



E V O L V E **2**

USER MANUAL v1.3

2021.11

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 optimize 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.

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/>

<https://store.xdynamics.com/download/>

Support Website

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

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

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 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, especially 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 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 incorrectly 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 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 or aging 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. 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

PRODUCT PROFILE

PRODUCT INTRODUCTION	1
KEY FEATURES	2-3
AIRCRAFT ANNOTATED DIAGRAM	4
GROUND STATION ANNOTATED DIAGRAM	5

AIRCRAFT

AIRCRAFT INTRODUCTION	7
INSERTING AND REMOVING THE AIRCRAFT BATTERY	8-9
TURNING ON/OFF THE AIRCRAFT BATTERY	10-11
CHARGING THE AIRCRAFT BATTERY	12
AIRCRAFT BATTERY LED INDICATIONS	13
AIRCRAFT LED INDICATORS	14-15
ENSURE CORRECT PROPELLER ALIGNMENT	16
ATTACHING AND DETACHING THE PROPELLERS	17
BEGINNER MODE	18
FLIGHT MODES	18
HOME POINT	19
COMPASS CALIBRATION	20
ACCELEROMETER CALIBRATION	20
GAIN AND EXPO	21
AIRCRAFT FLIGHT CONTROL	22
AIRCRAFT AND PILOT ORIENTATION	22

CAMERA AND GIMBAL

ATTACHING AND DETACHING GIMBAL	24
ATTACHING AND DETACHING CAMERA LENS	25
RECOMMENDED LENS	26
CAMERA LED INDICATOR	27
MEMORY CARD FORMAT (SD CARD/CFAST)	28
SHOOTING IN PRORES	28
CAMERA SETTINGS	28
CREATIVE ASSISTANT	29
GIMBAL TILT ANGLE	30
GIMBAL PITCH (SPEED/SMOOTHNESS)	30
AUTO GIMBAL CALIBRATION AND CENTRALIZE GIMBAL	30

GROUND STATION

INSERTING AND REMOVING THE GROUND STATION BATTERY	33
TURNING ON/OFF THE GROUND STATION BATTERY	34
CHARGING THE GROUND STATION BATTERY	35
GROUND STATION LED INDICATOR	36
PAIRING THE GROUND STATION AND AIRCRAFT	37
ANTENNAS (INTERNAL/EXTERNAL)	37
IMAGE TRANSMISSION	37
CONTROL STICK MODES	37-40
BUTTON CUSTOMIZATION	41

SMART PILOT SYSTEM

SCREEN INTRODUCTION	43-44
NOTIFICATIONS	45
FIRMWARE UPDATES	46
WIFI/HOTSPOT CONNECTION	46
ALBUM AND IMAGE EDITING	46
FLIGHT RECORDS	47

INFLIGHT

WEATHER FORECAST	49
PREFLIGHT CHECKLIST	50-51
FLIGHT SYSTEM LIMITATIONS	52
PREPARING AIRCRAFT FOR FLIGHT	52
MAXIMUM DISTANCE AND ALTITUDE	52
ARMING AND DISARMING THE AIRCRAFT	53-54
AUTO TAKE OFF AND LANDING	54-55
RETURN TO HOME	55-56
LANDING AND RETURN TO HOME CANCELLATION	56
DETERMINING THE RETURN TO HOME ALTITUDE	57
MAP (FLIGHT MAP/OFFLINE MAP)	57-58
RADAR	58

PRODUCT SPECIFICATION	59-64
-----------------------	-------

PRODUCT PROFILE

Product Introduction

Key Features

Aircraft Annotated Diagram

Ground Station Annotated Diagram

PRODUCT INTRODUCTION

The EVOLVE 2 is the first fully integrated premium drone platform providing aerial cinematographers with professional grade filming capabilities and an advanced flight experience in a comprehensive package.

EVOLVE 2 is the smallest multirotor drone platform equipped with a mirrorless Micro Four Thirds camera supported by a monocoque carbon-fiber airframe. These premium materials minimize weight for longer flight time while providing enhanced structural integrity. The magnesium alloy ventral plate provides heat dissipation while reducing vibration during flight. Combined with high-power motors and optimized propeller design, the aircraft can reach speeds over 55mph supporting high-quality cinematography for action sports, racing, wildlife photography and other challenging applications.

EVOLVE 2 sports an Astra M4/3 camera with a Sony sensor and brushless gimbal system that brings unparalleled creative freedom to create compelling visual experiences that connect deeply with the audience. Designed for the multi-level professional, recording video at a maximum 4K at 120fps with a larger pixel pitch of 4,63µm – it offers higher dynamic range and greater light sensitivity. Combine these important features with interchangeable lenses from Olympus and Panasonic, SD Card/CFast 2.0 memory and encoding at H.264/H.265 or Apple ProRes to produce professional HD broadcast files for commercials, feature films, documentaries and streaming applications.

The dual touchscreen Ground Station is designed to support a solo pilot/cinematographer and is widely considered one of the best controllers available today. Rated at 1,000 nits for easy viewing in bright outdoor conditions, it also features fully programmable controls and external antenna options to extend flight distances to 11km (6.8 miles).

KEY FEATURES

Superior Image Quality and Camera System

Since the infancy of motion pictures, the camera has played an important role in storytelling allowing the viewer to imagine themselves in the moment and experience all the action and emotions through the lens. The Astra camera system, designed and manufactured by XDynamics allows you to capture the most amazing images even in the most challenging environments.

EVOLVE 2 sports an Astra M4/3 camera with a premium sensor and brushless gimbal system that brings unparalleled creative freedom to create compelling visual experiences that connect deeply with the audience. Designed for the multi-level professional, recording video at a maximum 4K at 120fps with a larger pixel pitch of 4,63µm – it offers higher dynamic range and greater light sensitivity. Combine these important features with interchangeable lenses from Olympus and Panasonic, SD Card/CFast 2.0 memory and encoding at H.264/H.265 or Apple ProRes and to produce grade HD broadcast files for commercials, feature films, documentaries and streaming applications.

Unparalleled Aerial Performance

EVOLVE 2 was designed from the ground up to provide an unparalleled flight experience to future-forward innovative pilots who strive to deliver the finest in aerial cinematography everyday. Proudly designed, manufactured and supported by the XDynamics team, the EVOLVE 2 challenges what is possible in the air for the contemporary filmmaker.

The fuselage design is the smallest multirotor drone platform to carry a m4/3 payload and is built on a monocoque frame of carbon fiber and weather resistant magnesium alloy. This advanced design delivers specifications that push the envelope with 33 minutes of flight time and an impressive 11km (6.8 mile) range. High power motors reach top speeds over 53mph while LiDAR sensor technology provides peace of mind for low altitude flyover maneuvers or foul weather take-offs and landings. This level of power and speed requires superior control offered by the EVOLVE 2 boasting one of the finest aircraft and camera controllers available today. The protective clam shell case offers dual touchscreens, 1,000 nit brightness and a grip, all designed for the solo, pilot/cinematographer and allows for simultaneous control of the aircraft and camera systems.

Strength, Durability and Resilience

Whereas other companies primarily invest in marketing and fancy campaigns, XDynamics prioritizes premium quality materials and workmanship. We design and manufacture virtually nearly every component of our aircraft and camera (except for sensors and lenses), maintaining complete control over quality and engineering. We believe this is the correct path to creating the highest quality and most durable drone platforms for aspiring filmmakers.

The concept of the EVOLVE platform began with the idea that strength and durability are paramount to creating the best aerial cinematic experience for the pilot and the audience. The EVOLVE 2 is built with a single carbon fiber fuselage with high tensile strength, yet maintaining its light weight and extreme weather resistance. Combine this aircraft with the all-weather proof clam shell designed Ground Station and you have a complete solution that delivers lasting, high-quality cinematography even in the most challenging environments.

High Performance, Small Footprint

Keeping our focus on the challenges presented to the modern cinematographer, we designed the EVOLVE 2 to fit into the reality of life on the road, in the air and sometimes even the back of a camel. The entire platform has been made to be lightweight, compact and practical for the professional film maker. The new EVOLVE 2 backpack is designed specifically to fit in the overhead compartment of commercial aircraft and be less conspicuous to average eye for security and safety while traveling. All of this while protecting the lightest drone platform with an Astra M4/3 camera and our award-winning Ground Station and all its accessories.

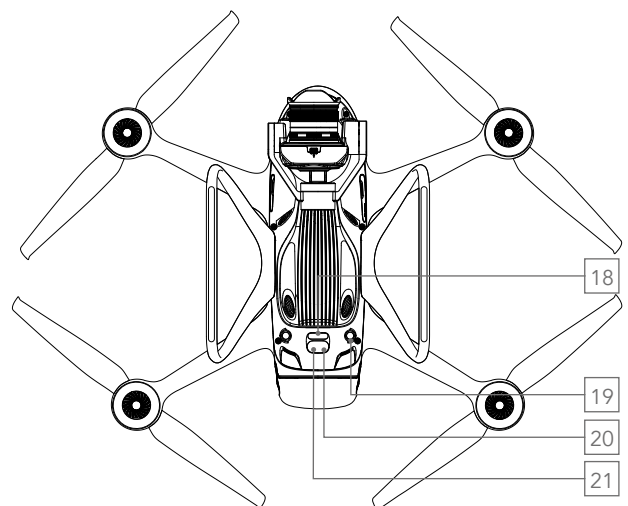
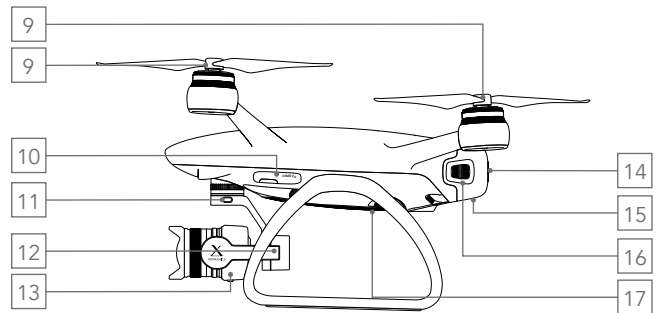
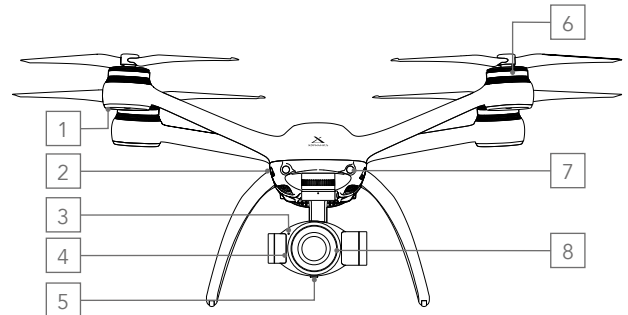
Professional Integrated Platform

Because professional filmmakers are looking to optimize their gear while making the most out of every situation, XDynamics created an integrated and modular drone platform. The EVOLVE 2 platform is light enough for travel, intuitive enough for a quick and easy set-up as well as solo operation, and highly adaptable to fit a wide range of production purposes, conditions and environments.

AIRCRAFT ANNOTATED DIAGRAM

AIRCRAFT

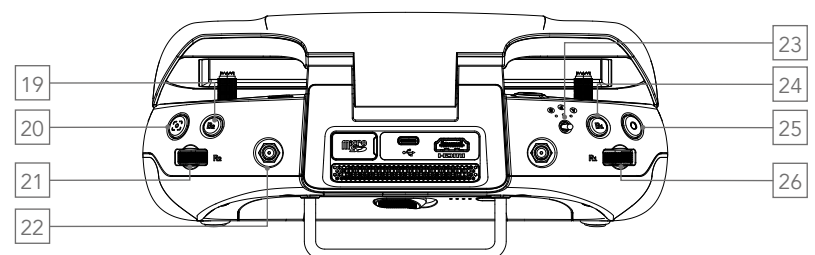
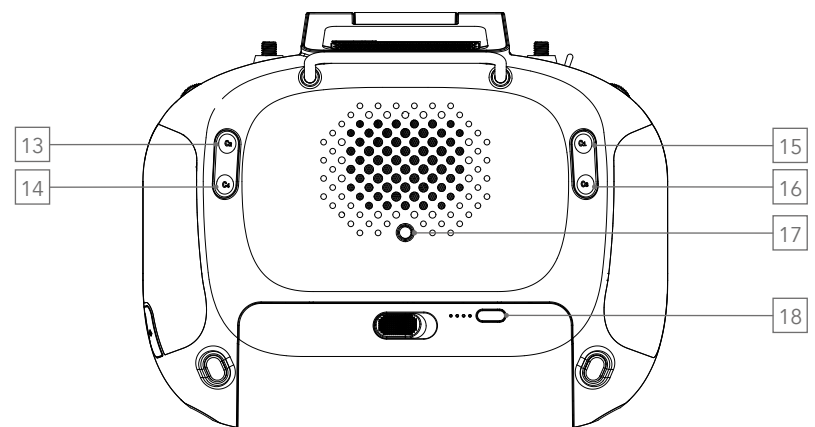
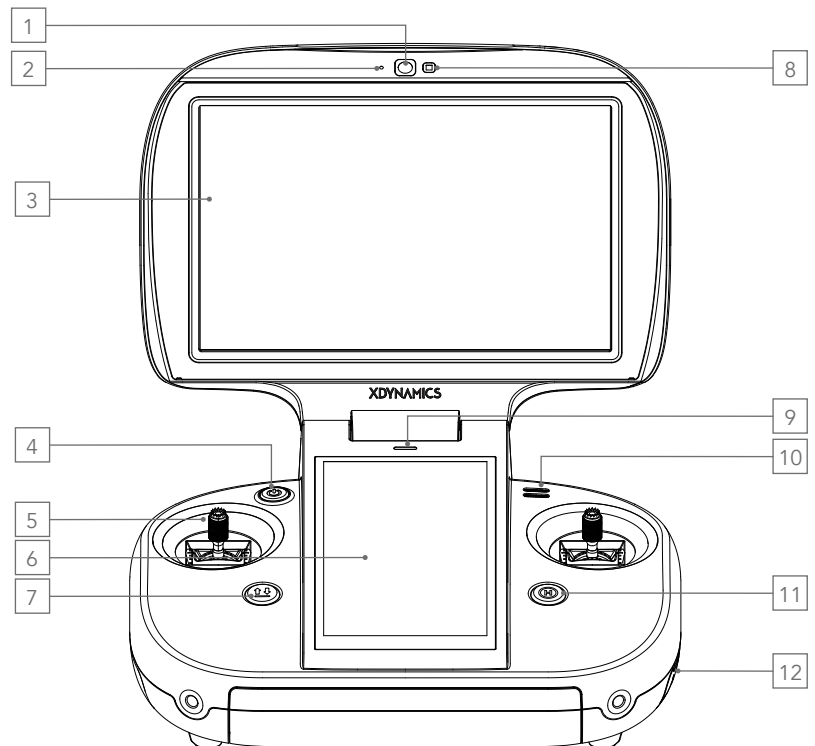
1. LED Light
2. Camera Micro SD Port / Micro USB / Pairing Button
3. Camera LED Status
4. Camera
5. Lens Release Button
6. Motor
7. Forward Vision System (inactive)
8. Lens
9. Propellers – 2 CW and 2 CCW
10. Camera CFast Port
11. Gimbal Release Button
12. Gimbal
13. Camera
14. Power On/Off Button
15.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



GROUND STATION ANNOTATED DIAGRAM

GROUND STATION

1. Front Camera
2. Microphone
3. 8-inch Touch Screen
4. Power On/Off Button
5. Control Sticks
6. 5.5-inch Touch Screen
7. Landing / Take-off Button
8. Light Sensor
9. LED Signal Indicator
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. Tripod
18. Battery Indicator Button
19. Customizable Button B2
20. Shutter Button
21. Roller (R2)
22. External Antenna Mount
23. Flight Mode Switch
24. Customizable Button B1
25. Record Button
26. Roller (R1)



AIRCRAFT

Aircraft Introduction
Inserting and Removing the Aircraft Battery
Turning On/Off the Aircraft Battery
Charging the Aircraft Battery
Aircraft Battery LED Indications
Aircraft LED Indicators
Ensure Correct Propeller Alignment
Attaching And Detaching The Propellers
Beginner Mode
Flight Modes
Home Point
Compass Calibration
Accelerometer Calibration
Gain and Expo
Aircraft Flight Control
Aircraft and Pilot Orientation

AIRCRAFT INTRODUCTION

Graceful by Nature. Strong by Design

The EVOLVE 2 is a graceful and well-balanced aircraft designed with both the strongest and lightest materials that not only withstand the tests of time and weather but also provide a unique, comfortable, intelligent, and safe flight experience. Taking inspiration from nature, the silhouette of the body is optimized to increase efficiency during flight.

Monocoque Chassis

The monocoque carbon fiber airframe is a structural skin system that supports loads with its external skin, similar to an egg. The design concept began with boats but quickly was adapted by the aircraft industry before being introduced to automotive racing by McLaren's MP4/1 Formula One car and ultimately spacecraft like the SpaceX Falcon 1.

Monocoque construction is ideal for aircraft and, when combined with carbon fiber, creates a lighter, faster and stronger body. Rather than relying on internal beams and other internal reinforcements to produce structural support, the EVOLVE 2 utilizes a single sheet of 3K twill carbon fiber to form the drone's airframe. We believe these modern materials and design provide the finest airframe available on any drone platform today.

Magnesium Undercarriage

Similar to the carbon fiber featured on the EVOLVE 2, the magnesium underbody allows for lighter weight while maintaining strength and durability. Magnesium alloy, which is 34% lighter than aluminum and 76% lighter than steel, is 20 times stiffer than thermoplastics featured on most other drones. The magnesium underbody also offers significantly greater shock absorption as compared to standard aluminum, for increased efficiency, improved flight times, and reductions in vibration and noise. The magnesium underbody features a heatsink design for impressive heat dissipation and cooling the aircraft during times of high usage.

3K Twill Carbon Fiber

XDynamics designed a custom carbon fiber airframe of the Evolve 2, which is intricately constructed over 26 stages from one sheet of carbon fiber by highly skilled technicians. With the highest strength-to-weight ratio and tensile strength over 50 times that of plastics (like most other drones), the EVOLVE 2 is designed to fly for many years.

Our custom 3K twill is stronger than other patterns and has higher elongation before failure. As compared to 6K and 9K patterns, 3K has a smaller bundle of fibers, thinner fabric and can be woven without affecting the stiffness and strength of the overall airframe, all while providing superior protection for the aircraft's sensitive components.

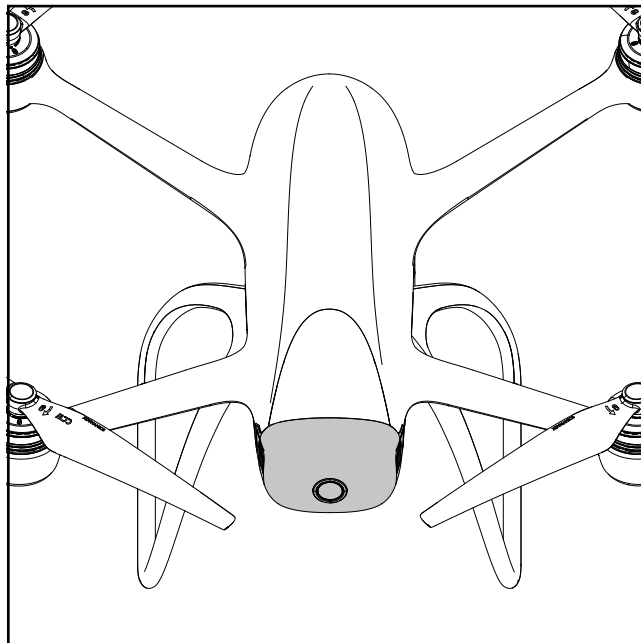
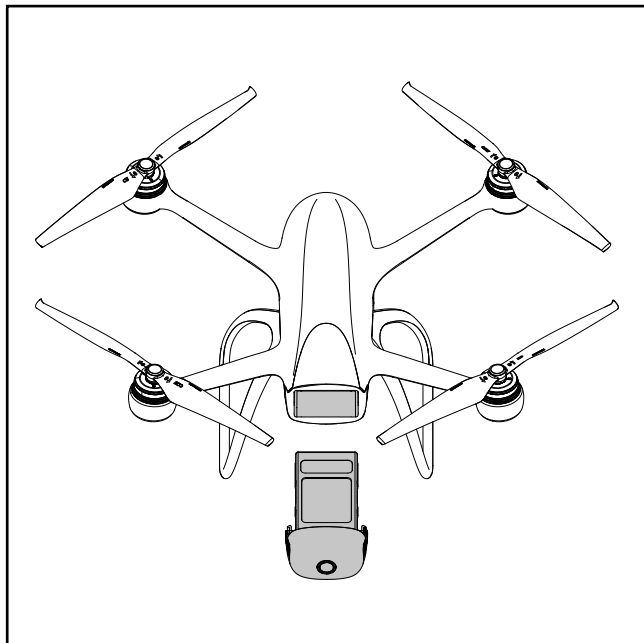
Quick Release Propellers

The EVOLVE 2's patented snap-on quick release mechanism provides a fast, safe, and secure method to snap on, lock and unlock the Dyna-WING 2 propellers. The dual safety system is designed with clockwise (black) and counterclockwise (white) icon markers on the propeller system as well as white/red lock icons, to ensure secure assembly of every flight.

INSERTING AND REMOVING THE AIRCRAFT BATTERY

INSERTING THE AIRCRAFT BATTERY

Be sure that the aircraft battery is fully charged before flying.



STEPS FOR AIRCRAFT BATTERY INSTALLATION

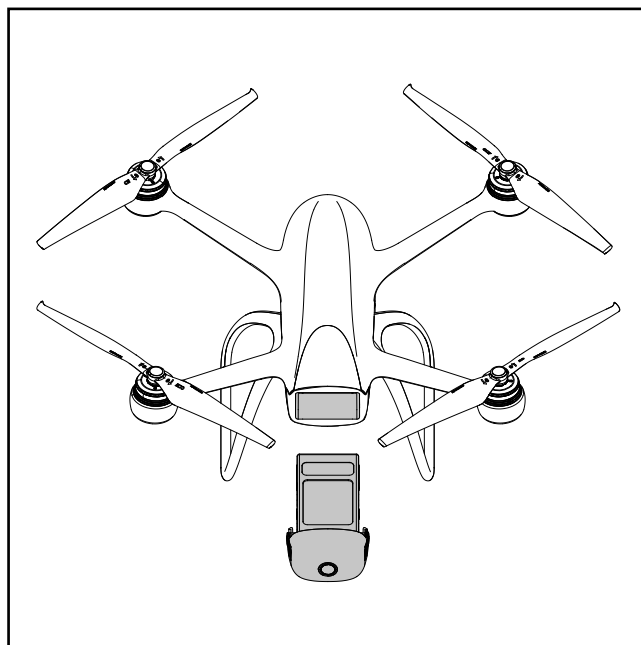
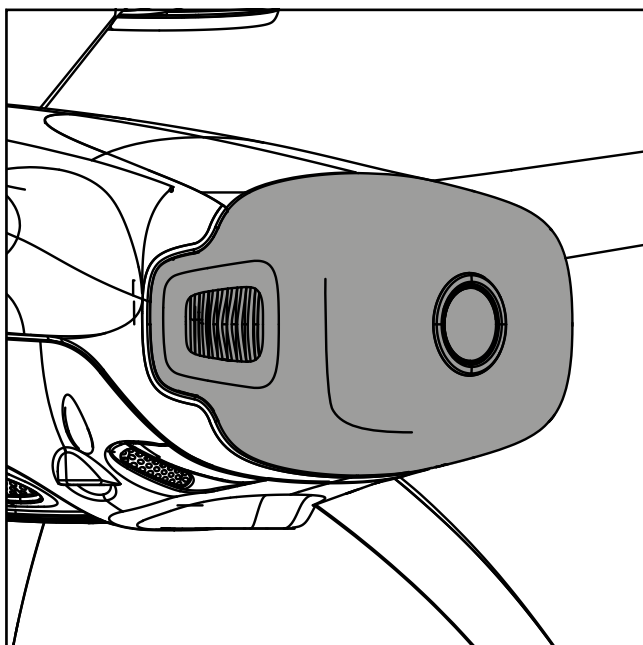
1. Ensure the battery is turned OFF .
2. Then ensure the orientation of the battery is correct (The OLED display with battery details should be facing upwards).
3. Insert by pushing the battery gently into the aircraft until the two latches of the battery securely engage into the aircraft.

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.



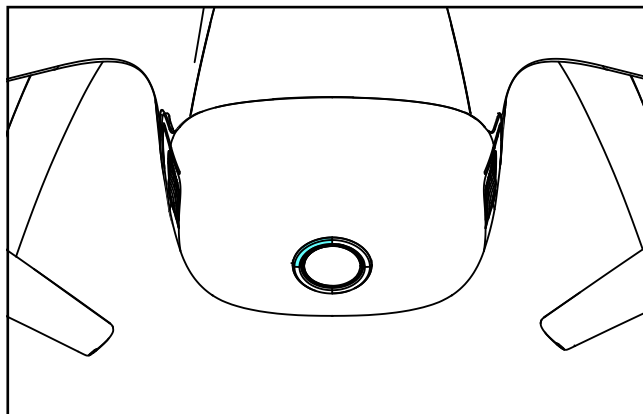
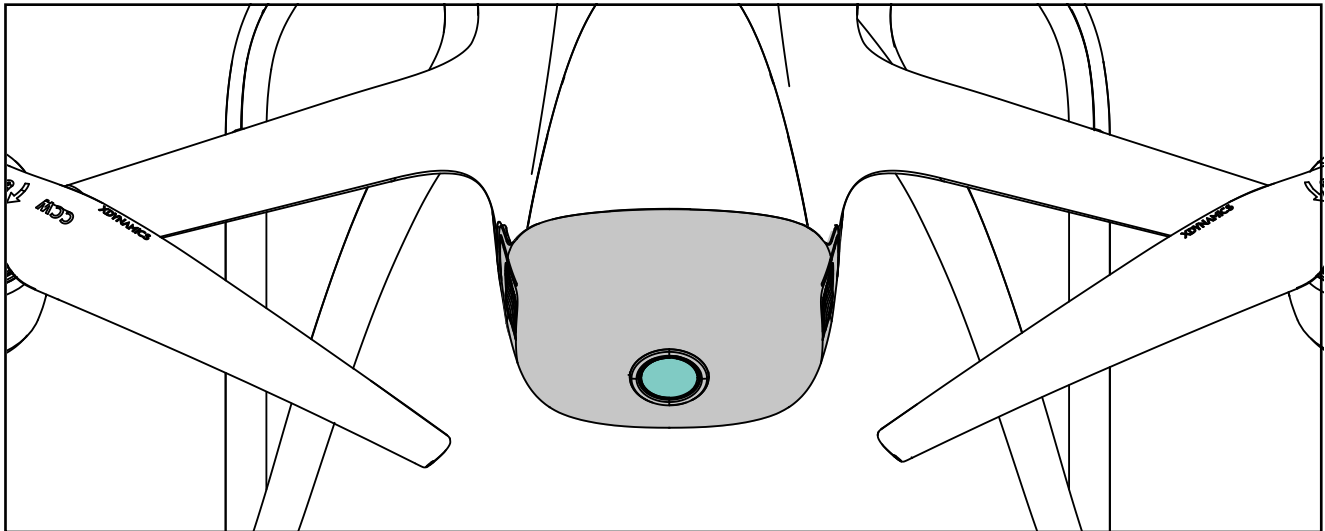
STEPS FOR REMOVING THE AIRCRAFT BATTERY

1. 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.

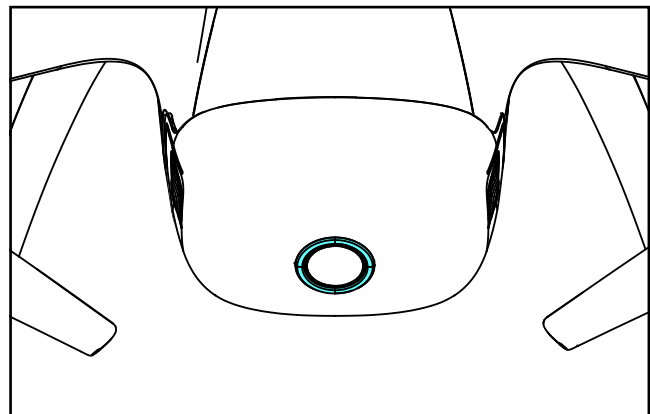
TURNING ON/OFF THE AIRCRAFT BATTERY

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

TURN ON THE AIRCRAFT



Press the power button once to check the battery level.



Press the power button once, then press again and hold for two seconds to turn the battery on. LED lights located underneath the 4 motors should light up when powered on.

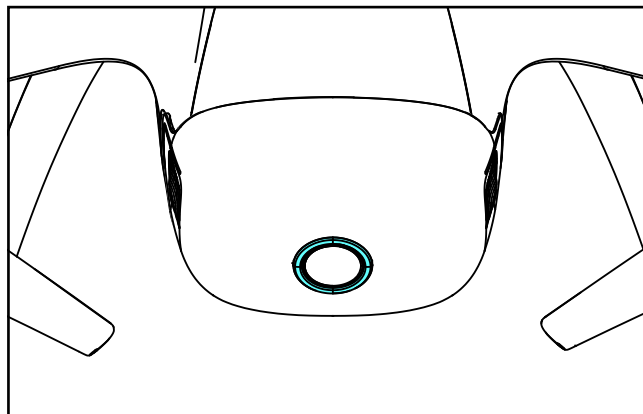
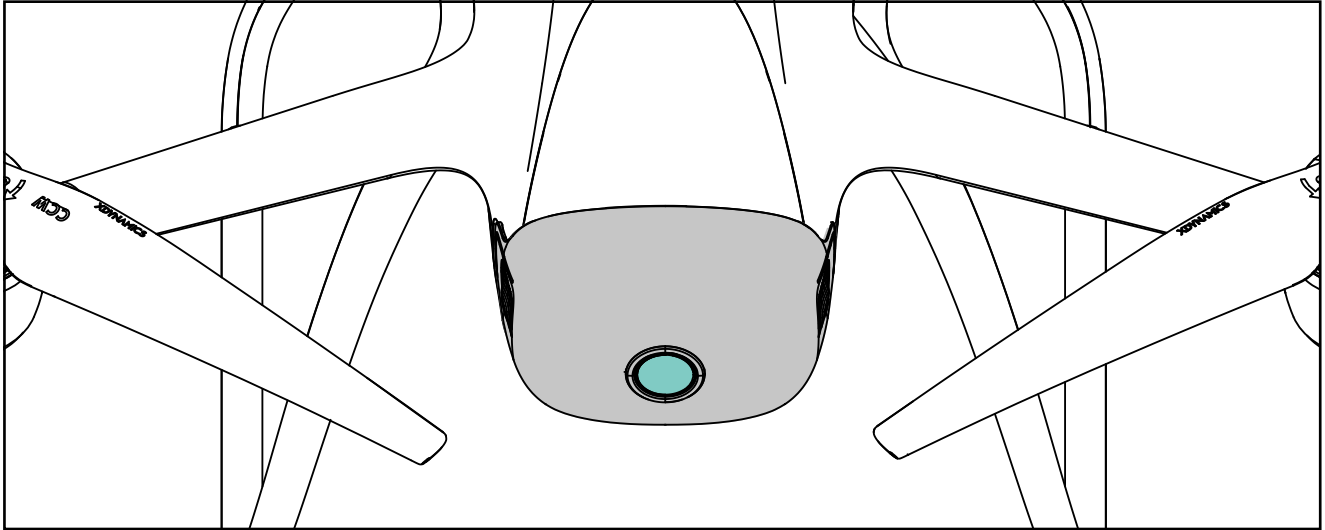


Never short out any of the pins of the battery or try to connect to any other equipment other than the EVOLVE 2 aircraft and the supplied charger.

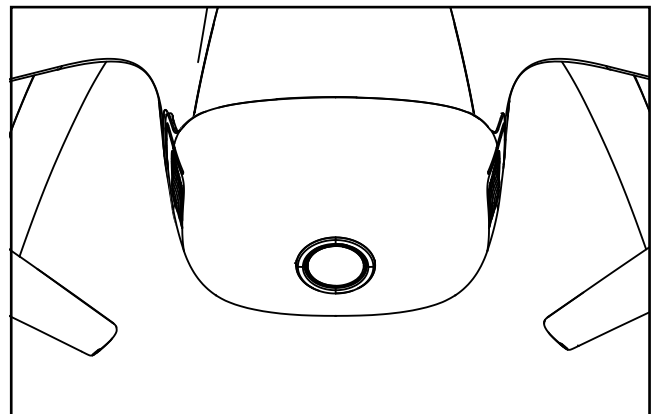


You can check the battery level by pressing the power button once even if the battery is not mounted into the battery compartment.

TURN OFF THE AIRCRAFT



Press the battery button once, then press again and hold for two seconds to turn the battery off. LED lights located underneath the 4 motors should turn off when powered off.



All lights on the battery button will turned off when the aircraft is powered off.



Make sure to remove the battery from the aircraft battery compartment when not in use to avoid accidentally turning it on.

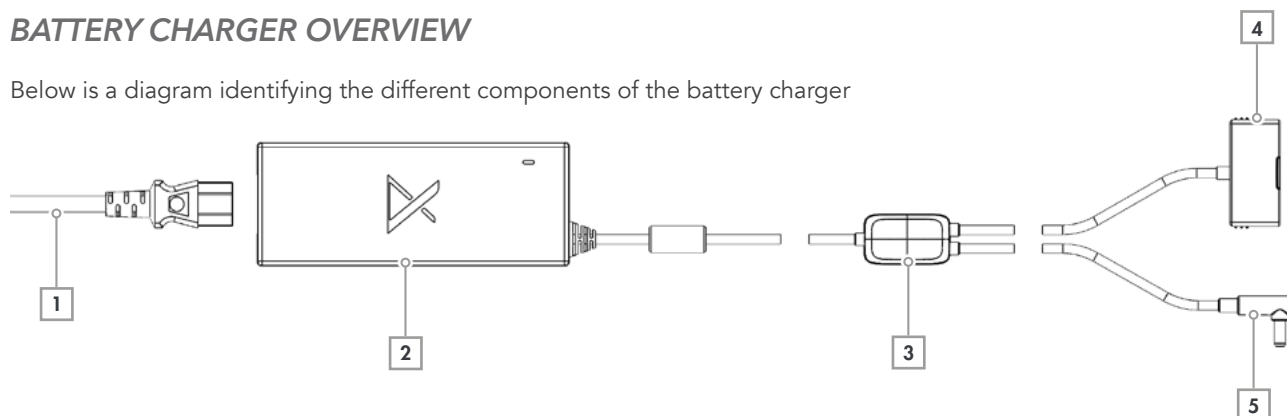


If the battery is still turned on when removed from the aircraft, ensure the battery connect terminals are left unobstructed to prevent short circuiting.

CHARGING THE AIRCRAFT BATTERY

BATTERY CHARGER OVERVIEW

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

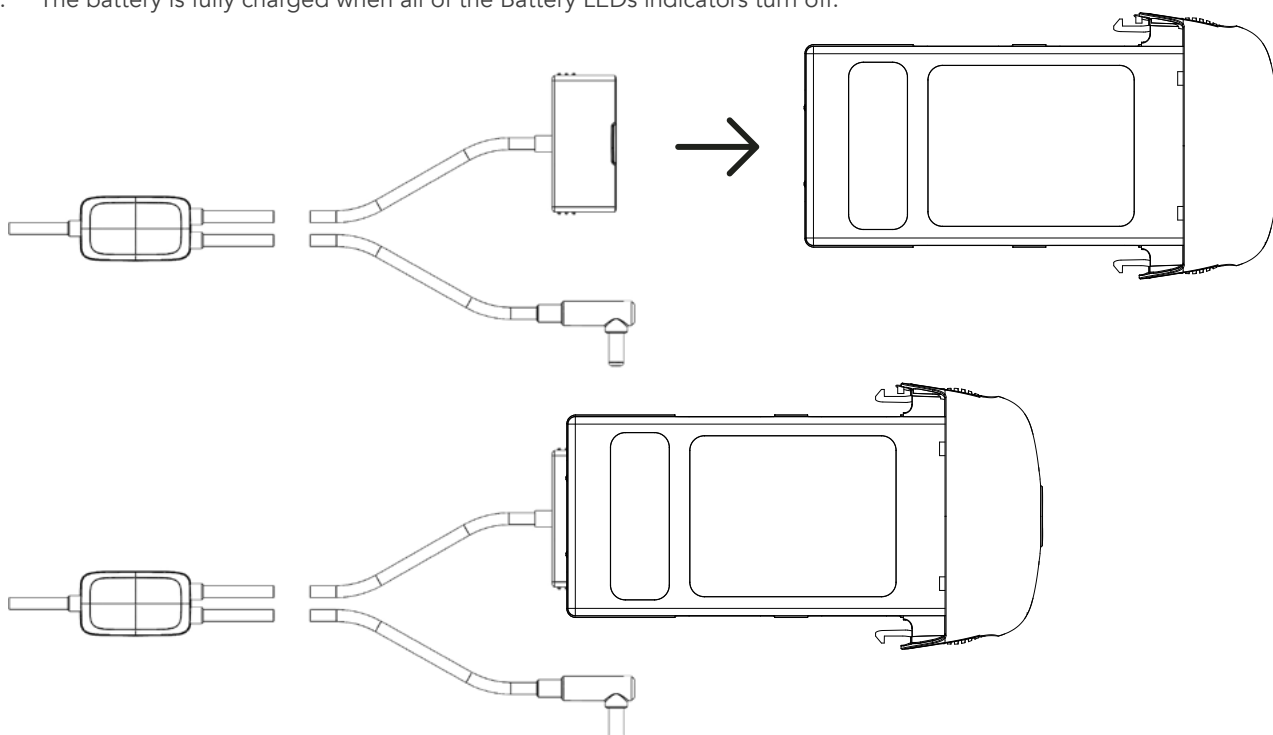


COMPONENTS OF THE BATTERY CHARGER

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

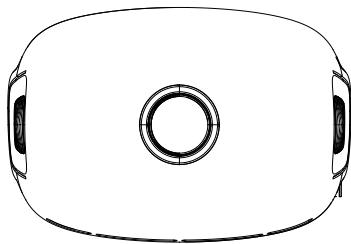
CHARGING THE AIRCRAFT BATTERY

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



AIRCRAFT BATTERY LED INDICATIONS

When determining the estimated flight time and distance range of any aircraft flight, the user should 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	LED 1	LED 2	LED 3	LED 4
0 % - 12 %	⦿	⦿	⦿	⦿
13% - 37%	●	⦿	⦿	⦿
38% - 62%	●	●	⦿	⦿
63% - 94%	●	●	●	⦿
95% - 100%	●	●	●	●

Status when switch on

BATTERY LEVEL	LED 1	LED 2	LED 3	LED 4
0% - 12%	⦿	○	○	○
13% - 24%	●	○	○	○
25% - 49%	●	⦿	○	○
50% - 62%	●	●	○	○
63% - 74%	●	●	⦿	○
75% - 94%	●	●	●	⦿
95% - 100%	●	●	●	●

● = ON ○ = OFF ⦿ = BLINKING