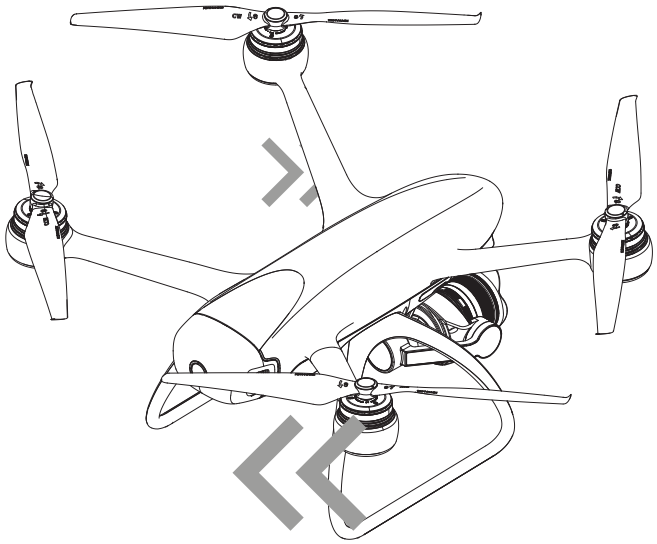
Yaw Clockwise (Aircraft rotates CW)

Move left thumbstick right

Keep right thumbstick centerd



(Left) **(Right)**

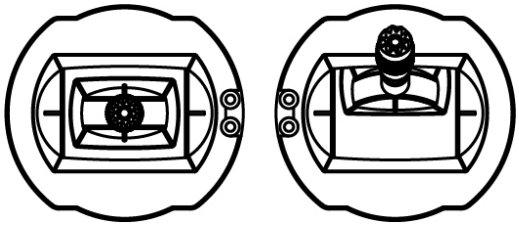


FLIGHT MODE (MODE 2)

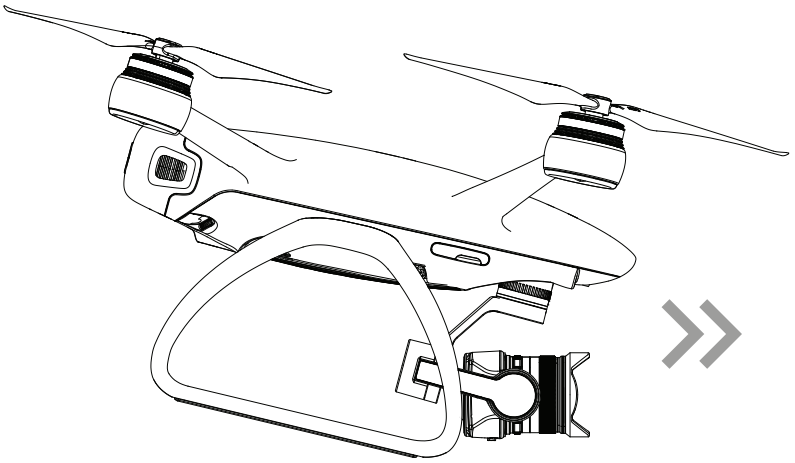
Forward Movement – (Aircraft tilts forward)

Keep left thumbstick centerd

Move right thumbstick up



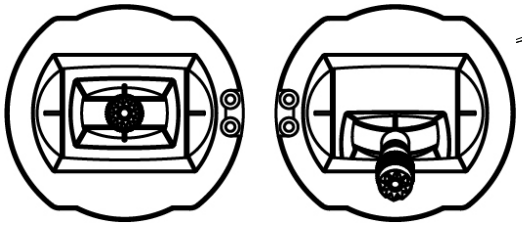
(Left) **(Right)**



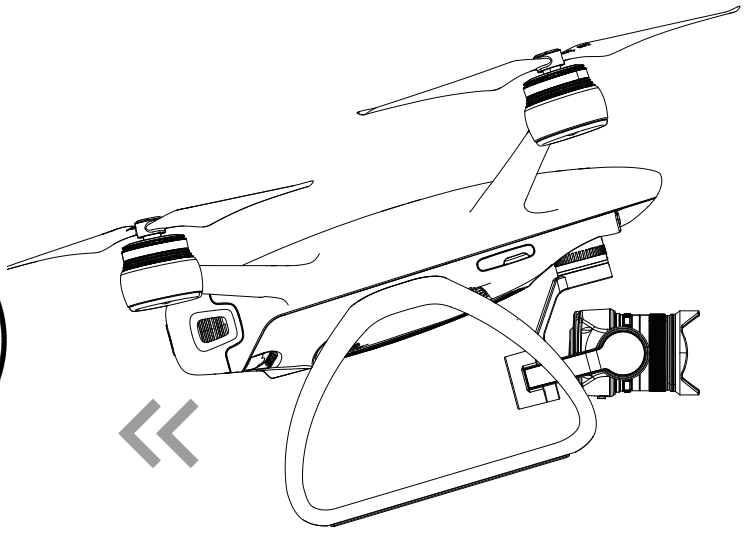
Backwards Movement – (Aircraft tilts backwards)

Keep left thumbstick centerd

Move right thumbstick down



(Left) **(Right)**

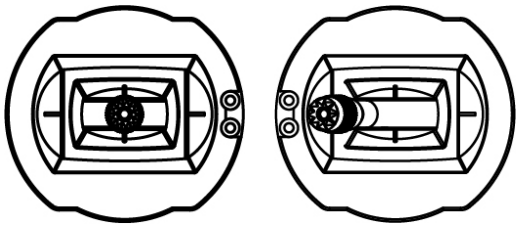


FLIGHT MODE (MODE 2)

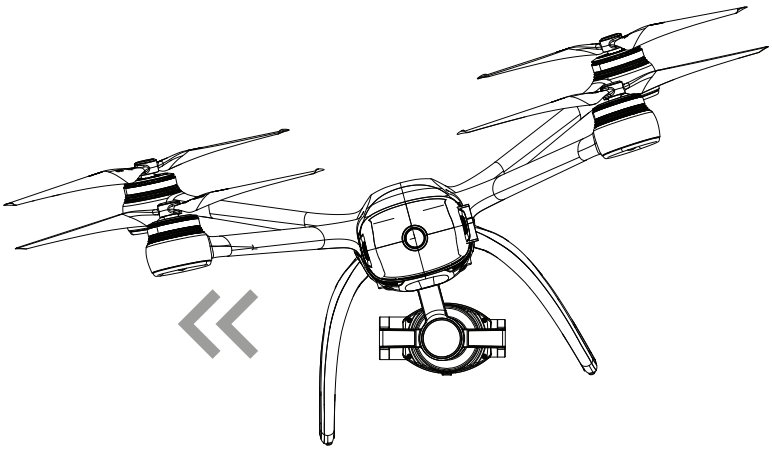
Roll Left – (Aircraft moves left)

Keep left thumbstick centerd

Move right thumbstick left



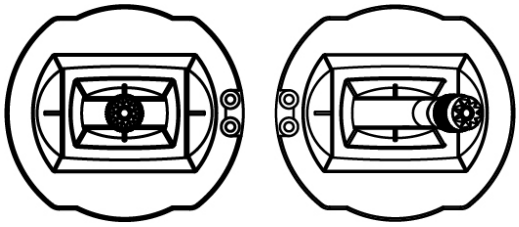
(Left) **(Right)**



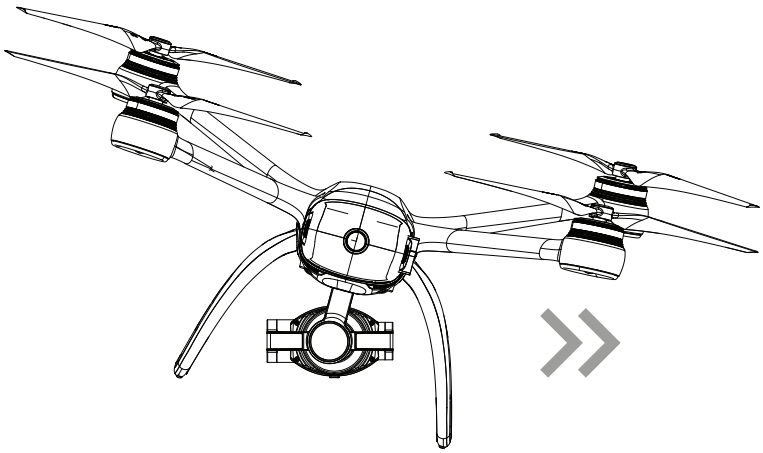
Roll Right – (Aircraft moves right)

Keep left thumbstick centerd

Move right thumbstick right



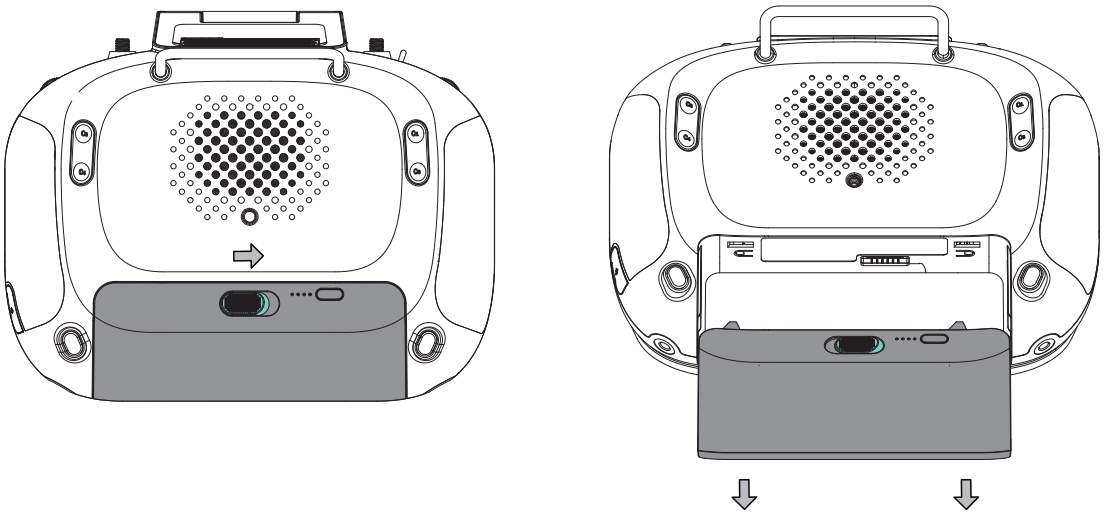
(Left) **(Right)**



REMOVE THE GROUND STATION BATTERY

Remove the battery by sliding the battery mechanical latches and pulling the battery out of the aircraft.

See diagram for battery installation below



Steps for removing the Ground Station Battery:

1. First ensure the battery is turned OFF.
2. Slide the latch to the right to disengage the lock.
3. Remove by firmly gripping and pulling the battery from the Ground Station.

GROUND STATION

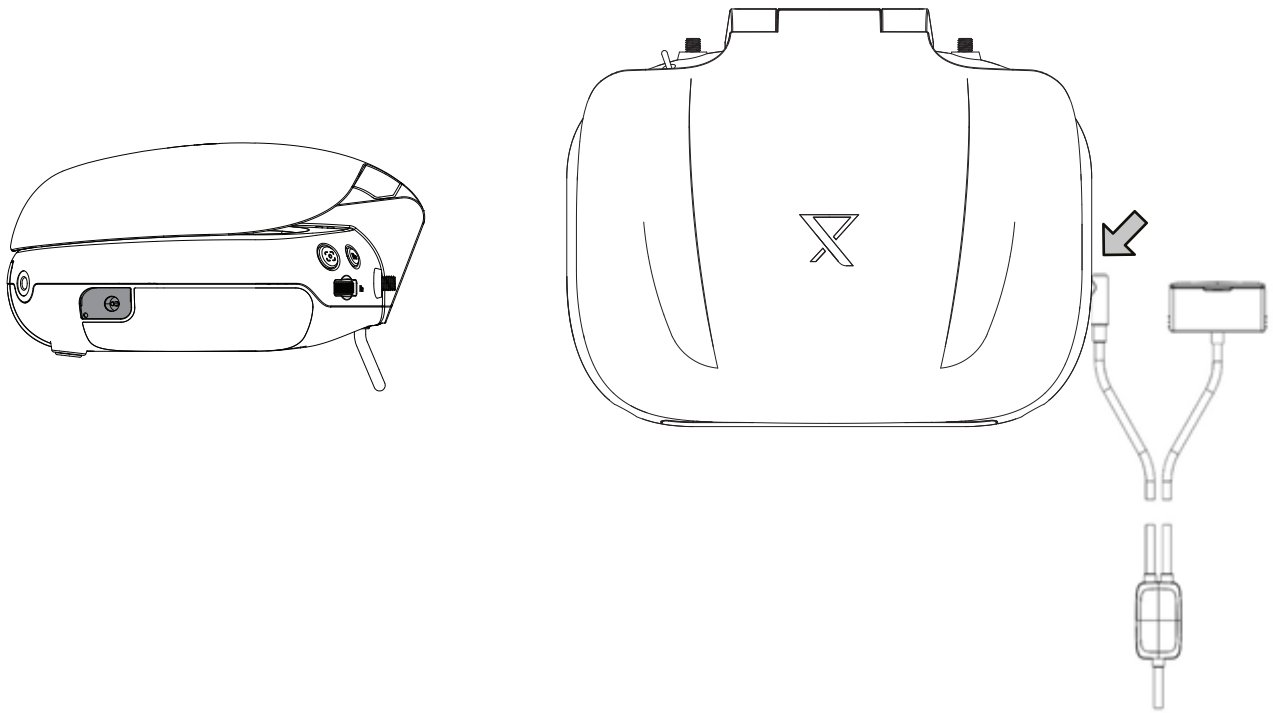
Charging the Ground Station battery

The Ground Station battery can be charged with the supplied battery charger whilst inserted into the Ground Station's main housing.

Follow the steps below to charge the Ground Station battery:

1. Connect charger to a power source.
2. Connect the Ground Station Battery.
3. Connector to the Ground Station Battery Charging Port.

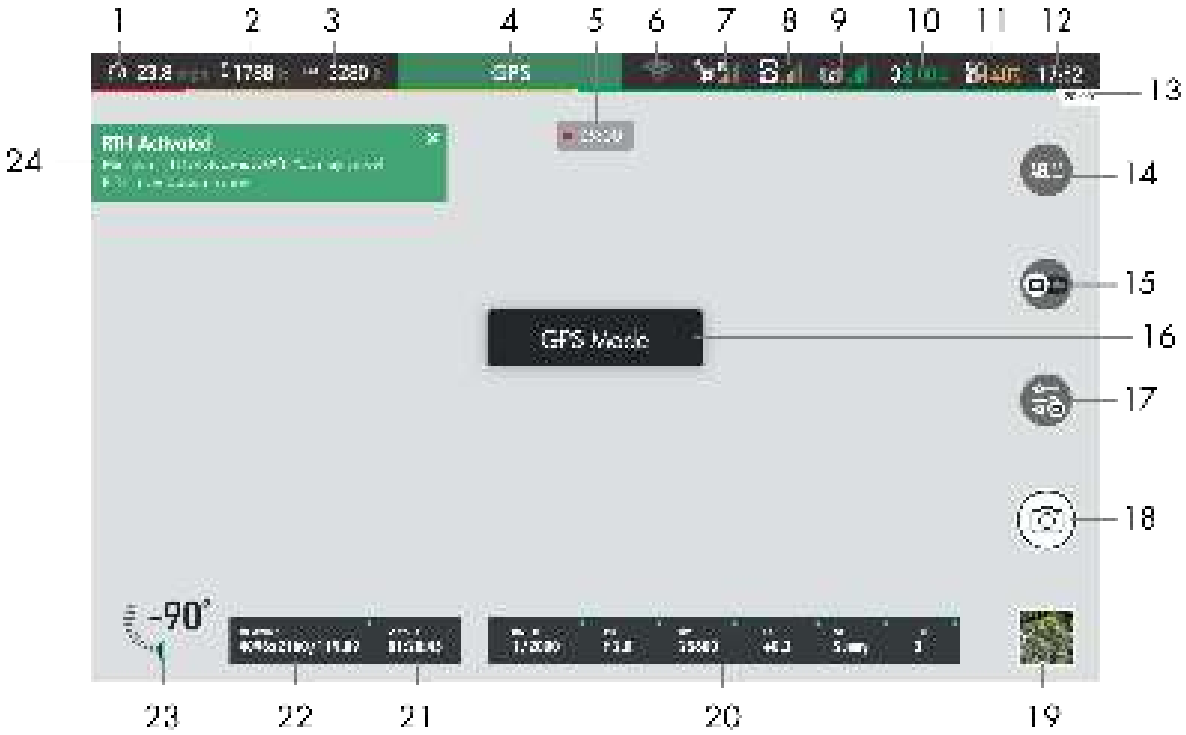
Please note the Ground Station battery can also be charged simultaneously with the EVOLVE 2 aircraft battery.



APPLICATION

SCREEN INTRODUCTION

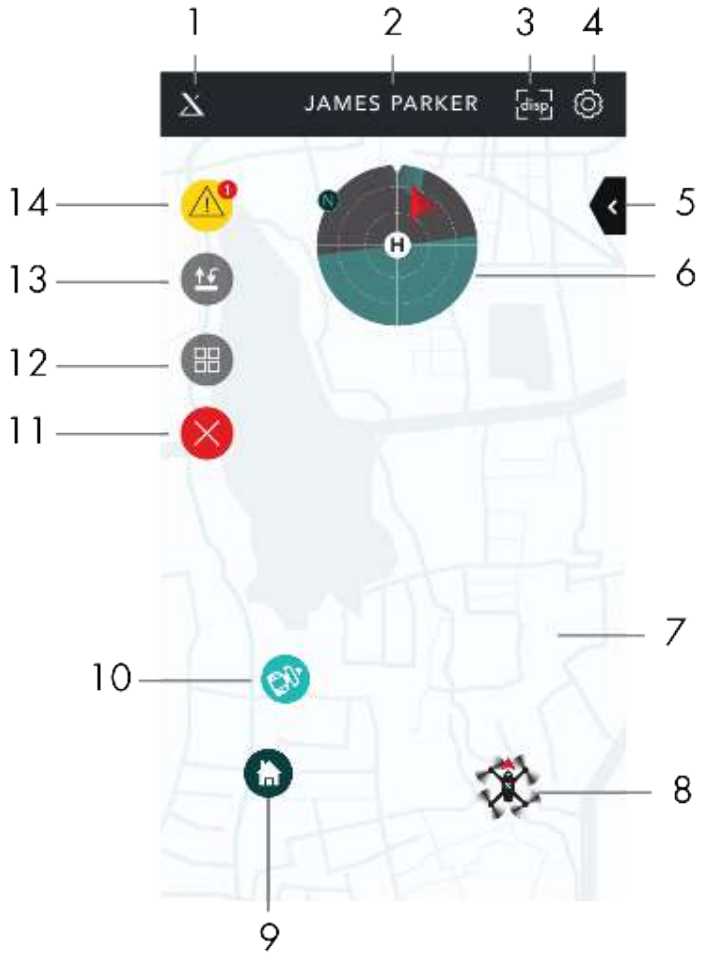
See below indicators for reference.



1. Speed
2. Height
3. Distance
4. Aircraft Status
5. Record Time
6. Wifi Signal
7. GPS Signal and number of GPS
8. Remote Controller Signal
9. Image Transmission Signal
10. Drone Battery
11. Remote Controller Battery
12. Time
13. Remain Flight time
14. AE Lock
15. Switch Photo / Video
16. Current Mode
17. Camera Setting
18. Shutter
19. Playback
20. Camera Parameter
21. Capacity
22. Resolution
23. Gimbal Angle

SCREEN INTRODUCTION

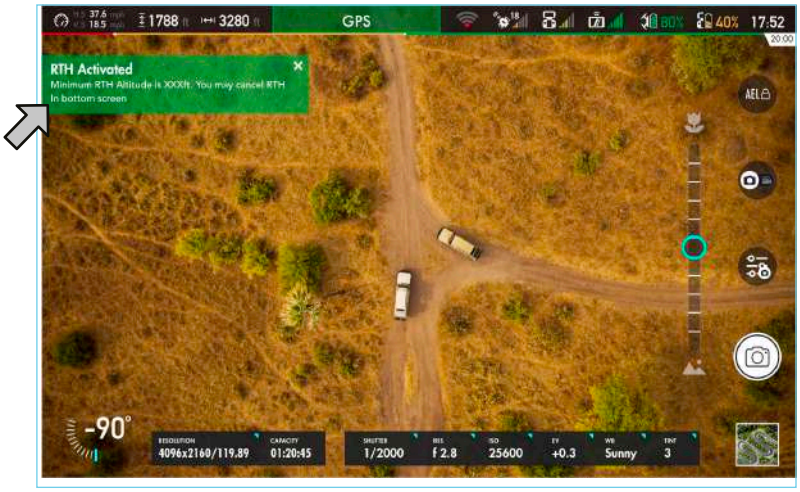
Flight Data is displayed as below:



1. Home Button
2. Pilot Name
3. Display Mode
4. Drone Setting
5. Map Option
6. Compass
7. Map
8. Drone Location
9. Home Point
10. Remote Controller Location
11. Cancel Button
12. Smart Mode
13. RTH
14. Alert Center

WARNINGS AND ALERTS

Smart Pilot System provides notifications on warnings and alerts, and will provide suggested actions on solving the issues.

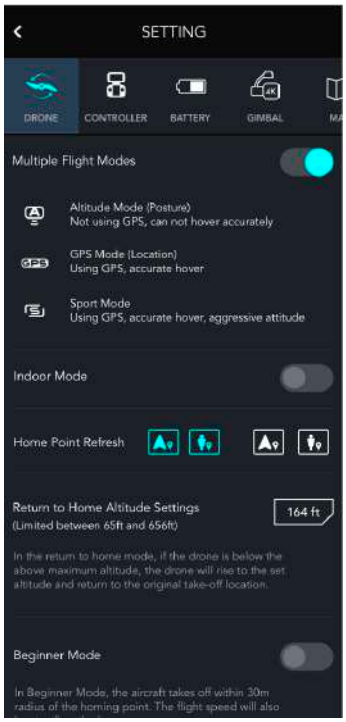


The top screen shows the warnings at the top left corner.

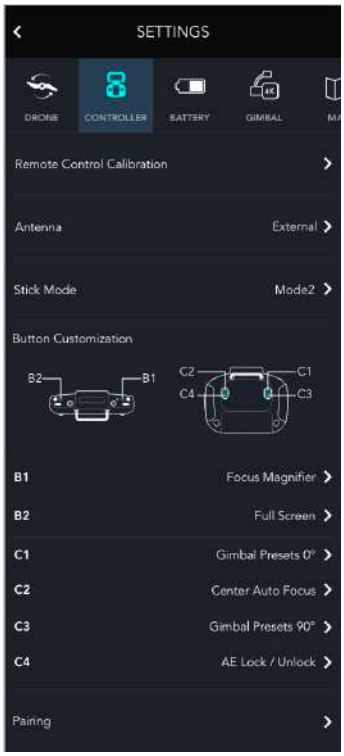
The bottom screen also shows the alerts on the left side. You may also refer to the Alert button at the top right corner for current warnings. Alert button at the top right corner. Tapping the Alert button on the screen will bring you to the Warning List. You may check all the existing warnings and tap the suggested action to solve the issue.

SETTINGS MENU

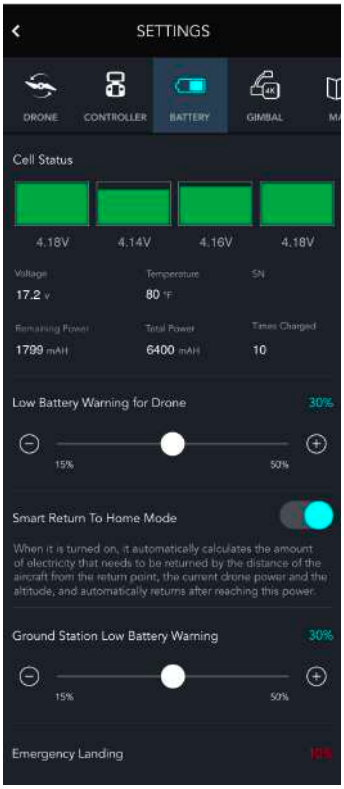
The settings menu allows the operator to configure the aircraft to suit their preferences. Settings include Aircraft, Ground Station, Battery, Gimbal, Map and General.



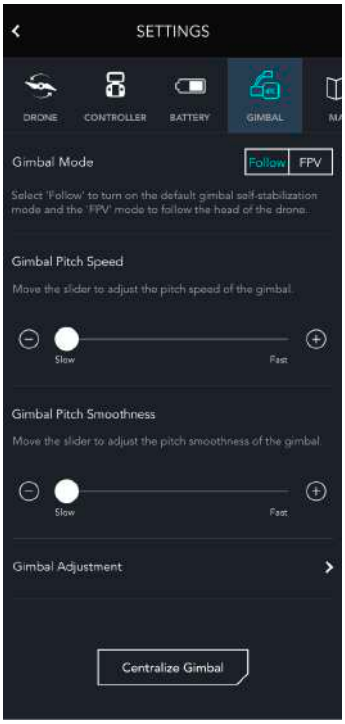
Aircraft Settings



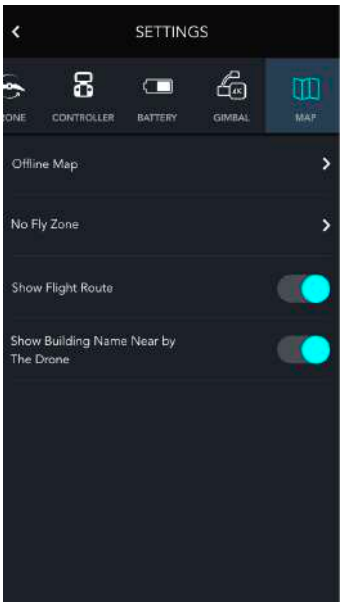
Ground Station Settings



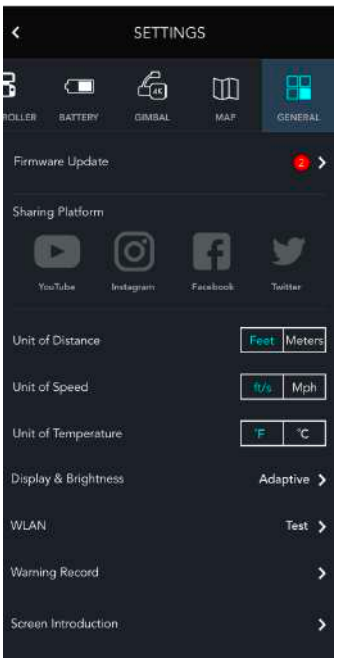
Battery Settings



Gimbal Settings



Map Settings



General Settings

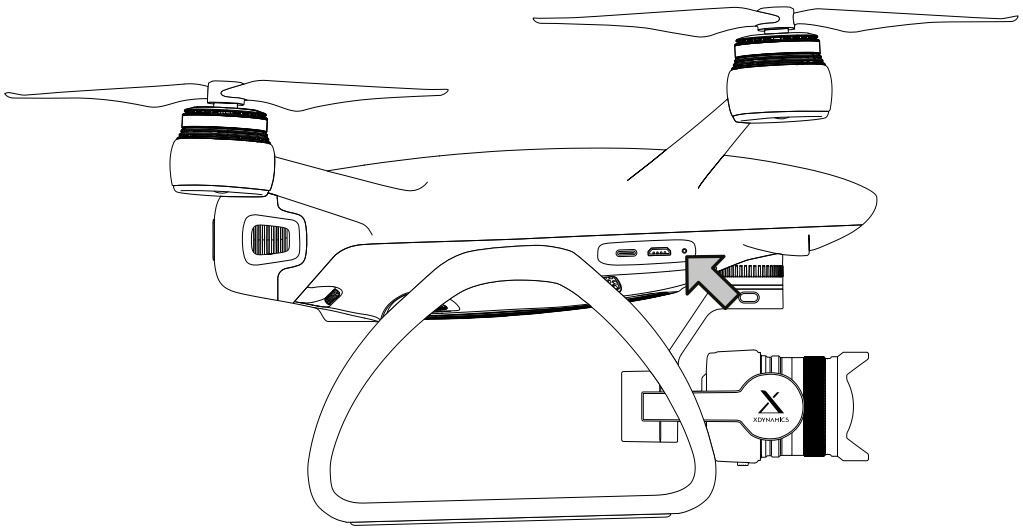
LINKING THE GROUND STATION

The EVOLVE 2 aircraft system is pre linked from the factory. If there's a situation which requires the Ground Station and the aircraft to be re-linked follow the steps below:

To pair the Ground Station to a new aircraft follow these steps:

1. Navigate to the Smart Pilot System aircraft Pairing Page. *(Settings > Ground Station > Pairing)*
2. Turn on the aircraft.
3. Keep the aircraft at least 3ft away from the Ground Station.
4. Tap "Start Pairing" on the Ground Station screen.
5. Follow the instructions on screen to complete the pairing.
6. The screen shows the modules pairing status.
7. The whole pairing process may take up to 1 minute.

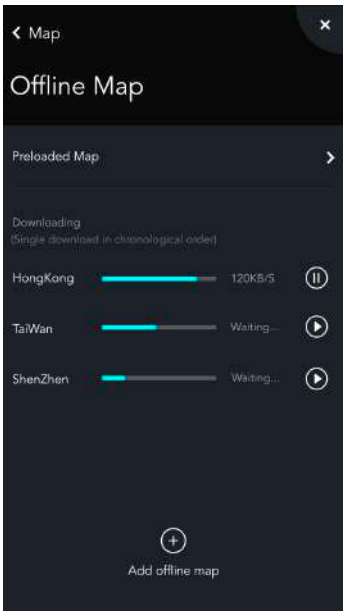
Only required if pilot is trying to pair a new aircraft to the Ground Station or a new Ground Station to the aircraft.

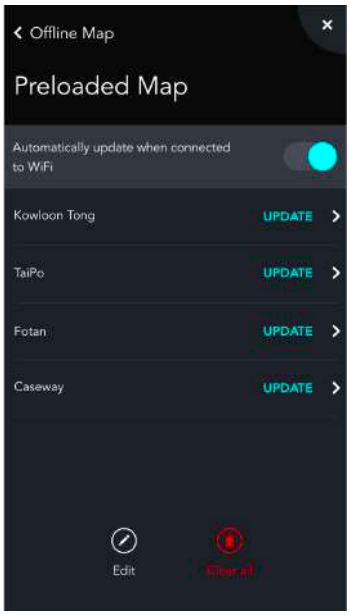


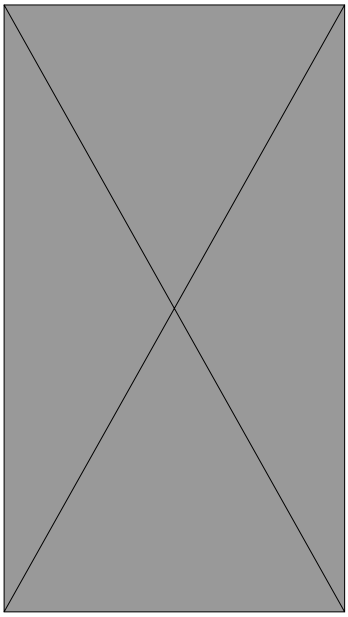
MAP PRELOADING (OFFLINE MAP)

To ensure that the map can be displayed outdoor without network, Smart Pilot System offers the offline map download feature. Follow the steps below to download the map.

1. Connect Ground Station to WiFi internet connection with download capabilities
2. Navigate to the Smart Pilot System Offline Map Page *(Setting > Map > Offline Map)*
3. Tap "+" to create a new offline map area
4. Search for plane or address
5. Drag and pinch the map to the designated area
6. Tap Download to start downloading
7. Smart Pilot System will indicate the download progress







RUN WAYPOINT PLAN

Setting Waypoints

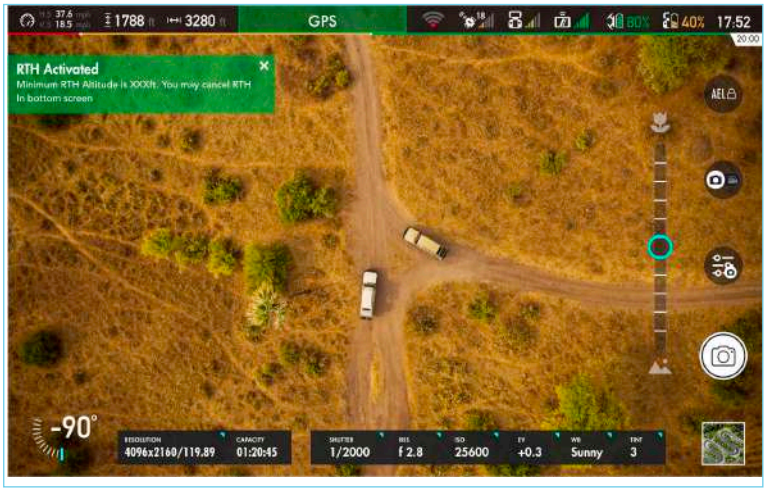
To execute the waypoints path, select Smart Mode by choosing the right position on the flight mode switch and then choose waypoint mode and follow the steps outlined below. Once the plan has been selected and completed, the aircraft will hover or return to home (RTH) from last waypoint. Auto mode can be cancelled any time by switching the flight mode switch to the left for GPS mode. The pilot has full control of the position and yaw angle of the aircraft during auto flight. To execute the plan, you may enter the Fly page by following these steps:

1. Navigate to the Smart Pilot System Fly Page.
2. Tap the Smart GPS Button and select Waypoints.
3. Select the Fly and Point.
4. Fly the aircraft to the interest point and tap C1 to record.
5. Tap "Start" to execute.

CAMERA AND GIMBAL SECTION

Camera Settings Page

The aircraft camera has full control of key video shooting settings, all of these settings can be found at the camera settings page in the Smart Co-Pilot System. Select the icon indicated in the diagram below to open the configure settings for the camera. The standard settings are similar to those found in most digital camera systems, including ISO, shutter speed, EV , quality, format etc.



Auto exposure Lock

Photo and video switch button

Advance camera setting

Record or Shutter

RESOLUTION	CAPACITY
4096x2160/119.89	01:20:45

SHUTTER	IRIS	ISO	EV	WB	TINT
1/2000	f 2.8	25600	+0.3	Sunny	3

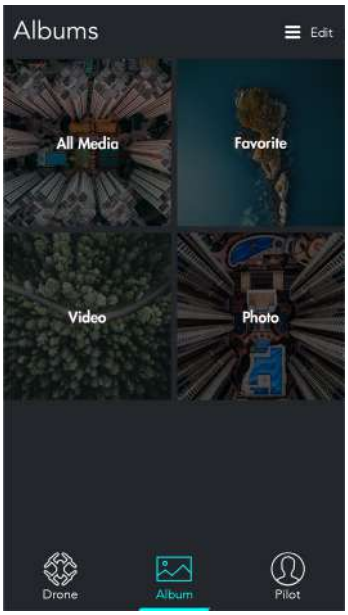
Quick camera setting

ALBUM AND IMAGE EDITING

You may view your photos and videos on the Smart Pilot Systems page. The editing tool is also available for quick edits.

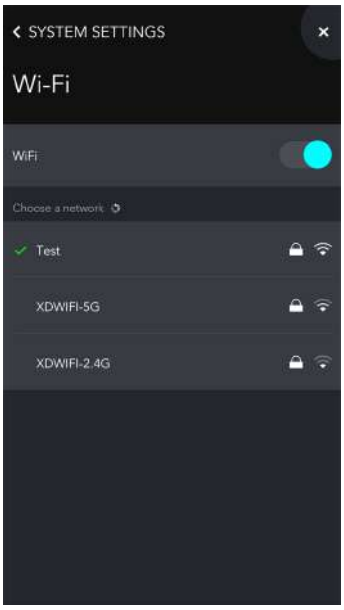
1. Navigate to the Smart Pilot System Album page.
2. The bottom screen shows the images and videos on the Ground Station.
3. Tap the media on the screen.
4. The top screen shows the photos/videos in full screen mode, while the bottom screen provides the detailed information and control for the photos/videos.
5. Tap Edit on the top right corner to enter the photo editing section.
6. Users can Crop / Apply Filters / Adjust Brightness / Change Contrast / Saturation / Sharpness on this interface.

Media on the Ground Station is a DVR recording from the FPV downlink. For full quality images, remove the SD card and upload files to your computer.



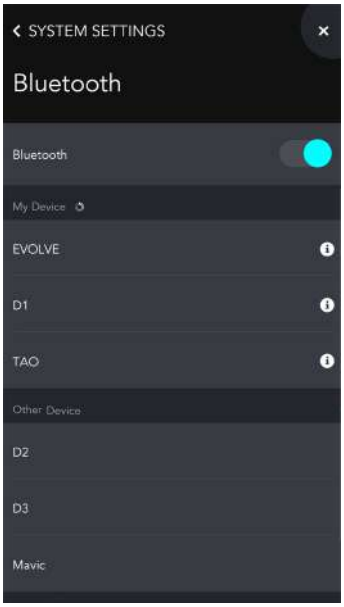
WI-FI NETWORK

To download maps and connect to social media services, the Ground Station needs connect to a Wi-Fi network. Navigate to the Wi-Fi Network page on the Smart Pilot APP and connect to the desired Wi-Fi network.



BLUETOOTH

To listen to voice alerts form the Smart Piot APP, the Ground Station must be connected to connect to Bluetooth capable devices. Navigate to the Bluetooth page on the Smart Pilot APP and connect to the desired Bluetooth device. Be sure to make Bluetooth devices detectable to the Ground Station.



FIRMWARE UPDATES

The Ground Station App will guide the user through the Firmware Update process. Firmware Update requests are displayed on the Ground Station screen. Whenever an update is available, the Smart Co-Pilot system will request the operator perform the update when the Ground Station is connected to a Wi-Fi source. This process can be simply accessed from the alerts page by selecting update.

FLIGHT

PREFLIGHT CHECKLIST

The checklist below is recommended before every aircraft flight. Aircraft operators are encouraged to add more items that might be required for particular operations.

1. Weather Limitations

Although the EVOLVE 2 is a high performance aircraft, weather can be a crucial factor to flight performance and safe operations. Caution must be observed when it comes to weather planning. Effective weather planning breaks down to these criteria:

- Weather information gathering – This can be achieved by watching your local news weather station and by using the web and APP tools like The Weather Channel and NOAA.
- Knowledge of weather patterns in your operational area – Search for local weather patterns with similar APP tools for forecasting weather.
- Executing flight plan and go or no go situations based on the weather information – Be sure to make informed decisions based on accurate weather information and remember no flight is too important to ignore hazards created by inclement weather.

 If these criteria are met, the chances of a crash or close calls are substantially reduced.

Below is the weather limitation of the EVOLVE 2:

- Wind speed - 25mph for maximum safe operations.
- Outside temperature - 0°C (coldest recommended temperature) - 40°C (hottest recommended temperature).
- Visibility – At least 5 statute miles of clear visibility and a minimum cloud cover ceiling of 400ft.
- Fog – Not recommended to fly.
- Rain – Do not fly.

2. Aircraft PreFlight Checklist

- Gimbal Clamp (Removed; Stowed)
- Micro SD Card (Installed; Available Space)
- Format SD Card (As Necessary)
- Battery (Installed; Status Check Fully Charged)
- Propeller (Check Condition; Installed Black on Black, Silver On Silver)
- CHECK COMPLETE

3. Ground Station PreFlight Checklist

- Battery (Securly installed; Status Check Fully Charged)
- If using external antennas (Installed; Corretly orientated)
- Wi-Fi Internet Service (Connected)
- Maps (Loaded)
- Waypoints (Loaded if necessary)
- Flight Mode Switch (P-mode) VERY IMPORTANT for BEGINNERS
- CHECK COMPLETE

4. Ground Station Before Aircraft Initialization Checklist

- Power On (Ground Station)
- Pilot App (Launch)
- Aircraft initialization done. (Blue or Green light states)
- Start Here
- Check checklist page (App)
- Check software update
- Check sensor status (Compass; Accelerometer)
- Check RTH Alt height
- Check GPS Signal
- Check Gimbal & Camera status
- Format media cards (As Necessary)
- Check Controller Mode
- CHECK COMPLETE

FLIGHT SYSTEM LIMITATIONS

Below are the flight limitations of the EVOLVE 2:

Speed

- Assenting – 16.4ft/s (5m/s)
- Descending – 6.6ft/s (2m/s)
- Horizontal – 47mph (75km/h) (For higher top speeds contact customer support for signing of warranty wavier prior to activation)

Distance

- 3281ft /1000m

Height

- 3281ft above sea level / 1000m

Weight

- 5.2lbs / 2.36kg

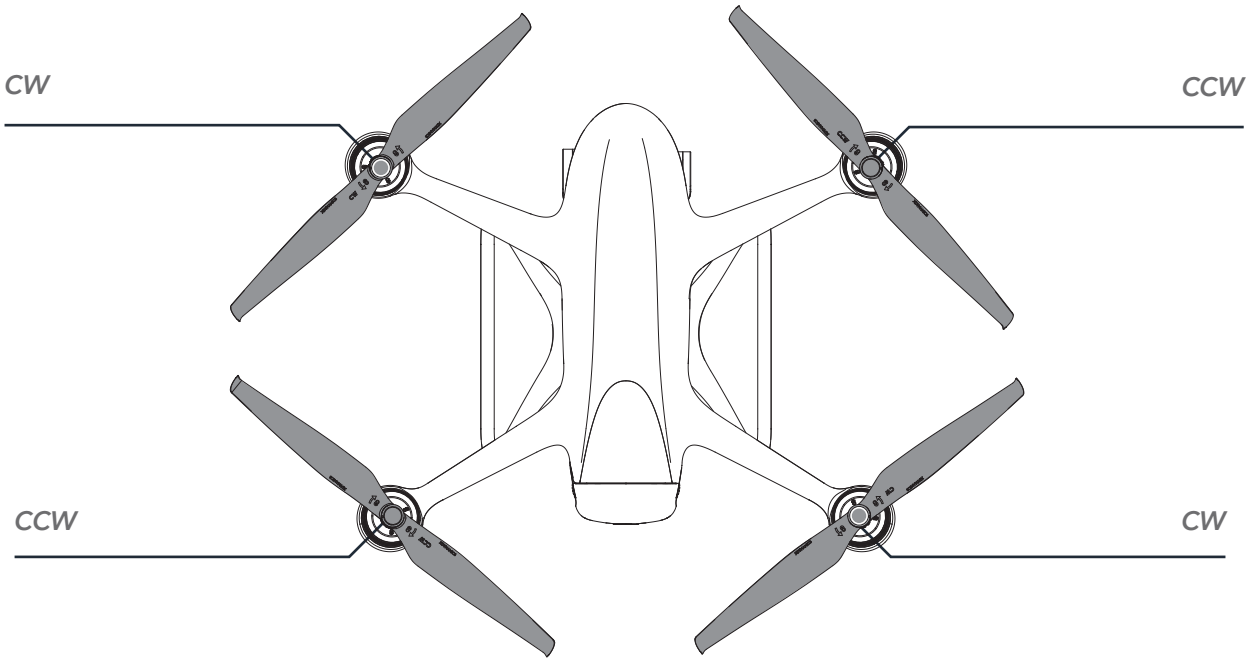
Maximum. Flight time

- approx. 20mins

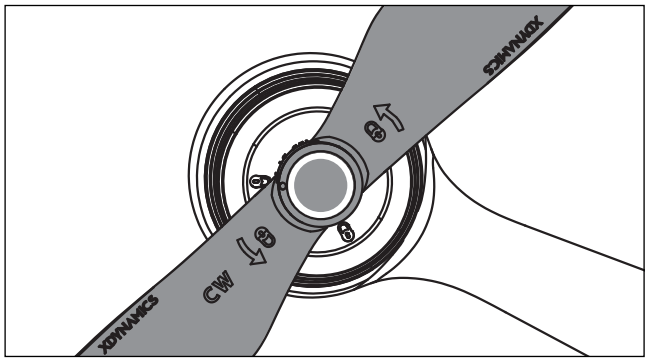
ENSURE CORRECT PROPELLER ALIGNMENT

The propellers need to be mounted with the correct CW (clock-wise) and CCW (counter-clock-wise) configurations. Two propellers are marked with white rings and two propellers have no markings. Mount the propellers with the white rings to the motors with a white ring on top. Please follow the steps on the following page to ensure all propellers are securely in place.

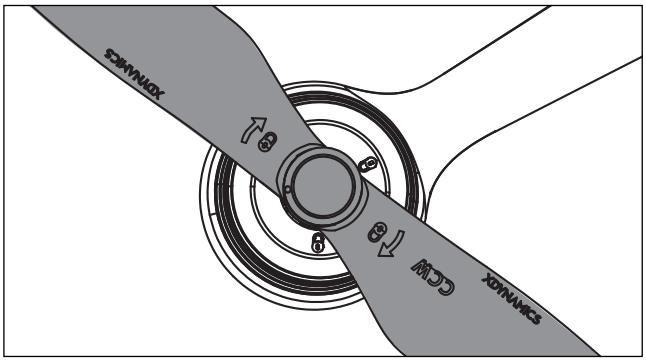
See diagram for attaching and detaching the propellers



- Ensure that both CW props with white circle markings match motors with white circle markings.
- Ensure that both CCW props with no circle markings match motors with no circle markings.
- Place the propeller on the motor with the red dot in-line with the white lock, apply a downward force, then twist in the direction of the arrow until the red dot is lined up with the red lock. Release and the propeller should spring up slightly and lock in place.



CW Props

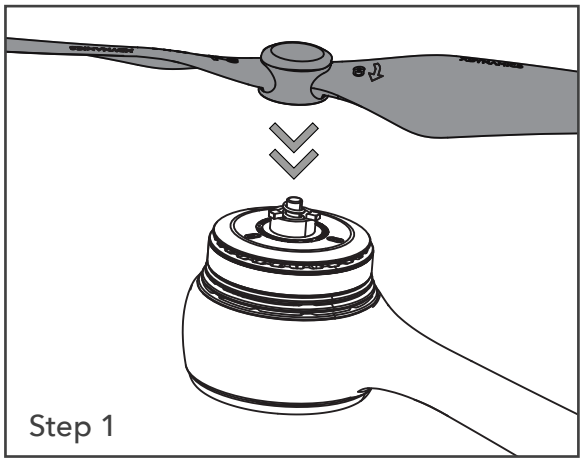


CCW Props

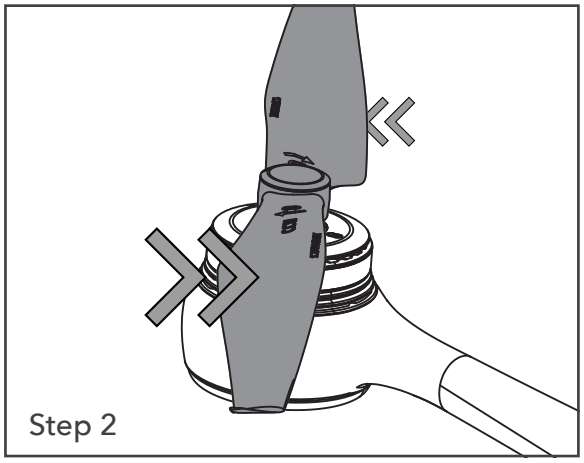
ATTACHING AND DETACHING THE PROPELLERS

The EVOLVE 2 aircraft employs a sturdily constructed attach and detach propeller system. With a quick half turn installation the aircraft can be ready to fly within minutes of pulling it out of the pack. To detach the propellers follow the steps below in reverse. Before installing the props, please make sure that the pre-filght check list is complete.

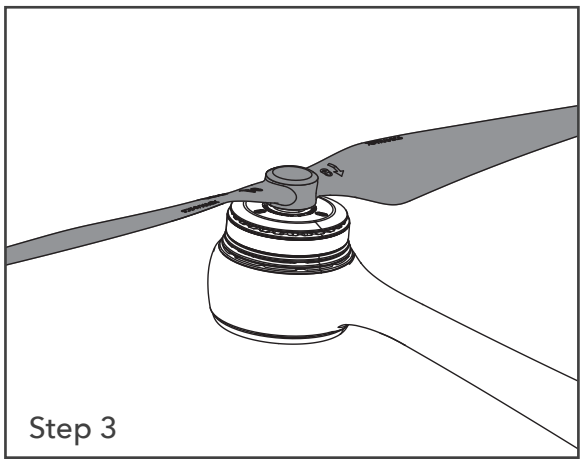
See diagram for attaching and detaching the propellers



Step 1 - Ensure that the CW / CCW direction of the propeller is aligned with the direction of the motor.



Step 2 - Place the propeller on top of the motor, apply a downward force. Hold the motor still and twist the propeller in the direction of the arrows shown on its surface.



Step 3 - Continue twisting the propeller with downward force until the red dot on the propeller and the red lock on the motor are aligned. Once you release the downward force, the propeller should pop up and lock securely into place. Confirm it is secure by twisting the propeller left and right while holding the motor in place. The propeller should now be firmly secure.

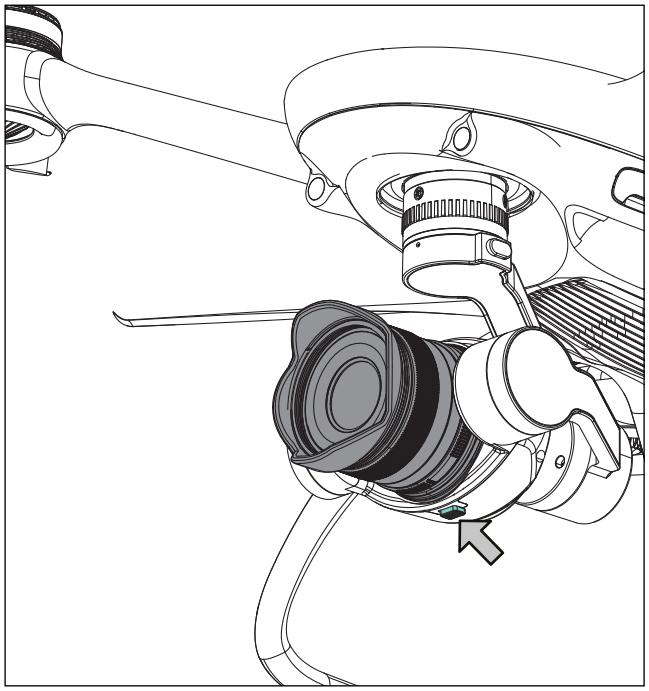
PREPARING AIRCRAFT FOR FLIGHT

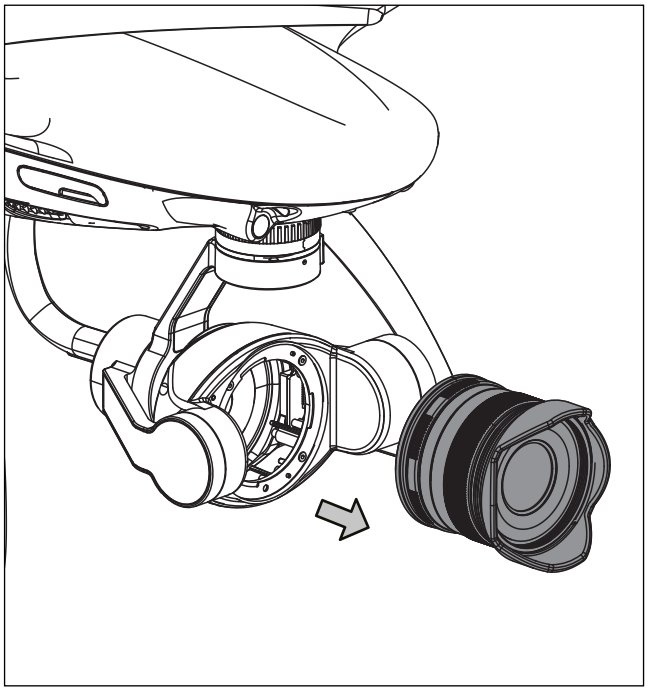
For the first flight of the EVOLVE 2 be sure to have a level surface available that is clear of obstacles and loose debris. Ensure that there are no overhead structures or trees that might interfere with the EVOLVE 2 connecting to GPS satellites. Do not place the EVOLVE 2 on metal surfaces or with metal nearby (metal interferes with the internal compass of the flight system and can cause directional errors). For the first flights of the EVOLVE 2 be sure to fly in low wind (below 10kt) and high visibility conditions. Avoid flying in low visibility (like heavy fog) and rainy conditions.

CAMERA AND GIMBAL SECTION

Removing lens

To remove the Lens, press the button located underneath the gimbal backward, then unscrew the lens CCW as shown in the diagram below.





AIRCRAFT CALIBRATION

Accelerometer calibration procedures

Please note that the aircraft calibration procedures are subject to change. Always follow the procedures indicated in the Ground Station. Please ensure all firmware is up to date and follow on screen instructions if any variance from the instructions outlined below.

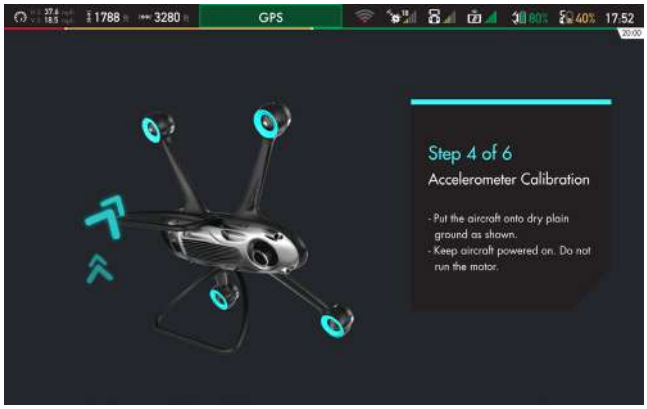
To calibrate the accelerometer follow these steps

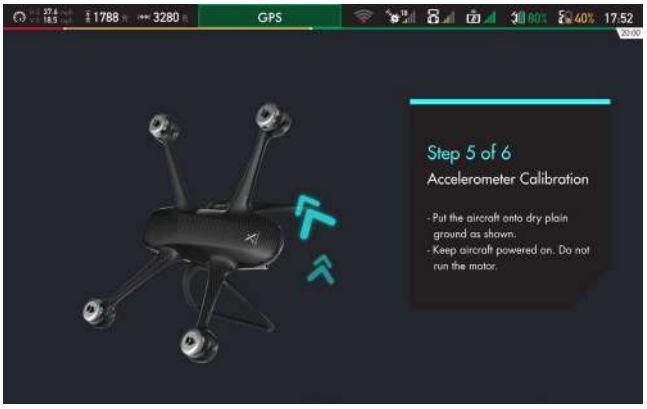
1. For safety reasons, please remove the propellers from the aircraft.
2. Make sure the GS and aircraft are powered on and connected.
3. Navigate to the accelerometer calibration page on the smart pilot APP *(Settings > General > Sensor > Accelerometer)*.
4. Press " OK " on the accelerometer calibration page.
5. Ensure that the aircraft is on a levelled surface and press "next".
6. Follow the on screen instructions for aircraft placement and push "next" when prompted.
7. Once complete, the APP will indicate a failed or successful calibration.
8. If failed, switch off the aircraft and Ground Station power and restart at Step 1.

Accelerometer calibration is only required when requested by the Smart Pilot System.

AIRCRAFT CALIBRATION

Accelerometer calibration procedures





AIRCRAFT CALIBRATION

Compass calibration procedures:

The electronic compass on the EVOLVE 2 aircraft is used to determine the direction which aircraft is pointing to in reference to true north. The compass is a sensitive sensor that is affected by electromagnetic interference from sources such as radio towers and high voltage power lines. The compass can give false readings if the aircraft is placed over a surface composed of metal or if there is metal under the surface, such as rebar under concrete. If a compass error occurs simply relocate the aircraft in a different location until the metal interference is gone. If relocating the aircraft does not clear the compass error or if the smart pilot APP requires a compass calibration follow the steps below.

To calibrate the compass follow these steps:

1. For safety reasons, please remove the propellers from the aircraft.
2. Make sure the GS and aircraft are powered on and connected.
3. Navigate to the compass calibration page on the smart pilot APP.
4. Press "OK " on the compass calibration page. *(Settings > General > Sensor > Compass)*
5. Follow the on screen instructions to rotate the aircraft on the proper plane.
6. Only upon starting and ending will there be an audio prompt. Once success, aircraft will restart.
7. When complete the APP will indicate calibration success or failure.
8. If failed, switch off the aircraft and Ground Station power and restart at Step 1.

AIRCRAFT CALIBRATION

Compass calibration procedures

ARMING THE AIRCRAFT

When arming or disarming, commands are given to the flight controller, the aircraft's state may change suddenly requiring the operator to react immediately in order to maintain full control of the aircraft.

ARMING PRE-CHECK

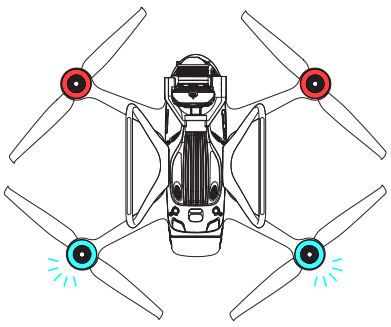
The EVOLVE 2 makes several internal calibrations and adjustments before each flight. If for any reason, any of the vital sensors or internal equipment has a safety issue, the aircraft will not ARM upon the ARM command given by the operator's stick and the LEDs under each motor will turn RED. Please refer to the Smart Pilot screen to check for the diagnoses in order to correct the problem.

The most common reason for not arming is the calibration of compass on a different or magnetically noisy environment. Please refer to Compass calibration and try again.

There is a 5 second delay on the arming and disarming of the stick commands to avoid accidental spinning of the motors or disarming the aircraft in mid-air causing the aircraft to crash.

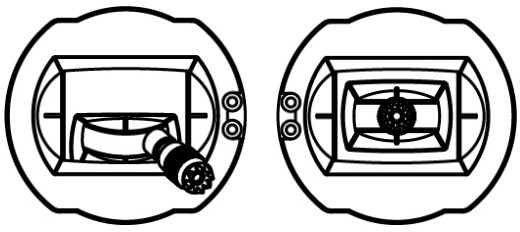
ARMING

Before arming the aircraft make sure pre-flight check lists are complete and the aircraft is in an area clear of obstacles and loose debris as loose debris can damage the propellers and possibly cause loose debris to act as projectiles doing damage to surrounding property and personnel.



Flash

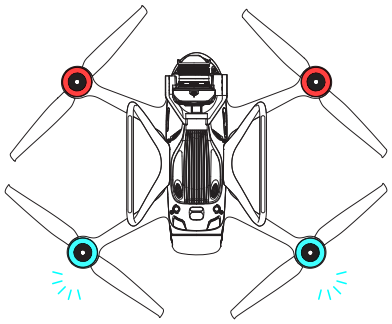
Push the left throttle stick down and to the right and wait for the LED's light change. During arming, the LEDs color will fast blink different colors followed by a long beep, the motors will then engage and the propellers will start spinning. Move the throttle stick to the middle position and the aircraft is ready to take off manually.



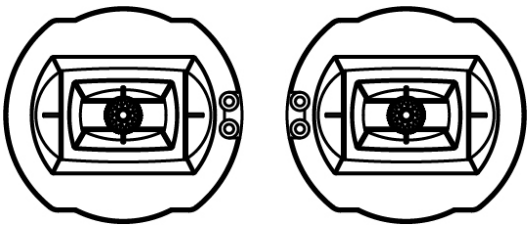
(Left) **(Right)**

DISARMING THE AIRCRAFT

After a landing the aircraft, hold the throttle stick down and to the left to disarm the motors. The LED indicators will change color followed by a long beep and propellers will stop spinning. Make sure all the LED indicators are solidly lit by the same color (either Green or Blue) with no blinking before moving the sticks back to central position. If the LEDs are blinking the aircraft is still in arming mode, keep the sticks in the same position until all the LEDs are solid (either Green or Blue).



Flash



(Left) **(Right)**

Push the left throttle stick down and to the left and wait for the LED's light change. During disarming the LEDs color will fast blink rapidly with different colors followed by a long beep, the motors will then engage and the propellers will start spinning. Move the throttle stick to the middle position and the aircraft is ready to take off manually.

Ensure the aircraft is fully disarmed (either solid Green or Blue LED) before returning the left thumb stick to the middle position.

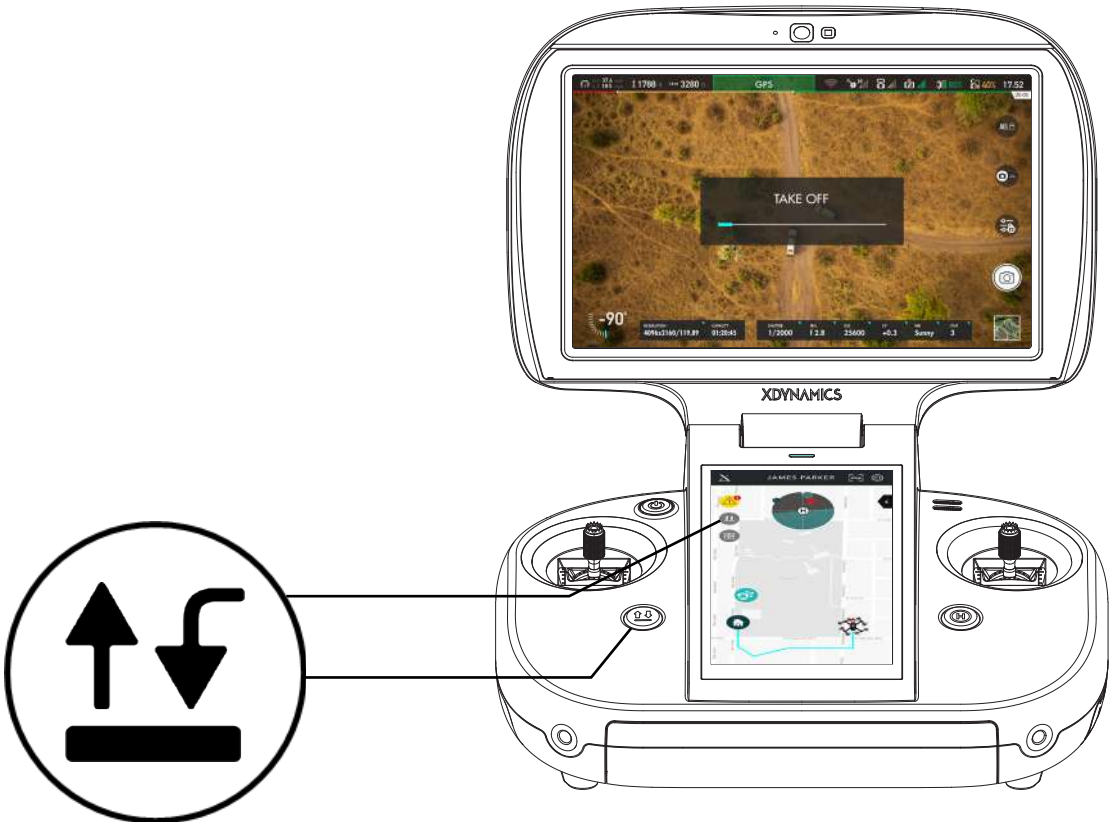
AUTO TAKE OFF

For ease of operation and to assist beginner operators, the EVOLVE 2 aircraft can take off and land automatically.

Follow the steps below:

1. Short Press and Long Press the Auto Take Off button for 3 seconds.
2. The aircraft will arm itself and take off.
3. The aircraft will rise to 4 to 5 feet. (If the aircraft is in GPS mode it will hold position until the operator takes over, but if it is in manual mode the operators needs to correct the altitude to prevent drifting.)

Follow the previous pre-flight check, as stated in arming the aircraft above.



AUTO LANDING

For ease of operation and to assist beginner operators, the EVOLVE 2 aircraft can take off and land automatically.

Follow the steps below:

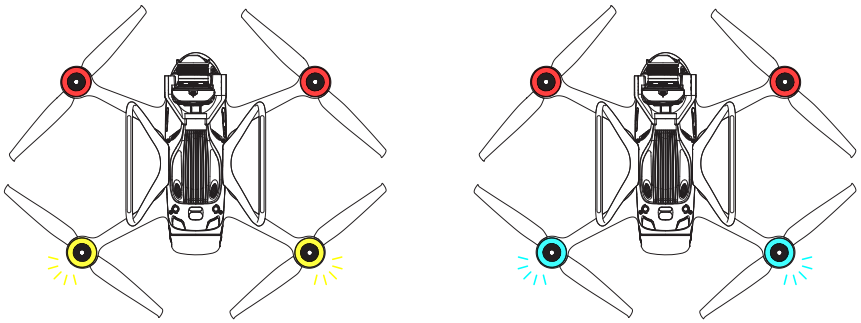
1. Short Press and Long Press the Auto Take Off button for 3 seconds.
2. The Ground Station will voice over to indicate the aircraft ready to descent. (during the descent the operator can reposition the aircraft to clear obstacles or land in preferred spot)
3. When landed, the aircraft will disarm automatically.

After confirming the land operation, the Ground Station will update the status to indicate that the aircraft is landing.

RETURN TO HOME

This feature brings the aircraft back to the location it first acquired a home lock position utilizing the GPS signal. Ensure GPS signal is fixed before takeoff (when all 4 LED lights located under the motors are solid green a GPS home lock is achieved) to bring it back to your home point position, when it reaches the home position the aircraft will hover for 5 seconds then land automatically. During the landing descent the operator can move the aircraft's position to clear away from obstacles on the ground or land in a preferred spot. At any point during the RTH mode, it can be modified by pressing the RTH button again and confirming the RTH cancel. The aircraft will then switch back into the mode which the 3 position switch mode is selected.

The number of GPS satellites acquired and the health of the GPS signal can also be checked on the top screen of the Ground Station. 6 is the minimum number of satellites needed. The signal health will be confirmed by a (Excellent / Good / Fair / Poor) message on the APP.



USING THE RETURN TO HOME BUTTON ON THE GROUND STATION

Follow the steps below:

1. Make sure GPS Signal is showing at least 'Good' (if not, visually track the aircraft as it flies back to home position).
2. Press and hold the Return to Home button for 3 seconds.
3. The aircraft will ascend to a pre-set altitude, or if at a greater altitude than the programed altitude it will remain at that altitude, and then return to the Home Point in shortest path (straight line).
4. Smart Pilot System indicates the aircraft is under Return to Home Mode.
5. When reaching the home point the aircraft will hover for few seconds then proceed to auto land (during the descent the operator can reposition the aircraft to clear away from obstacles or land in preferred spot).

Press and hold the Return to Home button for 3 seconds

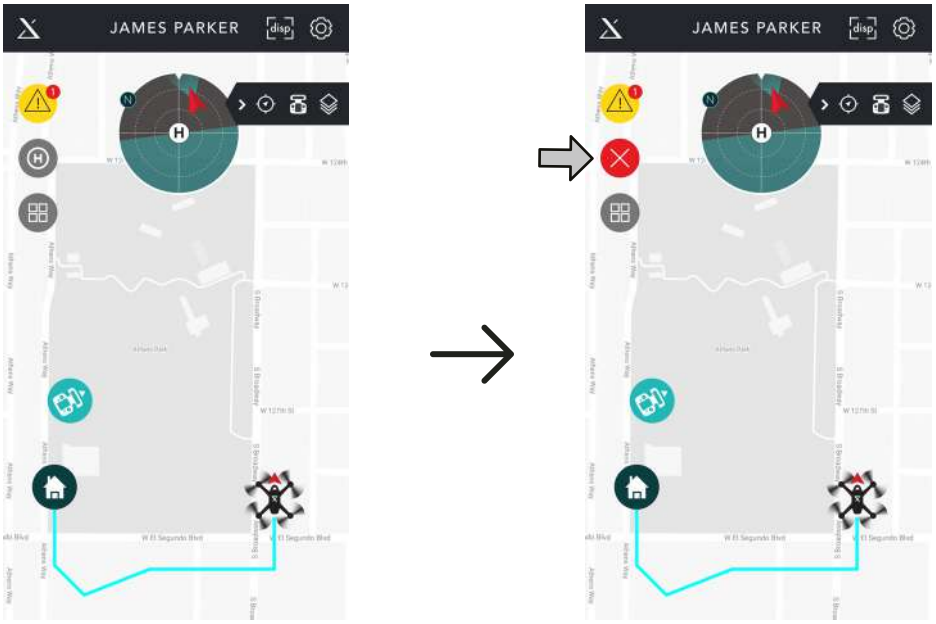
Return to home successful

Return to home failed

RETURN TO HOME BUTTON CANCELLATION

During the return home flight the user may stop the Return to Home process by following the steps below

1. Press the cancel button to stop the Return to Home process.
2. The aircraft will continue in the mode at which the 3 position switch mode is selected.



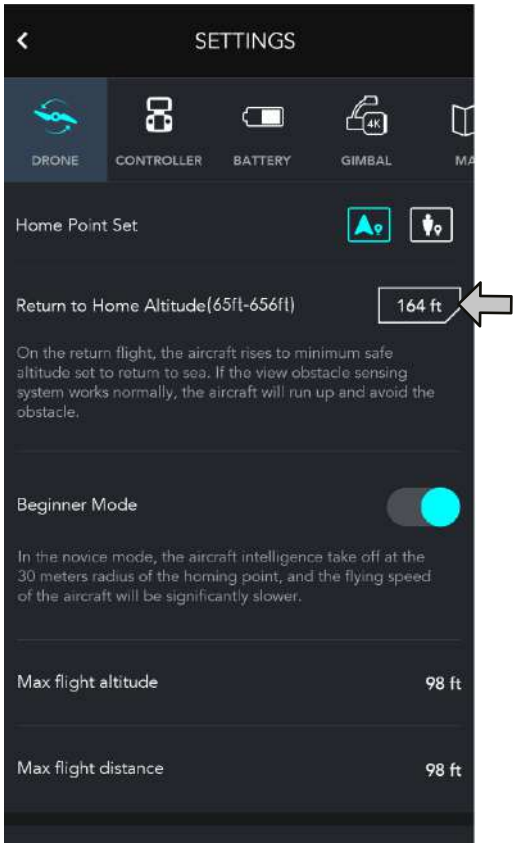
Press the Cancel Button
to stop the Return to Home process

DETERMINING THE RETURN TO HOME ALTITUDE

Depending on the flight conditions and obstacles in the return to home flight path, the operator can choose a safe return altitude for the Return to Home function. This altitude should be set up before flight under the APP configuration tab. A low altitude setting is not recommended for obstacle clearance (such as trees or buildings). Also notice the maximum legal flight altitude for each flight. This configuration allows the aircraft to reach a programed altitude before starting to flying back to the home position. If the aircraft is below the programed altitude it will ascend to the programmed altitude then proceed to the home position. If the aircraft is above the programed altitude it will remain at that altitude and then proceed to the home position.

Note: This altitude setting is also used for Return to Home function in case the failsafe is triggered due to loss of signal or power loss of the Ground Station.

To configure the Return to Home Altitude, user may enter the Settings Page. At the aircraft section, there is the RTH Altitude, tap and change the value.



APPENDIX

PRODUCT SPECIFICATION

CAMERA SYSTEM

ITEM	SPECIFICATION
Controllable Range	Pitch -90° to 0°
Gimbal Accuracy	Static stability: ±0.005°, motion stability: ±0.01°
Stabilization	3-axis (pitch, roll, yaw)
Power Output	
Voltage	
Output Current	
Net Weight	480g
Dimensions	143mm*110mm*104mm
Operating Temperature	0 to 40°C
Input Voltage	
CMOS Sensor	4/3› WDR CMOS Sensor
Supported Lens	Panasonic Lumix 15mm/1.7 Panasonic Lumix 42.5mm/1.7 Panasonic Lumix 14-42mm/3.5-5.6 HD Olympus M.Zuiko 12mm/2.0 Olympus M.Zuiko 17mm/1.8 Olympus M.Zuiko 25mm/1.8 Olympus M.Zuiko 45mm/1.8 Olympus M.Zuiko 9-18mm/4.0-5.6
ISO Range	ISO 100-6400
Shutter Speed	Video : 1/8000s – 1/24s Photo : 1/8000s – 30s
Max Photo Resolution	4000 x 3000 (4 : 3) 3840 x 2160 (16 : 9)
Video Resolution	4096x2160@100/60/59.94/50/48/47.96/30/29.97/25/24/23.98fps 3840x2160@120/100/60/59.94/50/48/47.96/30/29.97/25/24/23.98fps 2704x1520@120/100/60/59.94/50/48/47.96/30/29.97/25/24/23.98fps 1920X1080@240/120/100/60/59.94/50/48/47.96/30/29.97/25/24/23.98fps
Max Video Bit Rate	200Mbit/s
Photo File Formats	JPEG, DNG, JPG+DNG
Video File Formats	MP4, MOV

ITEM	SPECIFICATION
Encoding	H.264, H.265, ProRes
Video Mode	Normal, Time-lapse, Slow motion, HDR10
Photo Mode	Single shot, Burst Shot, Bracketing, Interval Timer Shot, HDR
Exposure mode	Auto, Manual,TV, AV
Metering Mode	Center-weighted, Evaluative, Partial, Spot
White balance	Auto, Daylight, Fluorescent, Cloudy, Incandescent, Manual(2300k-7500k)
Focus Mode	AF-S, AF-C, MF
Color Profile	Standard, X-log

GROUND STATION

ITEM	SPECIFICATION
Processor	RK3399K Quad Core 2.0GHz Cortex-A72 *2 Cortex-A53 *4 Mali-T864 GPU
Operating System	Android 8.1
Memory	4GB LPDDR4
Internal Storage	64GB eMMC 5.1
Supported SD Card Types	Micro SD (SD/SDHC/SDXC) / Max. 64GB
Upper Display (View Finder)	8” 1080p Multi-Touch Screen Anti-reflective Coating Luminance: 1000-1200cd/m2
Lower Display (Console)	5.5” 1080p Multi-Touch Screen Anti-reflective Coating Luminance: 1000-1200cd/m2
Embedded Camera	2592*1944 Front Camera
R/C & Telemetry Operating Frequency	
Max Transmission Distance	11 km, FCC Compliant, unobstructed and no interference
Live View Working Frequency	2.4GHz
Max Live View Distance	3280ft , FCC Compliant, unobstructed and no interference
Live View Quality	1080p @ 60 fps
Live View Transmission Latency	<50ms
Wireless Connectivity	Bluetooth 4.1,WiFI 11ac/ 4G:LTE FDD: B2/B4/B5/B12/B13/B14/B66/B71 WCDMA:B2/B4/B5
Peripheral Connectors	HDMI x 1 USB TypeC x 1 SD Card x 1 SIM Card x 1
Sensors	Magnetometer Accelerometer Three-axis gyroscope Proximity Detector Microphone

ITEM	SPECIFICATION
Operating Temperature	32°F - 104°F (-20 - 60°C)
Battery	6700 mAh Li-Po 3S2P
Transmitter Power (EIRP)	FCC: 20 dBm (not released)
Operating Voltage	10.8V
Dimensions	9.1in(D) x 7.1in(H) x 4.1in(W) (231.4 x 180 x 103 mm)
Weight (including battery)	3.40 lbs (1.55kg)

GROUND STATION BATTERY

ITEM	SPECIFICATION
Capacity	6700 mAh Li-Po 3S
Voltage	10.8v
Battery Type	Lithium-ion Polymer
Energy	72.36 Wh
Net Weight	<400 g
Dimensions	147 mm*63.5 mm*38 mm
Operating Temperature	-20 to 60°C
Max Charging Voltage	12.6V

AIRCRAFT

ITEM	SPECIFICATION
Supported SD Card Types	Micro +C3: C62USB, SD card, Type-C, Cfast
Connectivity	USB TypeC
Dimension	455(L)*362.5(W)*258.8(H)mm
Weight (including battery)	<2kg
Max. Rotation speed Motors	6600rpm
Max Ascent Speed	5m/s
Max. Descent Speed	2.5m/s
Max Wind speed	7.9m/s
Max. Horizontal Speed	25m/s have to test
IP rating	
Operating temperature	-10°C- 45°C

AIRCRAFT BATTERY

ITEM	SPECIFICATION
Capacity	7900 mAh 4 Cell LiPo
Voltage	14.8V
Battery Type	Lithium-ion Polymer
Energy	99.16 Wh
Net Weight	<550g
Dimensions	190mm*67.5mm*40mm
Operating Temperature	0 to 40°C
Max Charging Voltage	17.4V

BATTERY

Battery Use

- DO NOT allow the batteries to come into contact with any kind of liquid. DO NOT leave batteries out in the rain or near a source of moisture. DO NOT drop the battery into water. If the inside of the battery comes into contact with water, corrosion may occur, potentially resulting in the battery catching on fire, and may even lead to an explosion.
- Never use non-XDynamics batteries. Go to www.xdynamics.com to purchase new batteries. XDynamics takes no responsibility for any damage caused by non-XDynamics batteries.
- Never use or charge swollen, leaky, or damaged batteries. If your batteries are abnormal, contact XDynamics or an XDynamics authorized dealer for further assistance.
- Never install or remove the battery from the aircraft when it is turned on. DO NOT insert or remove batteries if the plastic cover has been torn or compromised in any way.
- The battery should be used in temperatures from 32°F to 104°F (0°C to 40°C). Use of the battery in environments above 50°C can lead to a fire or explosion. Use of battery below 32°F (0°C) can lead to permanent damage
- DO NOT use the battery in strong electrostatic or electromagnetic environments. Otherwise, the battery control board may malfunction and cause a serious accident during flight.
- Never disassemble or pierce the battery in any way or the battery may leak, catch fire, or explode.
- Electrolytes in the battery are highly corrosive. If any electrolytes make contact with your skin or eyes, immediately wash the affected area with fresh running water for at least 15 minutes, and then see a doctor immediately.
- DO NOT use the battery if it was involved in a crash or heavy impact.
- If the battery falls into water with the aircraft during flight, take it out immediately and put it in a safe and open area. Maintain a safe distance from the battery until it is completely dry. Never use the battery again, and dispose of the battery properly as described in the Battery Disposal section below. DO NOT heat batteries. Put out any battery fire using sand or a dry powder fire extinguisher
- DO NOT put batteries in a microwave oven or in a pressurized container.
- DO NOT place loose battery cells on any conductive surface, such as a metal table.
- DO NOT put the loose cells in a pocket, bag or drawer where they may short-circuit against other items or where the battery terminals could be pressed against each other.
- DO NOT drop or strike batteries. DO NOT place heavy objects on the batteries or charger. Avoid dropping batteries.
- Clean battery terminals with a clean, dry cloth.

- Before carrying the Intelligent Flight Battery onto an airplane, the battery must first be discharged to below 30%. Only discharge the battery in a fireproof location. (Please verify with IATA or FAA prior to your flight if any changes in regulation)

Battery Use

- Make sure the batteries are fully charged before each flight.
- Land the aircraft immediately when low battery level signals are activated.

Battery Charging

- The Intelligent Flight Battery is designed to stop charging when it is full. However it is a good practice to monitor the charging progress and disconnect the batteries when fully charged.
- Ensure the Intelligent Flight Battery is turned off at all times during charging.

Battery Storage

- Discharge the battery to 40%-65% if it will NOT be used for 10 days or more. This can greatly extend the battery life.
- The battery automatically discharges to below 65% when it is idle for more than 10 days to prevent it from swelling. It takes approximately 3 days to discharge the battery to 65%. It is normal that you may feel moderate heat emitting from the battery during the discharge process.
- DO NOT store the battery for an extended period after fully discharging it. Doing so may over-discharge the battery and cause irreparable battery cell damage.
- The battery will enter hibernation mode if depleted and stored for a long period.
- Recharge the battery to bring it out of hibernation.
- Remove batteries from the aircraft when stored for an extended period.

Battery Disposal

- If the power on/off button on the Intelligent Flight Battery is disabled and the battery cannot be fully discharged, please contact a professional battery disposal/recycling agent for further assistance.

Battery Maintenance

- Never over-discharge, as this may lead to battery cell damage.
- Battery life may be reduced if not used for a long time.
- Fully charge and discharge the battery at least once every 3 months to maintain battery health.

Travel Notice

- Store Intelligent Flight Batteries in a ventilated location.

Battery Charging

- DO NOT attach the batteries to wall outlets or car charger sockets directly, and always use a XDynamics approved adapter.
- XDynamics takes no responsibility if the battery is charged using a non-XDynamics charger.
- Never leave the battery unattended during charging. DO NOT charge the battery near flammable materials or on flammable surface such as carpet or wood.
- DO NOT charge battery immediately after flight, because the battery temperature may be too high. DO NOT charge the battery until it cools down to near room temperature. Charging the battery outside of the temperature range of 59°F - 104°F (15°C - 40°C) may lead to leakage, overheating, or battery damage.
- Disconnect the charger when not in use. Examine the charger regularly for damage to the cord, plug, enclosure, or other parts. DO NOT clean the charger with denatured alcohol or other flammable solvents. Never use a damaged charger.

Battery Storage

- Keep batteries out of the reach of children and pets.
- DO NOT leave the battery near heat sources such as a furnace or heater. DO NOT leave the batteries inside of a vehicle on hot days. The ideal storage temperature is (72°F - 82°F) 22°C - 28°C.
- Keep the battery dry. Never drop the battery into water.
- DO NOT drop, strike, impale, or manually short-circuit the battery.
- Keep the battery away from metal objects such as glasses, watches, jewelry, and hairpins.
- Never transport a damaged battery or a battery with power level higher than 30%.

Battery Disposal

- Dispose of the battery in specific recycling boxes only after a complete discharge.
- DO NOT place the battery in regular trash containers. Strictly follow your local regulations regarding the disposal and recycling of batteries.

Battery Maintenance

- Never use the battery when the temperature is too high or too low.
- Never store the battery in environments with a temperature higher than 140°F (60°C).

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