

VECTOR

User Manual



v1

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Features

Motion Control

With motion control, your aircraft feels like an extension of your body. Simply tilt your controller and the aircraft will follow your command.

Long Range Communication Link

For Vector, we have developed a state of the art communication module that allows you to fly up to 2km. The module works on the 2.4 Ghz frequency band. By using this frequency band, you can safely use the controller all around the world.

Portable

We have been able to shrink the size of the Vector controller by using motion control and our own embedded communication module. The result is a compact and sturdy remote control that you can toss in your back pack and carry everywhere with you.

Sturdy Design

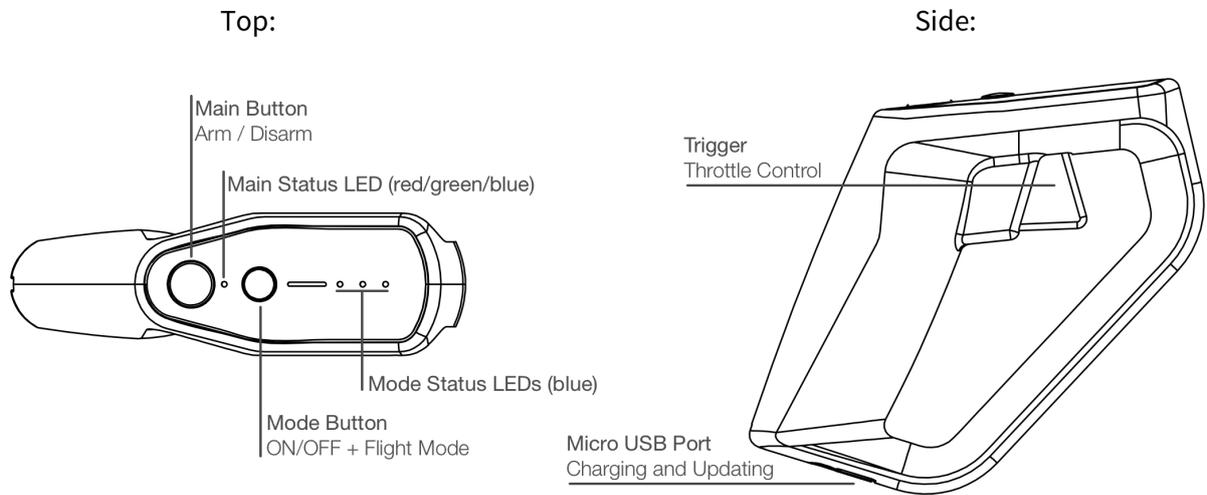
With our compact design and few moving pieces, Vector is extremely sturdy. We have tested the controller in extreme conditions with great results. Vector can easily be carried in your backpack without having to be afraid of damaging it.

Refined User Interface

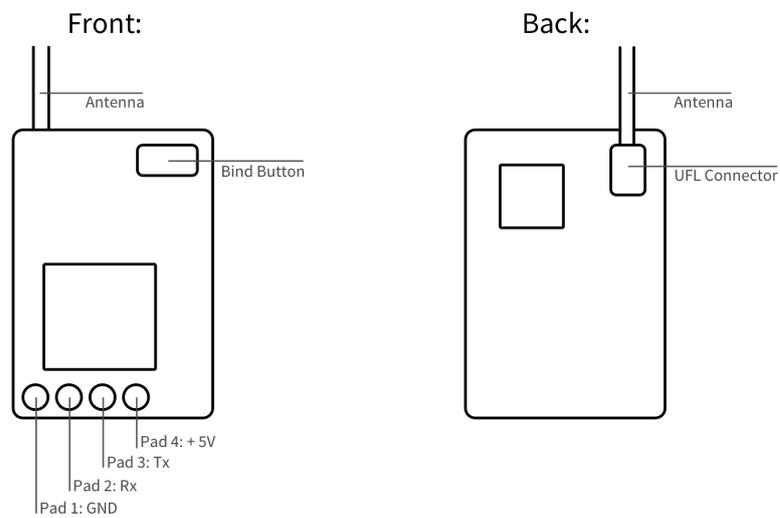
For vector, we have designed the user interface specifically for FPV aircraft. The controller fits nicely in your hand. Both buttons for changing flight mode and arming the drone are easily accessible.

Overview

Controller Overview



Receiver Overview



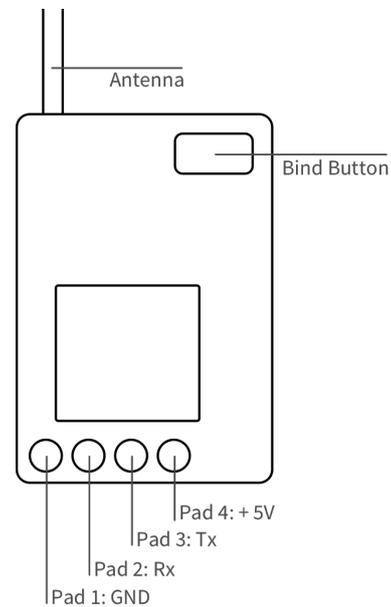
Setup

Installing your Receiver

Connecting the Receiver to your Flight Controller

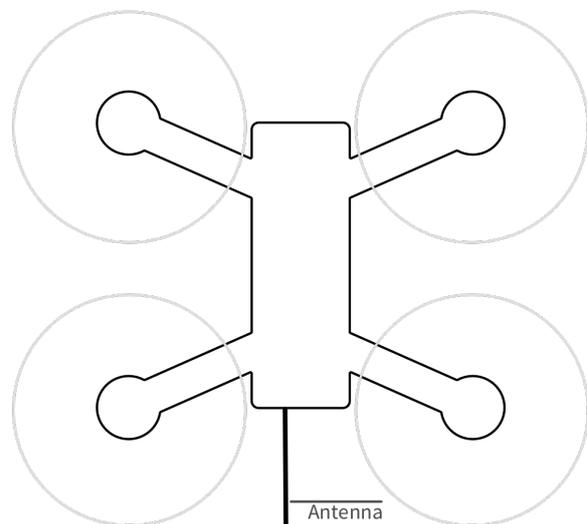
The four pads on your receiver need to be connected to your flight controller. The receiver comes with the wires soldered to the receiver board. You can use those cables to connect the receiver to your flight controller or you can solder your own cables if you wish to do so. The following table shows how the cables should be connected to your flight controller.

Pad	Receiver	Cable Color	Flight Controller
1	GND	Black	Ground
2	Rx	White	Serial Tx
3	Tx	Yellow	Serial Rx
4	+ Vin	Red	5V Power



Securing the Receiver to your Aircraft

The receiver should be attached to your aircraft away from any sources of electromagnetic noise. The antenna should be sticking outside the frame of your aircraft without touching any electrically conductive material such as carbon fiber or metal. Make sure the tip of the antenna is straight.



Binding your Receiver

The purpose of the binding procedure is to tell your controller with which receiver it should communicate. This is important when multiple aircrafts are flying at the same time or if you have multiple aircraft that you wish to control with the same Vector controller.

When you receive your product, the Vector controller and receiver are already bound together. Thus, you don't need to follow this process.

To bind your controller to a new receiver, you should follow those steps:

Step 1: Put your controller in bind mode

To do so, press to arm button immediately followed by pressing the mode button. Keep both buttons pressed until the controller enters the bind procedure. Once this happens, you can release the buttons. The controller will indicate that it is in bind state when the mode LEDs are moving up and down. Leave your controller and continue to step 2.

Step 2: Put your receiver in bind mode

Press the bind button on your receiver while turning it on (you can perform this by turning your aircraft on when the receiver is soldered in place). You might need someone's help to achieve this if your receiver is already installed in your aircraft. Keep the button pressed until the controller stops indicating bind mode and comes back to normal state. This should only take a couple of seconds. If this procedure did not work, turn everything off and start again.

Step 3: Check communication between controller and receiver

Check if the LED on your receiver is flashing rapidly. If this is the case, it means that the controller and receiver are communicating together and that they can be used.

Connecting the Receiver to your Flight Controller

Now that your receiver is installed on your aircraft, you can setup the communication between your receiver and your flight controller.

Before doing this, please remove propellers on your quad to avoid severe injuries.

First, check that the LED on your receiver is turning on and flashing when you turn on your aircraft and your controller.

Setting Up the SBUS Communication Protocol

The receiver uses the standard SBUS protocol. On your flight controller software, make sure the communication serial port is enabled and that you have selected the SBUS protocol. If this is the case, you should see the AUX2 channel move when you press the mode button on your Vector controller. If this is not working, check that your controller and receiver are bound together and that you have correctly soldered the receiver on the aircraft.

SBUS Channel	Purpose	Value	Controlled by
Channel 1	Controller Roll Value	1000 to 2000	Tilting Controller
Channel 2	Controller Pitch Value	1000 to 2000	Tilting Controller
Channel 3	Controller Throttle Value	1000 to 2000	Trigger
Channel 4	Controller Yaw Value	1000 to 2000	Tilting Controller
Channel 5	AUX1	1200 or 1800	Main Arming Button
Channel 6	AUX2	1200 or 1500 or 1800	Mode Button
Channel 7	AUX3	1200 or 1800	Mode Button
Channel 8	Link Quality	1000 to 2000	Link Quality (% of packets received)

Setting Up the Arming Procedure and Flight Modes

The arm button is setup to move the AUX1 channel. You can setup the arm button to arm the aircraft when the button is pressed.

The mode button changes the value of AUX2 and AUX3, you can use those channels to configure your different flight modes like angle, acro, horizon, ...

Setting Up Link Quality

Link Quality is the ratio between the number of communication packets received on the drone and the packets sent from your controller. It gives you some understanding on how well the two are communicating together. The Vector receiver is setup to output this information on the AUX4 channel. If your flight controller supports it, you can configure Link Quality on the AUX4 channel.

When flying, if the Link Quality drops lower than 50%, you should head back to where you are standing.

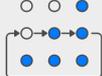
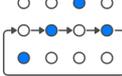
Operation

Turning the Controller On/Off

To turn your controller on and off, simply press the mode button for two seconds. The LEDs will turn on or off. If the controller is not turning, try charging it.

Controller Status Indicator Description

Mode Status Indicator Description

Mode LED Pattern	Signification
	Controller is on and flight mode 1 is selected
	Controller is on and flight mode 2 is selected
	Controller is on and flight mode 3 is selected
	Controller is charging
	Controller is in bind mode

Main Status Indicator Description

Main LED Pattern	Signification
	Aircraft is armed
	Controller is charged
	Charge your controller

Calibration of the Controller

To have the best control experience, you should calibrate your Vector controller prior to each flight. To do so, place your controller on a stable surface after turning it on. The controller will detect that it is placed on a stable surface and start the calibration procedure. Don't touch the controller for 15 seconds to perform the calibration.

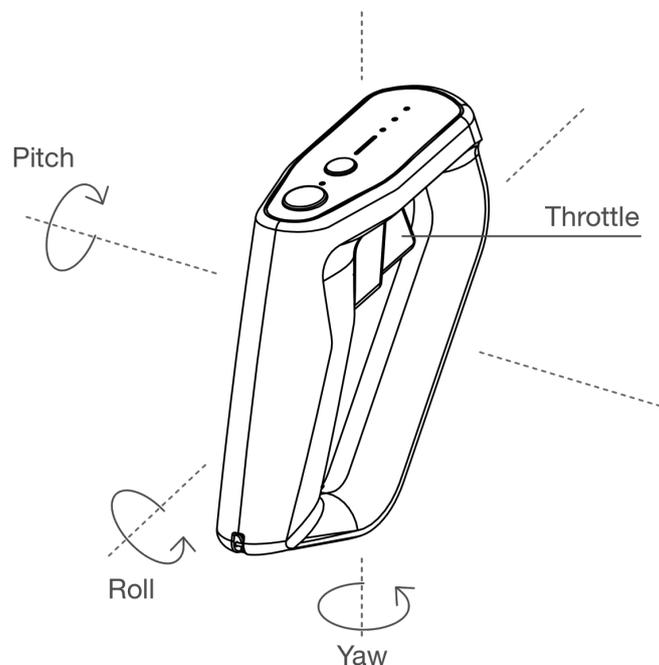
Take Off and Aircraft Control

Arming the Aircraft and Setting the Control Position

To control the aircraft, the controller needs a neutral position around which you will be able to move your controller. This position is set once you press on the main arming button. This means that you can control your aircraft in any position you would like. However, we recommend that you pilot with your forearm at 90 ° with your body to have the best antenna performances.

Controlling your Aircraft

After pressing the arming button, you are able to control your aircraft. Each control axis is controlled according to the following figure.



Charging the Controller

To charge your controller, plug the the micro usb cable into an USB wall adapter. The controller will show that it started charging. When the Vector is charged, the main LED will turn green. See Controller Status Indicator Description.

Troubleshooting

Resetting your Controller

If your controller is stuck and you can not turn it off, you can perform a hard reset by pressing on the two buttons at the same time for about four seconds. The controller will turn off and on again and should work properly again.

If the controller is not turning on, it is likely that the battery is discharged. Simply plug the controller through USB and it should turn on again.

Contacting Customer Support

To get some help from us, you can contact us directly at the email address: support@motionpilot.ch