

# **RAVEN**

**Quadcopter Drone with GPS and Wi-Fi Camera**



**User's Guide for Model DRWG538 v2139-01**

# Warnings & Precautions

## Important Safety Instructions

- Read and follow all instructions.
- Keep these instructions for future reference.
- Heed all Warnings.
- Intended for children ages 14 and higher. Adult supervision is required.
- Only use attachments/accessories specified by the manufacturer.
- Before flying, always check the body, rotors, and battery for any damage or obstructions.
- Battery should be free from cracks or swelling.
- Keep the rotors clear of any obstructions and body parts to avoid potential damage and injury.
- Manufacturer and dealer assume no liability for accidental damages from improper use or installation of parts, or from damage incurred from worn or broken parts.
- Pilots are responsible for their actions and any damage caused from improper use.
- Pilots should keep the craft in sight at all times during flight. If you lose sight of the craft at any time, power down and cease flight immediately.
- Only fly in large, open areas that are free from obstacles or potential hazards, such as trees, power lines, ceiling fans, and the like.
- Flying over bodies of water is not recommended.
- Flying at night is not recommended.
- Never try to retrieve the craft from areas you cannot safely reach, such as rooftops or trees.
- Never launch the craft from your hand.
- Never leave the craft unattended while it is powered on or while the battery is charging.

## FCC Warnings

Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: 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 separation between the equipment and receiver.
- Connect the equipment into 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.

## Additional Warnings & Precautions

- **WARNING:** To reduce the risk of fire or electric shock, do not expose this apparatus to rain, moisture, dripping, or splashing.
- **CAUTION:** Use of controls or adjustments or performance of procedures other than those specified may result in personal injury.
- **WARNING:** Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
- **CAUTION:** Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type.
- Lithium batteries, like all rechargeable batteries, are recyclable and should be recycled or disposed of according to state and local guidelines. They should never be disposed of in normal household waste, and they should never be incinerated, as they might explode. Contact your local government for disposal or recycling practices in your area.
- **WARNING:** Shock hazard - Do Not Open.
- Battery shall not be exposed to excessive heat such as sunshine, fire, or the like.
- Keep new and used batteries away from children. If the battery compartment does not close securely, stop using the product and keep it away from children.
- If you think batteries might have been swallowed or placed inside any part of the body, seek immediate medical attention.
- Do not mix old and new batteries.
- Completely replace all old batteries with new ones.
- Do not mix alkaline, standard (carbon-zinc), or rechargeable (ni-cad, ni-mh, etc) batteries.
- Batteries should be recycled or disposed of as per state and local guidelines.
- Only use the included power supply/power charger or a UL/ETL certified power supply of the same power output specifications.

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# Raven GPS Drone

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## FAA Information: Flying Your Drone Under the Special Rule for Model Aircraft

To fly under the Special Rule for Model Aircraft you must:

- Fly for hobby or recreation ONLY
- Register your model aircraft
- Fly within visual line-of-sight
- Follow community-based safety guidelines and fly within the programming of a nationwide community-based organization
- Fly a drone under 55 lbs. unless certified by a community-based organization
- Never fly near other aircraft
- Notify the airport and air traffic control tower prior to flying within 5 miles of an airport
- Never fly near emergency response efforts

**You alone are responsible for safety and responsibly flying your drone.** For more information on FAA Rules and Guidelines for flying Unmanned Aerial Systems please visit: <http://www.faa.gov/uas/>

## Features

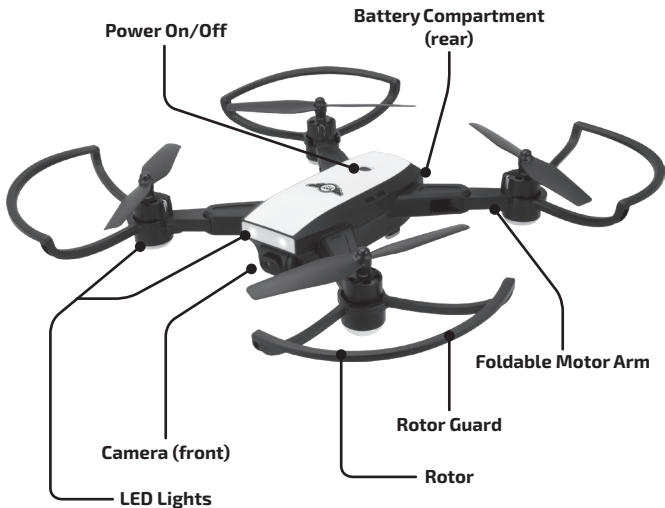
- 6-axis gyroscope
- Free app for GPS control and Wi-Fi viewing
- Adjustable angle Wi-Fi camera
- 2 speeds
- LED navigation lights
- Foldable Rotors
- Operating time: 12-14 minutes
- Charge time: approx. 180 minutes

## Includes

- USB charging cable
- Rechargeable lithium polymer battery
- 2.4GHz remote control: requires 4 AA batteries (not included)
- Detachable smartphone cradle
- Screwdriver
- User's Guide

## Diagram & Specifications

- Unfolded Dimensions (LWH): 350 x 75 x 285mm / 6.7 x 5.3 x .87 in.
- Weight: 217g / 7.65oz / 0.48lb
- Control Distance: max 328 ft. (app) / 650 ft. (remote)



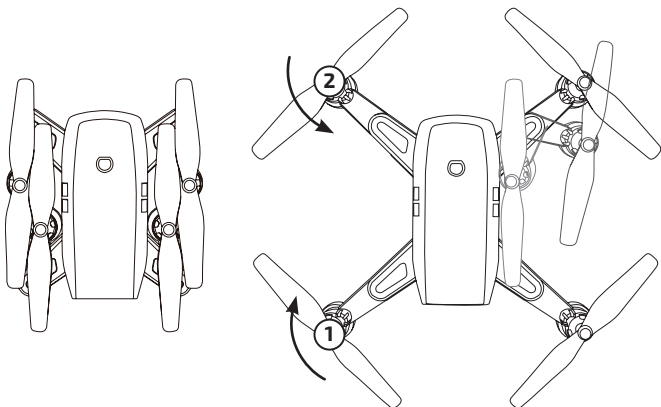
Green LEDs indicate the front of the craft.

Red LEDs indicate the rear of the craft.

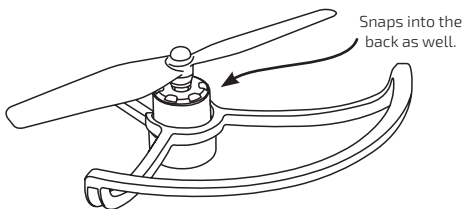
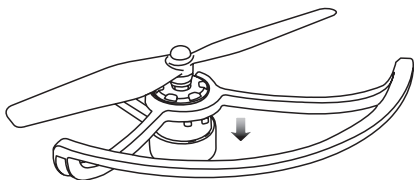
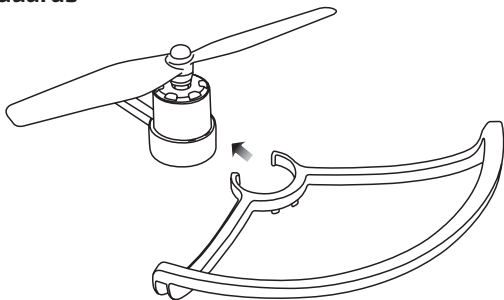
# Rotor Guards

## Rotor Folding

The rotor guards can be removed and the arms folded inwards for flight or for easy stowage.

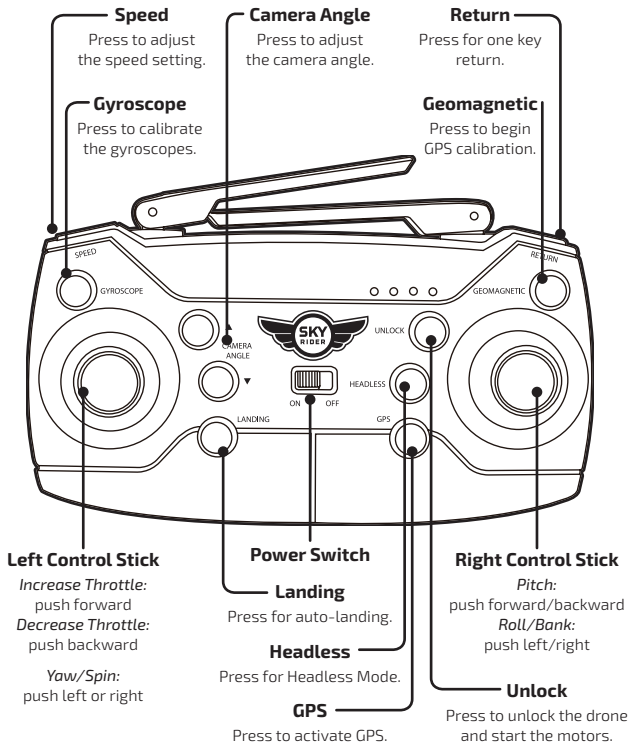


## Rotor Guards



# Remote Control

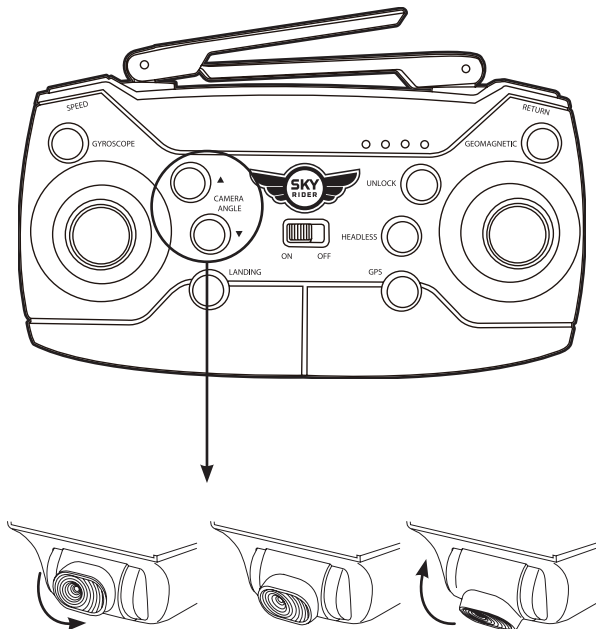
## Functions





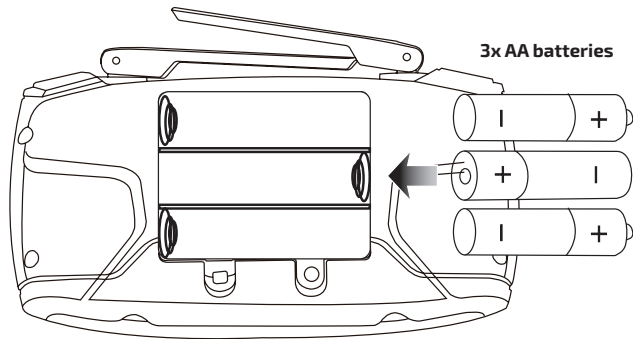
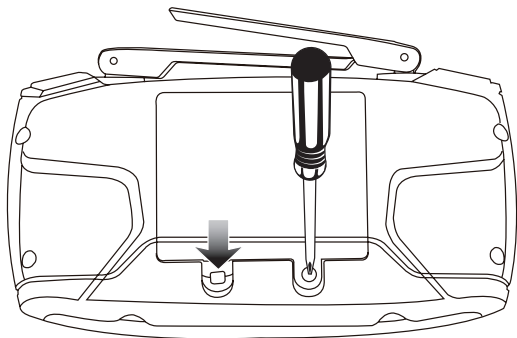
## Camera Adjustment

Use the camera buttons on the remote to rotate the camera lens and change the viewing angle.



# Remote Control

## Battery Installation



# Charging the Battery

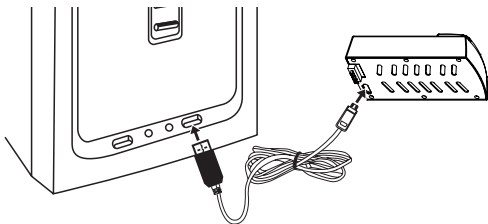
## Information & Procedure

The craft's battery must be charged before it can be flown. To avoid risk of injury or damage, **be sure the craft and remote control are both powered OFF and remove the battery from the craft when charging.** Charging time is approximately 120 minutes. Charge fully before use for best performance.

Connect the USB charging cable (included) to the USB port of a powered ON computer or USB power adapter (not included), then connect the charging plug to the battery plug.

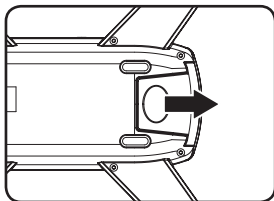
**While charging,** the cable will display a red light.

**When charging is complete,** the light will turn OFF.

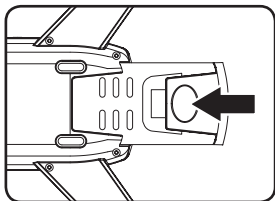


**Be sure to correctly match the plug to the charging port or damage may occur.**

**REMINDER: Do not charge overnight. Do not leave unattended while charging.**



**Remove Battery**



**Replace Battery**

# Sky Rider GPS App

The Sky Rider GPS app will allow you to fly the drone with a GPS compatible smartphone and display the image from the craft's camera on your smartphone's screen, allowing you to capture images and video of your flights.

## Free Download

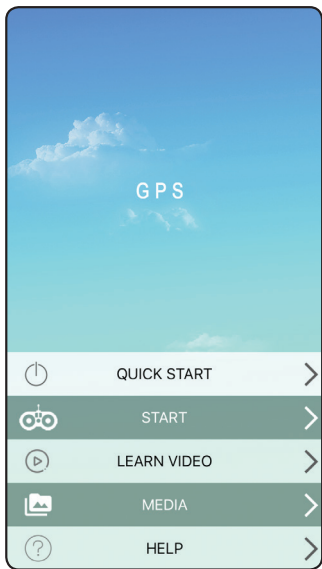
Scan the appropriate QR code with your smartphone or search for "**Sky Rider GPS**" in the Apple App Store or Google Play Store.



Android



Apple



## Home Screen

**Quick Start** - Displays Quick Start Guide to flying the drone and GPS calibration.

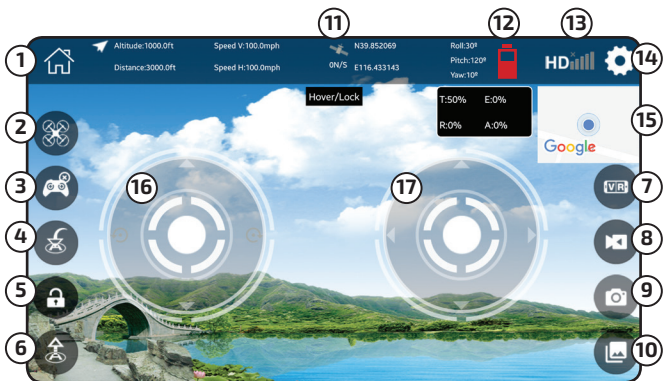
**Start** - Start the app and begin flying.

**Learn Video** - Open a video tutorial on how to use the app, calibrate GPS, and more.

**Media** - Open the gallery and view images or video taken while flying.

**Help** - Opens a controller guide for flying and other controls available in the app.

## Flight Screen



- |                           |                      |                              |
|---------------------------|----------------------|------------------------------|
| 1. Home Screen            | 7. 3D View (VR Mode) | 13. Wi-Fi Signal Strength    |
| 2. Control Mode           | 8. Take Photo        | 14. Settings                 |
| 3. Flight Controls ON/OFF | 9. Take Video        | 15. Map                      |
| 4. Auto-Return            | 10. View Gallery     | 16. Throttle and Yaw Control |
| 5. Unlock Button          | 11. Flight Data      | 17. Pitch and Roll Control   |
| 6. Auto-Take Off          | 12. Drone Battery    |                              |

# Sky Rider GPS App

## Flying Modes

**Standard Flight Mode** - Uses the flight control sticks for drone flight.

**Waypoint Mode** - Uses the map to set waypoints for the drone to follow.

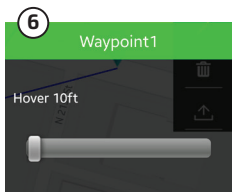
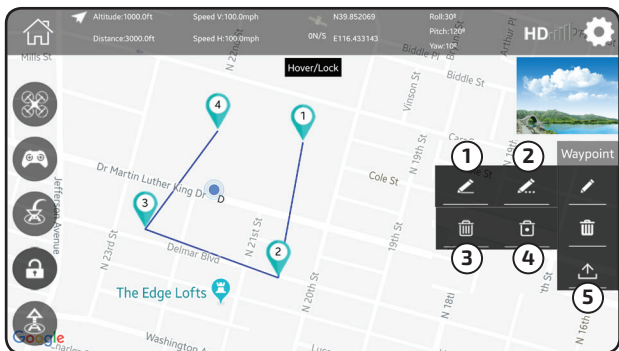
**Follow Me Mode** - Press to activate, the icon will turn yellow and the drone will automatically maintain a set distance from the remote control.

**Orbit Mode** - Use the map to set an orbit point for the drone to follow.




## Waypoint Mode

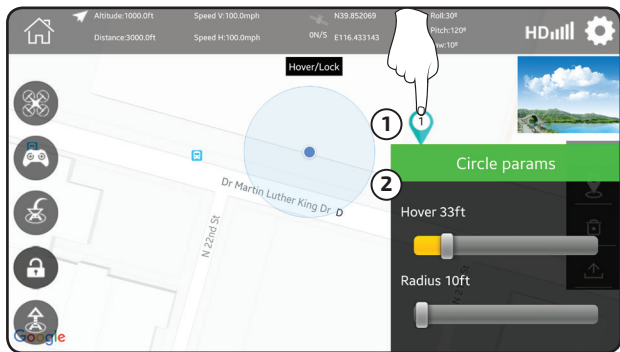
1. Draw a Flight Path - Use your finger to trace a flight path on the map.
2. Set Waypoints - Use your finger to set individual waypoints on the map.
3. Delete All Waypoints - Delete the entire flight path.
4. Delete a Single Waypoint - Delete one waypoint at a time on the flight path.
5. Send the drone on the set flight path.
6. Flight Path Height - Set the height the drone will fly during the flight path.



# Sky Rider GPS App

## Orbit Mode

1. Use your finger to place the orbit point on the map.
2. Press that point to set the altitude and radius parameters.
3. Press the  icon to send the drone. It will take off and fly out to the distance set by the radius setting and begin orbiting.





# Sky Rider GPS App

## Control Settings

**Joystick Mode** - Reverses the joystick control locations.

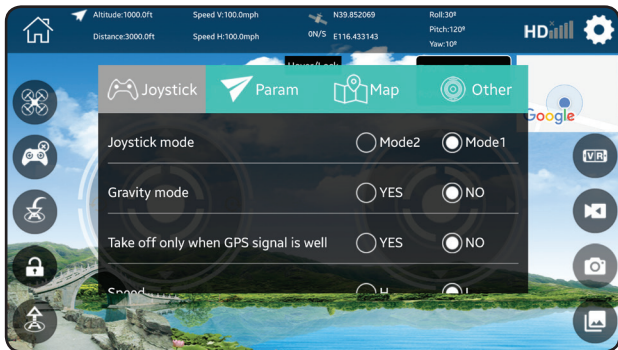
**Gravity Mode** - Uses the G-Sensor in your phone to control the craft. Tilt the phone forward, back, left and right to control the **pitch and roll** of the craft. **Throttle and yaw** are still manually controlled from the **Left Directional Control**.

**GPS Signal** - Drone will only take off when it has good GPS signal.

**Speed** - Set to low or high.

**Calibrate Accelerometer** - Press to calibrate the drone's accelerometer.

**Calibrate Magnetometer** - Press to calibrate the drone's magnetometer.



# Sky Rider GPS App

## Parameter Settings

Set various parameters for the drone's flying speed, altitude, and other settings.

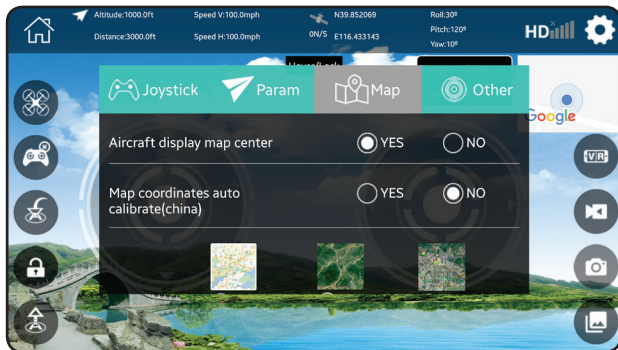


## Map Settings

**Aircraft Display Map Center** - Sets the drone as the center of the map view.

**Map Coordinates Auto Calibrate** - Only applies in China, disregard.

**Map Type** - Switch between Standard, Satellite, or Hybrid view.

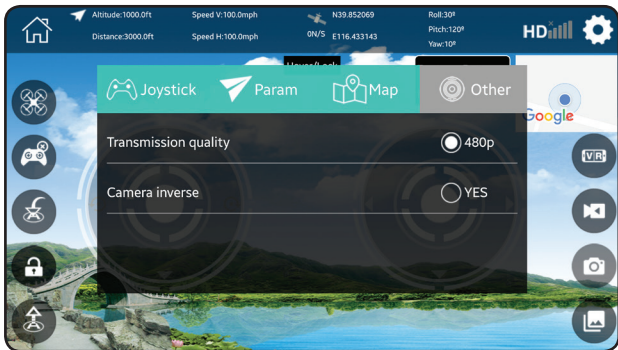


# Sky Rider GPS App

## Other Settings

**Transmission Quality** - Change the display settings of the Wi-Fi camera transmission.

**Camera Inverse** - Flips the camera image on the screen.



# Flying with the App

## Step 1 - Pre-Flight Condition Check

Before flying, it is important to note the environment in which you are about to fly. Do not fly in rain or snow, and be sure the area is free of trees, power lines, buildings, airports or air traffic. The drone has semi-autonomous features, such as the Waypoint feature, and the pilot is responsible for the drone's flight at all times.

## Step 2 - Connect Phone to the Drone's Wi-Fi

**NOTE:** Wi-Fi control may be interrupted by interference from other nearby Wi-Fi equipment.

- **Begin with the battery installed and the craft and remote powered OFF.**
- Press and hold the power button on the drone to power it on and make sure your phone's Wi-Fi is enabled.
- From your smartphone, open the Wi-Fi settings menu, then search for and select **WIFI-720-GPS-XXXXX** to connect to the craft.

Once connected, open the app. Press Start to open the flying screen.

## Step 3 - Calibrate the Drone's Magnetometer

The drone's GPS system need to be calibrated to your specific geo-location, magnetic field, longitude/latitude, and elevation to fly properly. To do this, perform the following actions in the app:

*Flight Screen > Settings > Calibrate Magnetometer*

The lights on the drone will begin flashing very quickly, indicating it is in calibration mode. Hold the drone in your hand and rotate it horizontally around its axis 3 times, then repeat the procedure while holding the drone vertically (camera facing up, see diagram below). When finished, place the drone on a flat surface. When successfully calibrated the lights will go back to blinking slowly.



**Spin on  
Horizontal  
Axis x3**



**Spin on  
Vertical  
Axis x3**

# Flying with the App

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## Step 4 - Calibrate the Drone's Accelerometer

Next, the drone's accelerometer and gyroscopes need to be calibrated. Place the drone on a flat surface and perform the following actions in the app:

*Flight Screen > Settings > Calibrate Accelerometer*


The lights on the drone will begin flashing very quickly, indicating it is in calibration mode. When successfully calibrated the lights will go back to blinking slowly. The drone is now ready for flight.

## Step 6 - Update GPS Position

Before flying and using the GPS features, you should update the GPS map and position. Press the map thumbnail in the upper right corner of the screen. The screen will change to the Map View and your position should update to your current location. When complete, the lights on the drone will turn solid, indicating the drone has good GPS signal.

## Step 7 - Unlock the Drone

The drone must be "unlocked" before you begin to fly. When the drone is unlocked the rotors will start spinning (but the craft will not lift off).

*Flight Screen > Press the Unlock icon* 

## Step 8 - Take Off/Landing

To take off, press the **Take Off button** . The drone will climb to a fixed height and hover in place.

To land, press the **Landing button**  and the drone will land automatically.

## GPS Features

Consult the previous sections of this manual for instructions on using the various GPS features of the app.

# Flying with the Remote

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## Step 1 - Pre-Flight Condition Check

Before flying, it is important to note the environment you are about to fly in. Do not fly in rain or snow, and be sure the area is free of trees, power lines, buildings, airports or air traffic. The drone has semi-autonomous features, such as the Waypoint feature, and the pilot is responsible for the drone's flight at all times.

## Step 2 - Connect Remote to the Drone

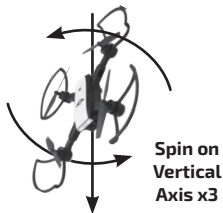
**NOTE:** Remote control may be interrupted by interference from nearby Wi-Fi or other equipment that may cause interference.

- **Begin with the battery installed and the craft and remote powered OFF.**
- Press and hold the power button on the drone to power it on.
- Press the power switch on the remote to power it on. It will chime once when it has connected to the drone.

## Step 3 - Calibrate the Drone's Magnetometer

The drone's GPS system need to be calibrated to your specific geo-location, magnetic field, longitude/latitude, and elevation to fly properly.

Press and hold the GPS button on the remote. The lights on the drone will begin flashing very quickly, indicating it is in calibration mode. **Press the Geomagnetic button** then hold the drone in your hand and rotate it horizontally around its axis 3 times and repeat the procedure while holding the drone vertically (camera facing down, see diagram below). When finished, place the drone on a flat surface. Finally, press the GPS button again to search for GPS signal. This may up to 1 or 2 minutes. When complete, the lights on the drone will turn solid.



# Flying with the Remote

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## Step 4 - Unlock the Drone

The drone must be "unlocked" before you begin to fly. Press the Unlock button on the remote, the rotors will start spinning (but the craft will not lift off).

## Step 5 - Take Off/Landing

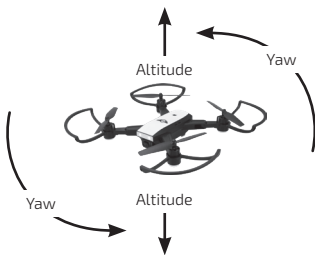
To take off, press the **Landing button** on the remote, the drone will climb to a fixed height and hover in place.

Press the **Landing button** again and the drone will land automatically.

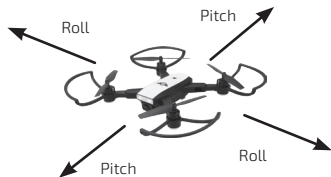
## Step 6 - One Key Return

The Return feature will bring the drone back to its point of origin (where it first took off) and automatically land there. Note: When the drone's battery has reached a critical low point, or if the drone loses signal from the remote, it will automatically initiate the Return feature.

## Flight Controls



**Left Stick** controls Altitude (power) and Yaw (spin).



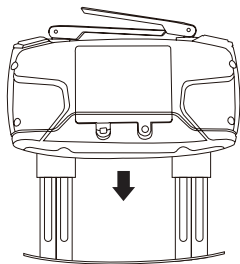
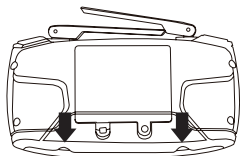
**Right Stick** controls Pitch (forward/backward) and Roll (left/right).



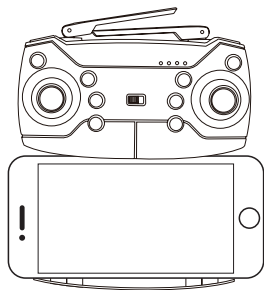
## Smartphone Holder

Use the smartphone holder to get the most out of the drone's camera and video features.

It is recommended to connect the remote to the drone first and connect the app to the drone second. It is not recommended to use the app's flying or GPS controls while using the remote, there is a chance that signals from the two controllers will get mixed and cause a loss of control or unpredictable flight.



Pull downwards out of the body of the remote. Note the two tabs on the rear.



The phone holder is spring loaded, pull down wards again to adjust to fit your phone.

# Flying

## Tips for Safe Operation

- It is recommended to only fly in large, open spaces that are free of obstacles like power lines, trees, ceiling fans, etc.
- When flying indoors avoid walls and ceilings, as the craft may be drawn towards them if closer than 2-3 feet.
- Stand behind the craft when first taking off, so that you and the craft are facing the same "forward" direction. This will help with orientation when the craft is airborne.
- Novice pilots should move the controls slowly and deliberately to get used to the craft's flying characteristics. Try using one control at a time.
- Practice basic flight operations like take off, hovering, and landing.
- If you get into trouble or if anything obstructs the rotors, cut power immediately and safely clear the obstruction. Check for possible damage before flying again.

## Speed Setting

Press the **Speed** button on the remote or the app to change the craft's speed setting.

- **Low:** Provides smooth and predictable control of the craft. The remote will chime once to indicate the low speed setting.
- **High:** Highest setting for maximum performance. The remote will chime three times to indicate the high speed setting.

## Headless Mode

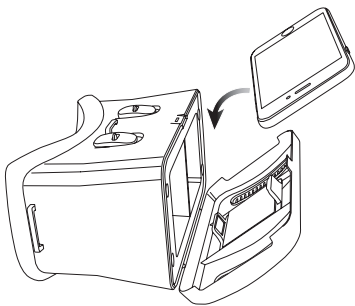
Before using Headless Mode be sure you and the craft are facing the same "forward" direction, otherwise the craft will not fly correctly. **To activate Headless Mode, press the Headless Button** on the remote control. The LED lights will quickly flash while Headless Mode is ON. Press the button again to deactivate Headless Mode.

While Headless Mode is active the craft will fly in whatever direction the **Right Control Stick** is moved, regardless of where the front of the craft is pointing. For example, if the front of the craft was pointed straight ahead but is now pointed right 90°, when you push forward on the stick the craft will fly forwards as if it was still pointed straight ahead. This can be useful if you become disoriented while flying and cannot visually determine which direction the craft is facing.

## Virtual Reality Mode

VR Mode splits the phone's screen for use in a VR headset (not included). Use VR Mode to give a friend a fully immersive, point-of-view flying adventure.

**Press the 3D Mode (VR) button** on the screen to turn this feature ON or OFF.



# Parts & Repair

**REMINDER: Pilots are responsible for any damage caused by improper use.**

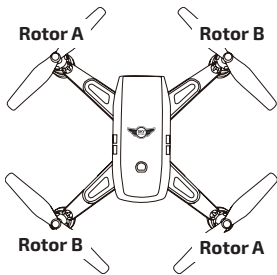
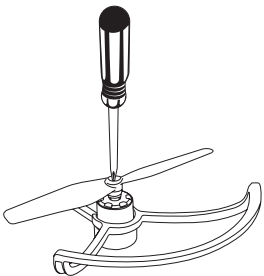
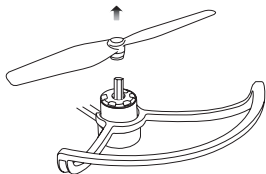
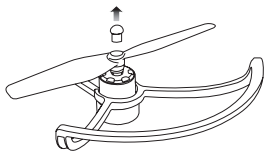
## Parts Replacement

Standard parts such as extra batteries and remotes are available online for purchase when in stock. However, any non-standard parts such as cameras, screws, bodies, etc. can be ordered by placing an inquiry with our parts department at: [partsinfo@dpiinc.com](mailto:partsinfo@dpiinc.com).

## Rotor Replacement

The craft comes with replacement rotors if the originals are broken or badly damaged. Use the included screwdriver to remove the rotor retaining screw that holds the rotor to the motor shaft. Once the retaining screw is out, pull upwards on the rotor to remove it from the motor shaft. Installation of the new rotor is the reverse of the removal process. Be sure to tighten the rotor retaining screw firmly, but do not over tighten.

**It is extremely important to use the correct rotor (A or B) for replacement.** Using the incorrect rotor will make the craft impossible to control. The marking can be found on the rotor near the shaft.



# Troubleshooting

## Troubleshooting Guide

PROBLEM	POSSIBLE CAUSES	SOLUTION
<b>Craft does not respond to controls.</b>	<ul style="list-style-type: none"><li>• No power to remote or craft.</li><li>• Poor contact between power plugs.</li><li>• Craft is out of range.</li></ul>	<ul style="list-style-type: none"><li>• Check remote batteries, replace if needed.</li><li>• Check craft battery, be sure it is fully charged.</li><li>• Be sure the power plugs are firmly connected.</li><li>• Be sure the remote has an unobstructed line of sight to the craft.</li><li>• Remain within the remote's 300 ft. range.</li></ul>
<b>Craft suffers from mechanical trouble.</b>	<ul style="list-style-type: none"><li>• Damage to body, rotors or other major components.</li></ul>	<ul style="list-style-type: none"><li>• Repair or replace parts as needed.</li></ul>
<b>LED lights ON but craft does not respond to controls.</b>	<ul style="list-style-type: none"><li>• Low battery power.</li></ul>	<ul style="list-style-type: none"><li>• Recharge the battery.</li></ul>

# Customer Support

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## Contact Information

Website: [www.gpx.com](http://www.gpx.com)

Email Support: [prodinfo@dpiinc.com](mailto:prodinfo@dpiinc.com)

Email Parts: [partsinfo@dpiinc.com](mailto:partsinfo@dpiinc.com)

Phone Support: **1-888-999-4215**

## Warranty

See included 30 Day Warranty for warranty information. Warranty and the most up-to-date version of this User's Guide can also be found at: [www.gpx.com](http://www.gpx.com)

## International Support

To download this User's Guide in English, Spanish, and French, or to get answers to frequently asked questions, visit the support section at: [www.gpx.com](http://www.gpx.com)

Para descargar este Manual del Usuario en inglés, español y francés, o para obtener respuestas a preguntas frecuentes, visite la sección de apoyo en: [www.gpx.com](http://www.gpx.com)

Pour télécharger ce guide de l'utilisateur en anglais, espagnol ou français, ou pour obtenir des réponses à des questions fréquemment posées, consultez la rubrique d'assistance sur: [www.gpx.com](http://www.gpx.com)



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