



Operation Manual

X PLUS ONE



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www.xcraft.io

xCraft Support

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X PlusOne Operation Manual
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Dear xCraft Pilot,

Please note that while the enclosed information is valid at the time of shipping, it is important to check all of the appropriate and up to date legal and nonlegal information on our website: xcraft.io

Please remember to register your X PlusOne at:
<https://www.faa.gov/uas/registration/>

Before you fly it is a good idea to read up on the regulations in your area at:
<http://knowbeforeyoufly.org/>

Sincerely,
Team xCraft



ATTENTION!

Prior to assembly and/or operation of this X PlusOne you must fully read and comply with all instructions and warnings contained in the Operation and Maintenance Manual or any other manual or documentation accompanying this X PlusOne product.

You must operate this X PlusOne safely, responsibly, and in accordance with any and all applicable rules, laws and regulations as well as all checklists, emergency procedures and all other instructions contained in the Operating and Maintenance Manual and any other manuals or documentation that accompany this X PlusOne product.

FAILURE TO COMPLY WITH THE X PLUSONE OPERATING AND MAINTENANCE MANUAL OR ANY OTHER MANUALS OR DOCUMENTATION THAT ACCOMPANY THIS PRODUCT WILL RESULT IN THE LIMITED WARRANTY CONTAINED IN THE OPERATING AND MAINTENANCE MANUAL TO BECOME VOID.

ADDITIONALLY, THE LIMITED WARRANTY CONTAINED IN THE OPERATING AND MAINTENANCE MANUAL WILL BECOME VOID IF YOU FAIL TO COMPLY WITH SPECIFIC NOTES OR WARNINGS CONTAINED IN THE OPERATING MAINTENANCE MANUAL, INCLUDING BUT NOT LIMITED TO: ANY FAILURE TO CONDUCT PREFLIGHT OR OTHER PERIODIC INSPECTIONS; SUBJECTING THE X PLUSONE TO ANYTHING BEYOND ORDINARY AND INTENDED USE; MODIFYING THE X PLUSONE OR ITS SOFTWARE; OR USE OF THE X PLUSONE IN VIOLATION OF ANY APPLICABLE LOCAL, STATE OR FEDERAL RULES, LAWS OR REGULATIONS.

Sincerely,
Team xCraft

Safety and Compliance

WARNING!

This X PlusOne unit can be dangerous. Read and follow all safety and operating instructions before using the X PlusOne, and ensure that basic safety precautions are always followed during operation of the X PlusOne. Failure to do so can result in damage to the product or personal property and cause serious injury. This is a sophisticated product. It must be operated with caution and common sense and requires some basic mechanical ability. 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 incompatible components or alter this product in any way outside of the documents provided by xCraft Enterprises. This Operating and Maintenance Manual contains instructions for safety, operation and maintenance. It is essential to read and follow all of the instructions and warnings in the X PlusOne user manual, prior to assembly, setup or use, in order to operate the product correctly and avoid damage or serious injury. If situations occur that are not specifically covered in this Operating and Maintenance Manual (this "Manual"), use care and good judgement.

Operators of the X PlusOne agree to operate the X PlusOne safely, responsibly and only for authorized and lawful purposes. Operators of the X PlusOne are solely responsible for complying with, and by using this X PlusOne unit each operator represents that it has read and agrees to comply with:

All instructions, warnings and terms and conditions on the X PlusOne unit and in this Manual and any other manuals or documentation that accompany the X PlusOne, the remote control unit (if applicable) and any other accessory included with this x PlusOne unit (if applicable);

All checklists, emergency procedures, and preflight inspections and periodic inspections and maintenance as indicated in this Manual; and

Any and all applicable governmental and administrative laws, rules, regulations, guidelines and flight restrictions, whether federal, state, local or international, including, without limitation, any and all applicable aviation, communication, data protection, safety, and privacy laws.

This manual and the legal terms and conditions contained in this Manual are subject to change at any time without prior notice - please refer to www.xcraft.io for the latest version.

SAFETY

Always keep the X PlusOne in a visual line of sight.

Do not fly under the influence of drugs or alcohol.

Do not fly indoors.

Do not fly at night.

Always fly outside in clear, open areas away from any people, houses, vehicles, buildings, power lines, trees, etc.

Do not fly over or near property owned by governmental entities or other individuals without their express permission.

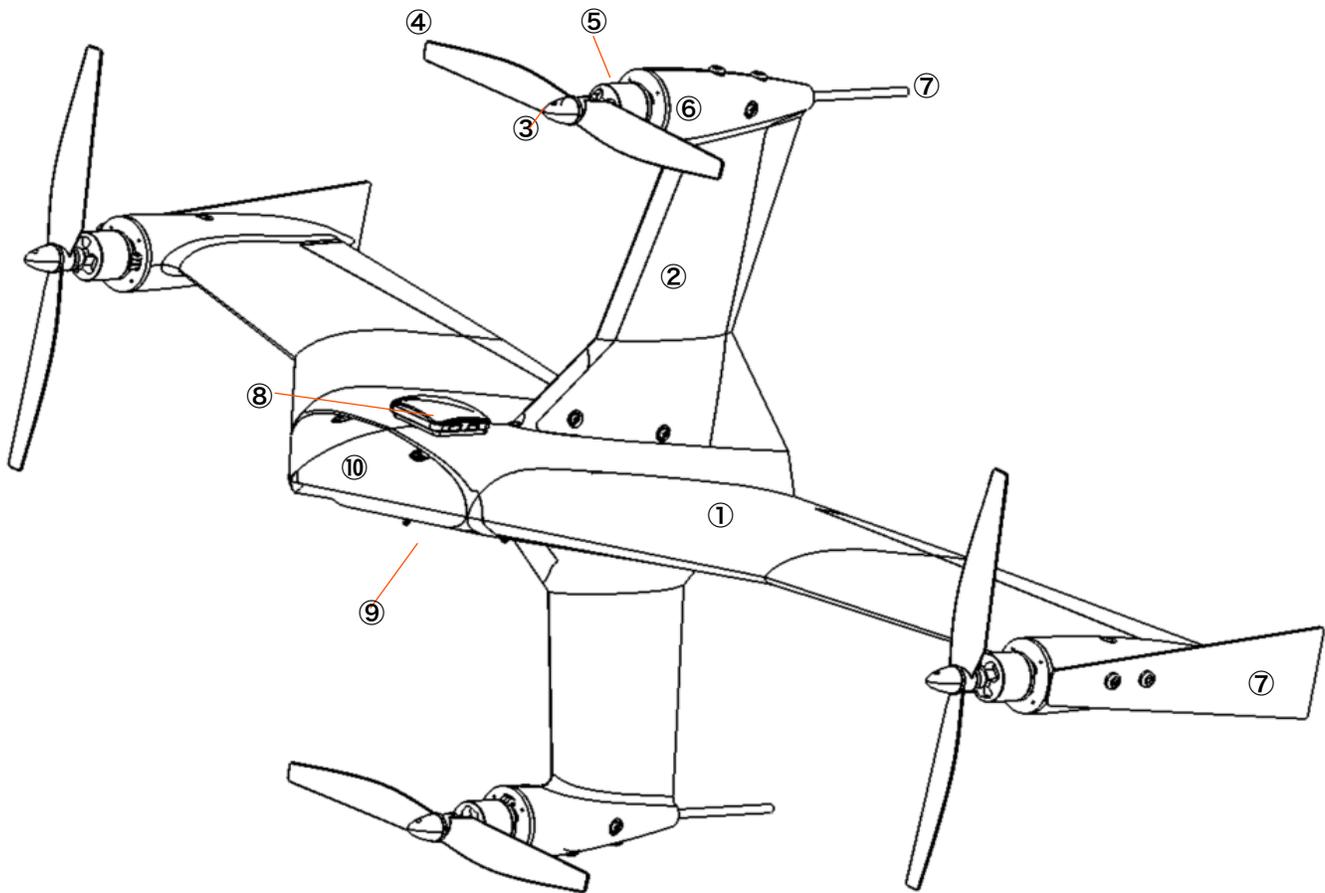
Do not fly near international borders.

Do not fly in bad weather conditions such as rain, snow, high winds, or fog.

Take flying lessons, and practice flying often.

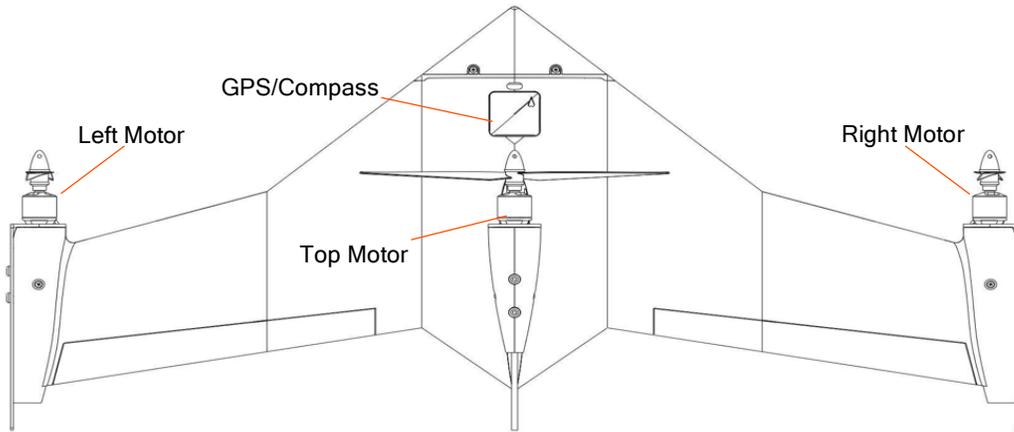
1. X PlusOne

The X PlusOne is an extremely powerful machine. This hybrid VTOL craft combines the precision of a quadcopter with the speed and endurance of a fixed wing aircraft. Perform autonomous missions, Return-to-Land, Loiter, and Follow-me all while racing at 60 MPH and capturing footage with a GoPro camera.

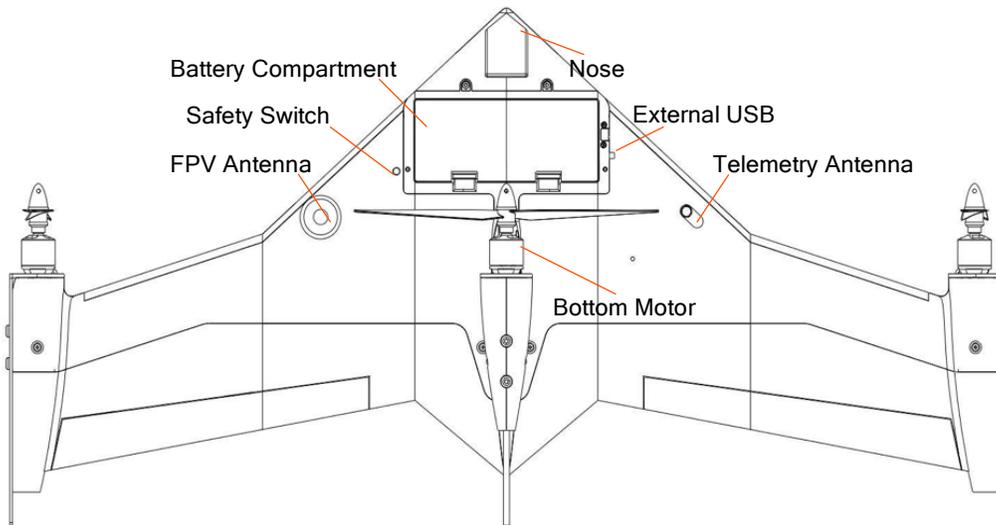


- | | |
|-------------|------------------------|
| ① Wing | ⑥ Motor Mount |
| ② Pylons | ⑦ Landing Gear |
| ③ Spinner | ⑧ GPS/Compass(Ai Only) |
| ④ Propeller | ⑨ Battery Compartment |
| ⑤ Motor | ⑩ Nosecone |

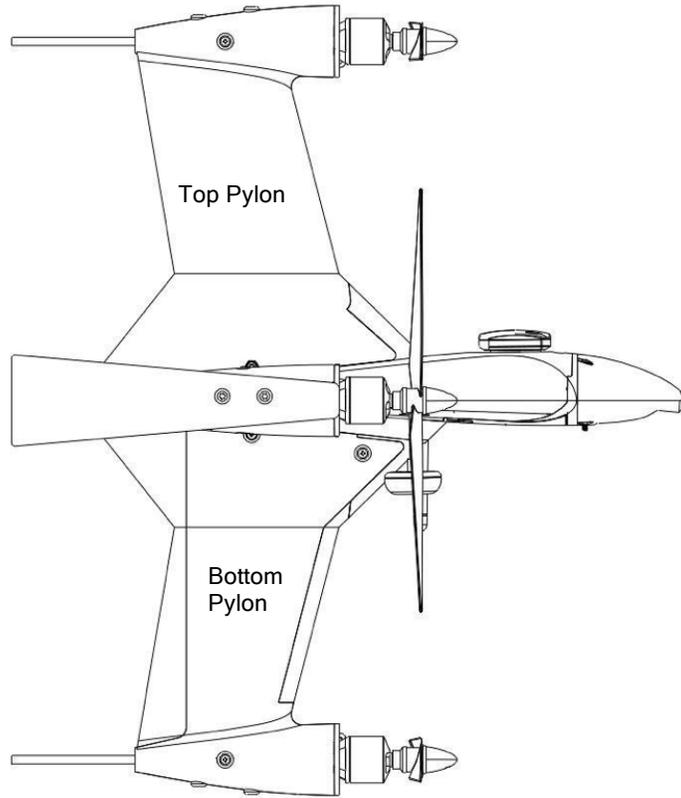
Top



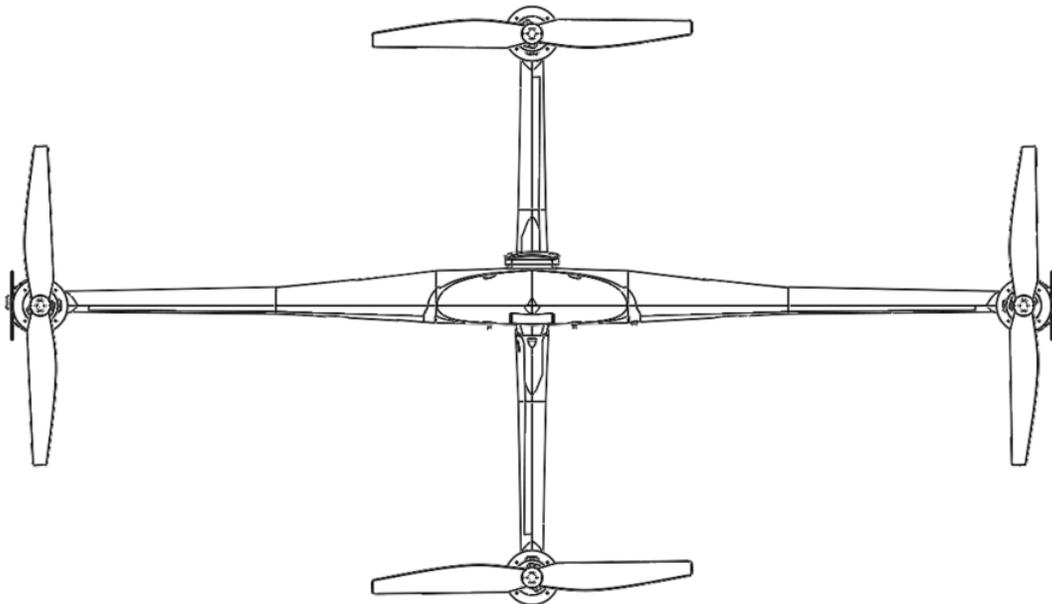
Bottom



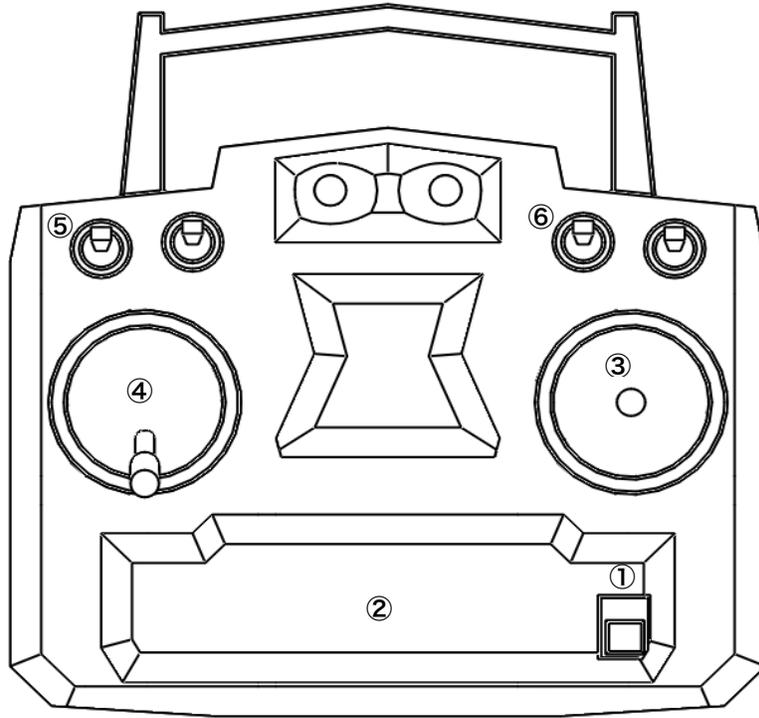
Side



Above



2. Transmitter



① Power Switch

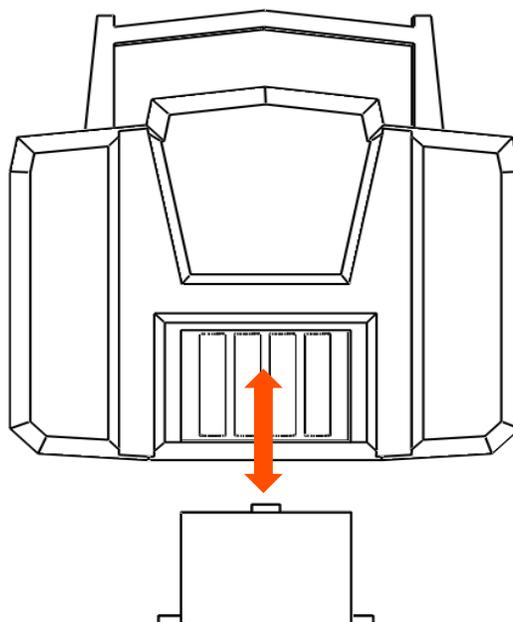
② Display

③ Throttle/Rudder

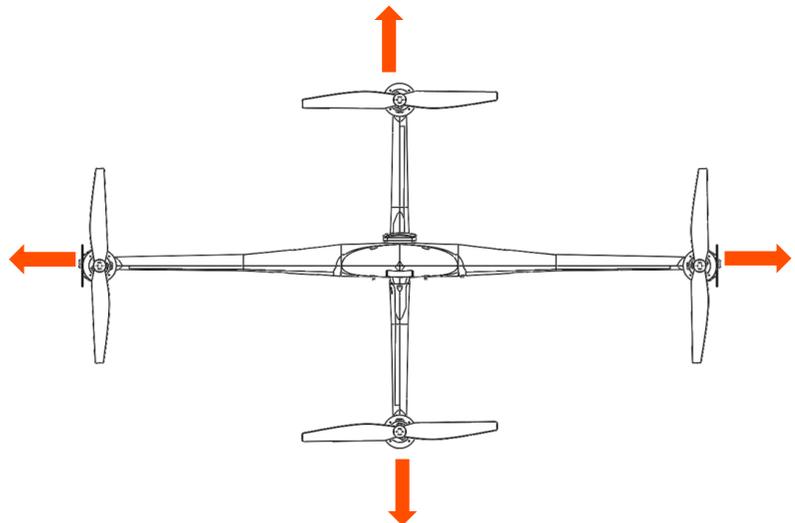
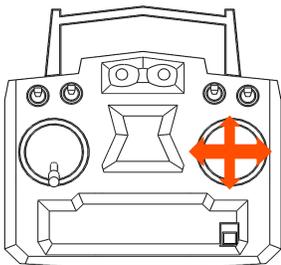
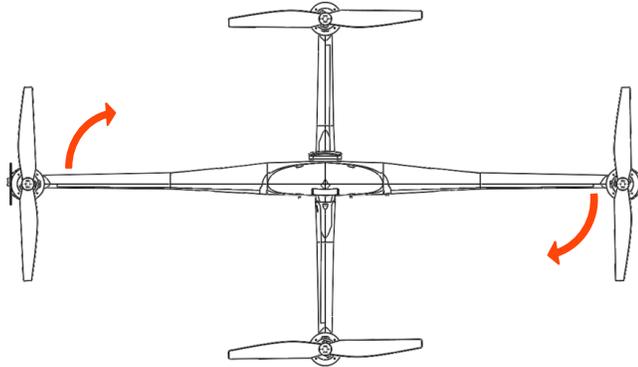
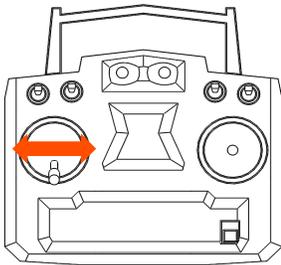
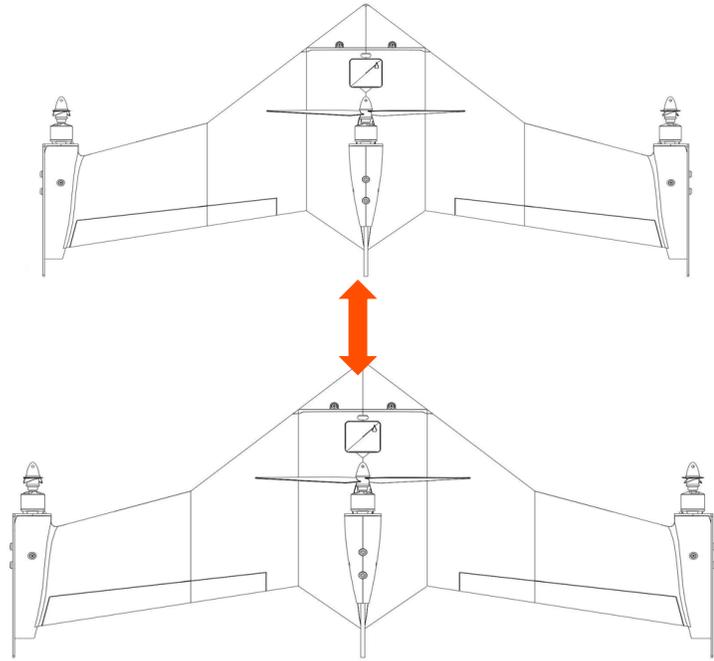
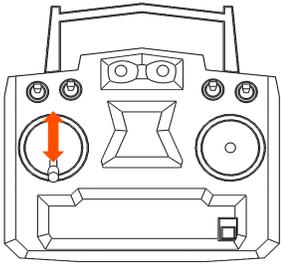
④ Elevator/Roll

⑤ Switch 1

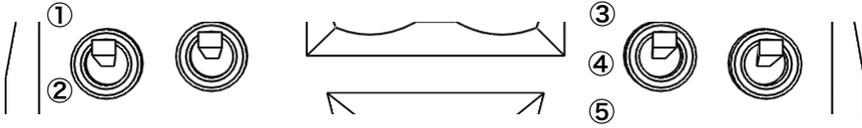
⑥ Switch 3



Controls



Modes



- ① Fly - Normal switch position for flight.
 - ② Home - Return to Home. Craft will return to original take off location.
 - ③ Hover - Hover in place. Craft will hold position and can be controlled with hover controls. Craft uses GPS to auto-stabilize itself. Ensure GPS has clear signal, free of buildings and trees etc.
 - ④ Smart - Same as Hover except, craft will react to direction inputs regardless of orientation. i.e. even if the craft is turned sideways, pulling back on the right stick will bring the craft back.
 - ⑤ Acro - Use for forward flight. Craft is stabilized but does not use GPS to hold a hover position. In forward flight, craft will pitch forward up to 75°
- Auto (set via Mission Planner (Windows) or QGroundControl (Windows/Mac) - Autonomous mission. X PlusOne will fly the flight plan saved to the autopilot.
- Guided (set via Mission Planner/QGroundControl) - Ground station controlled flight. X PlusOne will fly to waypoints sent from the ground station in real time.
- Follow Me (Ground stations with GPS required) - Follows ground station. X PlusOne will follow the ground station as you move. Install “3DR Services” and “Tower” apps on smartphone to connect with craft.

3. LED Light Combos

Internal PixFalcon - The PixFalcon is the autopilot module for the Ai X PlusOne. It is inside the craft, under the bottom pylon connection. Note the following LED light combos that convey the status of the craft.

-  Flashing red and blue: initializing. Please wait.
-  Double flashing yellow: error. System refuses to arm.
-  Flashing blue: disarmed, searching for GPS. Autonomous, loiter, and return-to-land modes require GPS lock.
-  Flashing green: disarmed, GPS lock acquired. Ready to arm. Quick double tone when disarming from the armed state
-  Solid green plus single tone: armed and ready to fly!
-  Flashing yellow: RC failsafe activated.
-  Flashing yellow and blue plus high-high-high-low tone: GPS glitch or GPS failsafe activated.
-  Flashing yellow plus quick repeating tone: battery failsafe activated.

Safety Switch Combos - The safety switch is located next to the battery compartment on the Ai X PlusOne. Follow the instructions to arm.

-  Quick, constant blinking: performing system check. Please wait.
-  Intermittent blinking: system ready. Press the safety button to activate.
-  Solid: ready to arm. Proceed to the arming procedure.

4. Software

The X PlusOne uses a third party, open source software to program and update the craft. Use Mission Planner software for Windows and QGroundControl or APM Planner software for iOS. The X PlusOne features an external USB port to use only if adjusting the firmware on the craft.

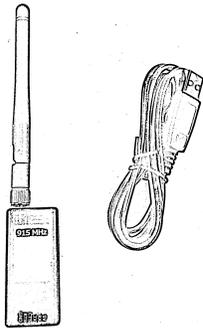
Telemetry Module (Ai Only)

The telemetry module is used to connect the X PlusOne to a computer or an Android smartphone. Use the above software to:

- Set autonomous missions-The X PlusOne will execute the flight plan by hitting waypoints set in the software.
- Fly a guided mission and control the X PlusOne through waypoints sent from the ground station in real time.
- Execute Follow Me mode by plugging in your telemetry to your Android smartphone and connecting to the X PlusOne.

*"3DR Services" and "Tower" apps required.

*MicroUSB cable for smartphone connection not included.



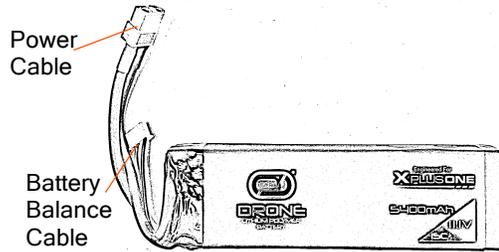
Visit the "How To" videos on the xCraft Youtube page for help on calibrating or setting up "Follow-Me".



Updates

Because Mission Planner and QGroundControl are open source software, it is important to keep them updated regularly. Check xcraft.io/software for updates to software settings and parameters and upload them to your X PlusOne by connecting through the telemetry.

5. Battery



The X PlusOne operates off of a 3 cell, 5400 mAh, 11.1V LiPo battery.

WARNING!

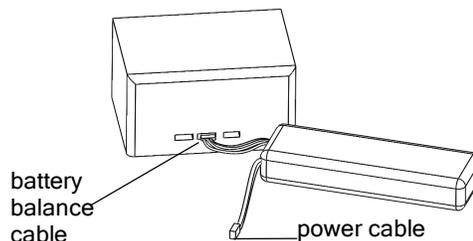
To avoid fire, serious injury, and property damage, observe the following safety guidelines when using, charging, or storing your batteries.

- Use caution when handling the X PlusOne battery; lithium polymer batteries can cause a fire if handled incorrectly. Never alter, puncture, throw, bend, or impact the battery.
- Keep the battery away from liquids, fire, microwaves, and other hazardous or combustible materials.
- DO NOT expose the battery to extreme temperatures. If the battery is hot to the touch, wait for it to cool before using or charging.
- DO NOT use the battery if the plastic cover has been torn or compromised in any way.
- 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.
- 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 properly described 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.
- Clean battery terminals with a clean, dry cloth.

Only use the X PlusOne battery for your craft. Inspect the battery before and after each flight. It is possible for the battery to be damaged in shipping, use or charging. If you notice any abnormal features such as damage to the exterior shell, swelling, deformation of the battery, abnormal smell, leakage, or other unexpected behavior, DO NOT use the battery! These can be signs of serious damage that can cause the battery to catch fire or cause serious injury. To prevent a hazard in case of fire or explosion, disconnect the battery, and place the battery in a safe area outside of any buildings or vehicles and away from flammable materials. DO NOT dispose of the battery in the trash; dispose of the battery at local battery recycling center as soon as possible. In the US and Canada, visit call2recycle.org to find a location.

Battery Charging

a) Plug charger into a power outlet and the battery balance cable into the middle port of the charger. It is the only port that fits that size plug.



b) The X PlusOne transmitter runs off of 4AA, included in the box. Slide the battery hatch off of the back of the transmitter, insert the AA batteries and slide the battery hatch back into place.

- DO NOT attach the batteries to wall outlets or car charger sockets directly, and always use an xCraft approved adapter. xCraft takes no responsibility if the battery is charged using a non-xCraft charger.
- Never leave the battery unattended during charging. DO NOT charge the battery near flammable materials or on flammable surfaces 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 32° F to 104 ° F 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

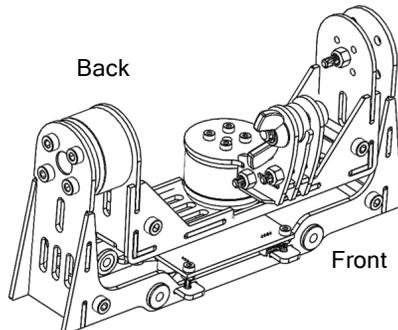
- Keep batteries out of the reach of children and pets.
- DO NOT leave the battery near heat sources such as a furnace or heater. DO NOT leave the batteries inside of a vehicle on hot days. The ideal storage temperature is 64° F to 82° F.
- Keep the battery dry. Never drop the battery into water.
- DO 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 50%.

For long term storage, store the battery in a 64° F to 82° F environment, between 45-85% relative humidity and with 50% charge. Always make sure to store the battery in a place where it won't be exposed to extreme temperatures or direct sunlight.

6. Accessories

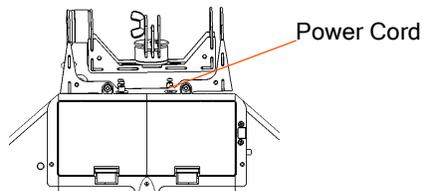
Gimbal

The X PlusOne 2-axis, carbon fiber gimbal can be added on to capture smooth video footage from a GoPro camera.



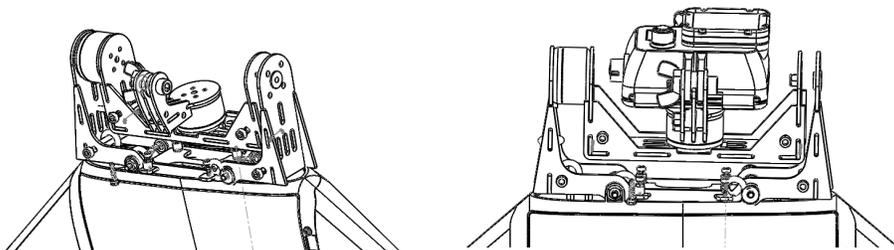
a) Remove the nosecone from your X PlusOne and place the gimbal in its place. If you are facing the battery compartment on the craft, the vertical gimbal motor should be on your left (see image).

b) Plug the gimbal board into the power cord before mounting gimbal. That way the connection will be held between the gimbal and the battery, as shown.



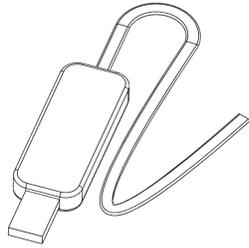
c) Insert the long screws included in hardware kit, through the holes in the battery compartment and the gimbal. Secure with included nut on the backside. The direction of the screws is irrelevant.

d) Attach GoPro to gimbal base using included bolt, spacer and wing nut. Position the GoPro so that it balances freely level; facing forward



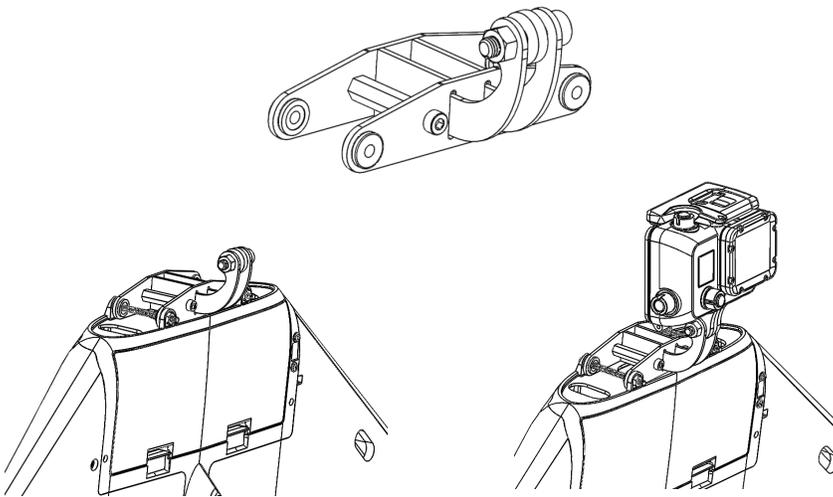
Gimbal Board Programmer

Every gimbal comes with a programming cable. This cable would be used to reinstall or update the gimbal board. The software will be provided as needed if the gimbal is malfunctioning.



Fixed Mount

Your X PlusOne will come with a fixed mount to allow you to mount a GoPro camera to your craft. Mount the fixed mount and GoPro the same as the gimbal above. See below for final set up:



FPV (First Person View)

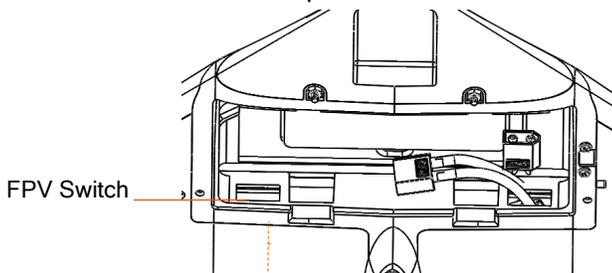
First-Person-View accessories allow the pilot to stream live footage from the craft to the ground.

FPV Power

Your X PlusOne has a switch to power on the FPV in your craft. You will have to power on the FPV in order to transmit a live feed.

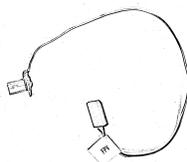
*Check local regulations for use of 5.8 GHz, 200mW FPV transmitter.

The switch is set in the "Off" position and is labeled. Simply switch to "On" before using FPV accessories.



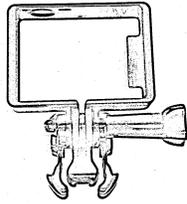
Cable

An FPV Cable is included in your package and allows you to connect your GoPro to your craft to transmit a live feed. Connect the Micro USB end to the GoPro and the other connector to the matching wire labeled "FPV" in your craft.



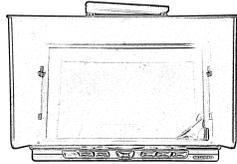
Mounting Case

GoPro Mount Case (FPV Package): Use this case to mount the GoPro to the gimbal/fixed mount and plug the FPV cable into the Micro USB connection.



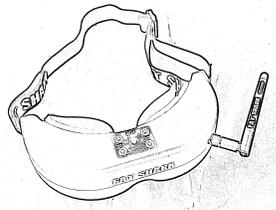
Monitor

To connect the monitor to your GoPro, power on FPV from your craft and connect the GoPro. Power on the GoPro and monitor. Scan through the “group” button until you find the camera image. Scan through the “channels” to get a clearer image.



Goggles

To connect the goggles to your GoPro, power on FPV from your craft and connect the GoPro. Power on the GoPro and goggles. Scan through the channels on the goggles until the camera footage comes through clear.



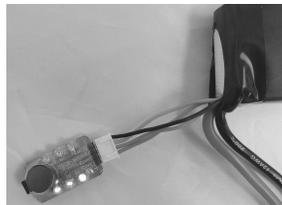
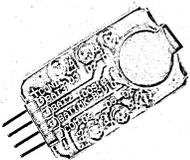
Skin

The X PlusOne comes with a vinyl skin that protects the craft frame from scratches and dents, and ads customization options. Visit xCraft on YouTube for help on applying a new vinyl skin.

Battery Monitor (RC Only)

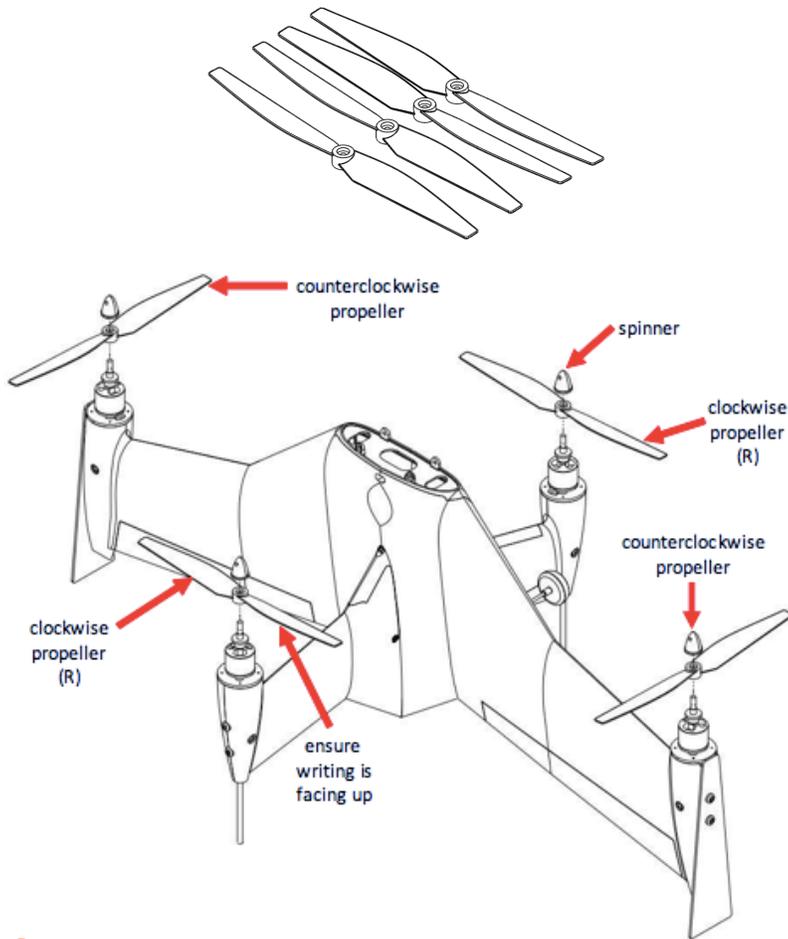
Plug the battery monitor into the balance cable of the craft battery and leave plugged in during flight. Tuck the monitor under the battery and leave inside the battery compartment. Monitor will beep loudly when the battery reaches its set cut off limit.

Always land the X PlusOne as soon as possible when you hear the beep.



Propellers

The X PlusOne uses 4 10X5 nylon propellers.



7. Support

If at any time you have questions, comments, or concerns, please email: support@xcraft.io, or call +1(208)-665-1353. Our Customer Support team would be more than happy to help you through the process and get your X PlusOne flying!

8. Maintenance

Calibration

PC

You will need: Mission Planner Software, telemetry module with its USB power cord, fully charged battery, X PlusOne.

1. Download and open Mission Planner Software
2. Plug telemetry unit into computer with its USB power cord
3. Connect battery to craft
4. Set COMM Port (upper right hand corner) to specific USB port
5. Set speed of connection to 57600. Press connect.
6. Enter Initial Set-up>Mandatory Hardware>Accel Calibration
7. Click and follow prompts for Calibrate Accel
8. Set craft upright and select Calibrate Level, follow prompts
9. Select Compass (under Mandatory Hardware). Set Orientation to Manual-Rotation_Pitch_90
10. Select Live Calibration and follow prompts
11. Select Disconnect in Mission Planner (top right corner)

MAC

You will need: QGroundControl Software, VCP Driver installed on your computer, telemetry module with its USB power cord, fully charged battery, X PlusOne.

1. Download and open QGroundControl Software
2. Plug telemetry unit into computer with its USB power cord
3. Connect battery to craft
4. Select settings option (gear image)
5. Select Sensors>Accelerometer>set AutoPilot Orientation to Roll180Pitch90>Okay>Follow prompts to calibrate
6. Select Compass>set Compass 1 Orientation to Pitch90>follow image prompts to orient
7. Disconnect telemetry

Center of Gravity information

Check that CG is within tolerance

Make sure all components are installed

Lift up your X PlusOne and find its center of gravity by attempting to balance it on two fingers

(one on either side of the pylon, the same distance from the nose)

If the nose tips down the CG is forward of your balance point

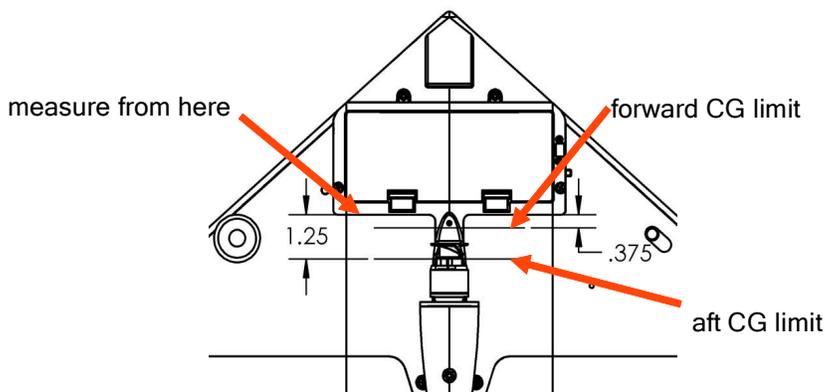
If it tips up the CG is behind your balance point

Adjust the position of your fingers until your X PlusOne balances and make note of the position of your fingers, this is the CG

Measure the distance from the CG to the back edge of the battery compartment as shown below

The acceptable range is $\frac{3}{8}$ " to $1 \frac{1}{4}$ " from the battery compartment to the CG

TIP: You may want to mark the forward and back CG limits to make checking the CG easier.



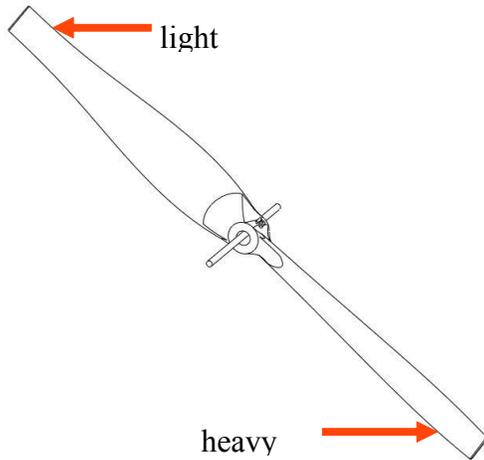
Propellers

Always balance all propellers used on your X PlusOne. Balanced propellers will greatly improve performance and allow clearer images from onboard cameras. To balance propellers, follow the recommended procedures below.

1. Insert a rod into the hole in the center of the propeller

TIP: For best results use a propeller balancer.

2. Allow propeller to freely rotate and make note of which blade points up, this is the "light" blade



Add weight to the light blade. This can be done by adding a small piece of tape or nail polish to the underside of the propeller blade.

Repeat steps 2 and 3 until the propeller balances horizontally on the rod

Non-Serviceable Components

There are several components of the X PlusOne that are not individually replaceable. These parts can be found in the wing assembly (main wing foam, wing spars, battery compartment, and spar insert) and the pylon assembly (main pylon foam, and pylon spars).

To replace these components:

- If the component to be replaced is in the wing, remove both pylons and set them aside
- If the component is in a pylon, remove that pylon and set the other pylon and wing aside
- Remove the cover (either wing cover or pylon cover) by removing the screws holding it in place and sliding the cover off
- TIP: You may want to take several pictures after removing the cover to aid in reassembly.
- Remove all electronics from damaged assembly
- Make careful note of all connections to the removed components as well as wire routing throughout the assembly
- Unscrew motor mount(s) from spars and foam and remove motor mount(s)
- Install motor mount into new wing or pylon assembly
- Install electronics into new wing or pylon assembly
- Check that all connections and wire routes are installed properly
- Reinstall the cover
- Reinstall the pylon(s)

Serviceable Components

- If the component to be replaced is in the wing, remove both pylons and set them aside. If the component is in a pylon, remove that pylon and set the other pylon and wing aside
- Remove the cover (either wing cover or pylon cover) by removing the screws holding it in place and sliding the cover off
- TIP: You may want to take several pictures after removing the cover to aid in reassembly.
- If the cover is damaged, simply replace it and reassemble your X PlusOne

Replace damaged component

- For electrical components, make careful note of all connections to that component as well as wire routing and make sure to reconnect all connections and run all wires as they were before
- For motors or motor mounts, remove the screws holding the motor mount to the spars and the screws holding the mount to the wing or pylon foam
- Reinstall the motor mount and reconnect the motor wires to the speed control (making sure to reconnect the wires as they were before)
- Reinstall the cover
- Reinstall the pylon(s)

Periodic Inspection

Performed every 10 flight hours

Spin each motor by hand and check that the motors spin smoothly and quietly.

Inspect airframe for damage.

If there is evidence of damage under a cover remove that cover and inspect the components underneath

Check the rigidity between the top pylon and the wing

Hold the wing in one hand and keep it stationary

Hold the top pylon with your other hand

Apply light pressure to the pylon and verify that it does not flex more than a few degrees in any direction

Check pylons

Inspect wires that go between the pylons and the wing

Check the wire insulation for any exposed wire

Check connectors, verify that connections are not loose

Check landing gear

Hold one of the pylons in one hand

Grasp the landing gear with the other hand

Verify that landing gear is firmly attached

Connect X PlusOne to mission planner

Connect battery and check battery voltage displayed

Disconnect the battery and measure its voltage with a volt meter

Verify that the measured value is within ± 0.1 V of the value displayed in mission planner

Control Check

A control check should be performed during the periodic inspection

- Remove the propellers
- Power on transmitter
- Install battery and connect power
- **WARNING: REMOVE PROPELLERS BEFORE ARMING**
- Arm the motors
- Slowly increase the throttle until the motors begin spinning

Test each control input and check that the motors respond as shown in the table below

Control Input	Left Wing Motor	Top Pylon Motor	Bottom Pylon Motor	Right Wing Motor
Elevator forward	=	faster	slower	=
Elevator backward	=	slower	faster	=
Aileron right	faster	=	=	slower
Aileron left	slower	=	=	faster
Rudder right	faster	slower	slower	faster
Rudder left	slower	faster	faster	slower

Safety

DO NOT use aged, chipped or broken propellers.

Recommended storage temperature: between 64° F to 82° F.

Refer to section 1.1 for more information about the safe use of the battery.

9. Troubleshooting

Won't arm:

If your Ai X PlusOne won't arm, check to see if you have a GPS signal. The craft needs a GPS lock before it will arm.

Won't achieve GPS Lock:

If your Ai X PlusOne won't achieve a GPS lock, look for a blue light inside the compass. The blue light signifies a GPS lock, a green light means it is still searching. Be sure that you are clear from trees, buildings, hills, etc. After powering on your craft, allow up to 5 minutes for the craft to connect. Depending on weather and number of satellites available, your craft may take a much shorter time. If you cannot get a GPS lock, recycle power by disconnecting and reconnecting the battery. If you still cannot get a GPS lock, calibrate your X PlusOne.

Craft is "toilet bowling" in the air:

If your X PlusOne is making a toilet bowl motion in the air, spinning and not holding location, it is very likely a GPS connection issue. Recalibrate your craft and make sure that you have plenty of satellites and a strong signal. If the craft is still toilet bowling, check behind the top pylon to make sure that the PixFalcon is secure. If it is loose, stuff hot glue into the gap to secure it inside the craft.

Craft won't hold a loiter position:

*See above

Won't connect to Mission Planner Software:

If your craft won't connect to a computer software, recycle power by disconnecting then reconnecting the battery to your craft. Eject, then reinsert the USB telemetry cable to your computer and make sure that you have the correct COM port selected in the software.

10. FAQ

1-How fast can it go and what is the range?

The X PlusOne can fly up to 60 mph and approximately a mile away from the remote. The battery life is approximately 20 minutes.

2-Is it hard to fly? What kind of experience do you need?

From its inception, the X PlusOne was designed with the average operator in mind. If you can fly a multi-rotor or RC airplane, you can fly the X PlusOne. We suggest approximately 5 or more hours of training on a typical quadcopter to prepare for a more comfortable flight.

3-How does the AI version work?

The AI version of the X PlusOne contains a GPS unit that communicates with nearby satellites. This version can be fully autonomous and can be programmed to fly solo missions, return to land, even follow me mode!

Find more details here: <http://store.xcraft.io/xplusone-store-xcraft-vtol-drone-sandpoint-id/xcraft-x-plusone-ready-to-fly-ai-telemetry>

5-How are they made?

The X PlusOne is assembled entirely by hand at our headquarters in downtown Coeur d' Alene, Idaho. Each product is test flown and thoroughly inspected to ensure a quality product upon delivery.

6-How long does the battery last and how long does it take to charge?

The battery typically lasts 20-25 mins and takes 30 mins to charge.

7-Is it waterproof?

The X PlusOne is made of porous Styrofoam and contains exposed electronic components inside, so water is not its best friend. We suggest keeping your X PlusOne as dry as possible.

8-What is it made out of?

The X PlusOne is made from Expanded PolyOlefin (EPO). EPO is a very strong, lightweight expanded foam, similar to Styrofoam except more flexible and able to be glued with CA glue.

9-What are the dimensions of the aircraft?

The X PlusOne measures 32.5 x 19 x 14 inches and weighs 2.9lbs.

11-Do you have to use the GPS to fly the AI version?

When using the AI version, you must have a GPS signal to be able to fly. The GPS should automatically connect when preparing for flight. If the GPS is not connecting, be sure you are clear from heavy metal and brick buildings. The body of the craft will flash green, and the GPS unit will flash blue to signify a connection has been made.

12-What's the difference between a monitor and goggles for the First Person View (FPV) feature?

The FPV monitor is a small screen that allows you to see what the drone sees as you fly it. The FPV goggles are actually worn by the pilot so it feels like you are riding with the drone. It comes down to personal preference and how you would like to view your live camera footage.

13-My craft is armed but won't engage.

If you have armed your craft but the throttle is not engaging, the most possible situation is one of GPS connectivity. Restart your craft, make sure you are clear of any buildings and that your GPS unit is blinking blue before engaging the throttle. When in doubt, charge the battery.

14-My XPlusOne is beeping loud, fast and continuous-

Once the battery gets below its natural fail safe level of power it beeps loud and fast. This simply means it's time to recharge your battery.

15-What kind of weather conditions can I fly my XPlusOne in?

The most extreme weather you should fly in is a light sprinkle of rain and a maximum of 25 mph of wind.

16-Can I use my own GoPro camera?

Yes! We supply fixed mounts and gimbals that you can order with your X Plus One to attach your own GoPro camera. GoPro's Hero 3 and more recent models perform most efficiently with the gimbal but it is compatible with all GoPro models.

17-Will my battery last longer in flight or hover mode?

Both modes of flight are very similar in battery life. A consistent flight will be more efficient than a constant hover but both last approximately the same amount of battery time.

18-What's included in my XPlusOne package?

With each XPlusOne we include, 2 sets of props, a battery charger, and all of the hardware necessary for assembly. The AI versions also receive a telemetry module, antenna and an FPV cable.

FAA FAQ

1-Will I need to register my drone?

In accordance with Federal Aviation Administration (FAA) guidelines, all UAS (Unmanned Aircraft Systems) between 0.55 lbs. (250g) and 55 lbs. (25kg) need to be registered with the FAA. Please visit the FAA registration site for more information.

<https://www.faa.gov/uas/registration/>

You can also register your drone here: <https://registermyuas.faa.gov/>

Don't forget to look up your individual's state's regulations on UAVs as well. You can also visit <http://knowbeforeyoufly.org/> for more information.

2-What are FAA rules for flying my drone?

The FAA website lists the following rules for flying your drones:

- Fly below 400 feet and remain clear of surrounding obstacles
- Keep the aircraft within visual line of sight at all times
- Remain well clear of and do not interfere with manned aircraft operations
- Don't fly within 5 miles of an airport unless you contact the airport and control tower before flying
- Don't fly near people or stadiums
- Don't fly an aircraft that weighs more than 55 lbs
- Don't be careless or reckless with your unmanned aircraft - you could be fined for endangering people or other aircraft

For more information, please visit the FAA model aircraft operations page at: https://www.faa.gov/uas/model_aircraft/

3-Any more questions?

Please visit the FAA frequently asked questions page for even more information on your drones and applicable regulations.

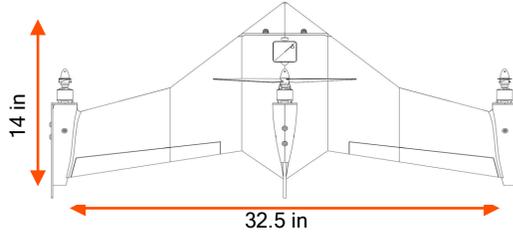
<https://www.faa.gov/uas/registration/faqs/>

11. Appendix

Specs

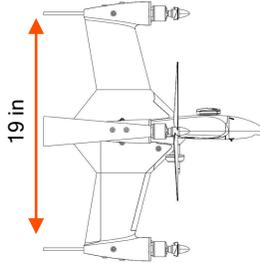
Aircraft

Weight: 2.9 lbs.
Max Speed: 60 MPH
Flight Time: Approx. 20 mins
Max Service Ceiling: 11,000 FASL
Operating Temp: 32° - 104° F



Transmitter

Operating Frequency: 2.400 GHz
Max Transmission Distance:
FCC Compliant-2.5 miles (Unobstructed)
Operating Temp: 32° - 104° F
Batteries: 4AA batteries
Operating Voltage: 6V



Gimbal

Range: Pitch-70°-190°
Roll-160°

Charger

Voltage: 240V
Rated Power: 50W

Battery

Capacity: 5.4A
Voltage: 11.1V
Battery Type: LiPo 3S
Operating Temp: 32° - 104° F

*Always read the Operations Manual before flying.

*This Quick Start Guide is subject to change without prior notice.

Notices and Warnings

Important Note: All safety precautions and warnings, instructions, warranties and other collateral information is subject to change at the sole discretion of xCraft Enterprises. For the most up-to-date information please contact xCraft Support.

The following special language terms are used throughout the product literature to indicate various levels of potential harm when operating this product:

Notice: Procedures, which if not properly followed, create a possibility of property damage and/or little to no possibility of injury.

Caution: Procedures, which if not properly followed, create the probability of property damage and/or a possibility of serious injury.

Warning: Procedures, which if not properly followed, create the probability of property damage, collateral damage and/or serious injury or create a high probability of superficial injury.

Warning: Read the ENTIRE Quick Start Guide and Operation Manual to become familiar with the features of the product before operating. Failure to operate the product correctly can result in damage to the product, property and/or cause serious injury.

Warning: This is a sophisticated consumer product. It must be operated with caution and common sense, and requires some basic mechanical ability. Failure to operate this product in a safe and responsible manner could result in damage to the product, property and/or cause serious injury. 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 instructions provided by xCraft. The quick start guide and Operation Manual contain instructions for safety, operation, and maintenance. It is essential to read and follow all the instructions and warnings prior to assembly, setup and/or use in order to operate the product correctly and avoid damage and/or serious injury.

Age recommendation: Not for children under 14 years. This is not a toy.

General Safety precautions and Warnings:

Failure to use this product in the intended manner as described in the Quick Start Guide and Operation Manual can result

in damage to the product, property and/or cause serious injury. A Radio Controlled (RC) multirotor aircraft, APV platform, drone, etc. is not a toy! If misused it can cause serious bodily harm and damage to property.

Warning: As the user of this product you are solely and wholly responsible for operating it in a manner that does not endanger yourself and others or result in damage to the product or the property of others.

Keep your hands, face and other parts of your body away from the spinning propellers and other moving parts at all times. Keep items that could impact or become entangled away from the propellers including debris, parts, tools, loose clothing, etc.

Always operate your aircraft in open areas that are free from people. Vehicles and other obstructions. Never fly near or above crowds, airports or buildings.

To ensure proper operation and safe flight performance never attempt to operate your aircraft nearby buildings or other obstructions that do not offer a clear view of the sky and can restrict GPS reception.

Do not attempt to operate your aircraft in areas with potential magnetic and/or radio interference including areas nearby broadcast towers, power transmission stations, high voltage power lines, etc.

Always keep a safe distance in all directions around your aircraft to avoid collisions and/or injury. This aircraft is controlled by a radio signal subject to interference from many source outside your control. Interference can cause momentary loss of control.

Do not attempt to operate your aircraft with any worn and/or damage components, parts, etc. (including, but not limited to, damaged/propellers, old batteries, etc.)

Never operate your aircraft in poor or severe weather conditions including heavy winds, precipitation, lightning, etc.

Always operate your aircraft starting with a fully charged battery.

Always keep the aircraft in clear line of sight and under control, and keep the transmitter powered on while the aircraft is powered on.

Always move the throttle control stick down fully and disarm the motors in the event the propellers come into contact with any objects.

Always allow components and parts to cool after use before touching them and flying again.

Always remove batteries after use and store/transport them per the corresponding guidelines.

Avoid water exposure to all electronic components, parts, etc. not specifically designed and protected for use in water. Moisture causes damage to electronic components and parts.

Never place any portion of the aircraft or any related accessories, components or parts in your mouth as doing so could cause serious injury or even death.

Always keep chemicals, small parts and electronic components out of the reach of children.

Carefully follow the instructions and warnings included with this aircraft and any related accessories, components or parts (including, but not limited to, chargers, rechargeable batteries, etc.).

Individual Parts

Transmitter

Ensure the transmitters batteries are full before each flight.

If the transmitter is left on for more than 5 minutes it will sound an alarm. Execute some action, or power it off.

Repair or replace the transmitter if damaged.

Gimbal

Precision elements in the gimbal may be damaged in a collision or impact, which may cause the gimbal to function abnormally.

DO NOT apply external force to the gimbal after the gimbal is powered on.

DO NOT add any payloads to the gimbal, as this may cause the gimbal to function abnormally or even lead to motor damage.

Compass

To avoid possible injury or damage, observe the following rules:

Land immediately when severe drifting occurs in flight, i.e., the aircraft does NOT fly in straight lines.

Ensure the compass is calibrated before every flight. Failure to calibrate may lead to poor flight performance or a crash.

DO NOT attempt to calibrate your compass where there is a chance of strong magnetic interference. This includes areas where there are massive metal objects, parking structures, steel reinforcements underground, or under bridges.

DO NOT carry ferromagnetic materials with you during calibration, such as keys or mobile phones.

The compass should always be calibrated when moving from indoor spaces to outdoor spaces.

After successful calibration, the compass may become abnormal when you place the aircraft on the ground. This may be because of underground magnetic interference. Move the aircraft to another location and try again.

When to calibrate:

When flying in a new location, or a location that is different from your last flight.

When the mechanical structure of the aircraft has changed, i.e. new mounting position of the compass.

Legal Terms and Conditions

Warranty

Legal Terms and Conditions

This section contains the legal terms and conditions relating to the use and operation of the X PlusOne. Please read it thoroughly. The below terms and conditions affect and limit your legal rights.

Limited Warranty

XCraft Enterprises, LLC ("XCraft") warrants to the first purchaser of this product that at the time of purchase the X PlusOne product is free from material defects in materials and workmanship for a period of ninety (90) days. In the event the X PlusOne product fails during the warranty period stated above, XCraft or its designee will have the right, but not the obligation, to inspect and validate such defect, and, if the defect is confirmed by XCraft or its designee, XCraft or its designee shall, in its sole discretion, repair or replace the defective product or component with a new, repaired or overhauled product or component, without charge, as long as the defect arises due to the result of normal use and the warranty is otherwise not void.

Notwithstanding the foregoing, the warranty of workmanship does not extend to the build-your-own X PlusOne kit, and XCraft disclaims all liability relating to the workmanship and assembly of the resulting X PlusOne unit built from a build-your-own kit.

This limited warranty does not extend beyond the first purchaser of this X PlusOne product. Additionally, this limited warranty is conditioned upon compliance with all aspects of this Manual and any other manual or other documentation accompanying the X PlusOne product. This limited warranty does not apply to

The product, or any components thereof, when it is subjected to anything beyond ordinary and intended use, any accidents (including but not limited to collisions, crashes, mishandlings, etc.), alterations, software modifications, improper repair or maintenance, improper or unauthorized use, abuse, neglect, inclement weather, or acts of God;

Any damage caused by moisture, liquid, dirt, sand, battery liquid, or any other substance;

Damage caused by any failure to comply with notes or warnings contained in this Manual or any other manual or documentation accompanying this X PlusOne, including, but not limited to, any failure to conduct preflight or other periodic inspections;

Damage arising from any combined use with any other product;

Damage from improper usage of any electrical source; or

Use of the X PlusOne in violation of any applicable local, state or federal rules, laws or regulations.

OTHER THAN THE EXPRESS LIMITED WARRANTY PROVIDED ABOVE, XCRAFT MAKES NO OTHER WARRANTY OR

REPRESENTATION, EITHER EXPRESS OR IMPLIED, REGARDING THE X PLUSONE OR ANY COMPONENTS OR ACCESSORIES THEREOF OR RELATED THERETO. XCRAFT HEREBY DISCLAIMS ANY AND ALL IMPLIED WARRANTIES,

INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE PURCHASER ACKNOWLEDGES THAT THE PURCHASER ALONE

HAS DETERMINED THAT THE PRODUCT WILL SUITABLY MEET THE REQUIREMENTS OF THE PURCHASER'S INTENDED USE. THE EXTENT OF XCRAFT'S LIABILITY UNDER THIS WARRANTY IS LIMITED TO THE REPAIR OR REPLACEMENT AS PROVIDED ABOVE, AND IN NO EVENT SHALL XCRAFT'S LIABILITY EXCEED THE PURCHASE PRICE PAID BY PURCHASER FOR THE X PLUSONE PRODUCT.

Accessories

The above limited warranty in Section 8.1 only extends to the X PlusOne unit accompanying this Manual and does not extend to the radio controller, camera or any other accessory sold or provided with the X PlusOne (if applicable). The radio controller, camera and any other accessories sold or provided with the X PlusOne (if applicable) each have separate manuals or documentation that may or may not include warranties for such accessory. Any representations or warranties provided for in those manuals or any associated documentation are not representations or warranties made by XCraft, and in no case shall any such representations or warranties extend to XCraft or the X PlusOne.

Limitation of Liability

XCraft's total maximum aggregate liability for damages relating to the sale and operation of the X PlusOne product shall not exceed the purchase price paid for the product. In no event shall XCraft be liable for, and purchaser and all operators of the product waive and release any claim (in contract, tort, breach of statutory duty or otherwise) against XCraft for, any and all indirect, special incidental or consequential damages as well as any and all lost revenues, profits or prospective economic or non-economic advantage (whether direct or indirect).

Indemnification

Purchaser and each operator hereby agrees to indemnify, save and hold XCraft and its officers, directors, shareholders, agents, and employees harmless from any and all damages, injuries or any other loss which is caused by the acts or omissions of purchaser or any operator of the X PlusOne, regardless of whether based upon negligence, strict liability in tort, breach of warranty or other theory of recovery or any other cause of action.

Software

The software included in this X PlusOne unit contains copyrighted software that is licensed in its entirety under the GPLv3. You may obtain the complete Corresponding Source Code for the software from XCraft for a period of three years after the last shipment of this product and/or spare parts therefore, which will be no earlier than 2015-11-19, on XCraft Enterprise's website at <http://xcraft.io>. The licensed software contained herein was modified by XCraft Enterprises, LLC on 2015-10-15. Future updates to the Corresponding Source Code will be provided on XCraft Enterprise's website with corresponding installation information. **NOTWITHSTANDING THE FOREGOING, ANY MODIFICATION OF THE SOFTWARE INCLUDED IN THIS X PLUSONE BY PURCHASER OR ANYONE OTHER THAN XCRAFT WILL EFFECTIVELY VOID ANY AND ALL WARRANTIES CONTAINED HEREIN.**

Additional Terms

These terms represent the entire understanding between XCraft and the purchaser and operators of the X PlusOne product. In the event any provision of these terms is determined to be illegal or unenforceable, that provision will be limited or eliminated to the minimum extent necessary so that the remaining terms and conditions shall otherwise remain in full force and effect. The purchaser and operators agree that any legal action taken in relation to the product shall be governed by and construed in accordance with the laws of the State of Idaho, without regard to the conflict of laws provisions thereof. The exclusive jurisdiction and venue for any legal proceedings or actions will be the State of Idaho and the U.S. federal courts located in Coeur d'Alene, Idaho. The United Nations Convention on Contracts for the International Sale of Goods (CISG) is specifically excluded and do not apply to this this Agreement nor the sale of this X PlusOne unit.

Regulatory Compliance

FCC Compliance

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the distance between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Modifications not authorized by the manufacturer may void the purchaser's authority to operate this device.

Sincerely,

Team xCraft

Government Regulations

As an X PlusOne operator, you are solely responsible for assuring your operation of the X PlusOne is conducted safely and in accordance with all local laws and regulations. Below are links for regulatory information on flying unmanned devices in differing jurisdictions, which operators may use as a starting point to research and become familiar with the applicable local laws and regulations. It is the operator's sole responsibility to familiarize himself or herself with all applicable rules, laws and regulations and other government guidance and information relating to flying the X PlusOne. The below information and links are provided for convenience purposes only - XCraft does not guarantee or warrant that the following links are accurate or exhaustive of all applicable rules, laws and regulations relevant to the operation of the X PlusOne.

- United States: <http://www.faa.gov/uas/>
- China: <http://www.caac.gov.cn/>
- New Zealand: <https://www.caa.govt.nz/rpas/index.html>
- Canada: <http://www.tc.gc.ca/eng/civilaviation/standards/general-recavi-uav-2265.htm>
- Czech Republic: <http://www.caa.cz/letadla-bez-pilota-na-palube/unmanned-aircraft?lang=2>
- Denmark: [http://selvbetjening.trafikstyrelsen.dk/civilluftfart/Dokumenter/Love%20og%20bestemmelser/Bestemmelser%20for%20Civil%20Luftfart%20\(BL\)/BL%2009-serien/9_4_ud3.pdf](http://selvbetjening.trafikstyrelsen.dk/civilluftfart/Dokumenter/Love%20og%20bestemmelser/Bestemmelser%20for%20Civil%20Luftfart%20(BL)/BL%2009-serien/9_4_ud3.pdf)
- UK: <http://www.caa.co.uk/default.aspx?CATID=1995>
- France: <http://www.developpement-durable.gouv.fr/Effectuer-des-activites>
- Germany: <http://www.riot.ch/wp-content/uploads/2014/01/BMVBS-Kurzinformation-unbemannte-Luftfahrtsysteme-10.2013.pdf>
- Italy: http://www.enac.gov.it/repository/ContentManagement/information/N1220929004/Reg%20SAPR%20english_022014.pdf
- Ireland: <https://www.iaa.ie/index.jsp?p=100&n=107&a=406&pp=413&nn=428&IID=956>
- Poland: <http://www.ulc.gov.pl/pl/uav>
- Norway: <http://www.luftfartstilsynet.no/selvbetjening/allmennfly/RPAS-FAQ/>
- Singapore: <http://www.caas.gov.sg/caasWeb2010/export/sites/caas/en/ANS/aero-modelling.html>
- Australia: <https://www.casa.gov.au/operations/standard-page/remotely-piloted-aircraft-rpa>
- Austria: http://www.austrocontrol.at/luftfahrtbehoerde/lizenzen__bewilligungen/flugbewilligungen/unbemannte_lfz
- UAE: <https://www.dcaa.gov.ae/sitepages/en/AviationLawsAndRegulations.aspx>
- Spain: http://www.seguridadaerea.gob.es/lang_castellano/cias_empresas/trabajos/default.aspx
- Korea: <http://www.law.go.kr/lsInfoP.do?lsiSeq=157013&efYd=20150301#0000>