

AQUILA 3F

USER MANUAL



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01

Product Profile

This Section describes the features of the product, guide the preparation of the aircraft before flight, and lists the components of the aircraft and remote controller.

Product Profile

Introduction

AQUILA3F is a small quad-rotor, high-precision aerial survey drone with 76-minute flight time and IP4 waterproofing. Upgrade your next mapping mission with the AQUILA3F - the most compact and accurate low altitude mapping solution.

Based on the new H7 flight control system, it is compatible with PX4 and ArduPilot dual-system open source architecture. A new dual RTK module is integrated directly into the AQUILA3F, providing real-time, centimeter-level positioning data for improved absolute accuracy on image metadata. At the same time, it has stronger anti-magnetic interference ability and precise positioning ability. In addition to optimized flight safety and precise data collection. Fit the AQUILA3F to any workflow, with the ability to connect this positioning system to the NTRIP (Network Transport of RTCM via Internet Protocol) using a 4G dongle or WiFi hotspot.

Users can also create customized solutions through the newly added Phalanx G1 expansion board module and customized auxiliary equipment according to business characteristics, so that AQUILA3F can be closely integrated with the operation scene.

This device complies with Part 15 of the FCC Rules.

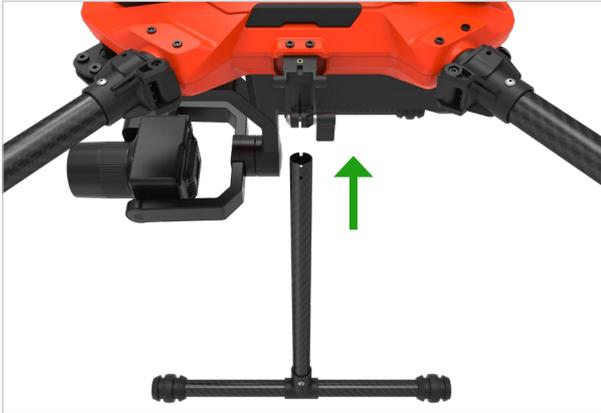
Operation is subject to the following two conditions :

- (1) This device must accept any interference received and
- (2) this device must accept any interference received, including interference that may cause undesired operation

Preparing the Aircraft

1. Installing the Landing Gears

Install the landing gears, tighten the latch clockwise, and make sure it's tight.



2. Mounting the Gimbal and Camera



1. Align the white and red dots and insert the gimbal.
2. Rotate the gimbal lock to the locked position.

After installation, make sure that the gimbal lock is locked in place.

Make sure to press down the Gimbal Detachment button when rotating the gimbal lock to remove the gimbal and camera. The gimbal lock should be fully rotated when removing the gimbal for next installation.

* The camera is a separate option, and the price is added according to the camera type

3. Battery Installation

Slide battery into the battery compartment according to the arrow's direction as shown below.

When the upper and lower buckles on the battery are in place, a click sound indicates the battery is securely installed. Failure to do so may affect the flight safety of your aircraft.



Make sure to use included batteries, Do not use any other type of batteries.

4. Turning on the Aircraft

Turn on/off :

Short press the power button on the aircraft once to turn on the battery; long press for 2seconds to turn off the battery. The indicator light is always on after turning on the power.



Aircraft Overview



- 1. Propellers
- 2. RTK Modules
- 3. Frame Arms
- 4. Gimbal Camera



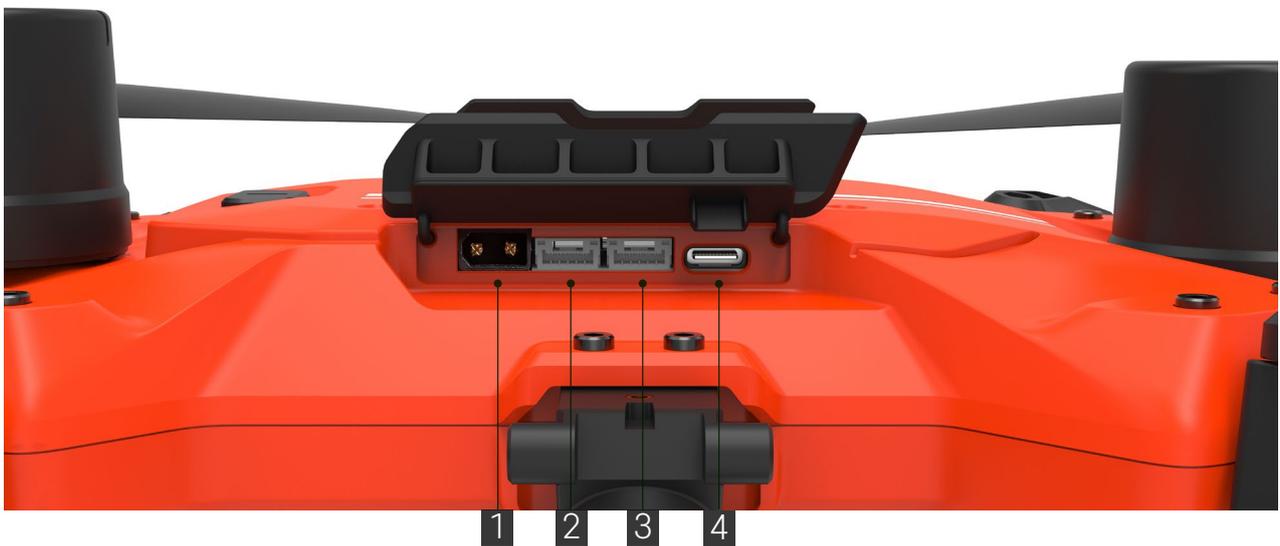
- 5. Motors
- 6. Landing Gear
- 7. Power Button
- 8. Transmission

Expansion Port Overview



- 1. Expansion Board USB-C Port (Debug Port)
- 2. Serial Interface D1 (Debug Port)

- 3. Serial Interface D2 (Debug Port)
- 4. Serial Interface D3 (Debug Port)



- 1. External Output Power Port (21V-26V)
- 2. Ethernet Port E1 (Debug Port)

- 3. Ethernet Port E2 (Debug Port)
- 4. FC USB-C Port (Debug Port)

Aircraft

This section introduces the aircraft components, features and functions.

Aircraft

Profile

The AQUILA includes a flight controller, a communication system, a positioning system and an Flight Battery. This section describes the functions of these components.

Aircraft Status Indicators

The AQUILA has Front LEDs and Aircraft Status Indicators.
The positions of these LEDs are shown in the figure below:



The Front LEDs show the orientation of the aircraft. The Front LEDs glow solid white when the aircraft is turned on to indicate the front (or nose) of the aircraft. The Aircraft Status Indicators communicate the system status of the flight controller. Refer to the table below for more information about the Aircraft Status Indicators.

Aircraft Status Indicator Description

Normal:

Altitude Mode : Fast blue flashing

Position Mode : Alternate red and green flashing

RTL Mode : Fast yellow flashing

Mission Mode : Fast purple flashing

Propellers

Propellers Usage Guide

Only use Codev Dynamics approved propellers. Do not mix propeller types.

Ensure to check that the propellers and motors are installed firmly and correctly before each flight.

Ensure that all propellers are in good condition before each flight. Do not use aged, chipped, or broken propellers.

To avoid injury, stand clear of and do not touch propellers or motors when they are spinning.

Replacing the Propellers

In order to replace the propellers, use the H2.5 hex key with ball-end.



Propeller blades are sharp, please handle with care.

Flight Battery

The flight battery is specially designed for AQUILA. It uses a brand-new high-performance battery. Please be sure to fully charge the battery before using it for the first time. Must use the special charger provided by Codev Dynamics for charging.

Capacity :	10000mAh
Voltage :	26.4V
Battery Type :	Lipo 6S
Energy :	231wh

Please read carefully and strictly abide by the requirements of Codev Dynamics in this manual, disclaimer, and battery surface before using the battery. The user shall bear the consequences caused by failure to use it as required.

Warnings:

1. The Flight Battery is significantly reduced when flying in low temperature environments (temperatures below 5°C).
2. Ensure that the battery is fully charged and the cell voltage is at 4.4V before each flight.
3. Enter the flight as soon as FLYDynamics App displays the "Low Battery Level Warning" in low temperature environments.
4. You will still be able to control the aircraft's movement when this warning is
5. triggered.

In extremely cold weather, the battery temperature may not be high enough even after warming up. In these cases, insulate the battery as required.

In order to ensure optimal performance of the battery, keep the battery temperature above 7. 16°C.

In low temperature environments, it will take a longer time for the batteries to warm up. It is recommended to keep the battery warm before use to reduce the warm-up time.

Flight

This section describes flight restrictions and safe flight practices.

Flight Environment Requirements

1. Do not use the aircraft in bad weather such as where wind speeds exceed 15m/s.
2. When flying in open areas, tall and large metal structures may affect the accuracy of the on board compass and GNSS system. Make sure to operate the aircraft by following the prompts in the app.
3. Avoid obstacles, crowds, high voltage power lines, trees, and bodies of water.
4. Minimize interference by avoiding areas with elevated levels of electromagnetism, including base stations and radio transmission towers.
5. Aircraft and battery performance are subject to environmental factors such as air density and temperature. Be very careful when flying at high altitudes, as battery and aircraft performance may be affected.

Preflight Checklist

1. Remote controller, Flight Battery, and display device are fully charged.
2. Landing gears are mounted firmly, and batteries are locked firmly.
3. All the devices' firmware is up-to-date.
4. Ensure that a microSD card has been inserted.
5. The Camera and Gimbal work normally after the power is turned on.
6. Motors can start and are functioning normally.
7. The FlyDynamics App is successfully connected to the aircraft.
8. Do not face the battery connector downwards to the ground to avoid getting dust or water into the battery connector.
9. Make sure that the gimbal dampener is without obvious wear and tear, and the gimbal anti-drop has been fastened.

Appendix

Appendix

Specifications

Aircraft	AQUILA3F
Dimensions	590*575*285mm
Diagonal Wheelbase	780mm
Weight	Approx. 1.6 kg (without batteries) Approx. 2.8 kg (with one battery)
Max Payload	3kg
Operating Frequency	2.400 - 2.4835 GHz
Transmitter Power	2.4000 - 2.4835 GHz ; 29.5 dBm (FCC) ; 18.5dBm (CE) 18.5 dBm (SRRC) ; 18.5dBm (MIC)
Hovering Accuracy	Vertical : ± 0.5 m (GPS enabled) ± 0.1 m (RTK enabled) Horizontal : ± 0.5 m (GPS enabled) ± 0.1 m (RTK enabled)
RTK Positioning Accuracy	1cm + 1ppm (Horizontal) 1.5cm + 1ppm (Vertical)
Max Angular Velocity	120°
Max Pitch Angle	30°
Max Takeoff/Land speed	6~10m/s (configurable)
Max Speed	12m/s
Service Ceiling Above Sea Level	5000m
Max Wind Resistance	15m/s
Max Flight Time	76min (no load)
GNSS	Dual GPS-GPS, GLONASS, Galileo, BeiDou
Operating Temperature	-10° C to 50° C
IP Rating	IP53

Flight Battery	LPB610HV
Capacity	10000mAh
Voltage	26.4V
Battery Type	Lipo 6S
Energy	231wh
Weight	1.2kg
Operating Environment	0° C to 40° C (32° F to 104° F)

Firmware Update

Aircraft firmware upgrade

Please download the latest Aircraft firmware from CodevDynamics official website before upgrading.

1. Connect the aircraft to a PC with a Type-C USB cable.
2. Run the FlyDynamics. First select the Gear icon (Vehicle Setup) in the top toolbar and then Firmware in the sidebar.
3. Please unplug your Pixhawk and/or Radio from USB. Then plug your device via USB to start firmware upgrade.
4. Tap to Advanced settings , choose Custom firmware file, Click the OK button to start the upgrade.
5. Restart the device after the firmware update is complete.

FlyDynamics APP firmware upgrade

Please download the latest FlyDynamics APP firmware from CodevDynamics official website before upgrading.

Please connect the latest App firmware to the remote control via a USB Flash Disk or SD card, select the installation file in the file manager, and overwrite the installation.

Extended Screw Holes Description

Be sure to use the specified type of screw to avoid damaging the screw hole thread and ensure that the accessories are installed firmly.



Customer Support Center

ARGOSDYNE Customer Support Center

☎ 070-5102-1388

For any inquiries regarding the construction of the Aquila 2 drone and drone automatic operation system - Rondo Mobility System, please use the ARGOSDYNE Customer Support Center.

※ For customers who use communication networks such as LTE/wifi through the Rondo Mobility System, problems that arise related to the use of rate plans, etc. can be resolved by contacting the telecommunication company with which you have a contract.

Product maintenance

The free maintenance period for the Aquila 2 drone is one year from the date of purchase. Except in cases where there is a defect in the product itself, free support is not provided for matters caused by the user's negligence or natural disasters.

Feedback about this document

If you would like to help us improve this document, please send suggestions, comments, or errors to info@argosdyne.com.



If damage to the product occurs due to a change in the intended use of this product or a change in the settings, we will not be held liable due to the customer's negligence.

Argosdyne Co., Ltd. (Representative : Jeong Seung-ho)

Business number: 466-86-00994

Address: A-1306, 58-1 Giheung-ro, Giheung-gu, Yongin-si, Gyeonggi-do,
Republic of Korea

Tel. 070-5102-1388 | Fax. 031-274-5041 | Web. www.argosdyne.com

