GAIA 160HY-Hybrid DJI A3 PRO

User Manual

FOXTECH

Contents

Product Profile

Introduction

FOXTECH GAIA 160HY-Hybrid A3 PRO hexacopter is a long flight time hexacopter equipped with gasoline-electric hybrid power system and DJI A3 Pro triple-modular redundancy flight controller which ensuring safe and stable operation at all times. With a maximum flight time of 5 hours, take off weight of 19.5kg, Gaia 160HY can meet specific needs across a range of industries. Its carbon fiber material and mechanical design, with quick-release arms make it easy to transport, store, and prepare for flight.

Highlighted Features

The heart of GAIA 160HY is the on board NOVA 2000 generator. With which the max take-off weight can reach 19.5kg (Default power system), and the max flight time is about 5 hours. This 2000W NOVA generator is the world record keeper by completing 100km sea bay flight in 175 minutes.

The DJI A3 Pro's three GPS modules and IMUs add triple modular redundancy to greatly reduce the risk of system failure. It is fully compatible with the DJI Onboard and Mobile SDKs, allowing developers to optimize the flying platform for specific applications.

The GAIA 160HY is compatible with Foxtech FH series zooming camera and gimbals, Foxtech Seeker series camera and gimbals and DJI series camera and gimbals for professional aerial photography and industrial applications.

The DJI Lightbridge 2 HD video downlink is integrated into the remote controller, allowing real-time camera footage to be displayed in the DJI GO app.

Assembled View
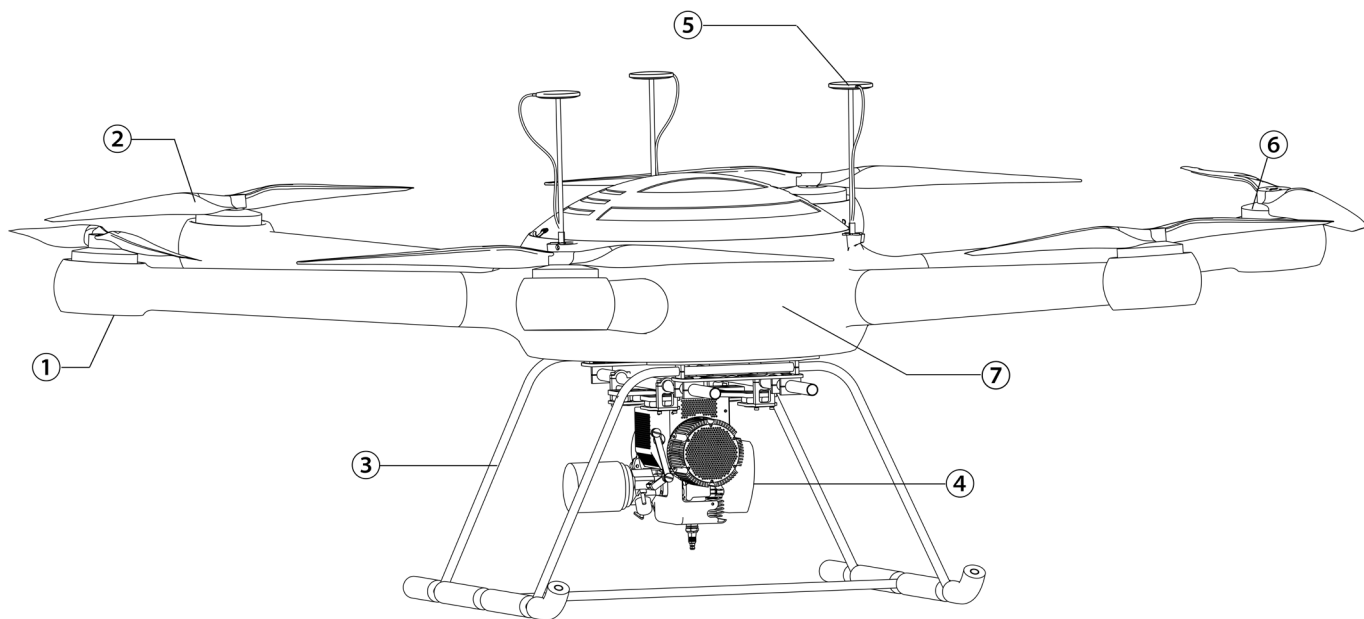
① T-MOTOR Flame 60A ESC

② Foxtech Supreme 3010T Propeller

③ Landing Gear

④ NOVA-2000 Generator

⑤ DJI A3 Pro Flight Control GPS

⑥ T-MOTOR U8II KV85

⑦ GAIA 160HY-Hybrid

This content is subject to change.

Download the latest version from

https://www.foxtechfpv.com/gaia-160-hybrid-hexacopter-arf-combo.html

Specifications

Aircraft

|	
Structure	
Wheelbase	1600mm
UAV Dimension(unfolding)	1600mmx1600mx680mm
UAV Body Dimension(Without Arms)	800mmx800mx500mm
Dimensions(NOVA-2000 Generator)	192mmx215mmx222mm
Shipping Dimension	8900mmx8800mmx6700mm
Shipping Weight	104kg(Throw Weight)
Weight(NOVA-2000 Generator)	4kg
No Payload Weight	15.5kg(No Fuel)
Max Take-off Weight	19kg
Propeller	Supreme 3010T Propeller
Motor	T-Motor U8II KV85
ESC	T-Motor Flame 60A ESC
Flight Controller	DJI A3 Pro Flight Control
Radio	DJI Lightbridge 2+Remote Controller Channel Expansion Kit
Flight-time with 1KG Payload	≥4 Hours
Flight-time with 2KG Payload	≥3 Hours
Max Speed	15m/s
Max.Flight Height	≤2000m
Max.Ascending Speed	5m/s
Max.Descending Speed	4m/s
Working Temperature	-10℃~+45℃
Max Generator Output	2000W
Average Generator Output	1800W
Voltage	48V
Fuel Consumption	1.5L/H(Max)
Tank	3.5L(Customized tank are available. Max tank volume is 8L.)
Battery	6s 3300mAh / 12s 1800mah

⚠ *NOVA-2000 generator is suitable for those multicopters whose power is still lower than 1800w even with 6kg generator system(including generator, fuel tank and 1L gasoline).

*The specifications above is standard combo. For customized application solutions, please contact Foxtech sales.

Installation

Power System

1. Fix T-Motor U8II KV85 motors and Flame 60A ESC on arms.

2. Install DJI A3 Pro and arrange cables.

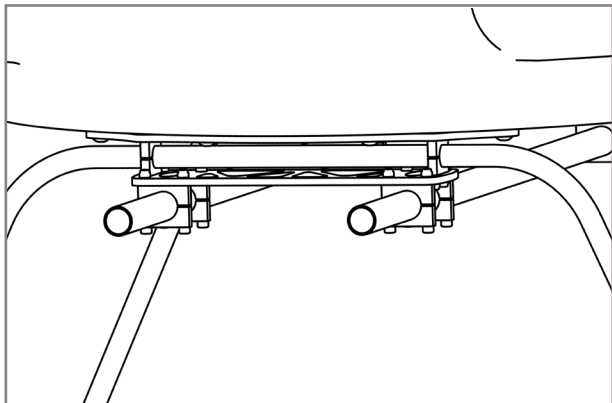T-MOTOR U8II KV85

T-MOTOR Flame 60A ESC

DJI A3 Pro
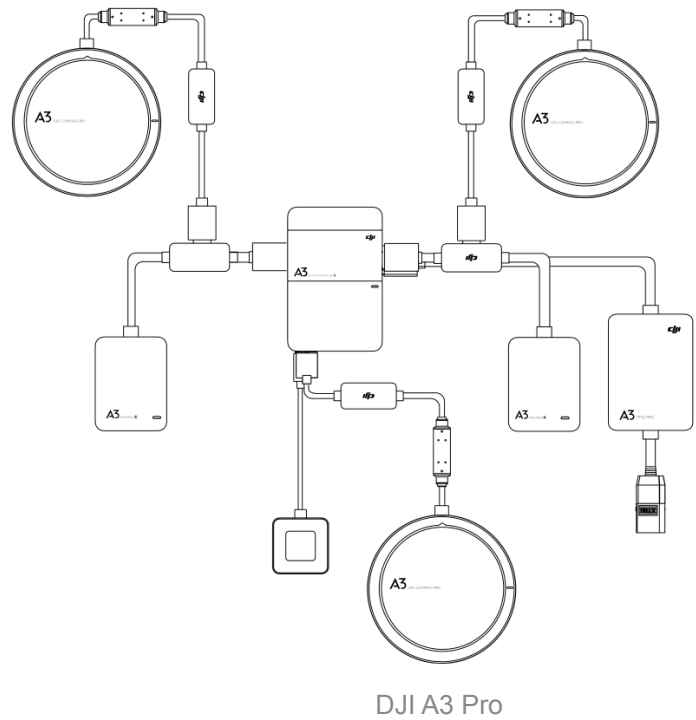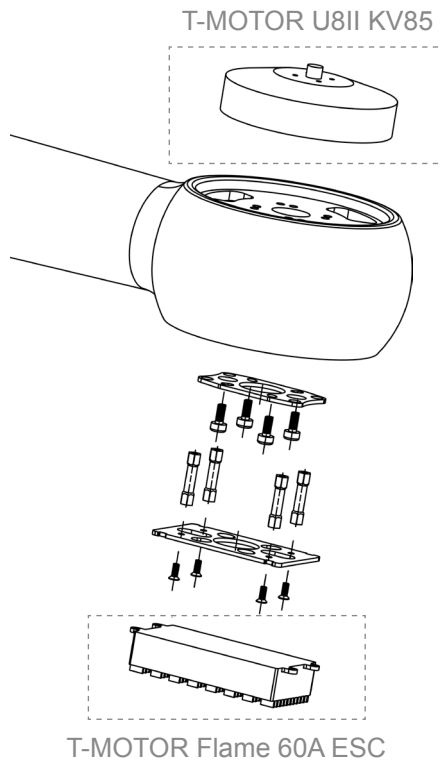
Generator System

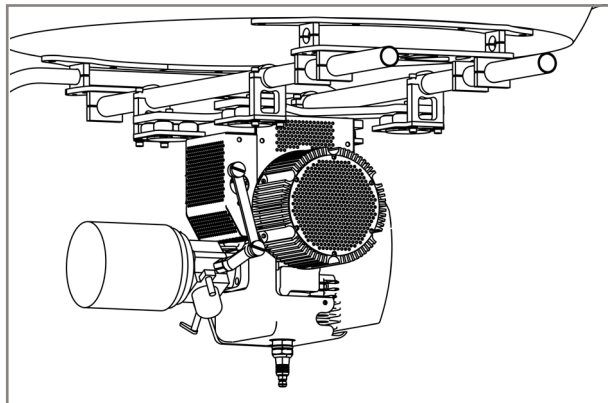1. Connect the fuel hose and the return hose. Mount the fuel tank.

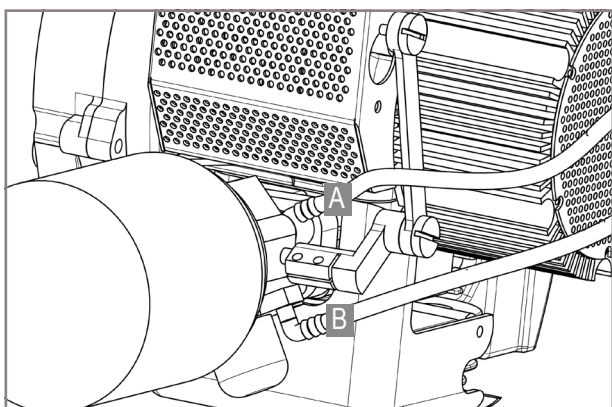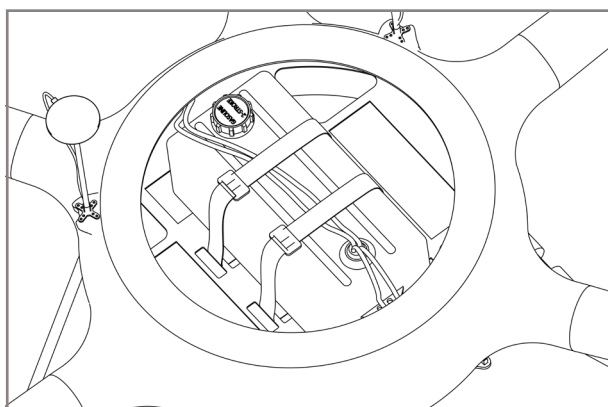   (For more information, download NOVA-2000 hybrid generator manual.

   https://www.foxtechfpv.com/foxtech-nova-2000-generator.html)

Generator Loading Kit

Mount the NOVA-2000 Generator

A: Fuel Hose   B: Return Hose

Mount the Fuel Tank

Generator System Connection Illustrator

Receiver

DJI Lightbridge 2

FC Power Supply

Gimbal Power Supply

ESC Power Supply

General Power Supply

ESC

6S 3300mAh x2

4S 1800mAh x3

Control Unit

Liquid Level Sensor

Inlet Hose

Outlet Hose

Fuel Tank
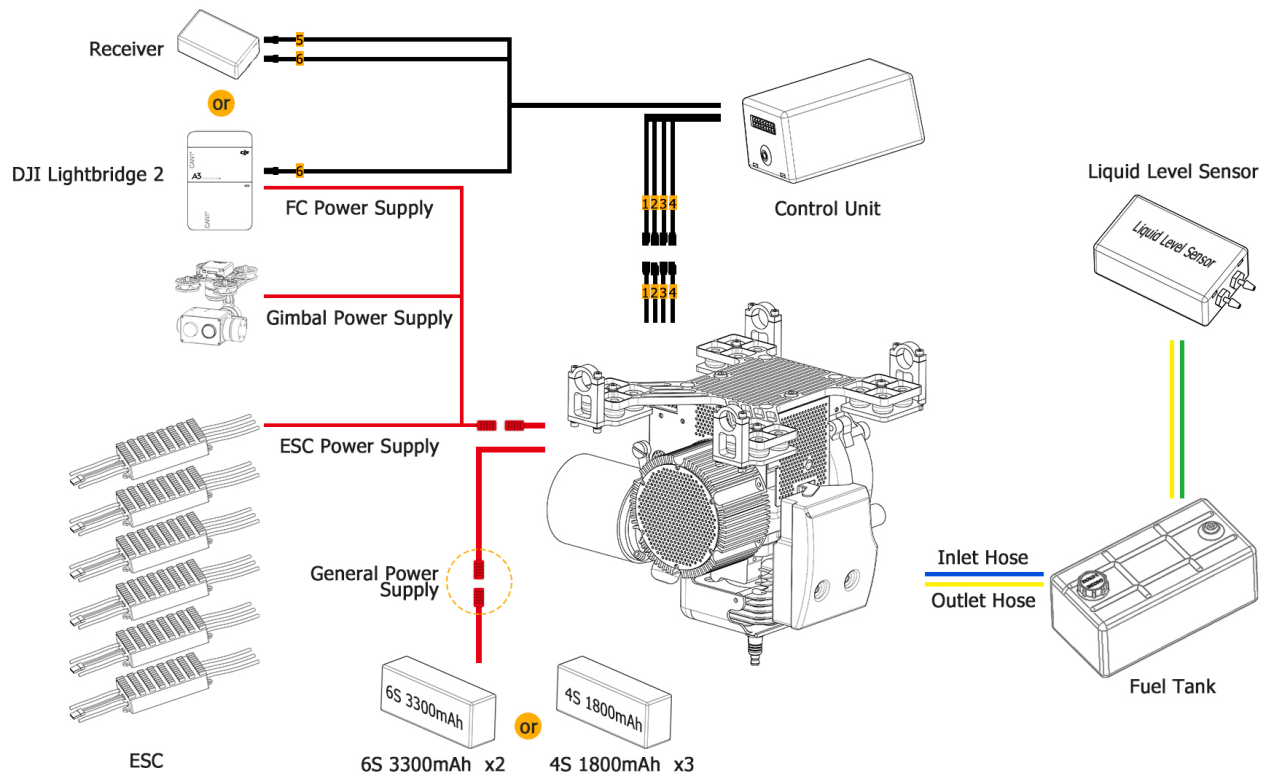
Compatible Gimbals

1.Foxtech Seeker Series Camera and Gimbals

| Seeker-10 | Seeker-18 | Seeker-18 IR | Seeker-30 | Seeker-30 TR |

2.Foxtech FH Series Camera and Gimbals

| FH310IR-TR | FH310Z | FH318/FH318Z | FH336-TR |

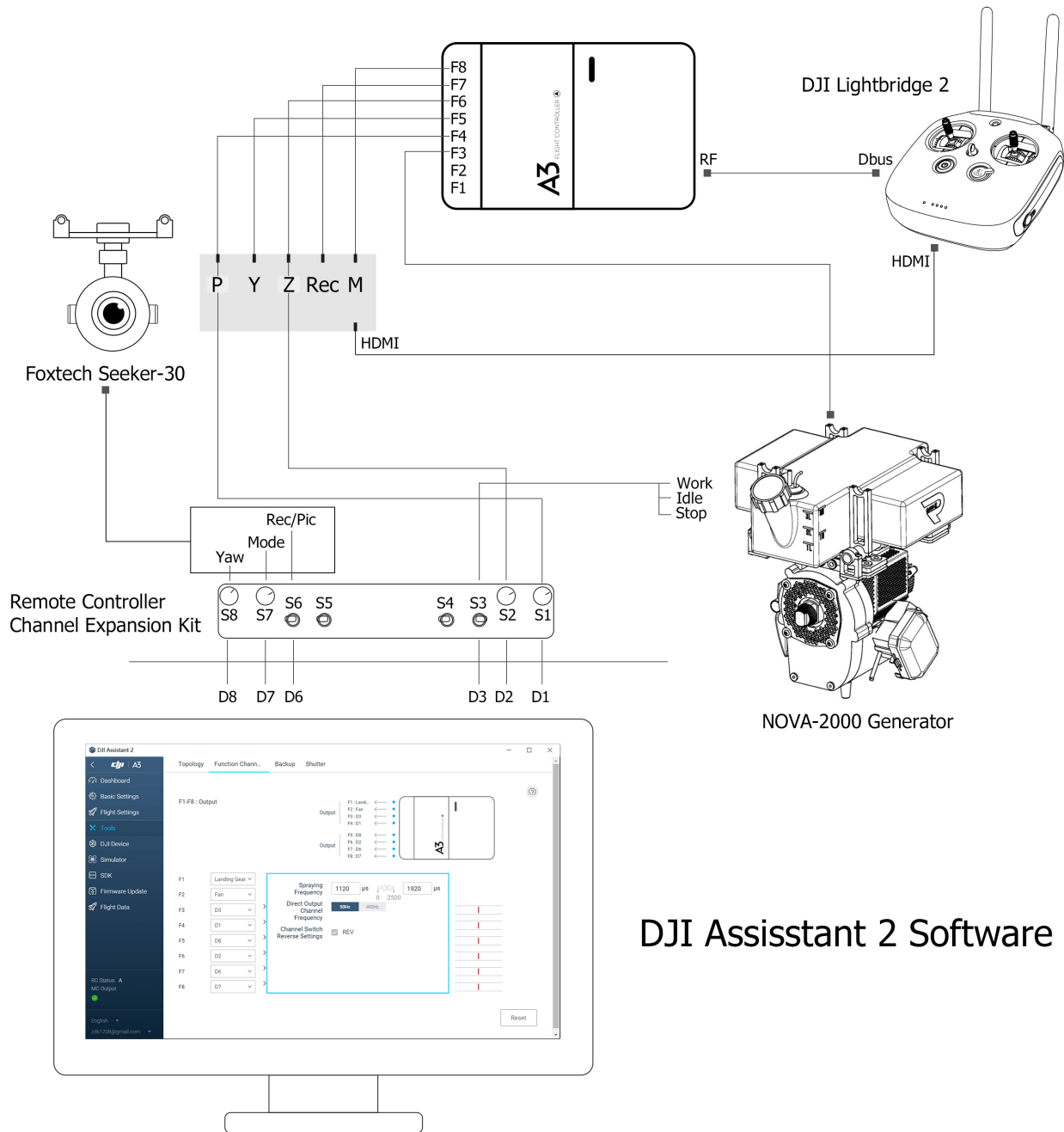3.DJI Series Camera and Gimbals

| Zenmuse XT | Zenmuse X5 | Zenmuse X3 |

Foxtech Seeker-30 Connection Illustrator

Foxtech Seeker-30

DJI Lightbridge 2

NOVA-2000 Generator

Remote Controller Channel Expansion Kit

DJI Assisstant 2 Software

Flight

Flight Environment

1.Do not use the aircraft in adverse weather conditions including rain, snow, fog, and wind speeds exceeding 8 m/s.

2.Only fly in open areas. Tall buildings and steel structures may affect the accuracy of the compass and the GPS signal.

3.Avoid flying near obstacles, crowds, high voltage power lines, trees and bodies of water.

4.Avoid flying in areas with high levels of electromagnetism, including mobile phone base stations and radio transmission towers.

5.Aircraft and battery performance is subject to environmental factors such as air density and temperature. Be very careful when flying over 8,202 feet(2,500 meters) above sea level as the battery and aircraft performance may be reduced.

Pre-Flight Checklist

Before each flight, make sure:

1. All firmware is up-to-date.

2. The remote controller, Batteries and your mobile device are fully charged.

3. All the GPS-Compass Pro are unfolded and the arrows on the GPS-Compass Pro point toward the front of the aircraft.

4. All cables are connected correctly and firmly.

5. The DJI GO app is connected to the aircraft.

6. Motors start properly and are functioning as normal.

7. NOVA primer pump is filled with petrol.
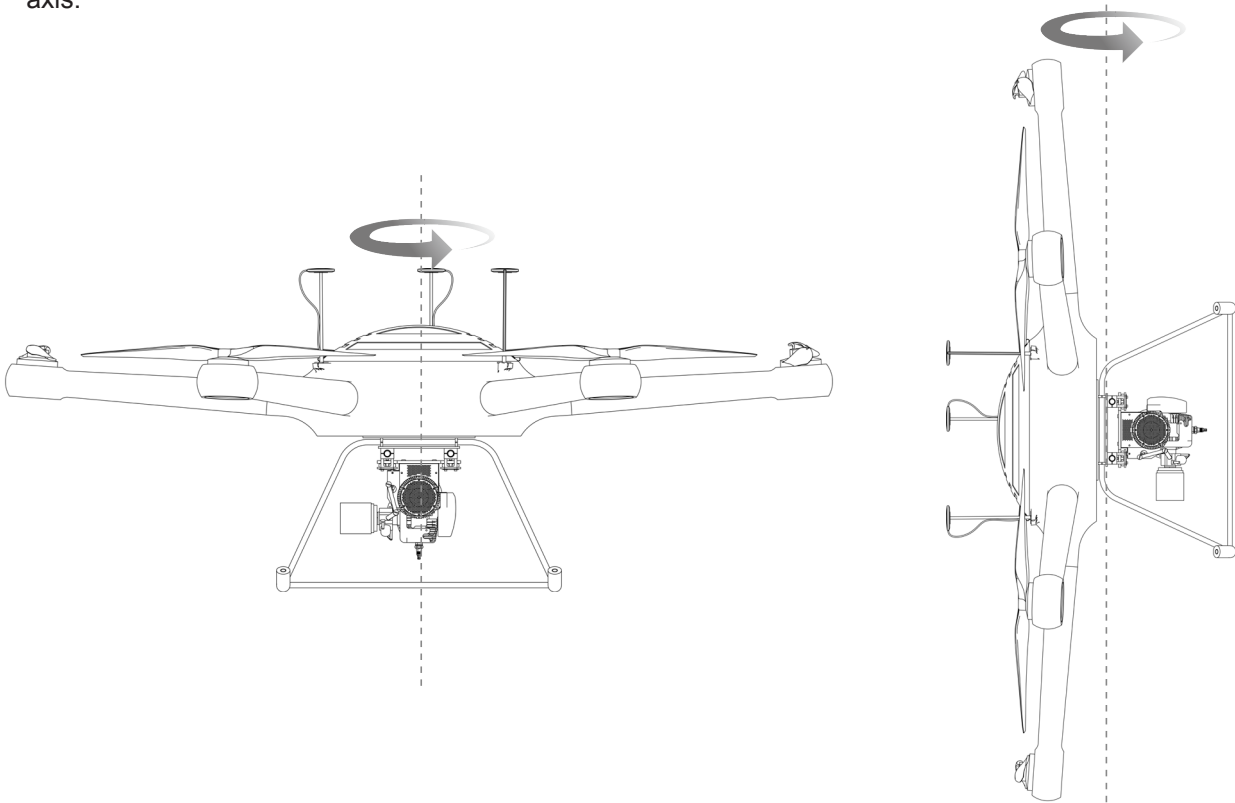
Calibrating the Compass

Be sure to calibrate the compass before your first flight, or else the aircraft cannot work properly. After that, calibrate the compass when the DJI GO app or the Aircraft Status Indicator prompts you to do so.

⊘   * DO NOT calibrate your compass where there is a chance of strong magnetic interference, such as magnetite quarries, parking structures, and underground steel reinforcements.
* DO NOT carry ferromagnetic objects such as cellular phones with you during calibration.

Calibration Procedures

Choose an open space to carry out: the following procedures.

1. Tap the System Status bar in the app and select Calibrate, then follow the on-screen instructions to calibrate the aircraft step-by-step.

2. Hold the aircraft horizontally, and rotate it 360 degrees along the central axis. The Aircraft Status Indicator will emit a solid green light.

3. Hold the aircraft vertically with its nose pointing downwards, and rotate it 360 degrees around its central axis.

4. Recalibrate the compass if the Aircraft Status Indicator blinks red.

💡   • Calibrate the compass after you launch the DJI GO app if you are prompted to do so.
• After successful calibration, the compass may become abnormal and the DJI GO app will prompt you to recalibrate the compass when you place the aircraft on the ground. Move the aircraft to another location.
• The DJI GO app will prompt you to resolve the compass issue if the compass is affected by strong interference after calibration is complete. Follow the prompted instructions to resolve the compass issue.

Takeoff and Landing

Takeoff

Follow the steps below to Takeoff:

1. Push the primer pump several times until fuel supply pipe is filled with gasoline(Fig.1).

2. Check the inlet filter if it is clogged(Fig.2).

3. Power on and switch the three-position switch to "idle". Make sure the status lamp on NOVA controller is "green".

4. Close the Choke Lever (Fig.3), a.Push hard the starter to NOVA, b.Push the start button for seconds. Disconnect starter from NOVA.(For a warm start, choking may not be necessary.)

5. Open the Choke(Fig.3). Push start button for 2~3seconds. Pull the starter until hearing running noise(Fig.4).

Fig.1

Fig.3

Fig.2

Fig.4
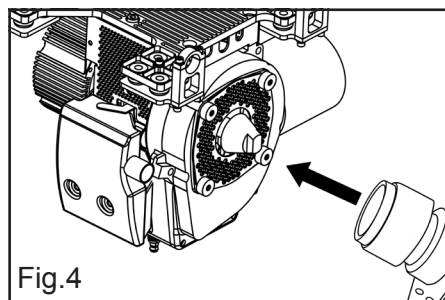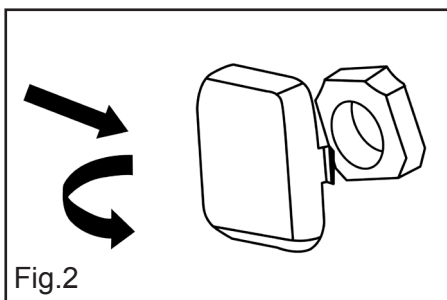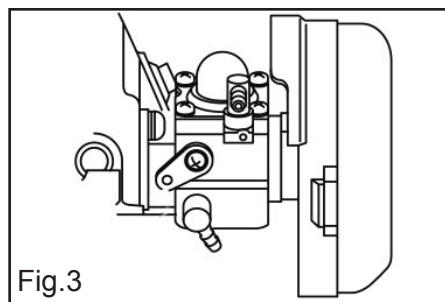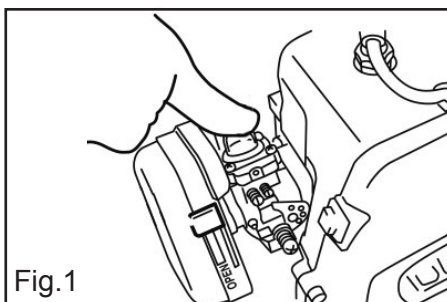
6. Switch the three-position switch to "run", and monitor the UAV input voltage. Voltage should be at 49±1V.

7. Run NOVA for 1 minute for warming up.

8. Launch the DJI GO app and enter the Camera View.

9. Ensure that the aircraft is in P-mode.

10. Go through the pre-flight checklist.

11. Push both sticks to the bottom inner or outer corners to start the motors. Once the motors have started spinning, release both sticks simultaneously.

OR
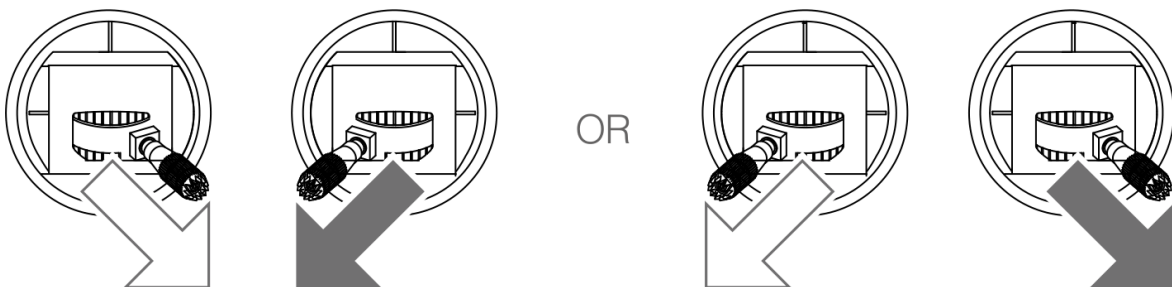
⛯   Voltage may drop 2~3 V when encounters air turbulence or Hard maneuver. If the voltage drops rapidly below 45 V, great attention should be given, and the drone should be landed and inspected when necessary.
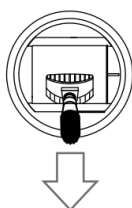
⚠   Fuel depletion may damage NOVA. Monitor fuel level with given sensor and land before fuel ran out. To monitor fuel level, please purchase Liquid level display.

     https://www.foxtechfpv.com/liquid-level-display.html

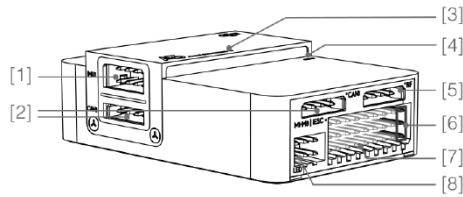## Landing

Follow the steps below to use Landing:

1. push the throttle stick down, Release stick once the motors have stopped.

2. Switch the three-position switch to "idle", cooled down NOVA generator for about 30 seconds.

3. Switch the three-position switch to "stop". NOVA will stop.

4. Plug off.

Appendix

DJI A3 Pro Flight Control System Overview

Flight Controller

[1] IMU1

Communicates with the IMU Pro module. Connected before delivery.

[2] CAN1

Dedicated DJI CAN-Bus port. Communicates with the GPS-Compass Pro module or other DJI devices (e.g. Real Time Kinematic (RTK) GPS system, gimbals).

[3] OrientationArrow

Points to the front of the aircraft.

[4] Status Indicator

Indicates the status of the flight controller and triple modular redundancy system.

[5] RF Port

Communicates with the DJI Lightbridge 2 Air System. Connected to the Lightbridge 2 Air System upon delivery.

[6] iESC Port

Communicates with the DJI Smart ESC. Connected to the DJI Smart ESC upon delivery.

[7] M1-M8Pins

Connects to the corresponding ESC PWM port for each motor. M1-M6 have been connected to the ESCs and M7 has been connected to the ground upon delivery. M8 is reserved.

[8] LED Port

Communicates with the LED module. Connected to the Aircraft Status Indicator upon delivery.

[9] IMU2 Port

Communicates with the IMU Pro module. Connected before delivery.

[10] PMU Port

Derives power from the PMU Connected to the PMU upon delivery.

[11] CAN2

Communicates with an SDK device.

[12] API Port

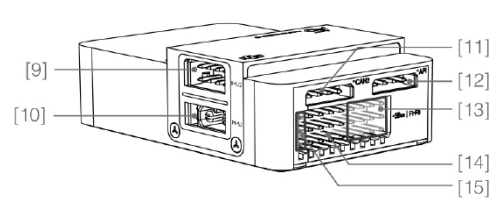Communicates with an SDK device.

[13] F5-F8 Pins
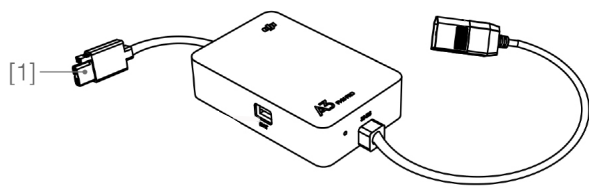
Multifunction PWM output ports.

[14] F1-F4Pins

Multifunction PWM output ports. The fan control cable (1-pin) has been connected to the F1 pin and the landing gear servo cable has been connected to the F2 pin upon delivery.
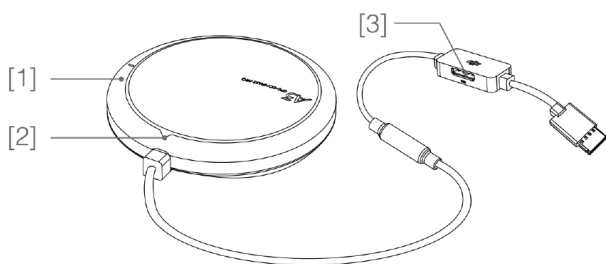
[15] S-Bus Port

The fan power cable (2-pin) has been connected to the S-Bus port upon delivery.

PMU Module

[1] Power Port (9V 3A)

Provides power to the flight controller Connected before delivery.

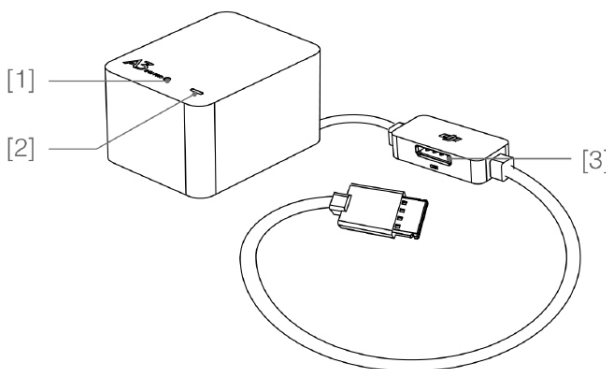**GPS-Compass Pro Module**

[1] Status Indicator

Indicates the status of the GPS-Compass Pro module and the triple modular redundancy system.

[2] Orientation Arrow

The GPS-Compass Pro module should be mounted with the arrow pointing toward the aircraft nose.

[3] Extended CAN1Port

Dedicated DJI CAN-Bus port for connection to other DJI systems (e.g. Real Time Kinematic (RTK) GPS system).

IMU Pro Module

[1] Orientation Arrow

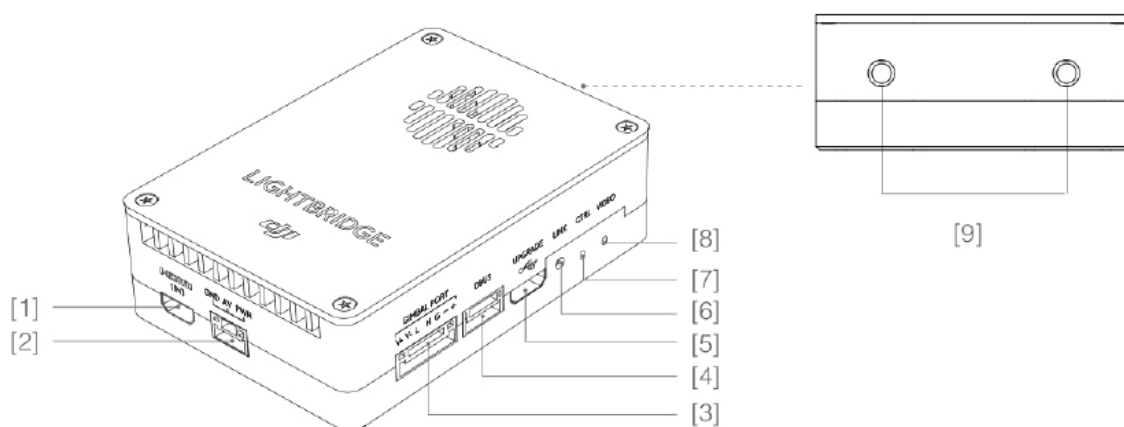Arrow indicated direction of the IML Pro module.

[2] Status Indicator

Indicates the status of the IMU Pro module and the triple modular redundancy system.

[3] CAN1GPSPort

Communicates with the GPS-Compass Pro module. Connected to the GPS-Compass Pro before before delivery.

DJI Lightbridge 2 Air System Overview

[1] HDMI IN

Supports up to 1080p60 input resolution. This por has been connected to an HDMI cable and the other end o the cable is an HDMI-D connector.

[2] AV IN

Receives AV input from the camera.

[3] Gimbal Port

Connects to a DJI gimbal or camera.

[4] DBUS Port

Sends the remote controller signal to the flight controller. Connected to the RF port on the flight controller upon delivery.

[5] Upgrade Port

Connected to the USB Hub built into the center frame upon delivery.

[6] Link Button

Used to link the Air System with the remote controller.

[7] Control Indicator

Indicates the status 01 the Ai System and remote controller.

[8] Video Indicator

Indicates the video transmission status.

[9] Antenna Port

This port has been connected to an antenna extension cable upor delivery.

Remote Controller

The remote controller integrates video downlink, aircraft and gimbal control, generator operation into one system. The combined system operates at 2.4 GHz with a maximum signal transmission range of 5 km.
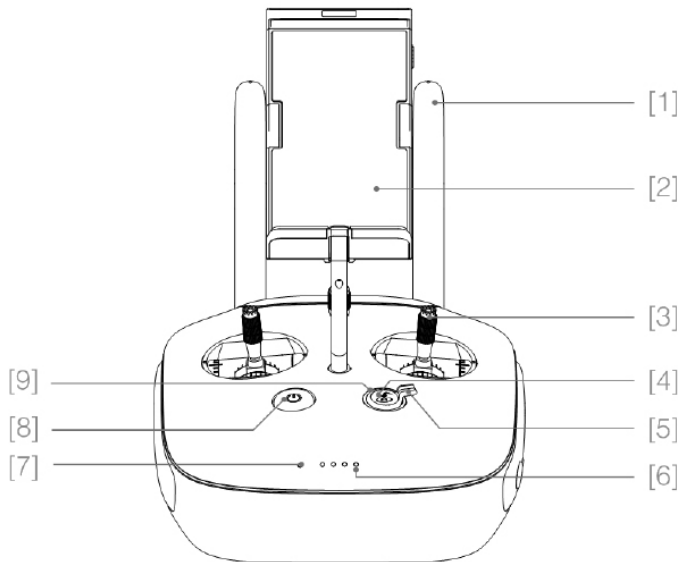
[1] Antennas

    Relays aircraft control and video signal.

[2] Mobile Device Holder

    Mounting place for your mobile device.

[3] Control Stick

    Controls aircraft orientation.

[4] Return-to-Home (RTH) Button

    Press and hold the button to initiate Return-to-Home (RTH).

[5] Landing Gear Control Switch

    Toggle the switch up or down to raise or lower the landing gear.

[6] Battery Level LEDs

    Displays the current battery level.

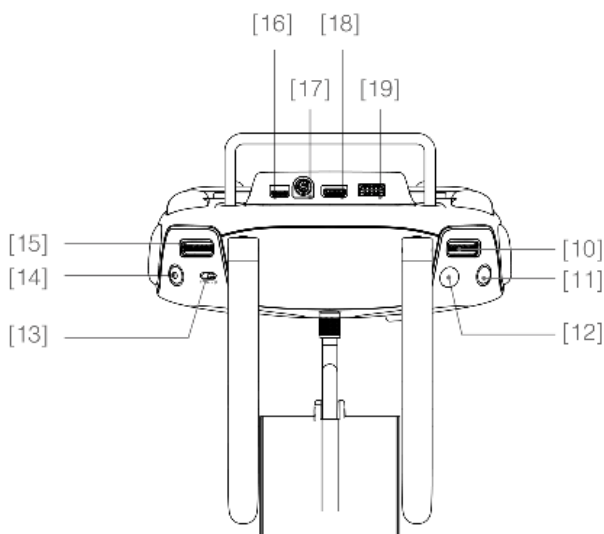[7] Status LED

    Displays the power status.

[8] Power Button

    Used to power on or power off the remote controller.

[9] RTH Status LED

    Circular LED around the RTH button displays RTH status.

[10] Camera Settings Dial

    Turn the dial to adjust camera settings. Only functions when the remote controller is connected to a mobile device running the DJI GO app.

[11] Playback Button

    Playback the captured images or videos.

[12] Shutter Button

    Press to take a photo. If in burst mode, the set number of photos will be taken with one press.

[13] Flight Mode Switch

Used to switch between P, A and F mode.

[14] Video Recording Button

Press to start recording video. Press again

to stop recording.

[15] Gimbal Dial

Use this dial to control the tilt or pan of the

gimbal.
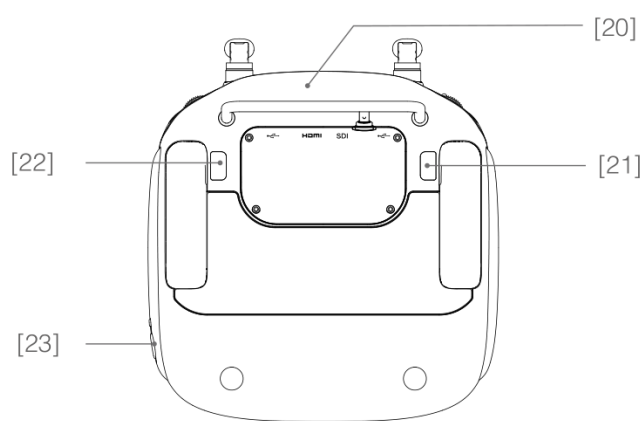
[16] Micro USB Port

Reserved.

[17] SDI Port

Connect an SDI display device.

[18] HDMI TM OUT Port

Connect an HD compatible monitor.

[19] USB Port

Connect to mobile device to access all of

the DJI GO app controls and features.

[20] GPS Module

Used to pinpoint the location of the remote

controller.

[21] Back Left Button

Customizable button in the DJI GO app.

[22] Back Right Button

Customizable button in the DJI GO app.

[23] Power Port

Connect to a power source to charge the

remote controller's internal battery.

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