# RISE™ RXS270

# INSTRUCTION MANUAL

***REQUIRED FOR COMPLETION***

6-Channel Transmitter and Receiver
3S or 4S 1300 – 2200 mAh LiPo Battery
LiPo Battery Charger
5.8G FPV Transmitter (*optional*)
FPV Camera (*optional*)
5.8G FPV Receiver with Monitor or Goggles (*optional*)

**WARNING**

Please read and understand this manual, the operation and all safety aspects required for the safe operation of the product. Before use, if you feel that this product is not for you, please return it to the place of purchase.

***Manual Specifications and Description Changes***

The instruction manual, warranties, and other associated documentation are subject to change without notice. Hobbico assumes no responsibility for inadvertent errors to this manual.

# INTRODUCTION

Thank you for purchasing the RXS270. We want the time you spend with your new R/C quadcopter to be fun and successful so please read the entire manual before beginning setup. If for any reason you think this R/C model is not for you, return it to the dealer immediately. Your dealer cannot accept returns on any model after final assembly.

For the latest technical updates or manual corrections for the RXS270 please visit the RISE web site at **www.explore-rise.com**. If there is any new technical information, changes or important updates to this model a "tech notice" box will appear on the page. Click the "tech notice" box to learn more.

# SAFETY PRECAUTIONS

Failure to follow these safety precautions may result in injury to yourself and others.

- Keep your face and body as well as all spectators away from the rotating plane of the blades whenever the battery is connected. Keep loose clothing, shirt sleeves, ties, scarfs, long hair or loose objects such as pencils or screwdrivers that may fall out of shirt or jacket pockets away from the rotors. The spinning blades of a model quadcopter can cause serious injury. When choosing a flying site for your RXS270, stay clear of buildings, trees and power lines. **AVOID** flying in or near crowded areas. **DO NOT** fly close to people or pets. Maintain a safe distance from the quadcopter.
- Your RXS270 should not be considered a toy. Because of its performance capabilities, the RXS270, if not operated correctly, could cause injury to you or spectators and damage to property.
- **DO NOT** alter or modify the model. Doing so may result in an unsafe or unflyable model.
- When and if repairs are necessary you must correctly install all components so that the model operates properly on the ground and in the air. Please check the operation of the model before every flight to insure that all equipment is operating and that the model has remained structurally sound. Be sure to check connectors and the propellers before each flight. Replace them if they show any signs of wear or fatigue.

# KNOW BEFORE YOU FLY

As a new owner of an unmanned aircraft system (UAS), you are responsible for the operation of this vehicle and the safety of those around you. Please contact your local authorities to find out the latest rules and regulations.

KNOW BEFORE YOU FLY

knowbeforeyoufly.org

Federal Aviation Administration

faa.gov/uas

# AMA

We urge you to join the AMA (Academy of Model Aeronautics) and a local R/C club. The AMA is the governing body of model aviation and membership is required to fly at AMA clubs. Though joining the AMA provides many benefits, one of the primary reasons to join is liability protection. Coverage is not limited to flying at contests or on the club field. It even applies to flying at public demonstrations and air shows. Failure to comply with the Safety Code may endanger insurance coverage. Additionally, training programs and instructors are available at AMA club sites to help you get started the right way. There are over 2,500 AMA chartered clubs across the country. Contact the AMA at the address or toll-free phone number that follows.

**Academy of Model Aeronautics**
5151 East Memorial Drive
Muncie, IN 47302-9252
Tele. (800) 435-9262
Fax (765) 741-0057

AMA
SINCE 1936

Or via the Internet at: www.modelaircraft.org

**IMPORTANT:** Two of the most important things you can do to preserve the radio controlled aircraft hobby are to avoid flying near full-scale aircraft and avoid flying near or over groups of people.

# BATTERY WARNINGS

- **ALWAYS** unplug your battery from either the charger or quadcopter after use. **NEVER** store your quadcopter with the battery plugged into the quadcopter.
- **DO NOT** attempt to charge your battery if it becomes swollen or hot.
- The RXS270 does not have a voltage cutoff/failsafe. When the LEDs begin to flash, land the quad and disconnect the battery.
- It is best to store your batteries in a cool, dry location at 1/2 charge. Storing a fully discharged battery may cause irreversible damage to the battery.
- **NEVER** disassemble, puncture or modify the battery pack in any way.
- **NEVER** allow the battery temperature to exceed 150° F [65° C].
- If your battery begins to swell or "puff" during charge or discharge or becomes damaged in any way, stop using it.

# WARRANTY

RISE™ guarantees this kit to be free from defects in both material and workmanship at the date of purchase. This warranty does not cover any component parts damaged by use or modification. In no case shall RISE's liability exceed the original cost of the purchased kit. Further, RISE reserves the right to change or modify this warranty without notice. In that RISE has no control over the final assembly or material used for final assembly, no liability shall be assumed nor accepted for

any damage resulting from the use by the user of the final user-assembled product. By the act of using the user assembled product, the user accepts all resulting liability. If the buyer is not prepared to accept the liability associated with the use of this product, the buyer is advised to return this kit immediately in new and unused condition to the place of purchase.

To make a warranty claim, send the defective part or item to Hobby Services at this address.

**Hobby Services**
3002 N. Apollo Dr., Suite 1
Champaign, IL 61822 USA

217-398-8970 ext#6
productsupport@hobbyservices.com

Include a letter stating your name, return shipping address, as much contact information as possible (daytime telephone number, fax number, e-mail address), a detailed description of the problem and a photocopy of the purchase receipt. Upon receipt of the package the problem will be evaluated as quickly as possible.

# FEATURES

- 3S/4S Class Racing Quad
- Carbon Fiber Frame
- 20A 4 in 1 Speed Control
- 2150kV 2206 size Brushless Motors
- Receiver Ready, no building required
- Flight Controller is pre-programmed, no setup needed

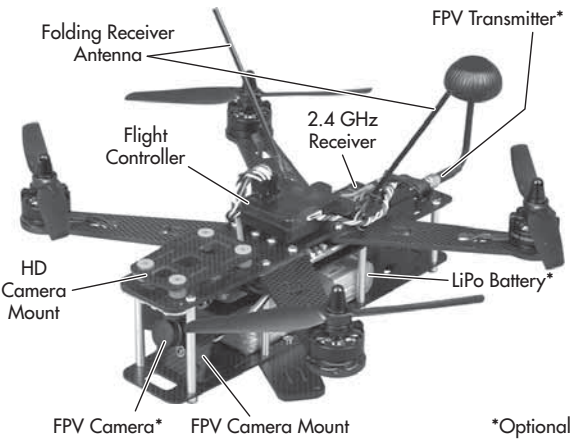
# DIMENSIONS

**Size:** 272mm (10.7in) diagonally motor to motor
**Width:** 230mm (9.1in)
**Length:** 230mm (9.1in)
**Prop:** 6 x 3

**Blade Length:** 152mm (6in)
**Empty Weight:** 461g (16.3oz.) without battery & FPV system

# CONTENTS

- Rx-R RISE RXS270
- Receiver cable
- Battery strap
- Propellers
- Prop Adapters



# FLIGHT MODES

The RXS270 has three flight modes.

**Stability Mode** has limits on the tilt angle and the quadcopter will level itself in this mode when the right stick is centered.

**FPV Mode** will not level the quad and has no limits to tilt angles. The quadcopter will be more maneuverable and the flight will be smoother in this mode.

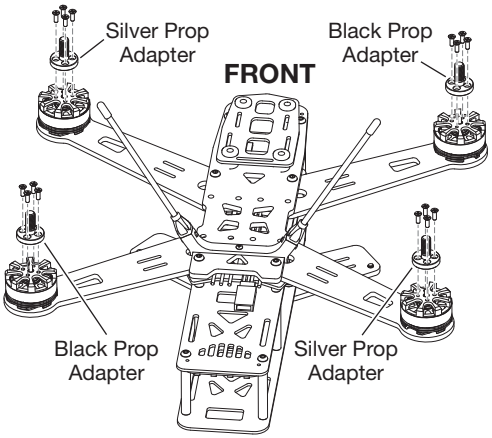
**Acro Mode** is available for experienced pilots that want maximum maneuverability while performing acrobatics. The quadcopter will react faster in this mode than in the FPV mode.

# SETUP

All the bolts have been tightened to the proper torque and have thread locking compound applied to keep them secure.

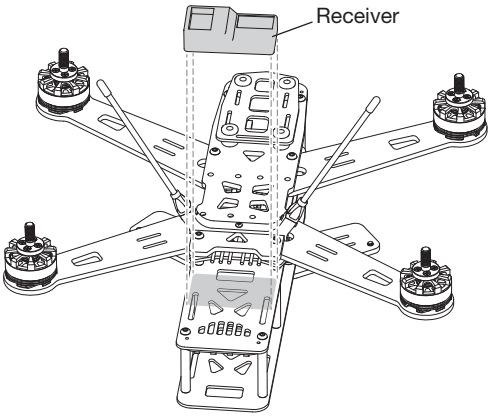
### PROP ADAPTER INSTALLATION

The silver prop adapters should be installed on the front left and rear right motors. The black prop adapters should be installed on the front right and rear left motors. Please use a threadlocking compound on the screws.



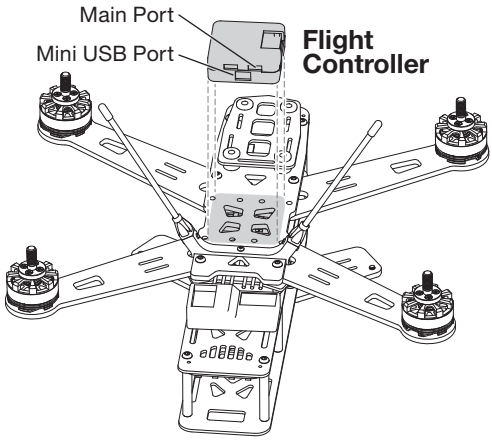

### RECEIVER MOUNTING

Attach the receiver to the rear center plate of the frame with double sided tape. Route the antenna wires into the folding antenna tubes.

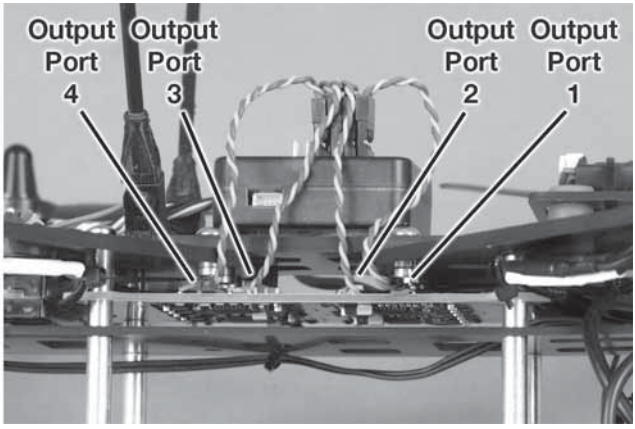


## FLIGHT CONTROLLER INSTALLATION

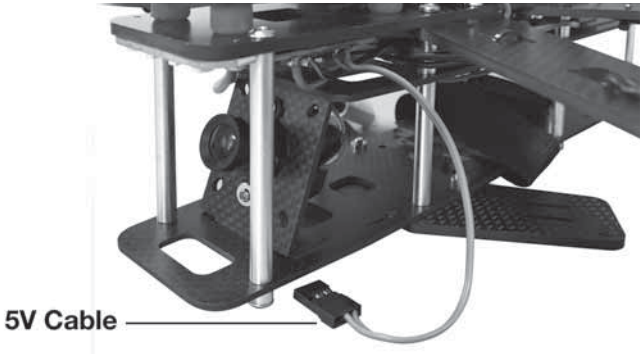
When installing the Flight Controller (FC), be sure to orient the case so the **Mini USB Port** is facing the rear of the quadcopter. Apply the mounting tape to the bottom of the flight controller and place it at the center of the frame.




The 4 ESC wires need to be plugged into the Output ports 1–4 on the FC. Refer to the following photo to identify the correct cable for each port. The brown wires for the plugs should be in the "–" column at the edge of the FC.


The 5V power cable should be plugged into Output port 5 or 6 with the brown wire in the "–" column.



## RADIO SYSTEM

Your transmitter needs to have a 3 position switch for channel 5. The model setup below is typical for most transmitters.

**MODEL TYPE: Airplane**

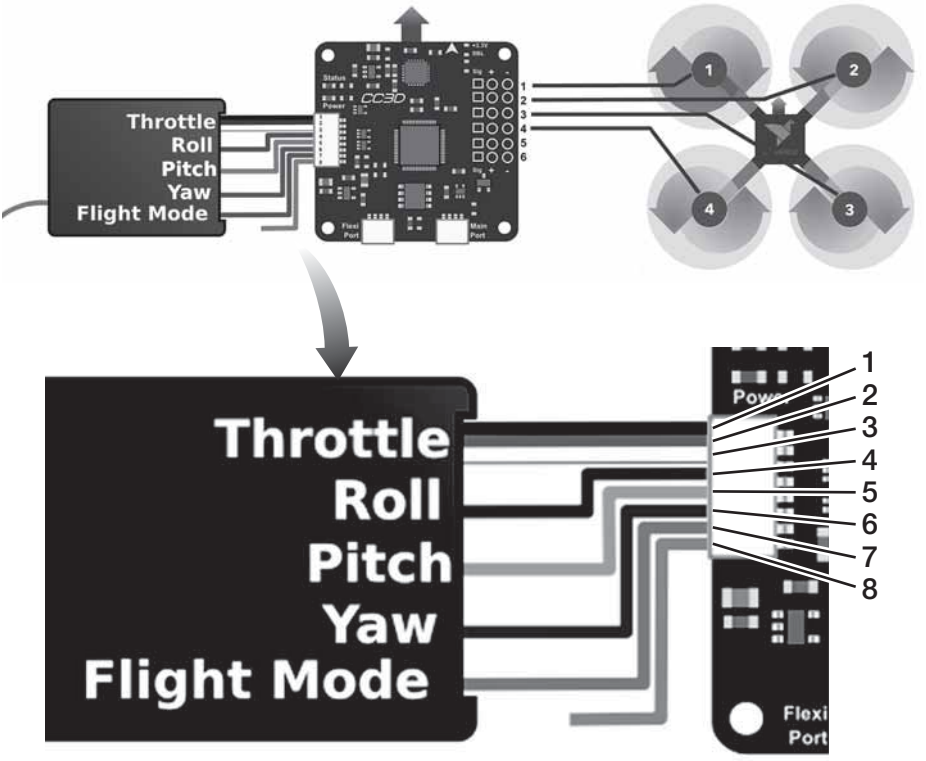
| CHANNEL ASSIGNMENTS | | | | |
|---|---|---|---|---|
| **Channel** | **Direction** | **End Points** | **Dual Rates** | **Expo** |
| Aileron | normal | 100/100 | 80/100 | –30/0 |
| Elevator | normal | 100/100 | 80/100 | –30/0 |
| Throttle | normal | 100/100 | | |
| Rudder | normal | 100/100 | 80/100 | –30/0 |
| Gear | normal | 100/100 | | |

| SWITCH ASSIGNMENTS - Ch 5 | | |
|---|---|---|
| Gear | –100% | Stability |
| Gear | 0% | FPV |
| Gear | 100% | Acro |

## PWM RECEIVER CONNECTIONS (One wire for each channel.)

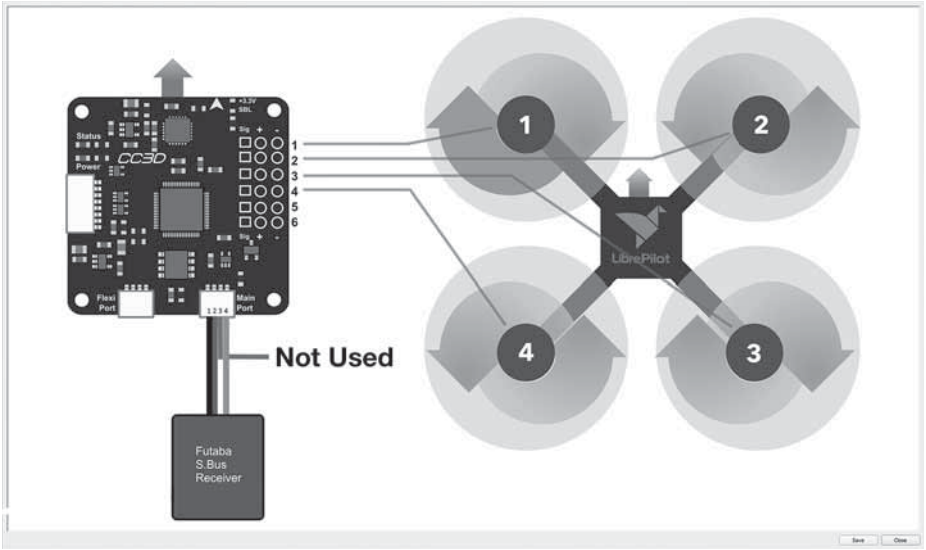
**NOTE:** S.bus, satellite and DSM type receivers cannot use the 8 pin receiver cable. See page 8 for more details.

Connect the receiver to the CC3D flight controller.



## S-BUS RECEIVER CONNECTIONS (Optional)

The optional S.Bus cable (RISE2509) is required to connect the receiver and the flight controller.




## FLIGHT CONTROLLER SETUP

The CC3D flight controller used by the RXS270 has Open Pilot firmware. We have found that the LibrePilot GCS app has better performance and recommend that it should be installed.

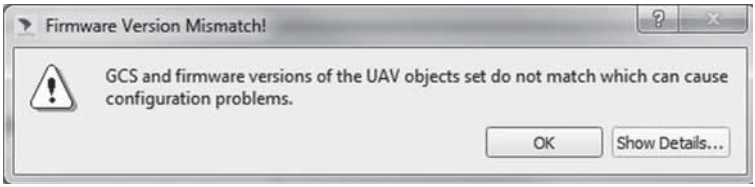
Download the LibrePilot Ground Control Station app (GCS) from http://www.librepilot.org/ from the software downloads section.


**WARNING:** Always remove the props before connecting the flight controller to the GCS.

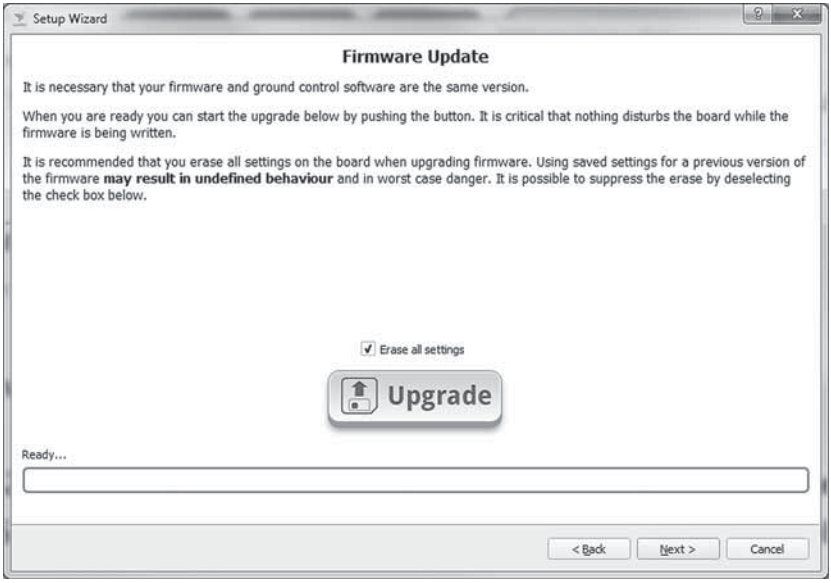
To set up the CC3D flight controller to use your transmitter, you will need:

a. a mini-usb cable to connect the cc3d controller to the GCS app.
b. a charged flight battery.
c. the transmitter set up with the new model and linked to the receiver.

Open the GCS app and connect the RXS270 with your mini-USB cable. When the communication window shows that the flight controller is connected to the GCS app, you should see a warning about firmware incompatibility.




Click on the yellow Vehicle Setup Wizard button. Clink on the Next button to open the Firmware Update page. Make sure that the "Erase all settings" box is checked and click on the Upgrade button.

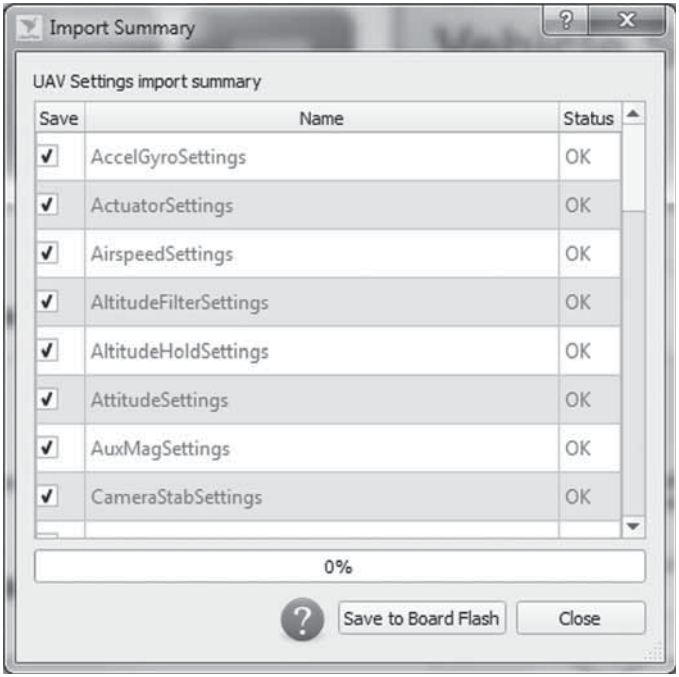



When the update is completed, click on the Next button to open the Board Identification page. The detected board should be "CopterControl 3D". Cancel the wizard to return to the Welcome screen.

Download the default settings file from

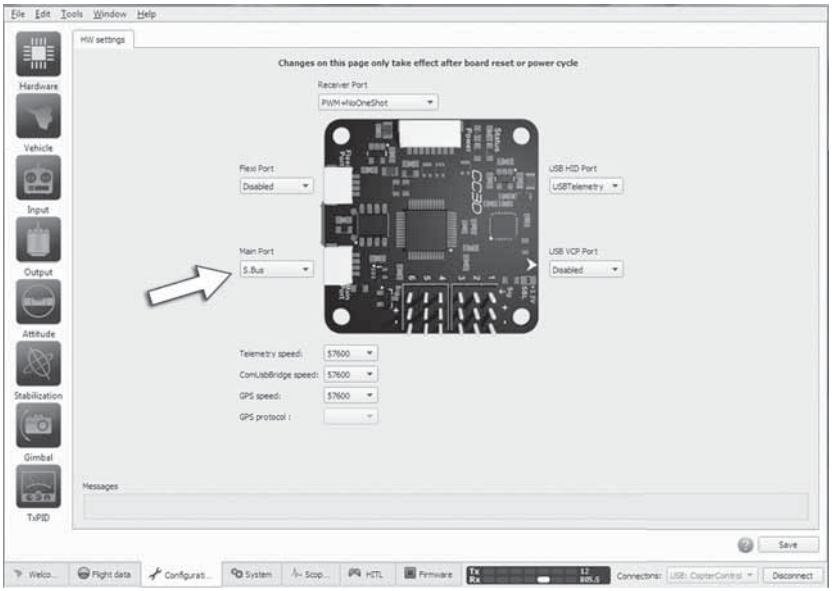
http://www.explore-rise.com/drones/rise0270/index.php?section=downloads#prod-menu

Open the File menu in LibrePilot and click on "Import UAV settings" to load the settings file. If an Entry Point error pops up, click OK until a window opens to select the file to be loaded onto the flight controller. Click on the "Save to Board Flash" button to load the file onto the flight controller.



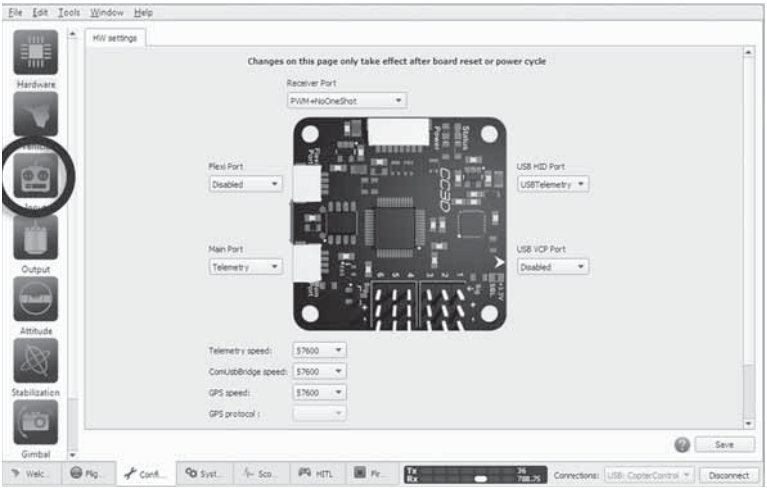

If you have a PWM receiver, no hardware settings will need to be changed. Please go the Flight Controller Input section.

If using an S-Bus or DSM type receiver, the receiver cable should be plugged into the Main Port and the appropriate receiver type (S.Bus or DSM) should be selected. When the settings have been changed, click the Save button and cycle the power for the CC3D controller.



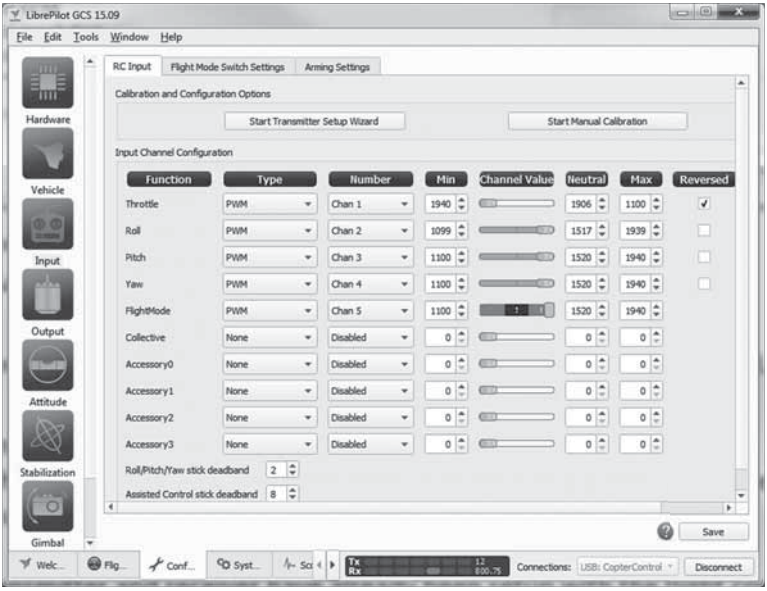
## FLIGHT CONTROLLER INPUT SETUP

Click on the Input button on the left side of the screen to open the Input settings page.

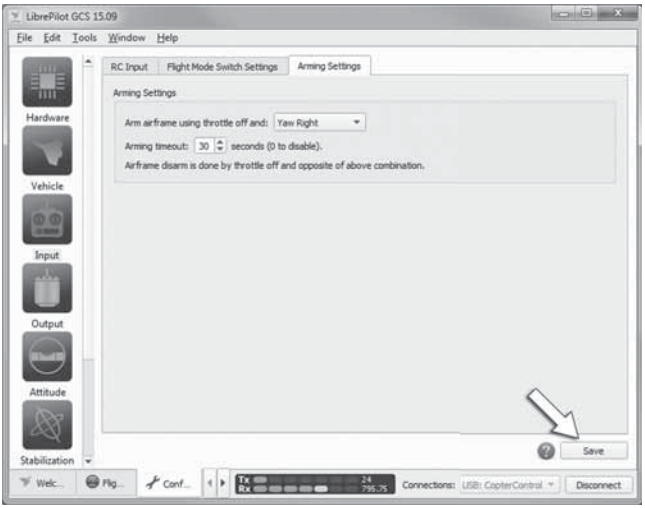



If your transmitter and receiver have already been setup with the flight controller, this page can be used to test the transmitter controls and switches. The flight battery will have to be connected to power the receiver. Warning: Remove the props before connecting the flight battery to the quadcopter.

If any of the channel indicators do not respond to input from the transmitter, click on the "Start Transmitter Setup Wizard" button to configure the flight controller's input settings.



At the end of the wizard is the screen to set the motor arming procedure. The recommended setting is Yaw Right which requires the yaw control to be held to the right while the throttle is at 0 for 3 seconds. Holding the Yaw control to the left will disarm the motors. There are several other options available for arming/stopping the motors including using a switch assigned to Channel 6.



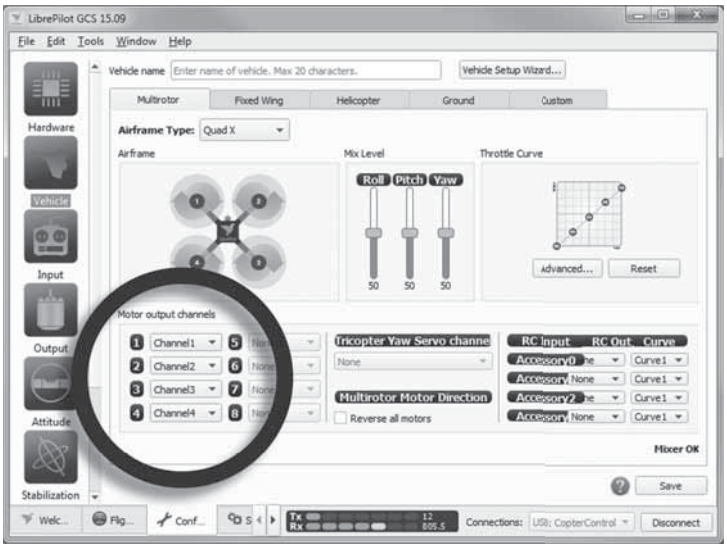

After the Arming Setting is selected, the settings need to be saved to the flight controller

# GENERAL SETTINGS

Any time the controller is connected to the app, the following settings should be checked.

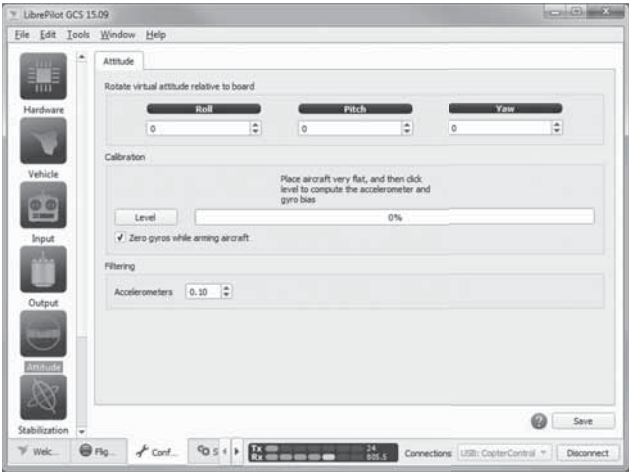
**Vehicle Configuration Screen**

The Motor Output Channels should have matching Channels



**Attitude Configuration Screen**

The Roll, Pitch and Yaw settings should "0". The Filtering Accelerometer setting should be 0.10.




# UPLOADING and DOWNLOADING FLIGHT CONTROLLER SETTINGS

The settings file for the flight controller can be saved or replaced any time the GCS app is open and connected to the flight controller. These functions can be found in the File menu at the upper left corner of the GCS window.

Click on Export UAV Settings to save the current configuration settings of the flight controller.

Click on Import UAV Settings to load a settings file onto the flight controller. If the current settings will be needed in the future, they must be saved before a new file is downloaded.

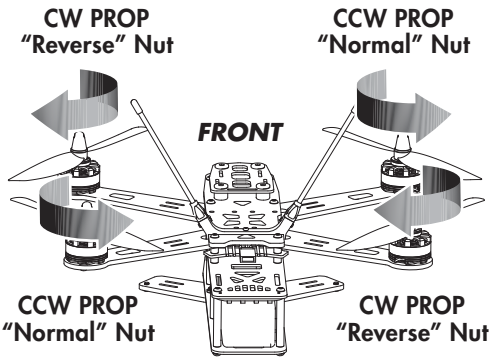
If you see an entry point error message when either of these procedures is used, click the OK button until a window opens with a folder to save or upload the settings file.

# PROPELLERS

Please refer to the diagram when installing or replacing the propellers. When installing propellers, make sure each is installed on the correct motor. Note that two of the motors shafts and prop nuts are reverse threaded.

**CW** – Clockwise rotation when viewed from above.

**CCW** – Counter clockwise rotation when viewed from above.



# FAILSAFE

If your transmitter can set values for all the channels for failsafe, set the roll and pitch channels to midstick and the throttle to its lowest setting to stop the motors.

For transmitters that only set failsafe on the throttle channel, set the throttle to its lowest setting

Be sure to remove the props before testing the failsafe operation.

# BATTERIES

The RXS270 has been tested with 3 and 4 cell LiPo batteries between 1300 (30C or larger) and 2200 mAh (20C or larger). Typical flight time is between 4 and 6 minutes.

The flight controller does not have a low voltage cutoff to protect the LiPo from damage. The LEDs on the RXS270 will start flashing when the battery is at 10.0 V for a 3S battery and at 13.3 V when a 4S battery is used. You should land the quadcopter as soon as the LEDs start to flash.

For your first flight, set a timer for 4 minutes. If the LEDs are not flashing at the end of the flight, the timer setting could be increased to find the optimal flight time. If the LEDs are flashing at the end of the flight, the timer setting should be reduced to protect the battery from damage.

Unless there is an On Screen Display board (OSD) that is to be used to monitor the battery voltage, we recommend using a voltage monitor/alarm that plugs into the battery's balance connector and will sound an alarm when the battery voltage gets low.

**WARNING: Your battery life will be reduced and the battery can be damaged if you continue to fly after the LEDs flash. Charging a LiPo battery that is damaged in any way can pose a fire hazard.**

# FPV SYSTEM

The optional Rise FPV Camera (RISE2508) and the Tactic 200mW FPV Transmitter (TACZ5005) are recommended.

Please refer to the RISE FPV Camera Manual at the following link for wiring instructions.

http://www.explore-rise.com/drones/rise0250/index.php?section=downloads#prod-menu

# MOTOR ARMING & TAKEOFF

Turn on the transmitter and connect the flight battery to the RXS270. Place the quadcopter on a level surface and let it sit for 10 seconds to let the flight controller initialize the gyros.

Arm the motors by holding the yaw control to the right for at least three seconds, and center the left stick. Advance the throttle to start the motors and take off.

To disarm the motors, bring the throttle down to 0% and hold the yaw control to the left for three seconds.

# OPTIONAL PARTS AND UPGRADES

### OSD

An On Screen Display board (OSD) is a useful accessory to add between the camera and the video transmitter. Most OSD boards will display battery voltage and flight time. Some will offer attitude, GPS position, altitude, etc.

### LOST MODEL TRACKER

Unfortunately, crashing is part of flying a model like the RXS270. A small model like this will be difficult to find in tall grass or dense vegetation. A tracking unit like the RC Gear Shop Electronic Aircraft Tracker (RGZP0300) that makes an audible beep after the radio system is idle for a few seconds will make finding a lost model easier.

# SPARE PARTS

| | | | |
|---|---|---|---|
| 1 | RISE2701 | Full Chassis Kit RXS270 | |
| | | Includes | Carbon Arm (4) |
| | | | Carbon Lower Board |
| | | | Carbon Upper Board |
| | | | Carbon Middle Board |
| | | | Carbon Camera Mounting Plates |
| | | | Carbon Landing Legs |
| | | | Rubber Dampers (4) |
| | | | Antenna Mount |
| | | | Alum Tube Set w/Screws |
| 2 | RISE2702 | Carbon Arm (2) | |
| 3 | RISE2703 | Carbon Lower Board | |
| 4 | RISE2704 | Carbon Upper Board | |
| 5 | RISE2705 | Carbon Middle Board | |
| 6 | RISE2706 | Carbon Camera Mounts | |
| 7 | RISE2707 | Carbon Landing Legs | |
| 8 | RISE2708 | Rubber Dampers (4) | |
| 9 | RISE2709 | 4-in-1 ESC + LED Boards | |
| 10 | RISE2710 | CC3D Flight Controller | |
| 11 | RISE2711 | Motor 2206-2150 CW with Adapter and Nut | |
| 12 | RISE2712 | Motor 2206-2150 CCW with Adapter and Nut | |
| 13 | RISE2713 | Prop Adapters (2CW/2CCW) with Screws | |
| 14 | RISE2714 | Prop Nuts (2CW/2CCW) | |
| 15 | RISE2715 | Propellers 6030 (2CW/2CCW) | |
| 16 | RISE2716 | Alum Tube Set w/Screws | |

# RISE RXS270