Setting up the Dragonlink V3 system for use with the Eagletree Vector

Here are all the steps required to setup the Dragonlink V3 with the Vector including Vector Telemetry. It is assumed that you have connected your Dragonlink Transmitter to you Radio Transmitter and are able to bind to your Dragonlink Receiver. These instructions will not be covering Vector Wiring or settings other than those related to this specific topic.

It will be assumed you are using the Dragonlink MicroRX although all settings and connections for the Large (Advanced) RX are the same EXCEPT that the ANALOG RSSI pin is #8 on the MicroRX and #13 on the Advanced RX.

These instructions will use the PREFERED method of connecting the DL RX to the Vector, S-BUS, and the PREFERED method of FAILSAFE DETECTION in the Vector, S-BUS Failsafe Detection.

Presented here are two different examples. Example #1 will use 12 channels, **Analog RSSI** (connected to the DL RX Pin #8 for a MicroRX or pin #13 for an Advanced RX) and the Vector Telemetry connected to the **DL RX Servo Rail**. This is the simplest example.

Example #2 will use 12 channels, **Digital RSSI** and the **UEXP connector** on the RX for the Vector Telemetry connection.

There is no functional difference between Analog and Digital RSSI, they both work equally well, but the use of Digital RSSI requires a spare (otherwise unused) RC channel and a manual setting in the Vector. It also frees up a servo pin on the DLRX if needed for an additional PWM connection.

There is also no functional difference between using a servo pin or the UEXP Connector for the Vector Telemetry however using the UEXP again frees up a servo pin on the DLRX if needed for a PWM output.

EXAMPLE #1 – 12 Channels, Analog RSSI, and Telemetry connected to the DL RX Servo Rail

It is always recommended you start with pen and paper by listing the channels programmed in your Radio and their functions and ultimate destination (RX Pins or Vector). Then list the connections on the DLRX and the S-BUS channels to the Vector. This will make setting things up easier and clearer and avoid confusion:

Transmitter Channels:

Ch 1 – Aileron – Vector
Ch 2 – Elevator – Vector
Ch 3 – Throttle –Vector
Ch 4 – Rudder – Vector
Ch 5 – Cam Switch – RX
Ch 6 – Light Switch - RX
Ch 7 - Unused
Ch 8 – Pan – RX
Ch 9 – Unused
Ch 10 – Mode Switch – Vector
Ch 11 – Submode Switch – Vector
Ch 12 – Gain Knob – Vector

DL RX Pins (PWM Output)

Pin 1 – Ch 5, Cam Sw
Pin 2 – Ch 6, Light Sw
Pin 3 – Ch 8, Pan
Pin 4 -
Pin 5 -
Pin 6 – Vector Telem
Pin 7 – S-BUS Out
Pin 8 – Analog RSSI

S-BUS Output (to Vector)

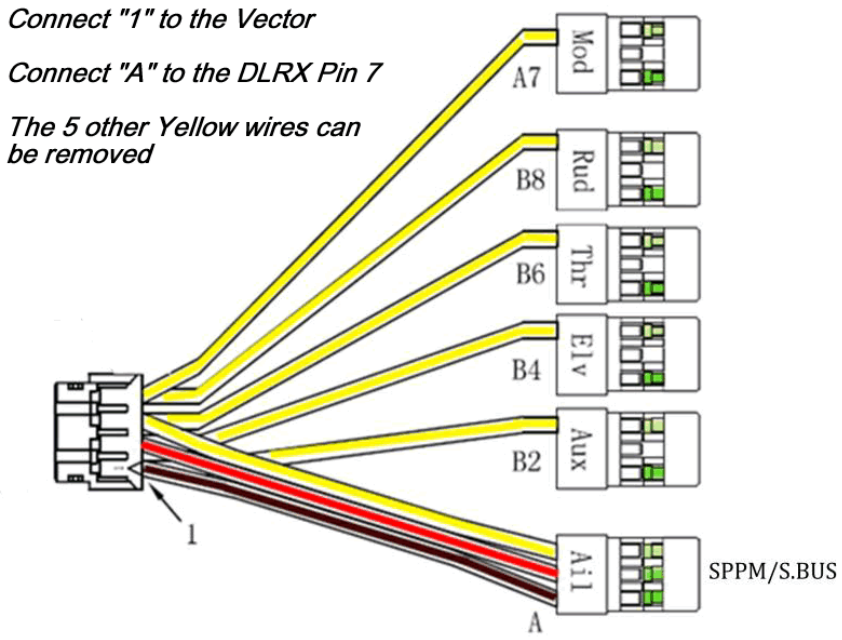
Ch 1 – Channel 1 (Ail)
Ch 2 – Channel 2 (Ele)
Ch 3 – Channel 3 (Thr)
Ch 4 – Channel 4 (Rud)
Ch 5 – Channel 5
Ch 6 – Channel 6
Ch 7 – Channel 7
Ch 8 – Channel 8
Ch 9 – Channel 9
Ch 10 – Channel 10 (Mode)
Ch 11 – Channel 11 (Submode)
Ch 12 – Channel 12 (Gain)

Having taken the time to list things as above makes the next steps simple and clear and you can always refer back if you get confused at any step of the Game!

Connections

1. Connect the Cam Switch Servo Lead to Pin 1 on the RX
2. Connect the Light Switch Servo Lead to Pin 2 on the RX

3. Connect the Pan Servo Lead to Pin 3 on the RX
4. Connect the Vector Telemetry Cable to the Vector **UART** connector (**NOT the BUSS connector!**). Plug the other end of the Telemetry Cable into the DLRX Pin 6. See **Vector Telemetry Cable Construction** at the end of this Chapter if you have not already built yours!
5. Connect the Vector Receiver Connection Harness to the Vector and plug the AIL/SPPM/S-BUS connector of the Receiver Harness into the DLRX Pin 7. Since none of the remaining Yellow wires/connectors are used they may be removed from the Vector Connector by using the tip of an Exacto knife to carefully lift the latch and slide each unused Yellow wire out. Do this BEFORE connecting to the Vector.

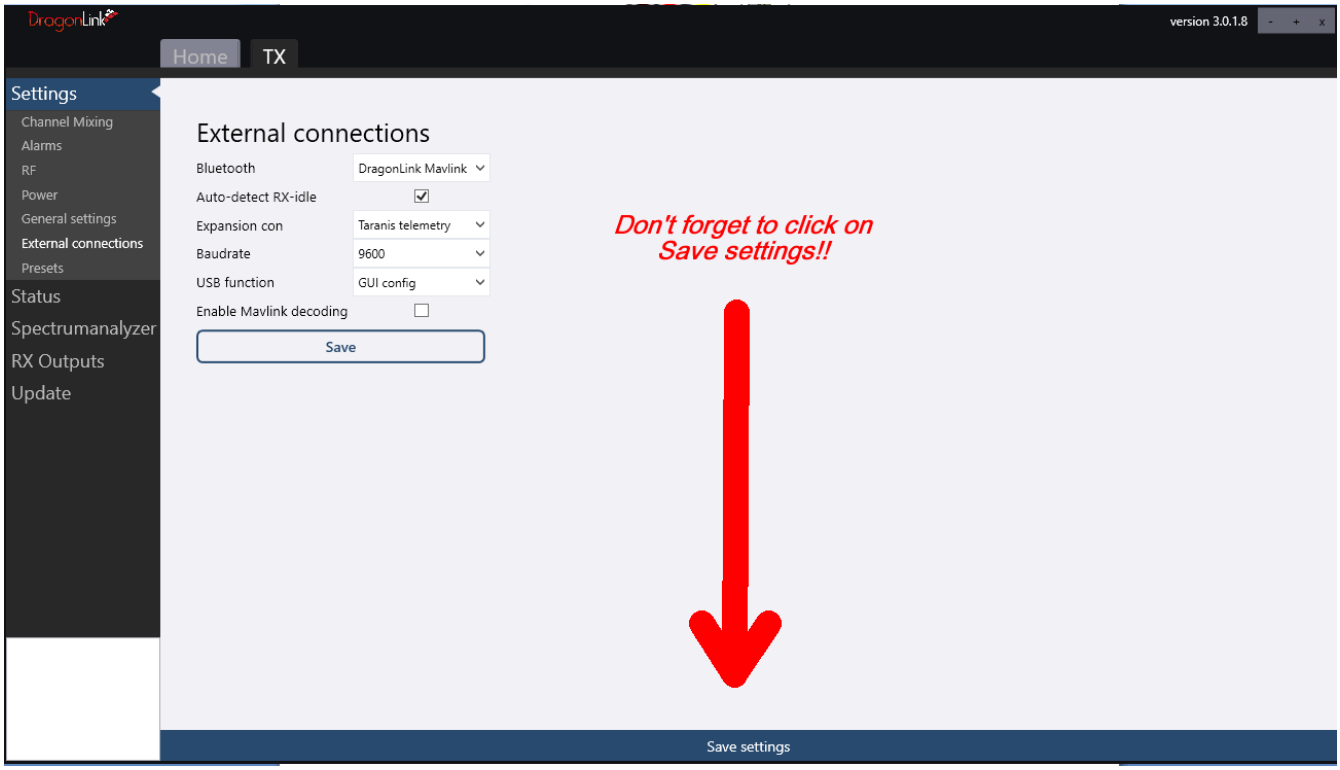


6. Using a 3 wire Male to Male Servo Lead connect one end to the DLRX (Pin 8 for a MicroRX or Pin 13 for an Advanced RX) and the other end to the Vector RSSI/5v Backup port.

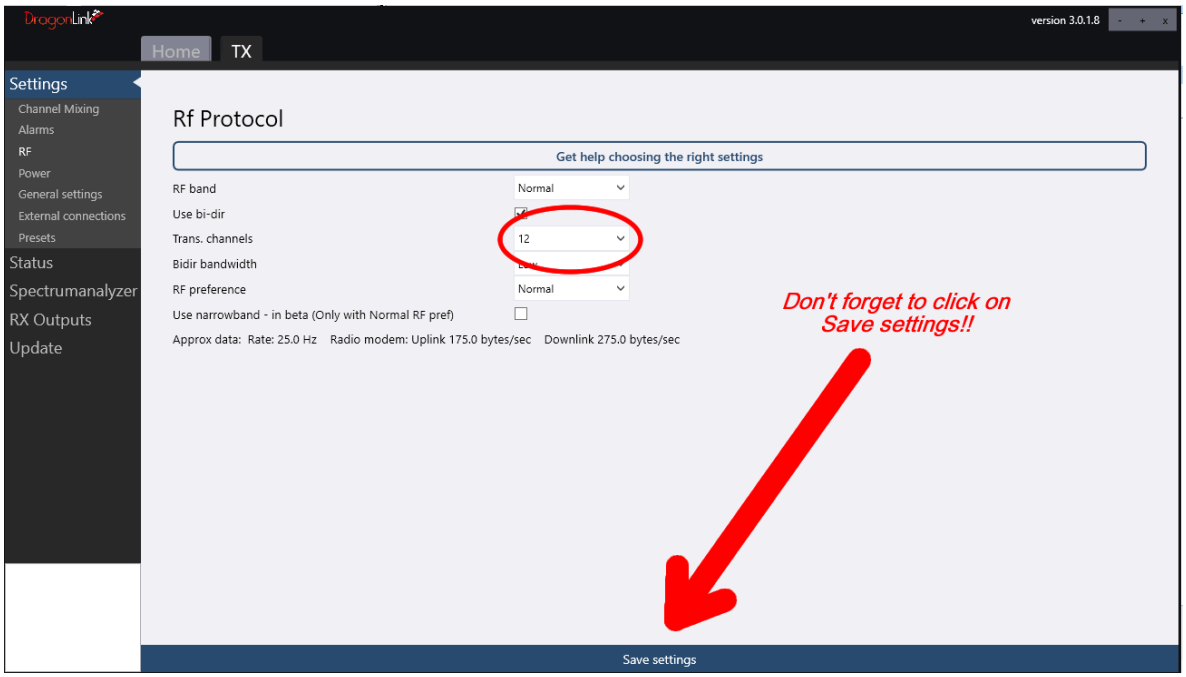
Settings

Dragonlink TX

1. Connect the DL TX to a PC using a USB cable. Start the DL GUI.
2. Click on the TX tab at the top, then External Connections on the Left Side Bar
3. Set “Bluetooth” to “Dragonlink Mavlink” (for telemetry to a Tablet, Phone, or Laptop running Mission Planner, Tower, or other App/Program)
4. Put a Check in “Auto detect RX-idle”.
5. Set “Expansion con” to “Taranis telemetry”.
6. Set the “Baudrate” to “9600”. ***Note that the Dragonlink Website and prior instructions advised 57600 baud. This is OK however 9600 works fine and will slightly improve Telemetry Range***
7. Click “Save settings” at the bottom of the window!

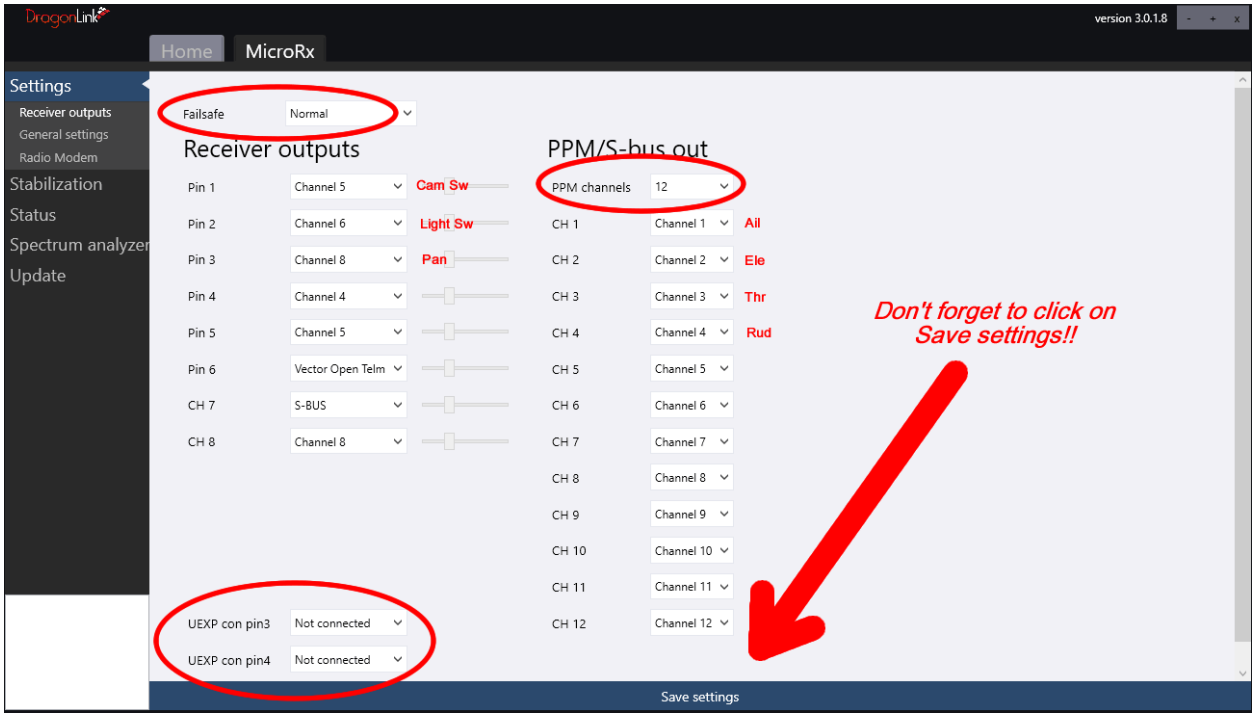


8. Click on “RF” in the left side menu bar.
9. Set “Trans. Channels” to 12.
10. Click on “Save settings”

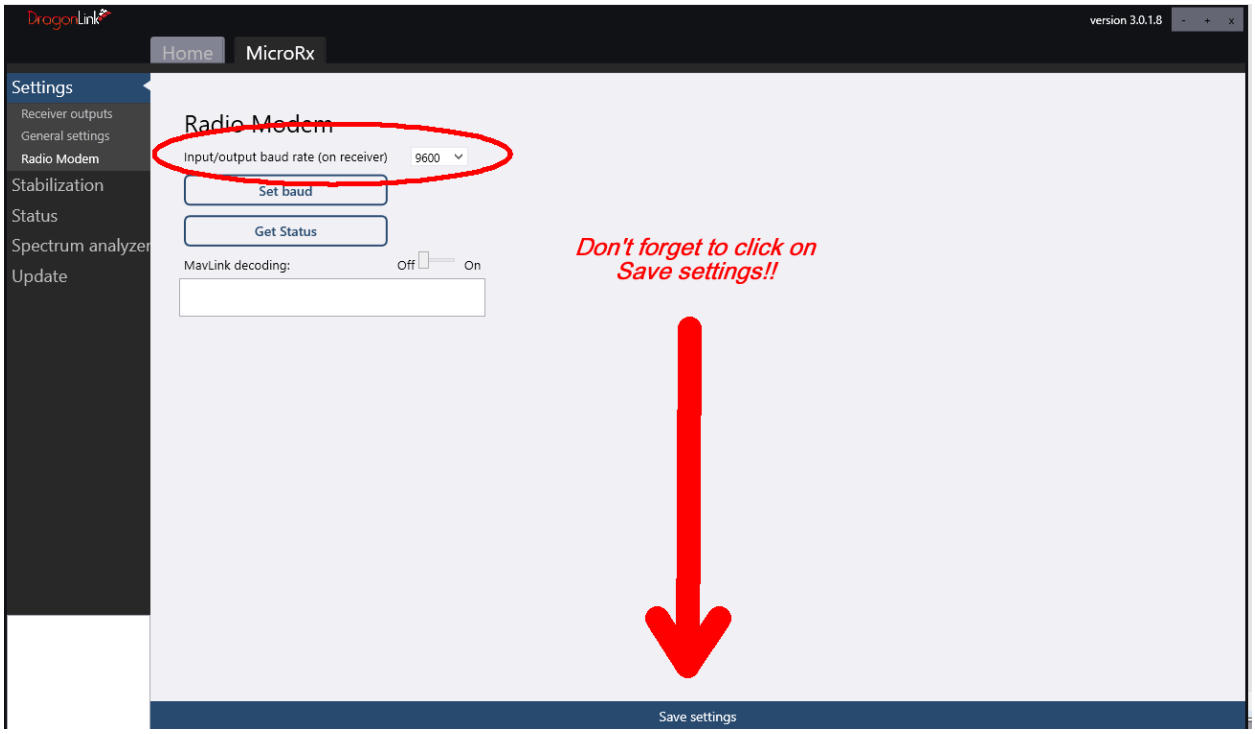


Dragonlink RX

1. Connect the DL RX to a PC using a USB cable. Start the DL GUI.
2. Click on the RX (MicroRx or AdvancedRx) tab at the top.
3. Set “Failsafe” to “Normal”.
4. Set “PPM Channels” to “12”.
5. Using the second list created above now set the “Receiver outputs” (on the left side) and the “PPM/S-BUS out” (on the right side). See the Picture below. Notice how the settings look just like your list?
6. Be sure that “UEXP con pin3” and “UEXP con pin4” are both set to “Not connected” (you may have to scroll down to see these!). If any of the values in the drop down boxes are RED there is a conflict so go back and double check.
7. Click “Save settings” at the bottom of the page.



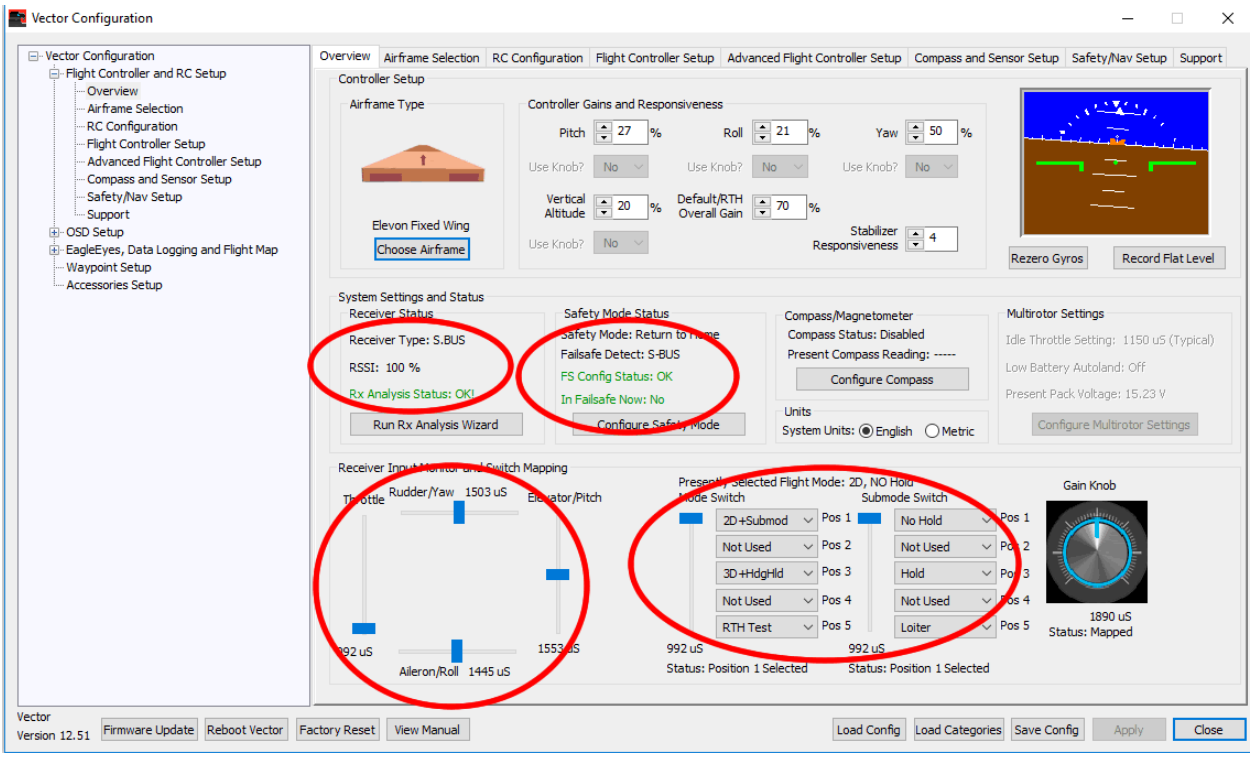
8. Click on “Radio Modem” on the left Menu Bar.
9. Set “Input/output baud rate (on receiver)” to “9600” (or whatever value you set on the TX above). **The Baud Rate setting on BOTH the TX and RX MUST MATCH!**
10. Click on “Save Settings” at the bottom of the Page.



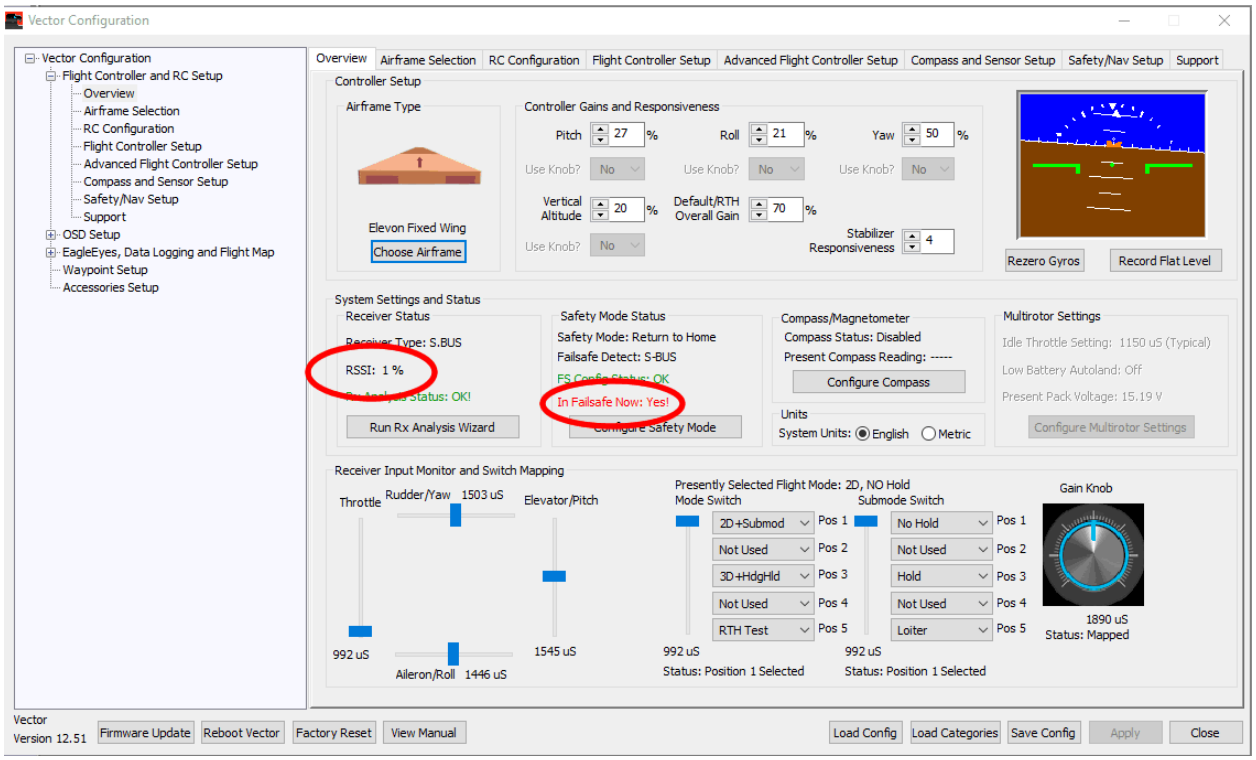
11. Now Rebind the DLTX and RX (see Binding Procedure elsewhere in this Manual)

Vector Settings

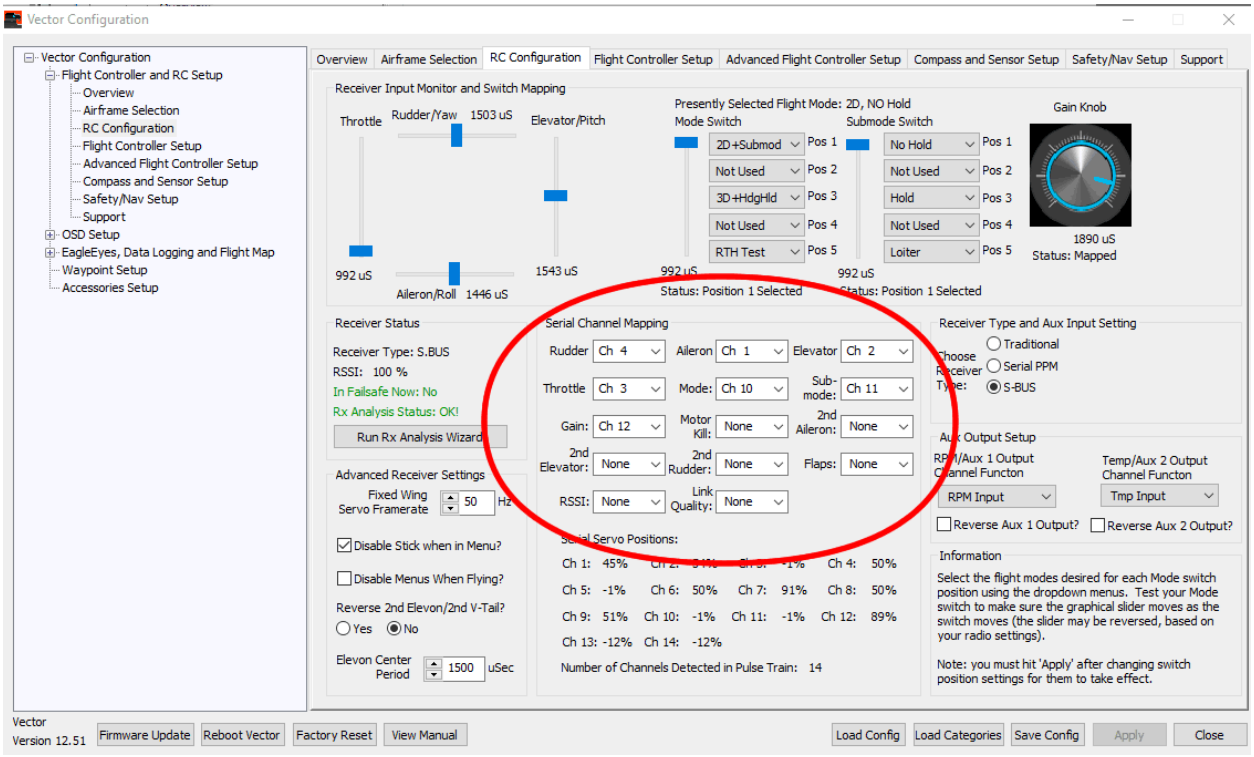
1. Connect the Vector to the Vector PC Software (GUI) with a USB cable. Power up your Transmitter, then the Aircraft. **NOTE: If you have not done so before you will need to select the correct Airframe (and later CONFIM by toggling the Mode Switch) and configure the OSD and Mode/Submode switches but that is beyond the scope of this Manual!**
2. From the "Overview" tab click on "Run Rx Analysis Wizard".
3. Follow the Wizard and when prompted enter "S-BUS" as the "Receiver Type" and "S-BUS" as the "Failsafe Detection Method".
4. Once you have completed the "Wizard" Click "Save Config" at the bottom, choose a name and location you will remember, and SAVE.
5. Power down the Aircraft and disconnect the USB cable.
6. Reconnect the USB cable and repower the Aircraft and Transmitter.
7. From the "Overview" tab in the Vector GUI confirm:
    a. "Receiver Type" = S.BUS
    b. "RSSI" = 100% (or very close to that)
    c. "RX Analysis Status" = OK!
    d. "Failsafe Detect" = S-BUS
    e. "In Failsafe Now" = No
    f. The Sliders in the lower left of the screen respond to you Transmitter Sticks correctly.
    g. The Mode and Submode Switch sliders follow you switch movements.



8. Now turn off your Transmitter and confirm:
    a. “RSSI” = 1% (or very close to that)
    b. “In Failsafe Now” = Yes!



9. If RSSI does not work or the channel sliders or Mode/Submode switches do not work click on the “RC Configuration” tab. For RSSI issues confirm that “RSSI” under “Serial Channel Mapping” is set to “None”. For other channel issues confirm that the associated channel(s) are mapped correctly. Refer to the Channel List you made at the start of this Chapter.



10. If you have made any changes click “Apply” at the bottom of the screen and then go back to Step #7 above. When you are satisfied click “Save Config”!

Continue to ***Setup the Vector UART for Telemetry*** below.

EXAMPLE #2 – 12 Channels, Digital RSSI, and Telemetry connected to the DL RX UEXP

It is always recommended you start with pen and paper by listing the channels programmed in your Radio and their functions and ultimate destination (RX Pins or Vector). Then list the connections on the DLRX and the S-BUS channels to the Vector. This will make setting things up easier and clearer and avoid confusion:

Transmitter Channels:

Ch 1 – Aileron – Vector
Ch 2 – Elevator – Vector
Ch 3 – Throttle –Vector
Ch 4 – Rudder – Vector
Ch 5 – Cam Switch – RX
Ch 6 – Left Flap - RX
Ch 7 – Right Flap - RX
Ch 8 – Digital RSSI - Vector
Ch 9 – Pan - RX
Ch 10 – Mode Switch – Vector
Ch 11 – Submode Switch – Vector
Ch 12 – Gain Knob – Vector

DL RX Pins (PWM Output)

Pin 1 – Ch 5, Cam Sw
Pin 2 – Ch 6, Left Flap
Pin 3 – Ch 7, Right Flap
Pin 4 – Ch 9, Pan
Pin 5 -
Pin 6 –
Pin 7 – S-BUS Out
Pin 8 – Vector 5V Backup

S-BUS Output (to Vector)

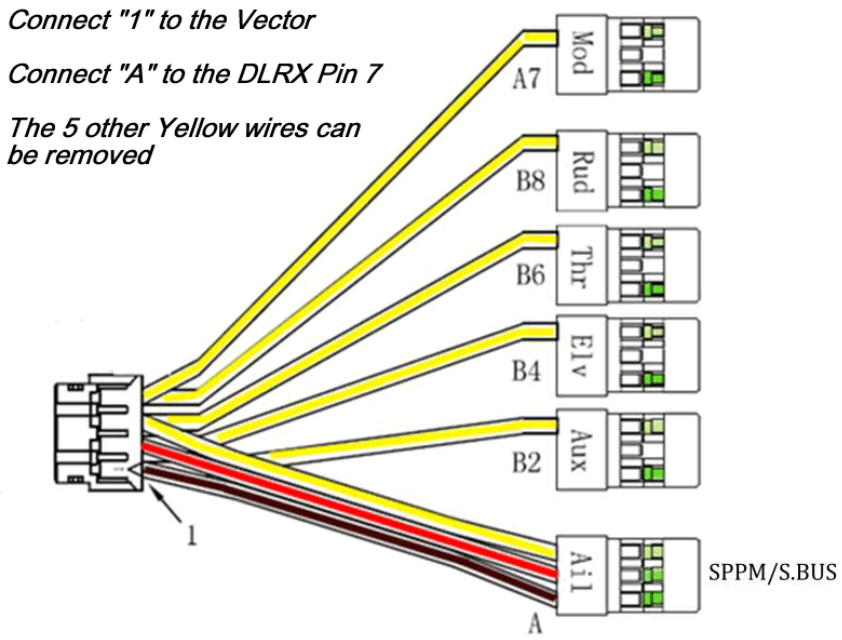
Ch 1 – Channel 1 (Ail)
Ch 2 – Channel 2 (Ele)
Ch 3 – Channel 3 (Thr)
Ch 4 – Channel 4 (Rud)
Ch 5 – Channel 5
Ch 6 – Channel 6
Ch 7 – Channel 7
Ch 8 – Digital RSSI
Ch 9 – Channel 9
Ch 10 – Channel 10 (Mode)
Ch 11 – Channel 11 (Submode)
Ch 12 – Channel 12 (Gain)

Having taken the time to list things as above makes the next steps simple and clear and you can always refer back if you get confused and any step of the Game!

Connections

1. Connect the Cam Switch Servo Lead to Pin 1 on the RX
2. Connect the Left Flap Servo Lead to Pin 2 on the RX
3. Connect the Right Flap Servo Lead to Pin 3 on the RX
4. Connect the Pan Servo Lead to Pin 4 on the RX

5. Connect the Vector Telemetry Cable to the Vector **UART** connector (**NOT the BUSS connector!**). Plug the other end of the Telemetry Cable into the DLRX UEXP port. See **Vector Telemetry Cable Construction** at the end of this Chapter if you have not already built yours!
6. Connect the Vector Receiver Connection Harness to the Vector and plug the AIL/SPPM/S-BUS connector of the Receiver Harness into the DLRX Pin 7. Since none of the remaining Yellow wires/connectors are used they may be removed from the Vector Connector by using the tip of an Exacto knife to carefully lift the latch and slide each unused Yellow wire out. Do this BEFORE connecting to the Vector.



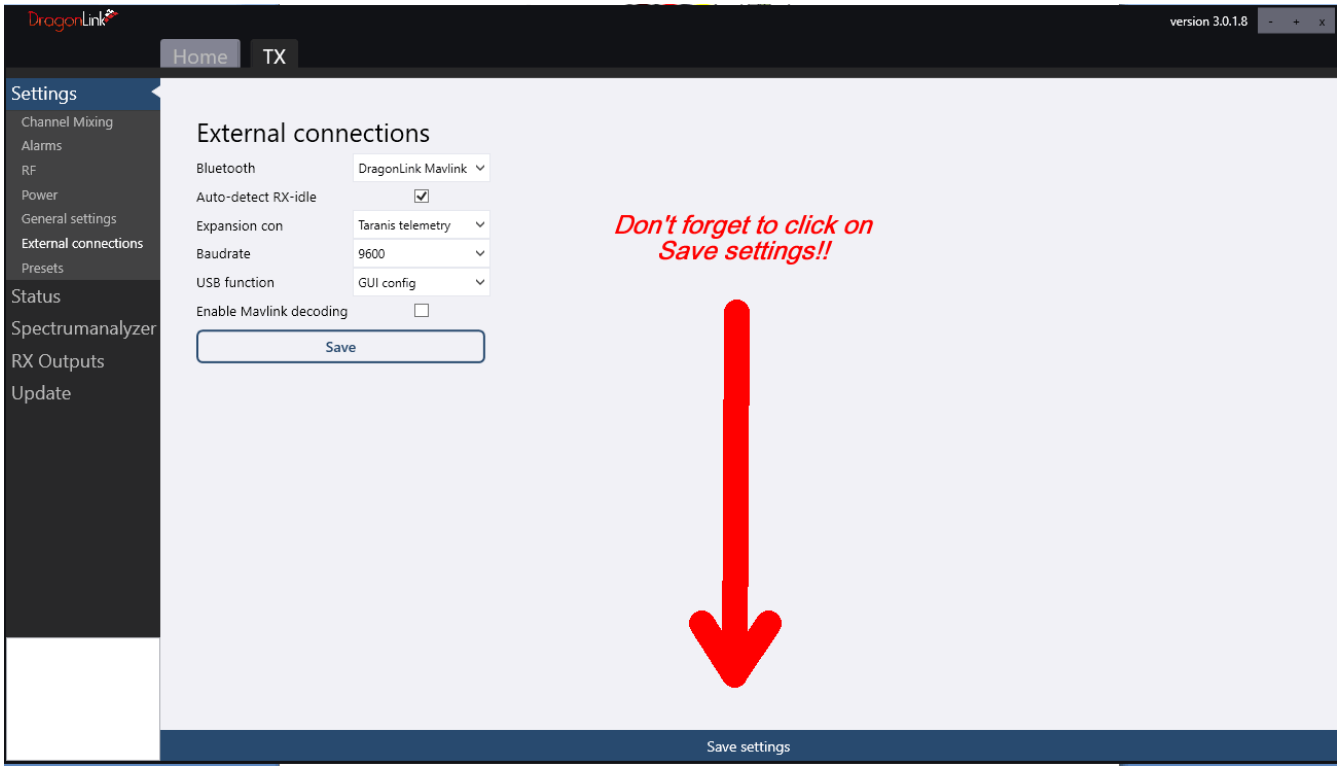
7. Using a 3 wire Male to Male Servo Lead connect one end to the DLRX (Pin 8 for a MicroRX or Pin 13 for an Advanced RX) and the other end to the Vector RSSI/5v Backup port. This will be used only to provide a source of Backup Power to the Vector "Brain" in the event of a Vector PSU "Brownout". When using Digital RSSI (as in this example) ANY unused pin on the DL RX can be used to provide Backup Power, it is not required to use the RSSI pin.

Settings

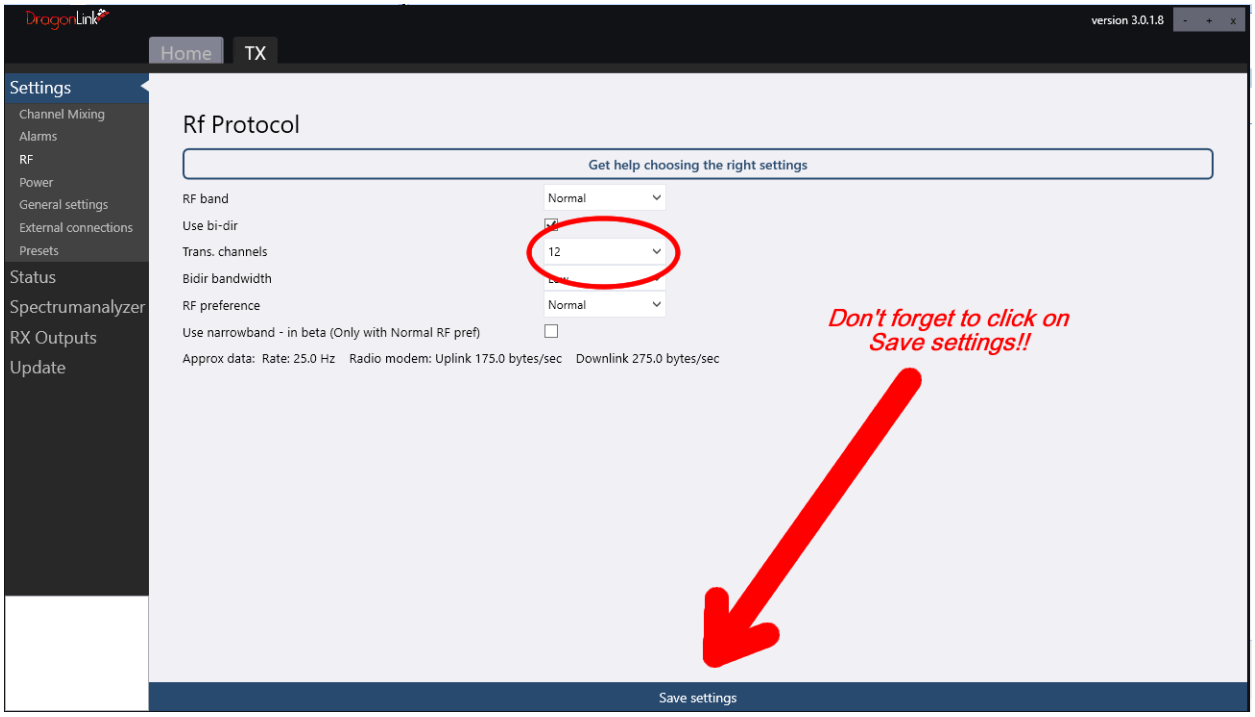
Dragonlink TX

11. Connect the DL TX to a PC using a USB cable. Start the DL GUI.
12. Click on the TX tab at the top, then External Connections on the Left Side Bar
13. Set "Bluetooth" to "Dragonlink Mavlink" (for telemetry to a Tablet, Phone, or Laptop running Mission Planner, Tower, or other App/Program)
14. Put a Check in "Auto detect RX-idle".
15. Set "Expansion con" to "Taranis telemetry".
16. Set the "Baudrate" to "9600". ***Note that the Dragonlink Website and prior instructions advised 57600 baud. This is OK however 9600 works fine and will slightly improve Telemetry Range***

17. Click “Save settings” at the bottom of the window!

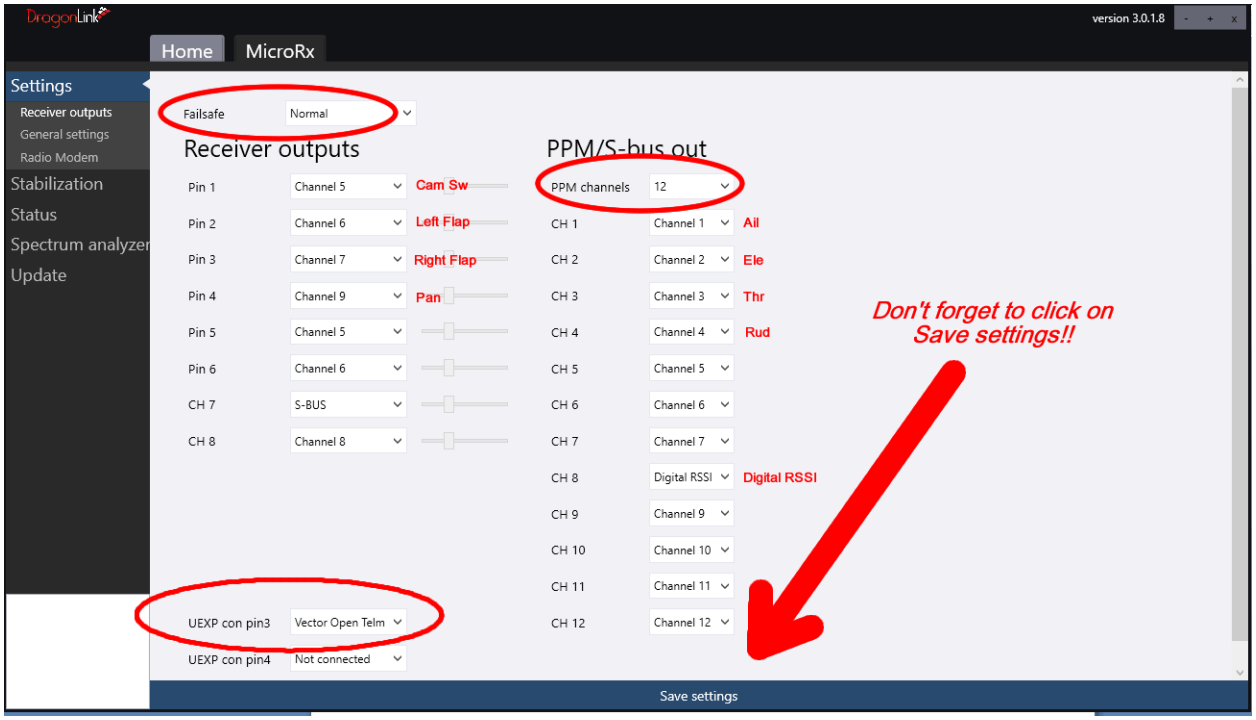


18. Click on “RF” in the left side menu bar.
19. Set “Trans. Channels” to 12.
20. Click on “Save settings”

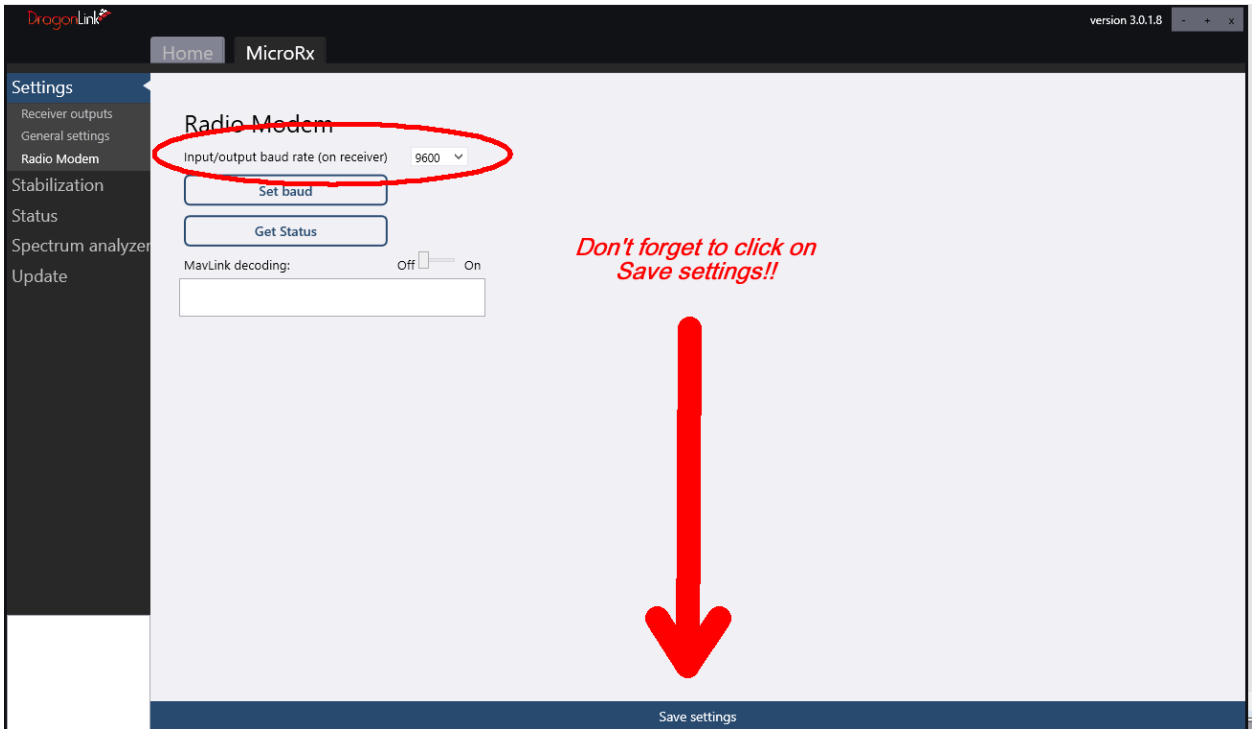


Dragonlink RX

1. Connect the DL RX to a PC using a USB cable. Start the DL GUI.
2. Click on the RX (MicroRx or AdvancedRx) tab at the top.
3. Set “Failsafe” to “Normal”.
4. Set “PPM Channels” to “12”.
5. Using the second list created above now set the “Receiver outputs” (on the left side) and the “PPM/S-BUS out” (on the right side). See the Picture below. Notice how the settings look just like your list?
6. Set “UEXP con pin3” to “Vector Open Telm” and “UEXP con pin4” to “Not connected” (you may have to scroll down to see these!). If any of the values in the drop down boxes are RED there is a conflict so go back and double check.
7. Click “Save settings” at the bottom of the page.



8. Click on “Radio Modem” on the left Menu Bar.
9. Set “Input/output baud rate (on receiver)” to “9600” (or whatever value you set on the TX above). **The Baud Rate setting on BOTH the TX and RX MUST MATCH!**.
10. Click on “Save Settings” at the bottom of the Page.



11. Now Rebind the DLTX and RX (see Binding Procedure elsewhere in this Manual)

Vector Settings

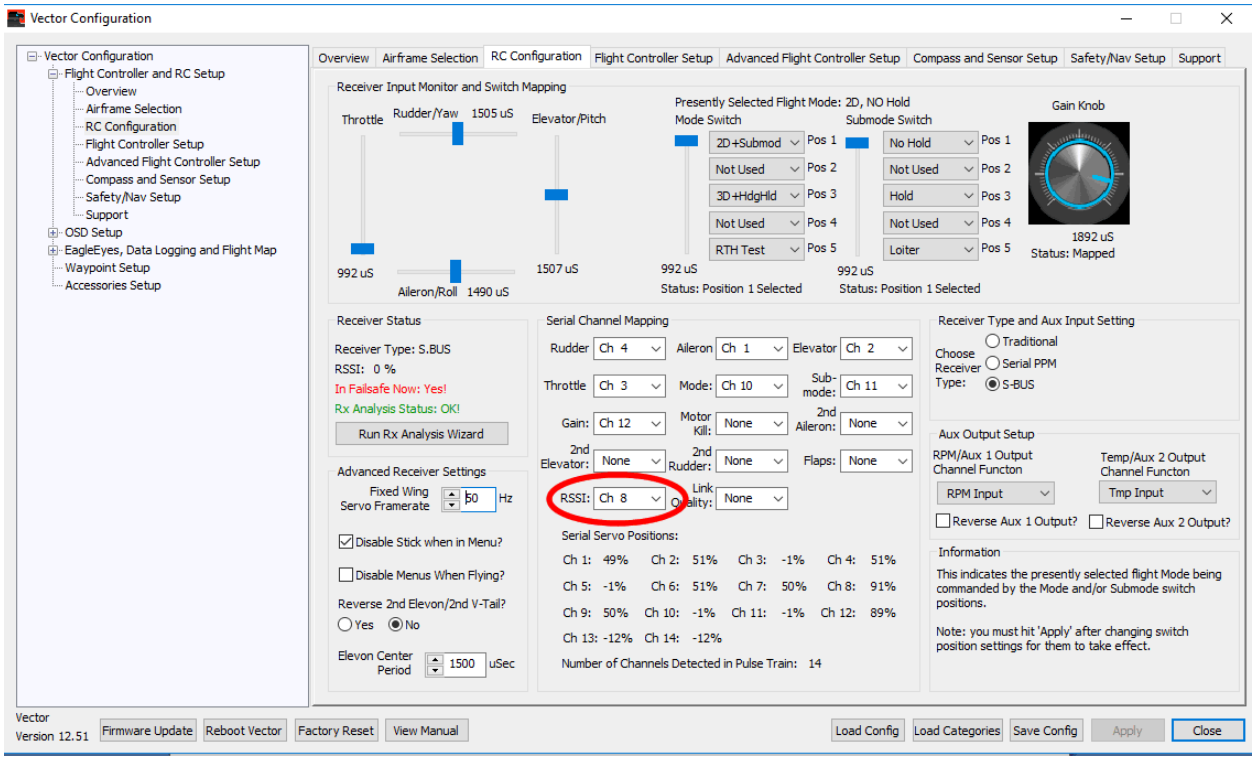
11. Connect the Vector to the Vector PC Software (GUI) with a USB cable. Power up your Transmitter, then the Aircraft. **NOTE: If you have not done so before you will need to select the correct Airframe (and later CONFIM by toggling the Mode Switch) and configure the OSD and Mode/Submode switches but that is beyond the scope of this Manual!**

12. From the "Overview" tab click on "Run Rx Analysis Wizard".

13. Follow the Wizard and when prompted enter "S-BUS" as the "Receiver Type" and "S-BUS" as the "Failsafe Detection Method".

14. Once you have completed the "Wizard" Click "Save Config" at the bottom, choose a name and location you will remember, and SAVE.

15. Click on the "RC Configuration" tab. Under "Serial Channel Mapping" set "RSSI" to "Ch 8". Click "Save Config" at the bottom.



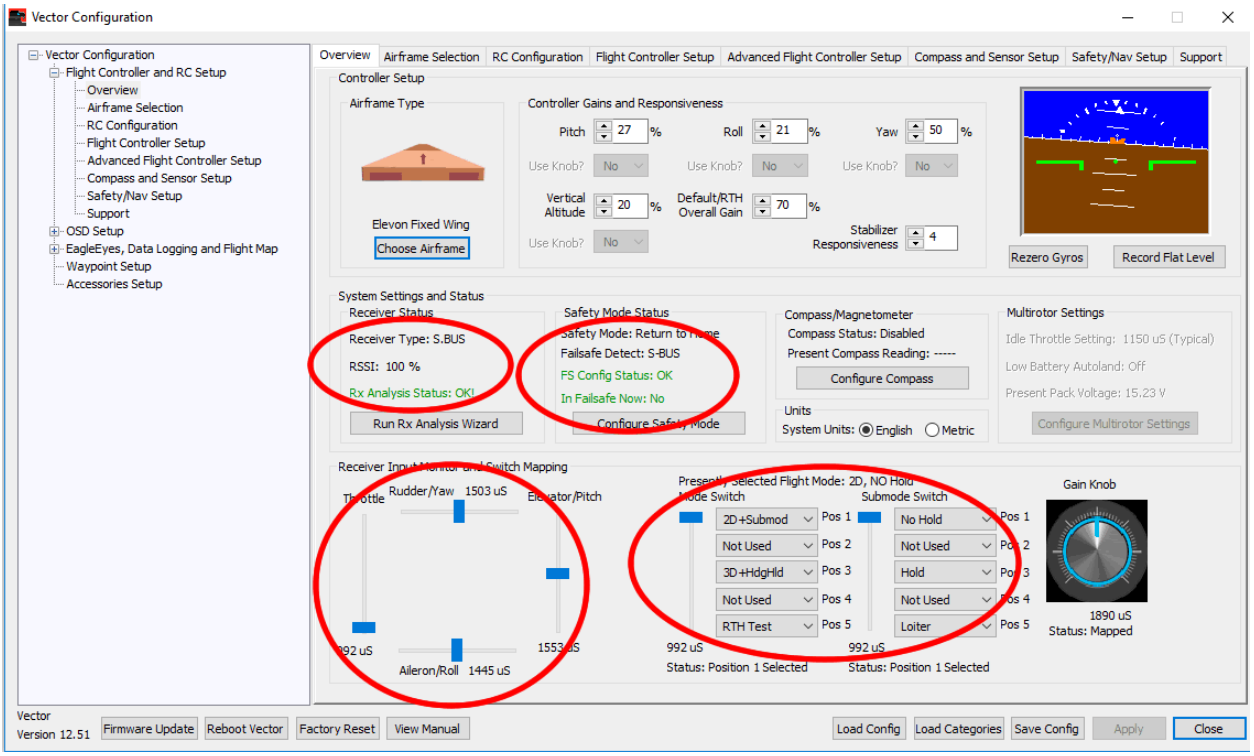
16. Power down the Aircraft and disconnect the USB cable.

17. Reconnect the USB cable and repower the Aircraft.

18. From the "Overview" tab in the Vector GUI confirm:
    a. "Receiver Type" = S.BUS
    b. "RSSI" = 100% (or very close to that)
    c. "RX Analysis Status" = OK!
    d. "Failsafe Detect" = S-BUS
    e. "In Failsafe Now" = No

f. The Sliders in the lower left of the screen respond to you Transmitter Sticks correctly.

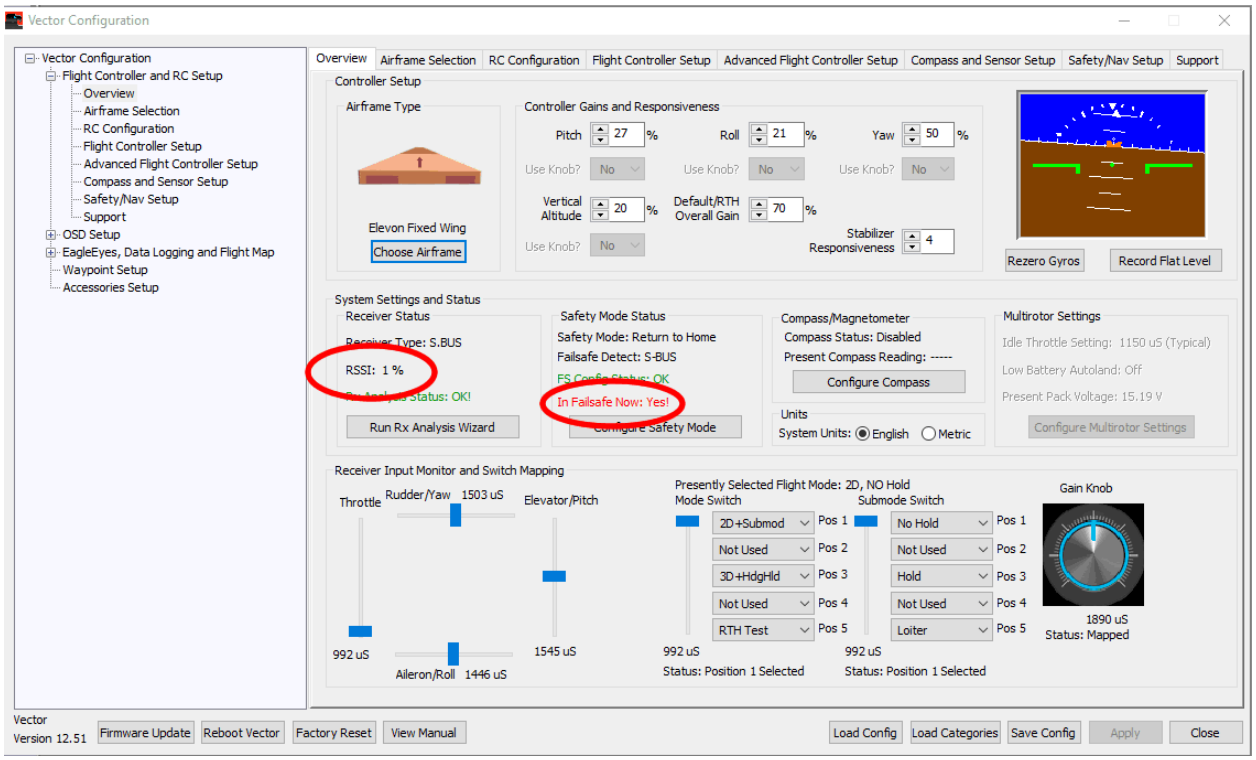
g. The Mode and Submode Switch sliders follow your switch movements.



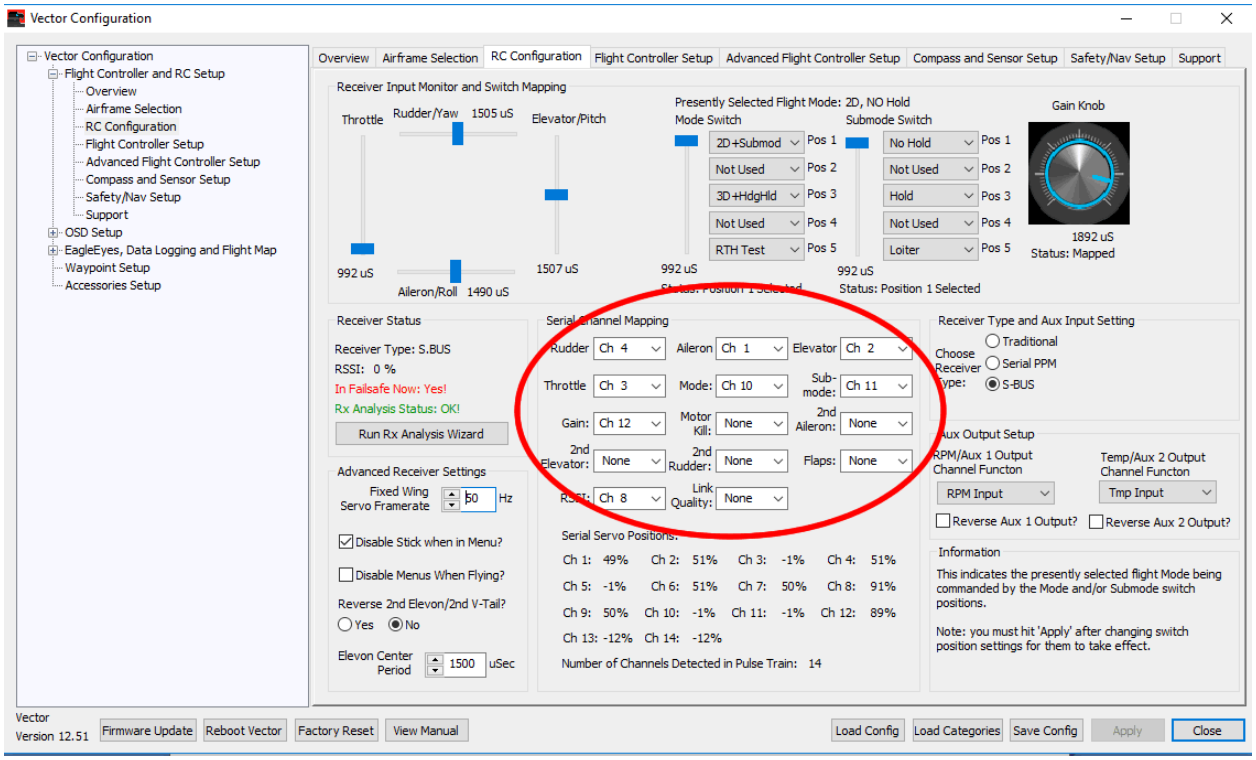
19. Now turn off your Transmitter and confirm:

a. “RSSI” = 1% (or very close to that)

b. “In Failsafe Now” = Yes!



20. If RSSI does not work or the channel sliders or Mode/Submode switches do not work click on the "RC Configuration" tab. For RSSI issues confirm that "RSSI" under "Serial Channel Mapping" is set to "Ch 8". For other channel issues confirm that the associated channel(s) are mapped correctly. Refer to the Channel List you made at the start of this Chapter.

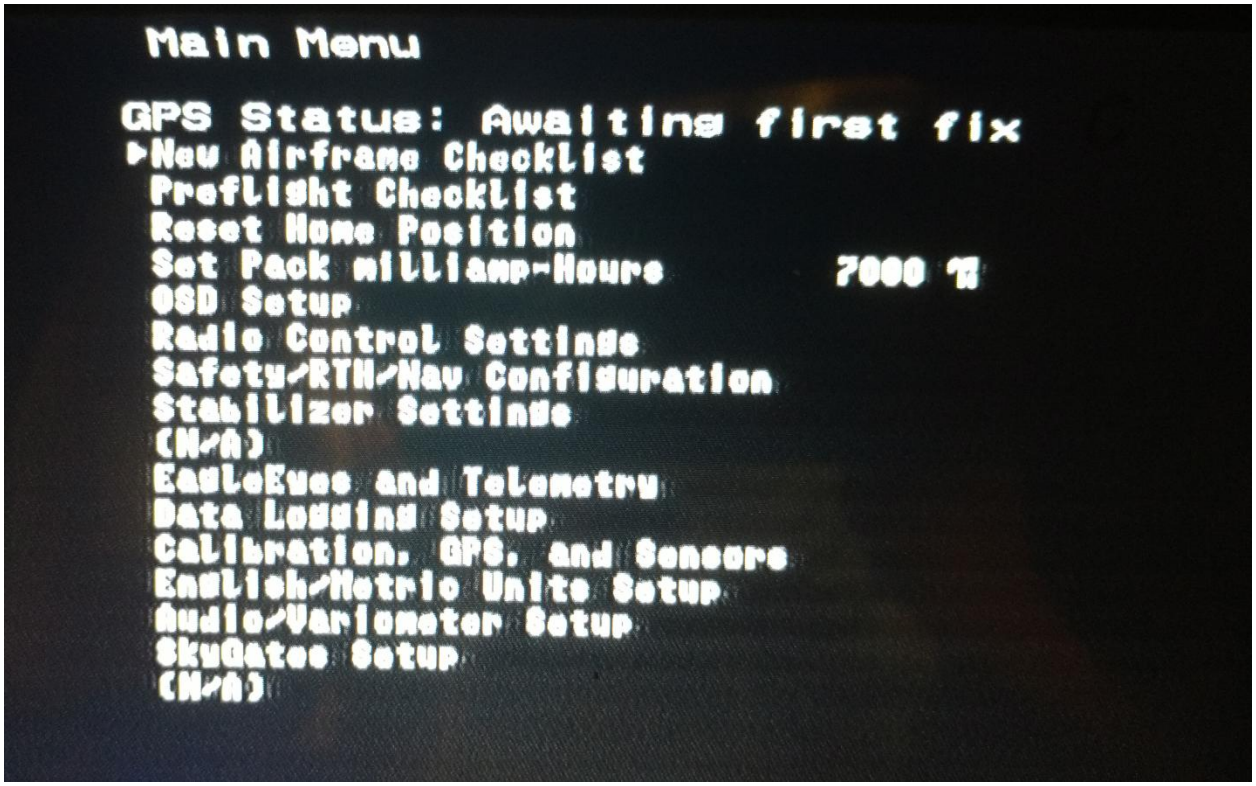


21. If you have made any changes click “Apply” at the bottom of the screen and then go back to Step #7 above. When you are satisfied click “Save Config”!

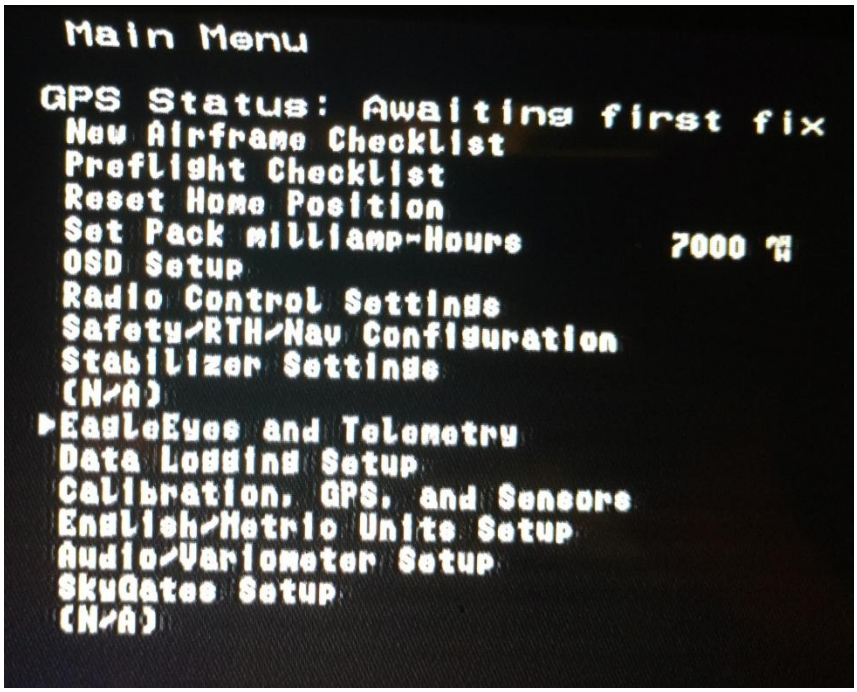
Setup the Vector UART for Telemetry

This step must (currently) be done using the Vector’s “OSD Stick Menus”. At present (Software/Firmware versions 12.61/2.66) this setting is not available in the PC Software (GUI). You do not need a camera or video transmitter to configure the Vector with the stick menus. You can directly connect the “composite” input of your video monitor or goggles to the "Vid Tx" output of the Vector Video Harness, and configure without a camera.

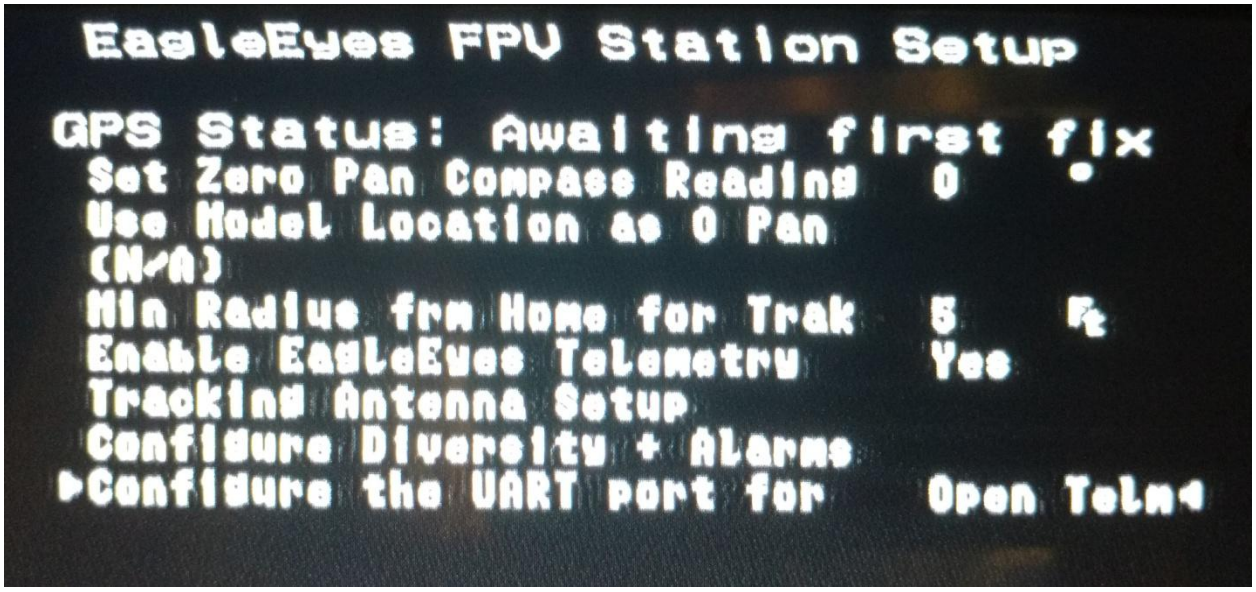
To enter the OSD Menus toggle your mode switch twice (two rapid, full movements between the switch's extents, in less than 2 seconds). This should initiate menu mode, and the Main Menu should appear.



Using the Elevator Stick scroll down to "EagleEyes and Telemetry":



Move the Aileron Stick to the right to go to the EagleEyes Submenu:



Using the Elevator Stick scroll down to “Configure the UART port for”. Move the Aileron Stick to the right then use the Elevator Stick to select “Open Telm”. Move the Rudder Stick to the left to exit the Menus and save the settings.

Setting the RX Failsafe

Unless you have PWM devices (such as Pan/Tilt, Camera Switch, Light Switch, etc.) connected to the DL RX servo rail that you want to move to specific position or state in a failsafe situation you do not need to set the DL RX Failsafe – the Vector will correctly detect a failsafe condition from the loss of the S-BUS stream and immediately initiate RTH!

If you DO have devices that you want to move to a specific position or state setting the DL RX Failsafe is very easy. Power up the Transmitter/DL TX and the plane. Once you have control move your switches/knobs to the positions you want them to assume in a failsafe and then press the “Menu” button on the DL TX briefly until it beeps. Confirm that the failsafe settings were recorded by moving those switches/knobs to a different position and then power off the Transmitter/DL TX. If you have been successful then your devices (Pan/Tilt, or lights for example) will move to the recorded failsafe positions. Do not bother with stick/throttle positions – Vector will control these when it goes to RTH. ***DO NOT record the failsafe positions with the Mode/Submode switch in RTH!*** Prior to Vector Software/Firmware version 12.61/2.66 having the Mode/Submode switch in RTH when recording the RX Failsafe could, in some cases, cause issues!

Vector Telemetry Cable Construction