

SMOOTH FLITE RRS



Version 5 User Guide



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Thank you for your purchase of the Advance Radio Smooth Flite System.

The Advanced Radio Smooth Flite system was designed with Giant Scale Models in mind and combines Power Distribution, Flite Stabilisation and a 26 Channel Servo control system in the lightest package in it's class (less than 110 grams).

In the past trimming and matching servos would take place via the transmitter. This old school thought would limit you to the number of channels available from the transmitter. With Smooth Flite these functions have been moved to the Smooth Flite system and in doing so brings you much more functionality and flexibility in model setup. You gain at the touch of a button as many as 26 servo outputs that can all be mixed, matched, sub trimmed, reversed and endpoint adjusted. The power of this new system and thought process will become obvious as you start to use the Smooth Flite System.

To add to this we have created much more than just a simple Gyroscope based system. We decided to include a 3 axis gyro, accelerometer, compass and barometer into the hardware. The combination of these sensors gives you much more flexibility in flight stabilisation and that is why we called it Smooth Flite!

LETS GET STARTED — in this guide we will show you how to connect your new Smooth Flite system, General use and setup as well as how to get the most out of the Smooth Flite stabilisation system. Please take the time to read & understand this guide before installation.

TOUCH SCREEN—The touch screen display supplied with the Smooth Flite should be protected from vibration. We don't recommend mounting the Smart Screen in models with gas powered engines.

BATTERIES—Before installation please ensure that your batteries are fully charged. The Smooth Flite System relies on this to know how much your model has consumed from each pack. Smooth Flite collects this information and displays this as a set of battery cells indicators on the Smart Screen. NEVER FLY WITH BATTERY PACKS THAT HAVE 35% OR LESS CAPACITY (RED ZONE ON THE BATTERY INDICATOR). Doing so may put your model at risk.

RECEIVER INSTALLATION—Some receivers don't offer protection against incorrect polarity or pin offset. IT IS IMPORTANT that you observe correct polarity and pins when connecting the receivers to the Smooth Flite system.

Included Items:

- 1 x Live feedback touch screen Smart display
- 1 x Smooth Flite power distribution module.
- 1 x Power LED
- 3 x Receiver cables

Optional Items:

- Pin Flag switch with Advance Radio Flag
- Remote FOB Switch with Advance Radio Flag
- Magnetic Switch with Advance Radio Flag
- 2 x Receivers

Features:

- Built-in Battery Guard Technology. The Smooth Flite constantly monitors battery voltage and current draw and displays this on the Smart Screen display.
- Works with single or dual battery configuration. *Recommended with dual battery.
- Works with all major battery chemistries. LiFe. LiPo, Lion, NiMh, NiCD. Battery voltage range can be from 6volts to 8.4volts.
- Full Dual Battery Redundancy - If one battery fails the other battery takes full control.
- Dual receiver redundancy (4 for Spektrum version)
- Up to 20 input channels (depending on transmitter capability)
- 26 buffered, fully assignable and programmable servo outputs.
- Easy-to-use pre-routed servo routing.
- Independent servo reverse on all channels.
- Sub Trim and end point (3 point) matching on all channels.
- Advanced 15 point matching on all channels
- Digitally selectable regulator output via the Smart Screen.
- Regulator selectable to 6.0 volts, 7.4volts.
- Maximum Battery Power Balancing – Using dual battery perfect diode technology.
- Proprietary Smooth Flite System with 3 axis Gyro, Accelerometer and Barometer.

Installation and Mounting Instructions

In this section we will explain how to mount both the Smooth Flite and the Smart Display. The Advanced Radio Smart System gives you the choice of mounting the Smart Screen in the Model or leaving it disconnected for normal flying. The Smooth Flite will operate in normal flying mode without the Smart Screen Connected.

Smart Screen Mounting

If your model is a gas powered and has a high level of vibration then we don't recommend mounting the screen in the model unless you provide a high level of vibration damping when mounting the screen.

If your model provides a low vibration environment (Turbine, Sail Plane, Electric model) then hard mounting of the Smart Screen is possible.

The Smooth Flite provides downlink telemetry so it is not necessary to mount the Smart Screen in the model to view battery data.

Mounting the Smooth Flite System

The Smooth Flite is supplied with 4 rubber shock mounts in the base plate, similar to rubber mounts on servos, these provide shock mounting for the Smooth Flite.

The Smooth Flite RRS has a built-in digital regulator which uses the base plate as a heat sink. It is important that the Smooth Flite be mounted correctly so air can flow over the base plate to allow effective heat dissipation. We recommend mounting with minimum standoff spacers of 1/2 inch or 12mm to allow adequate air flow over the base plate.

Mounting the Smart Display

To save weight the Smart Screen is not required for normal flying usage. It is only required for programming the Smooth Flite.

Should you wish to mount the Smart Screen in the model for quick battery checks etc then we recommend 2 options of mounting the Smart Screen display.

NOTE: Whichever method of mounting you choose, ensure the cable that comes out of the Smart Screen Display is not crushed in any way. Doing so will reduce the longevity of the cables.

Option 1. Using 3M Velcro adhesives, you can mount the back of the screen to a surface.

NOTE: This is a semi hard mount, and will provide a good resistance to vibration. AVOID MOUNTING IN HIGH VIBRATION AREAS. VIBRATION DAMAGE IS NOT COVERED UNDER WARRANTY. Clean both the back of the Smart Screen and surface that it is being mounted on. Place 3M dots/tape each side of the cable. Trimming as necessary.

IMPORTANT: DO NOT APPLY FORCE DIRECTLY ONTO THE SCREEN

Press on the black case around the screen to ensure it is secure.

Option 2. For hard mounting. The screen case has 2 eyelet holes on each edge of the screen. If you are mounting the screen in a scale cockpit, or in a non vibration model. (e.g. Turbine) these holes can be used to affix the Smart Display.

Simply place the Smart Display where you wish to mount it. Holding it in place, make a dot using a pen or pencil in each eyelet hole. Removing the screen, drill a hole where you placed the dots.

Now simply screw the Smart Display in place.

NOTE: Hard mounting the Smart Display provides little to NO protection against vibration. Use this method if you are using a non vibration model or ONLY where there is little to no vibration. AVOID MOUNTING IN HIGH VIBRATION AREAS.

General Usage and Screen Information

Important: The Smart Screen Display supplied with the Smooth Flite is a touch screen display. It is used in both setup and provides feedback to the user about battery voltage and milliamps used. The screen can be mounted in a model for quick and easy use. However the Smooth Flite will operate during normal flying mode without the Smart Screen connected.

Below is an overview of each screen on the Smooth Flite

Main Smart Screen Display

Battery 1 (B1) and Battery 2 (B2)

Shows input voltage of both battery packs.

Servo

Shows Regulated voltage to servos

Total mA

Shows total milliamps since last charge.

Press here to enter the **Main Menu**

Last mA

Shows milliamps used since model was last powered up and resets when model is turned off. Press here to reset **flight timer** and **Last mA**.

FL-T

Flight timer since model was turned on. The timer only operates while on the main screen.

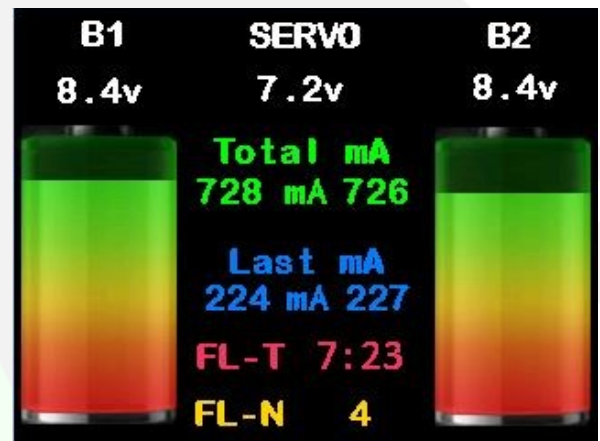
FL-N

Flight number since reset. Gives an indication of number of flights on the models airframe.

Battery Indicators

Shows the remaining capacity in the batteries from 100%

- 0%. **NEVER FLY IF THE INDICATORS ARE IN THE RED.**



Main Menu

Return

Returns back to the previous screen.

Power

Press here to go to the battery setup and reset menu.

Monitor

Press here to go to servo programming menu.

I/O Routing

Pressing here will take you to the channel routing screen.

Servo Match

Pressing here will take you to the 3 point and 15 point servo matching screen,

Receiver

Pressing here will take you to the receiver and frame rate monitor screen.

System

Pressing here will take you to the system page which contains credits and system information

Sequencer

Pressing here will take you to the sequencer page. (available on sequencer versions of the Smooth Flite RRS).

Smooth Flite

Pressing here will take you to the Smooth Flite page (available on Smooth Flite versions of Smooth Flite RRS)



Power Setup Screen

Return

Takes you back to the previous screen.

RES-mA

Resets total mA used. Please ensure both packs are **FULLY** charged before you reset.

RES-FLT

Resets flight counter and timer to zero. Use this feature mostly when installing in a new airframe or before the maiden flight.

Bat Capacity mA

Shows the capacity of the batteries you are using. We will go through how to set this in the First Time Setup section on page 10.

Servo Voltage Selector

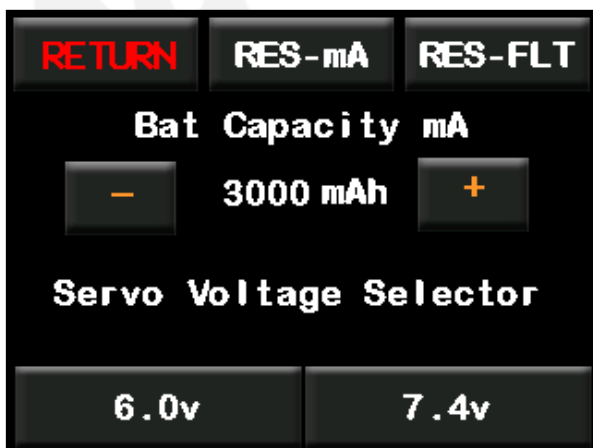
Pressing the 6.0v or 7.4v will set the regulator, Note: if using a battery with a voltage lower than 7.4v the 7.4v button will be greyed out.

For example: if you are using Lion 2S packs then the choice will be 6.0v or 7.4v.

Servo voltage choices when using different battery types:

LiFe 2S packs = 6.0v

Lion2S and Lipo 2S = 6.0v or 7.4v



I/O Routing Screen

Save

Takes you back to the previous screen and saves your routing choices.

- and + buttons

Changes the input Channel from 1 to 20

Note: you can only assign servos to channels that are available from your Receiver.

Example: you can not assign a servo to channel 18 when using a 10 channel radio

S01 to S26

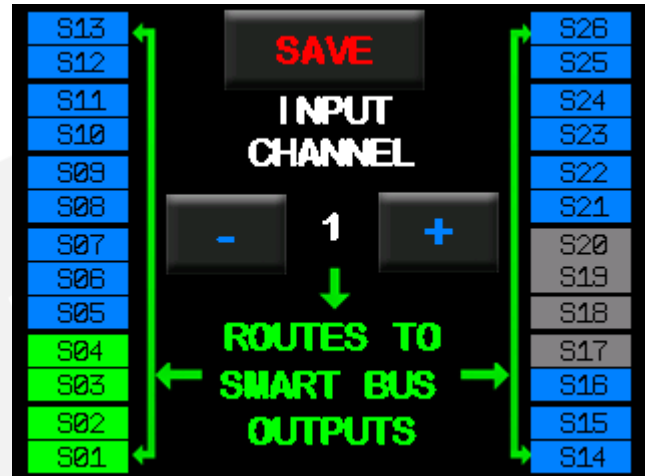
These buttons correspond to the outputs on the Smooth Flite RRS.

They have 3 colours,

Green = they are assigned to the current receiver channel.

Blue = they are not assigned to any receiver channel.

Grey = they have been assigned to a different receiver channel and cannot be selected for this channel



Servo Matching screen

Return

Takes you back to the previous screen.

S01—S26

Pressing any of these buttons will take you to the servo matching page for the corresponding servo output on the Smooth Flite. Here you can match the servos with the 3 point and 15 point matching.

Channel Monitor screen

Return

Takes you back to the previous screen.

Arrow

Changes the page to the next 10 channels.

Channel Bars

The bars show the current input channels and position.

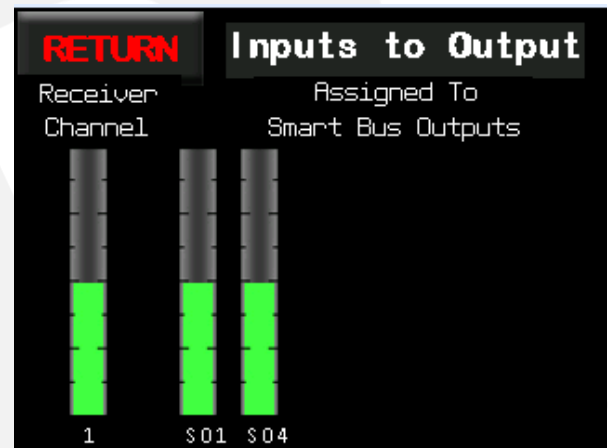
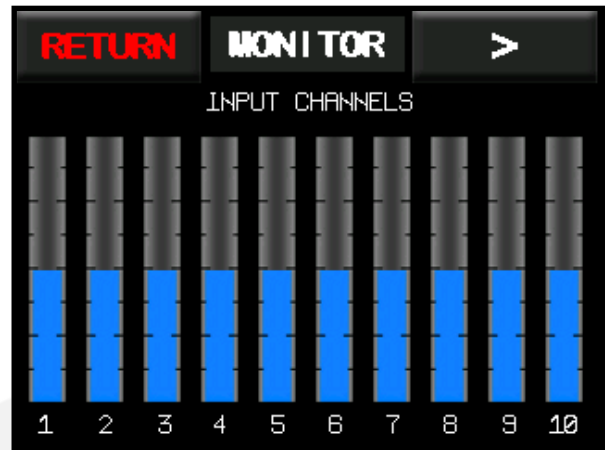
Note: The bars have two colours.

Blue = no servo output has been assigned.

Green = one or more servo outputs has been assigned to this channel.

Tapping any of the green bars will take you to the inputs to outputs screen and show corresponding assigned input to output channel(s).

We will expand on this feature in the servo matching



Sub Trim and Servo Match Menu

Return

Returns you back to the previous screen.

Servo Direction

Reverses the selected servo direction.

Sub Trim & Servo Match

Takes you to the Sub Trim page for the chosen Servo

15 point Servo Match

Takes you to the Multi-point match page.



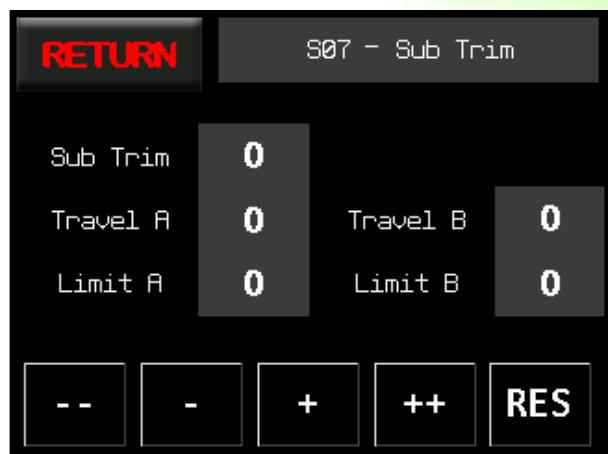
Sub Trim

Return Returns you back to the previous screen.

Sub Trim Level shifts the entire range of the chosen servo channel.

Travel A and Travel B Are end point adjustment to increase or reduce servo range. Also used in conjunction to match multiple servos.

Limit A and Limit B Adjusts the absolute maximum and minimum travel of a servo



15 Point Servo Matching

Return

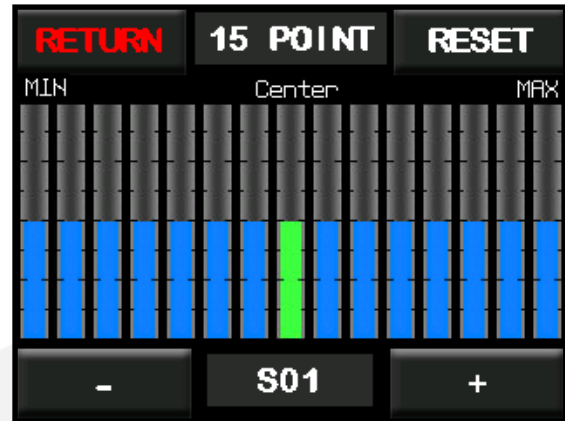
Takes you back to the previous screen.

Reset

Resets the sub trim values back to default.

Vertical Bars

Shows the sub trim applied to the servo. The sub trim values can be changed using the **DEC**, **INC** buttons.



RETURN		BIND		RESET	
Rec	Frames	Drops	FailSafe	Fail Safe	Frame Rate
1	0	0	0		
2	0	0	0		
3	0	0	0		
4	0	0	0		

Fail Safe Screen

Return

Takes you back to the previous screen.

Vertical Bars

Shows the fail safe values based on stick position from the radio. Fail safe is set by pressing the corresponding blue bar.

Note: The bars have two colours.

Blue = Fail safe is set to heading hold for that transmitter channel.

Green = Fail safe is set to a specific position based on the radio

Receiver Page

Return

Takes you back to the previous screen.

Reset

Resets the receiver values back to zero.

Frames

Shows good frames received by each receivers.

Drops

Shows frames not used by the receivers.

Fails

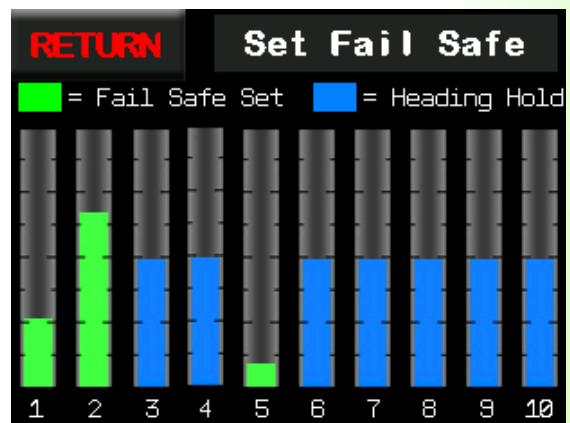
Shows frames received by Smooth Flite with an incorrect checksum value.

Frame Rate

Set the output frame rate of the signal to the servos.

Fail Safe Button

Takes the user to the fail safe set up screen.



First Time Battery Setup

We are now going to go proceed with a first time setup of the Smooth Flite .

Please ensure your batteries are fully charged before you setup the Smooth Flite.

If you need any additional help with what each button or item does please read the General Usage and Screen information page located on page 7 of this manual.

We recommend you do not have any servos connected to the Smooth Flite during the first time setup.

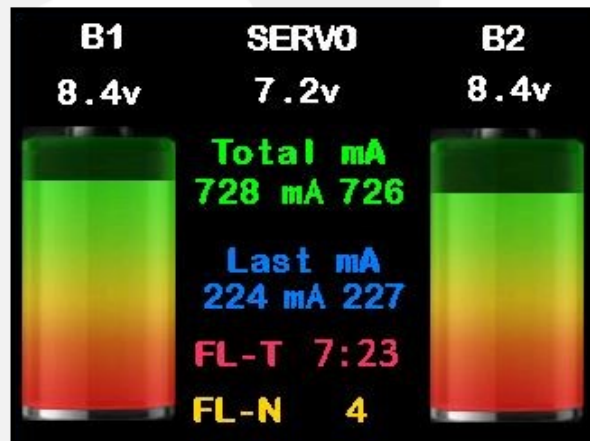
Step 1

Ensure that both batteries are plugged into the Smooth Flite. You will also need to ensure the Smart display is plugged into the switch as it is used for programming.

Upon power up, you will see the AR logo. After a few seconds the Smart Screen will be shown.

Step 2

Press the green **Total mA** text on the Smart Screen, this will take you to the main menu.



RETURN	Main Menu
Power	Monitor
I/O Routing	Servo Match
Receiver	System
Sequencer	SmoothFlite

Step 3

You should now see the Main Menu Screen. Press the **POWER** button on the screen.

Step 4

This is the battery setup screen. Using the arrows (DEC, INC) next to **Bat Capacity mA** cycle through until you see the correct capacity that matches your battery packs.

Note: Step 4 is extremely important! Please ensure the capacity is set correctly to the battery packs you are using.

The Smooth Flite uses this capacity value to show the remaining battery capacity on the main screen. If you set this value incorrectly then the remaining capacity indicators may not show the correct remaining battery capacity.



Step 5

Using the 6.0v and 7.4v buttons, select the regulator voltage of your choice. This will change the output voltage to your servos and receivers. The regulator may take some time, please wait until the voltage you select is the same as the number on the screen.

Note: Please ensure your servos are capable of the voltage you select. Selecting a higher voltage than your servos are capable of might cause damage to them.

Step 6

Once you have setup these parameters, press the **RETURN** button to save and return to the main menu. Press **RETURN** again to go back to the Smart Screen. You have successfully setup the Smooth Flite Battery monitoring.

Important

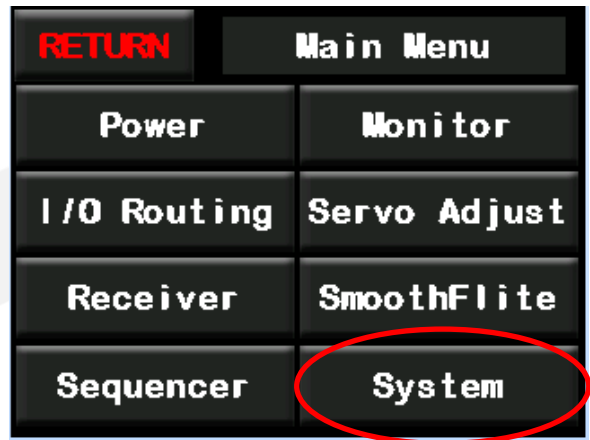
The Smart display main Screen shows how much capacity you have left using the battery indicators on the left and right of the battery screen. It is important that the capacity you enter is correct and accurate. If you are unsure about the capacity of your batteries or if your packs are not new we recommend cycling your packs by discharging them and recharging them to full. This will give you the best possible result for the battery packs you are using.

Protocol Selection ARXL Version

Before connecting receivers to the Smooth Flite RRS you will need to select the appropriate protocol to match to your transmitter system. At time of writing the Smooth Flite system supports SBUS2, XBUS, Jeti EX Bus, HOTT and SRXL protocols.

Step 1

From the main Menu tap the "System" button.



Step 2

From the System Page tap "Receiver Protocol".



Step 3

Tap the appropriate button that matches the protocol of your transmitter/receiver system.

Futaba = SBUS2

JR/DFA = X-BUS

JETI = JETI EX

Graupner = HOTT

Spektrum AR700 receiver = SPEK SRXL

Spektrum offers 2 different receiver protocols.

Spektrum SRXL is **NOT** compatible with Spektrum Satellite receivers and runs at a higher voltage.

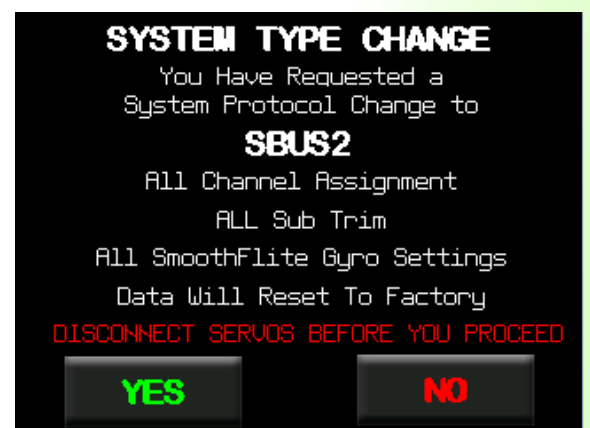
DO NOT CONNECT Spektrum Satellite receivers to the multiprotocol ARXL version of the Smooth Flite.

The Spektrum Satellite version of Smooth Flite is a dedicated Smooth Flite system with different receiver voltages matched to Spektrum Satellite receivers.



After making the selection you will be asked to confirm.

PLEASE NOTE changing the protocol will reset the Smooth Flite system to factory defaults erasing all input to output routing, sub trim and Smooth Flite Gyro settings.



Installing the Receivers ARXL Version

The Smooth Flite ARXL includes two receiver connection cables, these are designed to be plugged into the A1 and A2 at the base of the Smooth Flite. This cable can then be connected to the SBUS2, SRXL, JR XBus, Jeti EX Bus, HOTT port on your receiver.

PLEASE NOTE the polarity of the receiver signal and ground on the receiver before connecting to the Smooth Flite.

The Smooth Flite system will work with either a single or dual receiver setup. The receivers **MUST BE** capable of 7.4V .

We recommend using two HV (high voltage) receivers or similar. If you are unsure please contact Advanced Radio for details.

The Smooth Flite System is designed to supply the power to all the servos. NEVER connect servos directly to the receiver when using the Smooth Flite System.

It is very important that the polarity is connected correctly between the Smooth Flite and the receiver, if the polarity is connected incorrectly this may damage the receiver and Smooth Flite.

Note: For more information on how to setup and bind single or dual receivers, please consult your transmitter and receiver manual supplied by the manufacturer.



Please note cable polarity on a RG812BX



Please note cable position on a 7008 receiver. It is possible to plug into the ground pins of the receiver and this may damage the receiver and Smooth Flite system.



Ensure that the RRS cables supplied is plugged into the R2 and R1 port of the Smart Bus



Redundant Receiver Cable

Spektrum Receivers = Connect to SRXL port .

Futaba Receivers = Connect to SBUS2 port.

JR/FDA Receivers = Connect to XBUS port.

JETI Receivers = Connect to EX BUS port.

Graupner Receivers = Connect to SUMD port.

FRSky Receivers = Connect to SBUS port.

System Specific Receiver Installation

Please observe the correct polarity and pin placement when connecting the receivers.

Futaba SBUS2 System.

The current version of Smooth Flite operating system supports dual 7003SB, 7006SB and 7008SB SBUS2 receivers. SBUS2 provides up to 18 channels into the Smooth Flite (depending on transmitter) which can be routed to any of the 26 servo output channels. When using two SBUS2 receivers with Smooth Flite you connect the two supplied receiver cables to Smooth Flite ports A1 and A2. **Please observe the correct polarity and pin placement when connecting the receivers.** Telemetry is provided from port A1. No additional translator accessory is required. IMPORTANT: When you bind 2 SBUS2 receivers to your Futaba FASTEST system only the first bound receiver will accept telemetry. You MUST connect this receiver to port A1 of the Smooth Flite system to receive telemetry. The second receiver connects to Smooth Flite Port A2.

JR/DFA X-BUS System.

The current version of Smooth Flite operating system supports all JR/DFA receivers with XBUS-A. XBUS-A protocol supports up to 16 channels into the Smooth Flite (depending on transmitter) which can be routed to any of the 26 servo output channels. When using two JR/DFA receivers with Smooth Flite you connect the two supplied receiver cables to Smooth Flite ports A1 and A2 and then to the receiver. **Please observe the correct polarity and pin placement when connecting the receivers.**

For Telemetry connect port A3 of the Smooth Flite to the Battery/Sense port of either receiver. Telemetry of battery voltage, current and mAh consumption are provided alternatively on the JR/DFA transmitter.

Graupner HOTT System.

The current version of Smooth Flite operating system supports all receivers with HOTT protocol. HOTT receivers provide up to 16 channels (depending on receiver and transmitter) into the Smooth Flite which can be routed to any of the 26 servo output channels.

When using two Graupner HOTT receivers with Smooth Flite you connect a receivers to Smooth Flite ports A1 and A2 to the SUMD port of the HOTT receiver. You will need to set the receiver to SUMD. **Please observe the correct polarity and pin placement when connecting the receivers.**

For Telemetry connect port A3 of the Smooth Flite to the telemetry port of either HOTT receiver. Telemetry of battery voltage, current and mAh consumption are provided on the Graupner transmitter.

Jeti EX-BUS System.

The current version of Smooth Flite operating system supports Jeti SAT2 and REX receivers. Jeti EX provides up to 20 channels (depending on transmitter) into the Smooth Flite which can be routed to any of the 26 servo output channels.

When using two JETI EX BUS receivers with Smooth Flite you connect receivers to Smooth Flite ports A and B and to the EXT port of each receiver. Set the receivers to EX bus mode on the Jeti Transmitter. **Please observe the correct polarity and pin placement when connecting the receivers.**

Telemetry is provided via the EX bus cable on Smooth Flite port A1. To attach additional telemetry devices to the Jeti EX BUS system use an Expander EX2 or EX4.

Please observe the correct polarity and pin placement when connecting the receivers.

System Specific Receiver installation

Please observe the correct polarity and pin placement when connecting the receivers.

Spektrum SRXL System.

The current version of Smooth Flite supports Spektrum SRXL protocol on dual AR8010T and AR9030T receivers . These new telemetry receivers allow up to 6 DSMX satellites and the main receivers for a total of 8 receivers. Spektrum SRXL provides up to 20 channels (depending on transmitter) into the Smooth Flite which can be routed to any of the 26 servo output channels. When using two Spektrum receivers with Smooth Flite you connect the two supplied receiver cables to Smooth Flite ports A1 and A2 and then to the receiver . **Please observe the correct polarity and pin placement when connecting the receivers.**

Telemetry is provided from the Smooth Flite EXP port to the TM1000 or receiver XBUS port. You will require the an AR telemetry specific cable. **Do not use any other cable to connect the TM1000 to the Smooth Flite as this could damage the XBUS ports on the receiver and Smooth Flite. Please contact AR for details.**

FRSky SBUS System.

The current version of Smooth Flite operating system supports X6R and X8R receivers. SBUS provides up to 16 channels into the Smooth Flite (depending on transmitter) which can be routed to any of the 26 servo output channels. When using two SBUS receivers with Smooth Flite you connect the two supplied receiver cables to Smooth Flite ports A1 and A2. **Please observe the correct polarity and pin placement when connecting the receivers.** For Telemetry connect port A3 of the Smooth Flite to the SPORT port of receiver 1. Telemetry of battery voltage, current and mAh consumption will be provided transmitter.

IMPORTANT: When you bind 2 SBUS receivers to your FRSky system only the first bound receiver will accept telemetry. You MUST connect the SPORT input on receiver 1 to port A1 of the Smooth Flite system to receive telemetry.

Multiplex SRXL System.

The current version of Smooth Flite supports Multiplex SRXL protocol. Multiplex SRXL protocol provides up to 16 channels (depending on transmitter) into the Smooth Flite which can be routed to any of the 26 servo output channels. When using two SRXL receivers with Smooth Flite you connect the two supplied receiver cables to Smooth Flite ports A1 and A2 and then to the receiver . **Please observe the correct polarity and pin placement when connecting the receivers.**

Please observe the correct polarity and pin placement when connecting the receivers.

Input Channel to Servo Output Routing

During this stage, we will install the receiver and servos.

Note: Before plugging any servos into the Smooth Flite, ensure you have set the regulator to the desired voltage range.

Important: Check the recommended voltage range of your servos, supplying excessive voltage to your servos may cause damage to the servos.

Before connecting any servos to the Smooth Flite we recommend reading through the following steps. This will allow you to familiarise yourself with Smooth Flite in order to use it to its fullest potential.

During the setup if you have multiple servos on a control surface (Example: 2 servos on an aileron). We recommend setting up the master servo before mechanically connecting the slave.

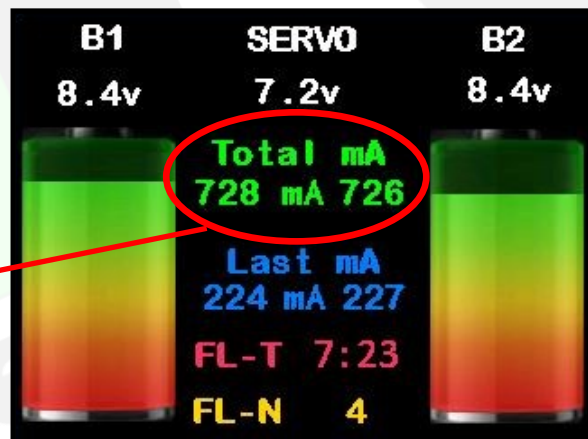
Step 1

Ensure that both batteries are plugged into the Smooth Flite. You will need to plug in the Smart Screen as it is used for programming. Ensure your receiver is plugged into the Smooth Flite and your transmitter is on and bound to your receiver.

For more information see page 6.

Step 2

Press the green **Total mA** text on the Smart Screen, this will take you to the main menu.



Step 3

You should now see the Main Menu Screen. Press the **MONITOR** button on the screen. This will take you to the receiver input channel monitor.

Note: The monitor gives you a visual indication of the assigned input channels from your receiver. Your new Smooth Flite RRS comes with primary control surfaces pre-assigned to simplify your setup.

Hint: Create a new model on your transmitter with dual aileron channels, single elevator and single rudder channels.

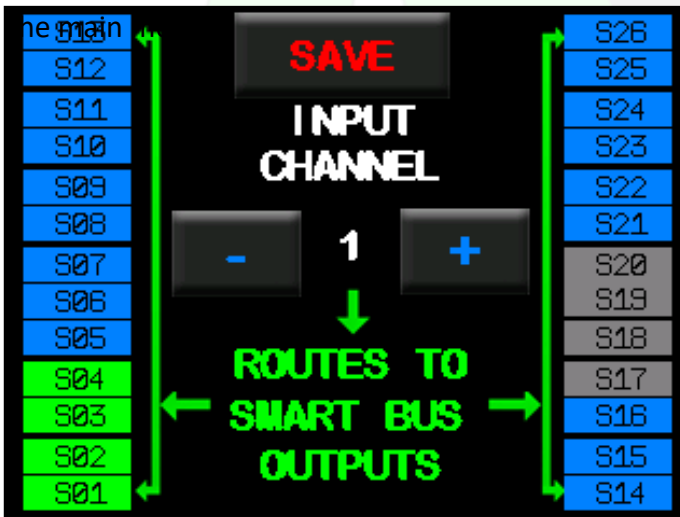
If all is connected correctly, moving the transmitter sticks will cause the green bars on the monitor screen to move.

As you can see, the monitor screen is a good tool for viewing input channel assignments.

For advance setups, we have included a blank assignment sheet at the end of this user guide.

The following steps will show you how you can reassign channels from the factory setup.

Press return from the monitor screen to return to



Note: The servo channels are colour coded.

Green = they are assigned to the current transmitter input channel.

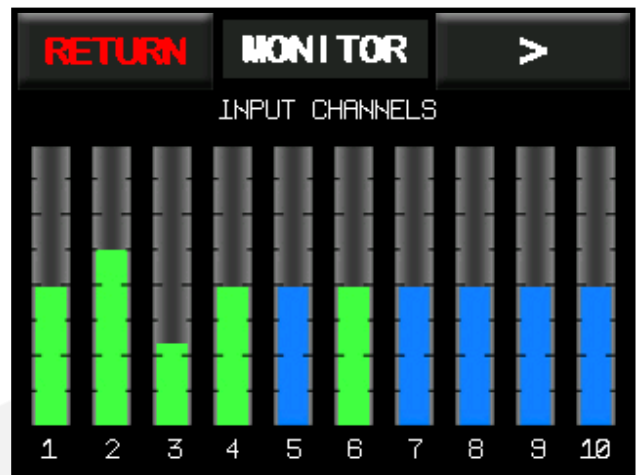
Blue = they are not assigned to any transmitter input channel and are available .

Grey = they have been assigned to a different transmitter input channel other than the one currently selected and cannot be selected for this channel.

Step 5

Lets now show you how to move through transmitter input channels. With the Stylus, tap the Plus (+) button once. You should see the input channel change to 2 (coloured white), and the previously green servo output channels will become grey (remember these servo outputs were assigned to input channel 1 so they are not available to input channel 2). Depending on the chosen protocol other servo outputs should show as green i.e. they are assigned to input channel 2. Tapping the Plus (+) sign will move you to higher input channels. Tapping the Minus (-) sign minus sign will move you to lower input channels and eventually back to input channel 1.

Note: you must press the **SAVE** button in order to confirm any changes to the channel routing. Pressing save also returns you to the Main Menu.



Step 4

From the main menu, tap the I/O Routing button. The screen (on the left) should appear. In this example, transmitter input channel 1 (coloured white) routes to servo outputs S01, S02, S03 and S04, which are coloured green.

Lets show how easy it is to assign and de-assign additional servo outputs to transmitter channel 1.

With the Stylus supplied, tap the Blue S13 button on the Smart Screen. The S13 should turn green. We have now added servo output 13 (S13) to transmitter input channel 1. Smooth Flite makes it that simple!

Tapping S13 a second time, will de-assign it turning it back to blue.

Servo Sub-Trim: Reversing Method 1

The Smooth Flite system is designed to allow you to easily trim up to 26 servo outputs for precise servo matching in multi-ganged servo installations, Elevators, flaps and multi motor installations. If servos require matching we recommend for simplicity you do this in the Smooth Flite system. And here is an example of why

Example: Gyro assisted Rudder and ground steering using only 1 transmitter channel.

You assign the transmitter rudder channel to 2 Smooth Flite output channels. Smooth Flite output 1 controls Rudder while output 2 controls Steering. You can reverse/reduce the throw of the rudder and steering channel for better ground steering and the rudder gyro function becomes available to steering for direction assisted take off steering. Nice.

OK, there are two methods to access the servo sub trim and matching function in the Smooth Flite RRS.

The following example assumes channel 1 from your transmitter has been assigned to S01 on the Smooth Flite as per factory setup.

From the **Main Menu**, tap on the **SERVO ADJUST** button. This will take you directly to the servo match and sub-trim screen (pictures to the right).

Lets have a look at how to sub-trim and reverse channel S01 on the Smooth Flite.

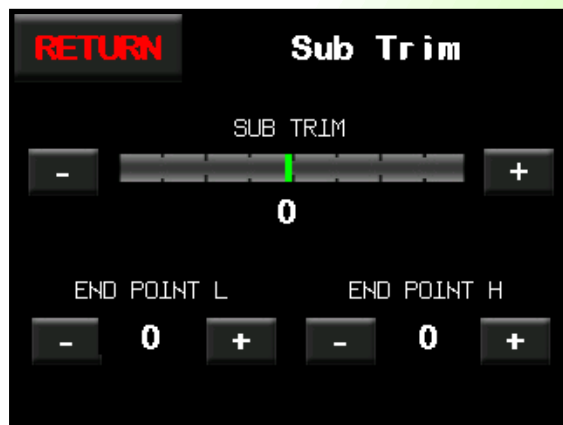
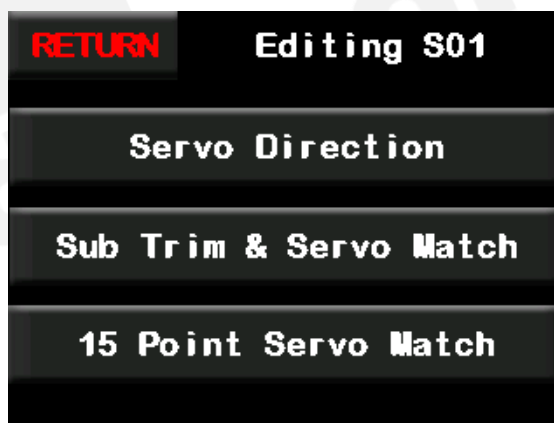
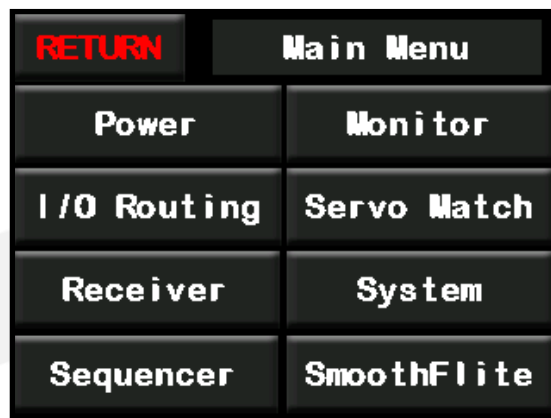
Simply tap on the servo output S01. You should now see the Sub Trim menu for S01. The words **"Editing S01"** will be shown at the top right of the screen (picture to the right) . This can be used to check you have selected the correct channel.

Lets now reverse the servo. Tap the **SERVO DIRECTION** button. This will change the direction of rotation on the servo. Tapping the **SERVO DIRECTION** button a second time will set it to its original direction.

Now lets have a look at sub-trimming a servo. Tap the **"Sub Trim & Servo Match"** button to take you into the Sub Trim Page. Press the Sub Trim +/- buttons to Sub Trim the servo.

This is the same as sub trimming on your transmitter but offers higher resolution and precise servo matching. You can also adjust end points of the servo from this page. The combination of sub trim and end point moving will give you precise multi-ganged servo matching or precise matching of elevators, flaps and multi engine models.

TAP RETURN TO COMMIT YOUR TRIM CHANGES TO MEMORY



Servo Sub-Trim: Reversing Method 2

We also provided an input channel **MONITOR** screen so you can easily visualise which transmitter channel is assigned to which servo output and then easily trim and match.

The following example assumes Channel 1 from your transmitter has been assigned to S01 on the Smooth Flite as per factory setup.

From the Main Menu tap on the **MONITOR** button.

The **MONITOR** screen will appear as pictured right.

From the **MONITOR** screen, tap the green bar for transmitter input channel 1. This will take you to the

INPUTS TO OUTPUTS screen for transmitter input channel 1 (see right).

With reference to this screen, "Receiver channel" 1 (left most column) is "Assigned to Smart Bus outputs" S01, S02, S03 and S04 shows as column 1,2,3 and 4.

Now, Simply tap on "Assigned to Smart Bus output" 1.

You should then see the Sub Trim menu for S01. The words "**Editing S01**" will be shown at the top right of the screen (picture to the right) . This can be used to check you have selected the correct channel.

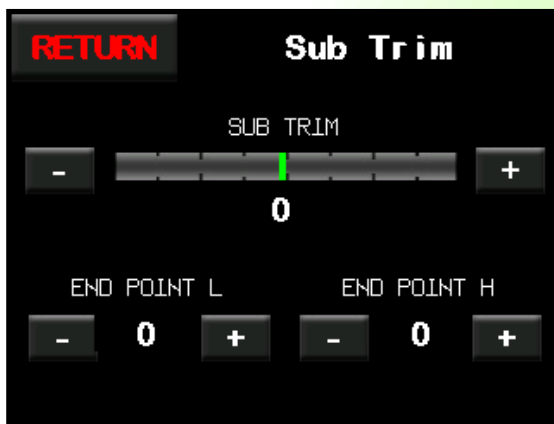
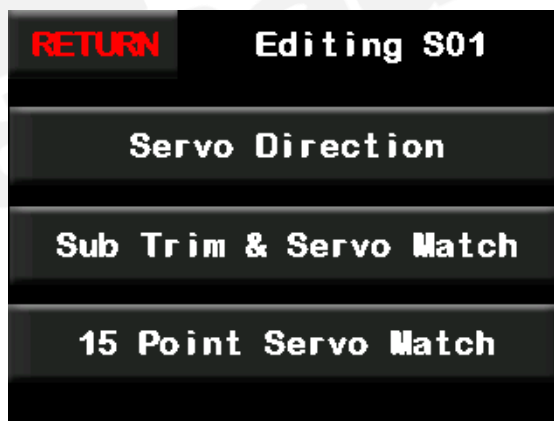
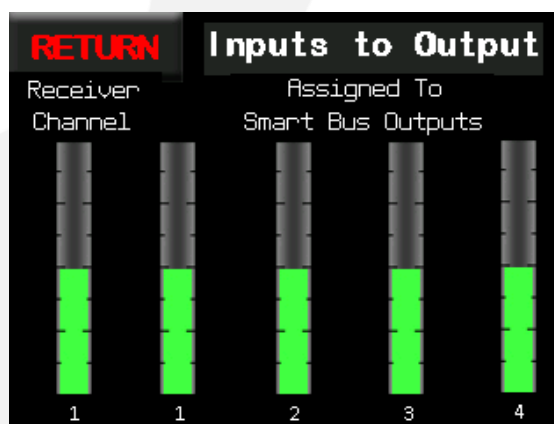
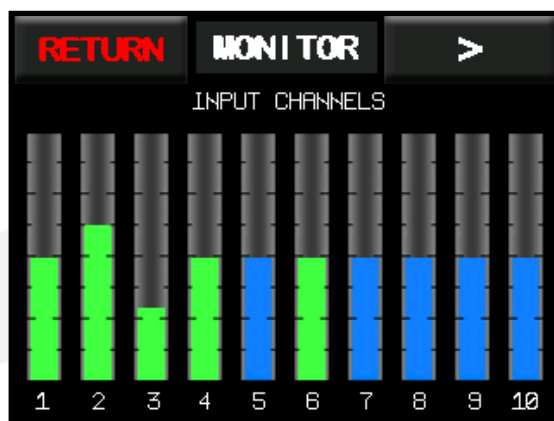
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This is the same as sub trimming on your transmitter but offers higher resolution and precise servo matching. You can also adjust end points of the servo from this page. The combination of sub trim and end point moving will give you precise multi-ganged servo matching or precise matching of elevators, flaps and multi engine models.

Example: Dual Flaps 15 point matched with 1 transmitter channel.

You assign the transmitter flap channel to 2 Smooth Flite servo outputs. Smooth Flite output 1 controls left Flap while output 2 controls right flap. You can reverse/reduce the throw of the left and right flap channel for exact matching. And for even more precise matching you can apply 15 point servo matching which is described on the next page.



15 Point Matching

(Smooth Flite All Versions)

15 point matching is useful for getting the best possible match between servos. This includes mechanically matched servos (aileron) or non mechanically matched (left and right elevator, flaps or multi engine models). We are now going to go through the 15 point servo matching process. For best results please do 3 point match before proceeding.

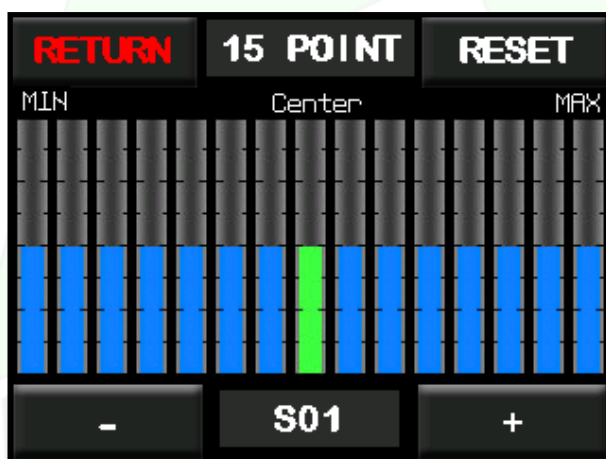
Note: If the servo is only moving a small amount. (Example: 10-15 degrees each way) You will only be able to use a small number of bars on the 15 point match. To use more bars, we recommend you increase the servo range by using a smaller servo arm.

Step 1

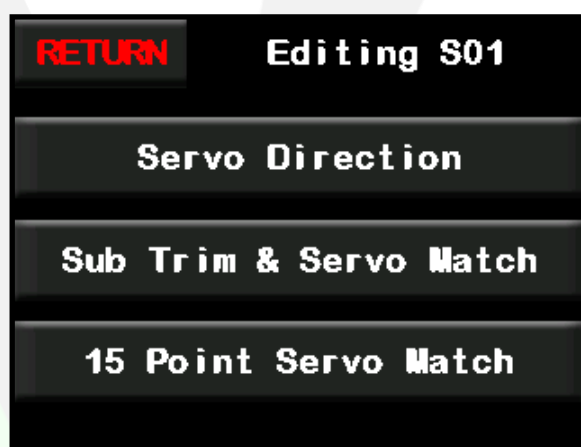
From the Sub Trim Screen tap the 15 Point Servo Matching button.

Step 2

You should now see the multi point match screen. Similar to the 3 point match, as you move the transmitter stick for that channel. The bars will change colour from blue to green.



Note: You can return the servos sub trim values back to default by pressing the RESET button.



Step 3

Slowly move the transmitter stick or rotary control for that channel from one side to the other, if at any point you hear servo buzz. Hold the transmitter stick in that position and use the -, + buttons to sub trim at that point. Sub trim the servo until the servo buzz lessens or disappears.

Step 4

Repeat Step 3 for the entire range of the servo, this can be repeated as many times as you wish.

Step 5

Once you are happy with the sub-trim press the **back** button to move back to the 3-point sub-trim page. Pressing back again from the 3-point sub-trim page will save the trim values to memory.

Receiver Menu

Smooth Flite RRS has the added feature of monitoring the connection between the Receiver and the transmitter. This can be used to assist in the optimal placement of your receivers during setup.

We will now go through a process of how to check the quality of the connection between your receiver and your transmitter.

Using the Smart Display, from the **MAIN MENU** tap the **RECEIVER** button. This will take you to the receiver page.

From the receiver page you can see the receiver **FRAMES** received for each individual receiver, these indicate good packets of information sent from the receiver to the Smooth Flite or received by the receiver from the transmitter. You can also see **DROPS**, these are packets have been received by the Receiver from the transmitter with a mismatched checksum rendering the frame useless.

Note: If the number of DROPS (dropped frames) is unusually high, it may indicate there is a problem with that receiver or receiver placement inside the model.

NOTE: It is quite normal to see these numbers with values higher than 0 however, if you are experiencing extremely high drop ratios, please consult your receiver manufacturer for more details on receiver placement.



Rec	Frames	Drops	FailSafe
1	0	0	0
2	0	0	0
3	0	0	0
4	0	0	0

Buttons: RETURN, BIND, RESET, Fail Safe, Frame Rate

The third column shows **FAILSAFE** (Fail Safe events PER RECEIVER) this value shows the number of failed-to-send events from a receiver to the Smooth Flite i.e. the Smooth Flite was expecting to receive frames but the receiver stopped sending them.

If you experience high numbers in FAILSAFE events during ground testing or after landing do not fly the model until you understand what has caused them.

Powering down the transmitter before powering down the Smart WILL cause the Smooth Flite to accumulate FAILSAFE events. Please avoid this situation.

PLEASE NOTE FOR A SYSTEM WIDE FAILSAFE EVENT TO HAPPEN ALL RECEIVERS MUST BE IN THE FAILSAFE CONDITION.

Frame Rate

Note: At the bottom of the receiver page you will see 2 buttons. These will take you to the **Frame Rate** page. Frame Rate will allow you to change the output frame rate to your servos. Factory frame rate is 14ms which will work with all high quality digital servos. Before changing this, double check that your servos will handle the selected frame rate.

Warning: By changing the frame rate, the Smooth Flite matching will be erased and servo reversing will be reset to default. Please ensure that all servos are not mechanically connected to avoid possible damage to your model and servos.

Setting FailSafe

Smooth Flite RRS version 5 and higher has Fail Safe function which should be used for all receiver type. If you are running an earlier Smooth Flite version please update to the latest version or refer to the Smooth Flite version 3 User guide. **Note: It is extremely important that FAILSAFE is set before flying. We recommend at least setting FAILSAFE on throttle to either idle or off as a matter of safety.**

Note: It is important to make sure that FAILSAFE is OFF or not set in the radio. If FAILSAFE is set in both the radio and the Smooth Flite, you may experience servo jumping during a failsafe condition.

Note: In the Smooth Flite RRS, for FAILSAFE to occur, both receivers must enter FAILSAFE. If only one receiver enters FAILSAFE then the system will function on the remaining receiver. This is one of the outstanding safety features of the Smooth Flite RRS.

Step 1

Using the Smart Display, From the **MAIN MENU** tap the **RECEIVER** button. Now tap **FAILSAFE**.

You should see the Fail Safe Page (picture on the right). The **Blue** bars will follow the stick positions of your radio (just like the monitor screen).

The bars represent the first 10 channels outputted from your radio.

Note: The bars have two colours.

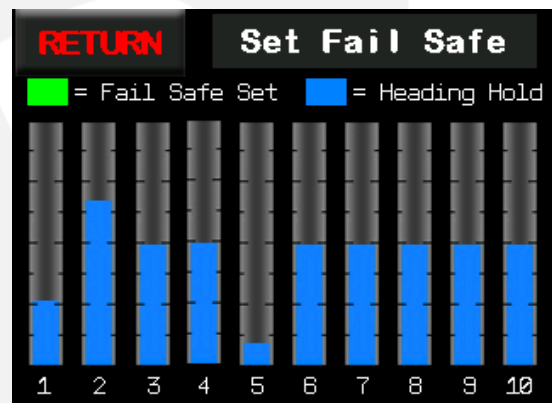
Blue = FAILSAFE is set to heading hold. In a FAILSAFE event the channel and associated servos will hold the last good received channel value.

Green = FAILSAFE is set to a specific position. The channel and associated servos will move to the pre-set FAILSAFE channel value.

The default setting for all channels is heading hold. (**Blue** bars)

Step 2

To set failsafe on any channel tap on the channel bar.



The blue bar will now turn green capturing the current input channel position. Alternate tapping of the Channel bar will cycle between heading hold (**Blue** bar) and FAILSAFE modes (**Green** bar).

Below is an example of how to set FAILSAFE on throttle assuming channel 1 is throttle:

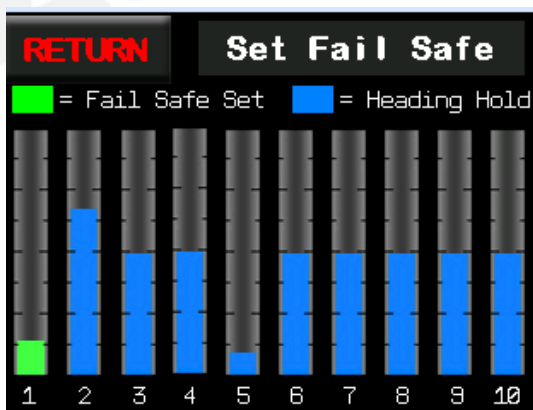
On the Set FAILSAFE screen, move your throttle transmitter stick, the blue bars above channel 1 will move. With your throttle stick at the Idle position, tap the channel bar for channel 1.

The channel bar will now turn green.

you have successfully setup FAILSAFE for throttle.

To test the FAILSAFE function is correctly set up power off the transmitter. Channels set to FAILSAFE should move servos to the pre-set position.

IT IS EXTREMELY IMPORTANT TO SET AND TEST FAILSAFE PRIOR TO OPERATING THE MODEL.



Telemetry with SBUS2 Receivers

Smooth Flite RRS comes with the added ability of downlink telemetry when using a 7008SB or 7003SB SBUS/ SBUS2 receiver.

Note: In order to receive telemetry via Smooth Flite, you must plug the receiver signal into the SBUS2 port. Please ensure that the primary receiver (first bound receiver in a dual receiver setup) is plugged into the R1 port on the Smooth Flite. To check which receiver is the primary receiver, please consult your transmitter manual for reference.

Step 1

Ensure your receivers are plugged into the SBUS2 port.

Step 2

Ensure that the Smooth Flite is on and both receivers are bound to your transmitter.

Step 3

Ensure your transmitter is turned on,

Note: For the following steps we will be using the 18SZ as an example. For all other radios please consult your transmitter manual.

Select the linkage menu on your transmitter.

Now select the sensor menu

Linkage menu	New Normal	6.7V	1/2
Servo monitor	Model select	Model type	
Servo reverse	End point	Servo speed	
Sub-trim	Function	Fail safe	
System type	T1-T6 setting	Throttle cut	
Idle down	Swash ring	Swash	
Stick alarm	Timer	Function name	

Step 4

Page across until you see sensor slot 24, Assign Curr. F1678 to this slot.

Step 5

Page across to slot 27 Assign Curr. F1678 to this slot.

Step 6

Now go to your telemetry screen, you should see the current used in mAHs and the Voltage of both Receiver packs.

Note: Both batteries must be plugged into the Smooth Flite unit to receive voltage up-dates.

Other telemetry systems are similar in how the connect with the Smooth Flite System. We also offer "How To" videos Advanced Radio YouTube channel.

https://www.youtube.com/channel/UCY_uLkfkMiO3OWU8jLm3jZQ?view_as=subscriber

Sensor	New-1 Condit1	6.7V	2/3
Sensor type	ID	Sensor type	ID
13	GPS	19	-----
14	GPS	20	-----
15	GPS	21	-----
16	-----	22	-----
17	-----	23	-----
18	-----	24	-----

Factory Reset

When you use the Sub-Trim and other functions these functions are saved to the permanent memory of the Smooth Flite. RRS. There may be situations where you will want to initialise your Smooth Flite back to the original factory settings. Switching the Smooth Flite to a different model for example would be one of the situations. When you select the Factory feature all the sub-trim data and battery settings will be erased and the Smooth Flite will be returned to “Out-Of-The-Box” settings.

WARNING!

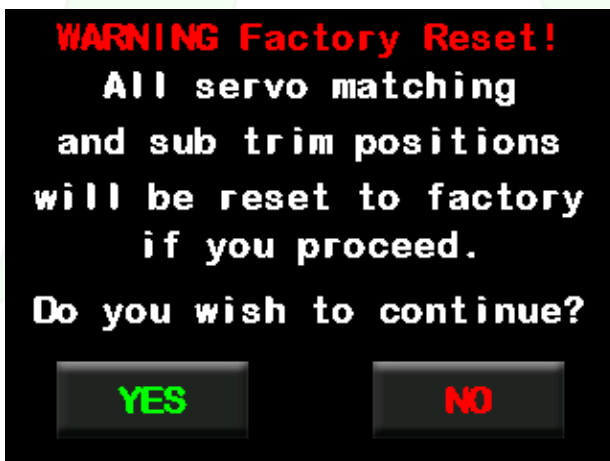
Performing a Factory Reset will erase all sub-trim data and is an irreversible process. **Only do this if you are sure you want to reset the Smooth Flite to factory settings.**

Step 1

Using the Smart Display, go into the System menu, once here press the FACTORY RESET button.

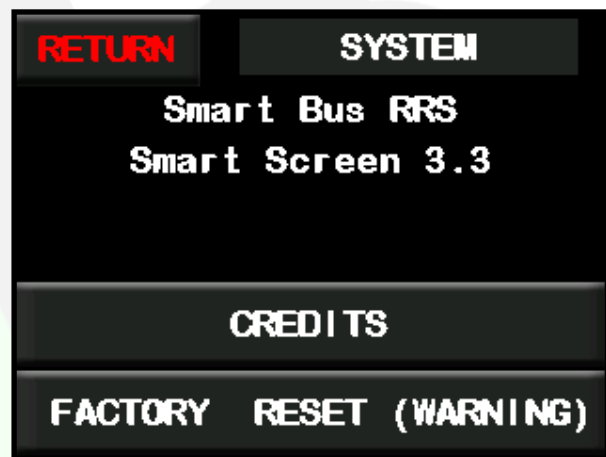
Step 2

A WARNING and Instructions will appear on screen. Please Read this as it is an important process. When ready press **YES** to continue or **NO** to go back to the system screen.



Step 4

After the Factory Reset process is complete the Saving Data Screen will disappear indicating you have reset all data.



Step 3

During the reset process the saving data screen will show for up to 20 seconds. Please DO NOT turn off the Smooth Flite during this process.

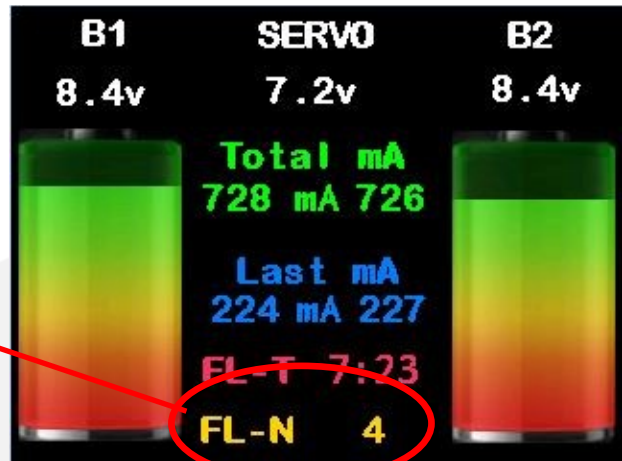


Additional Screens

Cockpit Simulation Screens

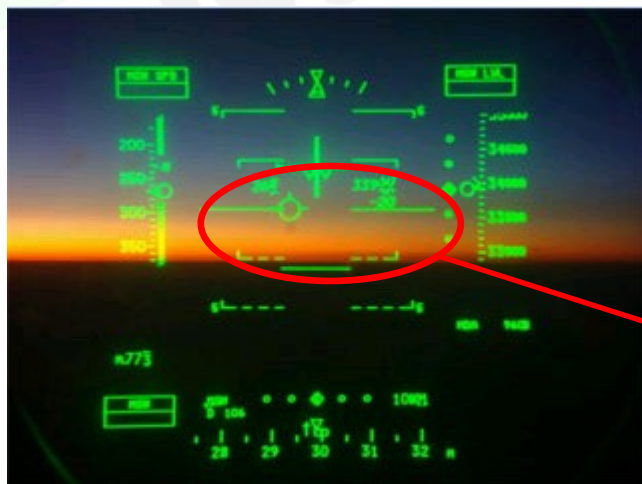
The Smooth Flite also comes with additional Simulation screens that simulate a real cockpit. These include an artificial horizon and instrumentation.

To view these new screens touch the bottom center of the Smart Screen page.



Cockpit Simulation Screens

You can cycle through the cockpit screens by tapping the area at the bottom of the Smart Screen .



If you want to make any of the cockpit screens (for realistic effects) or the battery monitoring screen the default screen simply power down the Smooth Flite while on the desired screen. The Smooth Flite remembers the last cockpit or battery screen and will display this after the boot routine on power up.

To return from the cockpit screen at any time to the main battery display , simply press the centre of the display.

Smooth Flite Gyro Menus

Smooth Flite is much more than just a simple Gyro system. It provides an intelligent system that calculates parameters from 4 different sensors to predict the nature of the model to provide, well, the smoothest flying characteristic available today. Smooth Flite combines a 3 axis Gyro, Accelerometer, Compass and Barometer, to provide for more advanced understanding of a model's flight characteristics.

To make setup of the Smooth Flite system simple we have included a Wizard which will guide you through the setup process and ensure you have the smoothest flying model. Before we start the Wizard we will give you a description of each page of the Smooth Flite System. You can jump straight to the Wizard feature if you like but please read the pre-flight checks before you fly the model.

Lets get started

To access the Smooth Flite menu from the main menu tap the **[Smooth Flite]** button. This will take you to the Smooth Flite main Menu (shown below). Lets take a look at the various Smooth Flite menu options.

RETURN	Main Menu
Power	Monitor
I/O Routing	Servo Adjust
Receiver	System
Sequencer	SmoothFlite

RETURN	SMOOTH FLITE
Wizard	Channel Assign
Aileron	Elevator
Rudder	Maximum Travel
Model Type	Advanced

Aileron, Elevator and Rudder buttons

These buttons take you to setup pages for, you guessed it, Ailerons, Elevators and Rudder

Max Travel button

This button will take you to the travel setup page where we set up travel limits for gyro corrections. More about this later.

Model Type button

Takes you to the model setup page where we specify the model type, and weight. These parameters are used in inertia and vibration dampening calculations and are unique to the Smooth Flite system.

Advanced button

Takes you to the advanced menu for specific model setups and delving deeper into the Smooth Flite system.

Return button

Returns you to the main menu

Wizard button

This button will start the setup Wizard and guide you through the setup process.

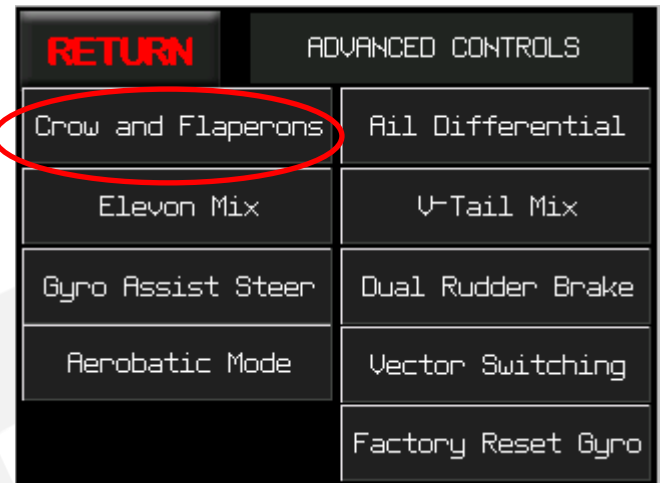
Chan Assign button

The Channel Assignment button will take you the setup page for channel assignment to Aileron 1 Aileron 2, Elevator, and Rudder as well as Master ON/OFF switch and Variable gain Control Channel. We will talk more about these later.

Smooth Flite Gyro Menus

Advanced Controls

The Advanced Controls menu is the gateway to many of the Smooth Flite advanced features. We will discuss these more in detail later.

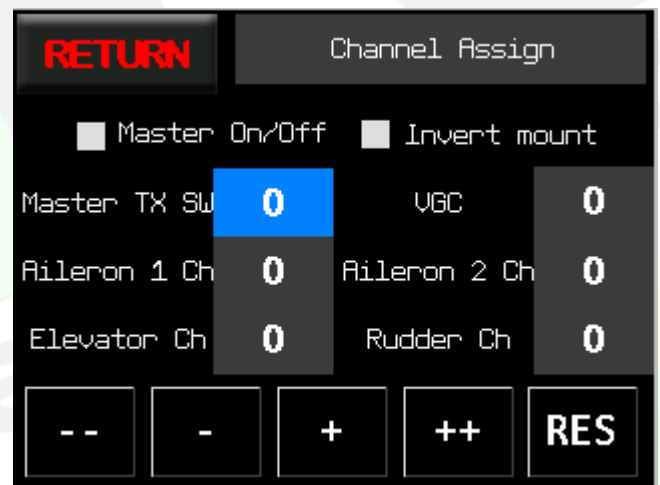


Parameter Editing

From version 5.00 onwards we have introduced a new method of editing values. (See Right).

To edit a parameter or value you tap the value to be edited. The value background will turn **BLUE**. Then use the buttons at the bottom of the page to change the value. You can also reset a parameter to factory default by tapping the "RES" button.

Once you are happy with the set value tap the value again and it will return to a black background.



Smooth Flite Gyro Menus

Advanced Controls

The Advanced Controls menu is the gateway to many of the Smooth Flite advanced features. We will discuss these more in detail later.

RETURN	ADVANCED CONTROLS	
	Crow and Flaperons	Ail Differential
	Elevon Mix	V-Tail Mix
	Gyro Assist Steer	Dual Rudder Brake
	Aerobatic Mode	Vector Switching
		Factory Reset Gyro

Smooth Flite Gyro Setup Wizard

As we mentioned earlier we have included a setup Wizard to guide you through the Smooth Flite assisted flight setup process. Using just the Wizard and pre-Flight check information on the following pages is all that is required to get a standard dual Aileron, Elevator and Rudder model ready to fly with Smooth Flite. If you require the setup of Elevons or V-Tail you can still use the Wizard for the basic setup and then apply advanced parameters later as required. After the Wizard setup pages we will explain in detail all the advanced functions available to you from the Smooth Flite assisted flight system and describe all Gyro pages and functionality.

Before you commence the Wizard it is assumed that you have :

- 1) Set the protocol of the Smooth Flite system to match your transmitter and receiver.
- 2) Have not altered the factory input channel routing from the transmitter. Smooth Flite uses factory input channel routing to simplify the setup process.
- 3) Have a good understanding of the Smooth Flite Input channel to Output channel routing.
- 4) Have assigned outputs to Ailerons, Elevator and Rudder.
- 5) Have a transmitter setup for the model and have assigned a Master Control channel on the
- 6) transmitter to control ON/OFF and gain functions of the Smooth Flite system.

Once you are ready turn the page and start the Smooth Flite Setup Wizard.

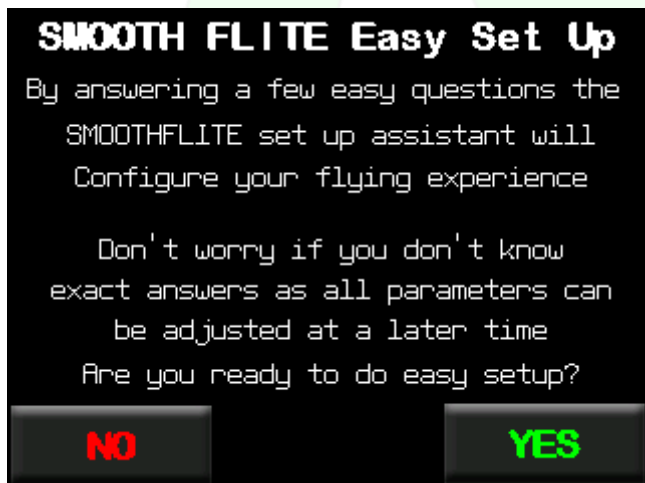
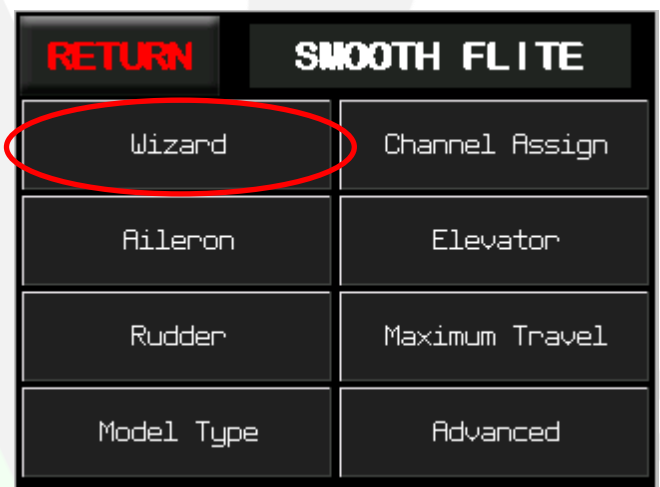
Smooth Flite Setup Wizard

The Wizard will take you through all the parameters in an easy to understand format. After completing the Wizard you will have all the parameters setup for a standard Aileron, Elevator and Rudder model. We will take you through the setup Wizard and explain each page as we go. There are a few fundamental points to getting the absolute best performance out of the Smooth Flite system.

Smooth Flite requires a dual aileron setup on 2 channels. During selection of the protocol you would have noticed that 2 channels were assigned for ailerons. This is important.

It is important that you sub trim all primary flight surfaces (Ailerons, Elevators, Rudder, Steering) outputs via the Smooth Flite system and not in the transmitter. Of course during the maiden flight you may need to trim on the transmitter but initial servo trim setup should be done in the Smooth Flite system. We will explain why trimming in the Smooth Flite system is best as we go through the setup process.

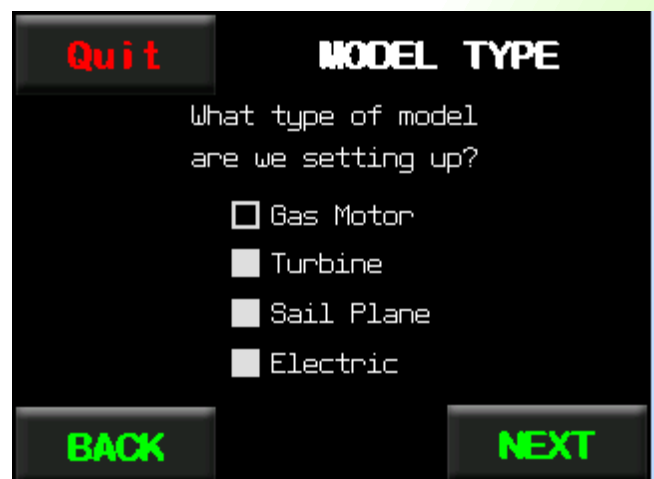
OK, lets get started. From the Smooth Flite menu tap the Wizard button. This will start the setup Wizard.



You will be presented with the Smooth Flite Easy Setup page. Please take the time to read this page and when ready press **"NEXT"**. You can also leave the setup Wizard at any time by tapping the **"NO"** or **"QUIT"** buttons.

Model Type

The first question the Wizard will ask is "What type of model you are setting up". One of the advanced features of Smooth Flite is vibration filtering based on the mode type you select. When ready select the model type and press **"NEXT"**. The Wizard will log your selection and take you to the model weight page.



Smooth Flite Setup Wizard

Model Weight

Another of the unique and advanced features of the Smooth Flite system is inertia calculations based on model type and weight. These calculations are used to dampen or liven up control surfaces to provide a real scale like Smooth Flite appearance to the model.

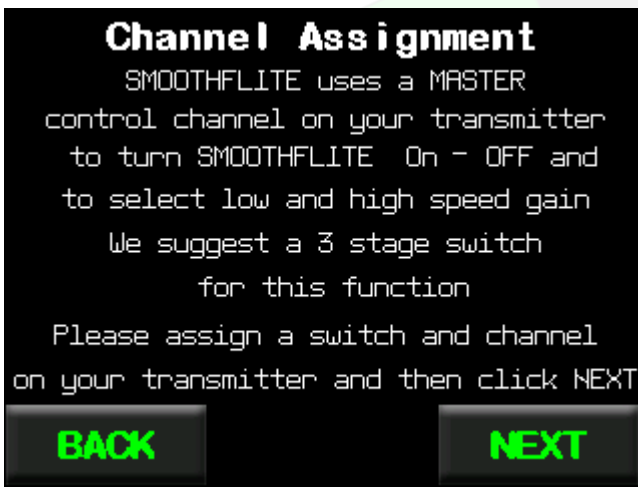
When you are ready enter the model's weight in Lbs or Kgs and press **"NEXT"**. Don't worry if you don't know the exact weight of the model. An approxima-



After tapping **"NEXT"** from the Model Weight Page you will see the Master Channel Assignment instruction page.

Smooth Flite uses a MASTER control channel on your transmitter to turn SMOOTH FLITE On/Off and to select low and high speed gain settings.

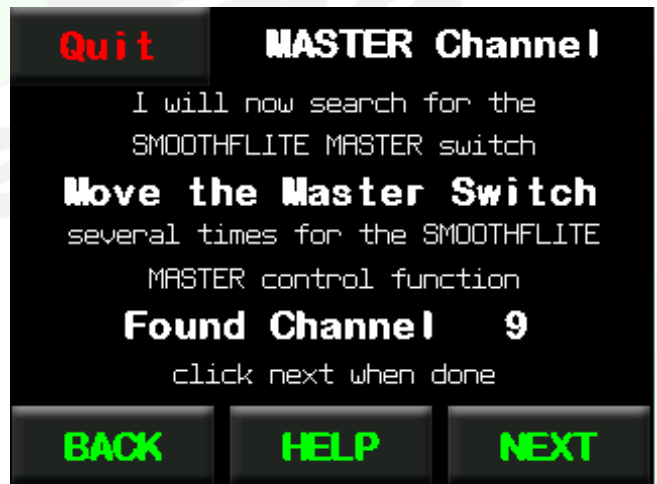
You need to assign a 3 stage switch on the transmitter for this function along with a transmitter output channel. Take the time to read this page and press **"NEXT"**.



Master Channel

When you are ready toggle the Master Switch on the transmitter. The Master Switch search function will find the assigned channel from the transmitter.

Once the channel has been found press **"NEXT"**. The Wizard will log your selection and take you to the Trim Help page. If you are unsure you can also tap the **"HELP"** button for a brief explanation.



Trim Help page

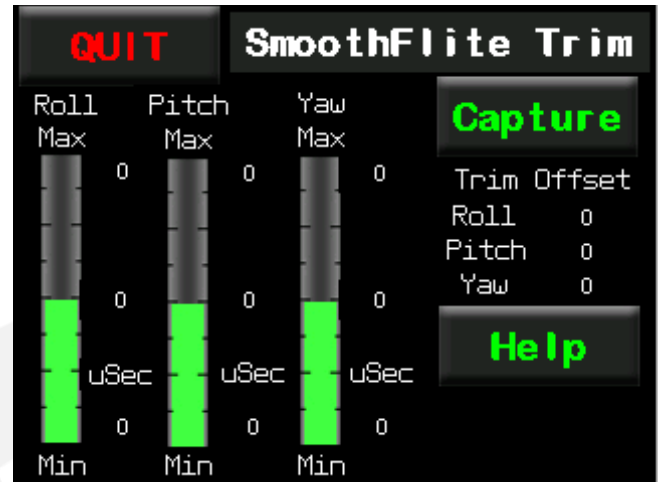
The centre trim and maximum end points are used to tell Smooth Flite maximum servo deflection limits. It is important that we set these correctly for a good flying experience. Please take the time to read this help page. When you are ready press **"NEXT"** to go to the trim page.



Smooth Flite Setup Wizard

Trim

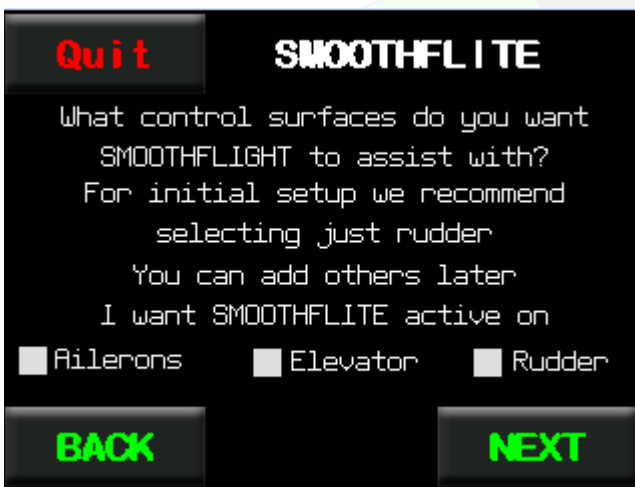
The Trim page captures the minimum, maximum and centre positions for servo travel limits. On this page you move the sticks to their minimum and maximum positions. Then let the sticks rest at the centre positions and press the **“Capture”** button. Smooth Flite will store the positions and show the **“NEXT”** button. Press the **“NEXT”** button to move to the SMOOTH FLITE surface assignment page.



After tapping **“NEXT”** from the Trim page you will see the control surface assignment page. Here you select which controls (Ailerons, Elevators, Rudder) to apply Smooth Flite control.

We suggest for the first flight you apply Smooth Flite to Rudder only so you can get a feel for flying with Smooth Flite. You can always apply to Elevator and Ailerons at a later stage.

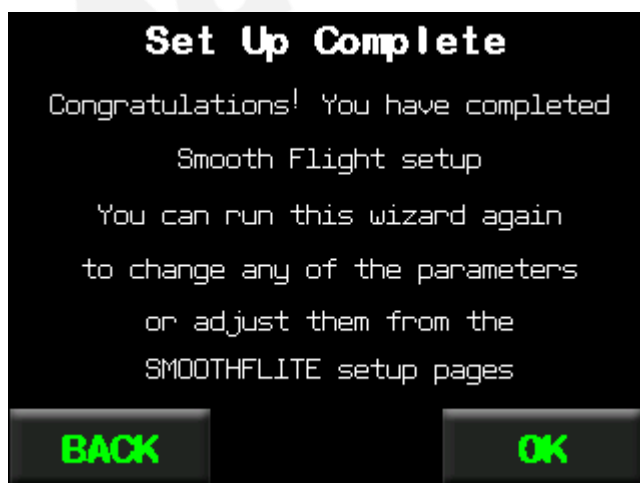
After making your selection Smooth Flite will store your choice then tap **“NEXT”**.



Smooth Flite Mounting

The last thing we need to tell Smooth Flite is whether it is mounted UPRIGHT or INVERTED.

After you make your selection press **“NEXT”**.



Smooth Flite Setup Complete

Congratulations you have completed the setup for your model. You can run the Wizard again or make manual alterations to the selected parameters from the Smooth Flite parameter pages. When ready press **“NEXT”** to go back to the Smooth Flite Menu. There are a few checks required before flying the model and we will explain these on the next page.

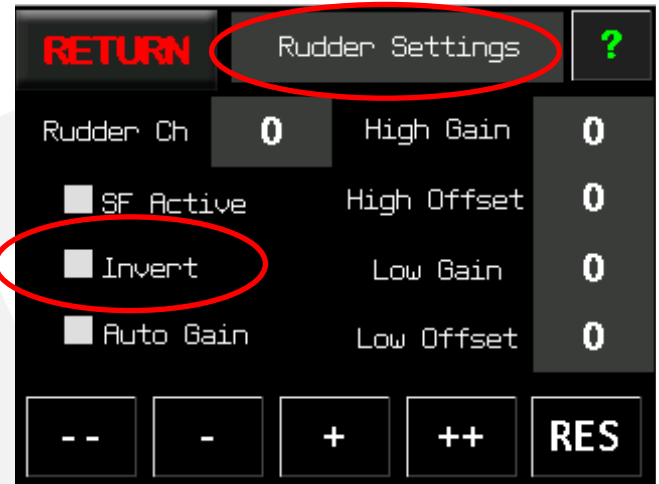
Smooth Flite Gyro Pre-Flight Checks

If you have completed the Smooth Flite Wizard then at this point you have setup for a standard dual aileron, Elevator and Rudder model.

Before flying the model YOU MUST check the control surfaces are reacting correctly to direction changes. This is extremely important. Failure to perform this check could cause a loss of model.

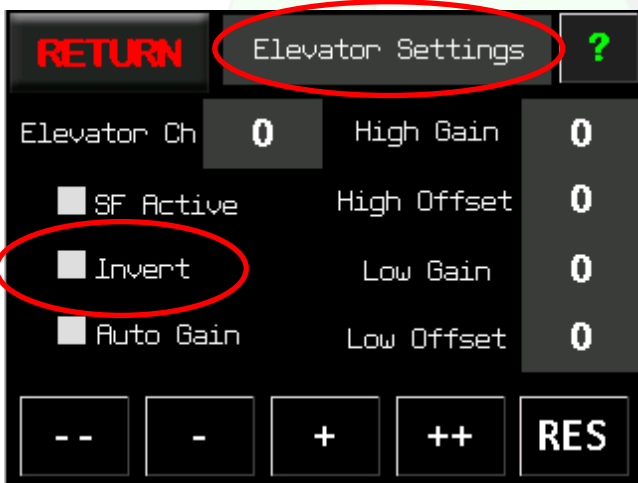
Rudder Check

If you have activated Rudder to be controlled by Smooth Flite then turning the model to the right you should see the rudder deflect to the left i.e. Smooth Flite will correct the rudder right movement with rudder movement to the left. If you see the rudder move to deflect further to the right then you can go to the Rudder page (shown left) and “invert SF Output” This will change the rudder reaction to the opposite direction.



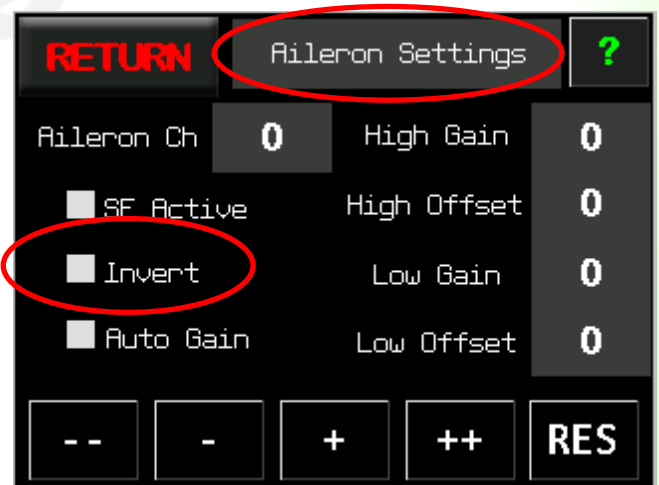
Elevator Check

If you have activated Elevator to be controlled by Smooth Flite then moving the models tail up you should see the Elevator deflect upwards to counteract the movement. If you see the Elevator move downwards then you need to “Invert SF Output” on the Elevator page.



Aileron Check

If you have activated aileron to be controlled by Smooth Flite then lifting a wing UP you should see the Aileron deflect upwards to counteract the movement and the opposite Aileron deflect downwards. If you see the opposite then you need to “Invert SF Output” on the Aileron page.



Gyro Pre-Flight Checks are continued on the next page

Smooth Flite Gyro Pre-Flight Checks

Master Switch Check

If the Pre-flight checks on the previous page check out then you are ready to fly with Smooth Flite activated. Remember from the Wizard setup you assigned a Master Switch control to a 3 stage switch on the transmitter. You can use the Master Switch to turn Smooth Flite control off giving you a non gyro assisted model. The 3 positions of the Master switch are:

Position 1 = Smooth Flite is deactivated. No Smooth Flite effect will be applied.

Position 2 = Smooth Flite is on low gain. Generally for normal flying mode.

Position 3 = Smooth Flite is on high gain. Generally for low speed flying or landing approaches.

First Smooth Flite Assisted Flight

We have mentioned earlier that we recommend flying Smooth Flite on rudder first so you can familiarise the way Smooth Flite feels. You may find that rudder is all that is needed to give you an excellent flying model.

After flying rudder you may want to try activating Smooth Flite on Aileron and Elevator. A general flying characteristic of flying gyro assisted is that the controls will feel like they have a lot of exponential applied. This is quite normal. The feeling will generally increase with higher gain and decrease with lower gain.

Smooth Flite Advanced Stabilisation Features

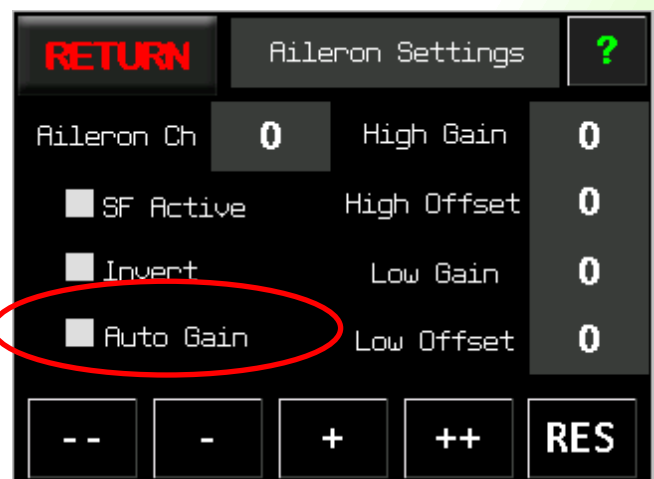
Smooth Flite is much more than just a Gyro. It offers several advanced proprietary features of “Automatic Gain Control” (AGC), “Variable Gain Control” (VGC), “Aerobatic Mode” and “Proportional Modes” to assist with tuning your model and Smooth Flite experience. We will now discuss these Advanced Features.

Smooth Flite Automatic Gain Control (AGC)

One of the symptoms of flying with higher gain on the gyro is that the model may start to oscillate at higher gain settings. At Advanced Radio we employed information gathered from several of the Smooth Flite sensors and have developed our proprietary Automatic Gain Control (AGC) algorithm to correct this situation.

If activated, the Smooth Flite Automatic Gain Control is constantly monitoring the flying characteristic of the model and applying gain up to the level you have chosen to suit the flying characteristic of the model. No other speed sensing module is required.

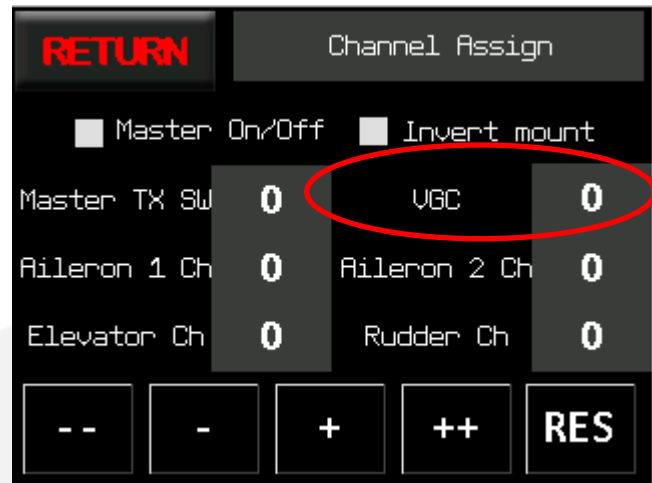
Smooth Flite AGC can be individually applied to Ailerons, Elevator and Rudder and is accessed from the Aileron, Elevator and Rudder control pages. The default factory setting is ON for all surfaces.



Advanced Stabilisation Features

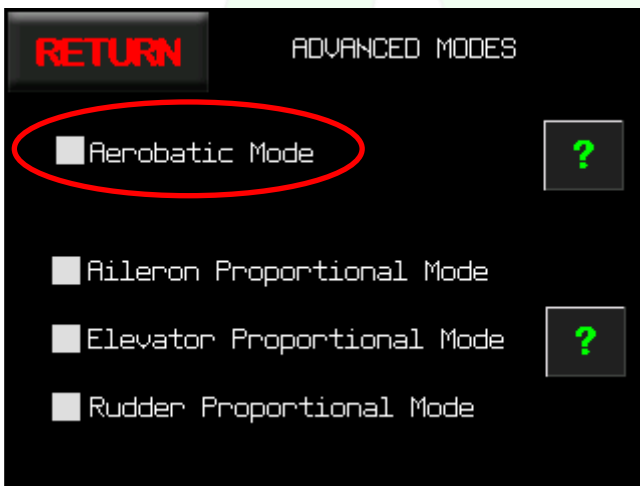
Variable Gain Control (VGC)

In addition to setting high speed and low speed gain settings on the Master Switch, Smooth Flite offers an optional additional Variable Gain channel which can be assigned to say, a rotary dial, a switch or an advanced mix on the transmitter. This might be useful if you disable AGC and require the ability to manually boost gain levels to really high settings for say, hovering etc. VGC allows you to extensively increase and decrease the gain level applied to Smooth Flite in real time. The default factory setting for VGC is OFF. To apply VGC use the plus button to set the desired channel to match to transmitter variable control channel.



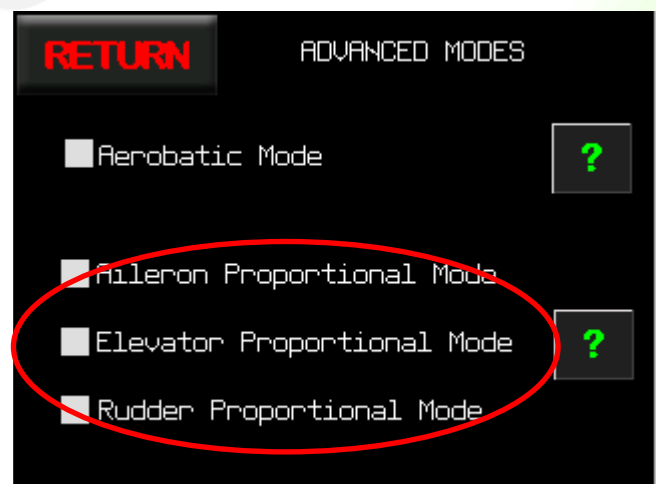
Aerobatic mode

The main design concept of Smooth Flite was to provide a scale like flying characteristic for giant scale models. After a year of test flying our engineers decided that it would be good to offer a product that provides both Scale like flying characteristics for scale modellers as well as the ability to switch to a more aerobatic feel with less assistance when flying. Basically Aerobatic Mode will make the model feel more agile when moving the sticks. Aerobatic mode is a global effect that is applied to all control surfaces. The default factory setting is OFF.



Proportional Mode

Proportional mode provides a mechanism where gyro gain is reduced from 100% of user selected gain to a centre stick position to approximately 50% as the stick moves towards the outer most points. This gives more agility to the model as the stick is moved away from centre. So, at centre position Smooth Flite is 100% assisting with smoothing out the flight characteristic whereas at extreme outer positions Smooth Flite is assisting at approximately 50%. Proportional modes can be applied individually to each control surface.



Smooth Flite Detailed Functions: Channel Assignment

OK, so we have gone through the Smooth Flite setup Wizard and we will now discuss each of the parameters of the Smooth Flite gyro in detail.

Channel Assignment Page

Tapping the “Chan Assign” button from the Smooth Flite menu will take you to the “CHANNEL ASSIGN” page (shown right).

Master On/OFF

Activates/Deactivates Smooth Flite Gyro functionality. Checking this (as pictured) means Gyro functionality is active. De-checking this literally takes the gyro functionality out of circuit. It is like unplugging the Gyro from the model.

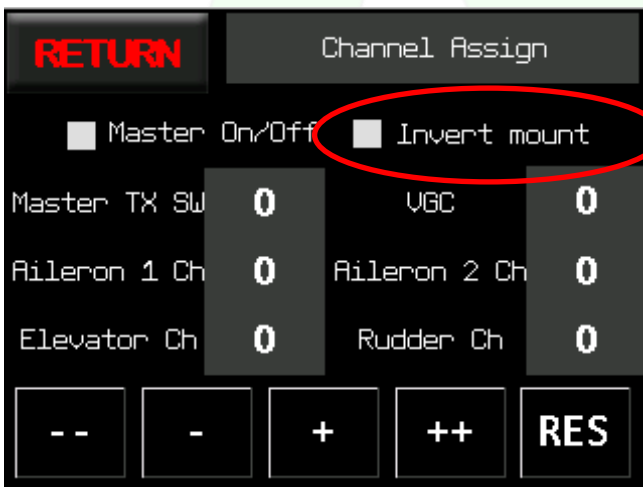
If you ran the Wizard then this function would be active (as shown in the picture)



Inverted Mount

Tells Smooth Flite to calculate gyro positions based on the Smooth Flite Bus being mounted up-right or inverted.

If you ran the Wizard and selected “inverted” then this function would be active (as shown in the picture)



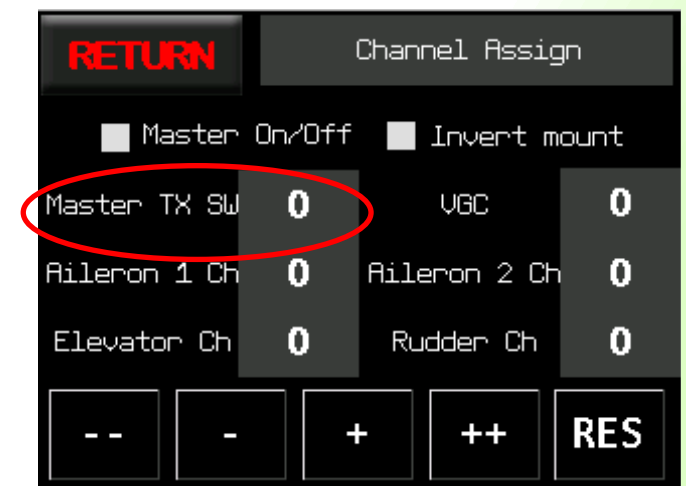
Master TX Switch

This is the channel chosen on the transmitter to turn the gyro ON/OFF, Low and high gain.

If you ran the Wizard then the channel shown here would reflect the channel selected for the 3 position Master Switch on the transmitter.

A value of (0) Zero will deselect this function. Any other value will activate the functionality.

IMPORTANT: Be careful to assign this function to it's own channel and not to a primary flight control TX channel.

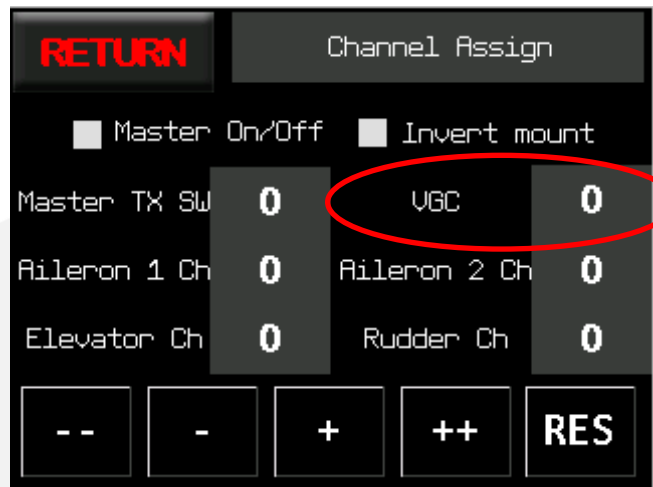


Smooth Flite Detailed Functions: Channel Assignment

Variable Gain Control (VGC)

In addition to setting high speed and low speed gain settings on the Master Switch, Smooth Flite offers an optional additional Variable Gain channel which can be assigned to say, a rotary dial, a switch or an advanced mix on the transmitter. This might be useful if you disable AGC and require the ability to manually boost gain levels to really high settings for say, hovering etc. VGC allows you to extensively increase and decrease the gain level applied to Smooth Flite in real time. A value of (0) Zero will deselect this function. Any other value will activate the functionality.

IMPORTANT: Be careful to assign this function to it's own channel and not to a primary flight control TX channel.

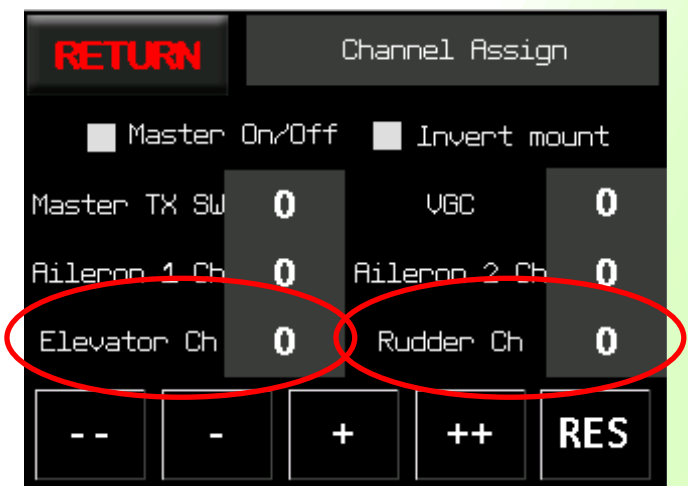


Aileron 1 Chan and Aileron 2 Chan

These are the channels that Smooth Flite applies corrective Aileron control.

They are automatically mapped to match your transmitter during the initial Smooth Flite protocol selection.

We strongly recommend these are not altered away from factory setting on the Transmitter unless you have a thorough understanding of input channel assignment.



Elevator Chan and Rudder Chan

These are the channels that Smooth Flite applies corrective Elevator and Rudder control.

They are automatically mapped to match your transmitter during the initial Smooth Flite protocol selection.

We strongly recommend these are not altered away from factory setting on the transmitter unless you have a thorough understanding of input channel assignment.

Smooth Flite Detailed Functions: Aileron

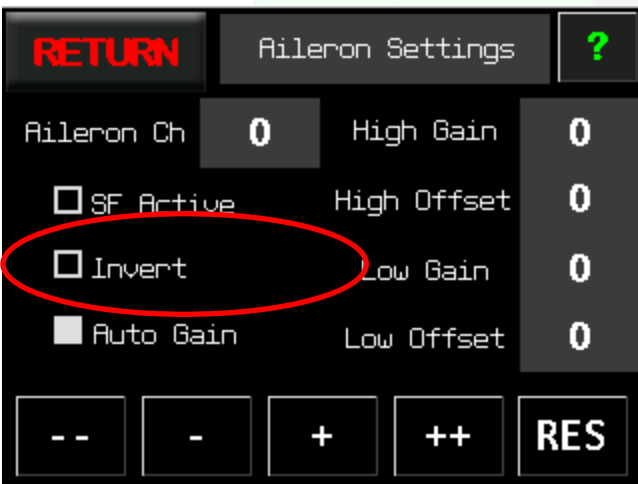
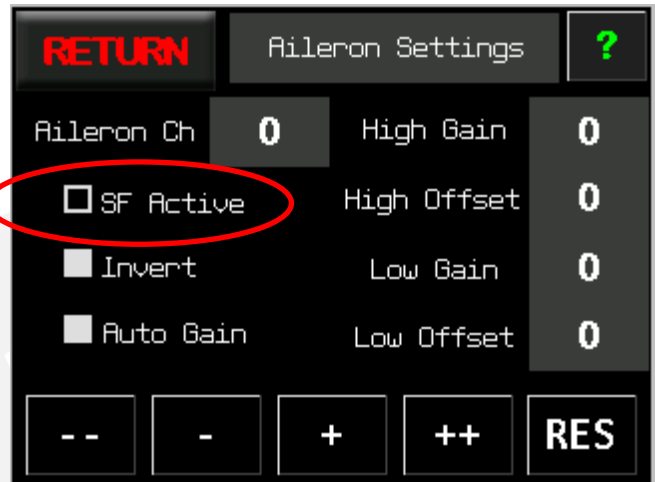
Aileron Channel Page

Tapping the “Aileron” button on the Smooth Flite Menu will take you to the “Aileron Channel” page.

SF Active (on Ailerons)

Checking SF Active from the Aileron Channel page (as shown in the picture to the right) will activate Smooth Flite on Ailerons. De-Checking will deactivate Smooth Flite from Ailerons.

If you ran the Wizard and selected “Ailerons” to be active with Smooth Flite then this function would be active (as shown in the picture)



Invert SF Output (Ailerons)

If you have activated aileron to be controlled by Smooth Flite then rolling the model to the right you should see the right Aileron move downwards and the left Aileron move upwards to counteract the roll to the right. If you see the opposite then you need to “Invert SF Output” as shown in the picture to the right. De-checking has the opposite effect.

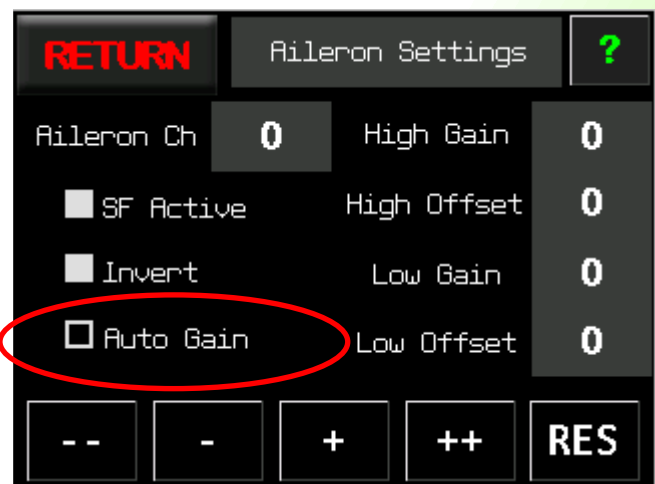
IT IS VERY IMPORTANT that this parameter be set correctly.

Smooth Flite Automatic Gain Control (AGC)

One of the symptoms of flying with too higher gain on the gyro is that the model may start to oscillate at higher gain settings. At Advanced Radio we employed information gathered from several of the Smooth Flite sensors and have developed our proprietary Automatic Gain Control (AGC) algorithm to correct this situation.

If activated, the Smooth Flite Automatic Gain Control is constantly monitoring the flying characteristic of the model and applying gain up to the level you have chosen to suit the flying characteristic of the model. No other speed sensing module is required.

Smooth Flite AGC can be individually applied to Ailerons, Elevator and Rudder and is accessed from the Aileron, Elevator and Rudder control pages. The default factory setting is ON for all surfaces.



Smooth Flite Detailed Functions: Ailerons

Aileron Hi and Low Gain

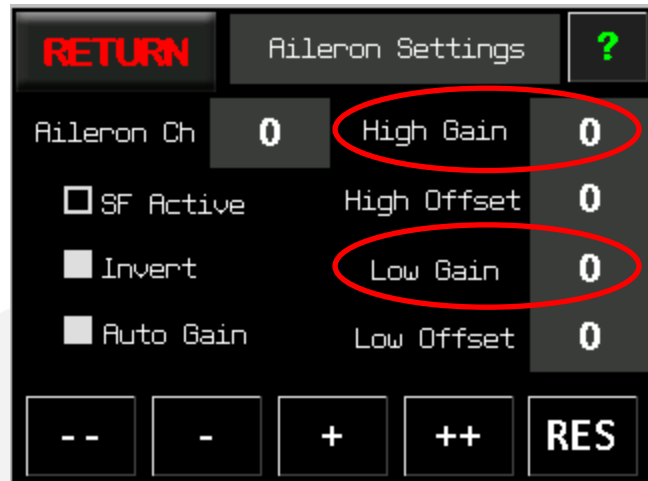
This is the level of Smooth Flite gain applied to the aileron by the Master Gain Switch.

High Gain is used for low speed flying and landing approaches. Low Gain is used for normal flying conditions.

Many hours of flying have been undertaken by our factory pilots to come up with default values which have been to give good results.

Increasing gain levels to high with Auto gain Control switched off may result in control oscillations.

Note: If you use the Auto Gain Control (AGC) feature then increasing these gain values may have little effect as the auto gain feature will control the maximum level of gain applied by Smooth Flite.



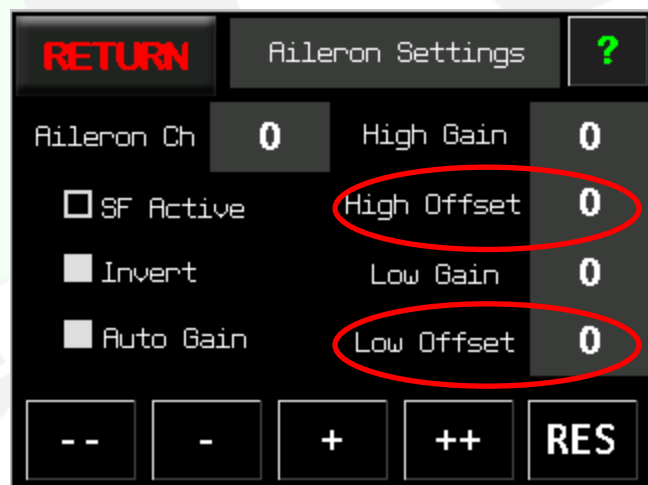
Aileron Hi and Low Offset

Offset is a new feature that allows you to trim and match end points of control surfaces for the 2 selected gain positions of the Smooth Flite.

These values have been pre-set at the factory for best performance with the factory set gain values.

If you alter High and/or Low gain values you may have to adjust the Offset slightly to rematch end point positions.

PLEASE NOTE— The High and Low Offset positions feature is specific to the Gyro Gain function. It is a separate feature to the servo outputs sub trim, travel and limit functions which effect overall output of each channel in gyro and non gyro modes.



Smooth Flite Detailed Functions: Elevator

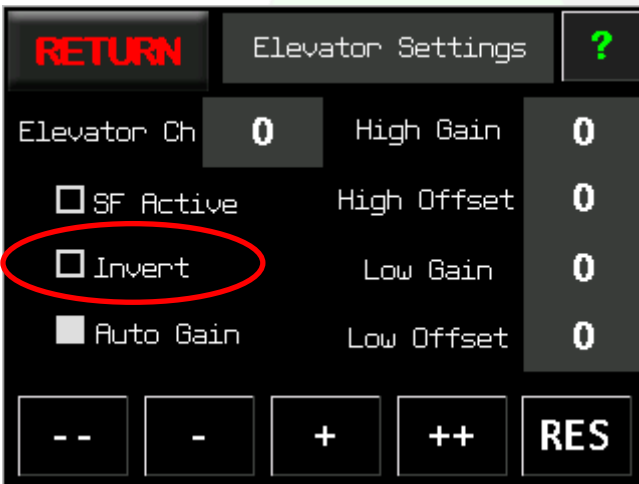
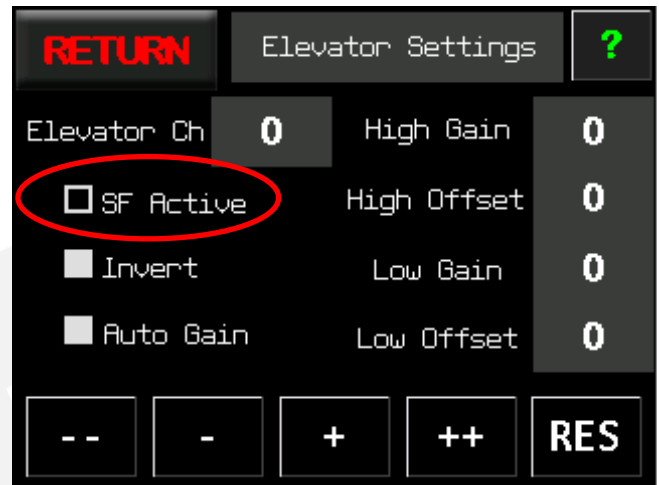
Elevator Channel Page

Tapping the “Elevator” button from the Smooth Flite menu will take you to the “Elevator Channel” page.

SF Active (on Elevator)

Checking SF Active from the Elevator Channel page (as shown in the picture to the right) will activate Smooth Flite on Elevator. De-Checking will deactivate Smooth Flite from Elevator.

If you ran the Wizard and selected “Elevator” to be active with Smooth Flite then this function would be active (as shown in the picture)



Invert SF Output (Elevator)

If you have activated Elevator to be controlled by Smooth Flite then moving the models tail up you should see the Elevator deflect upwards to counteract the movement. If you see the Elevator move downwards then you need to “Invert SF Output” on the Elevator page.

IT IS VERY IMPORTANT that this parameter be set correctly.

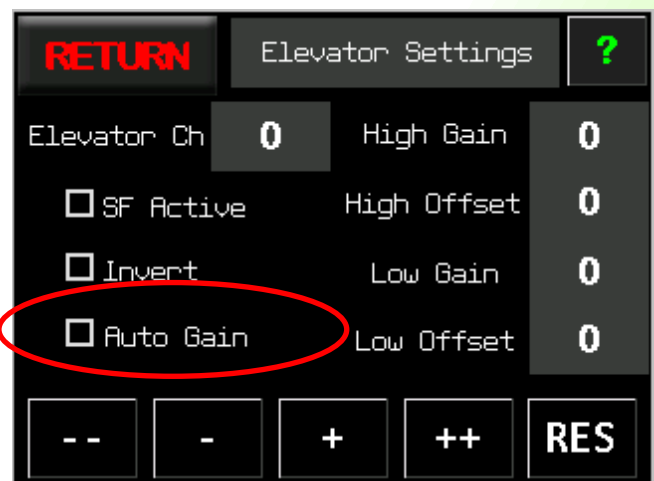
Smooth Flite Elevator Automatic Gain Control (AGC)

One of the symptoms of flying with too higher gain on the gyro is that the model may start to oscillate at higher gain settings. At Advanced Radio we employed information gathered from several of the Smooth Flite sensors and have developed our proprietary Automatic Gain Control (AGC) algorithm to correct this situation.

If activated, the Smooth Flite Automatic Gain Control is constantly monitoring the flying characteristic of the model and applying gain up to the level you have chosen to suit the flying characteristic of the model. No other speed sensing module is required.

Smooth Flite AGC can be individually applied to Ailerons, Elevator and Rudder and is accessed from the Aileron, Elevator and Rudder control pages. The default factory setting is ON for all surfaces.

Testing has found ideal results are achieved with factory gain settings and AGC set to ON.



Smooth Flite Detailed Functions: Elevator

Elevator Hi and Low Gain

This is the level of Smooth Flite gain applied to the Elevator by the Master Gain Switch.

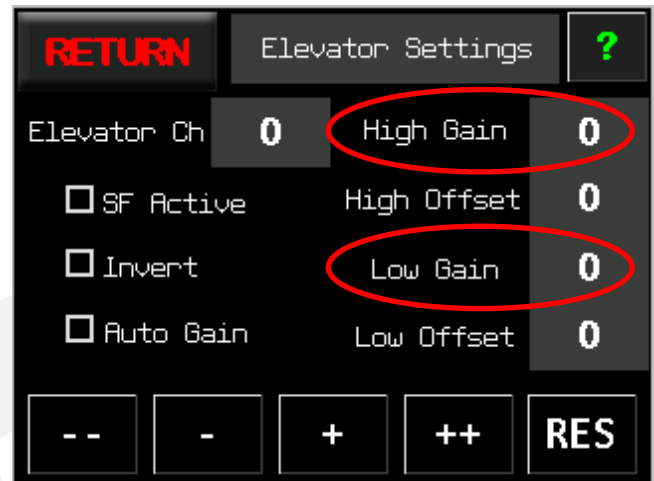
High Gain is used for low speed flying and landing approaches. Low Gain is used for normal flying conditions.

Many hours of flying have been undertaken by our factory pilots to come up with default values that will achieve good results.

Increasing gain levels to high with Auto gain Control switched off may result in control oscillations.

Note: If you use the Auto Gain Control (AGC) feature then increasing these gain values may have little effect as the auto gain feature will control the maximum level of gain applied by Smooth Flite.

Testing has found ideal results are achieved with factory gain settings and AGC set to ON.



Elevator Hi and Low Offset

Offset is a new feature that allows you to trim and match end points of control surfaces for the 2 selected gain positions of the Smooth Flite.

These values have been pre-set at the factory for best performance with the factory set gain values.

If you alter High and/or Low gain values you may have to adjust the Offset slightly to rematch end point positions.

PLEASE NOTE— The High and Low Offset positions feature is specific to the Gyro Gain function. It is a separate feature to the servo outputs sub trim, travel and limit functions which effect overall output of each channel in gyro and non gyro modes.



Smooth Flite Detailed Functions: Rudder

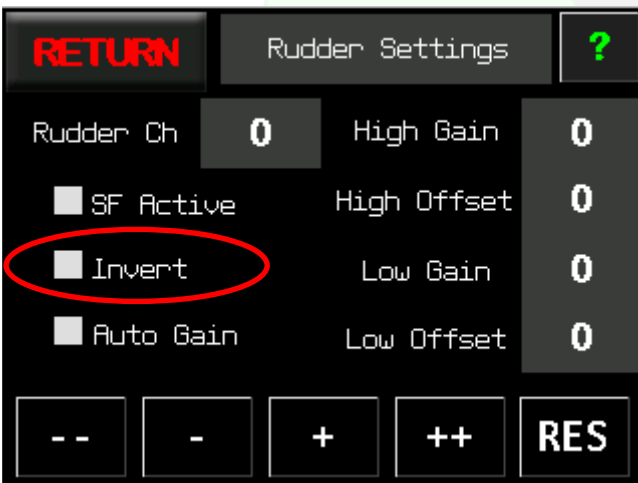
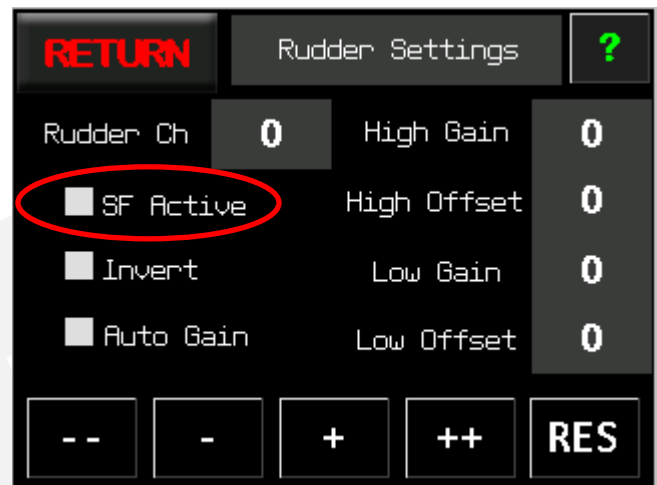
Rudder Channel Page

Tapping the “Rudder” button from the Smooth Flite menu will take you to the “Rudder Channel” page.

SF Active (on Rudder)

Checking SF Active from the Rudder Channel page (as shown in the picture to the right) will activate Smooth Flite on Rudder. De-Checking will deactivate Smooth Flite from Elevator.

If you ran the Wizard and selected “Rudder” to be active with Smooth Flite then this function would be active (as shown in the picture)



Invert SF Output (Rudder)

If you have activated Rudder to be controlled by Smooth Flite then turning the model to the right you should see the rudder deflect to the left. If you see the rudder deflect to the right then you need to “invert SF Rudder Output” This will change the rudder reaction to the opposite direction.

IT IS VERY IMPORTANT that this parameter be set the correctly.

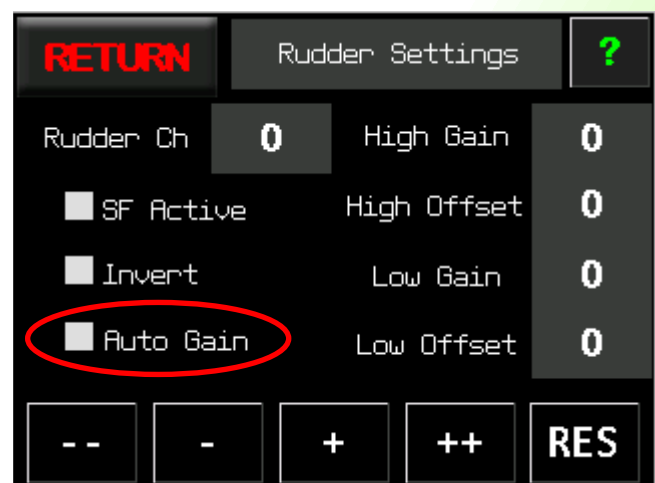
Smooth Flite Rudder Automatic Gain Control (AGC)

One of the symptoms of flying with too higher gain on the gyro is that the model may start to oscillate at higher gain settings. At Advanced Radio we employed information gathered from several of the Smooth Flite sensors and have developed our proprietary Automatic Gain Control (AGC) algorithm to correct this situation.

If activated, the Smooth Flite Automatic Gain Control is constantly monitoring the flying characteristic of the model and applying gain up to the level you have chosen to suit the flying characteristic of the model. No other speed sensing module is required.

Smooth Flite AGC can be individually applied to Ailerons, Elevator and Rudder and is accessed from the Aileron, Elevator and Rudder control pages. The default factory setting is ON for all surfaces.

Testing has found ideal results are achieved with factory gain settings and AGC set to ON.



Smooth Flite Detailed Functions: Rudder

Rudder Hi and Low Gain

This is the level of Smooth Flite gain applied to the Rudder by the Master Gain Switch.

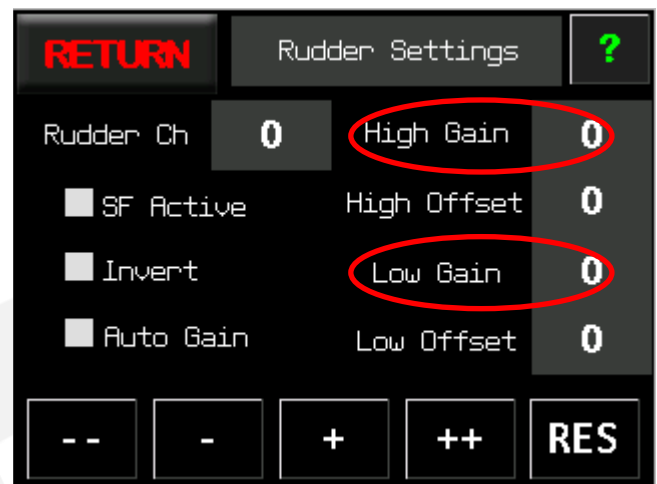
High Gain is used for low speed flying and landing approaches. Low Gain is used for normal flying conditions.

Many hours of flying have been undertaken by our factory pilots to come up with default values which have been to give good results.

Increasing gain levels to high with Auto gain Control switched off may result in control oscillations.

Note: If you use the Auto Gain Control (AGC) feature then increasing these gain values may have little effect as the auto gain feature will control the maximum level of gain applied by Smooth Flite.

Testing has found ideal results are achieved with factory gain settings and AGC set to ON.



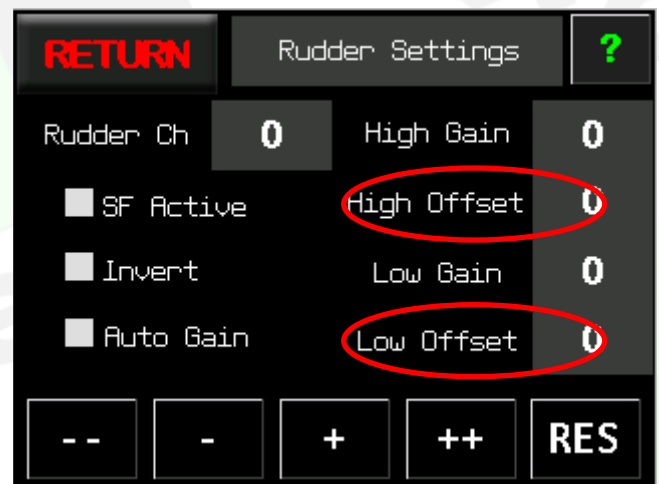
Rudder Hi and Low Offset

Offset is a new feature that allows you to trim and match end points of control surfaces for the 2 selected gain positions of the Smooth Flite.

These values have been pre-set at the factory for best performance with the factory set gain values.

If you alter High and/or Low gain values you may have to adjust the Offset slightly to rematch end point positions.

PLEASE NOTE— The High and Low Offset positions feature is specific to the Gyro Gain function. It is a separate feature to the servo outputs sub trim, travel and limit functions which effect overall output of each channel in gyro and non gyro modes.

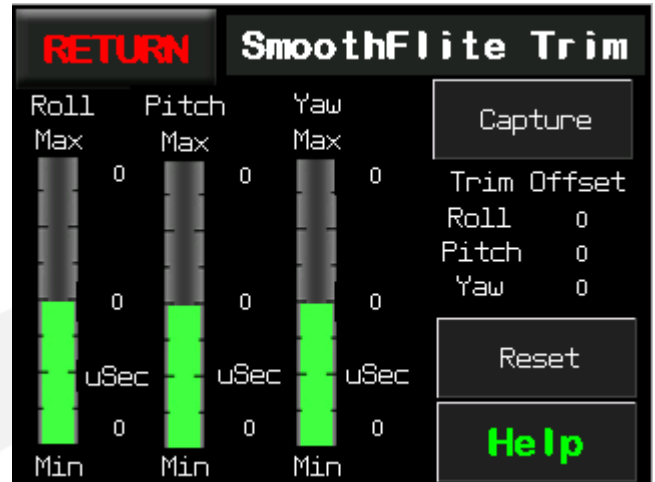


Smooth Flite Trim

Smooth Flite uses maximum, minimum and centre stick positions in many of its calculations. If you have completed the wizard then you would have already captured these values. However you can redo these values if for example control limits have changed in the transmitter.

To Re-Capture values first tap “Reset” then move the sticks to their minimum and maximum positions. After moving sticks to the minimum and maximum positions let the sticks rest at the centre positions and press the “**Capture**” button. Smooth Flite will store the positions.

The process can be repeated as many times as required.



Smooth Flite Advanced Mixing Functions

Crow and Flaperons

Crow and Flaperons (as the names suggests) operates on ailerons by providing offset from the normal aileron position.

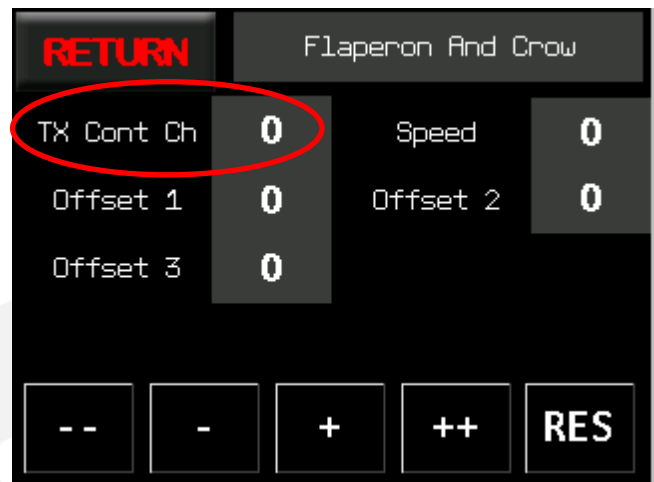
Smooth Flite provides Offset 3 positions which operate from a 3 position switch. You can of course operate this function from a 2 position switch or a slider or mixed from a channel say, flaps. This gives you a very simple but powerful method of setting any combination of Crow and/or flaperons.

TX Cont Ch is the transmitter control channel that triggers the Offset Position. So for a 3 position switch you would have Switch position 1 = Offset 1, Switch Position 2 = Offset and so on. All 20 input channels are available (depending on the number of transmitter channels available) to actuate the mix feature. A TX Control value of 0 (zero) turns the mix feature off.

Hint: For a slow fly-by you might set up flaps to be lowered, use the flap channel to trigger a small amount of Crow applied to Ailerons all from one switch and with full Gyro control maintained on the ailerons.

Speed is an adjustable parameter (0—10) to slow the movement of the aileron to the crow or flaperon position. 0 = fastest 10 = slowest.

Offset 1, 2, 3 are the Offset positions that the aileron will move to when the position is activated by the switch.



Aileron Differential

Differential is used to achieve gyro controlled axial rolls where more up or down aileron is applied to the right or left aileron and is one of the reasons that Smooth Flite uses dual Aileron channels.

Tapping ON applies differential to ailerons. This will also show the differential amount slider. Use the differential slider to adjust the level of differential.

Tapping "Invert" inverts the differential to the opposite aileron.

Moving the slider will increase or decrease the differential effect.

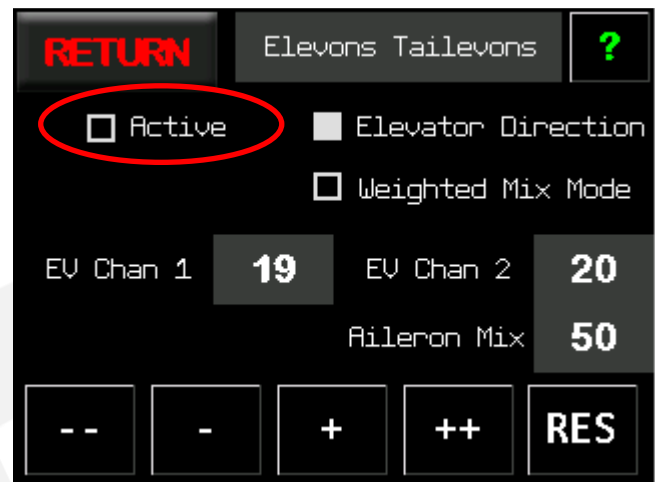


Smooth Flite Advanced Mixing Functions

Elevons (Aileron to Elevator mixing)

Elevons or Tailerons or Ailevators mixing is the process of mixing aileron into elevator.

Smooth Flite provides you with a separate set of Gyro controlled Elevon mix INPUT channels. This unique feature allows you to maintain gyro controlled Elevators (for Canard control), separate gyro controlled Ailerons for use as, say, flaperons or crow on a complexed jet model installation. All while having a separate set of gyro controlled Elevons.



When you Activate the Elevon mix function several things will happen in the Smooth Flite.

- 1) Input channels 19 and 20 will be assigned to the Elevon function. Input Channels 19 and 20 will then ignore signal from the transmitter. This allows you to then assign as many servo outputs as required from channels 19 and 20 for left and right Elevons.
- 2) Weighted Mix mode will be selected by default.
- 3) Aileron Mix will default to 50%.

Weighted Mix Mode. Smooth Flite has 2 Elevon modes. Weighted mix mode where the percentage of Aileron to Elevator mix will always sum to 100% of combine Elevator and Aileron throws. The balance of Aileron to Elevator is set with the Aileron mix parameter. With an Aileron Mix value of 50%, Weighted mix mode is good for axial rolls (depending on model type). In Weighted Mix Mode Elevator and Aileron movement will be weighted to the percentage set by the Aileron Mix value

EXAMPLE 1: Aileron Mix of 50 will yield Elevons with 50% Elevator and 50% of Aileron throws.

EXAMPLE 2: Aileron Mix of 30 will yield Elevons with 70% Elevator and 30% of Aileron throws.

Non Weighted Mix Mode. If you deselect Weighted Mix mode then the mix will be non weighted. In this mode 100% of Elevator throw is maintained and the Aileron Mix percentage is added to the Elevator throw. This allows for very scale like movement of Elevons. It is important to note that it is possible to over drive Elevons in non weighted mode however, you can limit this drive to the desired maximum positions by setting servo limits in the Servo Output (SO) Sub Trim & Servo Match page.

Aileron Mix is the amount of Ailerons mixed into the Elevator signal and sent to the Elevon processor.

Elevator Direction will reverse the direction of the elevator portion in the elevons. This can be used in combination with the Servo Out Sub Trim pages to get correct directional movement in any setup.

[Check the AR product page for setup videos.](#)

Smooth Flite Advanced Mixing Functions

V-Tail (Rudder To Elevator mixing)

V-tail mixing is the process of mixing Rudder into Elevator.

Smooth Flite provides you with a separate set of gyro controlled V-Tail mix INPUT channels. This unique feature allows you to maintain gyro controlled Elevators (for Canard control), separate gyro controlled Rudders for use as, say, gyro controlled steering. All while having a separate set of gyro controlled V-Tail channels.

When you Activate the V-tail mix function several things will happen in the Smooth Flite.

- 1) Input channels 19 and 20 will be assigned to the V-Tail function. Input Channels 19 and 20 will then ignore signal from the transmitter. This allows you to then assign as many servo outputs as required from channels 19 and 20 for left and right V-Tail surfaces.
- 2) Weighted Mix mode will be selected by default.
- 3) Rudder Mix will default to 50%.

Weighted Mix Mode. Smooth Flite has 2 V-Tail modes. Weighted mix mode where the percentage of Rudder to Elevator mix will always sum to 100% of combined Elevator and Rudder throws. The balance of Rudder to Elevator is set with the Rudder mix parameter. In Weighted Mix Mode Elevator and Rudder movement will be weighted to the percentage set by the Rudder Mix value.

EXAMPLE 1: Rudder Mix of 50 will yield Elevons with 50% Elevator and 50% of Rudder throws.

EXAMPLE 2: Rudder Mix of 30 will yield Elevons with 70% Elevator and 30% of Rudder throws.

Non Weighted Mix Mode. If you deselect Weighted Mix mode then the mix will be non weighted. In this mode 100% of Elevator throw is maintained and the Rudder Mix percentage is added to the Elevator throw. It is important to note that it is possible to over drive V-Tail controls in non weighted mode however, you can limit this drive to the desired maximum positions by setting servo limits in the Servo Output (SO) Sub Trim & Servo Match page.

Rudder Mix is the amount of Rudder mixed into the Elevator signal and sent to the V-Tail processor.

Elevator Direction will reverse the direction of the elevator portion in the elevons. This can be used in combination with the Servo Out Sub Trim pages to get correct directional movement in any setup.

[Check the AR product page for setup videos.](#)



Smooth Flite Advanced Mixing Functions

Gyro Assisted Steering Sub Trim

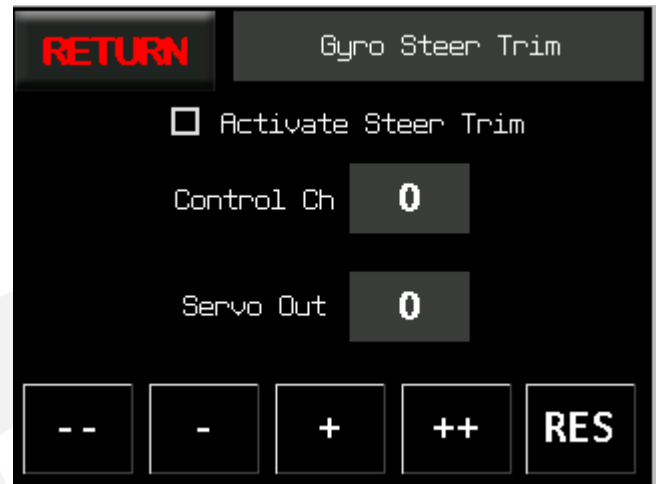
This smooth Flite mix feature allows you to assign gyro assisted rudder to a separate Servo output and then sub trim the servo output from the transmitter.

Activate Steer Trim—turns the mix ON/OFF

Control Channel— is the channel from the transmitter that will provide the steering trim offset.

Servo Output— is the Steering servo output.

Setting values of 0 (zero) in the Control Channel and/or Servo output parameter will also cancel the gyro assisted steering sub trim mix.

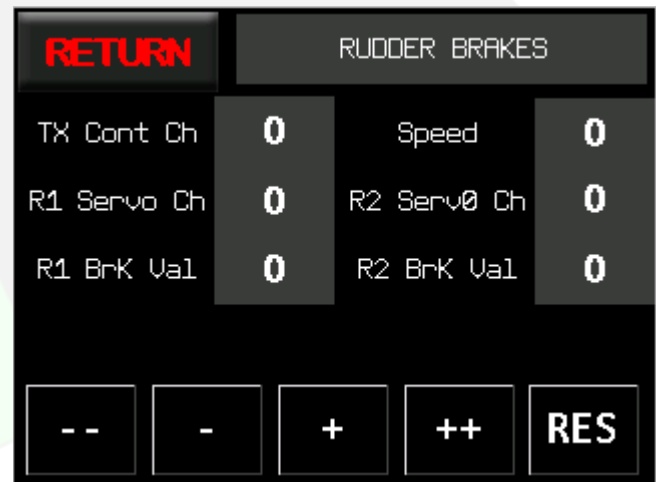


Dual Rudder Brakes

Some models come with dual rudders. Dual rudders can be employed as air brakes for slowing a model.

The Smooth Flite Dual Rudder Brake mix feature allows you to provide an offset to gyro assisted rudders to provide this air brake action.

TX Cont Ch is the transmitter control channel that triggers the Rudder braking Offset Position. All 20 input channels are available (depending on the number of transmitter channels available) to actuate the mix feature. A TX Control value of 0 (zero) turns the mix feature off.



Hint: For a scale presentation you might set up Rudder Brakes to actuate as ground brakes are applied. For air brakes you could use the flap channel. For a combination of both air brakes and ground brakes you would set up a mixed channel in the transmitter that passes signal from ground brakes and flaps (or airbrakes) to the mixed channel and then pass this to the Smooth Flite Rudder Brake Channel. Phew!

Speed is an adjustable parameter (0—10) to slow the movement of the Rudder brake effect. 0 = fastest 10 = slowest.

R1 and R2 Servo Ch—are the 2 Smooth Flite Servo outputs where the braking offset is applied. These would be your dual rudder servo outputs.

R1 and R2 Brk Val are the Offset positions that the Rudders will move to when the position is activated by the TX Control Channel.

Smooth Flite Advanced Mixing Functions

Vectored Thrust Switching

Many modern Sports Jets and some Scale Jets come with single and twin Vectored thrust. For the first time Vectored Thrust pilot this can be a daunting experience so we have provided a mechanism where Gyro assisted vectored Thrust can be switched to ON/OFF remotely from the transmitter. Up to 4 Servo outputs can be switched to cover both twin engine and single engine Vectored Thrust models.

TX Cont Ch is the transmitter control channel that triggers the Vectored Thrust switching position. All 20 input channels are available (depending on the number of transmitter channels available) to actuate the mix feature. A TX Control value of 0 (zero) turns the mix feature off.

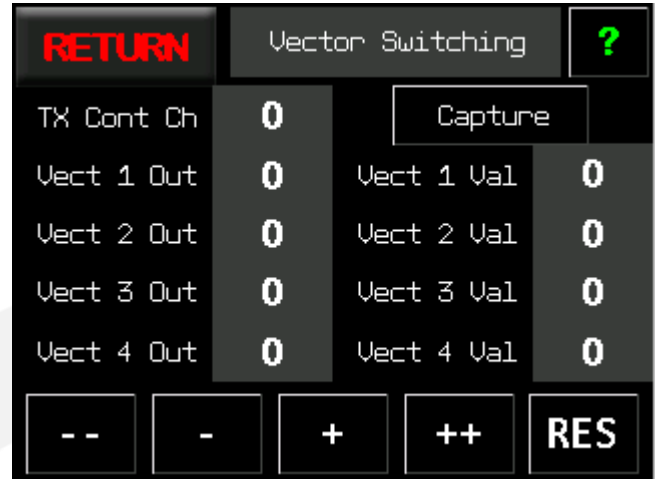
Vect 1,2,3,4 Out Are the (up to) 4 Smooth Flite Servo outputs that will be switched to the Vect 1,2,3,4 position.

Vect 1,2,3,4 Val Are the (up to) 4 Smooth Flite Servo outputs Offset positions that the Servos will move to when Vectored Thrust is switched off.

Capture will capture and assign the current servo position for the (up to 4) Servo output channels.

Hint: To set up Vectored Thrust switching.

- 1) **Assign the TX Control Channel from the transmitter.**
- 2) **Assign the Vect 1,2,3,4 Servo outputs. For a single engine use 1 and 2. For a twin engine you would use all 4 servo outputs.**
- 3) **Release the transmitter stick so the thrust tubes are at the neutral position and then press the "CAPTURE" button. This will capture and assign the current Servo Output position to the each corresponding Vect 1,2,3,4, Value.**
- 4) **Test the function by switching the assigned transmitter switch. With the switch in one position all Vectored Thrust tubes should move. Switching to the opposite position all vectored. Thrust tube should move to the captured position.**



Smooth Flite Setup Hints

Gyro controlled Rudder and Ground steering

One of the excellent features of Smooth Flite RRS is having unlimited Input to Output routing capabilities as well as sophisticated trimming capabilities. For the best Smooth Flite assisted outcome the following should be performed using Smooth Flite trim functions.

In this Hint we will talk about how to apply Gyro to ground steering as well as rudder.

We will use conventions as a brief Explanation and

[The steps ▶ to get to the ▶ pages to achieve the outcome]

Method.

On the TX, assign a single channel to rudder. The factory setup will automatically do this when you set the protocol to match your TX type.

[Main Menu ▶ System ▶ Receiver Protocol]

Route the TX rudder channel to 2 Smooth Flite servo outputs. One output will be for rudder the second output will be for steering.

[main menu ▶ I/O Routing]

Sub trim the rudder output to get a centred rudder.

[Main Menu ▶ Monitor ▶ Tap the input channel indicator assigned to rudder ▶ Tap the “Assigned To Smart Bus Output” for rudder. You will be in the Sub Trim page for the assigned Rudder where you can perform Sub Trim]

Reverse the servo if necessary and sub trim the steering output to get centred steering. Also adjust endpoints in or out as required. This can and should be performed in the Sub trim pages of the Smooth Flite

[Main Menu ▶ Monitor ▶ Tap the input channel indicator assigned to Rudder ▶ Tap the “Assigned To Smart Bus Output” for steering. You will be in the Sub Trim page for the assigned steering where you can perform servo revers, Sub Trim and end point adjustments]

Run the Smooth Flite Gyro Wizard **[Smooth Flite Gyro setup menu page]** assign Smooth Flite assisted control to Rudder. Because the steering output is assigned to the same input channel as rudder the steering will automatically be gyro assisted for ground steering.

Outcome

You will have Gyro assisted ground steering for take-off and landings.

You can also set up a transmitter channel as the sub trim control for Gyro assisted steering. See the section on “Gyro Assisted steering”

Smooth Flite Setup Hints

Setting up Flaps with a single TX channel

In this Hint we will talk about how to apply a single input channel to control flaps.

We will use conventions of a brief Explanation and

[\[The steps ▶ to get to the ▶ pages to achieve the outcome\]](#)

Method.

On the TX, assign a single channel to flaps.

Route the TX flap input channel to 2 Smooth Flite servo outputs. One output will be for the left flap and the other for the right flap.

[\[Main menu ▶ I/O Routing\]](#)

HINT: If you are using 4 servos for flaps then simply assign 4 servo outputs.

Connect one flap servo (**left or right does not matter. This will be the primary flap and we will match all other flap outputs to this primary flap via the Smooth Flite system**). Set the flap positions on the TX to flaps off, half and full as required.

HINT: We generally set flaps to half initially so as to not over-drive the servo.

Sub Trim the flap closed, half and full positions for the primary flap [\[Main Menu ▶ Monitor ▶ Tap the input channel indicator assigned to flaps ▶ Tap the “Assigned To Smart Bus Output” for this particular physical flap. You will be in the Sub Trim page for the assigned Rudder where you can perform Sub Trim, Reverse and Endpoint matching\]](#)

Hint: Do the above process starting with the TX Flap switch (or Dial) is in the half position so as to not overdrive the servo.

Reverse (if necessary), sub trim and adjust endpoints so the primary flap operates to your requirements.

Once you are happy with the primary flap operation then connect the second flap and perform the same process to match the movement of the secondary flap. You can also use our proprietary 15 point matching on the secondary flap to precisely match it to the primary flap. [\[Main Menu ▶ Monitor ▶ Tap the input channel indicator assigned to flaps ▶ Tap the “Assigned To Smart Bus Output” for this particular physical flap. ▶ Tap “15 point Servo Match”\]](#)

Hint: We set up our primary flap on a 3 position switch and for the setup of the second flap we temporarily transfer to a slider so we can slowly bring the flap down and adjust with 15 point matching to get super matched flaps. After the matching is complete we reassign the flaps to a 3 stage switch.

For additional flap servos just repeat the process above.

Outcome

You will have a single TX channel controlling a complexed array of flap servos.

Also check the product page for how to videos.

Smooth Flite Setup Hints

Elevons, Thrust Vectoring and Canards setup

One of the excellent features of Smooth Flite RRS is having unlimited Input to Output routing capabilities as well as sophisticated trimming capabilities. For the best Smooth Flite assisted outcome the following should be performed using Smooth Flite trim functions.

In this Hint we will talk about how to setup Elevons, Thrust vectoring and Canards. We will describe the exact setup used for our SU37 with Elevons, Thrust Vectoring, Dual Rudders and Canard.

We will use conventions of a brief Explanation and

[\[The steps ▶ to get to the ▶ pages to achieve the outcome\]](#)

Method.

On the TX, assign a single channel to elevator, a single channel to Rudder and dual channels to ailerons. The factory setup will automatically do this when you set the protocol to match your TX type.

[\[Main Menu ▶ System ▶ Protocol type \]](#)

Route the TX elevator channel to 2 Smooth Flite servo outputs. These will be eventually used for Canard control.

[\[Main Menu ▶ I/O Routing\]](#)

Route the TX left aileron channel to 2 Smooth Flite servo outputs and the TX right aileron channel to 2 servo outputs. These will be used of Elevon and thrust vectoring.

[\[Main Menu ▶ I/O Routing\]](#)

Route the TX Rudder channel to 4 Smooth Flite servo outputs. These will be used for dual rudder and rudder thrust vectoring.

[\[Main Menu ▶ I/O Routing\]](#)

Run The Smooth Flite Gyro Wizard assign Smooth Flite assisted control to Rudder, ailerons and elevator.

[\[Main Menu ▶ Smooth Flite ▶ Wizard\]](#)

Select Elevon mixing. Connect the elevon servos to outputs assigned to channels 19 and 20. Slowly move the aileron and elevator sticks being careful not to overdrive the servos. From the Smooth Flite, adjust the servo output Limit positions to the desired maximum movement positions.

[\[Main Menu ▶ Smooth Flite ▶ Advanced ▶ Tail Type ▶ Elevons\].](#)

From the Smooth Flite Elevon page, if necessary reverse the Elevator direction and adjust the amount of elevator to aileron mix.

Smooth Flite Setup Hints

Elevons, Thrust Vectoring and Canards setup CONTINUED

If the ailerons are moving the wrong way go to the Smooth Flite sub trim page for the ailerons and reverse their movement.

[Main Menu ▶ Monitor ▶ tap the input channel indicator assigned to the Aileron ▶ Tap the “Assigned To Smart Bus Output” for Aileron page. You will be in the Sub Trim page for the assigned Aileron where you can reverse the servo]. You may need to do this for both Aileron servo outputs.

Connect the thrust vectoring up down servos and if necessary reverse, sub trim and adjust endpoints as necessary. The thrust vectoring servos should follow the movements of the elevons in up down and movement.

Connect on Rudder servo. This will be our primary rudder. From the Smooth Flite Sub Trim Page, Sub Trim, Revers and endpoint adjust the primary rudder servo.

Connect the second Rudder servo and repeat the process.

Connect the Rudder Thrust vectoring servos and sub trim as necessary. The Thrust vectoring should now follow the elevon and rudder movements.

Finally connect the CANARD servos and as above Sub Trim, Reverse as necessary.

Hint: With Canards and thrust vectoring you can drastically reduce or increase the Travel (End Points) in the Smooth Flite Sub Trim pages. You can also Limit the travel to a maximum and minimum travel positions. This functionality is available for all 26 Smooth Flite servo outputs. For first flights you might want to reduce Thrust vectoring and Canards a little. You will soon have a feel for how the model reacts to these controls and can adjust them to you liking. It is all possible to perform these functions in the Smooth Flite system and this is why it is much more than a simple power expander.

Outcome

You will have set up one of the most complex RC controlled model available today with Elevons, Thrust Vectoring, Dual Rudders and Canards all with Smooth Flite assisted stabilisation.

Hint: You can add a 5th servo output for Smooth Flite assisted ground steering. Set up smooth Flite gyro assisted steering trim.

Also check the product page for how to videos.

Sequencer Menus

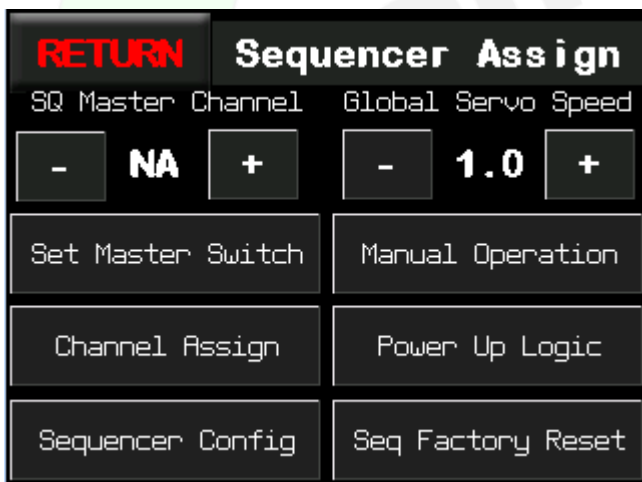
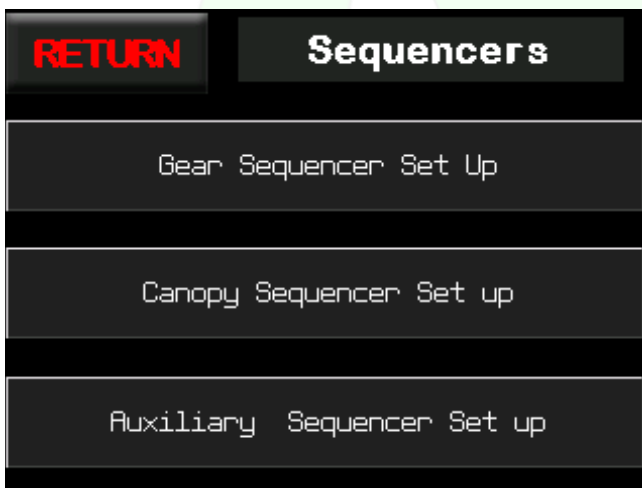
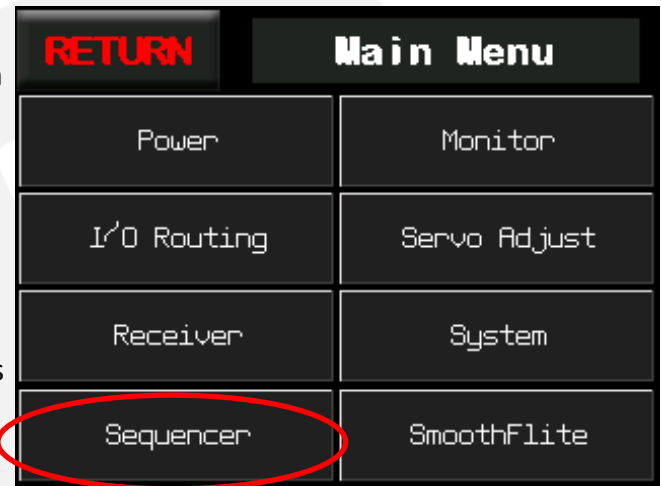
The experienced modeller looking for true scale understands that it can require up to 3 sequencers to get all the scale detail to operate. The team at Advanced Radio fly scale models and understand this so we decided to include 3 sequencers for your next scale project.

Sequencer 1 is a 9 channel gear sequencer with 3 channels dedicated to gear actuators, 3 channels dedicated to inner doors and 3 channels dedicated to outer doors.

Sequencer 2 is a 4 channel Canopy sequencer with 2 channels dedicated to canopy actuation and 2 channels for locking mechanisms.

Sequencer 3 is a 4 channel Auxiliary sequencer that can be used to sequence bomb drops or speed brake and chute actuation etc.

Ultimately it is up to the user on how the sequencers are allotted and used however to make the user experience easier we have created dedicated sequencing functions for easy operation. This will become clearer as you start to use the sequencers.



To access any of the sequencers press the appropriate sequencer button. You will be shown the “Sequencer Assign” page for the chosen sequencer.

SQ Master Channel—Shows the master channel value chosen to control the chosen sequencer. “NA” = not assigned.

Set Master Switch — Takes you to the Sequencer Master Switch Wizard.

Channel Assign— Takes you to the output channel assignment page.

Sequencer Config – Takes you to the Sequencer setup page.

Manual Operation – Takes you to the Manual Operation page where you can manually operate gear, inner outer doors etc.

Power Up Logic— Takes you to the page where you set up how you want the sequencer to react when power is applied to the Smart Bus.

Seq Factory Reset – Used to reset the sequencer back to default factory settings.

Sequencer Setup

Getting Started With Sequencer Set up - Lets start with setting up the gear sequencer.

Set Master Switch—All 3 sequencers require a master switch to trigger a sequence. You will need to set up a switch on the transmitter and assign a channel to the switch. Once you have assigned the switch on the transmitter tap **[Set Master Switch]** button. This will take you to the “SQ Master Switch” page (shown to the right).

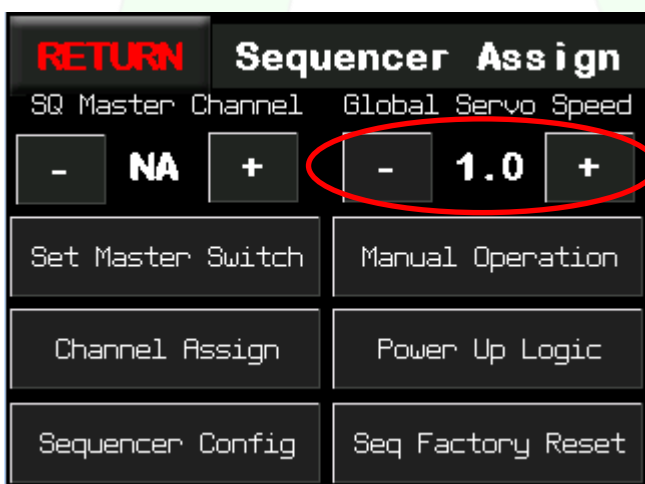
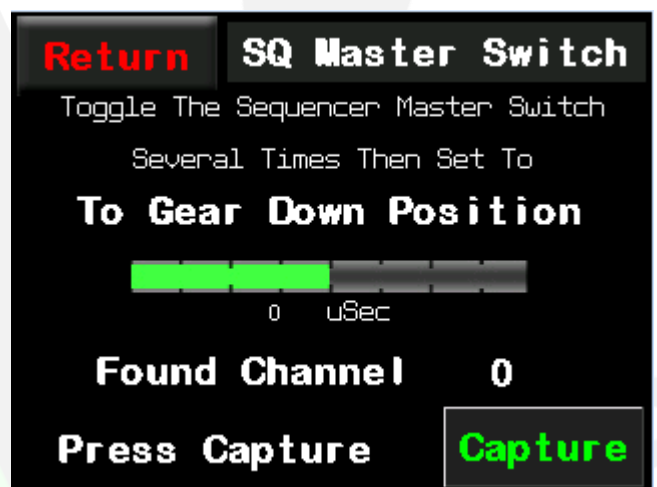
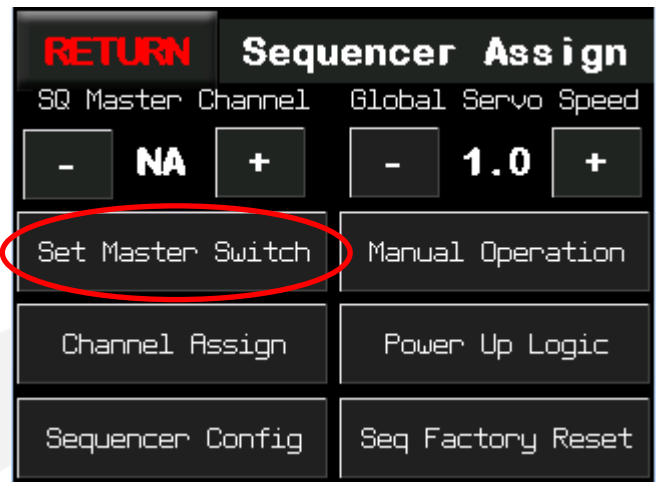
Toggle the Master Switch on the transmitter several times until the channel number is displayed on the Smart Screen.

Then set the switch to the gear **DOWN** position.

Once this has been done tap the **[Capture]** button at the bottom right of the screen.

The Smooth Flite unit will store the Master channel and gear down position and return you to the “Sequencer Assign” page. The letters “NA” will be replaced with the chosen Master Input channel.

If you have captured the wrong channel simply repeat the procedure above. You can repeat this process as many times as needed.



Global Servo Speed— When setting up a scale model sometimes we need to reduce the speed of linear actuators or servos to achieve a real scale effect. The Smooth Flite sequencer offers an optional speed feature on every output in all 3 of it's sequencers.

It is a global feature that allows you to slow the speed of selected actuator or servos. The speed can be adjusted between 0.5 - 5 seconds.

Tapping the **[+]** or **[-]** buttons will increase or decrease the global servo speed. We will show you how to apply a global speed to an output channel in the next section. For now just know that you have this feature available to you.

Please note: Global Servo Speed is designed for use with servos and linear actuation devices. Slowing an air valve will not have any effect unless the air valve is a linear design.

Sequencer Channel Assignment

Channel Assign—For the sequencer to work we also need to set up servo output channels. These output channels will be the physical outputs on the Smooth Flite unit.

Tap the “Channel Assign” button to take you to the “Seq Output Assign” page (2nd image to the right).

The gear sequencer gives you up to 9 output channels in 3 rows. The rows are marked as:

Top Row = “GEAR” can be used to control up to 3 gear air valves on up to 3 output channels.

Middle Row = “INNER” to control Inner Doors actuators, air valves etc.

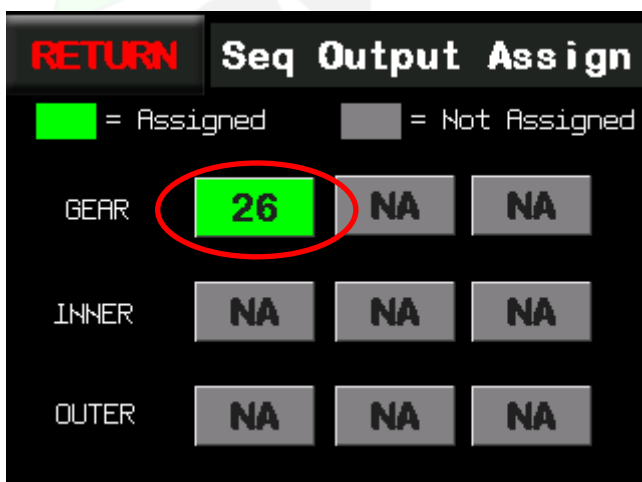
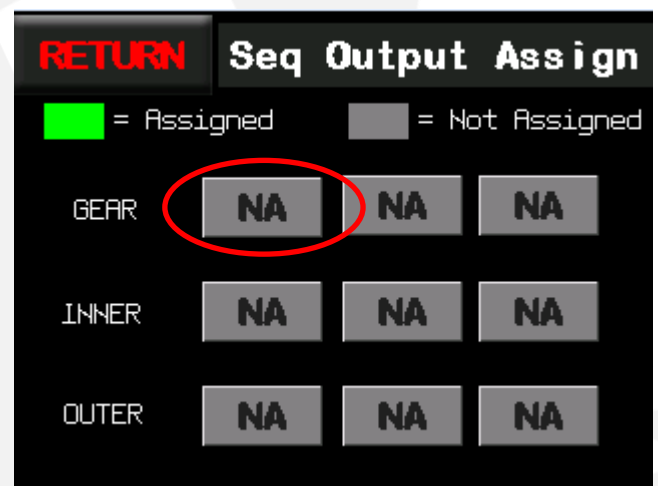
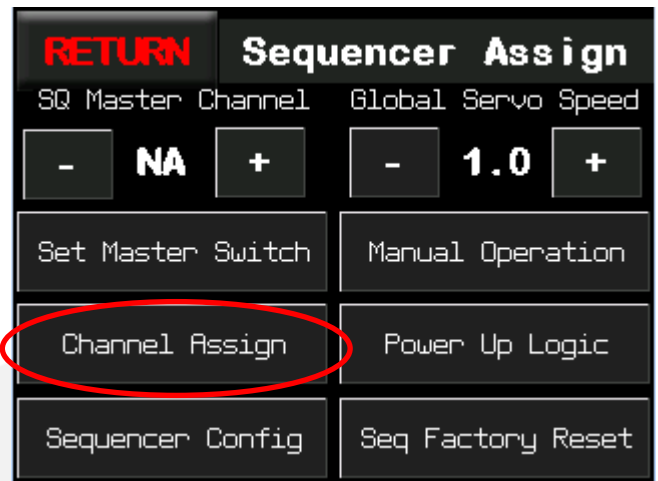
Bottom Row = “OUTER” to control Outer doors air valves etc.

Assigning An Output Channel— Lets assign an output channel to the gear function.

Tap the left most grey button marked [NA] on the top “GEAR” row. This will take you to the “SQ Chan 1 Param” page where you can select any of the Smooth Flite’s available physical output channels.

Smooth Flite will only allow you to select output channels that have not been previously assigned in the Smooth Flite.

Output Channel – Tap the Output Channel [+] or [-] buttons to cycle through the available physical Smooth Flite servo out put channels.



Once you have selected the desired channel tap the **[RETURN]** button to go back to the “Seq Output Assign” page (left).

The Assigned button has now turned **green**.

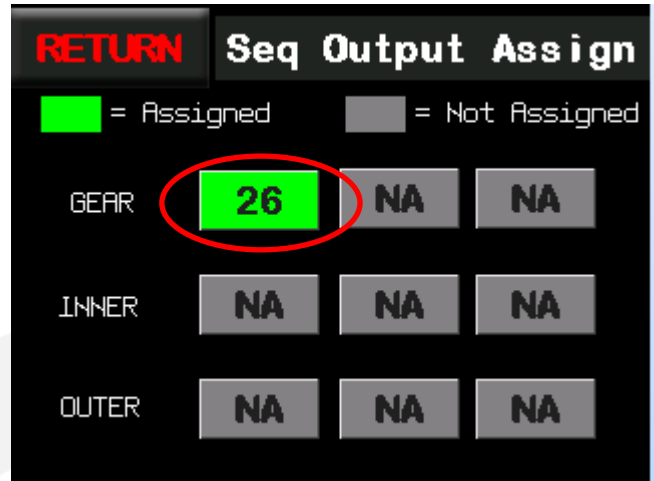
This tells you that Sequencer channel 1 in the Gear row has been assigned to Smooth Flite physical output 26.

Sequencer Output Parameters

Now that we have assigned a physical output channel we can edit the output channel parameters.

Tap the green button marked [26] to go back into the “Seq Output Assign” page.

You will see the Output Channel is assigned to channel 26 and parameters for adjusting the Smooth Flite physical output channel are now available.

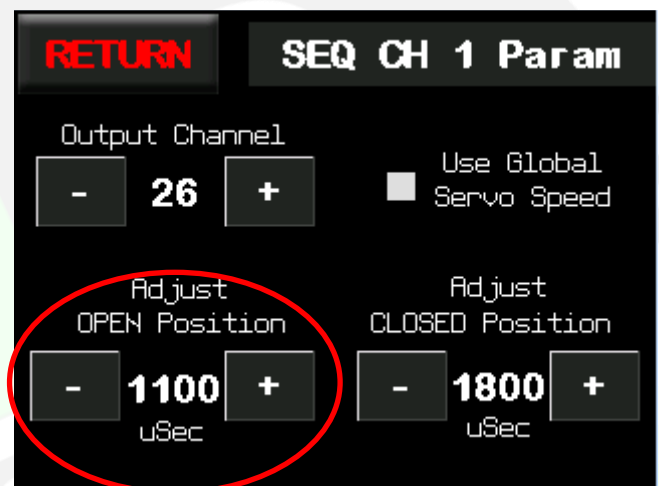


Use Global Servo Speed—tapping the check box will allocate this output channel to use Global Servo Speed to slow the servo or actuator down. The servo speed is set on the “Sequencer Assign” Page.



Adjust OPEN Position— Press and hold [+] or [-] to move the gear to the **Open or Down** position and then finely adjust the position.

Holding a button down will start adjusting in small increments and then step to large increments.



Adjust Closed Position— Press and hold [+] or [-] to move the gear to the **Closed or UP** position and then finely adjust the position.

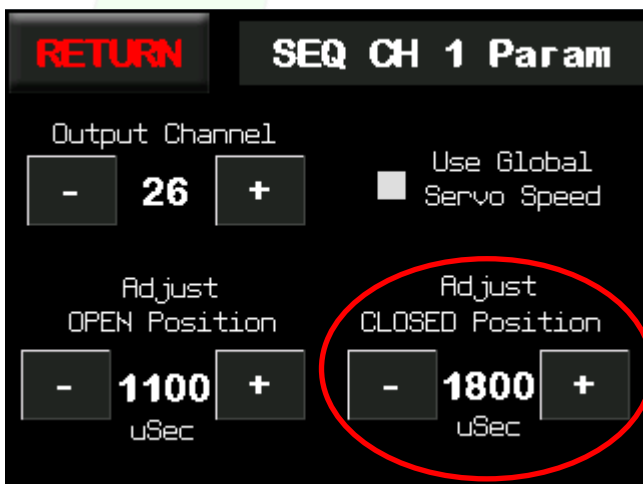
Hint: Holding a button down will begin adjusting in small increments and then step-up to large increments.

It is **IMPORTANT** that you set the **UP/CLOSED** and **DOWN/OPEN** position to match the physical position of the gear and doors. Correct operation

of the sequencer relies on these being set correctly.

HINT: You can reverse a servo operation by simply swapping out OPEN and CLOSED values.

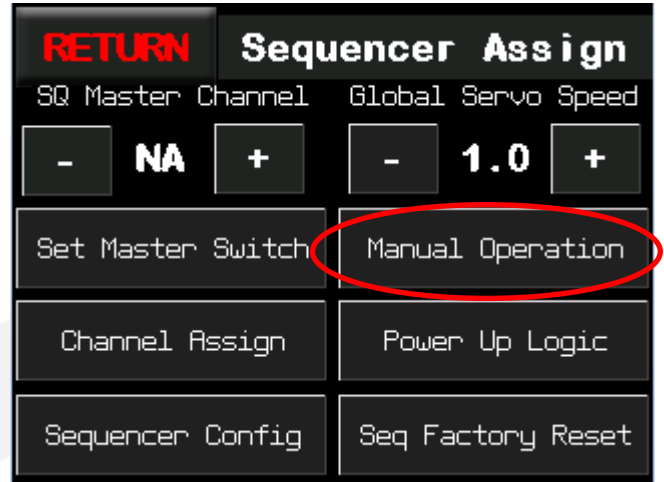
HINT: To step in large increments hold any adjust button down and the servo output will adjust in small increments and then after a few steps will jump to large increments.



Sequencer Manual Operation

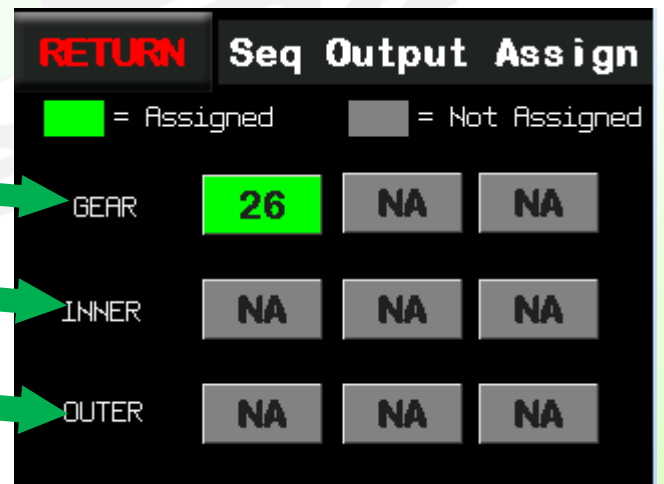
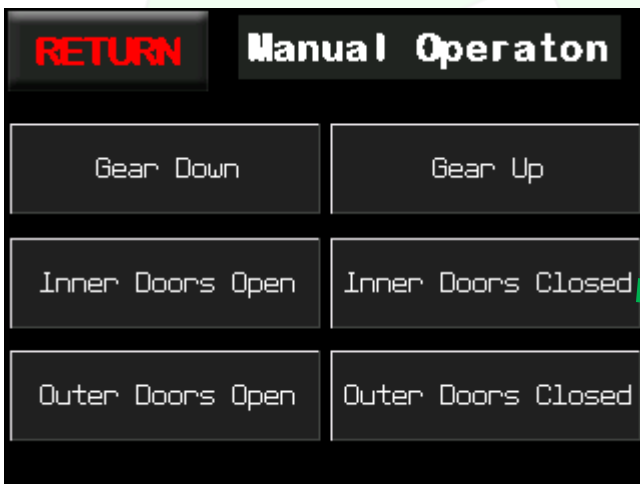
Manual Operation— This is a unique feature of the Smooth Flite sequencer. It gives you the ability to manually cycle Gear, Inner and Outer doors separately. This can be extremely useful during the initial model set up and when assembling the model at the field.

Tapping the **[Manual Operation]** button takes you to the “Manual Operation” Page. Buttons on this page correspond to the sequencer assigned channels.



Gear Down Pressing **[Gear Down]** will cause the **[Gear Down]** button to change from **BLACK** to **GREEN** and the previously assigned Smooth Flite Channel 26 to move to the **Gear Down** position. The Green colour in the Smooth Flite Sequencer corresponds to “**GEAR DOWN**” position. If you find that the gear raises when you press this button then you **WILL** need to reverse the operation in the Smooth Flite Sequencer output channel from the parameters page.

Gear Up Pressing **[Gear UP]** will cause the **[Gear UP]** button to change from **BLACK** to **RED** and Smooth Flite Channel 26 to move to the **Gear UP** position. If you find that the gear lowers when you press this button then you **WILL** need to reverse the operation in the Smooth Flite



Sequencer output channel parameters page.

The 3 rows of buttons correlate to the 3 rows of sequencer channels. Only the channels assigned to the Gear row will operate when you press the Gear Down/Up buttons. Likewise only channels assigned to the “Inner Doors” will operate when you press the “Inner Door” buttons and of course “Outer Doors” will operate when you press the “Outer Door” buttons. This unique feature allows you to set up and cycle gear and doors separately during the set up phase and while assembling your model at the field.

Sequencer Setup

Power Up Logic — Tapping the [Power Up Logic] button will take you to the “Power Up Logic” page.

From this page you can choose how you want the sequencer to react when power is applied to the Smooth Flite unit.

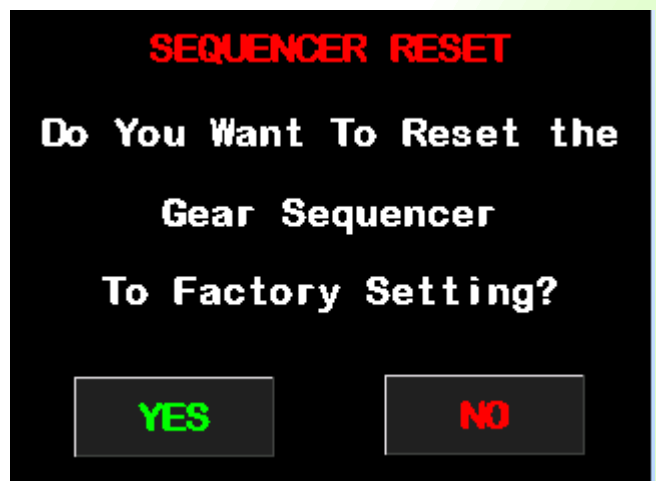
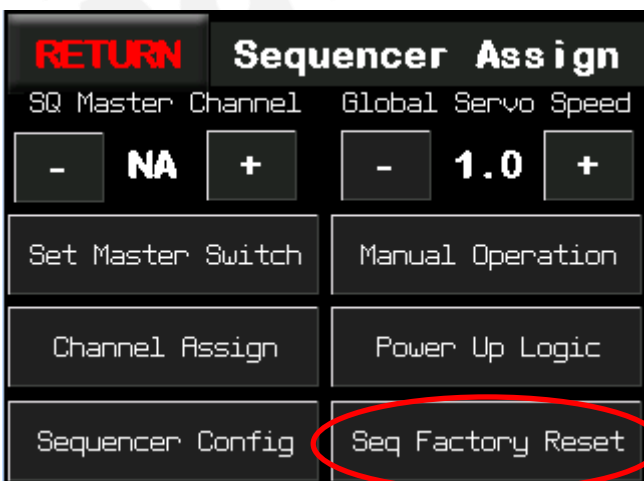
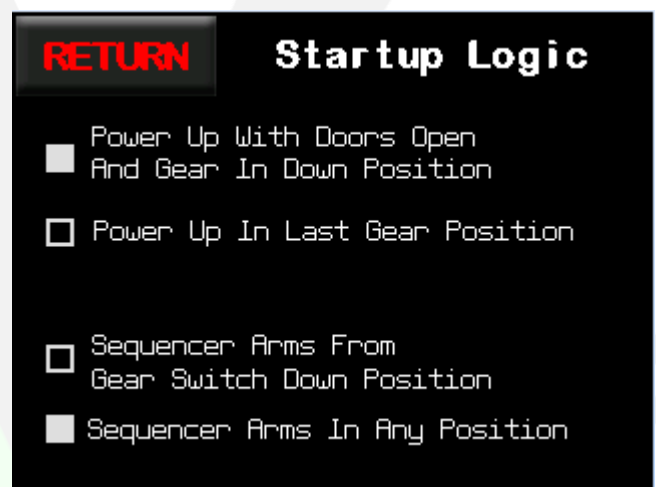
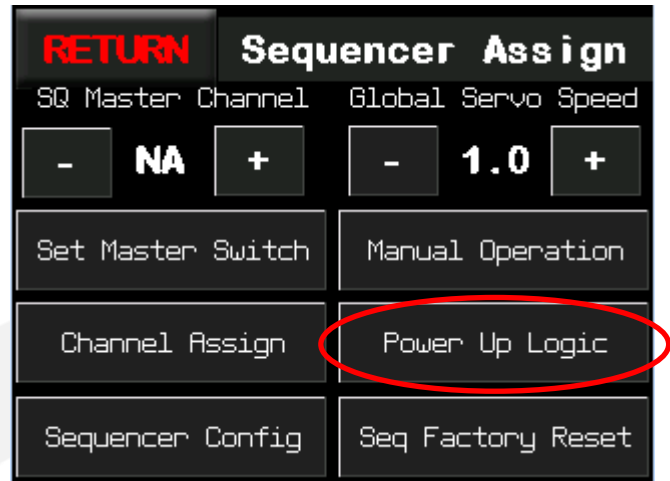
Gear position

- 1) **Power Up With Door Open and Gear in the Down Position.** This setting will cause the doors to open and gear to lower. You will of course need to have previously set up the sequencer with gear and door operation and ascertained that they are operating the correct way.
- 2) **Power Up In Last Position (Factory default).** This is the setting where the gear and doors will move to the last position when power was removed.

Sequencer Switch position

- 1) **Sequencer Arms From Gear Switch Down position (Factory Default).** This means the gear switch must be moved to the down position before the sequencer will arm.
- 2) **Sequencer Arms In Any Position.** If the Master switch is in the gear down position then the sequencer will cycle to the gear down position. If the Master Switch is in the gear up position then the sequencer will cycle gear to the gear up position. Using this setting will override the **Power Up In Last Position Setting.**

Factory Reset— Tapping [Factory reset] will give you option of resetting the currently edited sequencer.



Sequencer Configuration

Sequencer Config — After you have assigned physical Smooth Flite output channels (S01 through S26) to any of the 9 gear sequencer channels you can then configure how the sequencer performs.

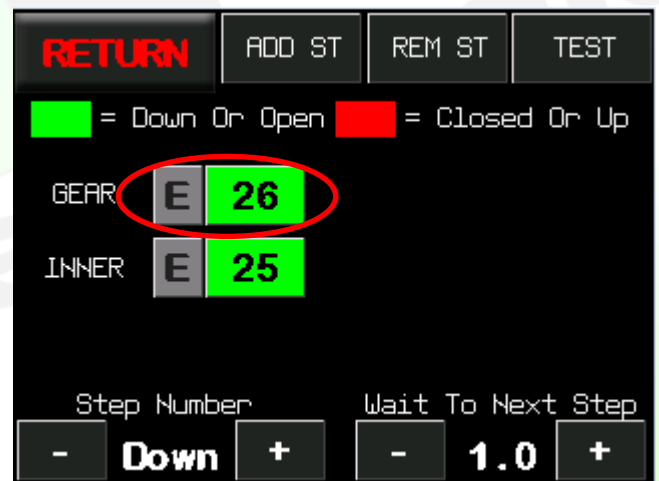
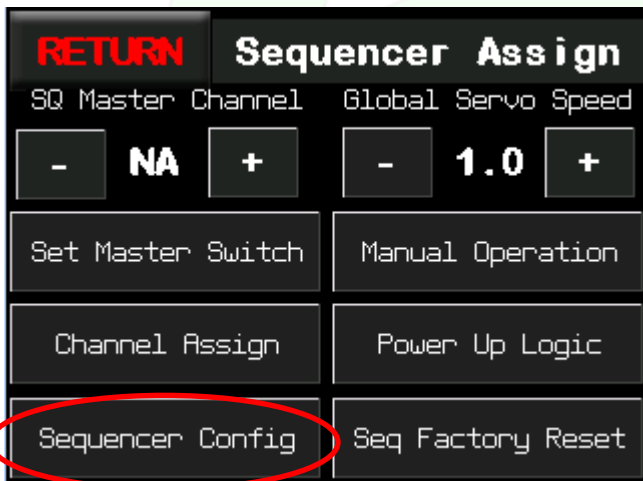
The Quick Start method for setting up a sequencer is as follows:

- 1) Assign a Master sequencer Channel. [Page 52]
- 2) Assign Physical output channels. [Page 53]
- 3) Adjust the parameters of the Smooth Flite physical output channels to set gear and doors in the correct position. [Page 54]
- 4) Set up sequencer steps. [Page 58]
- 5) Test sequencer operation using the Test page. [Page 59]
- 6) Test sequencer operation using the transmitter.

So far we have described points 1—3. From here on we will talk about how to get the best out of the sequencer stepping operation for a gear up sequence and gear down sequence.

For this example we will use a simple setup of 1 landing Gear air valve and one Inner Door air valve. Once you understand this basic operation you can easily expand to multi servo fear doors etc. In the previous pages we have explained how to assign a “landing Gear” channel. Please repeat the same process but this time assign an “Inner Doors” channel. Once you have these two assignments done you will be ready to start sequencing.

From the Sequencer assign page tap **[Sequencer Config]**. You should see the page shown directly below.

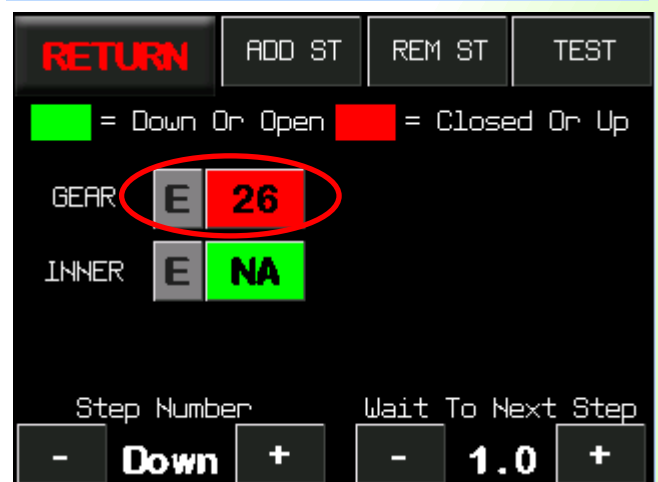


Tap the green button marked with channel **[26]**. You will notice that this button changes to **red or Gear Up state**.

Alternate tapping of the same button will alternate the buttons between **(Gear Up—Red)** and **(Gear Down—Green)** states.

This is how we set the state of the landing gear and doors for each step of the sequence.

(Continued over page)



Sequencer Configuration

Continuing on from the previous page. We will set up a basic sequence of:

Down = Gear Down with Doors Closed. **Step 1** = Gear Down with Doors Open.

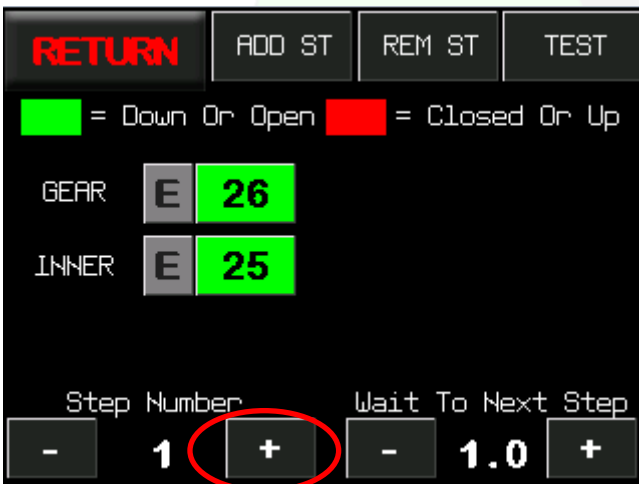
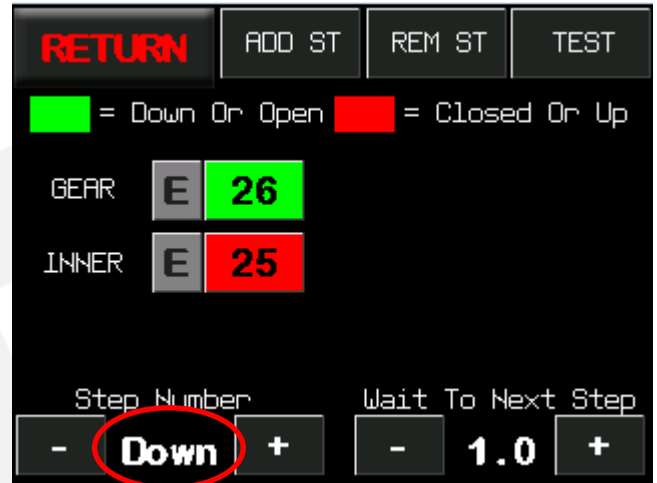
Step 2 = Gear Up with Doors Open. **Up** = Gear Up with Doors Closed.

Lets do it!

Down = Gear Down with Doors Closed.

Set the Gear [Chan 26] to **Green (Down)** and Inner Doors [Chan 25] to **Red (Doors Up)**. See the picture to the right.

Notice the “Step Number” at the bottom left of the screen capture. This is showing we are in the Gear **Down** position.



Now tap the “Step Number” [+] button to move to sequencer step 1.

Step 1 = Gear Down (green) —Doors Open (Green).

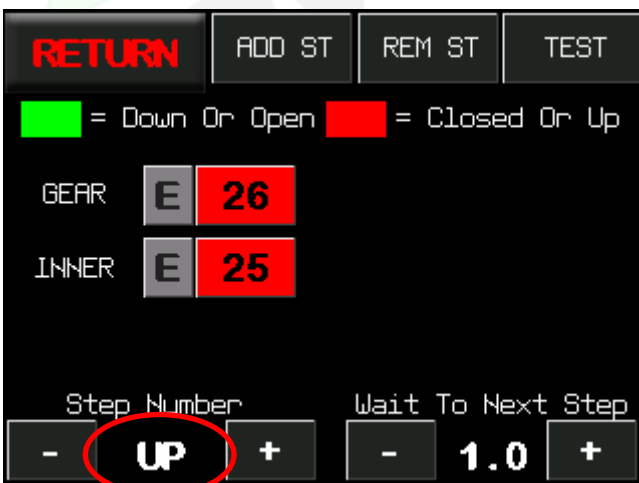
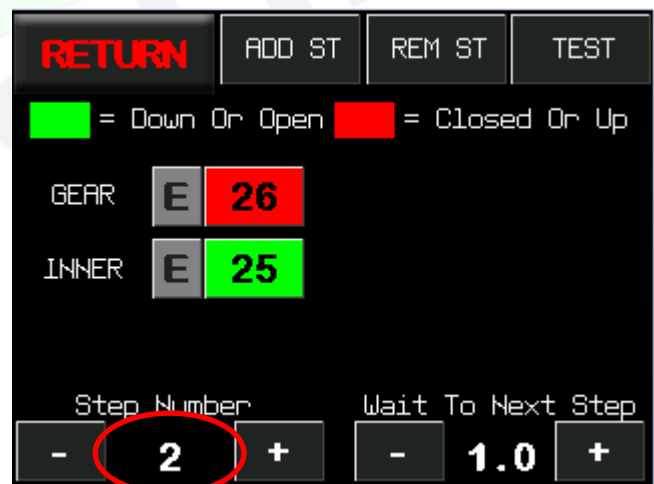
Tap button 25 to toggle the **Doors to the Open [green]** position.

The screen should look like the picture to the left.

Tap the “Step Number” [+] button again to move to sequencer step 2.

Step 2 = Gear Up (Red) with Doors Open (green).

Tap button 26 to toggle the Gear to the Up **[Red]** position.



Tap the “Step Number” [+] button again to move to the UP step.

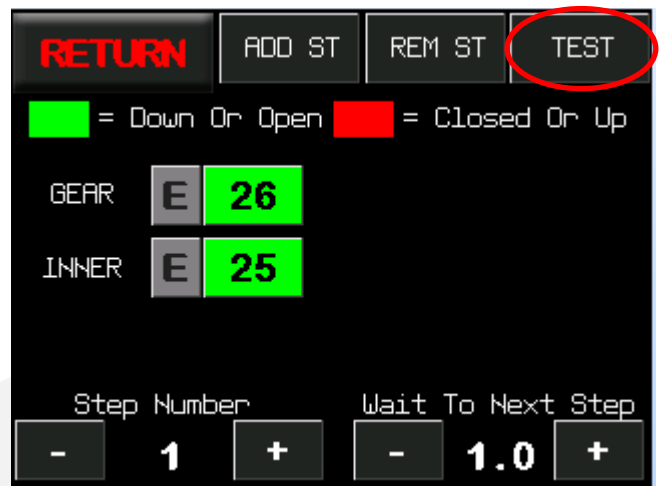
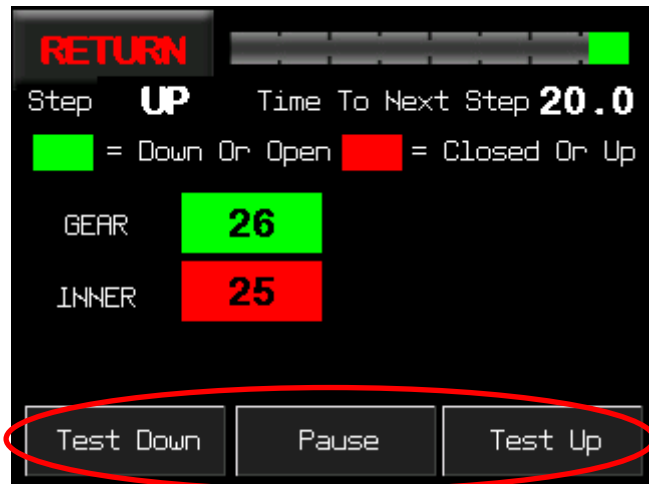
Up = Gear Up (Red) – Doors Closed (Red).

Tap button [25] to toggle the **Doors to the Up [Red]** position.

Sequencer Configuration Testing

Now that we have set up our basic sequence we can manually test it using the Smart Screen or toggling the Sequencer Master Switch on the transmitter.

Tap the **[Test]** button to take you to the test screen. Shown Below.



The "Test" page gives you manual controls to test your sequence. You can use this page or the transmitter to test at any time.

To run the sequence from the "Test" page, tap the **[Test Down]** button and the sequencer will play from the current step to the **(Gear Down)**

step. Tap the **[Test UP]** button and the sequencer will play from the current step to the **(Gear Up)** step. The green indicator in the progress bar at the top of the screen will move, the Step value will change and the "Time To Next Step" value will change.

You can tap the **[Pause]** button to pause at any step. Tap **[Test Up]** or **[Test Down]** to play from the **(paused step)**. One of the unique and easy features of the Smooth Flite sequencers is that you can freely mix and match using the transmitter or the Test buttons. We guarantee that you will find the **[Pause]** button invaluable during setup and testing.

We are almost at the end of the sequencer setup with just a few more features to mention.

Add and Remove Steps — At factory reset the sequencer will set up with 4 steps. In most cases 4 steps will be enough to satisfy most sequencing tasks. However for more complex sequencing tasks each sequencer can have up to 10 steps. You can add or remove steps from your sequence as required.

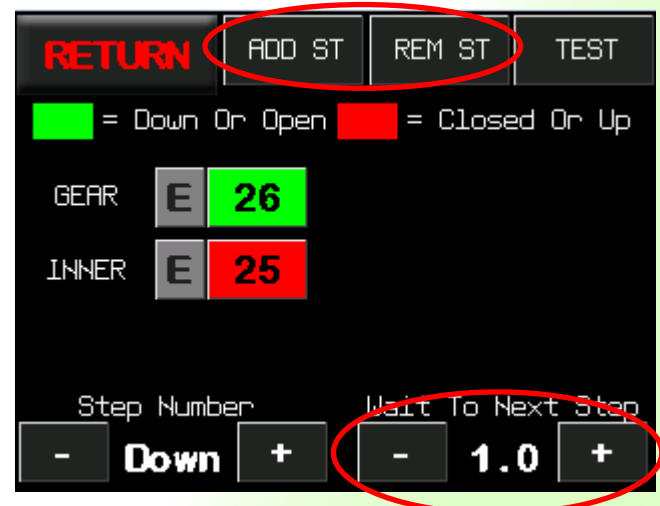
To add a step at the end of the sequence tap the **[ADD ST]** button.

To remove the current step tap the **[REM ST]** button. All steps after the current step will be shuffled forward one step.

Wait To Next Step - Each step has a wait time that triggers AFTER the servos or air valves have been actuated and BEFORE moving to the next step.

This feature is designed primarily for air valve devices or slow linear servos that can take time to move from one point to the other.

Tap the "Wait To Next Step" **[+]** and **[-]** buttons to increase or decrease a wait state for the current step.



Important Sequencer Rules

1) You **MUST** have a Master Channel assigned for the Sequencer stepping function to operate.

2) The Smooth Flite sequencer gives you the ability to slow standard servos (Global Servo Speed).

Smooth Flite also allows you to **(set wait times)** for slower linear devices and air values. Correct understanding of how these two features work together is important to unleashing the power in the Smooth Flite sequencer.

Here are the rules.

If a sequence step has a servo channel that subscribes to “Global Servo Speed ” then the complete step takes the duration of the “Global Servo Speed ” + any “Wait To Next Step” **BEFORE** moving to the next step.

In other words the servo is played at “Global Servo Speed” then the “Wait To Next Step” is added to the step **BEFORE** moving on to the next step.

Example 1:

- a) Global Servo Speed set to 1.5 seconds **AND** subscribed by **1 or more** servo channels
- b) Wait To Next Step set to 2.0 seconds
- c) Total step time $1.5 + 2.0 = 3.5$ seconds

Example 2:

- a) Global Servo Speed **NOT** subscribed by **ANY** servo channels
- b) Wait To Next Step set to 2.0 seconds
- c) Total step time $0.0 + 2.0 = 2.0$ seconds

In this example it will appear as if the step was missed.

Example 2:

- a) Global Servo Speed **NOT** subscribed by **ANY** servos channels
- b) Wait To Next Step set to 0.0 seconds
- c) Total step time $0.0 + 0.0 = 0.0$ seconds

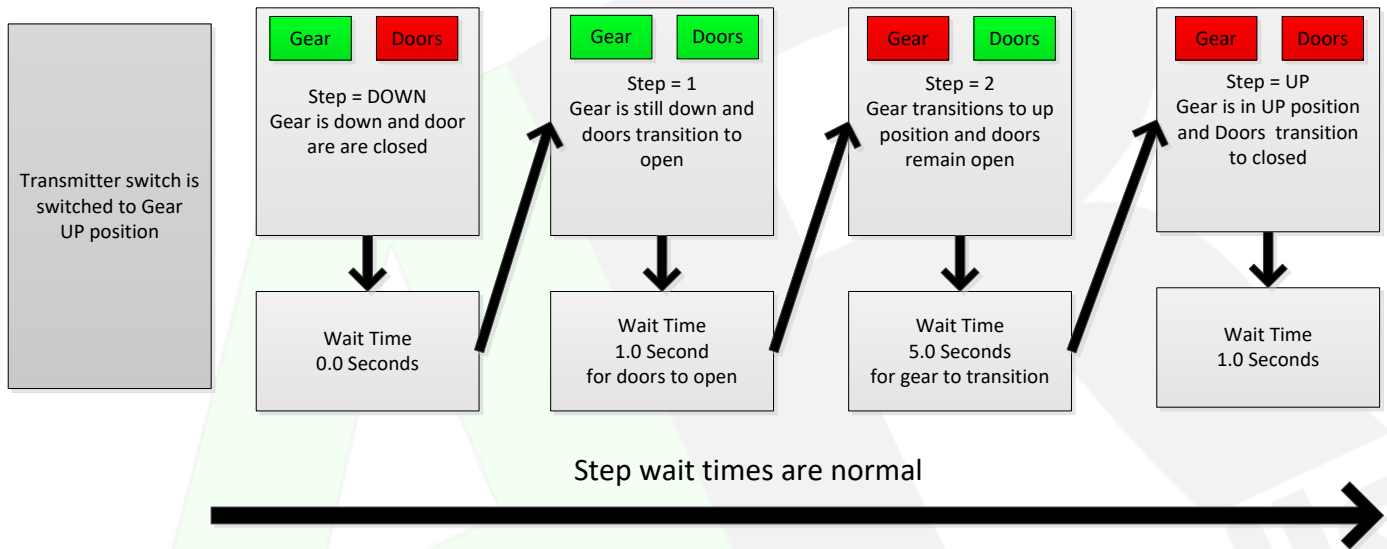
Important Sequencer Rules

3) Wait Time Step Offset

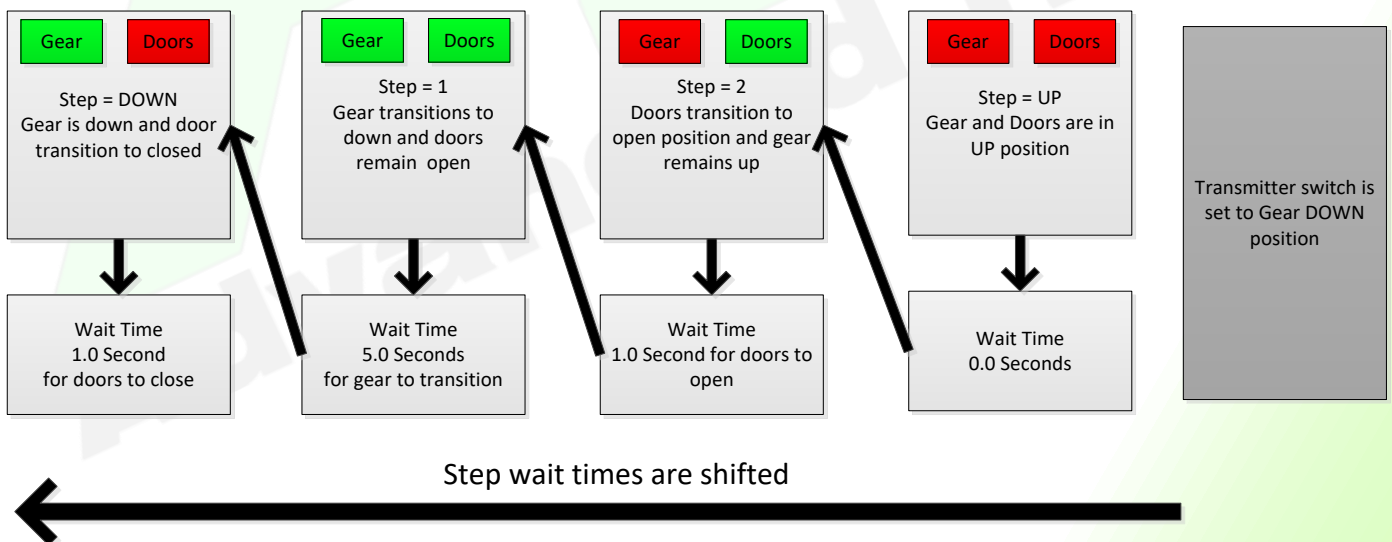
Sequencing Down to Up—When running the sequencer from the **DOWN** State to the **UP** state wait times for the current step are applied.

Sequencing UP to DOWN—When running the sequencer from an **UP** State to a **DOWN** state the wait times for the current step + 1 are applied.

Gear Down To Up Sequence



Gear Up To Down Sequence



We hope you enjoy all the power available from the Advanced Radio Smooth Flite system.

If you have any feedback please feel free to contact us.

The Advanced Radio Engineering Team.

General FAQ

Can I mount the Smart Display in my model.

The Smart Display can be mounted as a simulation cockpit for RC aircraft, however, it should be shock mounted to protect against vibration. All Advanced Radio ARXL products (Smooth Flite and Smart Bus) provide downlink telemetry so in most cases it is not necessary to mount the display in the model.

After setup, do I have to leave the Smart Screen in my model.

No you don't. The Smooth Flite will work perfectly without the Smart Display attached. Please read the FAQ above.

What are the 2 battery/bar pictures on the front screen for?

These pictures show you a percentage of the battery you have left. They will range from 100% to 0% and update as the battery packs are used. Never fly if the packs are in the RED ZONE and always make sure you have set up the correct battery capacity for your battery packs.

If I change the batteries in my model or move the Smooth Flite to a different model will I have to setup the switch again?

Yes, The switch relies on the information that you program into it to be accurate. It can not work to its best if this information is not accurate.

Does the Smooth Flite regulate the voltage?

Yes, the Smooth Flite versions offer digital output voltage regulation which can be set to 6.0v and 7.4v for 2S battery packs.

Can I Plug 2 different voltages into the Smooth Flite? For example a 3S lipo and a 2S lipo battery

No, you should always use the same voltage (S rating) and capacity packs on both sides of the Switch.

Can I plug 2 different chemistries into the Smooth Flite? For Example: A LiFE and a Li-ion battery

No, you should always use the same chemistries for both batteries.

I have the remote switch version of the Smooth Flite. Can I leave the batteries connected for a prolonged period?

Smooth Flite with the remote switch option will draw a small amount from the batteries each day so for periods longer than a few days you should disconnect the batteries.

Specifications

Operating Voltage:	5.0 — 10.0v
Battery type:	2s LiPo/Lion, 2s LiFePo4, 5s NiMH/NiCd
Regulator:	Digital dual 110A Controlled FET LDO
Regulated Voltage:	6.0v or 7.4v
Receiver:	Dual AR Active Redundancy technology
Receiver Voltage:	HV—Regulated Voltage
Supported protocols:	Jeti, Futaba SBus2, JR/DFA XBus-A, Spektrum SRXL, HOTT, SRXL, FRSky SBus.
Telemetry:	Ex-Bus, SBus2, XBus-A, Spektrum SRXL, HOTT, M-Link, S-PORT
Number outputs:	26 Channels fully programmable
Servo Output Resolution:	0.25 μ s
Frame Rate:	7ms, 14ms, 21ms selectable
Gyro Sensor:	Nine-Axis (Gyro + Accelerometer + Compass) MEMS
Barometer:	Pressure: 300-1100 hPa \pm 1 hPa
Graphic Interface:	16k Colour Touch Screen
Dimensions:	105 x 74 x 22
Weight Power Unit:	107g (without screen)
Weight Screen:	66g
Temperature:	-30°C to 85°C
EMV Conformance:	EN 55014-1:2006
CE Conformance:	2004/108/EG

Channel Routing for Model _____

Smooth Flite Servo Output	Transmitter Input	Function	Function	Transmitter Input	Smooth Flite Servo Output
S13					S26
S12					S25
S11					S24
S10					S23
S09					S22
S08					S21
S07					S20
S06					S19
S05					S18
S04					S17
S03					S16
S02					S15
S01					S14

Smooth Flite 5 Year Replacement Warranty

At Advanced Radio our products are designed and tested to very high standards. We use only the highest quality electronic components sourced from reputable manufacturers; ST Micro, BOSCH, TDK, Linear Technology, Texas Instruments, Cypress Semiconductor Corp and NPX. Our circuit boards are assembled in Australia in a certified ISO900-2008 and ISO 13485 medical devices risk management quality assurance environment.

At Advanced Radio we understand the value of the models that run our RC division of electronics. During our many years of operation we have focused on and developed a high quality product and reputable testing regime. Our QC process has been developed from many years of experience designing and working in medical systems. We understand completely the processes involved to achieve a very high quality and reliable product.

Our QC process provides for complete system functionality testing followed by rigorous load testing and running up a device up to 70°C for a period of 10 minutes under high electrical load. If the unit passes this stress test it is further run and heat soak at 60°C for a period of 8 hours prior to final test where it is load tested for a second time. If it passes these tests it is then packaged.

We believe in our processes and so for the first time in the RC industry we are offering a 5 year warranty on the main Smooth Flite unit if found to be defective in material and/or workmanship when used in the intended purpose.

Shipping charges related to any warranty claim are at the expense of the user, but Advanced Radio may elect to cover shipping charges at its discretion.

Warranty does not cover over voltage or over current damage beyond stated specification.

Warranty does not cover damage due to negligence, abuse, accident, improper installation or improper mounting.

Warranty does not cover loss of time, inconvenience, loss of model, or other incidental or consequential damages.

Smooth Flite Usage Statement

Smooth Flite has been flown now for 18 months in 6 models prior to it's release. It competed at Top Gun in May of 2018 in several models with excellent results. Smooth Flite employs state-of-the-art components to bring you the best possible flight experience for your giant scale model.

Smooth Flite is a highly technical product and so it is important that you fully understand the usage of a gyro based system prior to usage of Smooth Flite. This is not a toy. Incorrect setup of gyro parameters in any gyro system can lead to loss of control of a model. If you are unsure of the usage of gyro based systems then seek assistance from more experienced pilots.

Advanced Radio has extensively tested all supported radio protocols with our AR7432 and AR7426 servos during the 4 year development phase of the Smooth Flite product. These high voltage servos are design proven with superior reliability specifically for giant scale models. We highly recommend trying these servos. They really are superior. We have also tested with several other leading brands of servos with excellent results.

Smooth Flite servo outputs are buffered with line drivers and filtered to remove spurious noise. This allows the usage of long servo lead lengths. We strongly advise the usage of high quality servo leads capable of carrying currents experienced with today's high power high voltage servos.

While every attempt has been made to provide complete user instructions, it is impossible to cover every possible combination of servos, radio type and battery type. If you would like to discuss the set up of your new model please feel free to contact us by FaceBook (Booma RC), Telephone on +61 242955847 or email support@boomarc.com.

We trust you will enjoy using the Advanced Radio Smooth Flite.

Rick and Brendan Gell
AR Design Team.