E-Soar Plus

F5J template for OpenTX

Version 3.1

Setup Guide

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21 Nov 2024

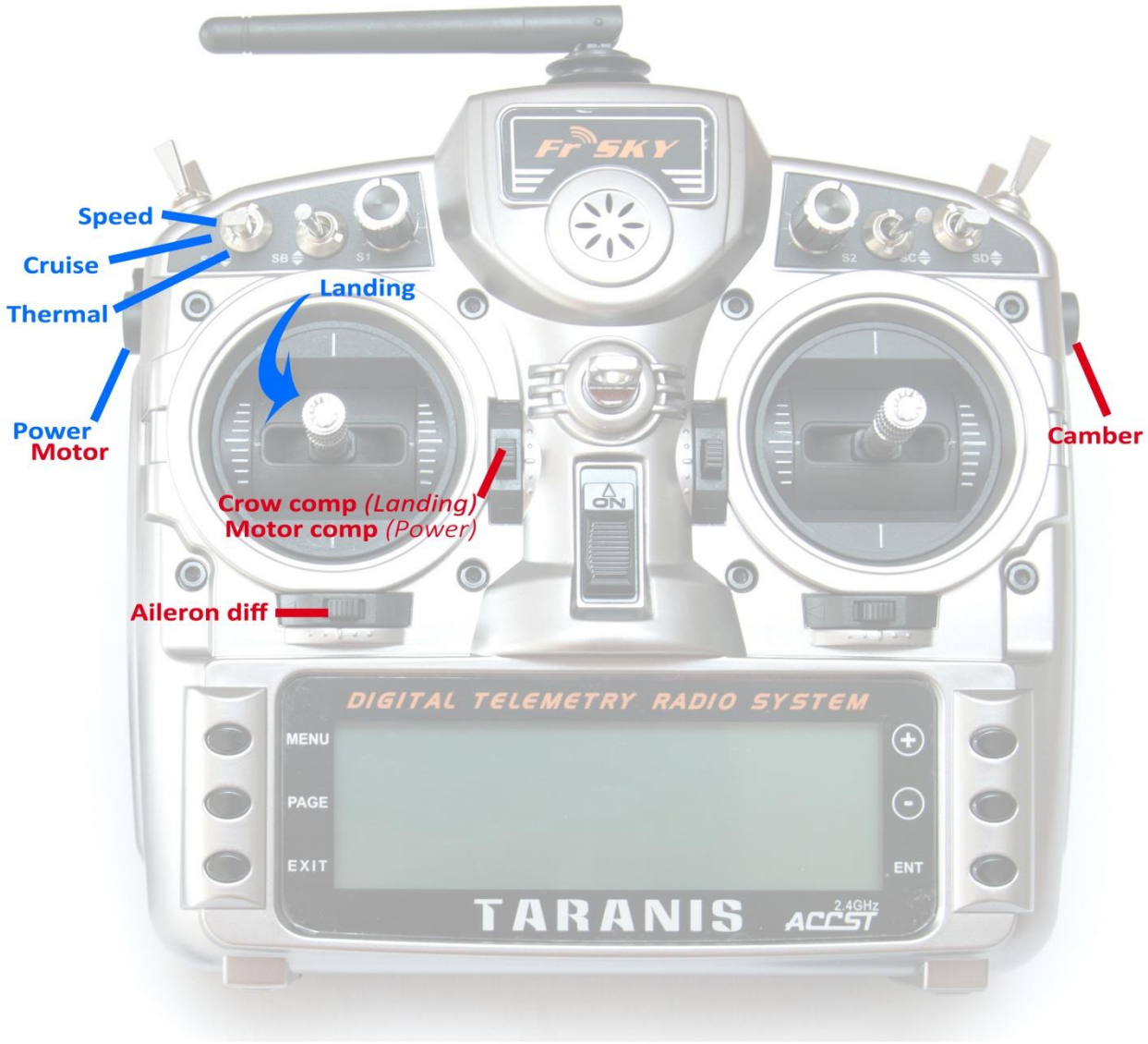


Table of Contents

1 INTRODUCTION

E-Soar Plus is an advanced template for full-house (F5J) electric sailplanes. It contains all the mixing needed for competition models yet is easy to configure and operate. Before starting please:

- Read through these instructions once
- Visit the support page for latest alerts

1.1 PACKAGE CONTENTS

Filename	Description
esoarplus_31_SetupGuide.pdf	Setup guide
esoarplus_31_SettingsRef.xls	Settings reference
esoarplus_31*.otx	Setups for V- and X/T- tail
esp***.wav	Sound files

1.2 REQUIREMENTS

The following are required to install and operate the template:

- Any OpenTX or EdgeTX transmitter
- Companion software + USB cable.
- For supported o/s versions, see version history

2 OVERVIEW

This section describes the general concepts of the template. Please read before starting the configuration.

2.1 STICK MODE AND CONTROL ASSIGNMENTS

The stick mode (1-4) is set in the **RADIO SETUP → MODE** menu. Any stick mode may be used.

2.2 CONTROL ASSIGNMENTS

Some control assignments are fixed. Others are 'soft' and will be configured later (see section 3.3).

Control		Assigned to
Rudder stick		Rudder
Rudder trim		Aileron diff adjust
Aileron stick + trim		Ailerons
Elevator stick + trim		Elevator
Throttle trim		Crow compensation adjust (Landing mode) Motor compensation adjust (Power mode)
Cmb	'Soft' switches, assigned in section 3.3	Camber
Mot		Motor
Cro		Crow brakes
S3p		Flight mode and CAL submode
CAL		CAL mode switch
ArM		Momentary arming switch
Ar2		2-pos arming switch

From this point, 'soft' controls will be identified by their 3-character nicknames (**Cmb**, **Mot** etc.)

2.3 FLIGHT MODES

The template has 5 flight modes: Power, Landing, Thermal, Cruise and Speed.
In the event of a clash, Power has highest priority, then Landing, then Thermal/ Cruise/Speed.

Flight Mode	OpenTx ID	Activated by	Priority
Power	FM2	**Mot** control ↑ (if motor armed)	High
Landing	FM3	Throttle stick ↓, activates crow brakes	Mid
Speed	FM5	**S3p ↑**	Low
Cruise	FM4	**S3p —**	Low
Thermal	FM0	**S3p ↓**	Low

A special CAL flight mode (FM1) is also provided, for calibrating the control surfaces.

2.4 SERVO ASSIGNMENTS

Ch	Function
1	Right aileron
2	Left aileron
3	Right flap
4	Left flap

Ch	Function	
5	Elevator	RtVee
6	Rudder	LtVee
7	Motor	

'Left' and 'right' are from are from the point of view of an observer looking forwards. Left and right channels are not interchangeable so make sure that the servos are connected correctly!

2.5 MIXERS

The table below shows which mixers are active in each flight mode. Mix adjusters are in brackets.

Flight mode	Ail→ Flap	Ail→ Rud	Motor Comp	Crow comp	Rev diff	Camber	Diff
Power	Y	Y	Y(Thr trm)				Y(RudTrm)
Landing	Y	Y		Y(Thr trm)	Y		Y(RudTrm)
Cruise	Y	Y					Y(RudTrm)
Thermal	Y	Y				Y (**Cmb**)	Y(RudTrm)
Speed	Y	Y				Y	Y(RudTrm)

2.6 BASIC OPERATION

Flight trims

- Aileron trim is shared across all flight modes
- Elevator trim is independent for each flight mode
- Rudder and throttle trims are repurposed for other functions (see below)

Camber mixes

- Camber is adjustable in Thermal mode via a slider (assigned in section 3.3).
- Reflex (fixed) may be specified for Speed mode.

Crow compensation (crow to elevator)

- Crow compensation is a variable mix which compensates for pitch changes as crow is deployed.
- The amount of compensation can be adjusted during flight, via the Throttle trim.
- Non-linear compensation may be applied by editing a curve

Motor compensation (motor to elevator)

- Motor compensation is a variable mix which compensates for pitch changes as power is applied.
- The amount of compensation can be adjusted via the Throttle trim.

Differential

- Diff is applied to both ailerons and flaps
- Diff is adjustable via the Rudder trim.
- Diff settings are stored per flight mode.

Roll rate enhancement with crow

- As crow is deployed, aileron diff reduces to zero.
- An adjustable 'Reverse diff' mix further improves roll response under braking.

Aileron to rudder ('combi')

- Aileron to rudder mix can be applied individually for each flight mode.

2.7 OPERATING THE MOTOR

This section describes how to operate the motor safely. Please do not test until configuration is complete.

2.7.1 Arming the motor

The motor is disarmed at startup. To arm the motor:

1. Move **Mot** control to idle (assigned in section 3.3)
2. Apply full right-aileron and full up-elevator, and hold
3. Pull momentary switch **ArM** and hold for 1 second until the startup sound
4. Release switch
5. Release stick(s)

A warning beep sounds every 12 seconds to indicate that the motor is live

2.7.2 Running the motor

To run the motor:

1. Arm the motor
2. Advance the **Mot** control

The Power flight mode is activated automatically while the motor is running. Note that the motor control incorporates some deadband, to prevent accidental operation.

2.7.3 Disarming the motor

To disarm the motor, pull arming switch **ArM** for 1 second until the 'motor disabled' alert.

☠ To minimise the risk of accidents, arm just before launch, and disarm immediately after landing.
☠ The arming system does not protect against signal loss. Remember to set the failsafe, so the motor is commanded to 'off' (-100) on loss of signal.

2.8 FLIGHT TIMER

Timer1 is configured as an automatic flight timer. The timer is named 'Flight'.

- *To reset*: arm motor.
- *To start*: advance motor
- *To stop*: disarm motor.

2.9 CAL MODE

CAL mode is a special flight mode for calibrating the servos. When CAL mode is active, all mixers and trims are disabled, and the raw stick values passed directly to the outputs. To enable CAL mode:

1. Apply full left aileron and full up elevator, and hold
2. Pull **Cal** switch (assigned in section 3.3)
3. Release switch
4. Release stick(s)

There are three sub-modes selected via switch **S3p** (assigned in section 3.3)

- Sub-mode 1 (**S3p**↑): calibrate with reduced movement for ailerons
- Sub-mode 2 (**S3p** —): calibrate end points and centres (throttle stick responds in 25% increments)
- Sub-mode 3 (**S3p** ↓): calibrate flap neutral

When CAL mode is enabled, a beep sounds every 3 secs and a voice alert every 9 secs.
To exit CAL mode, pull momentary switch.

3 CONFIGURING THE TRANSMITTER

Transmitter configuration is in four phases:

1. Transfer template to the transmitter
2. Assign switches and controls
3. Calibrate servos
4. Configure rates and mixing

Please follow in sequence.

☠ Disconnect the motor before proceeding.

3.1 TRANSFER TEMPLATE TO TRANSMITTER

In this step you'll transfer the template to your transmitter. The methods may differ slightly depending on the model of transmitter.

Establish communication with your PC

1. Enter bootloader mode. (For most transmitters: switch on whilst pressing horizontal trim levers towards the centre.)
2. Connect the tx to computer via USB. The tx's SD card should appear as an external drive.

Copy sound files:

3. On your PC, extract all files from .ZIP package
4. Copy the sound files to the \SOUNDS\{language} folder on the SD card. For example, English folder is "\SOUNDS\en". Note: there are new sound files in version 3.

Transfer model to transmitter:

5. Start the Companion program
6. Open the template file esoarplus_31x. otx. Versions for X/T and V tails are displayed in a window. A list of errors will be displayed – ignore all of these, as they will be fixed when the switches and controls are assigned later.
7. From the File menu, choose **READ MODELS AND SETTINGS FROM RADIO**. The model list from the radio is displayed in a second window.
8. Drag one of the ESOARP models into an empty slot in the model list.

9. Close the esoarplus_31x.otx window.
10. In the model list, right-click on new model and choose “Use as Default”

Optionally assign switches:

11. [optional] assign switches as described in section 3.3. Or you can do it later in your tx. (But do not assign switches *before* this point.)
12. From the File menu, choose **WRITE MODELS AND SETTINGS TO RADIO**.
13. Close OpenTx Companion

3.2 CALIBRATE HARDWARE

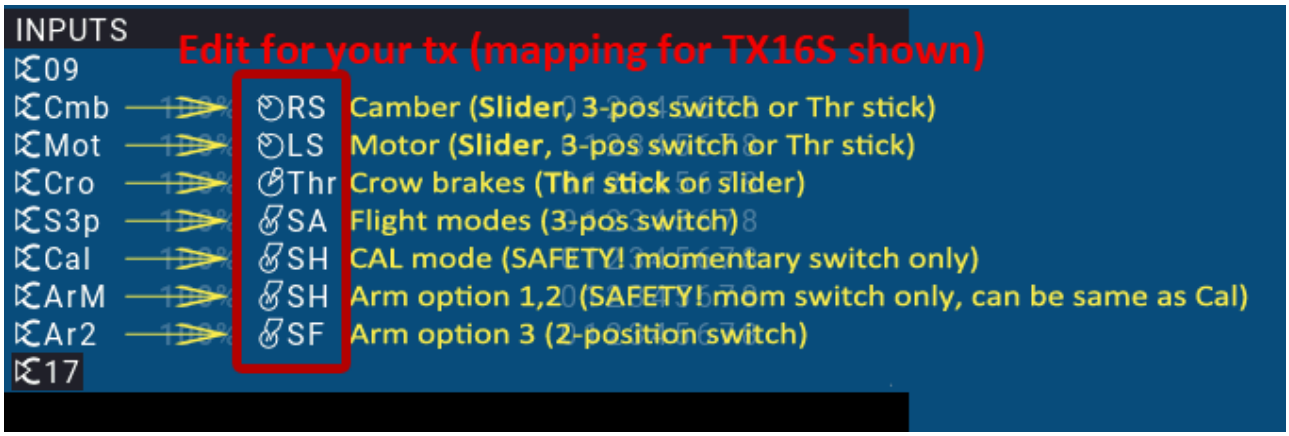
The sticks and sliders etc. must be properly calibrated. Failure to calibrate is one of the main causes of problems, from jumping neutrals to flight modes which cannot be activated.

1. Enter radio setup and page to **HARDWARE -> CALIBRATION** (may be different on your tx)
2. Calibrate all sticks, knobs and sliders.

3.3 ASSIGNING SWITCHES AND CONTROLS (NEW IN VERSION 3.1)

In version 3.1, you can easily assign the physical switches and controls according to the controls available on your transmitter and flying style:

1. Enter the **INPUTS** menu and scroll down to line 10.
2. Refer to the screenshot below. Check that all the sources are present, and of the correct type as described below.



To change an assignment:

1. Highlight the input
2. Press {Long enter} and choose Edit.
3. Tab to the Source field, press {Enter} till it blinks, then move the target control. The source will update automatically.

To reverse a stick, slider or switch:

1. Highlight the input
2. Press {Long enter} and choose Edit
3. Reverse the sign of Weight.

Note: all weights must be +/-100%. Do not change the direction of the momentary switches. Do not alter expo or other fields.

Note: flaps will not function until are configured later!

3.4 FAMILIARISATION

Familiarise with the following (use the transmitter on its own):

- Arm and disarm the motor with motor disconnected (see Section 2.7)
- Activate Thermal, Cruise, Power, Speed and Landing modes (see Section 2.3)
- Activate CAL mode and sub-modes (see Section 2.9)
- Start/stop/reset the flight timer (see Section 2.8)

Verify that the sounds are working correctly. If not, check that the sound files are in the correct location.

3.5 CALIBRATING THE SERVOS

In this section you will calibrate the servos. The goals are:

- Set servo limits and centres
- Equalise movements on the left and right side.

All the adjustments are made in CAL mode.

3.5.1 Set servo rotation

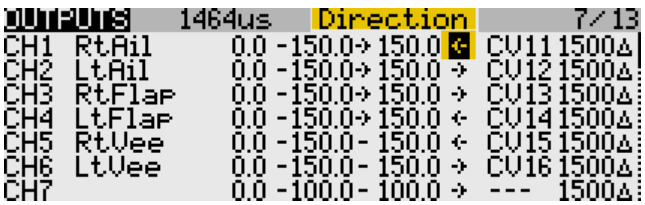
In this section, you'll set the rotation of the servos.

1. Switch on the transmitter (do not power up the receiver yet)
2. Crow stick to centre
3. Enter CAL mode, and set switch **S3p** to middle.
4. Power up the receiver
5. Open the **OUTPUTS** menu
6. Set the rotation of each servo according to table below:

Stick command	Control surface	Notes
Aileron stick right →	RtAil goes up ↑ LtAil goes up↑	In CAL mode, the ailerons move up together
Thr stick forward ↑	RtFlap goes up↑ LtFlap goes up↑	
V-TAIL only: Ele stick forward ↑	RtVee goes up ↑ LtVee goes up ↑	In CAL mode, the elevator(s) operate in reverse to normal.
X-TAIL only: Ele stick forward ↑	Ele goes up ↑	
X-TAIL only: Rudder stick right →	Rud goes right →	

To change the direction of an output:

1. Go to the Direction field
2. Press {enter}, and immediately {exit}



Now:

1. Exit CAL
2. Enter Cruise mode.
3. Check for correct direction of aileron, elevator and rudder. ***Note*: The flaps will not function yet!**

3.5.2 Adjust end points and centres

In this section you'll use the **OUTPUTS** menu to set the end points and centres of the servos. All adjustments are made using curves - *do not alter Min, Max or Subtrim!*

The servo end points should be set at the *maximum possible*, limited only by the hinges. The movement may seem excessive, but it will be reduced later.

Channel	Calibration procedure
CH 4 – Lt Flap	Start by calibrating the left flap. 1. Enter CAL mode 2. Switch **S3p** to middle position 3. In the **OUTPUTS** menu, highlight CH4 4. Skip to curve field LtF, and press {long enter} to open curve editor 5. Throttle stick fully back (↓), adjust point 1 for lower end point. Allow for both crow and aileron inputs. 6. Throttle stick fully forward (↑), adjust point 3 for upper end point. Allow for any aileron-to-flap mixing. 7. Adjust point 2 so it lies on the straight line between points 1 and 3. Move throttle stick from one end to the other, observing step intervals. You can fine tune point 2 to equalise intervals for best linearity.
CH 3 – Rt Flap	Next, calibrate the right flap (CH3). The goal is to precisely match the left flap. 1. Enter CAL mode 2. **S3p** to middle position 3. In the **OUTPUTS** menu, highlight CH3 4. Skip to curve field RtF, press {long enter} to open curve editor 5. Adjust points 1 – 5 to exactly match the left flap: 6. stick fully back, adjust point 1 7. stick ½-back, adjust point 2 8. stick to centre, adjust point 3 9. stick to ½-forward, adjust point 4 10. stick fully forward, adjust point 5 To match the end points on left and right sides, it may be necessary to reduce one or other end points for the left flap.
Flap offset	Next, adjust the flap offset: 1. Enter CAL mode, switch **S3p** down. 2. Open the **GLOBALVARS** menu. 3. Go to FOf:FM0 4. Adjust offset so that flaps follow airfoil profile 5. Check that the flaps are in line with each other. If not, then redo the calibration of the right flap (see previous step), paying particular attention to the points either side of the neutral position.

Channel	Calibration procedure
V-Tail CH 5 – RtVee CH 6 – LtVee	Calibrate V-tail surfaces: 1. Enter CAL mode 2. In the **OUTPUTS** menu, highlight CH5:RtVee 3. Skip to curve field 'ERv', press {long enter} to open curve editor 4. With Ele stick at centre, adjust point 2 for correct neutral 5. Ele stick forward (↑), set point 3 to upper limit 6. Ele stick back (↓), set point 1 to lower limit, allowing for crow compensation 7. Repeat for CH6:LtVee, ensuring that movements match CH5:RtVee. 8. Check equal travel up/down; check left and right surfaces match
X-Tail CH 5 – Ele	Calibrate elevator (**X-tail only**) 1. Enter CAL mode 2. In the **OUTPUTS** menu, highlight CH5 3. Skip to curve field 'ERv', press {long enter } to open curve editor 4. With Ele stick at centre, adjust point 2 for correct neutral 5. Move Ele stick forward (↑), then adjust point 3 for upper limit 6. Move Ele stick back (↓), then adjust point 1 for lower limit 7. Check elevator travel is equal up & down
X-Tail CH 6 – Rudder	Calibrate rudder (**X-tail only**) 1. Enter CAL mode 2. In the **OUTPUTS** menu, highlight CH6 3. Skip to curve field 'RLv', press {long enter } to open curve editor 4. With stick in centre, adjust point 2 so rudder is central 5. Move Rudder stick right (→), then set point 3 for max right movement 6. Move Rudder stick left (←), then set point 1 for max left movement 7. Check equal travel left/right

CH 1 – Rt Ail
CH 2 – Lt Ail
	Finally, calibrate ailerons:
	1. Enter CAL mode
	2. Set switch **S3p** to down position. The flaps will go to their calibrated neutrals.
	3. In the **OUTPUTS** menu, highlight CH1:RtAil
	4. Skip to curve field RtA, then press {long enter } to open curve editor
	5. With Ail stick at centre, adjust point 2 for correct centre.
	6. Move aileron stick right (→), then set point 3 to desired upper limit. Allow for both crow and aileron movement.
	7. Move aileron stick left (←), then set point 1 so that down-travel = up-travel. If you cannot get sufficient down movement then:
	  1. Move SA up (↑) – this reduces aileron movement by 50%. Note: this reduced rate applies only in CAL mode!
	  2. Now try again: Move aileron stick left (←) and adjust point 1 so down-travel = (reduced) up-travel. Full rate will be restored when you exit CAL; don't worry if down-travel is excessive – later adjustments in the **INPUTS** menu, and to aileron diff, will reduce the movement.
	8. Repeat all steps for CH2:LtAil.
	9. Check: (a) equal up/down movement, (b) left and right ailerons match.

The calibration is now complete.

- Exit CAL mode
- Move the sticks, checking that aileron, elevator and rudder control surfaces move in the correct sense. ***Note*: the flaps will not respond after exiting CAL mode. They will be configured in the next section**.
- Movements may appear excessive – don't worry, they'll be reduced in the next section.

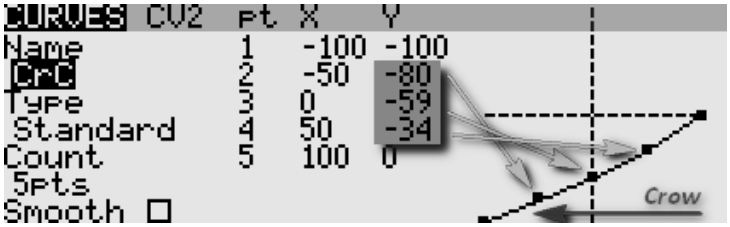
Now is a good time to backup your configuration.

4 CONFIGURING INPUTS AND MIXERS

In this last section, you'll set the control movements and mixing. Watch your model come to life 😊

Control / mix	Adjustment point	Adjustment procedure
□ Aileron travel	INPUTS→Ail	Set aileron rate as follows 1. Open the **INPUTS** menu 2. Scroll down to [I]Ail 3. Press {long enter} and choose Edit 4. Skip to the weight field 5. Enter Cruise mode 6. Adjust weight for required up-aileron movement (down movement is affected by diff setting) If Expo is required, 7. skip to Curve field 8. choose 'Expo' as the curve type 9. set required value in adjacent field. *Note*: Aileron diff must be set using the rudder trim (ignore the diff field in the input, it will result in asymmetric stick response).
□ Elevator travel	INPUTS→Ele	As above
□ Rudder travel	INPUTS→Rud	As above
□ Aileron→Flap	GVARS→'A2F'	Aileron to flap mixing is set per flight mode. 1. Open **GLOBALVARS** menu, select row 'A2F' 2. Activate flight mode to be adjusted, the column is highlighted 3. Adjust value in highlighted column. Note: the movement of down-going flap will be affected by diff setting, adjusted using the rudder trim.
□ Ail→Rudder	GVARS→'A2R'	This mix can help smooth turns without the need to coordinate rudder and aileron controls. Adjust per flight mode as follows: 1. Open **GLOBALVARS** menu, select row 'A2R' 2. Activate flight mode to be adjusted - the column is highlighted 3. Adjust value in highlighted column
□ Crow→Ail	GVARS→'CmA'	Sets the upward aileron movement due to crow. 1. Open **GLOBALVARS** menu 2. Enable Landing mode 3. Go to CmA:FM3 4. Move throttle stick back (full crow) 5. Adjust value for required up-aileron movement

Control / mix	Adjustment point	Adjustment procedure
□ Crow→Flap	GVARS→ 'CmF'	Sets the downward flap movement due to crow. 1. Open **GLOBALVARS** menu 2. Enable Landing mode 3. Go to CmF:FM3 4. Move throttle stick back (full crow) 5. Adjust value for required down-flap movement
□ Camber→Ail □ Camber→Flap	GVARS→ 'CmA' GVARS→ 'CmF'	Camber can be adjusted in Thermal mode using the **Cmb** control. Adjustment range = +/- 50%. For example if nominal camber is 4 degrees (**Cmb** at centre), the range will be from 2 to 6 degrees. In this step, you will set nominal camber. Start with flaps: 1. Enable Thermal mode 2. Move **Cmb** to centre position. 3. Open **GLOBALVARS** menu 4. Go to CmF:FM0 5. Adjust flap camber as required For ailerons, repeat above using CmA:FM0 Check camber range by moving **Cmb** control forward and back.
□ Reflex→Ail □ Reflex→Flap	GVARS→'CmA' GVARS→'CmF'	Reflex can be preset in Speed mode (FM5). Start by adjusting flaps: 6. Enable Speed mode 7. Open **GLOBALVARS** menu 8. Adjust reflex in CmF:FM5 Repeat for ailerons using CmA: FM5
□ Reverse diff	GVARS→ 'RvD'	Reverse diff can improve roll response under braking, by increasing movement of the down-going aileron. 1. Enable Landing mode 2. Open **GLOBALVARS** menu 3. Go to RvD: FM3 4. Apply full crow and full aileron 5. Adjust value so that the down-going aileron is at the desired position (normally a little below the neutral position) Note: this measure for improving roll response is in addition to aileron diff suppression, which is automatically applied.
□ Motor→Ele compensation	GVARS→ 'Cmp'	Motor compensation counteracts pitch changes due to motor thrust. It is adjustable in flight via the throttle trim: • Trim forward → pitch down • Trim centre → zero compensation • Trim back → pitch up Make sure the motor is disconnected while configuring. 1. Open **GLOBALVARS** menu, highlight Cmp:FM2 2. Enable Power mode 3. Push **Mot** control fully forward (max power) 4. Move throttle trim fully forward (max down comp) 5. Adjust Cmp:FM2 for required max down compensation 6. Move throttle trim to centre prior to flight tests During test flights: 1. Enter Power mode. 2. Apply minimum power (while still in Power mode), and adjust elevator trim for level flight. 3. Apply full power and adjust throttle trim for level flight.

Control / mix	Adjustment point	Adjustment procedure
□ Crow→Ele compensation	GVARS→ 'Cmp'	Crow compensation is used to counteract pitch changes as crow is applied. It can be fine tuned in flight using the throttle trim. Trim fully back = zero compensation Trim forward = down compensation First, set the limit of adjustment: 1. Enable Landing mode. 2. Open **GLOBALVARS** menu, highlight Cmp:FM3 3. Apply maximum crow 4. Move throttle trim fully forward for max compensation 5. Adjust Cmp:FM3 to set limit of compensation. 6. Move throttle trim to recommended compensation. If not known, set trim fully back (zero comp). During flight tests, adjust pitch trim as follows: 1. Enter landing mode 2. Apply minimum crow, then adjust elevator trim. 3. Apply full crow, adjust throttle trim. Note: After intial flight tests, you can fine-tune the response by editing curve 'CrC'. Alter points 2-4 only. Figure shows compensation rising sharply on initial application of crow, then tailing off towards the maximum (as defined by the throttle trim setting). 

5 MOTOR SAFETY CHECK

With the motor disconnected:

1. Enter the **CHANNEL MONITOR** menu.
2. Check for correct behaviour of the motor channel (CH7:Motor). Practise arming, disarming and applying throttle. Check motor-off = -100, full power = +100.

Congratulations, you've finished setting up your model. Just one last thing, please back up your work now!

6 SUMMARY OF IN-FLIGHT ADJUSTERS

Target	Adjuster	Flight mode	Notes
Aileron Diff	Rudder trim	[Any]	Diff is stored per flight mode Trim left for more diff/less travel
Crow→Ele compensation	Throttle trim	Landing	Adjust compensation with full crow deployed Trim fully back = zero comp
Motor→Ele compensation	Throttle trim	Power	Adjust compensation with motor at full power Trim centre = zero comp
Aileron Trim	Aileron trim	[All]	Trim is shared by all flight modes.
Elevator trim	Elevator trim	[Any]	Trim is stored per flight mode

7 PRE-FLIGHT

Before flying this setup for the first time, please:

- Train your ESC to recognise the motor off/on commands – consult your ESC documentation.
- Set the battery alarm threshold to suit your battery chemistry, for both the tx and rx.
- Set the failsafe so that the motor channel (CH7:Motor) is -100 on loss of signal.

8 CUSTOMISATIONS

This section describes various simple customisations. Apply these after the basic setup is complete and backed up. Customisations will not affect mixer adjustments, so you can customise at any time without breaking the setup.

8.1 ADDING MULTIPLE RATES

There is no dedicated rates menu in OpenTx. Instead, you add extra lines in the **INPUTS** menu.

1. For each new rate, create a new input line.
2. Tick the applicable flight modes (alternatively specify a switch).

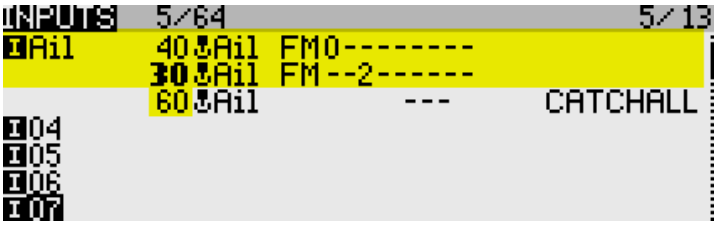
Safety note: **As a defensive measure the last input should always be a 'catchall', in other words all flight modes should be ticked, and no switch. This ensures that the control will be active even if no other line is selected (for example, through a typing error in a previous line).**

Flight mode numbers as follows:

0: Thermal
2: Power
3: Landing
4: Cruise
5: Speed

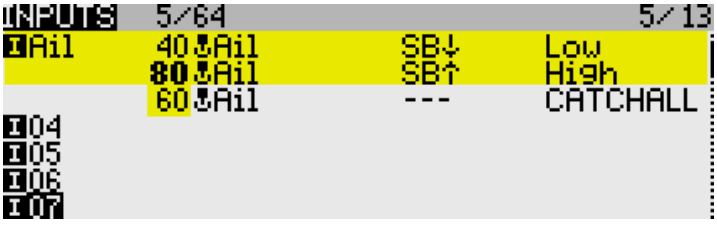
Here are a couple of examples, the first with flight mode rates, and the second using switched rates.
Example 1:

Thermal (FM0) 40%; Power mode (FM2) 30%; other fm's: 60%



Example 2:

SB↓ 40%; SB↑80%; all others (SB—): 60%



How OpenTx handles inputs

Starting with the first Input line, OpenTx reads the flight mode and/or switch. If these correspond to the actual FM and switch states, OpenTx uses the rate and expo values specified in that line.

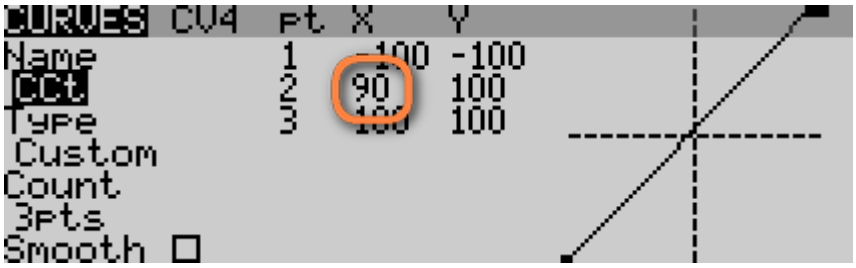
If there is no match, OpenTx advances to the next line and repeats the test. The cycle is repeated until either a match is found or the end of the input list is reached. If no match is found in any line, the control will be inoperative. As a defence against this possibility, the last line must be a 'CATCHALL' with all flightmodes checked and no switch.

If both flightmode and switch are specified in the same line, both must match for the line to be active.

8.2 ADJUSTING CROW STICK DEADBAND

The crow stick response incorporates some deadband at the idle end to help prevent accidental deployment. The default value should be fine for most pilots; however it can be adjusted as follows:

1. Go to Curves menu
2. Open Curve4:CCt
3. Adjust pt2 -> X. Decrease value to increase the deadband. Default value is 90.



8.3 SELECTING AN ALTERNATIVE ARMING METHOD

New in version 3 is the ability to select between three different arming/disarming methods. Selection is by altering the first parameter of logical switches L4 and L5. Safety note: If you're not 100% confident with data entry, then stick with the default setup.

Method 1 (default): stick in corner, pull momentary switch

This method uses the momentary arming switch **ArM.** It is the most secure and is recommended for beginners and sport flyers.

- *To arm*: motor lever **Mot** at idle. Full back on elevator stick, full right aileron. Pull momentary switch **ArM** and hold until confirmation
- *To disarm*: pull **ArM** until disarm confirmation

Settings: L4: V1 = L30
L5: V1 = L31

Method 2: Long pull momentary switch

This method is better suited if you need to disarm and re-arm in flight.

- *To arm*: motor lever off. Pull momentary switch **ArM** until arming confirmation
- *To disarm*: pull **ArM** until disarming confirmation

Settings: L4: V1 = L35
L5: V1 = L36

Method 3: Two-position switch

This method offers quick arming and disarming via a 'smart' 2-position switch **Ar2** – it's smart because the motor is disarmed at startup *regardless of the switch position.* So switch checks are not required at startup.

This method is inherently less secure than the first two and is for experienced flyers only.

- *To arm*: motor lever off, switch **Ar2** up then down.
- *To disarm*: **Ar2** up

Settings: L4: V1 = L38
L5: V1 = L39

9 MAKING YOUR OWN MODS

If you wish to make your own modifications, please study the Excel documentation carefully and make sure you understand the implications of any changes. Recommended workflow as follows:

1. Setup your model as described in this manual
2. Backup your work
3. Apply your modifications incrementally, testing and backing up as you go along.

10 DISCLAIMER

Although this setup is tested, it's up to the pilot to make sure that the controls respond correctly under all conditions. The author will not be responsible for the consequences of any bugs in the setup or documentation or as the result of changes in OpenTx.

Remember to test your setup thoroughly before the
first flight and after any modifications!

If in doubt, don't fly!!

11 CONTACT

If you have any queries or suggestions, or if you find any errors in the documentation, or just want to say hello, then please contact me at http://rc-soar.com/email.htm.

Safe flying!

Mike Shellim