

**NOVA
PRO
USER MANUAL**



QUANUM



01 INTRODUCTION

Thank you for purchasing the Nova PRO quadcopter. This exciting GPS equipped, gyro assisted quad offers exceptional stability, yet still has a performance to excite the seasoned multi-rotor flyer. The Nova PRO has many revolutionary features as standard, such as stable GPS Mode, Orientation Mode, Return Home and Altitude Hold mode.

This means that you can choose between an easy to fly model that's suitable for flyers with only very little radio control experience or fly the Nova PRO without the GPS mode enabled for a more dynamic flight performance. Of course, with its six-axis gyro, it is a super-stable platform to mount a GoPro® or similar action camera to capture breathtaking video footage.

To ensure that you operate this model safely, you must read and understand this instruction manual to familiarize yourself with the model's features and functions. This model is not a toy.

02 LI-PO BATTERY SAFETY INFORMATION

Before Charging Li-Po Batteries

- Before charging your battery, check for any physical damage. Check if the battery has expanded or swollen in size, or if the battery cell has been punctured. If any of the above is true: **DO NOT CHARGE THE BATTERY!**

Charging Li-Po Batteries

- Only use the supplied charger or a charger that is designed to charge Lithium Polymer (Li-Po) batteries. Never use a Ni-Cd, Ni-MH or other charger as this is very dangerous.
- Never attempt to charge at a rate faster than that recommended.
- Never charge Li-Po batteries unattended. Always stay with your battery while charging in case of overheating or fire.
- Charge on a safe surface or container. Charge only on non-flammable surfaces, such as a concrete floor preferably outdoors, or in a fireplace or in a proprietary charging bag or sack. Never charge inside a car!
- Remove the battery from the charger if the battery gets too hot, or puffs up. If the battery becomes hot to the touch during charging, disconnect it immediately.
- Extinguish fires with sand. If something goes wrong and your battery catches fire, always have sand from a fire bucket at hand to put out the flames. Do NOT use water!
- **NEVER LEAVE BATTERY UNATTENDED WHEN CHARGING**

Using Li-Po Batteries

- Do not modify/change any part of the battery or connector. Do not remove its protective bucket at hand to put out the flames. Do NOT use water!
- Do not place Li-Po batteries near fire or anything with high temperatures.
- Do not charge batteries while you are driving and do not store batteries in any type of motor vehicle.
- Do not let the battery get wet or become submerged in any type of liquid.
- Do not carry loose batteries in your pocket or bag as they could short-circuit against other items.

03 VITAL SAFETY INFORMATION

CAUTION!

This flying model is not a toy. It can cause injury to persons/animals and/or property if not used correctly. It is unsuitable for persons under the age of 14. You should take care and observe the principles of safety when flying this model.

- DANGER — Do not wear loose clothing or ties!
- DANGER — Keep well clear of rotating propellers!
- DANGER — Never operate near children or animals!

About the Flying Area Required

If you are a newcomer to R/C flight and have never flown a radio control model before, it is vital you seek advice from an experienced model pilot on where and how to fly.

Only fly in large open spaces that are approved for R/C model flying and that are away from people, animals, buildings, power lines, water or trees. Only fly in bright conditions where wind speed does not exceed 15mph.

Training, Crashing and Spare Parts

This model has been designed to be strong and has many built-in safety systems. However, they are not invulnerable and most people will break parts during their flying career. This is quite normal.

All parts are available as spares from our website. www.hobbyking.com

***Note:** Crash damage is not covered by warranty

IMPORTANT SAFETY INFORMATION

Congratulations on your purchase. We hope you have a lot of fun with it but there are just a few things you need to remember for everyone's safety.



You must only operate this aircraft in your line-of-sight in daylight. Don't let it get too far away from you.

You must not fly closer than 30 metres to vehicles, boats, buildings or people.



You must not fly over any populous area, such as beaches, other people's backyards, heavily populated parks, or sports ovals, where there is a game in progress.

If you are in controlled airspace, which covers most Australian cities, you must not fly higher than 400 feet (120 metres).



You should not fly within 5.5km of an airfield.

It's illegal to fly for money or economic reward unless you have an unmanned operator's certificate issued by the Civil Aviation Safety Authority (CASA). Safe and happy flying!



03 VITAL SAFETY INFORMATION

New to R/C Models?

The Nova PRO is not a toy and is capable of high performance flight. It requires preparation before taking to the air and it will require careful set-up in order to function correctly. Rotating propellers can cause injury and the utmost care must be taken when flying any model. A high performance Li-Po battery and charger are included.

If this is not what you were expecting, we advise you not to buy this model.

If you are new to flying R/C multi-rotors, or even if you are an experienced modeler, we recommend you have a fellow R/C modeler help you with the first flight. Some items you will need to complete on your first preflight are:

1. Check that the model is assembled correctly and ready for flight.
2. Check that the propellers are mounted in the correct location and that the propeller nuts are secure.
3. Ensure that the transmitter battery power is good and fresh batteries are fitted.
4. Ensure the Li-Po flight battery is fully charged and secure in its bay in the rear of the model.
5. Check that the electronics are operating correctly
6. Wait for a calm day with light winds for your first flights.
7. If you are new to R/C flying, we recommend having an accomplished flyer with you.

GENERAL SAFETY

Please be aware that rotating propellers can inflict painful and possibly serious injury or damage to people, animals or objects should the blades strike someone or something.

We recommend people keep fingers well clear of the propeller when operating this model and that you read this manual carefully before operating your Nova PRO.

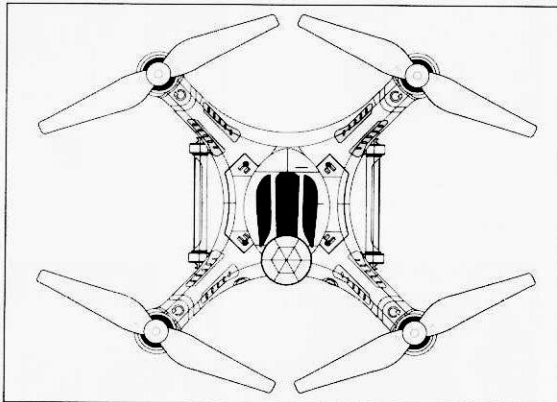
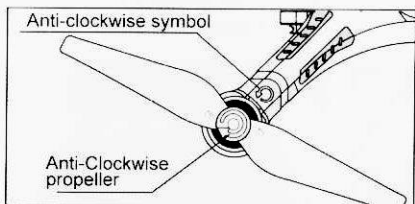
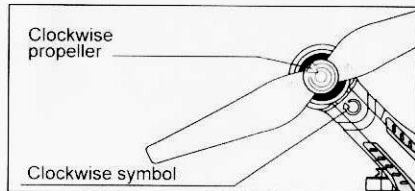
Radio controlled models can reach high speeds and cover significant distances rapidly if control is lost. It must therefore be used responsibly and with great care generally.

This model operates on the 2.4GHz radio band using the latest 2.4GHz technology, thereby providing probably the best interference rejection of any R/C system available today. This technology eliminates frequency worries with multiple radio operation as the radio encodes its own unique frequency data at startup.

04 ASSEMBLY INSTRUCTIONS

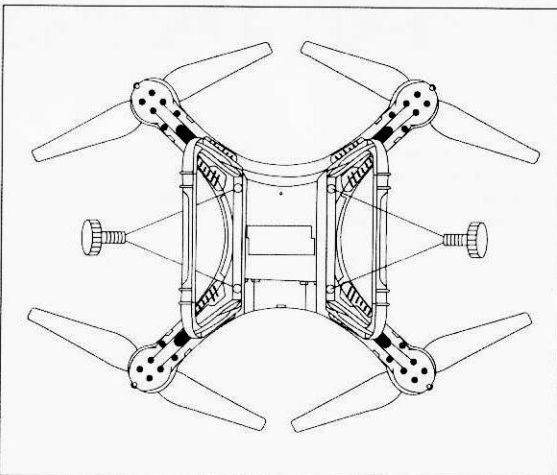
1. Installing the Propellers

- a. Locate the four self-tightening propellers. Note that the propellers are "handed" – there are two right-hand rotation propellers and two left-hand rotation. Each propeller is marked with its lock and unlock rotation and must be installed with this marking upwards.
- b. The propellers are self-tightening, meaning that you simply need to spin them on by hand (no tools required). Be sure to pay attention to the lock/unlock symbols on the props to match the spinning direction shown on each arm of the Nova PPO. (the unlock symbol direction will match the spin direction symbol on copter arm)
- c. Fit each of the four propellers ensuring to tighten the props well by hand for a snug fit. The props feature standard and reversed threads for their corresponding motors, so they can only be installed in the proper direction.



2. Installing the Landing Gear and Antenna

- a. Locate the landing gear struts and retaining thumb screws. Install the landing gear struts using two thumb screws on each.
- b. There is a small hole in the corresponding strut for the antenna wire to pass through. Ensure the antenna wire is not trapped under the the landing gear strut. Retain the antenna wire in the groove in the landing gear strut with a small length of clear tape.

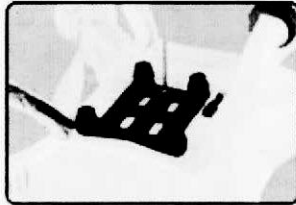


3. Installing an Action Camera

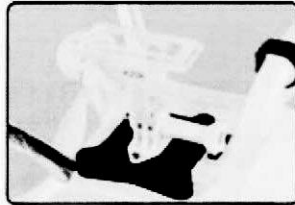
a. Locate the rubber isolated action camera mount. Pull the rubber grommets out of the camera half of the mount so that you can gain access to the mounting screw holes. Screw the mounting plate onto the underside of the Nova PRO using the Allen driver and cap head screws supplied. Re-fit the camera mount by gently easing the rubber grommets back through the mounting plate.

b. Remove the thumbscrew to release the camera mounting frame. Pop the frame open, drop in an action camera and close up it up. Install on the underside of the Nova PRO and re-fit the thumbscrew. Alternatively, use the hard case supplied with your action device.

IMPORTANT: Please respect other people's right to privacy. Before installing and operating any video recording device in the Nova PRO, check to see if there are any local laws regarding the use of video or photographic equipment in radio controlled aircraft.



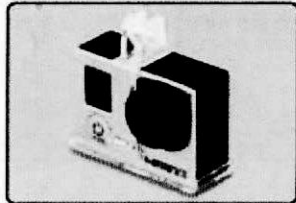
Fit the mount using the supplied screws.



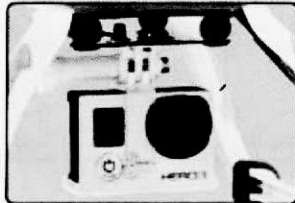
Install the rubber isolated camera mount.



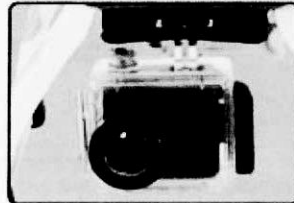
Remove the thumbscrew to release the camera frame.



Snap the frame closed around the camera.



Re-fit the frame to the rubber isolated mount.



Alternatively, mount an action camera in its own hard case.

c. **VERY IMPORTANT:** The GoPro® and many other action cameras use 2.4GHz Wi-Fi for streaming video. This can interfere with the radio equipment and the GPS sensor. It is imperative that before operating the Nova PRO, the camera's Wi-Fi is disabled. Failure to do this could result in loss of control which can lead to damage to property or personal injury.

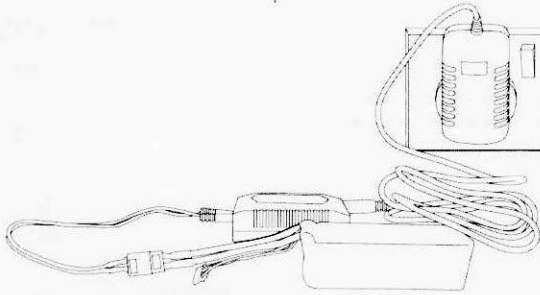
Only recording video to the camera's on-board micro SD card is recommended.

05 PREPARATION FOR FLIGHT

1. Charging the Battery

a. The battery supplied with the Nova PRO is a high capacity 3S (11.1V) Li-Po. Only use the supplied charger to charge the battery or a suitable Li-Po balance charger. Read the safety instructions at the beginning of this manual so you understand how to handle Li-Po batteries before charging.

b. The included battery charger has been designed to safely charge the Li-Po battery supplied with the Nova PRO.



IMPORTANT: Failure to follow the charging instructions can result in a fire, personal injury or damage to property. Always store your battery at room temperature. If at any time the battery begins to swell or balloon, discontinue using it immediately. Charging a swollen battery can result in a fire. Always inspect the battery before charging and allow the charger to cool between charges.

c. Always remove the Li-Po battery from the model before charging. Connect the Charger to the AC Adaptor. Plug the AC Adaptor into a mains power socket and switch it on.

d. ***Note:** Be sure to read the included battery charger's user manual fully before attempting to charge your new battery. Additionally, be sure to connect the charging lead banana plugs into the charger **FIRST** before connecting the battery to the charge lead. Failure to do so and follow the proper charging instructions could result in a fire, serious injury and/or property damage.

Plug both the yellow XT60 and small white connectors on your Li-Po battery to the included battery charger as shown (only **AFTER** connecting the charging lead's banana plugs into the charger **FIRST**), taking care to ensure that it is connected correctly. The plugs are shaped so that they will only fit one way. The charging process will start automatically.

Battery Charger LED status indicator:

LED green flashing: The charger is ready to charge

LED glows constant red: The charger is charging in CC mode.

LED glows constant orange: The charger is charging in CV mode.

LED glows constant green: The charging process is complete

LED flashes red: Error message (see battery charger user manual for more info)

IF THE BATTERY BECOMES EXCESSIVELY HOT DURING CHARGING, DISCONNECT BATTERY AND CHARGER IMMEDIATELY!

e. Unplug the charger from the mains power socket. Your Li-Po battery is ready for use.

06 INDICATOR LIGHTS AND STATUS

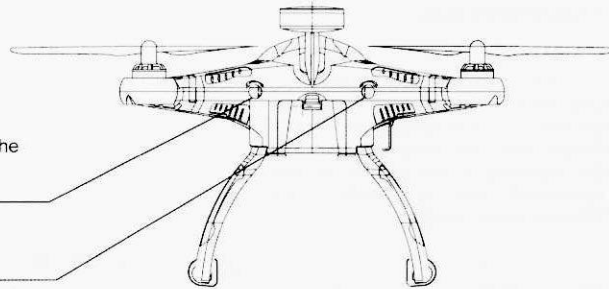
1. Understanding the LED Indicators

YELLOW/RED LED light is used for the main board calibration, plus motor lock/unlock indication.

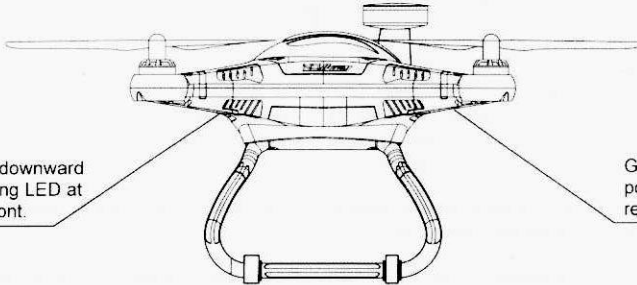
GREEN LED light is used for GPS signal indication.

RED downward pointing LED at the front.

GREEN downward pointing LED at the rear.



Viewing the Nova PRO from the rear.

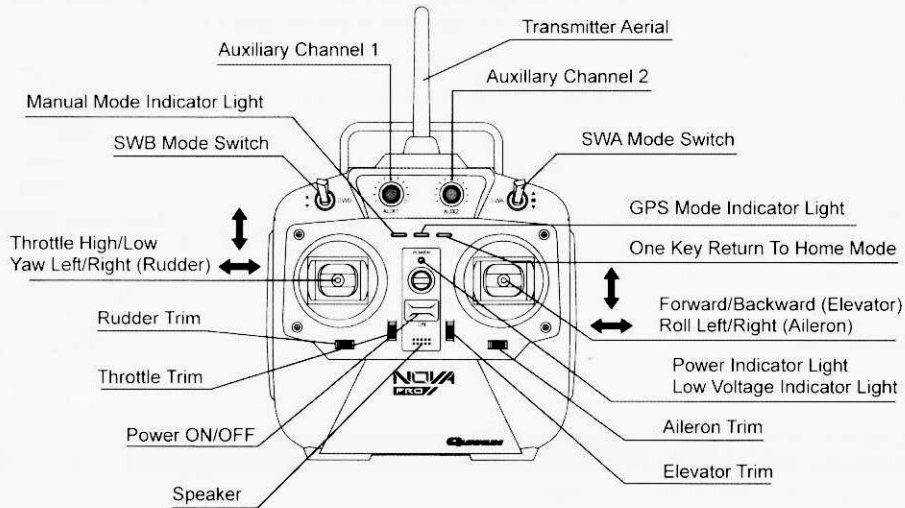


2. LED Indicator Status

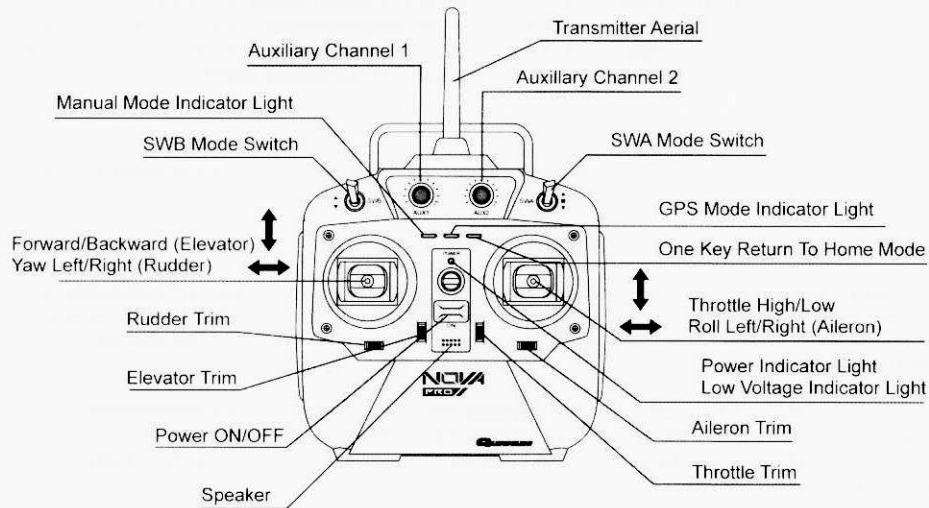
- a. The downward pointing LEDs on the front of the model illuminate RED and remain steady when the motors start. If the flight battery falls below its safe voltage, the LEDs flash and an alarm sounds. If this occurs, you should land immediately.
- b. The downward pointing LEDs on the rear of the model illuminate GREEN and remain steady when the motors start. If the flight battery falls below its safe voltage, the LEDs flash and an alarm sounds. If this occurs, you should land immediately.
- c. The YELLOW/RED LED on the rear of the model flashes alternate RED then YELLOW while the main control board calibrates. The RED LED slowly flashes when the motor function is locked and safe and the RED LED remains steady when the motors are unlocked and armed. The YELLOW LED flashes if the Nova PRO is on uneven ground. As a safety feature, the motors only unlock when the Nova PRO is level.
- d. The GREEN LED on the rear of the model indicates GPS status. The GREEN LED flashes when less than 6 satellites are received by the GPS system. NOTE: For the Stable Model and Return Home Mode to function correctly, the GPS system must receive information from a minimum of 6 satellites. When the GPS system is receiving data from 6 or more satellites, the GREEN indicator will illuminate and remain steady.

07 TRANSMITTER FUNCTIONS AND SETTINGS

Mode 2 (Throttle Left) Transmitter Control Layout



Mode 1 (Throttle Right) Transmitter Control Layout



08 SETTING THE NOVA PRO FLIGHT MODES

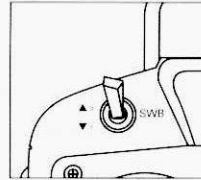
1. Selecting the Flight Mode Using the SWB and SWA Switches

a. The Nova PRO can be flown in many different flight modes - each of which are described in detail later in this manual. Each flight mode is selected using the two switches on the transmitter.

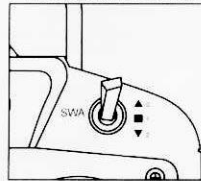
b. Important: All flights should commence with both switches in their '0' position (Take-Off Mode).

| FLIGHT MODE | SWB Position | SWA Position |
|---------------|--------------|--------------|
| Take-off | 0 | 0 |
| GPS | 0 | 1 |
| Orientation | 1 | 1 |
| Altitude Hold | 1 | 2 |
| Return Home | 0 | 2 |

SWB Mode Switch



SWA Mode Switch



09 BASIC OPERATION

2. Binding the Nova PRO to the transmitter

With the transmitter turned off, install a charged Li-Po battery into the Nova PRO and connect the yellow XT60 power plugs. After connecting the power, the RED and GREEN LEDs will rapidly flash alternately. During this initialization period, do not move the model. When the RED and GREEN LED indicators flash slowly, the model is ready to bind with the transmitter. Ensure that the throttle stick is in its lowest position and that all switches are in their default positions (SWA and SWB both in 0 position). Now turn on the transmitter. The bind process is complete when the model stops emitting the "beep" sound (binding is normally complete within a few seconds). If it does not complete the binding, unplug battery and repeat the process again until successfully bound.

3. Gyro Calibration

Your new Nova PRO is calibrated and tuned from the factory, but should you notice any stability issues when flying such as the model not maintaining level flight, you should first try to re-calibrate the gyro.

The calibration process can be performed as follows:

3.1 For Mode 2 transmitter: After power on and binding of Nova PRO and transmitter, hold the throttle/rudder stick in the lower right hand corner until the model arms, then keep holding the stick in this position for about 10 seconds until you see the YELLOW LED start flashing on the left LED indicator (it will flash YELLOW while the indicator remains solid RED lit).

For Mode 1 transmitter: After power on and binding of Nova PRO and transmitter, hold the elevator/rudder stick in the lower right hand corner until the model arms, then keep holding the stick in this position for about 10 seconds until you see the yellow LED start flashing on the left LED indicator (it will flash YELLOW while the indicator remains solid RED lit).

3.2 After the YELLOW LED begins flashing, take off and fly the Nova PRO in a stable hover. Use the pitch, roll and throttle inputs to maintain a stable hover (as best you can). After 10-30 seconds the YELLOW LED will stop flashing. At this point, the calibration is now complete.

4. Acquiring GPS Signals

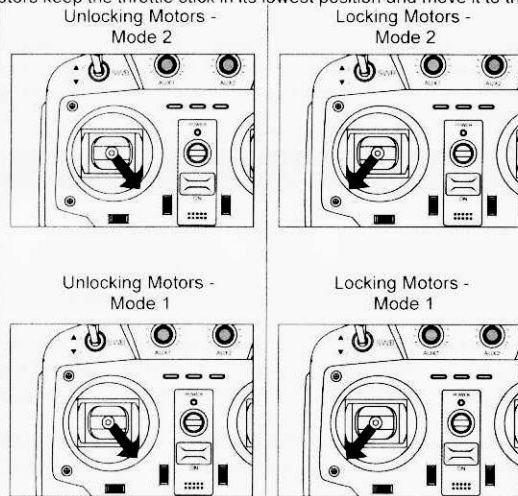
a. In order for the Nova PRO to acquire a GPS signal, the model must have a clear view of the sky. Objects such as tall buildings, dense trees or flying indoors will make acquiring a GPS signal difficult or impossible. Without a GPS signal, GPS Mode, Height Mode and Return Home Modes will not be available. Do not attempt to fly in one of these GPS Modes when flying indoors or when the GPS signal is known to be poor or intermittent.

b. With the Nova PRO powered up and the transmitter switched ON, allow the model to receive GPS signals by positioning the model on the ground with a clear view of the sky. GPS signals have been acquired with the GREEN LED on the rear of the Nova PRO stops flashing and illuminates with a steady light. Typically, this can take around 2 minutes.

5. Unlocking and Locking the Motors

a. As a safety feature, the motors need to be 'Unlocked' prior to operation. Until the motors are unlocked, the throttle stick will not have any effect. It is good practice to leave the motors locked until the Nova PRO has bound to the transmitter, the GPS signals have been acquired and you are ready to fly. Note: As an additional safety feature, if the Nova PRO is not on level ground, the RED/YELLOW LED will flash YELLOW and the motors will not unlock.

b. With a Mode 2 transmitter, to unlock the motors keep the throttle stick in its lowest position and move it to the bottom right of the transmitter. For a Mode 1 transmitter, keep the throttle at its lowest position and pull back the rudder/elevator joystick to the bottom right of the transmitter and hold it in this Unlocking Motors - position. The motors are unlocked and armed when the flashing RED LED illuminates with a steady light. The LED may take a few seconds to illuminate.

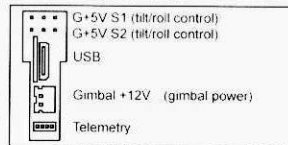


c. With a Mode 2 transmitter, to lock the motors, reduce the throttle stick to its lowest position and move it to the bottom left of the transmitter. For a Mode 1 transmitter, keep the throttle at its lowest position and pull back the rudder/elevator joystick to the bottom left of the transmitter. The motors are locked when the steady RED LED begins flashing. It may take a few moments to lock.

10 ADVANCED OPERATIONS

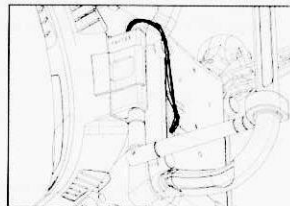
Use of brushless camera gimbal with the Nova PRO

The Nova PRO features integrated connections for use with both the Quantum Q-2D and Q-3D brushless camera gimbals. The outputs for power and signal (for tilt/roll control) are all clearly labeled on the connection ports integrated into the lower body shell (see diagram below).



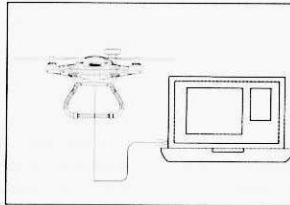
Use of optional telemetry radio set

The Nova PRO features full support for the optional HKPilot Transceiver V2 Radio Set. With the addition of this radio set, you will be able to not only receive full telemetry info to your ground station (eg; laptop computer, tablet or mobile phone), it will also enable use of features such as real-time mission planning, auto-takeoff/landing, follow-me modes and much more. The real-time telemetry info includes main battery voltage, current draw (Amps), heading, altitude, distance from home and more. For more info about use of telemetry radio set functions, please visit our website www.hobbyking.com



Connection of Nova PRO to Mission Planner software

The Nova PRO features a micro USB port integrated into the lower body shell. This allows quick and easy connection to your PC for use with Mission Planner software. Mission Planner software will allow access to advanced parameter settings, changing of flight modes, firmware updates and more.



***Note:** Use of Mission Planner software is for advanced users only. Any changes made to the default parameters of the Nova PRO can cause issues with flight performance, damage to the flight controller or other on-board components.

11 FLIGHT MODES EXPLAINED

1. Take-Off Mode

- a. With Switch SWB in its '0' position and Switch SWA in its '0' position, the Nova PRO is in its Take-Off (or Manual) Mode. In this mode, the model is controlled from the transmitter without any GPS stability.
- b. Ensure the throttle is in its low position and both SWB and SWA are in their '0' positions. Insert a charged battery, plug it in and allow the Nova PRO to initialize. Close the battery hatch and switch on the transmitter. The motors can now be unlocked. When the RED LED stops flashing and remains steady, the model is ready for flight.
- c. In Take-Off Mode, the Nova PRO can be flown forwards and backwards, bank left and right and rotate (yaw) to the left and right. It can ascend and descend using the throttle stick.

2. GPS Mode

- a. Only enter GPS Mode once the Nova PRO is airborne in Take-Off Mode. Do not enable GPS Mode until the Nova PRO is in flight.

b. Once the Nova PRO is hovering at the desired height, enter GPS Mode by keeping SWB in its '0' position and selecting position '1' on Switch SWA. When the Nova PRO is in a stable hover, push the throttle stick to its mid-position. The transmitter will give a beep, beep, beep... sound to confirm the throttle stick is centered. The model will now remain in this position without control inputs from the pilot. Allow sufficient space to fly in GPS Mode as the model's position can still be affected by the wind and other weather conditions.

IMPORTANT: In GPS Mode, the GPS signal indicator LED (the GREEN LED on the rear of the Nova PRO) must remain illuminated with a steady light. If the LED begins to flash, the GPS signal has been lost and you should return to Take-Off Mode by moving switch SWA to its '0' position.

c. When in GPS Mode, the Nova PRO is much more stable and it will try to stay in the same position. You should move the throttle stick to its mid-position (a beep-beep-beep... sound will identify this) to maintain both height and position. The accuracy of the model's position and height are dependent on the strength of the GPS signals.

3. Orientation Mode

a. Only enter Orientation Mode once the Nova PRO is airborne in Take-Off Mode. One of the most challenging aspects of flying a quadcopter is orientation - being able to see which way round the model is facing (for example which is the front and which is the back of the model) when it in flight.

b. With Orientation Mode selected, the orientation of the model is not important - pushing forward on the elevator stick will make the Nova PRO move forward, relative to the original take-off position, no matter which way it is pointing. Additionally, moving the aileron stick to the left will make the model bank left in relation to the take-off point and not in relation to the model.

c. To enter Orientation Mode, move the SWB Switch to position '1' then move SWA Switch to position '1'. Ensure that the model is pointing away from you when selecting or deselecting Orientation Mode. Remember that when in Orientation Mode, a stick command of forward will always result in the Nova PRO moving away from the original take-off position. ***Note:** If you lock and unlock the motors, the new take-off position is where the motors were unlocked.

4. Altitude Hold Mode

a. Only enter Altitude Hold Mode once the Nova PRO is airborne in Take-Off Mode. Altitude Hold Mode maintains the same altitude. To enter this mode, take off and hover at the desired height using Take-Off Mode. Select Altitude Hold Mode by flicking Switch SWB to its '1' position and Switch SWA to its '2' position. Now move the throttle to its mid-position. The transmitter will indicate that the throttle stick is in its mid-position by emitting a beep-beep-beep... sound.

b. When in Altitude Hold Mode, the Nova PRO will fly at the same height. Do allow sufficient space to fly in this mode as the model's position can still be affected by the wind and other weather conditions.

5. Return Home Mode

a. Only enter the Return Home Mode when the Nova PRO is in flight. When you wish the Nova PRO to Return Home, flick the SWB switch to its '0' position and the SWA switch to its '2' position. If the model is flying at an altitude greater than 15 meters, it will return to its starting point straight away. If the Nova PRO is flying at an altitude of less than 15 meters, it will climb to 15 meters, then return to its starting point. The Home position is the point from which the Nova PRO took off. The accuracy of the landing spot is dependent on the strength of the GPS signal.



b. Before entering the Return Home mode, ensure that you have a GPS signal and that the GREEN LED on the back of the model is illuminated with a steady light. If the LED is flashing, this means that you have lost the GPS signal. If this occurs, do not attempt to enter the Return Home mode until a GPS signal has been acquired.

c. Once the Nova PRO has returned to home using the Return Home mode, the model will automatically lock the motors for safety. Before flying again, return switch SWB and switch SWA to their '0' positions and unlock the motors using the procedure identified in Step 4 of Basic Operation.

d. If the transmitter is switched off, the Nova PRO will automatically enter the Return Home mode and will land by itself if it has a GPS signal. When the Nova PRO is in this automatic Return Home mode, do not attempt to interrupt it by turning the transmitter back on to regain control until after the model has landed.

***Note:** The accuracy of the landing point is dependent on the model having a GPS signal and can be affected by the wind and other weather conditions.

12 ADDITIONAL SAFETY FEATURES

1. Flight Battery: Low Power - Alarm

a. When the flight battery falls below a pre-set voltage, there is an audible alarm to warn you of this and you must land immediately. The Red and Green LEDs under the Nova PRO also flash to indicate that the power is low in the flight battery and you should land.

2. Flight Battery: Very Low Power - Auto Land

a. When the flight battery voltage falls below a critical level, the Nova PRO enters an automatic Safe Land sequence. If you do not act on the Low Power warnings above, the Nova PRO will attempt to land safely while there is sufficient power remaining in the Flight Battery. As there may not be sufficient power to return the Nova PRO to home, the model will simply attempt to land safely where it is. As this is carried out as an emergency procedure, the landing will not be as smooth as the Return Home landing sequence. Once the landing has been completed, you should lock the motors moving the left-hand joystick to the bottom left of transmitter and holding it there until the RED LED flashes.

3. Strength of the GPS signal

If your Nova PRO flies out of range, or in the unlikely event of the Nova PRO suffering a loss of radio signal, this new feature ensures that your model automatically enters the Return Home mode. Do not panic if this occurs - the new software ensures that the Nova PRO lands by itself at the point of take-off (where the motors were unlocked) so long as there is a strong GPS signal.

***Note:** The accuracy of the landing point is dependent on the strength of the GPS signal and can be affected by the wind and other weather conditions. Once the Nova PRO has landed, disconnect the battery and switch off the transmitter. To fly again, you must re-connect the battery and allow the Nova PRO to initialize. Once the RED and GREEN LEDs flash slowly, you should ensure that the transmitter throttle stick is in its low position and that SWA and SWB switches are in their '0' positions. Now turn on the transmitter. Once the transmitter powers up, you are ready to fly.

NOVA
PRO

QUANUM