

DragonLink

DragonLink V3 Advanced Complete System

DragonLink OSD



DRAFT ONLY

User Guide v0.3 – Sep 2018

Applicable versions:

UI: 3.0.2.0, RX/TX: 18 April 2018, OSD: 272

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1 Introduction

1.1 Overview

The DragonLink V3 System has been constructed from the best performing, highest quality components, using the latest and most advanced technology available. This system is built to outperform everything else on market and will last for many years. It is not cheap, but it will be the best FPV investment you will make.

Some of the DragonLink V3 features include:

- ▷ Typical range of more than 60 KM with stock antennas
- ▷ Full bi-directional telemetry - telemetry range varies with receiver type and data rate used
- ▷ Built in serial radio modem
- ▷ Full MavLink support, works with Tower, Mission Planner, and others
- ▷ Built in Bluetooth for display of telemetry on any android Smartphone or Tablet
- ▷ Fully configurable using PC software
- ▷ Can serve as a lost plane finder using optional GPS hardware and a telemetry-compatible controller
- ▷ Easy-to-see multi-color LEDs for instant status monitoring
- ▷ Audible alarms (for low voltage, low RSSI, etc.)
- ▷ Logging of flight, position, etc. to Micro-SD card (in development)
- ▷ RF Spectrum Analyzer
- ▷ Super-fast update rates available for racers and obstacle flyers
- ▷ Hassle free, bind-and-fly operation for those that want a basic experience
- ▷ Fully compatible with existing Dragon Link Micro Receivers (full bi-directional)

The Dragon Link complete system is proudly made in the USA, and is fully guaranteed in the USA. The system includes everything you need for long range, high performance RC control, and there is nothing additional to purchase. To get started with the best RC control money can buy, just order a complete DragonLink system and choose the correct options for your RC transmitter connection cables and airplane antenna options to suit.

NOTE: FPV video transmission is not a function of the DragonLink System and will require the purchase of additional equipment.

1.2 Package Contents

“DragonLink V3 Advanced Complete System” package contents include:

- ▷ 1x Long Range V3 Advanced Slim Transmitter
- ▷ 1x Long Range Receiver (Micro or Advanced)
- ▷ 1x Genuine Nagoya Transmitter Antenna
- ▷ 1x High Performance FPVPro Receiver Antenna
- ▷ 1x Connection Cable for Transmitter Module (type included according to selection made at time of purchase)

This user guide also covers the use of the following optional DragonLink products:

- ▷ DragonLink Transmitter (non-slim)
- ▷ DragonLink Advanced (high-power) Receiver
- ▷ DragonLink 100 amp Current Sensor
- ▷ DragonLink high-accuracy GPS position sensor
- ▷ DragonLink Micro OSD

1.3 Specifications

DragonLink V3 Advanced Transmitter (Slim)

Input Voltage	5 – 18v (2 – 4 cell LiPo)
Operating Frequency	433MHz (frequency hopping in ARS band)
Typical Range	40km (using supplied antennas)
Weight	90g
Length	79mm
Width	60mm
Thickness	15mm

DragonLink V3 Advanced Transmitter

Input Voltage	5 – 18v (2 – 4 cell LiPo)
Operating Frequency	433MHz (frequency hopping in ARS band)
Typical Range	40km (using supplied antennas)
Weight	150g
Length	86mm
Width	75mm
Thickness	30mm

DragonLink V3 Micro Receiver

Input Voltage	5 – 9v (UBEC or 2 cell LiPo)
Operating Frequency	433MHz (frequency hopping in ARS band)

Transmit Power	25mW
Weight	g
Length	52mm (not inc. SMA)
Width	23mm
Thickness	9mm (14mm inc. pin headers)

DragonLink V3 Advanced (high-power) Receiver

Input Voltage	5 – 9v (UBEC or 2 cell LiPo)
Operating Frequency	433MHz (frequency hopping in ARS band)
Transmit Power	1500mW
Weight	g
Length	70mm (not inc. SMA)
Width	36mm
Thickness	11mm (14mm inc. pin headers)

1.4 Software Updates

For instructions on how to apply software or firmware updates, please see sections 2.3 and 2.4, respectively.

1.4.1 Changelog

NanoRX, no Vector Open Telemetry with UEXP-Port

Fixed in latest FW but requires a restore default settings.

Problem with parameter fetch with Mavlink from ArduPilot

Tests reveal this to be working, most likely a problem with some setups causing overflow in the buffer due to usage of more bandwidth than what's available for an extended period of time when loading parameters.

There is no selection for "Auto Detect RX Idle" in the 3.0.2.0 TX GUI.

This setting is not needed with new BT-module and will only show with transmitters using the old module.

S.Bus data sent between the RC transmitter and the DL transmitter gets compressed.

The expected nominal range of 988uS-2012uS changes to 1020uS-1980uS.

Fixed.

GUI: shows coded/packed GPS data (also written to SD card)

Fixed to some degree, the GUI and SD now uses decimal-degrees but unsigned. It should be noted, that the RX shows the coordinates as degrees, decimal minutes.

To be fixed in future versions.

1.4.2 Known Issues and Limitations

- Voltage sensor not working on UEXP-Port Pin 3 (Nano RX)

- ⊃ [Elements positioned on the DragonLink OSD within the GUI will not always show the correct location on the FPV video feed. The OSD is still largely under development.]

1.5 Product Support

Your Dragon Link system is fully guaranteed and we will be happy to repair, test and upgrade it to the latest firmware free of charge. If you have exhausted the troubleshooting procedures in section [to be added] at the end of this manual and still have no success getting your DragonLink system to work, send your transmitter and receiver ONLY (NO antennas, NO accessories or other items) to us for repair. It is VERY IMPORTANT that you include a note explaining what is wrong so that we can correctly diagnose your system. Also remember to include your full name and return address on the note so that it can be sent back to you.

If you are outside the USA, you can use the cheapest way possible to send it to us in a small padded envelope, or very small box to keep the postage cost low. The mail is very reliable and fast in the USA so there is no need to pay extra for express mail, or very expensive tracking.

Shipping address:

ROSA YSLA
PO BOX 388
CORTARO AZ 85652
USA

Support contact:

support@fpvpro.com

1.6 Warnings and Safety

- ⊃ The DragonLink system is for hobby use only, in radio-controlled planes, copters, boats, and cars. Use of the system for any other than its intended purpose may cause damage to property, personal injury, or death.
- ⊃ Always observe proper use of the DragonLink system and ensure that all appropriate safety measures are taken during use and when setting up (eg. when soldering), in accordance with the user manuals for any other applicable products.
- ⊃ Always observe safety precautions for Lithium Polymer and other battery types. Improper use of batteries can cause fires, serious burns, and explosions. Never use or charge a damaged or puffed battery.
- ⊃ Always observe local and national laws regarding the use of radio transmitters and remotely piloted vehicles.

- ⇒ DragonLink and FPVPro will not accept any liability for any loss, fines, or damage that may result from the use of this system.

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2 Software Installation

This chapter outlines the procedures for installing the DragonLink GUI onto a Microsoft Windows PC and then using the DragonLink GUI to load the latest firmware onto your DragonLink hardware.

2.1 Minimum System Requirements

Component	Requirement
Computer / Processor	Pentium 4, Athlon 64, or equivalent
Memory (RAM)	2 gigabytes (GB) or greater
Operating System	Microsoft™ Windows™ 7, 8, 8.1, 10
Video	Display with resolution 1024x768 or greater
Internet Connectivity	256kbit/s or faster recommended

2.2 Obtaining the Latest Software / Firmware

It is strongly advisable to check for firmware and software updates regularly as they may include bug fixes, new features, and performance improvements. Before flying your DragonLink system for the first time, it is necessary to apply the latest firmware and obtain the newest version of the DragonLink GUI software for PC.

1. To begin checking for updates, visit this section of the DragonLink website:

<http://www.dragonlinkrc.com/instructions/>

2. From there, select your applicable DragonLink system:



3. Then select **Complete Systems**:



ALL DRAGON LINK V3 COMPLETE SYSTEMS INSTALLATION

4. Lastly, click on the download link near the top:

Dragon Link V3 Advanced Complete System
System Configuration and Firmware Update Software
*** [CLICK HERE TO DOWNLOAD](#) ***

5. Once the compressed (.zip) has downloaded, extract it by right-clicking the file and selecting **Extract All...**

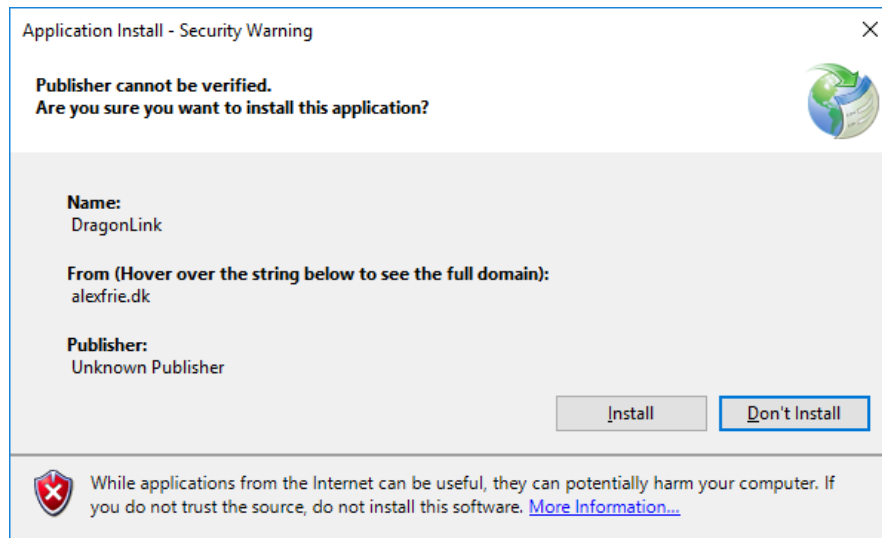
2.3 Software Installation

1. The compressed (.zip) file obtained from the DragonLink website contains the following files:

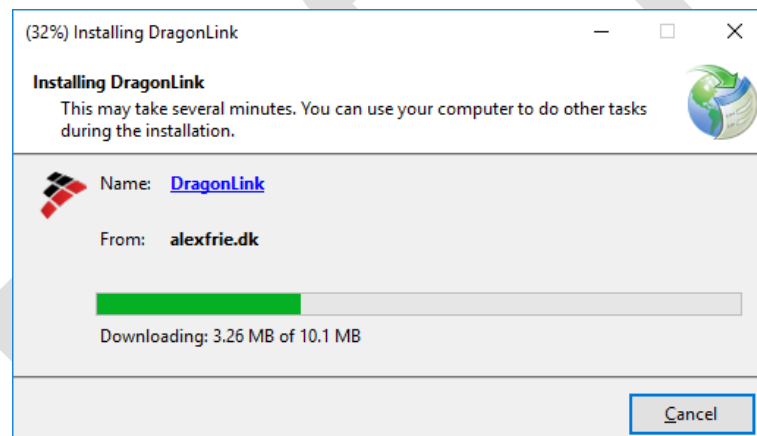
Driver	25/01/2018 10:15 ...	File folder	
DragonLink_GUI_Setup.exe	26/11/2017 9:43 AM	Application	511 KB
FirmwareReceiver26Nov2017.MicroRx	16/08/2017 5:09 PM	MICRORX File	68 KB
FirmwareTransmitter26Nov2017.V3Tx	26/11/2017 9:27 AM	V3TX File	53 KB

NOTE: You will require an internet connection in order to perform the installation as the installer needs to download additional software components.

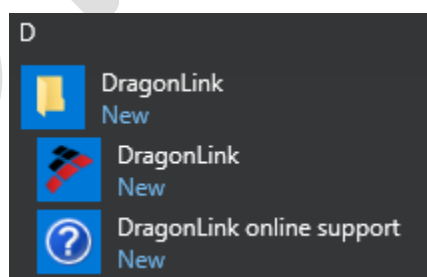
2. Double-click the **DragonLink_GUI_Setup.exe** file to begin the installation of the DragonLink software. At the prompt, select "Install".



3. Please wait for the download to complete.



4. Once the installation is complete, the software can be launched from the DragonLink shortcut on the Start Menu.

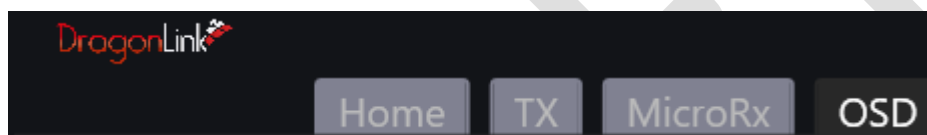


2.4 Applying Firmware Updates

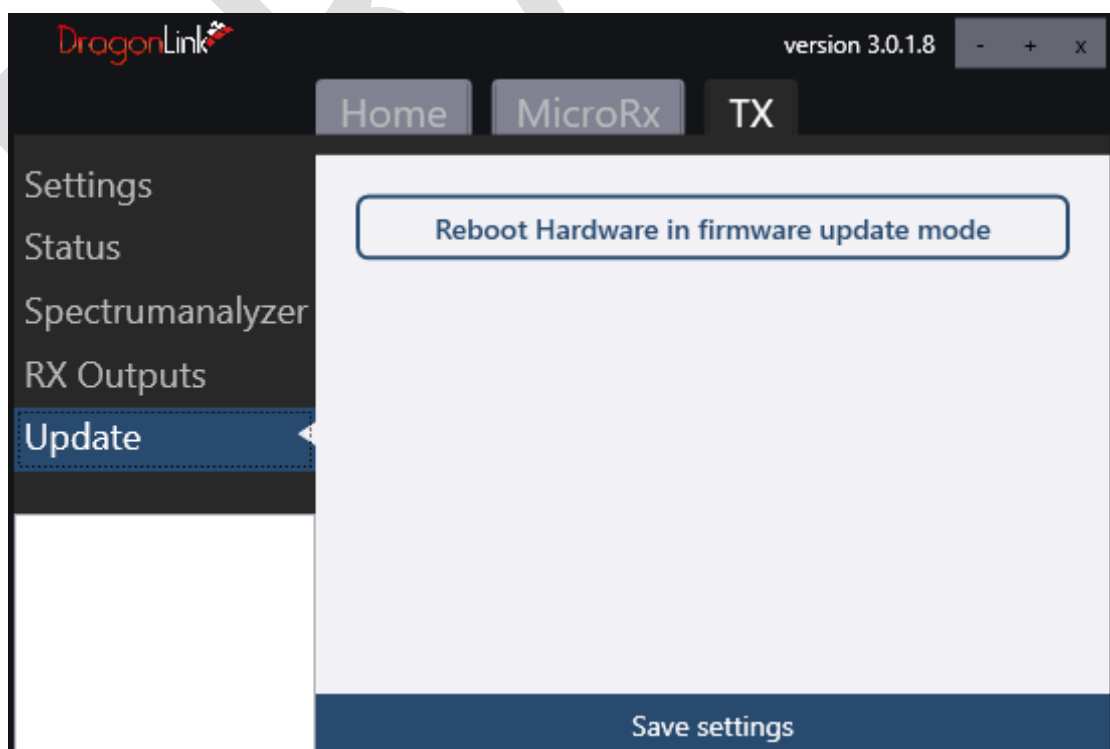
Firmware updates can be easily applied to your DragonLink transmitter, receiver, or OSD, using the DragonLink GUI software.

WARNING: *It is important not to interrupt the firmware update process as this has the potential to cause hardware damage and render your device unusable.*

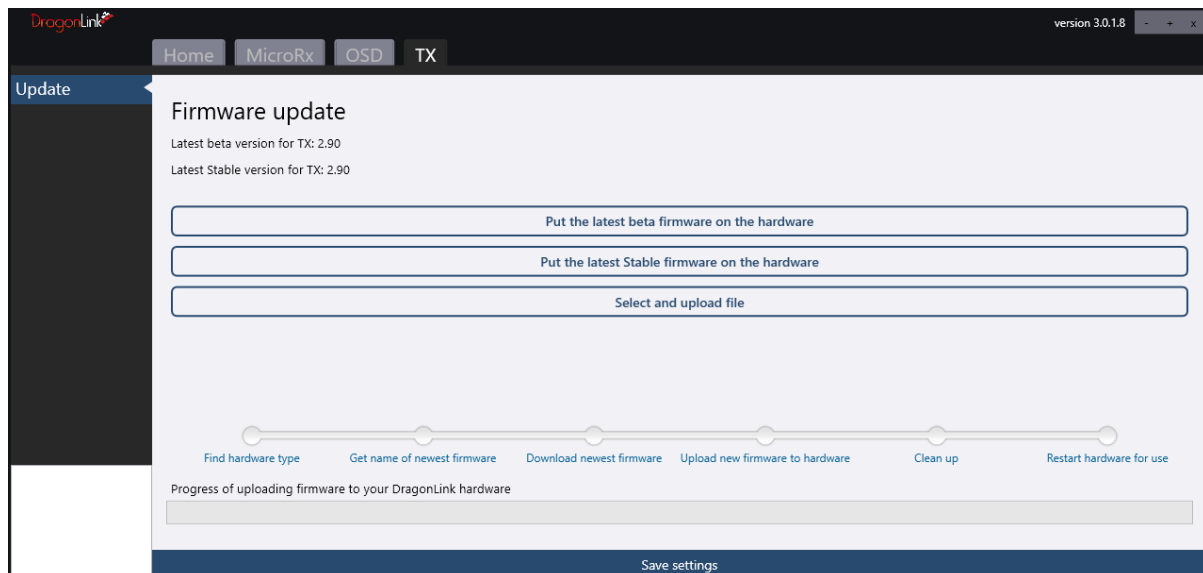
1. First, connect your DragonLink transmitter, receiver, or OSD to your PC using a micro-USB cable. Ensure the device tab appears in the DragonLink GUI software. It may take a moment for drivers to install before the tab appears. If it does not appear, please follow the Driver Installation Troubleshooting guide in section [to be added].



2. Select the relevant tab for the device you wish to update. Then, select the **Update** page and click **Reboot Hardware in firmware update mode**



- Once the hardware has rebooted you will be presented with the below screen, which offers a number of firmware options.



-Select **“latest beta firmware”** if you wish to try out the most up-to-date features and / or bug fixes.

-Select **“latest Stable firmware”** if you wish to use the most up-to-date firmware that is known not to have any major bugs.

-Select **“Select and upload file”** if you wish to manually specify a firmware file to upload to your device. (This is used in such instances as when you may wish to downgrade to a previous version of firmware.)

After selecting one of the options, the software will automatically download the firmware from the internet (or allow you to navigate to the firmware file and select it), then begin applying it to your DragonLink device.

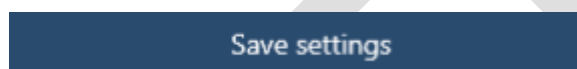
NOTE: While every precaution is taken to prevent serious bugs making it into any version of our firmware, it is possible that ‘beta’ firmware may contain bugs which have the potential to cause the loss of control of your model aircraft. At the time of writing, no such bugs are known to exist, however please proceed with the appropriate level of care as DragonLink cannot accept any responsibility for any damages or the loss of your model aircraft.

3 Configuration – DragonLink GUI

NOTE: After changing settings relating to update-rate, bandwidth allocation, use of narrow-band, no. of channels, hardware IDs, or the enabling or disabling bi-directional data, it will be necessary to re-bind your DragonLink transmitter and receiver.

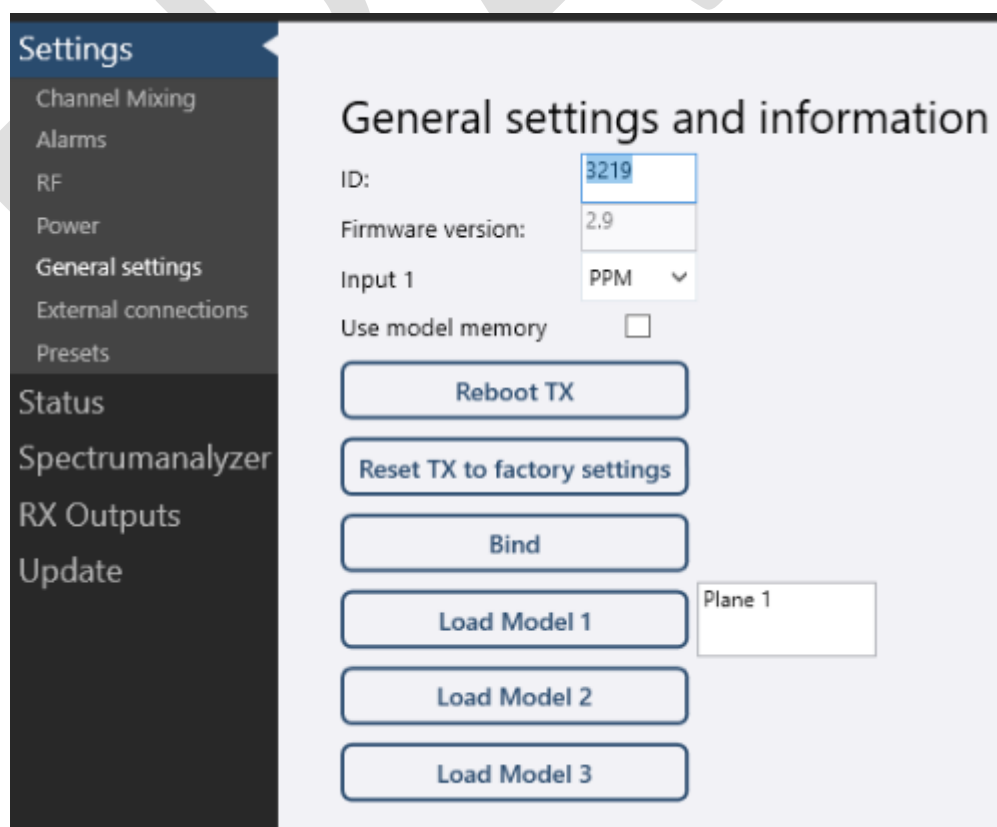
Saving Settings

Before disconnecting or rebooting your DragonLink device, ensure that any changes to the configuration are not lost by clicking **Save Settings** at the bottom of the DragonLink GUI window. Some pages have additional save buttons – ensure you click these as necessary.



3.1 DragonLink Transmitter

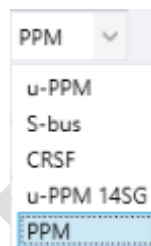
3.1.1 General Settings



ID: This number should be changed to something unique before your DragonLink system is used for the first time. It is used as an identifier to encode the transmission data so the receiver does not suffer interference from other DragonLink systems during flight. Once changed, re-binding with the receiver is necessary.

Firmware version: This field displays the version of firmware currently applied to the DragonLink transmitter.

Input 1: Specifies the protocol used by the controller to talk to the DragonLink transmitter. This must match the protocol used by the controller's trainer jack or module-bay port.



Use model memory: Enables the use of model memory, which allows switching between 3 different saved configuration 'profiles' so that the settings do not need to be adjusted manually each time for use with different model aircraft.

When enabled, the desired model can be selected by setting the switch position before powering on the transmitter (Switch Ex3 on large transmitter, or switch Ex1 on the Slim). Once the transmitter is powered on, the switch can then be used normally for other functions without affecting the model selection.

Reboot TX: reboots the DragonLink transmitter. Required for some changes to take effect.

Reset TX to factory settings: Restores all settings back to factory default. A recommended first-step when troubleshooting the DragonLink system.

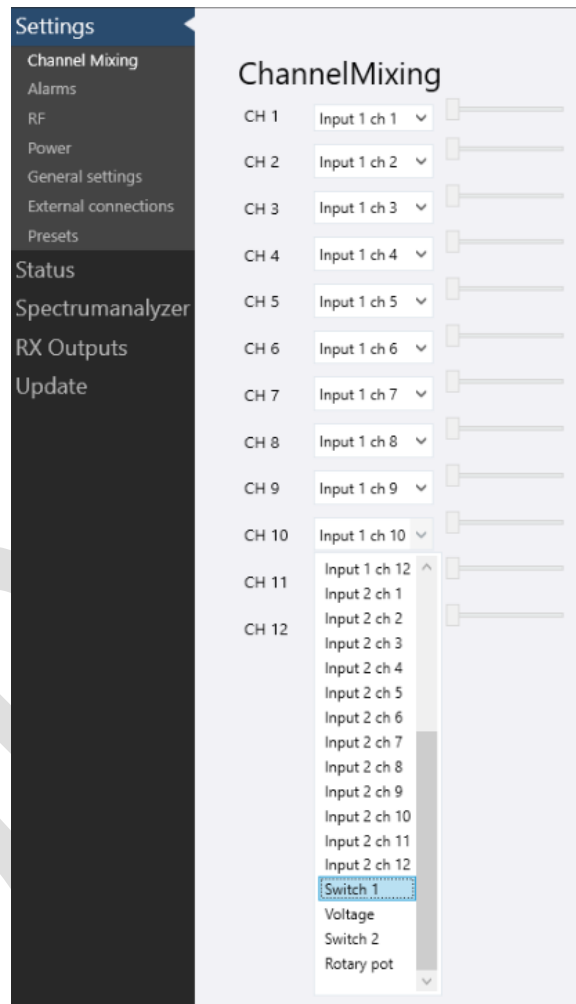
Bind: Places the DragonLink transmitter in binding mode. To complete the binding process once this mode has been activated:

- 1 Power on the DragonLink receiver. The receiver's blue and green LEDs should flash alternately, indicating a successful bind.
- 2 Power off the receiver and reboot the transmitter.
- 3 The receiver's blue LED should now be lit, indicating a successful link to the DragonLink transmitter. The transmitter's LED(s) will not be lit unless connected to an external power source.

Load Model 1 – 3: These buttons switch between saved model configurations. Before changing to another Model, ensure settings are saved as any unsaved changes will be lost.

3.1.2 Channel Mixing / Assignment

The Channel Mixing settings page allows you to map channels from your controller, as well as the DragonLink transmitter's switches or the rotary pot (large transmitter only), to any of the 12 channels on the DragonLink system. In addition, the sliders to the right of each channel show the position of each channel, live, so you can confirm their functionality without needing the receiver or additional hardware connected.



CH 1 – 12: The drop-down menus on this screen allow you to assign an input to each of the 12 channels that the DragonLink transmitter communicates to the receiver. The available options for each channel include:

- Channels 1 – 12 from Input 1
- Channels 1 – 12 from Input 2*
- Switch 1 (Ex1)
- Switch 2 (Ex3)*
- Rotary pot (Ex2)*
- Voltage

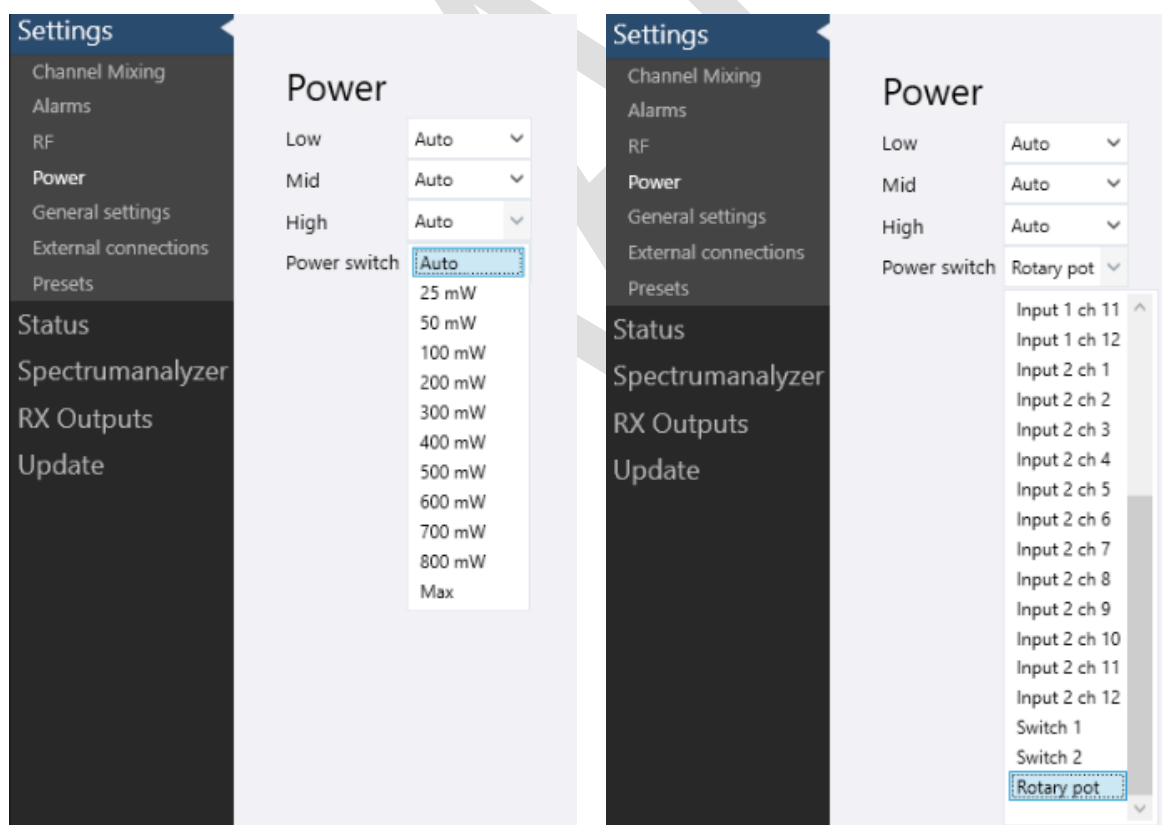
**not available on DragonLink V3 Slim transmitter*

NOTE: Configuration of the receiver is also required in order to complete the channel mapping / mixing setup. See chapter 3.5.

Assigning **voltage** to a channel will cause that channel's position to move in conjunction with the DragonLink transmitter's input voltage. This could, for example, be used by the model aircraft to display an indication on the OSD of the transmitter's voltage, or for an RTL mode to be set based on low TX voltage, or for a physical servo to perform some function once the TX battery reaches a certain level.

The channel will move from minimum to maximum positions based on a voltage range of approximately 5v – 16v.

3.1.3 Power Settings



The DragonLink transmitter's RF output power can be controlled automatically or set to a fixed milli-watt value manually by the user.

NOTE: Auto mode increases the RF power as-needed in order to maintain a stable RC link and reduces it when not needed to maintain efficiency. It does so very quickly – far quicker than the user could adjust it manually – and in much finer increments. For this reason, Auto is the recommended mode.

Low: sets the transmit power level when the switch, RC channel, or rotary pot is in the *lower third* of the channel range

Mid: sets the transmit power level when the switch, RC channel, or rotary pot is in the *middle third* of the channel range

High: sets the transmit power level when the switch, RC channel, or rotary pot is in the *upper third* of the channel range

Power switch: Defines the switch, RC channel, or rotary pot that will be used to alter the transmit power.

At the time of writing, there is no option to remove the assignment of a switch or RC channel to the power setting, however, if the **low**, **mid**, and **high** settings are all set to **Auto** (or an identical fixed value), the settings on this page will have no effect. In addition, the assignment of a switch or channel here will not prevent it from being assigned to other functions elsewhere.

3.1.4 RF Settings

Settings

- Channel Mixing
- Alarms
- RF
- Power
- General settings
- External connections
- Presets
- Status**
- Spectrumanalyzer
- RX Outputs
- Update

Rf Protocol

RF band: Normal

Use bi-dir: ☒

Trans. channels: 12

Bidir bandwidth: High

RF preference: Fastest update-rate

Use narrowband - in beta (Only with Normal RF pref): ☐

Approx data: Rate: 52.0 Hz Radio modem: Uplink 364.0 bytes/sec Downlink 2340.0 bytes/sec

The RF settings page controls how the DragonLink transmitter talks to the receiver. Changing these settings can affect the control range and telemetry range, as well as the responsiveness of control over the model aircraft. For example, lowering the

number of channels sent to the receiver will improve the responsiveness, while decreasing the bi-directional bandwidth and lowering the update rate to its minimum setting will greatly increase the range at which telemetry can be received.

At the bottom of the page, the approximate update rate (hertz) is displayed, along with the radio modem's uplink and downlink data rates (bytes per second). These values can be used to gauge the effect that changing the settings will have.

In real-world usage situations, any gain to be had by lowering the number of transmitted channels or bi-dir bandwidth will be marginal, and may result in compromised performance. Only lower these settings below 'normal' in cases where extreme range and link stability are required.

NOTE: *MavLink telemetry streams require a relatively high data rate. Without altering the configuration of the flight controller, MavLink typically only works with 'bidir bandwidth' set to 'High' and 'RF preference' set to 'Fastest update-rate'.*

RF Band: [to be added... if you know what this does please PM DangerFlite on RCGroups]

Use bi-dir: Enables or disables bi-directional communication between the transmitter and receiver. Disabling this setting will disable all telemetry and radio-modem functionality.

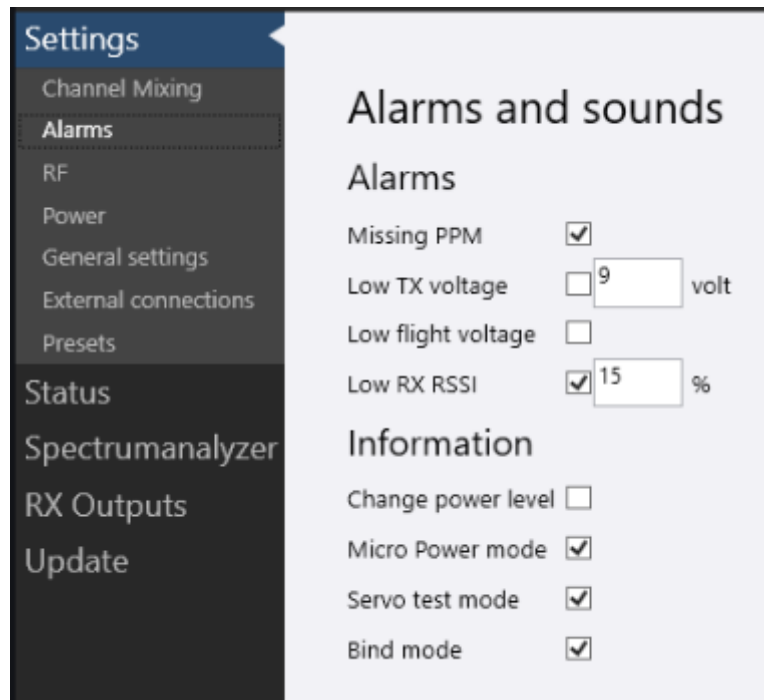
Trans. channels: Specifies how many channels to transmit to the receiver.

Bidir bandwidth: Specifies how much bandwidth to allocate to bi-directional communication. Maximum value is required for stable MavLink.

RF preference: Specifies how rapidly to update the channel positions.

Use narrowband: Effectively uses half the normal bandwidth, allowing much tighter internal RF filters for a cleaner signal.

3.1.5 Alarms and Sounds



The DragonLink transmitter is capable of providing a range of audible warnings to the user.

Missing PPM: Triggered by a loss of input from the radio controller's trainer jack or module bay connection.

Low TX voltage: User-configurable low input-voltage alarm.

Low flight voltage: Triggered by low voltage reading from optional DragonLink Voltage Sensor (requires active telemetry link).

Low RX RSSI: User-configurable low signal strength alarm.

Change power level: Either one, two, or three beeps will be played to correspond with the selection of either **low**, **mid**, or **high** power levels, respectively. When using Auto power level modes only, disabling this alert is recommended (see section 4.1.3).

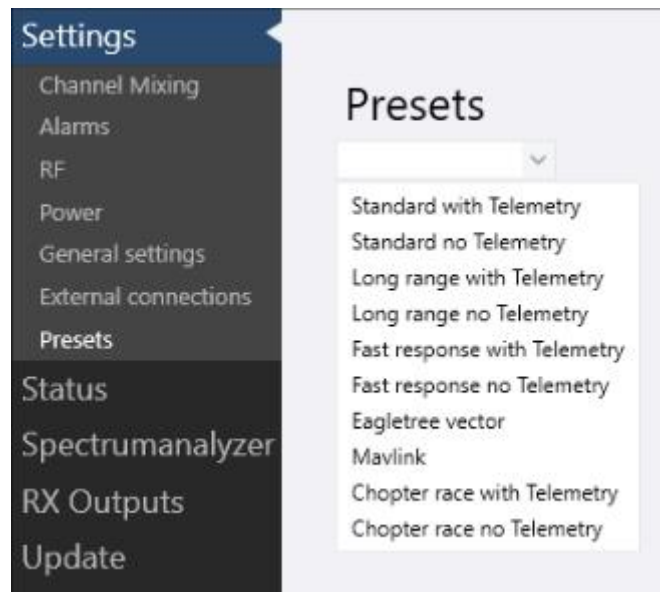
Micro Power mode*: Plays a repeating audio reminder while the transmitter is in micro power (range test) mode.

Servo test mode*: Plays a repeating audio reminder while the transmitter is in servo test mode.

Bind mode*: Plays a repeating audio reminder while the transmitter is in bind mode.

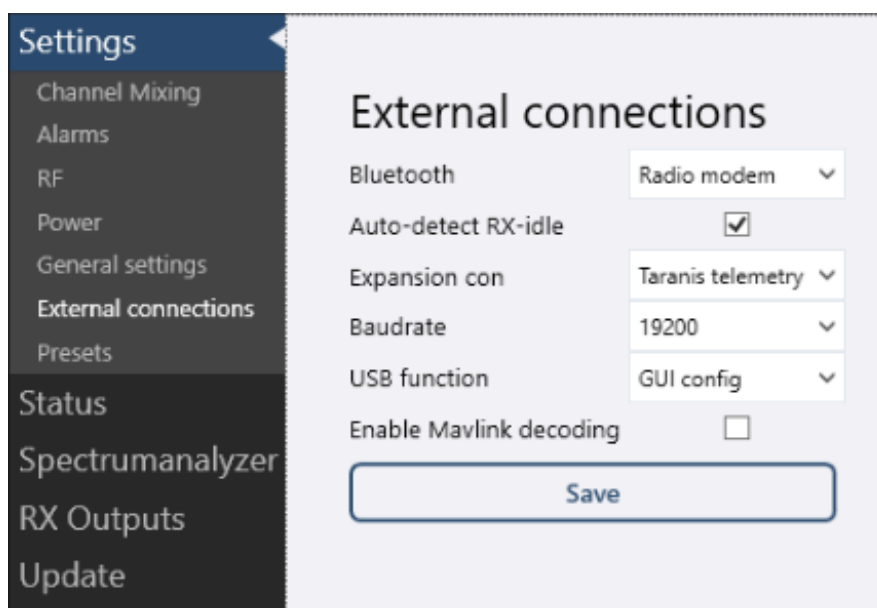
** It is recommended that these reminders be enabled to ensure the model aircraft is not inadvertently launched while the transmitter remains in a mode that may cause loss of control or damage.*

3.1.6 Presets



The Presets page can be used to apply a range of configuration templates to your DragonLink transmitter. These won't alter general settings, such as channel and switch assignments, model ID, or alarms, however it will alter settings to do with bi-directional data, update rate, and bandwidth in order to optimise performance for the use-case determined by the preset. After applying a preset, it will be necessary to check all of the settings to confirm they are suitable.

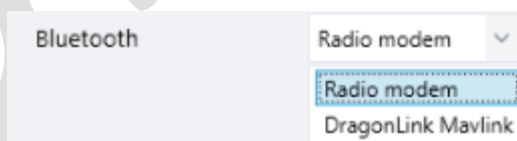
3.1.7 External Connections



The External Connections page is used to assign functions to the physical and wireless connections on the DragonLink transmitter.

NOTE: Chapters [to be added] contain instructions and example configurations for using your DragonLink transmitter to send telemetry for some of the more common flight controller and ground-station setups.

Bluetooth (on supported models): Sets the type of data that will be streamed to the Bluetooth virtual COM port.



Option	Function	Bi-directional
Radio modem	Passes raw serial data directly to and from the connected device.	Yes
DragonLink Mavlink	Encodes non-MavLink telemetry from the aircraft into a MavLink-compatible telemetry stream for use with ground stations.	No

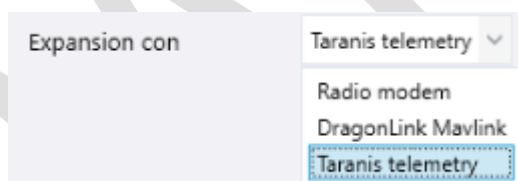
Auto-detect RX idle:

NOTE: This issue does not affect newer Slim transmitters with an updated bluetooth module and thus, this setting will not be visible unless it is required by the connected transmitter.

When enabled, the DragonLink transmitter looks for data (eg. MavLink heartbeats) coming from the device connected by bluetooth. If the upstream data stops (ie. the bluetooth device is disconnected), downstream telemetry data is no longer sent to the bluetooth connection. This setting is designed to prevent overflow of the bluetooth module's buffer which occurs when data is sent to the module and no device is connected to receive it. When this happens, bluetooth will not work until the DragonLink transmitter has been power-cycled (reset).

In order to use receive-only telemetry (ie. with a ground station that does not send any uplink data) this setting should be **disabled**. In this state, the user should be aware that disconnecting the bluetooth device while the telemetry stream is active will cause the module to crash and require a reset of the DragonLink transmitter.

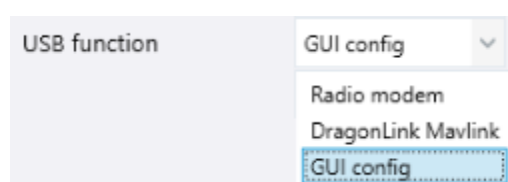
Expansion con: Sets the type of data that will be streamed to the UEXP port on the base of the transmitter.



Option	Function	Bi-directional
Radio modem	Passes raw serial data directly to and from the connected device.	Yes
DragonLink Mavlink	Encodes non-MavLink telemetry from the aircraft into a MavLink-compatible telemetry stream for use with ground stations.	No
Taranis telemetry	Encodes either MavLink or non-MavLink telemetry data into an S.Port telemetry stream for use with a FrSky Taranis controller	No

Baud rate: Sets the serial baud rate of the UEXP expansion connector.

USB Function: Sets the type of data that will be streamed to the USB virtual COM port.



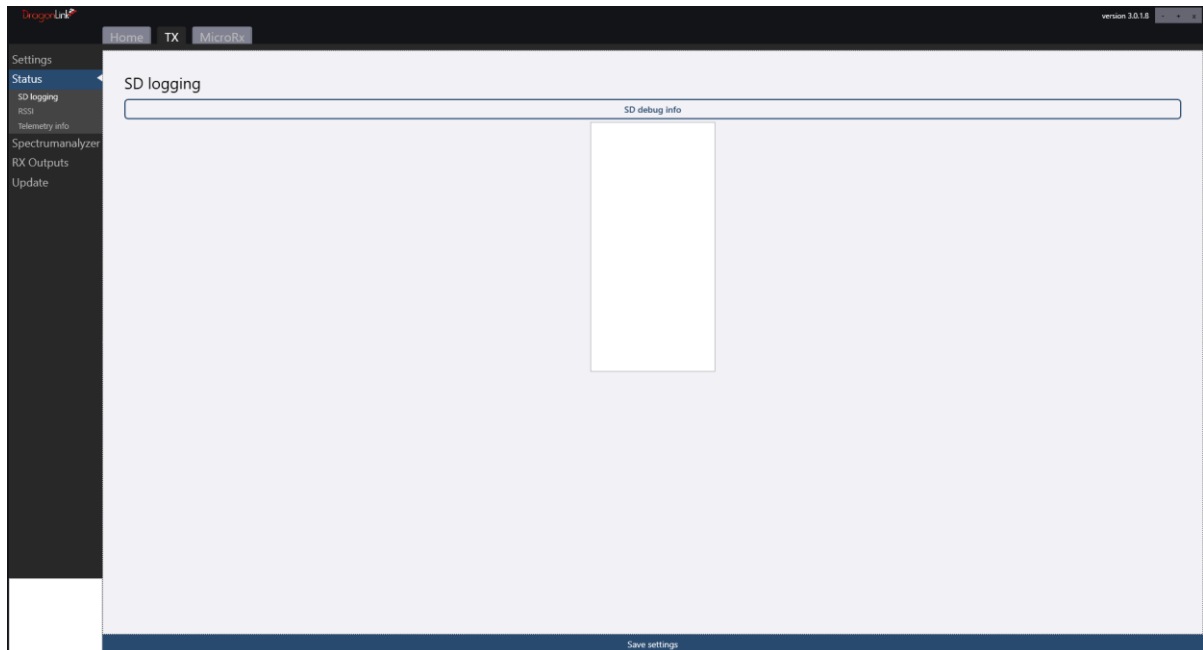
WARNING: *Changing the USB function setting will prevent the DragonLink GUI from being able to connect to the transmitter for configuration purposes. See section 3.3.5 for instructions on how to change this setting back to the default.*

Option	Function	Bi-directional
Radio modem	Passes raw serial data directly to and from the connected device.	Yes
DragonLink Mavlink	Encodes non-MavLink telemetry from the aircraft into a MavLink-compatible telemetry stream for use with ground stations.	No
GUI config	Allows the connected device to configure the transmitter using the DragonLink GUI	N/A

NOTE: *Baud rates do not apply to the USB virtual COM port. As long as the baud rate is correct on the receiver, and the receiving software matches that setting, the data will parse successfully.*

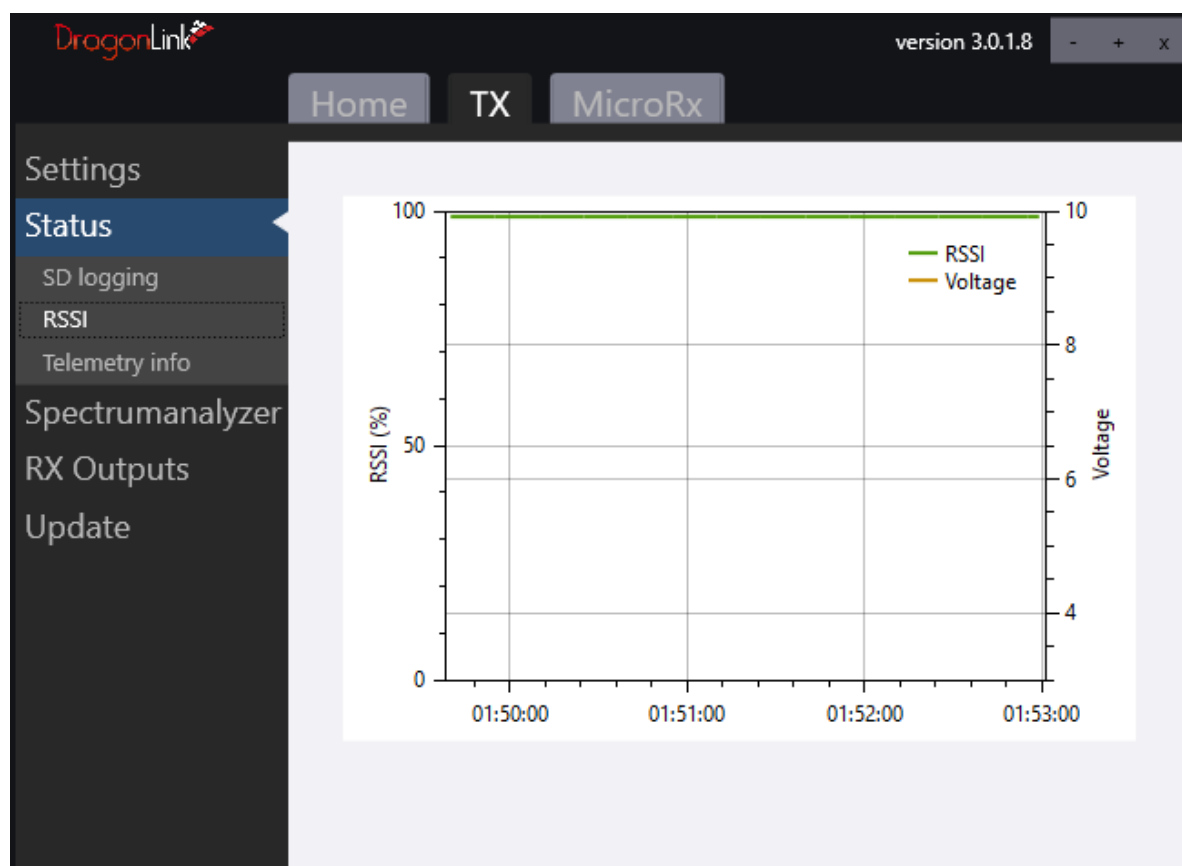
Enable MavLink decoding: This setting enables decoding of an incoming MavLink telemetry stream so that certain sensor values can be passed to external, non-MavLink devices.

3.2.8 SD Logging



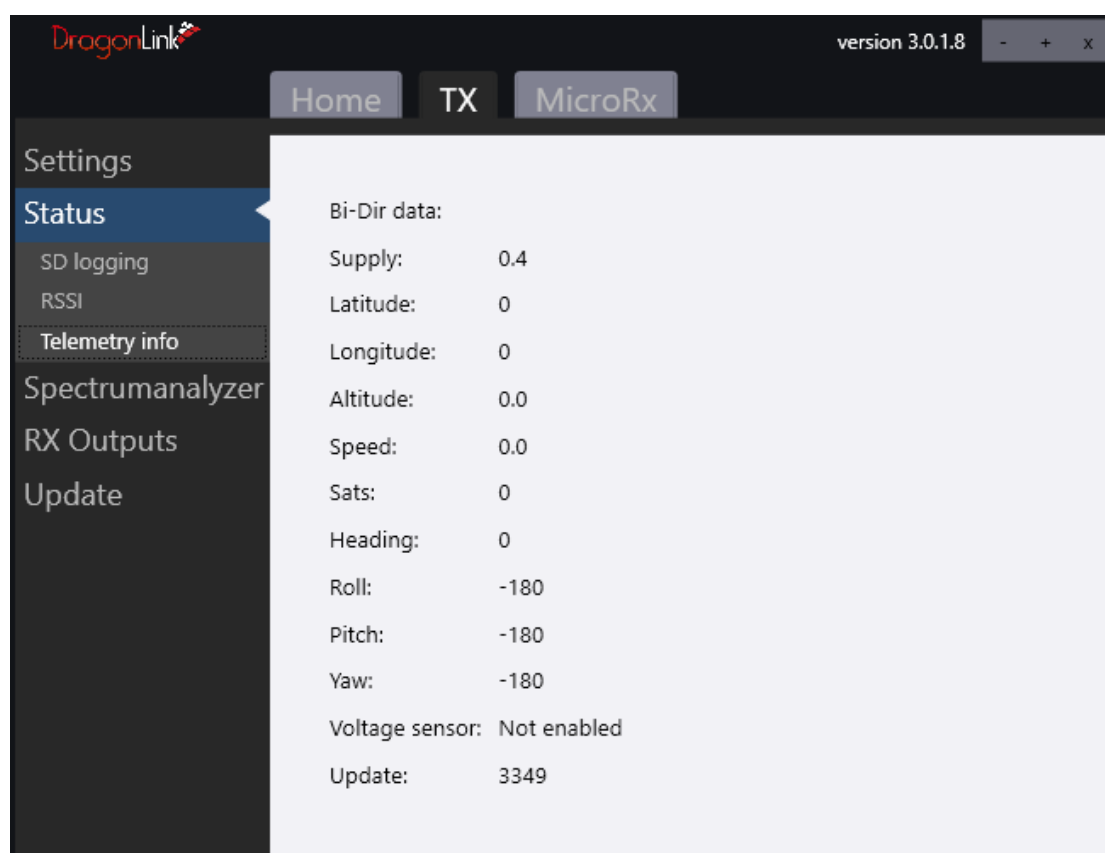
This page allows you to see diagnostic information regarding the logs that have been saved to the SD card (not included). At the time of writing, support for logging is still in development.

3.2.9 RSSI



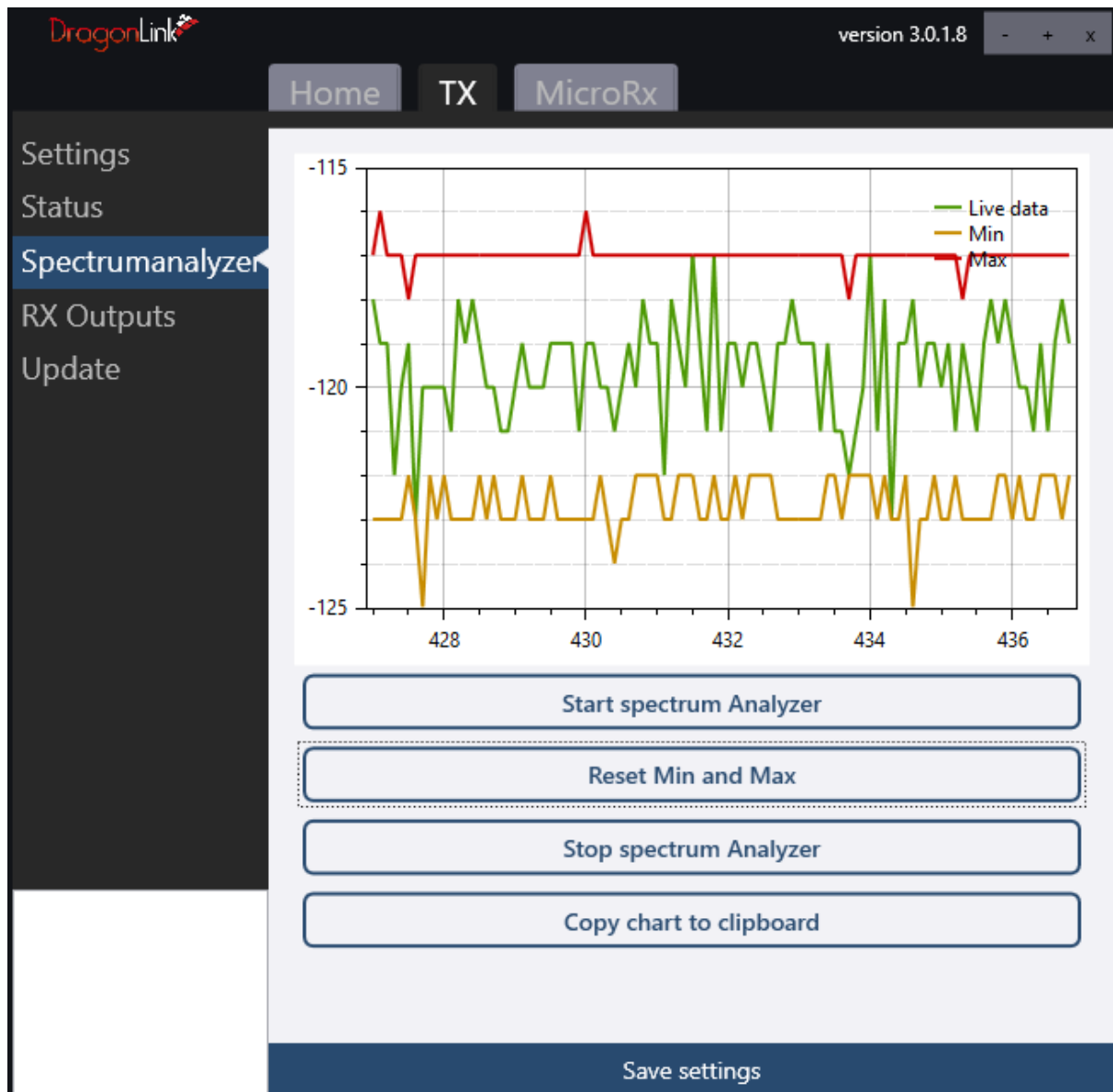
On this page, the RSSI (received signal strength indication) is displayed in live graph view, along with the transmitter input voltage. This indication of RSSI represents the strength of the **telemetry signal** sent from the receiver to the transmitter, and not the strength of the **RC signal** sent from the transmitter to your model aircraft.

3.2.10 Telemetry Info



When a compatible GPS, voltage sensor, or OSD are connected to the DragonLink receiver and the pin assignments are correctly configured, or when MavLink Decode is used to capture telemetry from a valid MavLink stream, the incoming telemetry data will be visible on this tab for diagnostic purposes.

3.2.11 Spectrum Analyzer



The spectrum analyzer can be used to assess the RF spectrum to look for any unexpected radio interference prior to flight or to diagnose the cause of any radio interference from other components on your model aircraft. The example screenshot above shows an RF noise floor (the signal strength of average background noise) of approximately -120dBm across the 433MHz band (427 – 437MHz), which is ideal.

It is normal to see a spike on the spectrum analyzer when your DragonLink receiver is powered on and within range.

***WARNING:** A noise floor significantly higher than -110dBm indicates a potential issue that may result in reduced range and loss of control over your aircraft, so should be investigated and resolved prior to flying.*

3.3 DragonLink Transmitter – Using Menu Button

The DragonLink transmitter allows for certain functions to be performed using the **Menu** button on top of the unit.

3.3.1 Range Test

Conducting a range test before each flight is an important step in ensuring that there are no faults, interference, or misconfigurations that could result in the loss of your model aircraft. In range test mode, the RF transmit power is greatly reduced to simulate the effects of extreme range. Range tests should be conducted on-location, with a clear line-of-sight and with environmental conditions matching those of the planned flight.

To conduct a range test:

1. Hold down the **Menu** button on the DragonLink transmitter and turn on the power.
2. After the power-on sound is played, the LED(s) will turn **green** accompanied by **1 beep**.
3. Release the **Menu** button.
4. The transmitter will continue to play **1 beep** (if the **range test mode** alarm is enabled) and the LED(s) will **flash green** to indicate it is in **range test mode**.
5. Position the transmitter with the antenna vertical.
6. Carry the model aircraft away from the transmitter, ensuring that the receiving antenna is also kept in its flight orientation, and monitor the **blue** LED on the **receiver**.
7. The receiver's blue LED turning off indicates a temporary loss of signal from the transmitter. Brief flickers are normal during operation even at close range. Once the LED is in an off state approximately 50% of the time, measure the distance from the transmitter to the model aircraft.
8. To exit range test mode, press the **menu** button.

In normal conditions, the range test should yield a distance of approximately **10 metres, or 30 feet**. 5 metres, or 15 feet, is acceptable for shorter range craft that will operate up to a maximum distance of 5km.

3.3.2 Bind Mode

It is possible to bind the transmitter to the receiver without using the DragonLink GUI. To do so,

1. Ensure the receiver is powered **off**.
2. Hold down the **Menu** button on the DragonLink transmitter and turn on the power.
1. After the power-on sound is played, continue to hold the **menu** button until the LED(s) on the transmitter turn **blue** accompanied by **2 beeps**.
2. Release the **Menu** button.
3. The transmitter will continue to play **2 beeps** (if the **bind mode** alarm is enabled) and the LED(s) will **flash blue** to indicate it is in binding mode.
4. Power on the receiver.
5. The receiver's blue and green LEDs should both begin flashing to indicate a successful bind.
6. Power off both the receiver and the transmitter to save the binding.

3.3.3 Servo Test

In servo test mode, the DragonLink transmitter will continuously sweep all channels back and forth from minimum to maximum positions.

1. Hold down the **Menu** button on the DragonLink transmitter and turn on the power.
2. After the power-on sound is played, continue to hold the **menu** button until the LED(s) on the transmitter turn **yellow** accompanied by **3 beeps**.
3. Release the **Menu** button.
4. The transmitter will continue to play **3 beeps** (if the **servo test mode** alarm is enabled) and the LED(s) will **flash yellow** to indicate it is in servo test mode.
5. To exit servo test mode, press the **menu** button.

3.3.4 Change Transmitter ID

Before operating the DragonLink system for the first time, the transmitter ID must be changed as not doing so presents the possibility of interference if another system with the default ID is used within range.

1. Hold down the **Menu** button on the DragonLink transmitter and turn on the power.
2. After the power-on sound is played, continue to hold the **menu** button until the LED(s) on the transmitter turn **red** accompanied by **4 beeps**.
3. Release the **Menu** button.
4. The transmitter's LED(s) will **flash red** to indicate the ID has been changed.
5. To exit ID change mode, you will need to power-cycle the transmitter.

NOTE: You will need to re-bind your receiver(s) after changing the transmitter ID.

3.3.5 Exit USB Telemetry Mode

After changing the **USB function** setting on the DragonLink transmitter, it will no longer be possible to configure the transmitter using the USB port and GUI software. To restore the default USB mode:

1. Hold down the **Menu** button on the DragonLink transmitter and turn on the power.
2. After the power-on sound is played, continue to hold the **menu** button until the LED(s) on the transmitter turn **white** accompanied by **5 beeps**.
3. Release the **Menu** button.
4. The transmitter will play the power up sound and the LED(s) will **flash white** to indicate the USB mode has been changed.
5. Power-cycle the transmitter for the change to take effect.

3.3.6 Set Failsafe Channel Positions

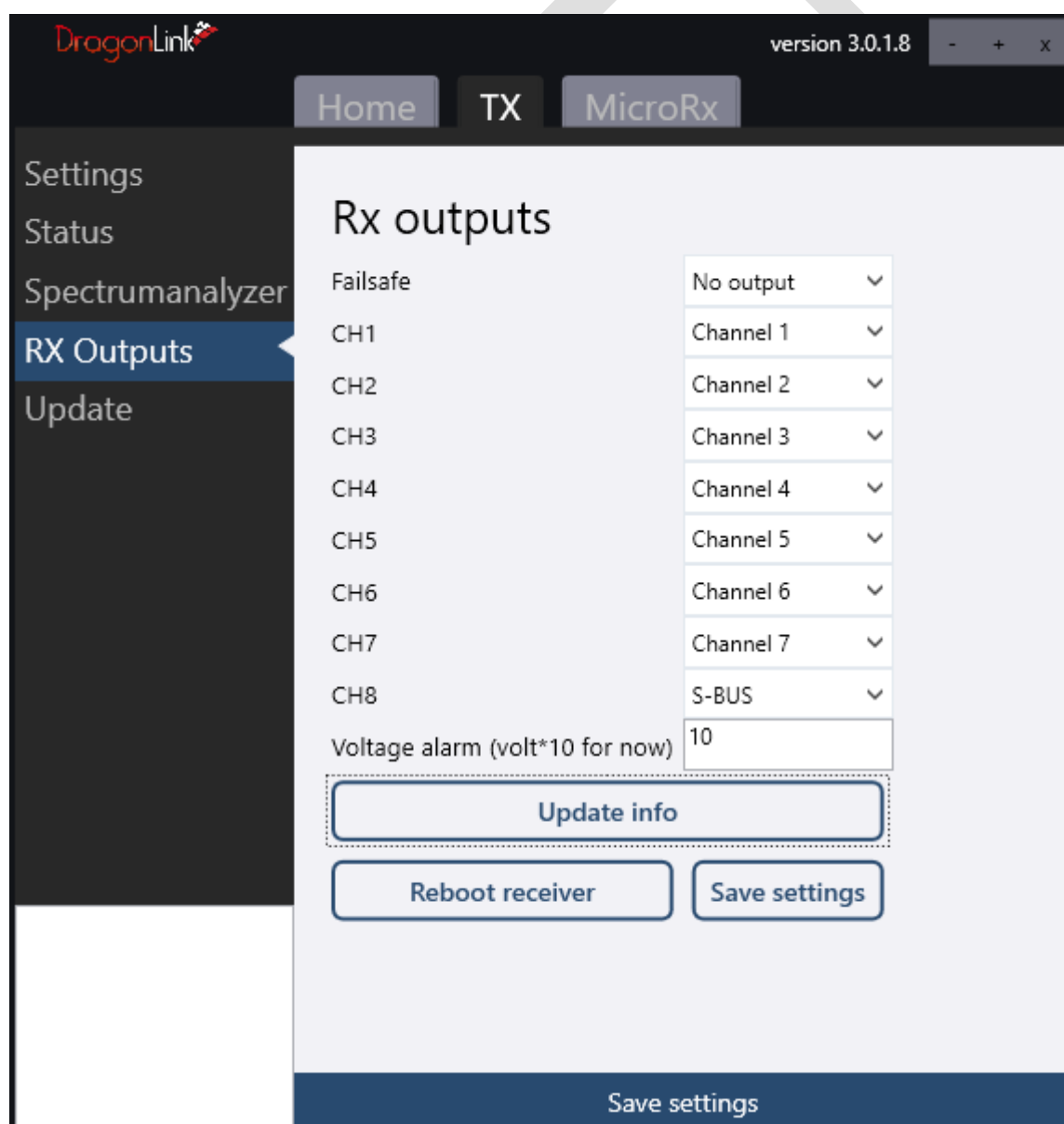
When the **Normal** failsafe mode is applied to the DragonLink receiver, it will move all of the channels to a pre-configured position upon loss of signal.

1. With the DragonLink transmitter and receiver powered on, check that both the transmitter and receiver are displaying **blue** LEDs to indicate an active link.

2. Press and hold the **Menu** button until **1 beep** is heard and the LED(s) momentarily turn **blue-green**.
3. The position of all sticks, switches, and rotary pots should now be saved to the receiver.

WARNING: Prior to setting the failsafe channel positions, ensure the position of any mode switches, such as “arm” or “return-to-home” are in the position you wish them to remain should the R/C link be lost.

3.4 DragonLink Receiver (via Transmitter)



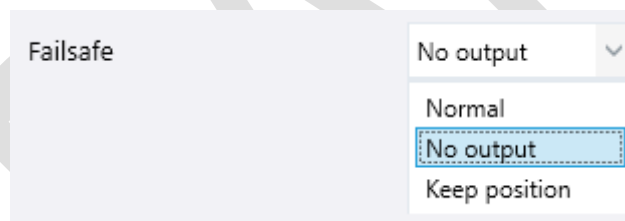
The DragonLink receiver can be configured using the GUI (to a limited extent) while the DragonLink **transmitter** is connected to the PC and the receiver is powered on.

At this time, it is not possible to configure the PPM / SBUS output, the UEXP port, or to select certain other RX pin assignments through this page. For those items, the PC will need to be directly connected to the receiver.

If the fields on this page are blank, settings can be retrieved from the receiver using the “Update info” button. If this does not work, ensure the receiver is powered on and has been bound to the transmitter.

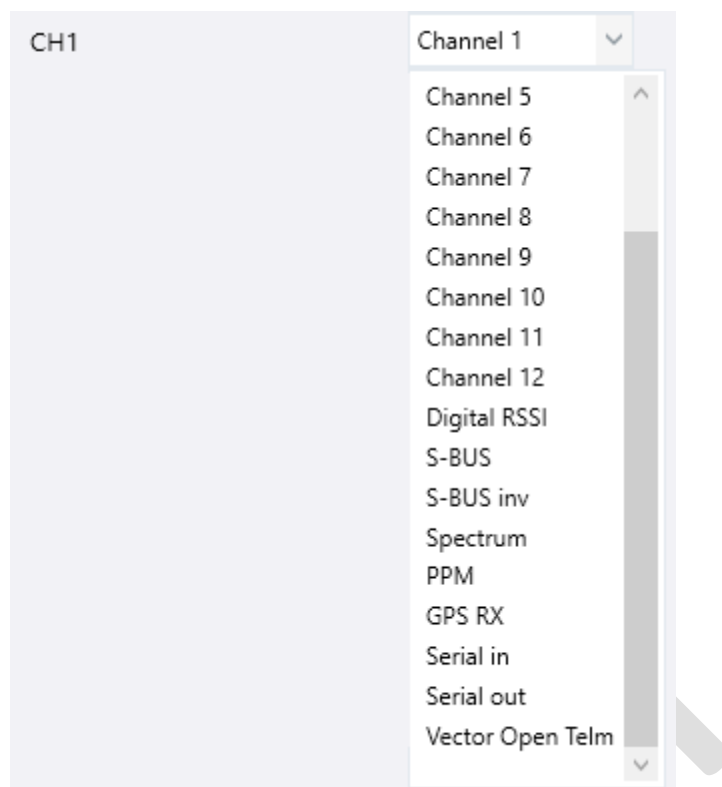
NOTE: Ensure settings are saved on this page using the dedicated “Save settings” button.

3.4.1 RX Failsafe Behaviour



See section 3.5.1 – Receiver Outputs – subheading **Failsafe**.

3.4.2 Channel Assignment (RX Outputs)

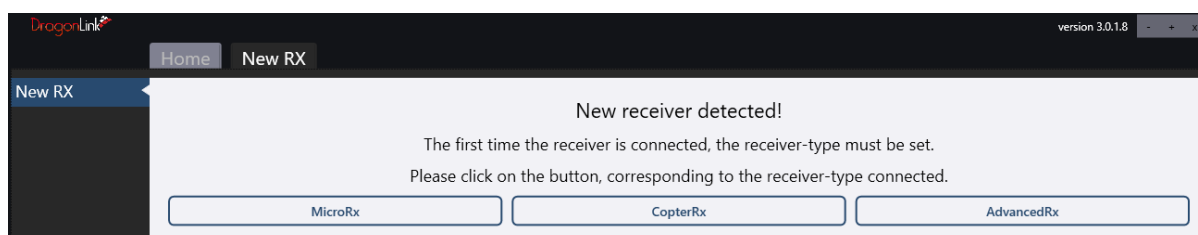


CH1 – X: These drop-down menus allow the assignment of a function to each of the physical pins on the DragonLink receiver.

NOTE: Analogue RSSI is *only* selectable on CH8 of the Micro receiver. On the Advanced (high-power) receiver, there is a dedicated set of pins (CH 13) for this function.

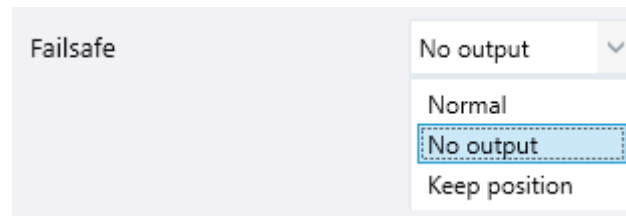
3.5 DragonLink Receiver

The first time you connect your DragonLink receiver to the DragonLink GUI, you may be prompted to set the receiver type. Ensure that you select this correctly as an incorrect selection may result in unusable channels.



3.5.1 Receiver Outputs

Failsafe:



The failsafe setting determines how the receiver behaves during fail-safe (loss of signal from the DragonLink transmitter).

Normal: The receiver's outputs (PPM / SBUS / PWM) remain active and the channels (sticks, switches, etc.) positions will move to saved positions set by the user during failsafe configuration. See section 3.3.6 for instructions on setting up and saving these channel positions.

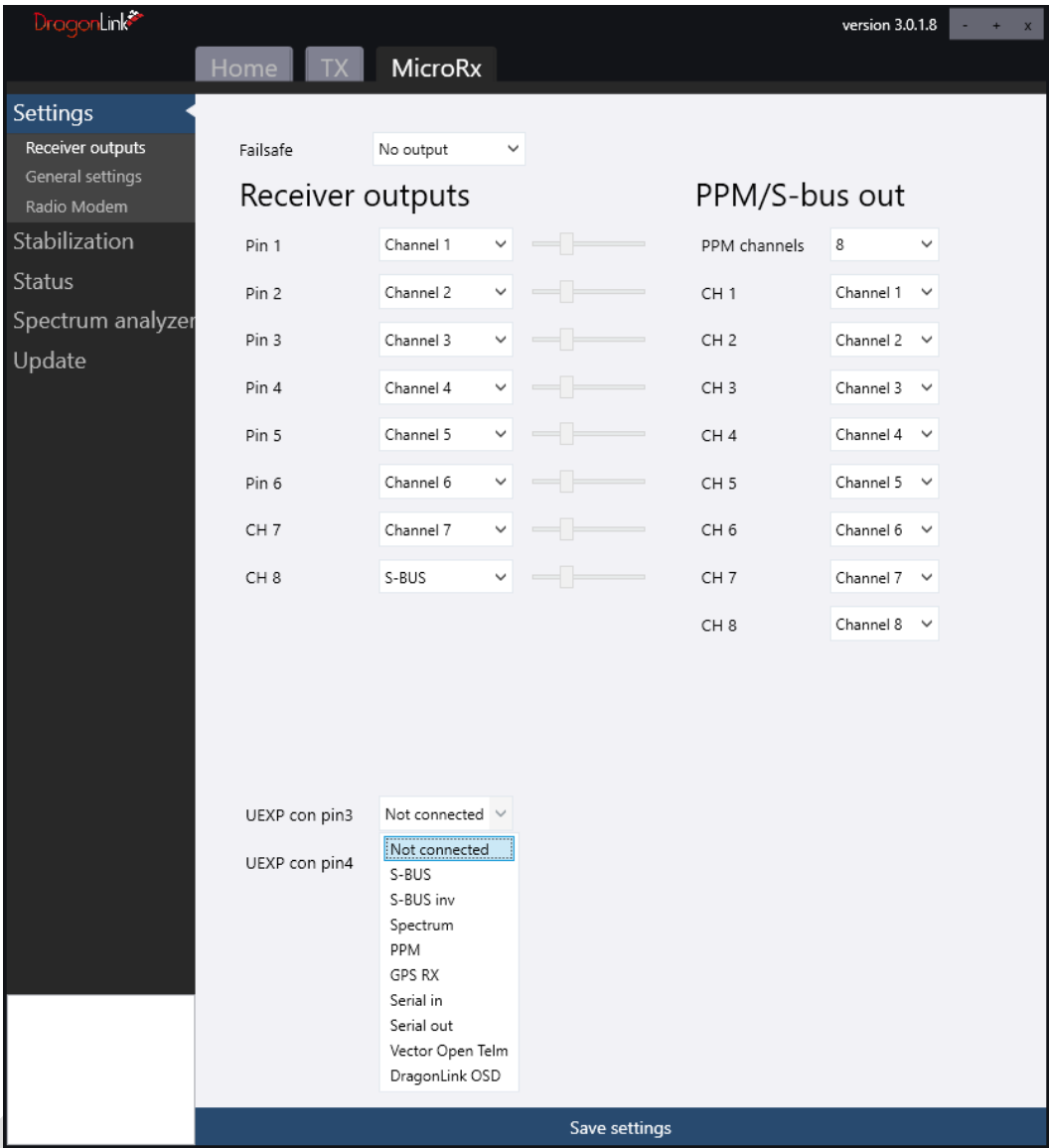
No output: The receiver's outputs (PPM / SBUS / PWM) outputs will deactivate when a fail-safe occurs.

WARNING: *If using Digital RSSI, that value will also no longer be updated until the signal from the transmitter is re-acquired.*

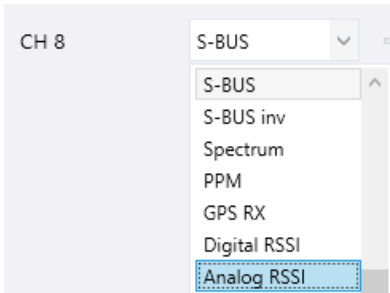
Keep position: All channels will hold their last-known position until signal is re-acquired.

WARNING: *Where applicable, if using Keep position you may need to ensure that your flight controller is correctly configured to monitor the DragonLink receiver's RSSI value in order for it to correctly identify when a fail-safe event has occurred.*

Receiver outputs: The Receiver outputs section allows you to assign functions to each of the pin headers on your DragonLink receiver. Pictured below is the configuration page for the **Micro receiver**, which has 8 multifunction pin headers. In the example below, channel 8 (CH 8) has been assigned to output S-BUS, while the remaining 7 channels output a standard single-channel PWM signal.



NOTE: Analog RSSI is only selectable on channel 8 (micro RX) or channel 13 (advanced RX).



NOTE: For use with MavLink data, it is possible to select the “Serial in” and “Serial out” channel assignments (for bi-directional telemetry and mission planning) or the “MavLink Decode” assignment (for decoded telemetry only – provides maximum range). The MavLink Decode assignment functions as a Serial input from the flight controller only – no output is required as it is not bi-directional.

An additional 4 channels are visible in the GUI when connected to an **Advanced** receiver.

Pin 9	Channel 9
Pin 10	Channel 10
Pin 11	Channel 11
Pin 12	PPM

PPM/S-bus out: These drop-down menus allow you to assign channels to the PPM or S-BUS stream and select the number of channels to include. The maximum number of channels for either protocol is 12.

UEXP con pin3/4: These connectors can also be assigned various functions, including S-BUS, PPM, GPS input, Serial communications and OSD data for the DragonLink OSD.

NOTE: Some S-BUS devices require a signal with inverted logic. For these devices, select S-BUS inv.

3.5.2 General Settings

Settings
Receiver outputs
General settings
Radio Modem
Stabilization
Status
Spectrum analyzer
Update

General settings and information

ID: 3219
Firmware version: 3
Volt Cal Value: 100 In %
Rf Band: Normal
Hardware ID: MicroRx
Set hardware ID
Reset hardware ID
MicroRx
CopterRx
AdvancedRx

ID: Displays the Transmitter ID (previously set by you) that the receiver is currently bound to.

Firmware version: Displays the version of currently applied firmware.

Volt Cal Value: This value allows calibration of the DragonLink Voltage Sensor (sold separately). If you measure the voltage of your flight battery and discover it to be incorrect, this value, which is a percentage of the sensed voltage, can be adjusted to correct it.

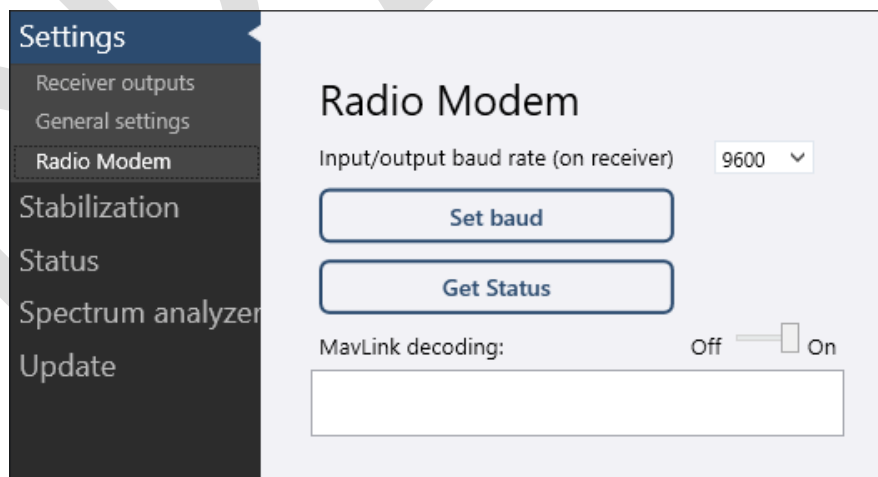
Rf Band: Displays the selected RF Band as set on the transmitter prior to binding.

Hardware ID: This setting tells the receiver which type of receiver it is and as such it should never need to be changed. This configuration is needed internally for the firmware to handle pin assignments and configuration. This is normally set once when first connected to a PC, however it can be changed here if it is inadvertently set incorrectly.

Set hardware ID: Confirms the change to the above setting.

Reset hardware to Factory Settings: Restores all of the configuration to factory default settings.

3.5.3 Radio Modem



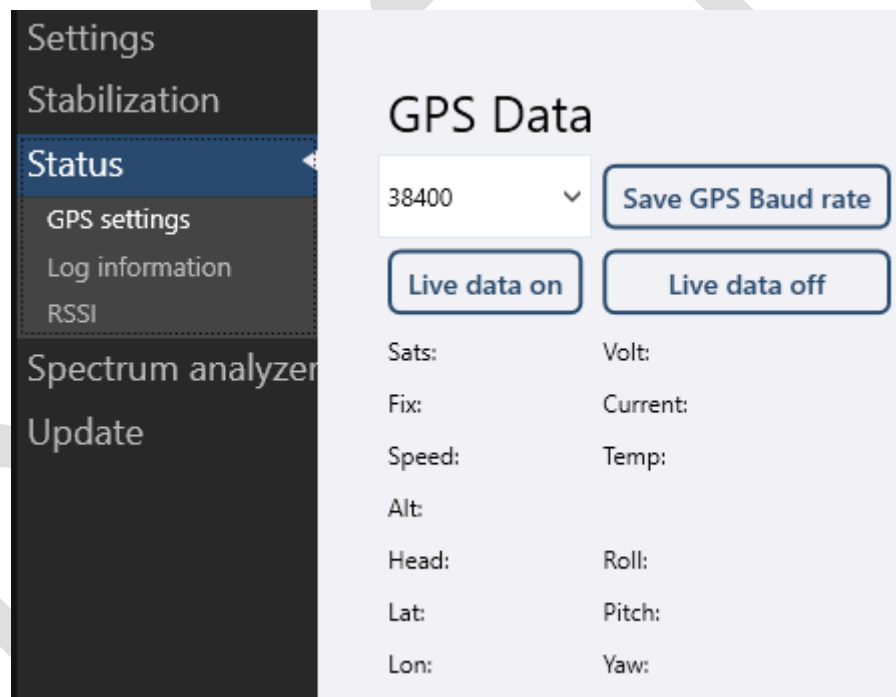
Input / output baud rate (on receiver): Specifies the baud rate for the Receiver to use for serial radio modem communication. This must match the baud rate set for the device(s) attached to the Receiver and on the receiving ground station. It must also match the Transmitter's UEXP baud rate, if that connection is to be used on the receiving end.

Set baud: Saves changes to the above setting.

Get Status: Displays in the text box the current bytes-per-second average being sent via the radio modem.

MavLink decoding: Enables decoding of a MavLink telemetry stream being sent via the radio modem. This function converts certain telemetry data to DragonLink's proprietary telemetry format which supports significantly greater range and robustness of data. Please see chapters [to be added] which contain detailed instructions for correctly applying this setting.

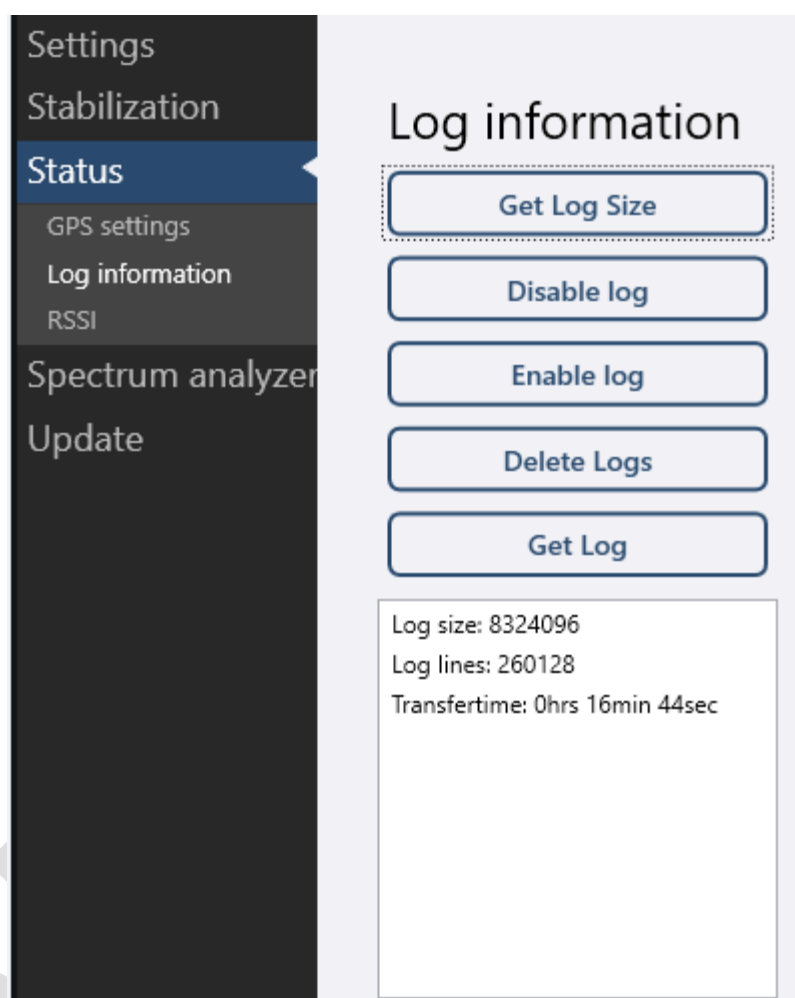
3.5.4 GPS Settings



A GPS receiver can be directly connected to the DragonLink Receiver for telemetry purposes. You will need to know the baud rate for the GPS receiver attached receiver, which is set using the drop-down menu and saved by clicking **Save GPS Baud rate**.

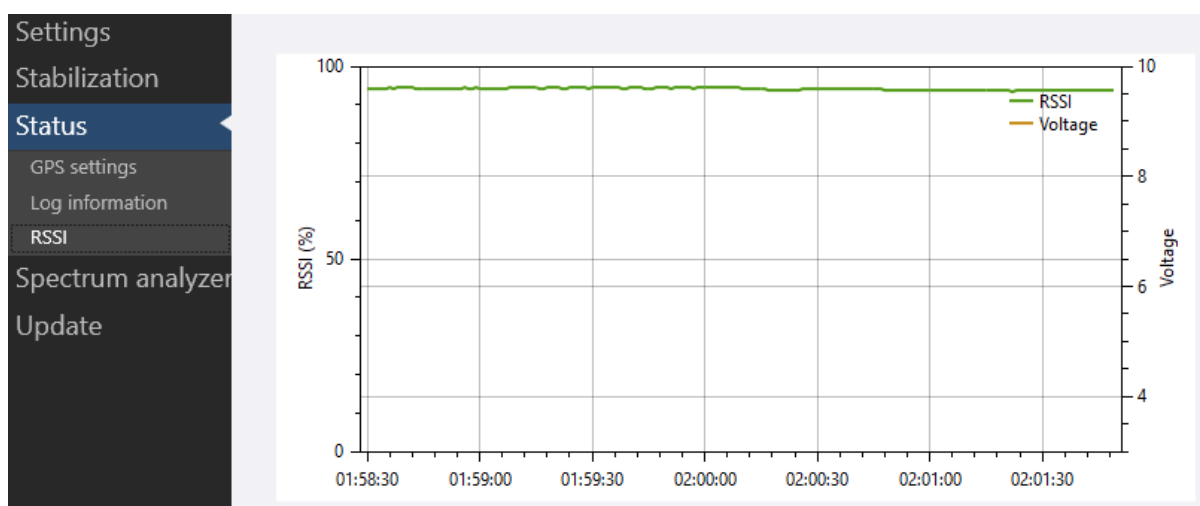
Live data on, Live data off: Toggles the display of live data sent by the attached GPS, as well as data from any attached MavLink telemetry stream.

3.5.5 Log Information



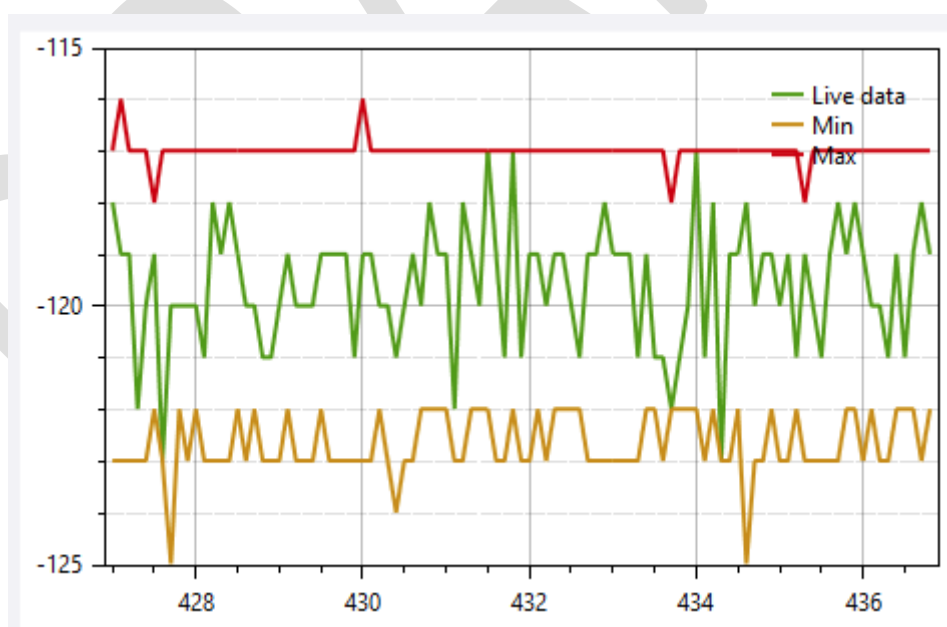
The Log Information page is used to store certain flight data regarding channel positions, RF transmit power, GPS and telemetry data, and link state. This can be enabled, disabled, deleted, and retrieved using the controls on this page.

3.5.6 RSSI



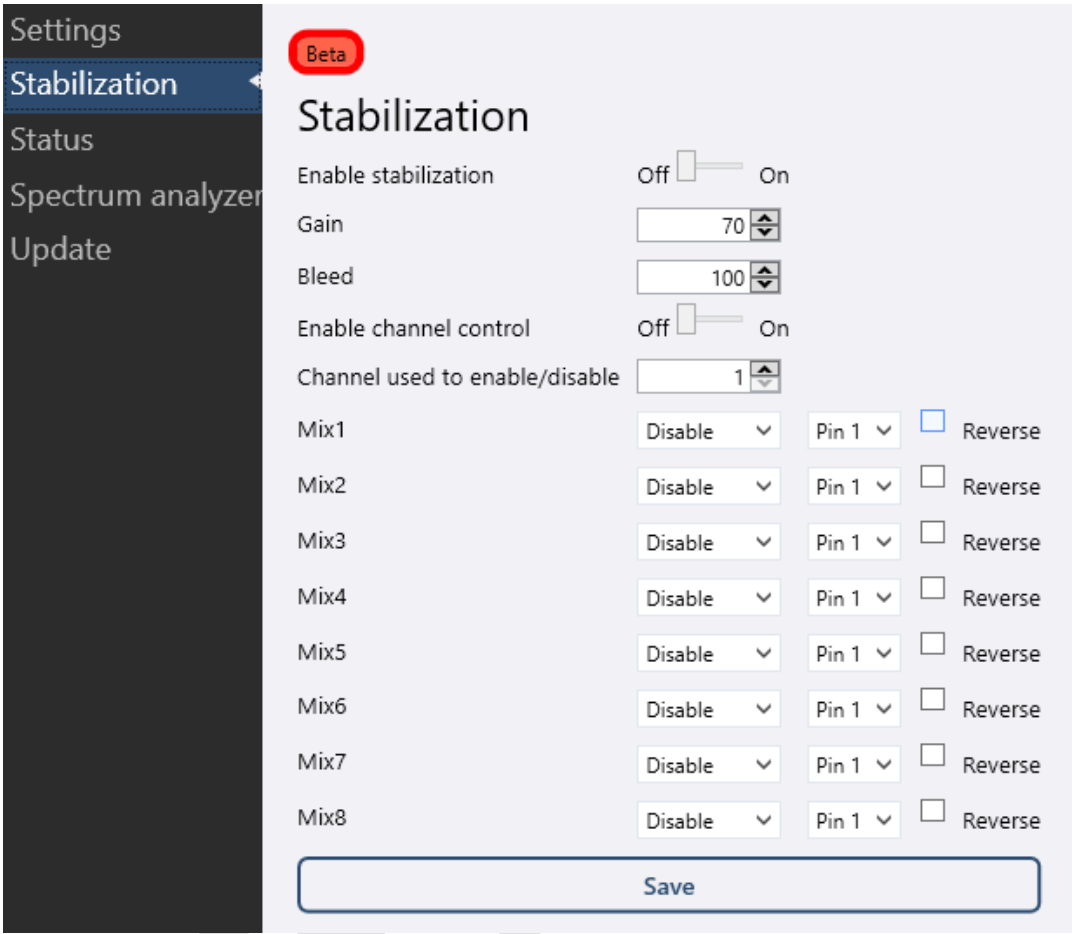
The RSSI page displays a graph of the current signal strength for the radio control link. This can be used for troubleshooting or testing. In addition, the voltage supplied to the Receiver is super-imposed on the graph in orange.

3.5.7 Spectrum Analyzer



This feature is identical to the feature of the same name found in the Transmitter configuration pages. Please see chapter **3.2.11** for further information.

3.5.8 Stabilization



[to be added]

4 Installation

Warning: Always observe correct polarity when making electrical connections. Reversed polarity or incorrect wiring may result in damage to your DragonLink or third-party equipment.

4.1 DragonLink Transmitter

The DragonLink Slim transmitter includes quality hook-and-loop pads with self-adhesive backing, which can be used to fix your transmitter to the back of your controller, as per the below image. If this method is not suited to your controller, other mounting hardware may be required (not included).

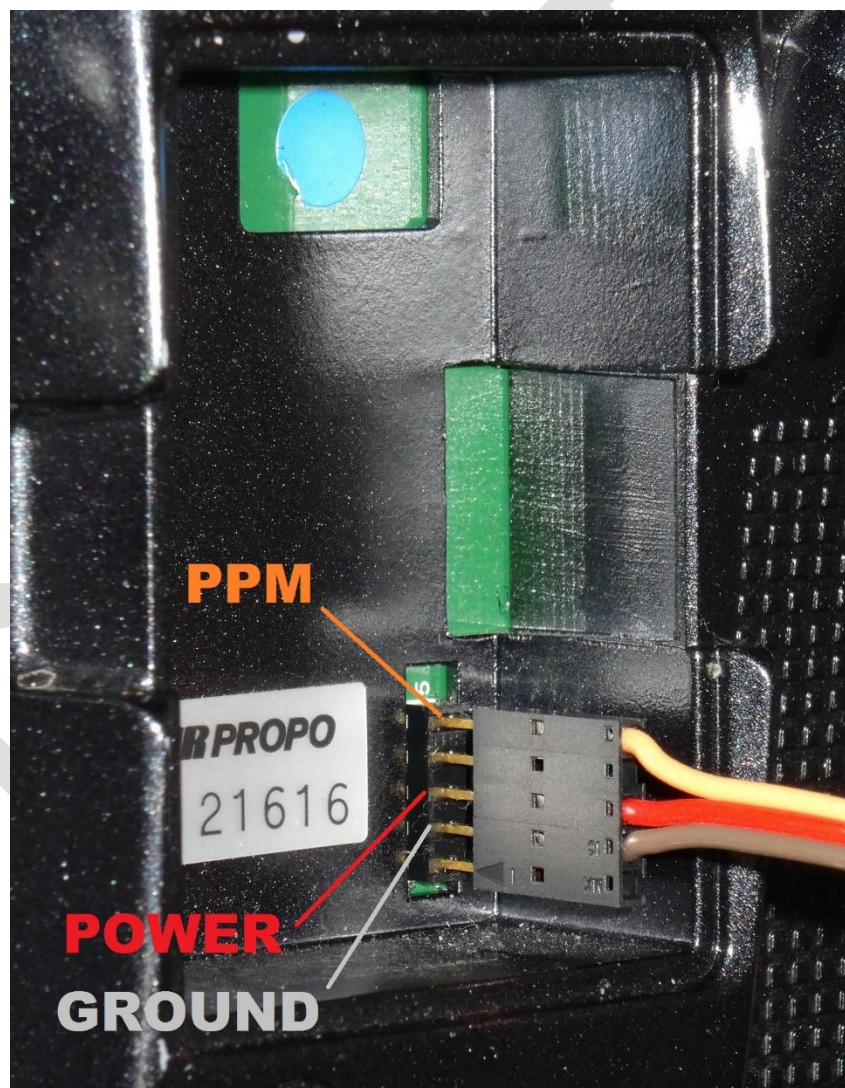


Connection to Transmitter

In order for the DragonLink Transmitter to connect to your controller, your controller must have a trainer port or module port which outputs the positions of the channels. On most controllers, this port will also provide power to the DragonLink Transmitter. The below sections highlight the different types of outputs that are most common.

RF Module pins

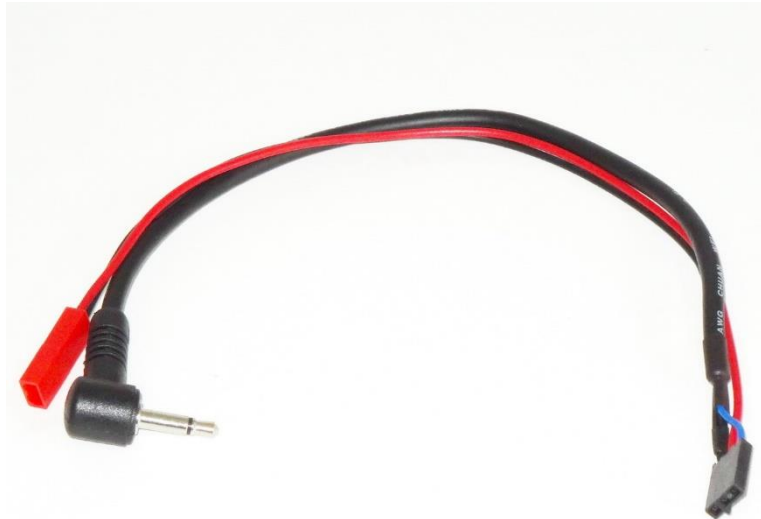
The Taranis, Turnigy 9x, and other RC transmitters with a removable RF module can be connected using the RF module Pins. This is generally the simplest method of connection as the RF module pins supply both power and signal to the DragonLink transmitter. If the "RF Module cable" option was selected at the time of purchase, you should have received the cable with one end having a plug matching the picture below. This end can be connected directly onto the RF module pins as shown and the other to the matching port on the DragonLink Transmitter. Ensure that the cable is not connected to the module bay pins in reverse.



3.5mm Jack Connector

This is the most common type of connection for Spektrum, JR, Walkera, Hitec, and other brands of RC controllers. Two connections are required for the DragonLink Transmitter when using this type of cable:

- ▷ PPM input from your RC Transmitter. This is provided using the 3.5mm jack.
- ▷ 5 - 18 volts. This is provided using the red connector.



Futaba Square Trainer Port

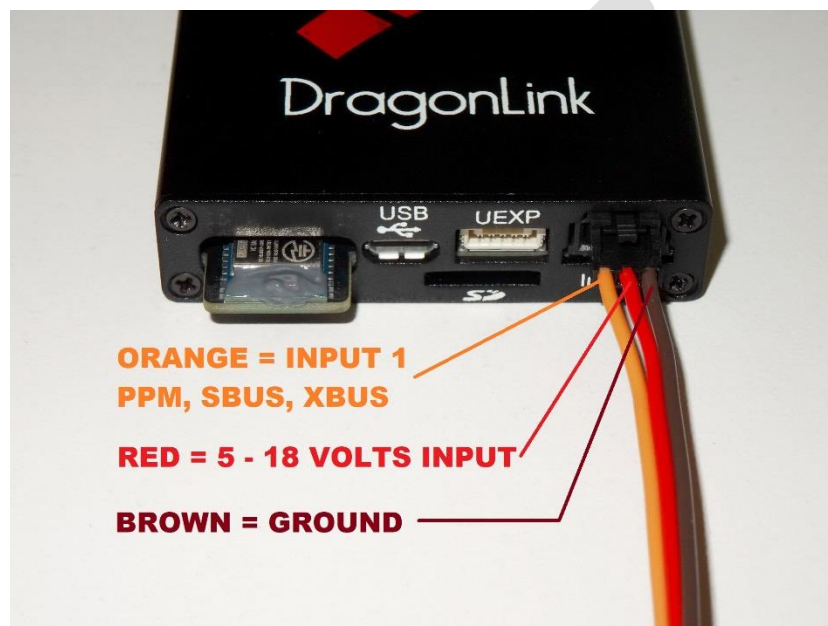
The Futaba square trainer cable will supply both signal and power to the DragonLink Transmitter, and cannot be connected with incorrect polarity.



DragonLink Transmitter

Once connected to your controller, the other end of the cable can be connected to the DragonLink Transmitter if not already done so. This should be connected to Input 1 if using the large TX.

Note that on the Large DragonLink Transmitter that Input 2 does not supply power to the unit.



Configuration

The controller must then be configured to output a signal matching one of the selectable options found in **chapter 3.1.1**. Please observe the manual supplied with your controller for correct configuration steps of the trainer/module port output.

4.2 DragonLink Nano Receiver

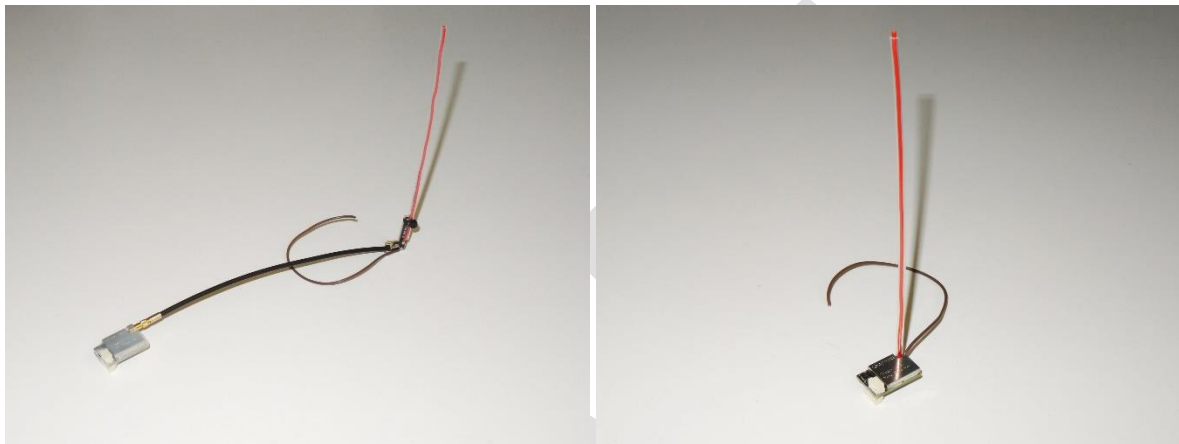
Mounting

The receiver can be fixed to the vehicle using Velcro, double-sided tape, or using a cable tie around the frame. Ensure it is tight enough to prevent the receiver coming loose, but not so tight as to damage the components or crush the plastic plugs. When mounting the Nano receiver, particularly in tight builds such as on racing quadcopters, it is important to consider the antenna placement. The antenna should be placed as far away as possible from the GPS receiver and compass, if either are to be used, and in such a way that any

propellers, wheels, or servo linkages will not be jammed by or cause damage to the antenna while the vehicle is in motion.

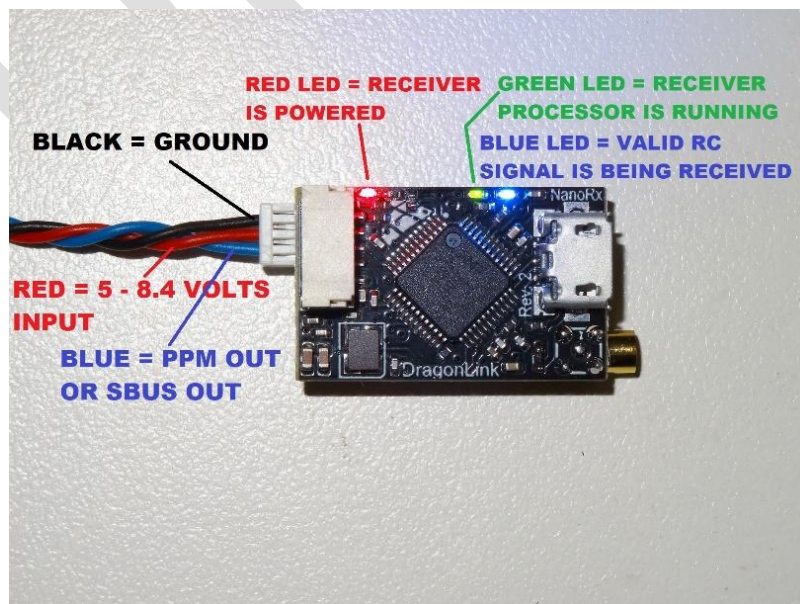
The upper antenna element (usually red, or labelled) should always be positioned vertically for the best reception. Ideally the lower element should also be vertical, however this does make mounting the receiver a challenge particularly in small vehicles. In these cases, the performance will only be minimally impacted by positioning the lower element horizontally.

Always perform a range test before using the system to ensure the Nano receiver is not interfered with by any other components on the vehicle.



Connections

The smaller, 3 – pin connection on the Nano receiver is used to output your R/C signal. The Nano receiver, unlike its larger Micro and High-Power counterparts, does not have ‘pin headers’ capable of outputting standard PWM signals for use with analogue servos and legacy systems.



SBUS / PPM output

The 3 – pin connector, as per the above image, provides ground (GND), VCC input (5 – 8.4 volts), and SBUS or PPM output. The output type is specified in the DragonLink GUI – see **chapter 3.5.1**. Never exceed the 8.4 volt maximum on the input and always double-check the wiring to ensure voltage is not applied in reverse, or to the SBUS/PPM output.

4.3 DragonLink Micro Receiver

4.4 DragonLink High-Power Receiver

5 DragonLink V3 with Futaba 14SG Transmitter

[add images to section]

5.1 Futaba 14SG Configuration

1. Create a new model
2. Under the Linkage Menu - Set the SYSTEM as FASSTest 14ch Single G
3. Under the System Menu, go to TRAINER > Page 4, and change INH to ACT (once done it will show as 'OFF'). Tab down to SW and change SW from the default of SH to -- since we don't want the DL Rx on a switch. Page 4 on the TRAINER menu should read:

ACT	INH
SW	--
CH MODE	12CH

[replace with image]

4. Go to Linkage Menu – FUNCTION – Leave AETR as they are. Set ch5 with control SW 'SC'. Set ch6 with control SW 'SD'. Set ch7 control SW 'LD'. These are the switch and rotary knob settings for the Vector. These switch settings can be altered to your preferences.
5. To set up Pan/Tilt: Set ch9 control to 'LS'. Set ch10 to 'RS'. These sliders control pan/tilt.

6. There are two remaining channels – ch11 and ch12. These can be set up to control lights, flaps, camera switch as needed.

5.2 DragonLink RX / Vector Hardware Connections

[move to vector section]

1. Connect the AIL lead from the ET Vector to ch7 on the DLRx – this provides the SBUS link for channels 1-7 from the Futaba 14SG
2. Connect pan/tilt and other equipment as needed directly to ch1-4 on the DLRx
3. Connect the UART cable as described elsewhere in [section] to enable Vector telemetry. The expansion cable needed for this connection can be purchased separately.

5.3 Hardware Connections for DragonLink TX with Futaba 14SG

1. Using the cable supplied with the DragonLink V3 Advanced Complete System, connect the DragonLink transmitter to the Futaba 14SG trainer port and power on both the 14SG and the DragonLink transmitter. Ensure that green LEDs are displayed on the DragonLink transmitter, indicating a valid PPM signal from the Futaba 14SG.
2. Power off the DragonLink transmitter, then hold down the BIND button and re-connect the power. Continue to hold the button for 3 seconds until the LED's turn blue, then release the button. The LED's will flash blue and two repeating beeps should be played. This indicates the transmitter is in binding mode.
3. Power on the DragonLink receiver. The green and blue LEDs will flash indicating a successful bind.
4. Power off both transmitter and receiver, then power them on again. Solid blue LEDs should be displayed on both the transmitter and receiver, indicating a successful link.

5.4 Configure DragonLink TX for use with Futaba 14SG

[add images]

1. Connect the DragonLink transmitter to the PC and open the DragonLink software, as per the instructions in [section].
[edit the below]
2. Set 'Trans channels' to 12

3. Set 'Input 1' to μ -PPM 14SG
4. Select tab 'External connections' See fig 2.
5. Under Bluetooth, select 'Dragonlink Mavlink'
6. Under expansion con, select 'Radio modem'
7. Under baud rate, select '57600'
8. Under USB function, select 'Gui config'
9. Tick the 'Auto-detect RX-idle' box
10. Save settings

DRAFT

6. DragonLink V3 with EagleTree Vector Flight Controller

This chapter contains all of 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 PREFERRED method of connecting the DL RX to the Vector, Sbus, and the PREFERRED method of FAILSAFE DETECTION in the Vector, Sbus Failsafe Detection.

Presented here are two different examples. The first 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 conned to the DL RX Servo Rail. The second example 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 Sbus 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) Vector)

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 – Sbus Out
 Pin 8 – Analog RSSI

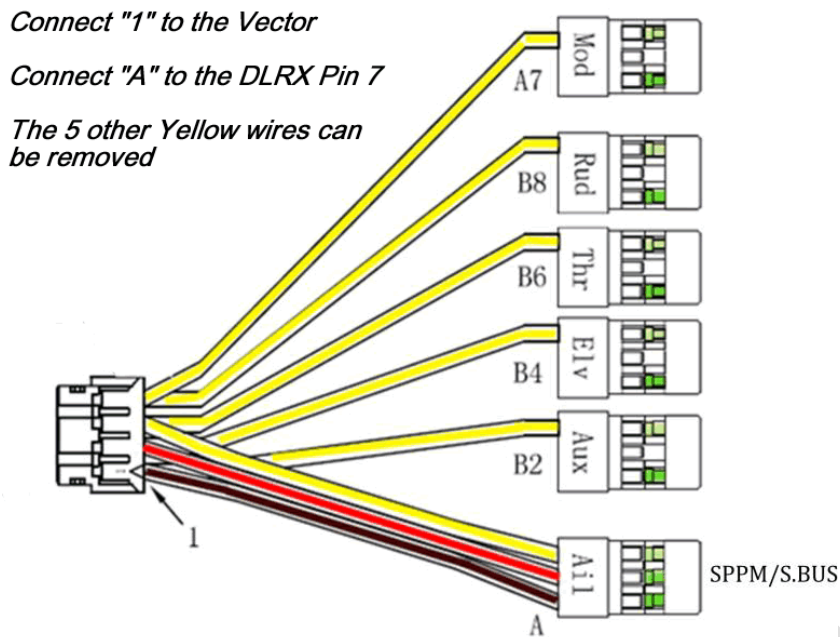
Sbus Output (to

Ch 1 – Channel 1 Ail
 Ch 2 – Channel 2 Ele
 Ch 3 – Channel 3 Thr
 Ch 4 – Channel 4 Rud
 Ch 5 – Channel 5 (not used)
 Ch 6 – Channel 10 Mode
 Ch 7 – Channel 11 Submode
 Ch 8 – 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 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/SBUS 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.

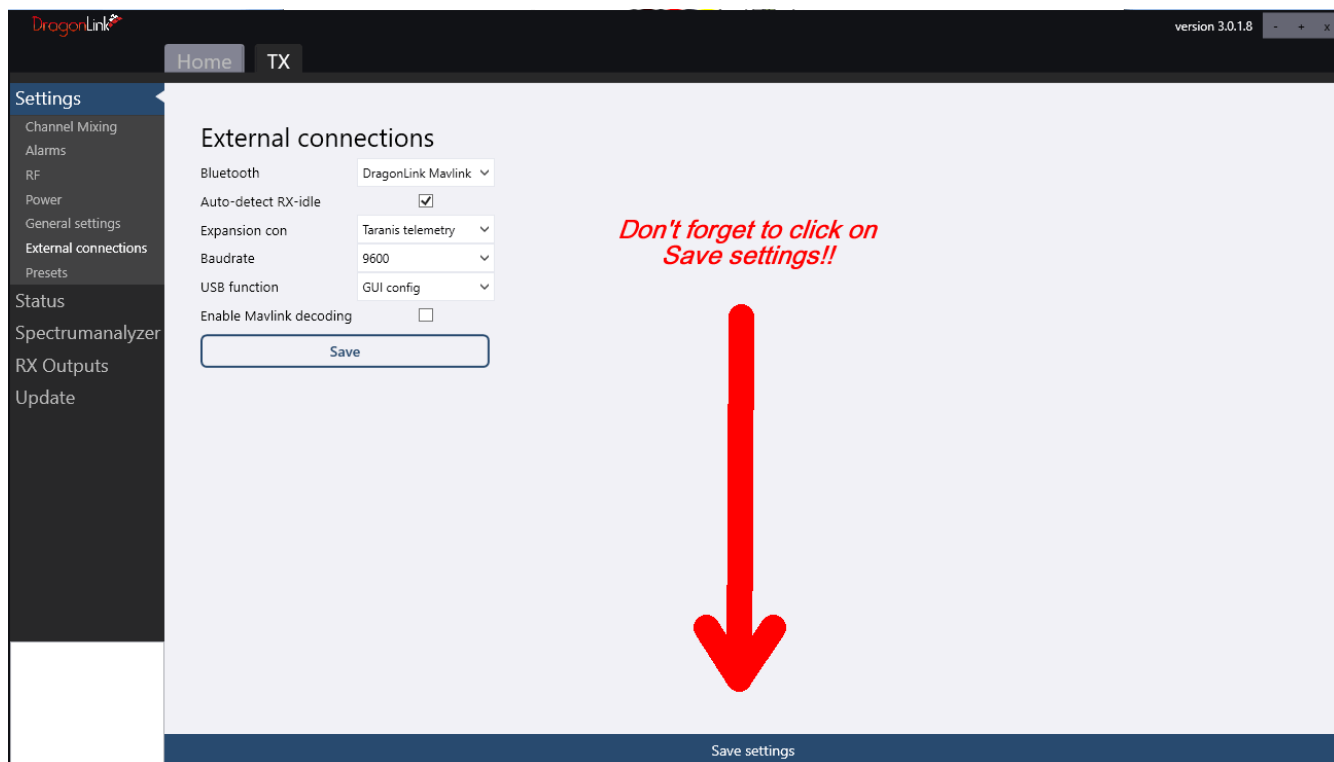


- Using a 3 wire Male to Male Servo Lead connect one end to the DLRX (Pin 8 for a MicroRX or Pin 13 for an Advanced RX) and the other end to the Vector RSSI/5v Backup port.

Settings

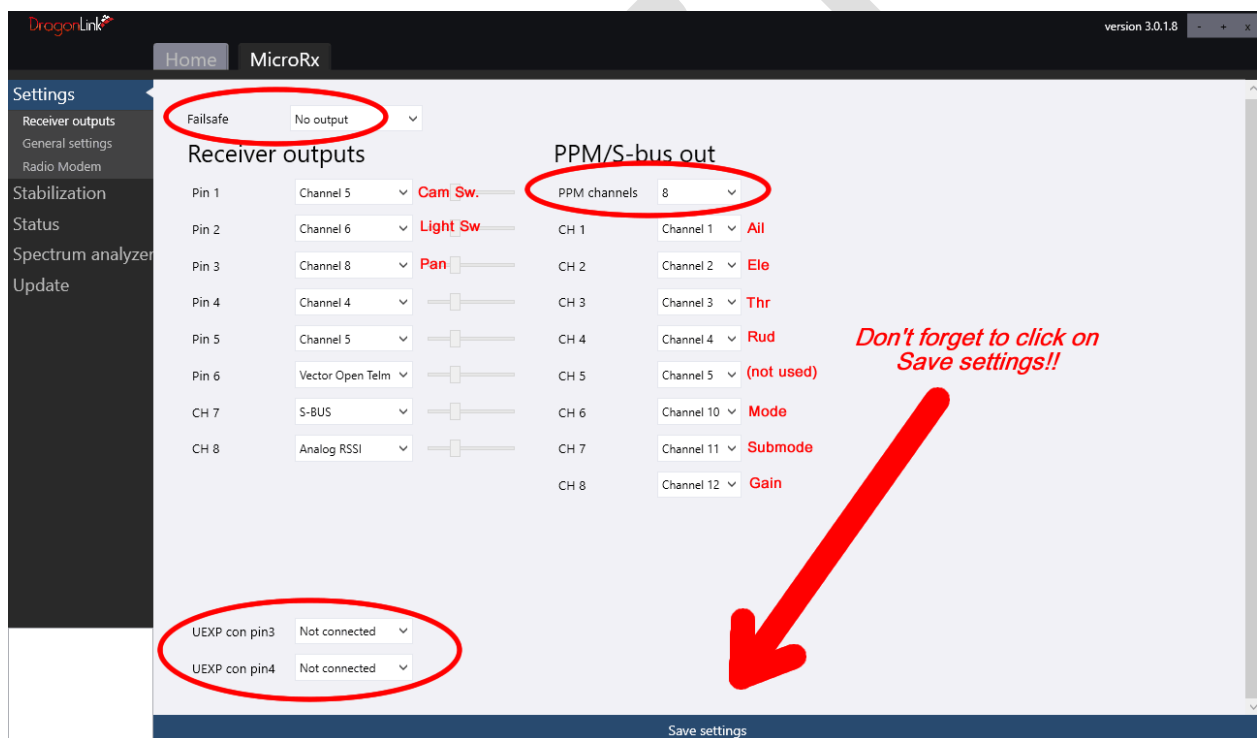
Dragonlink TX

- Connect the DL TX to a PC using a USB cable. Start the DL GUI.
- Click on the TX tab at the top, then External Connections on the Left Side Bar
- Set "Bluetooth" to "Dragonlink Mavlink" (for telemetry to a Tablet, Phone, or Laptop running Mission Planner, Tower, or other App/Program)
- Put a Check in "Auto detect RX-idle".
- Set "Expansion con" to "Taranis telemetry".
- Set the "Baudrate" to "9600".
- Click "Save settings" at the bottom of the window!

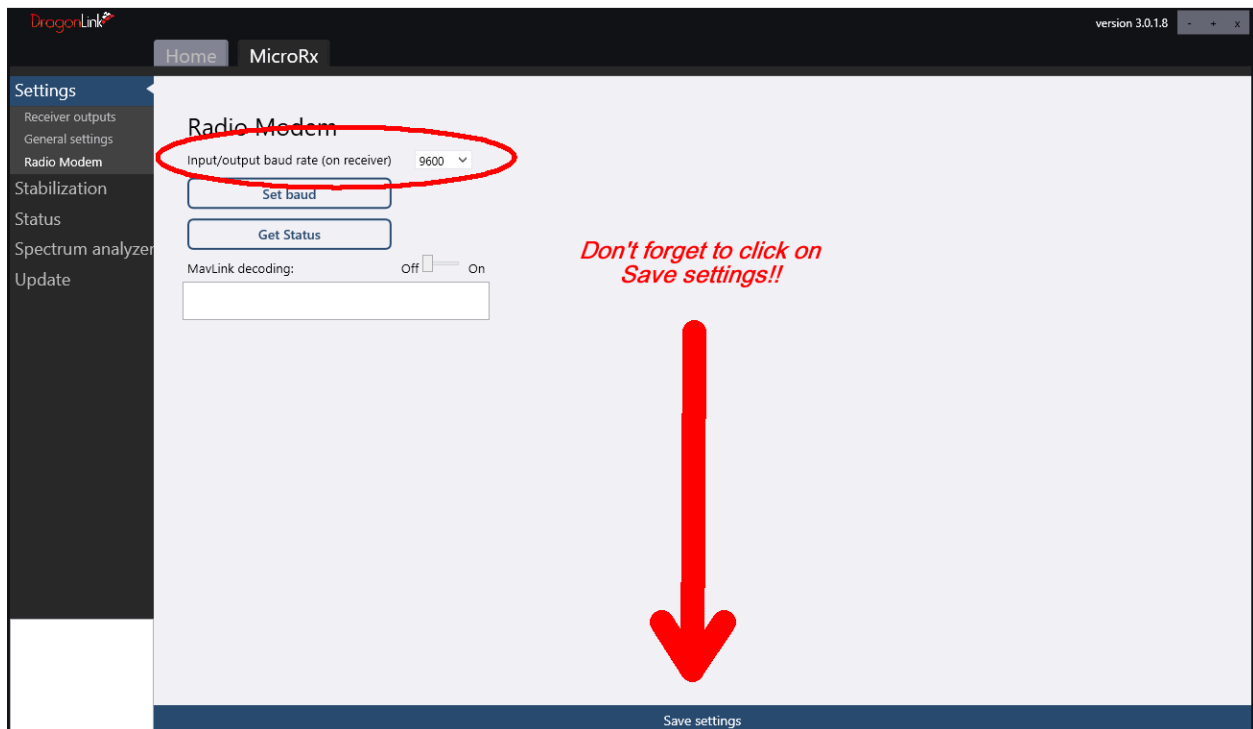


Dragonlink RX

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 "No output".
4. Set "PPM Channels" to "8".
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".
10. Click on "Save Settings" at the bottom of the Page.

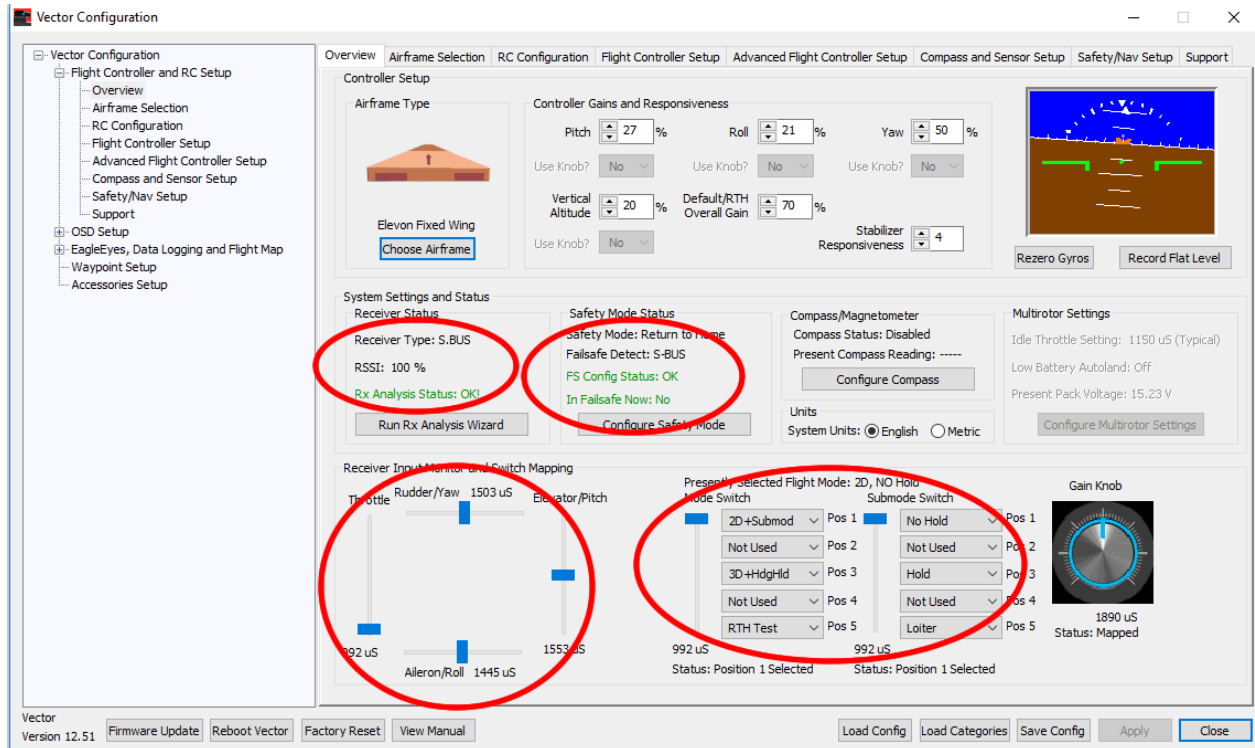


11. Now Rebind the DLTX and RX (see Binding Procedure elsewhere in this Manual)

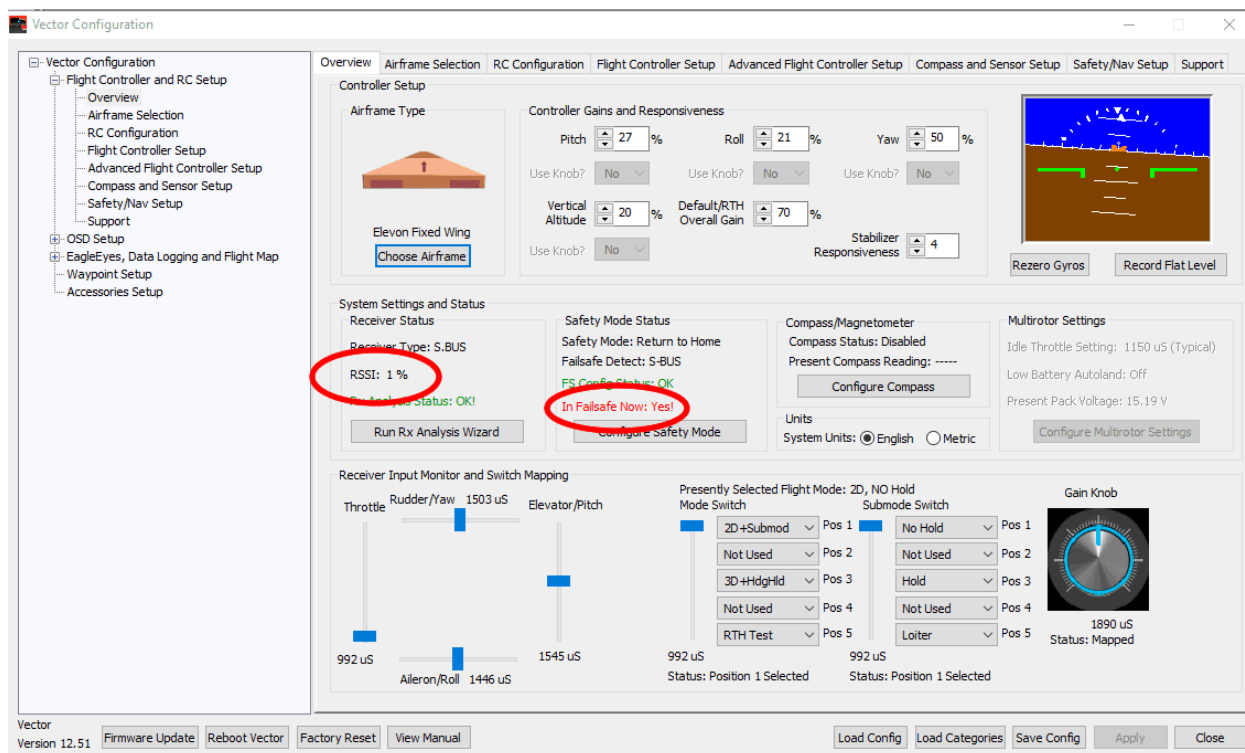
Vector Settings

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 CONFIRM 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 "Sbus" as the "Receiver Type" and "Sbus" 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.
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

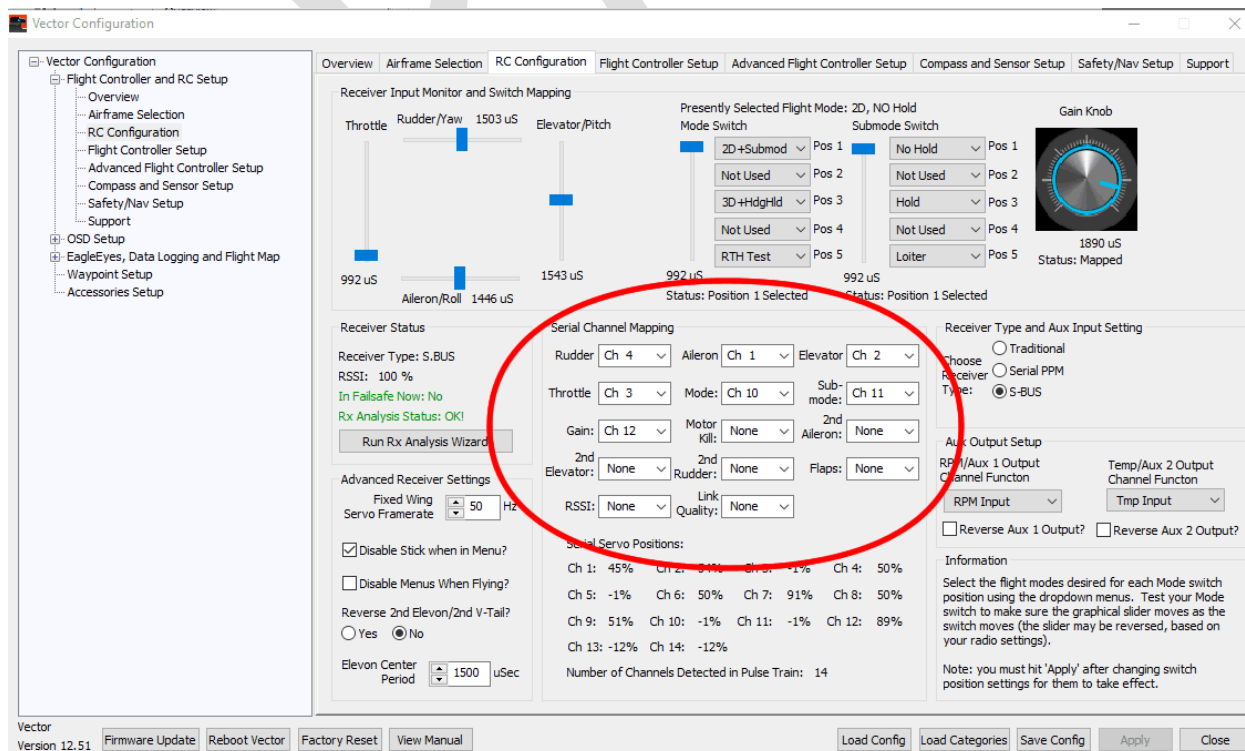
- f. The Sliders in the lower left of the screen respond to you Transmitter Sticks correctly.
- g. The Mode and Submode Switch sliders follow you switch movements.



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



- 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.



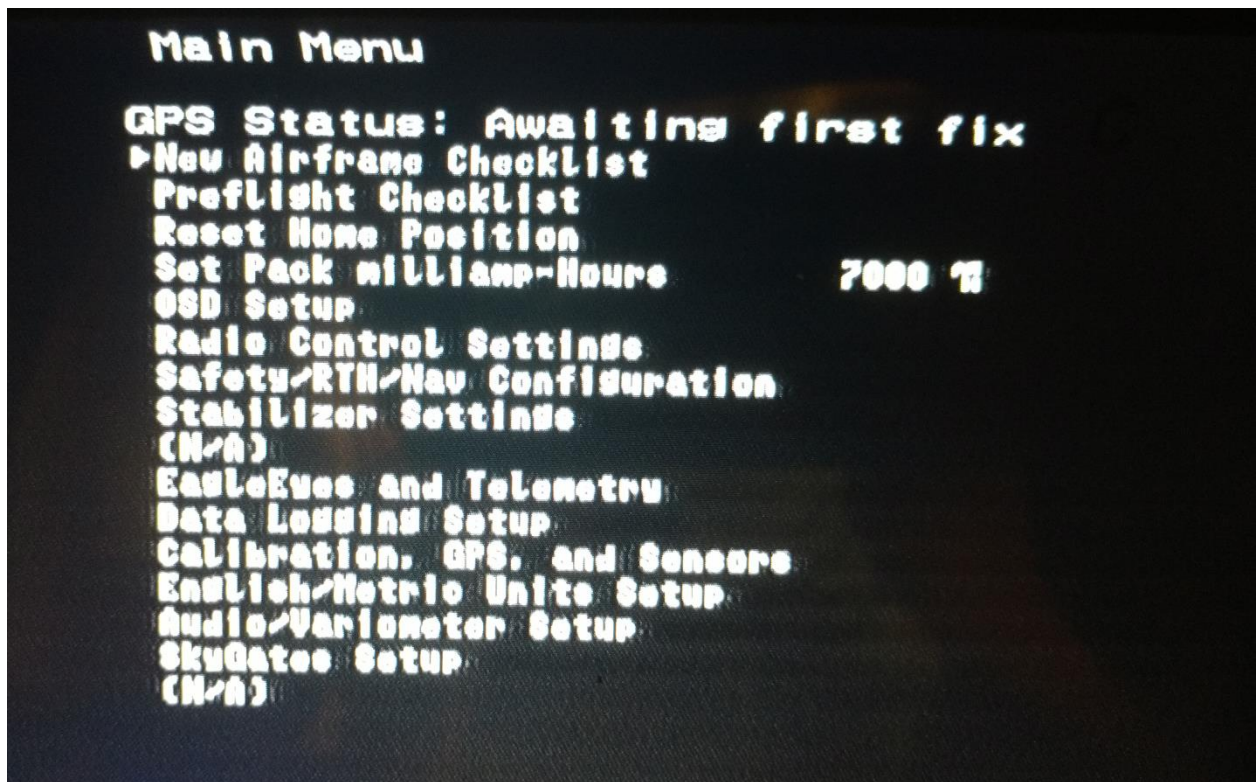
10. If you have made any changes click “Apply” at the bottom of the screen and then go back to Step #7 above. When you are satisfied click “Save Config”!

Setup the Vector UART for Telemetry

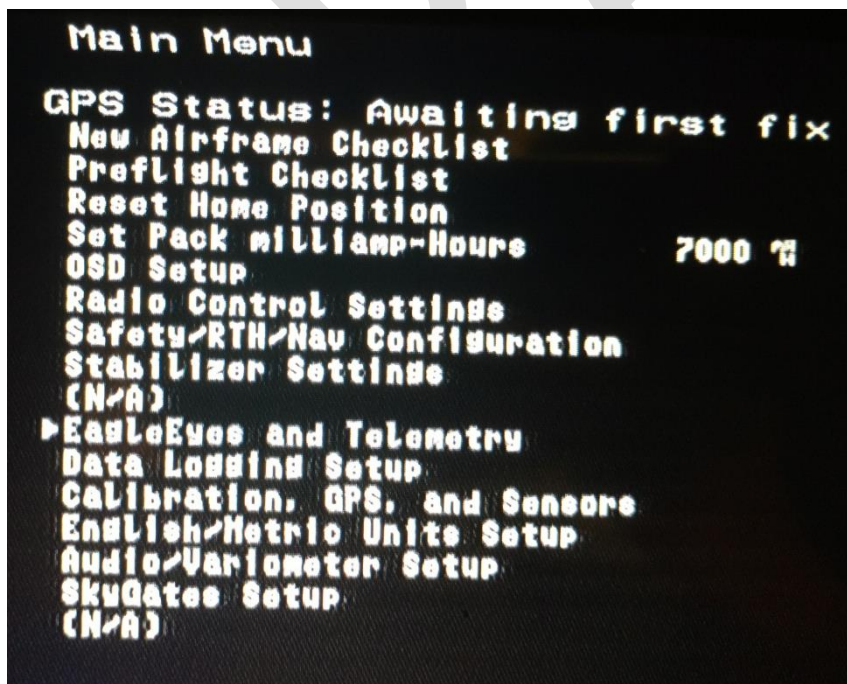
This step must (currently) be done using the Vector’s “OSD Stick Menus”. At present (Software/Firmware versions 12.61/2.66) this setting is not available in the PC Software (GUI). You do not need a camera or video transmitter to configure the Vector with the stick menus. You can directly connect the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

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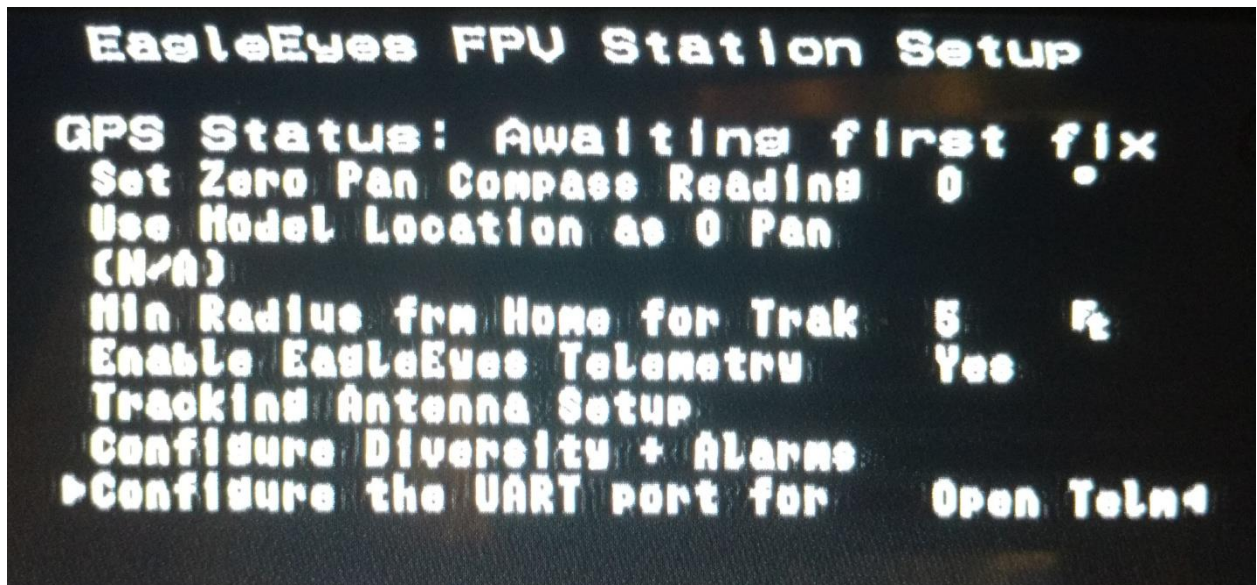
To enter the OSD Menus toggle your mode switch twice (two rapid, full movements between the switch's extents, in less than 2 seconds). This should initiate menu mode, and the Main Menu should appear.



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.

That’s it! Done! If you followed all the steps above you should have the DL V3 configured to work with the Vector and have Vector Telemetry available on the DL TX - which can be sent to a phone/laptop/tablet and/or your Taranis! If you have questions/issues/problems or suggestions to improve this Manual please post them at:

<https://www.rcgroups.com/forums/showthread.php?1518533-NEW-DRAGON-LINK-ADVANCED-Full-Telemetry-Bluetooth-Droid-Planner-Data-Modem>.

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 Sbus 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) Vector)

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 – Vector Telem
 Pin 7 – Sbus Out
 Pin 8 – Vector 5V Backup

Sbus Output (to

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

7. Connect the Cam Switch Servo Lead to Pin 1 on the RX
8. Connect the Left Flap Servo Lead to Pin 2 on the RX
9. Connect the Right Flap Servo Lead to Pin 3 on the RX
10. Connect the Pan Servo Lead to Pin 4 on the RX
11. 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

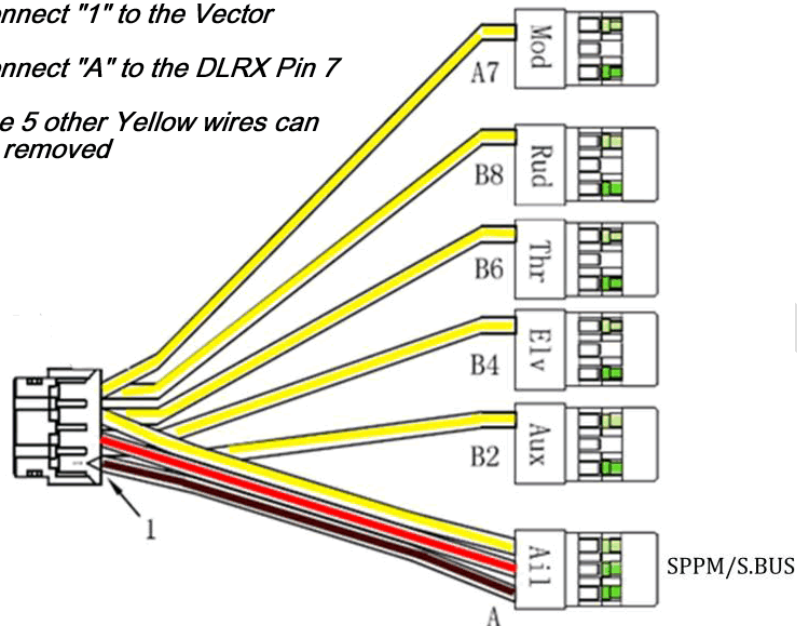
Vector Telemetry Cable Construction at the end of this Chapter if you have not already built yours!

12. Connect the Vector Receiver Connection Harness to the Vector and plug the AIL/SPPM/SBUS 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.

Connect "1" to the Vector

Connect "A" to the DLRX Pin 7

The 5 other Yellow wires can be removed

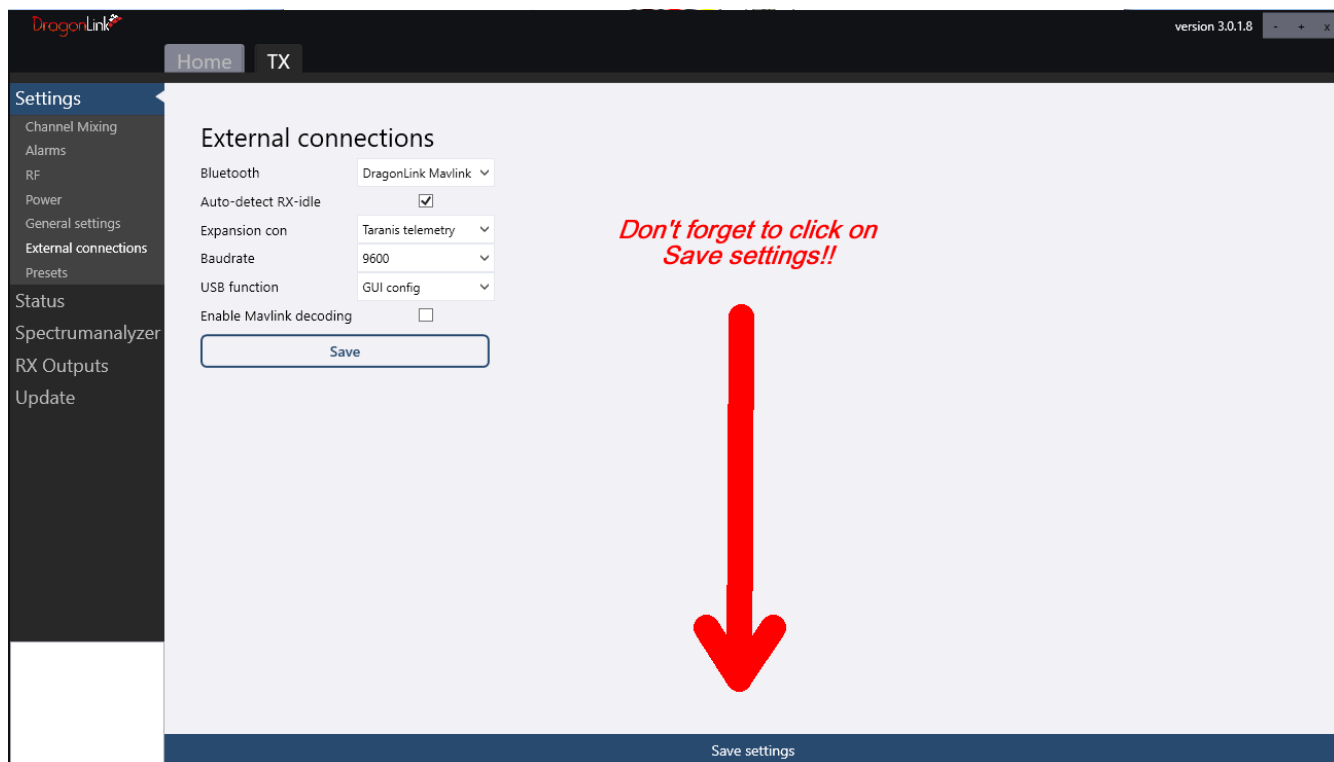


13. Using a 3 wire Male to Male Servo Lead connect one end to the DLRX (Pin 8 for a MicroRX or Pin 13 for an Advanced RX) and the other end to the Vector RSSI/5v Backup port. This will be used only to provide a source of Backup Power to the Vector "Brain" in the event of a Vector PSU "Brownout".

Settings

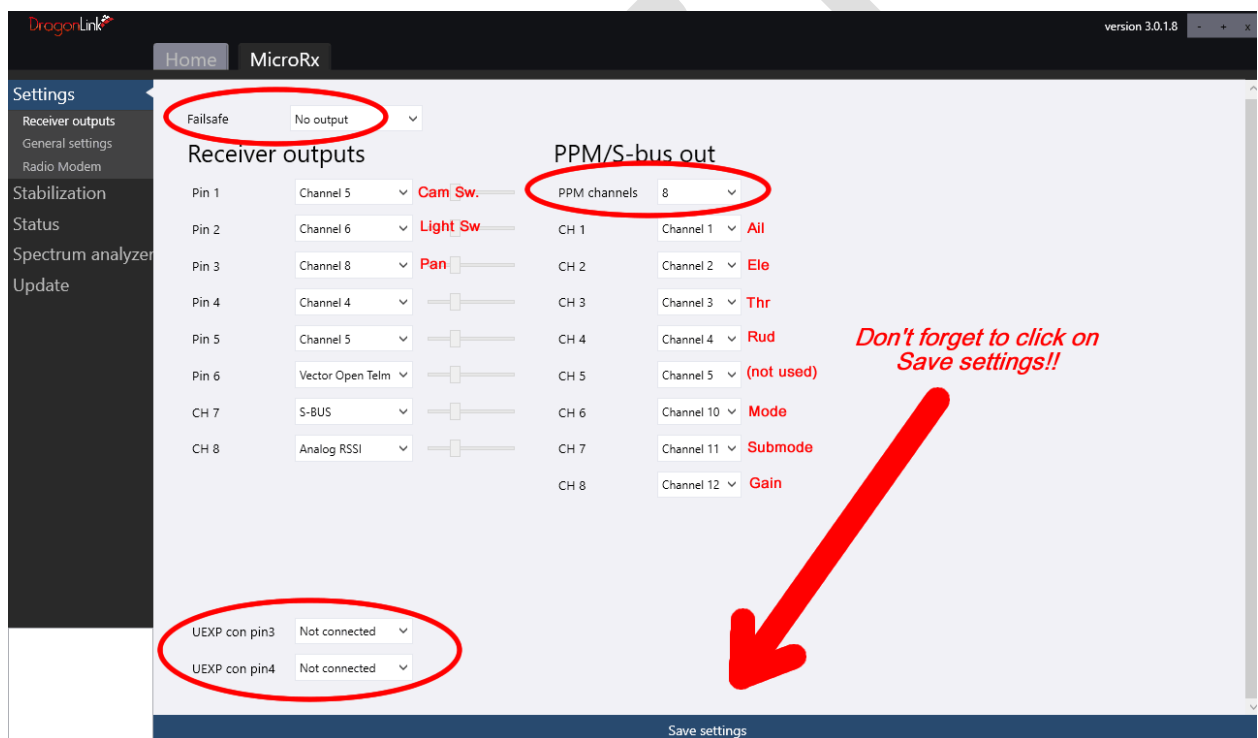
Dragonlink TX

8. Connect the DL TX to a PC using a USB cable. Start the DL GUI.
9. Click on the TX tab at the top, then External Connections on the Left Side Bar
10. Set "Bluetooth" to "Dragonlink Mavlink" (for telemetry to a Tablet, Phone, or Laptop running Mission Planner, Tower, or other App/Program)
11. Put a Check in "Auto detect RX-idle".
12. Set "Expansion con" to "Taranis telemetry".
13. Set the "Baudrate" to "9600".
14. Click "Save settings" at the bottom of the window!

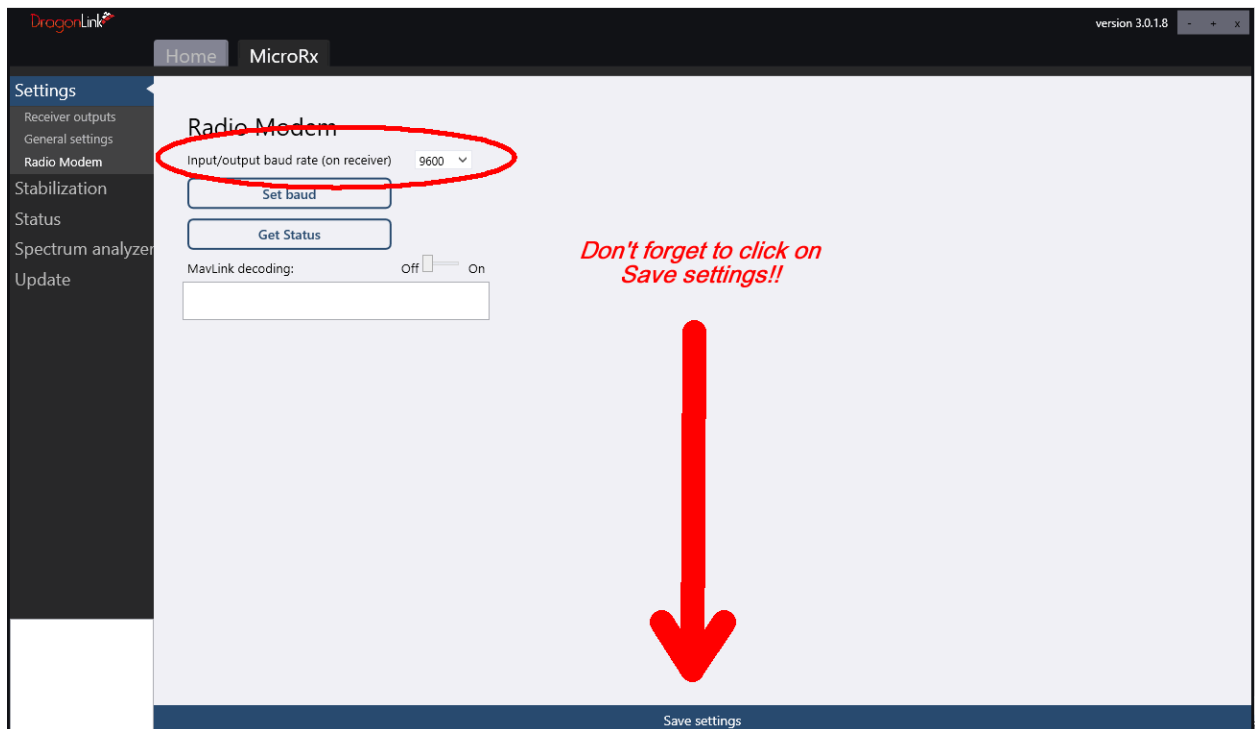


Dragonlink RX

12. Connect the DL RX to a PC using a USB cable. Start the DL GUI.
13. Click on the RX (MicroRx or AdvancedRx) tab at the top.
14. Set "Failsafe" to "No output".
15. Set "PPM Channels" to "8".
16. 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?
17. 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.
18. Click "Save settings" at the bottom of the page.



19. Click on "Radio Modem" on the left Menu Bar.
20. Set "Input/output baud rate (on receiver)" to "9600".
21. Click on "Save Settings" at the bottom of the Page.

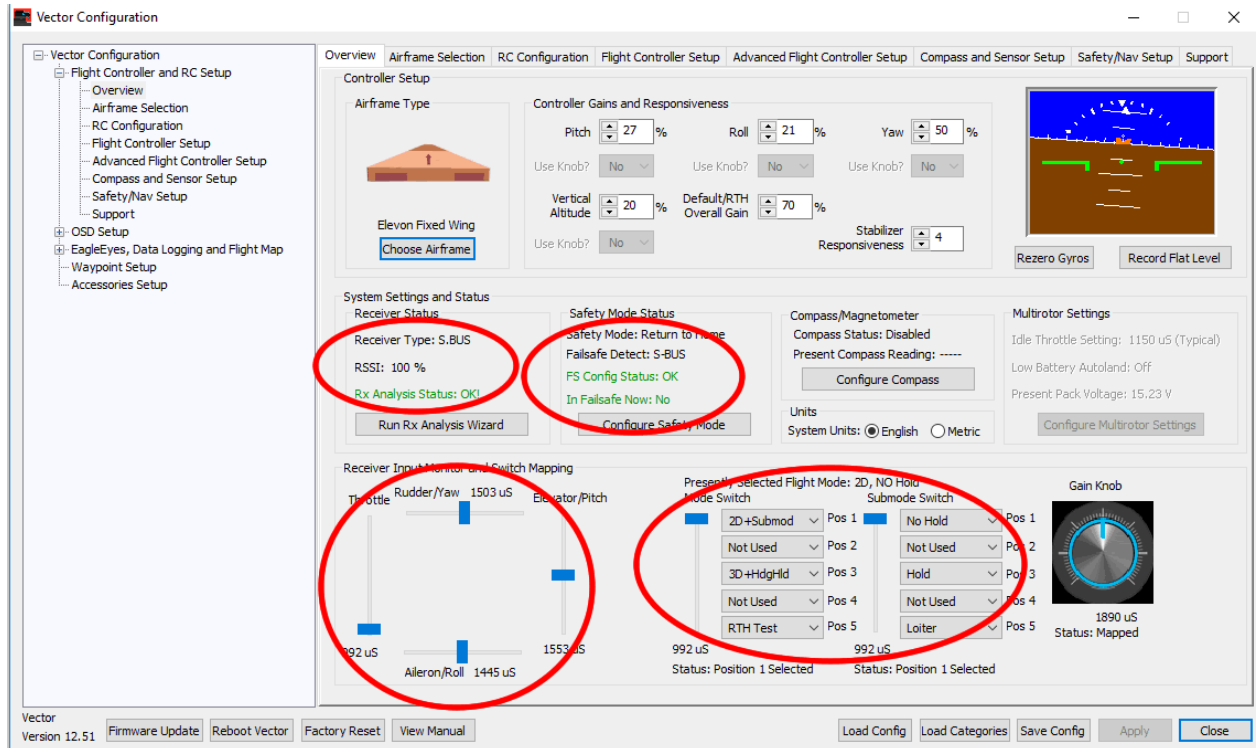


22. Now Rebind the DLTX and RX (see Binding Procedure elsewhere in this Manual)

Vector Settings

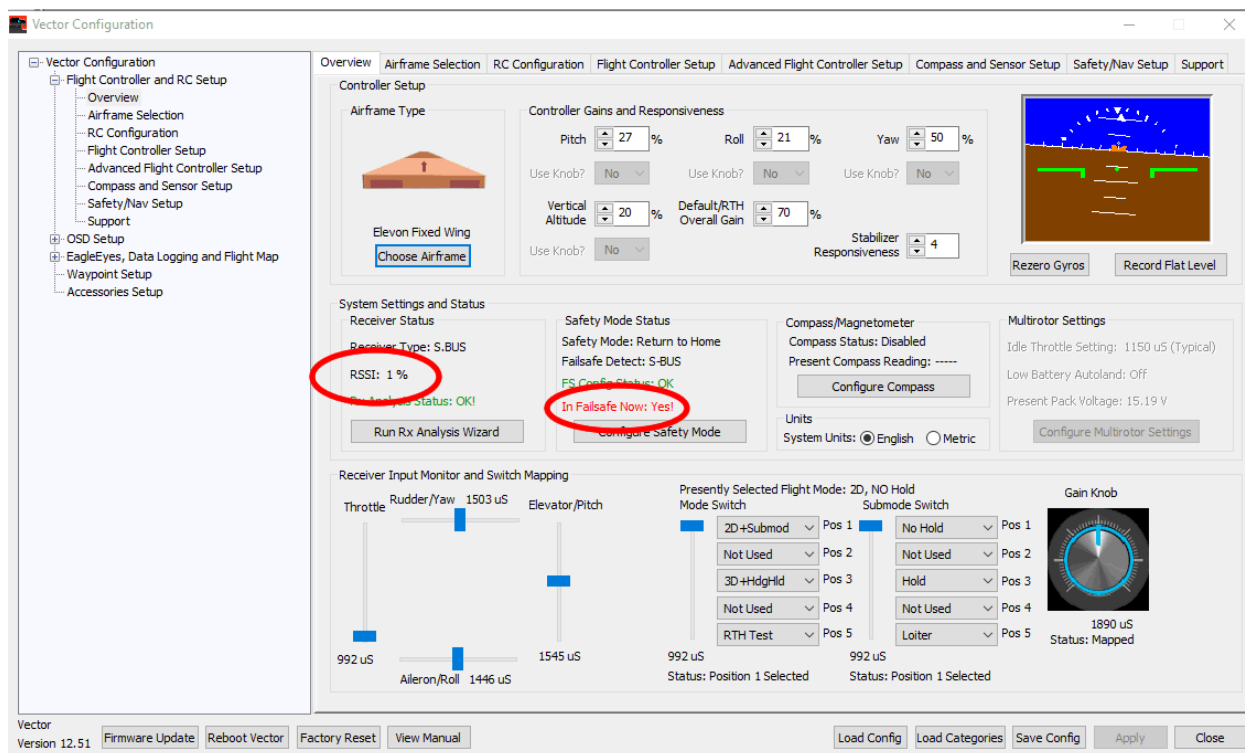
11. Connect the Vector to the Vector PC Software (GUI) with a USB cable. Power up your Transmitter, then the Aircraft. **NOTE: If you have not done so before you will need to select the correct Airframe (and later CONFIRM by toggling the Mode Switch) and configure the OSD and Mode/Submode switches but 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 "Sbus" as the "Receiver Type" and "Sbus" 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. Power down the Aircraft and disconnect the USB cable.
16. Reconnect the USB cable and repower the Aircraft.
17. 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.

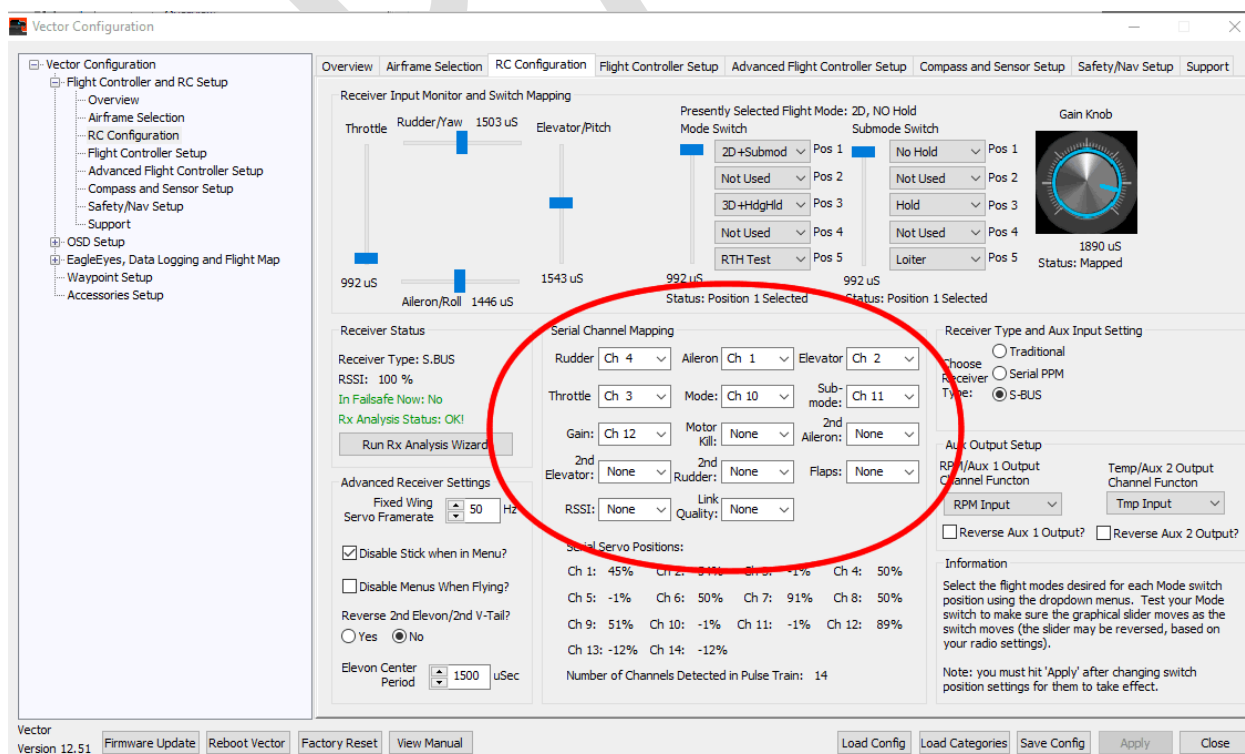


18. Now turn off your Transmitter and confirm:

- c. "RSSI" = 1% (or very close to that)
- d. "In Failsafe Now" = Yes!



19. 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.



20. 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”!

That’s it! Done! If you followed all the steps above, you should have the DL V3 configured to work with the Vector and have Vector Telemetry available on the DL TX - which can be sent to a phone/laptop/tablet and/or your Taranis! If you have questions/issues/problems or suggestions to improve this Manual please post them at:

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8 Pixhawk Dragonlink V3 Configuration

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