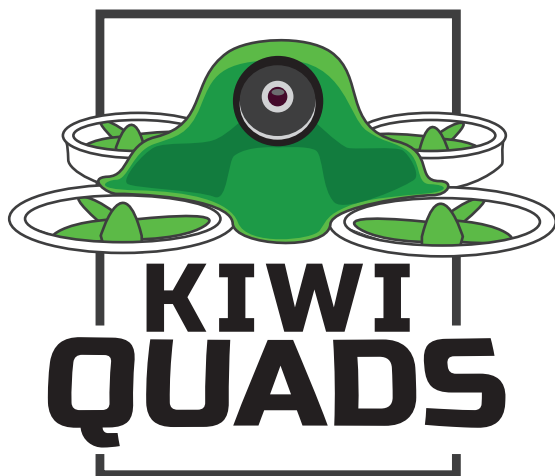


KIWI QUADS

Drone Racing Starter Kit Instruction Manual





**For Accessories, Parts,
Guides, and More Visit
www.kiwiquads.com**

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Welcome to the World of Drone Racing!

Congratulations on the purchase of your new KiwiQuad Drone Racing Starter Kit. Although you're eager to start flying, we need to cover the basics first! We recommend you familiarise yourself with the controls and read this manual in its entirety before attempting to fly.

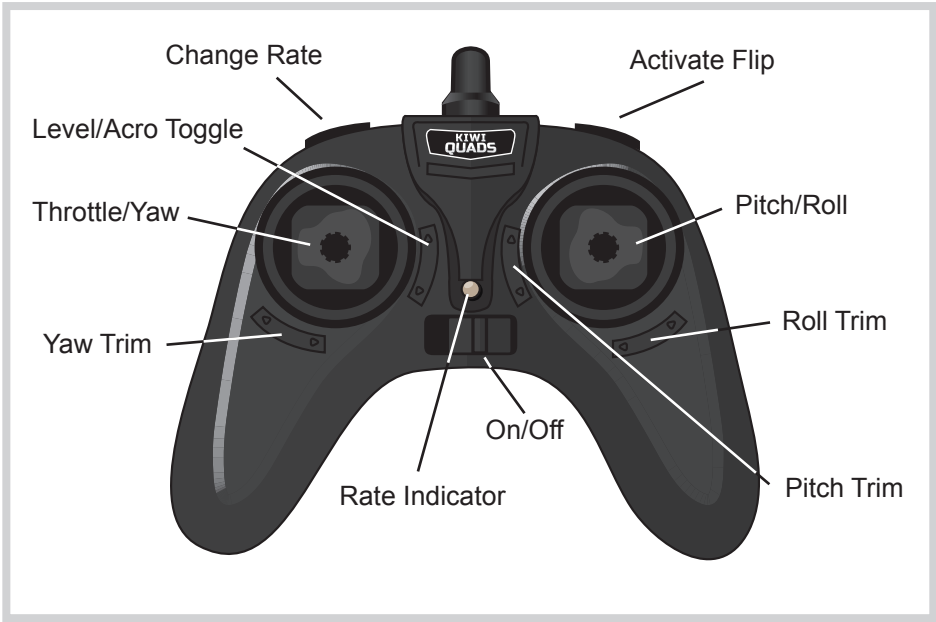
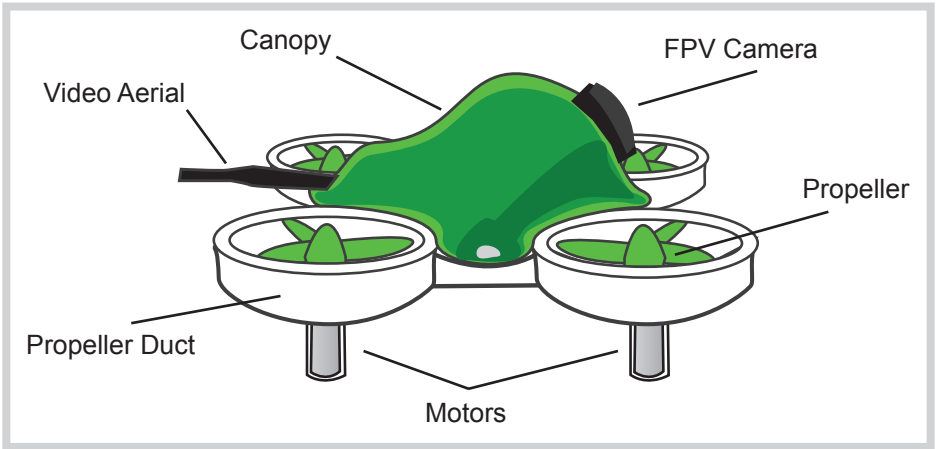
Box Contents:

- KiwiQuads Drone
- Radio Controller
- FPV Headset
- Antenna
- Headstrap
- 1x Propeller Spare Set
- 2 x Batteries
- USB Charger
- Micro USB Cable
- Propeller Removal Tool
- Screwdriver
- Landing Pad

Warning

Ensure you have read and understand Civil Aviation Authority rules and local laws before flying outdoors or in a public space.





Charging The Battery

To charge a battery, connect it to the included USB charger. The USB charger must be connected to a USB power supply. The red LED will flash twice quickly to indicate it is charging. On completion of charging, the red LED will remain lit on the charger.

To charge the FPV headset, connect the included micro-USB charger. A red LED on the underside of the headset will indicate the unit is charging. Once charging is complete, the red LED will turn off.

Warning

Lithium Polymer batteries can become a safety and fire hazard if not used or handled correctly.

- Never leave batteries charging unattended.
- Only charge batteries with official KiwiQuad chargers.
- Do not attempt to charge a swollen or damaged battery.
- Immediately dispose of any damaged batteries. Lithium batteries require proper disposal; do not dispose of with garbage.
- Do not expose batteries to water or modify in any way.
- Dispose of any bent, punctured, swollen or burnt batteries immediately.

Turning The Drone On and Off

The drone does not have a power switch. It will turn on and off when the battery is connected and disconnected.

Insert a fully charged battery into the slot underneath the drone. Ensure the battery plug is facing the rear of the drone. Plug the red and black cable into the battery plug. The drone will light up.

Caution

Take care when unplugging the battery lead to avoid damage. Always grasp the lead by the white plug.

The camera transmitter is now functional. The controller must now be switched on using the switch at the front. You will hear a single beep to confirm power is on. Lower the Throttle control to minimum. You will hear another beep to indicate the drone is bound to the controller. This process must be repeated at each power cycle of the drone.





Buttons located on right side of the FPV Headset

Operating The FPV Headset

Before operation, ensure the headset has been fully charged using the included micro-USB cable.

To switch on the headset, hold the ‘SCAN/⏻’ button for 5 seconds. The monitor display will switch on. You may see static video appear on the display. Switch on the drone to proceed.

Press the ‘SCAN/⏻’ button briefly to initiate a frequency scan. After a short time, the headset will tune into the same frequency as the drone. The real-time video link is now established and ready for flying.
If the headset has selected the incorrect frequency, simply repeat the scanning process until the correct frequency is selected.

MHz	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
Band A	5740	5760	5780	5800	5820	5840	5860	5880
Band B	5705	5685	5665	5645	5885	5905	5925	5945
Band C	5865	5845	5825	5805	5785	5765	5745	5725
Band D	5658	5695	5732	5769	5806	5843	5880	5917
Band E	5733	5752	5771	5790	5809	5828	5847	5866
Band F*	5362	5399	5436	5473	5510	5547	5584	5621

*Cannot be received by KiwiQuads FPV Headset but may be received on other compatible headsets.



Manually Tuning the FPV Headset

In some situations, the headset may not select the correct frequency. You can use the '+' and '-' buttons to select the correct frequency. The tuned frequency is displayed in the bottom right corner of the display when powered on.

Finding the Camera Frequency

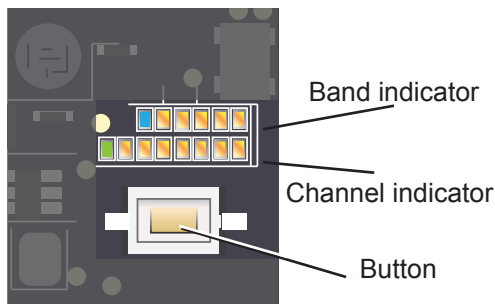
1. Using the included screwdriver, remove the two screws securing the canopy to the frame then remove the canopy.
2. Observe the LED pattern on the camera module. Take note of which LED is lit in each row. The top row represents the band A-F. The bottom row represents the channel 1-8.
3. Compare the band/channel with the diagram on the previous page.

Pro Tip

When flying with more than one drone in close proximity to others, space the frequencies apart by at least 40(MHz) on the frequency chart. Due to the bandwidth of video signals, this will give less interference between video feeds.

Setting the FPV Camera Frequency

To set the FPV camera frequency, first remove the canopy as described previously in '*Finding the Camera Frequency*'. Briefly press the yellow button on the camera module to skip to the next frequency channel. The bottom row of LEDs will indicate an advance to the next channel. To change frequency bands, hold the yellow button for 1 second. The top row of LEDs will indicate an advance to the next band. To change frequency bands, hold the yellow button for 1 second. The top row of LEDs will indicate an advance to the next band.



This camera module is operating on frequency A-1 as indicated by the Blue and Green LED.

Video Interference and Range

For best FPV results, fly in an open area free of dense obstructions. Walls, floors and windows may present attenuation and result in break-up of the video signal.





Low Battery Warnings

In the case of a low battery, the drone's red and blue LEDs will begin to blink rapidly. This indicates you have approximately 30 seconds left of flight time. Find a safe place to land the drone and swap the battery out.

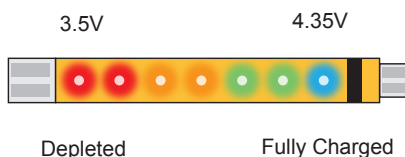
To protect the battery from over discharging, the on-board flight controller will shutdown when the battery voltage is detected as being too low. This will cease all function in the motors.

If the controller begins beeping repeatedly, the 4xAAA batteries must be replaced.

It is recommended that you replace the AAA batteries at the first opportunity as this can decrease the signal range. Do not mix old and new batteries.

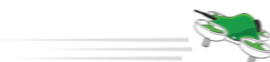
The FPV Headset has a battery voltage indicator in the bottom left corner. It will begin flashing when the battery is low. If the USB cable is connected, the headset may still be used while charging.

The LED charge meter (sold separately) can be used to show the charge level of KiwiQuad batteries.



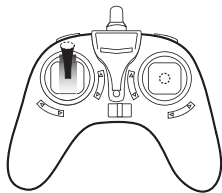
! Caution

Discharging the batteries too low will cause irreversible damage and reduce the expected lifespan. To maximise battery health, land and unplug your drone when the low battery warning occurs.

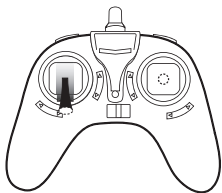
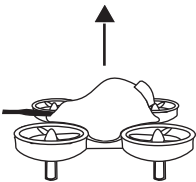


Learning The Controls

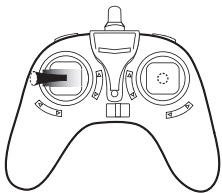
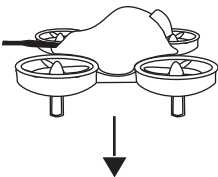
The diagrams below indicate movements of the drone corresponding to movements of the controller.



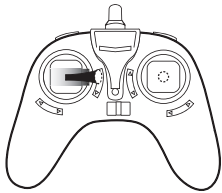
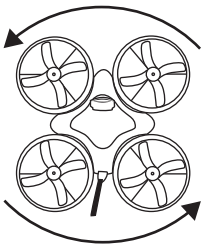
INCREASE THROTTLE



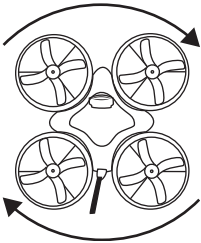
DECREASE THROTTLE



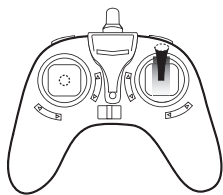
YAW LEFT



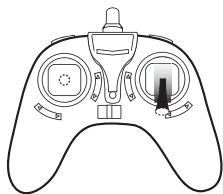
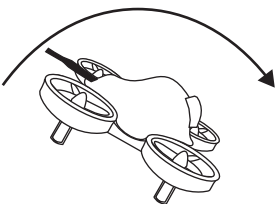
YAW RIGHT



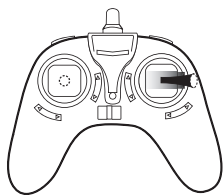
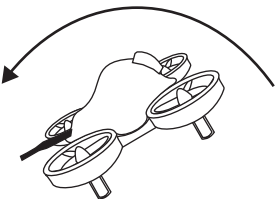
Take time to learn each of the controls and how they modify the movement of the drone. Start by making small adjustments to alter the flight path of the drone.



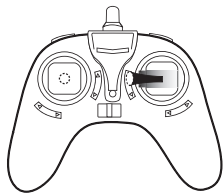
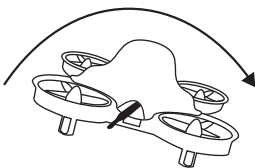
PITCH DOWN



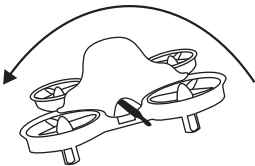
PITCH UP



ROLL RIGHT



ROLL LEFT



Flight Modes

The KiwiQuads Starter Kit Drone has several different flight modes to use. This can be explained in two different settings.

1. Control Modes

Control modes are toggled by pressing the left 'up' arrow next to the left stick.



Level / Angle mode:

This is the default mode selected on power-up of the drone. The drone uses its gyrometer correct itself to a level flying orientation when no controls are changed. This is the easiest mode to learn on as the drone will always correct itself in the case of an pilot error.

Acro mode:

The gyrometer is disabled to

allow more freedom in control for stunts and racing. This mode is much more difficult and it is recommended for experienced pilots only.

2. Rate/Speed Modes

Rate modes are cycled using the left bumper button.

Rate 1:



The lowest level of rates and the default mode on power-up. This mode allows for precise control of the drone and is particularly useful for indoor racing and beginners. This mode is indicated by a Red LED on the controller.

Rate 2:

In this mode, the rates are increased so that the drone can spin, pitch and roll faster and further. This means it is more



capable flying outdoors and better for experienced pilots who like to fly fast. This mode is indicated by a Green LED on the controller.

Rate 3:

This setting is recommended for outdoor flying only. The rates are increased to high levels which can be very difficult for indoor flying and requires a large open space to make the most use of. This is indicated by an Orange LED on the controller.

Pro Tip

When flying outdoors, it is useful to switch rate modes during flight to adapt to your flying situation. Rate mode 3 is particularly useful in windy environments.

Gyrometer Calibration

To calibrate the gyrometer, place it on a flat, level surface. Ensure the throttle is at minimum and move the Pitch control Down to minimum three times, returning to the centre each time. The LEDs will slowly blink until the calibration is complete.



Flips

Your KiwiQuad is equipped to perform 360 flips. To initiate a flip, press the right bumper button followed by a direction on the pitch/roll stick. Your KiwiQuad drone will flip in that direction.

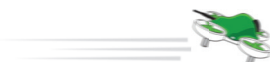


Flips can also be performed by experienced pilots using a combination of the throttle and pitch/roll stick.

Stealth Mode

Stealth mode turns off the red and blue LEDs during flight. Stealth mode does not affect the LED low-battery warnings or calibration procedure.

To toggle Stealth Mode, ensure the throttle is at minimum and move the Pitch control Up to maximum three times, returning to the centre each time.



Training Guide - Learning To Fly

Learning to fly FPV takes practice. These lessons will take you through step-by-step to introduce you to the basic controls. Remember to cut the throttle if you lose control during an exercise.

The FPV Headset is not required until instructed.

Lesson 1 - Hovering

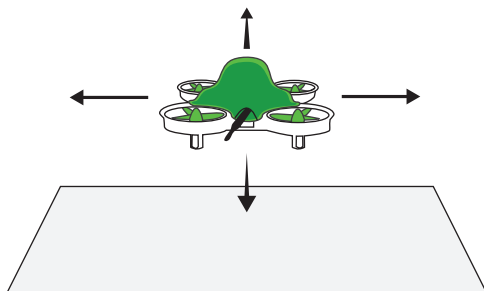
This first lesson will introduce you to the throttle control and allow you to hover the drone.

1. Mark off an area of at least 1m x 1m to fly in. Your aim is to stay within this area.
2. Slowly increase your throttle control until the drone 'jumps' on the ground to get a feel for the throttle range.
3. Practice hovering around 50cm off the ground and make minor adjustments to the pitch/roll to correct flight drift. Your aim is to maintain altitude for a few seconds.
4. Land and disconnect when the blue/red LEDs begin to flash and charge or replace the battery.

Lesson 2 - Basic Movement

Lesson 2 will teach you how the pitch and roll controls work and how the drone will respond to these inputs.

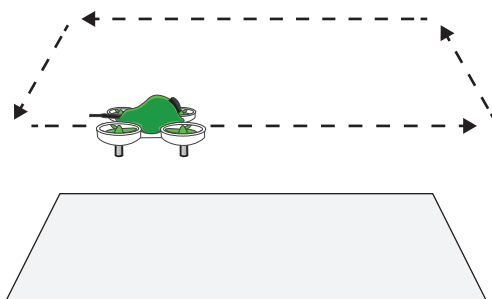
1. Mark off an area of at least 1m x 1m to fly in.
2. Maintain a hover of at least 30cm off the ground.
3. Gently press the pitch control downwards. Watch how the drone moves forward.
4. Experiment with pitching up and down, and rolling left and right. Try to maintain altitude while performing these movements.
5. Increase the amount of input you use when comfortable. The drone will move faster.



Lesson 3 - Square Pattern

In this lesson, you will follow a square pattern while maintaining altitude. This will teach you to make adjustments and correct your paths.

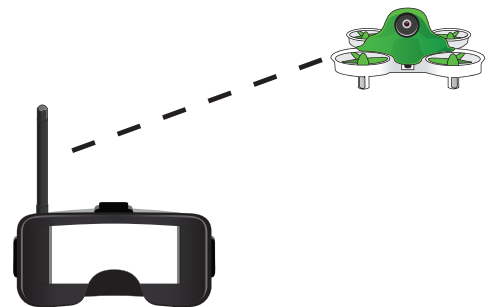
1. Mark a square area on the ground at least 1m x 1m. Ensure there is sufficient space surrounding the marked area.
2. Begin hovering at the perimeter of the marked square.
3. Follow the marked square from corner to corner, making any corrections to your path as needed.
4. When confident, try using the yaw control to rotate the drone at each corner. The change of perspective can be challenging at first, this will become easier when using the FPV Headset.



Lesson 3 - FPV

Now you know the basics, it's time to try FPV! It is recommended that you begin from Lesson 1 with the FPV Headset on to get a feel for the controls in first person view.

1. Set up your drone in an open area before putting on your FPV Headset.
2. Turn on the FPV Headset and check for a video link. At close range, the picture should be free from distortion and break-up. See page 7-8 for FPV Headset operation.
3. Complete lessons 1-3 in FPV.
4. Fly around a larger open area now, practice changing altitudes and some of the advanced controls such as flips.
5. Practice, practice practice!



Maintenance

KiwiQuad drones are designed for minimal maintenance. Often, the only maintenance required is replacement of consumable parts. Do not introduce foreign substances to motor shafts e.g. Oil.

Consumables

The following parts are considered consumable products and may require replacement with continued use:

Batteries:

Despite their longevity, batteries are consumable items similar to car batteries. This is due to the internal chemistry of the battery. Over time, they lose the ability to hold a full charge and will result in a reduced flight time.

By following the recommendations in this manual, you can maximise the lifespan of your batteries.

Propellers:

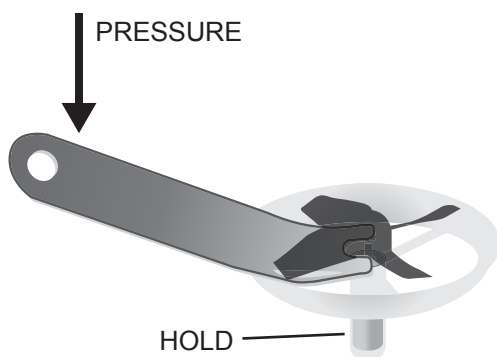
We expect the propellers in your KiwiQuad will last a considerable amount of time due to their high quality and the protection the ducts offer. However, in the event of a

crash, propellers may lose their shape or become bent.

Motors:

By nature, brushed motors wear out as the internal components wear due to the high performance. As they wear out, they don't run as efficient as new and lose thrust resulting in a shorter flight time.

Propeller Replacement



A propeller removal tool is included to assist you in removing the propeller. Some force is required for removal.

1. Place the forked end of the propeller removal tool between the propeller and motor shaft.
2. Gently apply pressure at the handle to force the propeller upwards. Cover the propeller



with your hand and point in a safe direction for removal.

3. Place the new propeller on the motor shaft and firmly press down until there is a 1-2mm gap between the bottom of the shaft and propeller. The diagram below illustrates the direction of each motor.



! Caution

Take particular care when removing propellers from motors. Incorrect procedure can result in a bent motor shaft.

Always apply direct upwards pressure to the propeller, never sideways.

Motor Replacement

To replace a motor or set of motors, follow the instructions below.

1. Remove propellers from motors to be replaced using the propeller removal tool. Take note of which propeller belongs to each motor.
2. Carefully unplug the motor from the flight controller board. A motor of the same specification must be replaced. Wire colours are indicative of the spinning direction of the motor.
3. Remove the clear ring holding the wire over the motor socket. Then remove the motor by pressing the motor up from underneath the frame. Some force may be required.
4. Insert the new motor into the motor socket. Take care to ensure the wire travels through the hole towards the flight controller.
5. Plug the wire into the white flight controller socket.
6. Replace the clear ring over the motor socket and raise to the top of the motor housing.
7. Replace propeller.



Troubleshooting Your KiwiQuad

Quadcopters are very sensitive to imbalances in weight and power distribution. A small problem can present itself as a major symptom during flight. The table below explains the most common issues, likely causes, and remedies. If your KiwiQuad is experiencing abnormal behaviour, please contact us for support online at www.kiwiquads.co.nz/contact-us/

Symptoms	Likely Causes	Remedies
Quick oscillations or shaking during hover accompanied by abnormal motor noise.	Heavy vibration at flight controller.	Remove canopy and ensure front and back screws holding flight controller board are screwed tight. Ensure black rubber grommets are in place and not missing.
	Unbalanced propellers due to damaged propellers or bent motor shaft.	Replace damaged propellers with new propellers. See page 16. Replace motor. See page 17.
Lack of thrust when increasing throttle.	CW/ACW Propellers on wrong motors.	See page 17 for correct motor and propeller direction and orientation.
	Worn-out motors.	Replace motors with new set. See page 17.
	Battery wear / not fully charged.	Battery has lost ability to hold a full-charge. Dispose of correctly and replace with a new battery.



Troubleshooting

Symptoms	Likely Causes	Remedies
Controller beeping constantly.	AAA batteries in controller low voltage.	Replace with fresh AAA batteries. See page 9.
KiwiQuad banks to one direction when hovering without user input.	Gyrometer calibration required.	Place KiwiQuad on flat surface and perform a gyrometer calibration. See page 13.
Video break-up during flight.	Device interference.	Interference could cause video breakup if another device is using the same frequency. Set a new frequency on the video module. See page 8.
	Dense obstacle interference or distance too far.	For best results, fly in an open area free from dense objects such as walls and floors. See page 8 for more information.
KiwiQuad loses signal during flight or motors stop spinning and falls. LEDs are blinking.	Flight controller has entered a failsafe state and shutdown all motors to prevent a fly-away situation.	Distance from controller too far or too much attenuation from interference. Ensure you have line of sight with your drone while flying. Do not fly near mountains or large hills.
	Battery voltage too low.	To protect the battery from over-discharging, the flight controller will shutdown if a very low voltage is detected.



Lost Procedure

Symptoms	Likely Causes	Remedies
KiwiQuad LEDs blinking rapidly on startup.	Controller not bound to KiwiQuad	Ensure controller is switch on, throttle is at minimum to initiate binding procedure.
KiwiQuad motors will not spin when throttle is increased.	Movement detected on startup.	The first time a Kiwi-Quad is launched from startup, it must be from a stable, level surface. This is a protection measure.
No picture at FPV Headset or heavy video break-up at close distances	Wrong frequency selection on FPV Headset.	Tune FPV Headset to correct frequency. See pages 7-8.

Lost Procedure

Don't panic! If your KiwiQuad is lost, follow the instructions below. It is important to begin your search as soon as possible as the battery will continue to deplete.

- Do not switch off your headset or controller. These items can be of assistance in your search.
- Lower your throttle to minimum. Otherwise, when the controller connection re-establishes, it could take-off unexpectedly.
- Pulse your throttle up and down. This will create sound as the motors pulse and may help you locate the position.
- Look through the FPV Headset. Can you see any recognisable surroundings? Does the picture become clearer when heading a specific direction? Move towards the stronger signal.
- Recall last flying location. On loss of signal, your KiwiQuad will shutdown all motors and fall. This is a protection measure.



Repair and Warranty

KiwiQuads Limited is committed to ensuring we operate in line with the Consumer's Guarantee Act. Our products are built to the highest possible quality and are designed to last a reasonable amount of time and be in accordance with the CGA.

If you believe any of your purchases are faulty from a manufacturers defect, we may offer a free repair. If a repair is not possible, we will replace the product. KiwiQuads Limited is not liable for defects arising from tampering and modifying software or hardware. KiwiQuads is not liable for any damage resulting from liquid exposure.

Due to the nature of model aircraft, we cannot offer warranty repairs on crashed or damaged products resulting from misuse and general wear and tear. KiwiQuads Limited is not liable for any costs incurred from courier or postal services to return products to our warehouse.

All warranty repairs/replacements will be dealt with on a case by case basis.

Please contact us directly at the first instance if you have any issues with our products. You can contact us online via:

Website: www.kiwiquads.co.nz/contact-us/

Email: support@kiwiquads.co.nz

KiwiQuads Limited is not liable for any injuries or damages resulting from the misuse of this product. We recommend users read this manual in its entirety before use.

KiwiQuads Limited is a licensed supplier of radio transmitters.
Licence Number: 263152

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Accessories for your Starter Kit

Colour Kit

Give your KiwiQuad a fresh look with a KiwiQuads original colour kit. We regularly release new colours and limited editions.



KiwiQuad Batteries

Boost your racing time by expanding your battery stock.

Propellers

Different propellers affect how your quad can manoeuvre. Give our 2-blade and 3-blade propellers a go.



Battery Voltage Tool

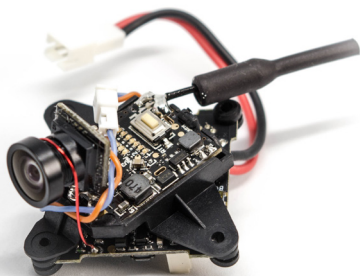
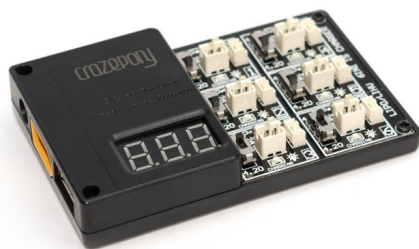
No more guessing work: Always know the charge in your batteries with this great LED tool.



Component Upgrades for your Starter Kit

Upgraded Charger

The KiwiQuads Pro Charger can charge up to 6 batteries simultaneously. It also provides a charge voltage display for each battery connected.

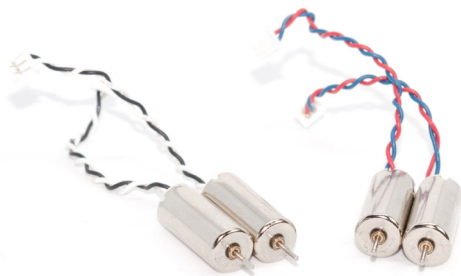


F3 Processor + OSD Flight Controller

Unlock your KiwiQuad's full potential with a tunable flight controller and On Screen Display camera (OSD). The pre-flashed Betaflight firmware is easy to use and highly customisable.

7x16mm Motors

Tweak your speed, flight time and power with our range of brushed motors.



KIWI QUADS

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