

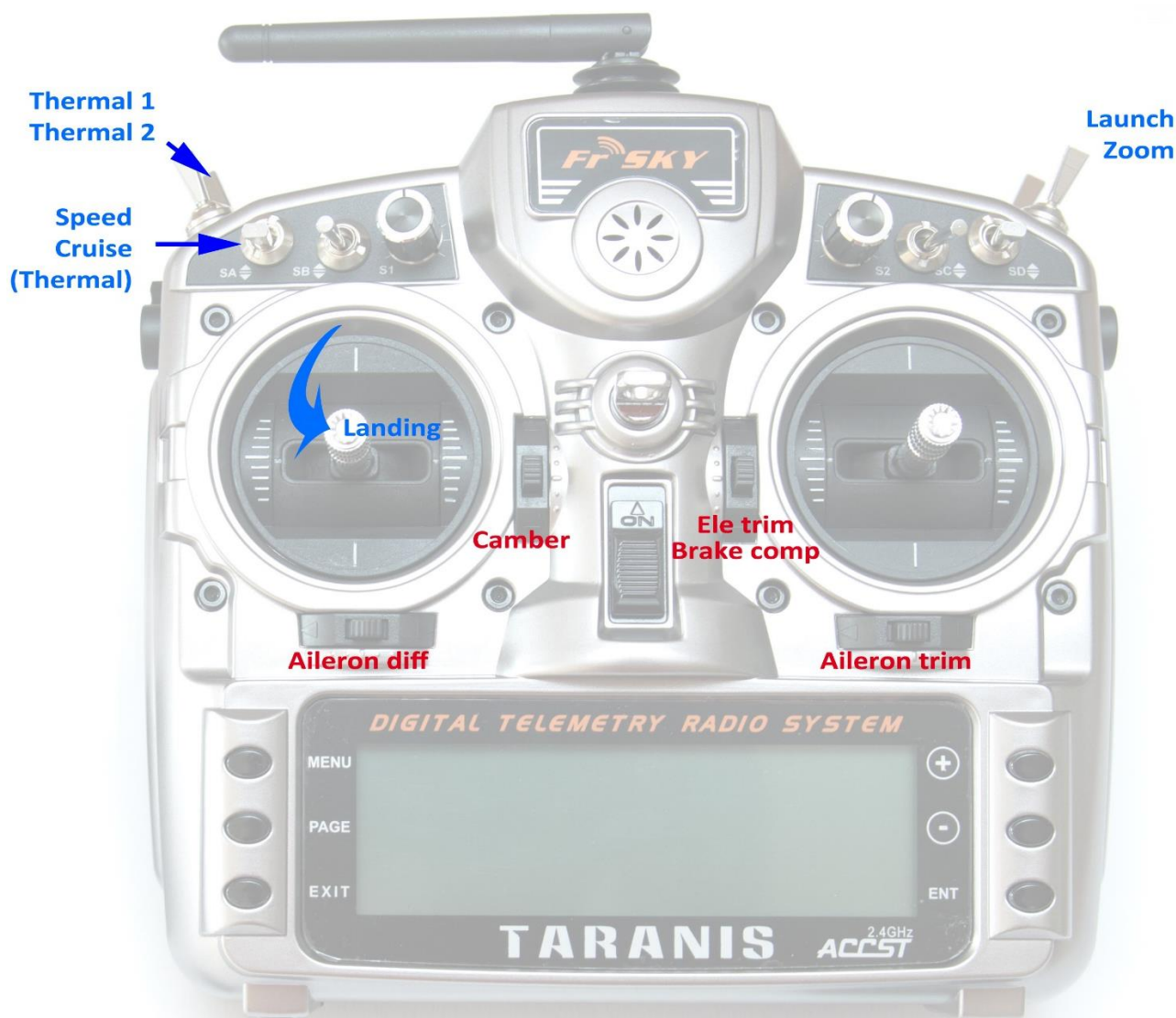
DLG

OpenTX template for four-servo DLG's

Version 2.4

Setup Guide

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1 INTRODUCTION

1.1 DESCRIPTION

DLG is a full feature template for four-servo DLGs. It is quick to set up, yet fully customisable. Version 2.4 offers much easier setup for different transmitters.

Specification:

APPLICATION

- For DLG gliders with two wing servos
- Any stick mode
- Assignable switches

LAUNCH HEIGHT CALLOUT

- Optional launch height callout (using ALT telemetry)

7 FLIGHT MODES

- Launch / Zoom
- Thermal1, Thermal2, Cruise, Speed
- Landing

TRIM ADJUSTERS

- for aileron diff (per FM)
- for camber (per FM)
- for brake compensation

SNAPFLAP

- Snapflap, preset per flight mode.

CONTROL SURFACE CALIBRATION

- Special 'CAL' mode for quick calibration
- 5-point balancing curve for flaps

BRAKES

- compensation adjustment using regular elevator trim
- super diff for better roll response under braking
- suppressed on exit from Zoom mode

MISC

- Flight timer
- Aileron to rudder mix
- Channels 7,8,9 free for other functions

Now begin your journey to a great DLG setup! But first, here are the golden rules for success:

- **READ THROUGH THESE INSTRUCTIONS ONCE BEFORE STARTING**
- **FOLLOW THE INSTRUCTIONS IN SEQUENCE**
- **VISIT THE [SUPPORT PAGE](#) FOR KNOWN ISSUES AND FIXES**

1.2 PACKAGE CONTENTS

What's included in the ZIP file:

Filename	Description
DLG_24_SetupGuide.pdf	This document
DLG_24_SettingsRef.xls	Settings reference
DLG_24*.otx	Model settings
DL1***.wav	Sound files

1.3 REQUIREMENTS

The following are required:

- Transmitter with OpenTX or EdgeTX. Please see [version history](#) for supported versions.
- A momentary switch on the correct side, for launching
- OpenTx Companion software + USB cable.

2 OVERVIEW

2.1 STICK AND CONTROL ASSIGNMENTS

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

Stick assignments for this template are as follows:

Control	Function
Throttle stick	Brakes/landing mode
Rudder trim	Aileron diff adjustment
Throttle trim	Camber adjustment

2.2 SWITCH ASSIGNMENTS (*NEW IN 2.4*)

Switch assignments are 'soft' to cater for different transmitters. *In the rest of this guide, switches will be identified by **switch name** below.*

The actual physical switches will be assigned later, see section 3.3.

Switch name	Type	Function	Notes
SwMom	Momentary	Launch mode	See also section 3.3.
SwFM	3-pos	Speed/Cruise/Thermal	
SwTherm2	2-or 3pos	Thermal 1 / 2 selector	

2.3 FLIGHT MODES

There are 7 flight modes: Launch, Zoom, Landing, Thermal1, Thermal2, Cruise and Speed.

Launch and Zoom have highest priority. Landing has priority over Thermal, Cruise and Speed.

Flight Mode	ID	Activation switches	Priority
Launch	FM2	SwMom↓	High
Zoom	FM3	Follows Launch mode. Elevator up or down to exit	High
Landing	FM4	Throttle stick ↓ (activates brakes)	Mid
Cruise	FM0	SwFM —	Low
Speed	FM5	SwFM ↑	Low
Thermal 1	FM6	SwFM ↓ and SwTherm2↑	Low
Thermal 2	FM7	SwFM ↓ and SwTherm2↓	Low

2.4 SERVO ASSIGNMENTS

Channel	Function
1	Rudder
2	Elevator
3	Left aileron
4	Right aileron

The left and right channels are not interchangeable – *please ensure they are connected correctly!*

Channel assignments can be changed using the author's ChannelChanger script.

2.5 MIXER TABLE

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

Flight mode	Diff	Ail=> Rud	Brakes	Brake Comp	Rudder offset	Camber/ Reflex	Snapflap
Launch	✓ (RudTrm)	✓			✓	✓ (Thr trim)	✓
Zoom	✓ (RudTrm)	✓				✓ (Thr trim)	✓
Landing	✓ (RudTrm)	✓	✓	✓ (Ele trim)		✓ (Thr trim)	✓
Thermal1/2	✓ (RudTrm)	✓				✓ (Thr trim)	✓
Speed	✓ (RudTrm)	✓				✓ (Thr trim)	✓
Cruise	✓ (RudTrm)	✓				✓ (Thr trim)	✓

2.6 FLIGHT TIMER

Timer1 is configured as a flight timer.

- *To reset and start the timer:* release launch switch (SwMom)
- *To stop the timer:* pull and hold launch switch (SwMom)

2.7 CAL MODE

CAL mode is a special flight mode for calibrating the outputs. When CAL is activated, stick values are passed directly to the outputs, bypassing mixers and trims. This allows servo end points and centres to be visualised during calibration. To activate CAL mode:

1. Apply full left aileron and full up elevator, and hold.
2. Pull and release momentary switch SwMom
3. Release sticks.
4. Select the appropriate submode using the flight mode switch SwFM.

CAL sub mode	Switch	Description
'Calibration'	SwFM ↑ or —	for calibrating end points and centres. <i>The ailerons move in 25% increments to aid calibration.</i>
'Calibrate flap neutral'	SwFM ↓	for calibrating the neutral offset

To exit CAL mode, pull the momentary switch again.

Note: when entering CAL mode, Launch mode is activated briefly.

2.8 BASIC OPERATION

Trims

- Aileron trim is shared across all flight modes.
- Elevator trim is independent in each flight mode (but see section 6.1 for Landing mode).
- Rudder trim is repurposed to adjust differential.
- Throttle trim adjusts camber per flight mode.

Launch offsets

- The rudder offset is adjusted via a GVAR.
- The elevator offset is adjusted using the regular elevator trim

Aileron differential

- Aileron diff is adjustable per flight mode, via the rudder trim.

Camber control

- Camber/reflex is adjustable using the throttle trim in all flight modes.

Brake compensation (brake=>elevator)

- Counteracts pitching due to deployment of brakes.
- The compensation at full brake can be adjusted in flight, via the elevator trim.
- The compensation with partial brake can be tuned by editing the compensation curve.

Aileron=>rudder mix

- Aileron=>rudder mix can be set per flight mode.

Snapflap

- Snapflap (elevator=> ail) can be preset per flight mode.

2.9 THE FLIGHT SEQUENCE

The flight sequence is as follows:

1. Rotate the model whilst pulling the launch switch. Model enters Launch mode.
2. As the model leaves the hand, release the launch switch. Model enters Zoom mode.
3. At top of the climb, **move the elevator stick forward or back**. Model exits Zoom mode.
4. Once out of Zoom mode, the flight mode is determined by flight mode switch.

3 PREPARING THE TRANSMITTER

3.1 TRANSFER TEMPLATE TO TRANSMITTER

Start by transferring the template to your transmitter. The model is not needed for this step.

Establish a USB connection

1. Enter Bootloader mode (the exact method will depend on your transmitter).
2. Connect to PC via USB. The tx's SD card should appear as an external drive.

Copy sound files

1. Copy the supplied .wav sound files to the */SOUNDS/{language}* folder on the SD card. For example, the English folder is */SOUNDS/en*.
Note: version 2.2 has an additional sound file dl1brk.wav – remember to copy it if upgrading from V2.1.

Transfer template to transmitter

1. Start the Companion software, using the correct profile for your transmitter
2. Open supplied file *DLG_24.otx*.
3. If using a transmitter other than the X9D, you may receive warnings that certain switches are not available. You can ignore these errors for now, as they will be dealt with in section 3.3.
4. From the File menu, choose *Read Models and Settings From Radio*. The models from the radio are displayed in a second window.
5. Drag the *DLG_24* model into an empty slot in the model list.
6. Close the *DLG_24.otx* window.
7. From the File menu, choose *Write Models and Settings To Radio*.
8. Close OpenTx Companion

3.2 HARDWARE CALIBRATION

The transmitter hardware (sticks, sliders etc.) must be properly calibrated, so calibrate now if in doubt. To perform a hardware calibration:

1. Open the **RADIO SETUP** menu and page to *Hardware -> Calibration* (Horus) or *Calibration* (Taranis)
2. Calibrate all sticks, knobs and sliders.

3.3 ASSIGN SWITCHES (NEW IN 2.4)

Switches SwMom, SwFM and SwTherm2 are 'soft' to cater for different transmitters. The real (physical) switches are assigned in the **INPUTS** menu, via the *Source* field.

The table below shows the recommended physical switches for the *FrSky X9D*, *RM Zorro* and *RM Pocket*. If your transmitter is not on the list, please determine suitable switches on your transmitter before proceeding.

Here's how to check and alter the switches:

1. Open the **INPUTS** menu
2. Scroll down to inputs 'SMm', 'SFM', 'ST2'
3. For each input, check (a) the source is a switch, and (b) the switch is of the correct type as in the table below.
To change the switch:
 1. press {long Enter} to open the input editor
 2. change *Source* as required. Do not alter any other fields.

Switch name	Input to edit	Switch type	Function	Recommended physical switch			
				X9D	Zorro	Pocket	Your tx
SwMom	SMm	Momentary	Launch and CAL modes	SH	SA	SE	?
SwFM	SFm	3-position	(a) Flight modes (b) CAL submodes	SA	SB	SB	?
SwTherm2	ST2	2- or 3-pos	Thermal 1 / Thermal2	SF	SE	SA	?

3.4 FAMILIARISATION

Using the transmitter on its own, practise the following:

- Activate Launch, Zoom, Thermal1, Thermal2, Cruise, Speed and Landing modes (see Section 2.3).
TIP: start with the throttle stick pushed fully forward.
- Activate CAL mode and sub-modes (see Section 2.7)
- Start/stop/reset the flight timer (see Section 2.6)
- Verify that the sounds are working correctly. If not, check that the sound files are in the correct location.

3.5 TELEMETRY

Check that your transmitter is receiving telemetry (if supported by the protocol and module). If you encounter problems, try rediscovering your sensors as follows:

1. Open the **TELEMETRY** menu
2. Choose 'Delete all sensors' then 'Discover sensors'

RSSI low/critical warning thresholds are set to 45/42. If using the FrSky ACCESS protocol, change to 35/32 (FrSky recommendation).

4 CALIBRATING THE OUTPUTS

In this section you will calibrate the outputs. This involves setting the rotation and operating range of the servos and equalising travels.

4.1 SET SERVO ROTATION

First, set the rotation of each servo:

1. Switch on the transmitter (do not power up the receiver yet)
2. Move the elevator stick, and check for correct direction of elevator surfaces. If necessary, reverse the direction of the output (see below).
3. Repeat for the rudder and ailerons. **Note: the throttle stick will be inoperative.**

To change the direction of an output:

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

OUTPUTS		1500us	Direction		7/14
CH1	Rud	0.0 -150.0 - 150.0	→	Rud	1500Δ
CH2	Elev	0.0 -150.0 - 150.0	→	Ele	1500Δ
CH3	LtAil	0.0 -150.0 - 150.0	→	LtA	1500Δ
CH4	RtAil	0.0 -150.0 - 150.0	→	RtA	1500Δ
CH5		0.0 -100.0 - 100.0	→	---	1500Δ
CH6		0.0 -100.0 - 100.0	→	---	1500Δ
CH7		0.0 -100.0 - 100.0	→	---	1500Δ

4.2 ADJUST SERVO END POINTS AND CENTRES

The next task is to set the operating limits of the servos. At the same time, you will compensate for linkage differences between the left and right sides of the model. **All the adjustments are made in CAL mode.**

When making the adjustments:

- Set the servo end points to the *maximum* as limited by the linkages and hinges. You may need to refine the adjustments to achieve symmetry – this is described in each step.
- Adjustments are made using curves. **Do not alter min, max or subtrim!**

Notes for radios with lo-res mono screens (X-Lite, TX12, Zorro etc.)

To edit a curve on these radios and also on radios running EdgeTX, close the **OUTPUTS** menu, then open the **CURVES** menu (). These radios also lack a GLOBALVARS menu. Instead, GVARs are accessed through the **FLIGHT MODES** menu.

Channel	Calibration procedure
CH 1 – Rudder	<p>CALibrate the rudder</p> <ol style="list-style-type: none">1. Activate CAL mode2. Open the OUTPUTS menu3. Highlight the rudder channel (default CH1)4. Go to the curve field 'Rud', press {long enter } to open curve editor5. With stick in centre, adjust point 2 so rudder is central6. Move Rudder stick right (→), then set point 3 for max right movement7. Move Rudder stick left (←), then set point 1 for max left movement8. Check equal travel left/right, reduce one or other side if necessary.

Channel	Calibration procedure
CH 2 – Elevator	<p>CALibrate elevator.</p> <p>IMPORTANT: in CAL mode, the elevator moves in the opposite direction to normal.</p> <ol style="list-style-type: none"> 1. Activate CAL mode 2. Open the OUTPUTS menu 3. Highlight the Ele channel (default CH2) 4. Go to the curve field 'Ele', press {long enter } to open curve editor 5. With Ele stick at centre, adjust point 2 so elevator is central 6. Move Ele stick forward (↑), then adjust point 3 for <i>upper</i> limit 7. Move Ele stick back (↓), then adjust point 1 for <i>lower</i> limit 8. Check elevator travel is equal up & down, reduce one or other side as necessary.
<input type="checkbox"/> CH 3 – Lt Ail	<p>Calibrate the left aileron:</p> <ol style="list-style-type: none"> 1. Activate CAL mode, select 'Calibration' submenu 2. Go to OUTPUTS menu 3. Highlight left aileron channel (default CH3) 4. Go to the curve field LtA, and press {long enter} to open curve editor 5. Throttle stick fully back (↓), adjust point 1 for <i>lower</i> end point. 6. Throttle stick fully forward (↑), adjust point 3 for <i>upper</i> end point. 7. Adjust point 2 so it lies on the straight line between points 1 and 3. Do not worry that the point 2 does not correspond to the airfoil centre line – that will be fixed later. <p>Move throttle stick from one end to the other, observing step intervals. If they are grossly unequal, adjust point 2 to for better linearity.</p>
<input type="checkbox"/> CH 4 – Rt Ail	<p>Next, CALibrate the right aileron so it precisely matches the left aileron:</p> <ol style="list-style-type: none"> 1. Activate CAL mode, select 'Calibration' submenu 2. Return to OUTPUTS menu 3. Highlight the right aileron channel (default CH4) 4. Go to the curve field RtA, press {long enter} to open curve editor <p>Adjust points 1 – 5 to exactly match the left aileron:</p> <ol style="list-style-type: none"> 5. Stick fully back, adjust point 1 6. Stick ½-back, adjust point 2 7. Stick to centre, adjust point 3 8. Stick to ½-forward, adjust point 4 9. Stick fully forward, adjust point 5 <p>To match the end points on left and right sides, it may be necessary to reduce one or other end points for the left aileron.</p>
Aileron offset	<p>Next, CALibrate the aileron offset:</p> <ol style="list-style-type: none"> 1. Activate CAL mode 2. Select 'calibrate flap neutral' submenu. 3. Page to GLOBALVARS menu. 4. Go to cell GV5:Fof→FM0 (Note FM0, not FM1) 5. Adjust offset so that ailerons follow the neutral profile <p>If the ailerons are not in line, redo the calibration of the right aileron (see above), paying attention to the points either side of the neutral position. Then readjust the offset again.</p>

Check operation:

1. Exit CAL mode
2. Move the sticks, checking that aileron, elevator and rudder control surfaces move in the correct sense.
Note that the throttle stick (for brakes) will not function yet (it will be configured in the next section).
3. The travel will be excessive – don't worry, it'll be dialled down in the next section.

5 CONFIGURING TRAVEL AND MIXERS

In the final section, you'll set the control travel ('rates') and mixers. Watch your model come to life!

5.1 AILERON, ELEVATOR AND RUDDER TRAVEL (INPUTS MENU)

In this section, you'll reduce the rates of the main flight controls, to achieve the required travel.

1. Activate **Cruise** mode
2. Open the **INPUTS** menu
3. Scroll down to [I]Ail, [I]Ele or [I]Rud as required
4. Press {LONG ENTER} and choose Edit
5. Go to the weight field
6. Adjust weight for required travel.
7. To add expo, go to the Curve field, and change the curve type from 'Diff' to 'Expo'. Set required value.

When adjusting aileron travel, *consider upward travel only* (downward travel will be adjusted when setting diff, in the following section.)

5.2 AILERON DIFF (RUDDER TRIM)

Aileron differential alters the downward travel of the ailerons in response to roll commands. Diff is adjusted using the rudder trim. As the trim is moved from left to right, the amount of Diff *decreases* thus *increasing* the roll rate – think of the trim as a roll rate adjuster!

The minimum diff is -30%, allowing down-travel to exceed up-travel as is required for some DLG setups. The range of diff adjustment can be changed (see section 7.5).

Diff settings are stored independently for each flight mode - make sure to set diff correctly for each flight mode!

5.3 RUDDER LAUNCH OFFSET (GV: RUD)

Counteracts rotation of the model following launch. Adjust as follows:

1. Open the **GLOBALVARS** menu
2. Go to row 'Rud', column FM2:Launch
3. Pull on the Launch switch, and hold.
4. Adjust the GV for required offset
5. Release the Launch switch
6. Push forward on elevator stick to exit **Zoom** mode.

5.4 ELEVATOR LAUNCH OFFSET

There is no dedicated elevator offset adjustment. Instead, activate **launch** mode and adjust the elevator trim.

5.5 BRAKE TRAVEL (GV: BRK→FM4)

Set the brake=>aileron travel as follows:

1. Open **GLOBALVARS** menu
2. Enable Landing mode
3. Move throttle stick back (full brake)
4. Go to row 'Brk', column FM4:Landing
5. Adjust for required down movement

5.6 SUPERDIFF (GV:SDF→FM4)

Superdiff is an optional adjustment which may improve roll response under braking. As the brakes are applied, the travel of the rising aileron (in response to a roll command) is gradually increased by the amount that you specify. Try a small amount first, as too much can adversely affect handling. To set the amount of Superdiff:

1. Open the GVARs and scroll to line GV6:SDF.
2. Go to the FM4 column (for Landing mode).
3. Enter Landing mode and apply full brakes and full aileron
4. Adjust GV as required

5.7 CAMBER/REFLEX PRESETS (THROTTLE TRIM)

Camber and reflex are adjustable independently in all flight modes.

The amount of camber is adjusted using the throttle trim:

- Trim centre = zero camber
- Trim forward = reflex
- Trim back = +ve camber

In Landing mode, the camber you set here will be the starting camber as brakes are deployed.

5.8 SNAPFLAP (GV:SNF)

Snapflap (Ele=> aileron) is adjustable per flight mode. Adjust as follows:

1. Open GLOBALVARS menu, go to row 'SnF'
2. Activate flight mode to be adjusted - the column is highlighted
3. Adjust value in highlighted column

By default, snapflap is positive only. To make snapflap bidirectional, see section 7.7.

5.9 AIL=>RUDDER (GV:A2R)

This mix can help the model enter the turn. Adjust per flight mode as follows:

1. Open GLOBALVARS menu, go to row 'A2R'
2. Activate flight mode to be adjusted - the column is highlighted
3. Adjust value in highlighted column

6 FLYING NOTES

6.1 ADJUSTING PITCH TRIM WITH BRAKES (BRAKE COMPENSATION)

Brake compensation can be adjusted while flying the model. The procedure is as follows:

1. Enter Cruise mode and adjust elevator trim as required.
2. Now apply 75% - 100% brakes. *Still using the elevator trim*, adjust the compensation as follows:
 - Trim fully back = zero compensation
 - Trim fully forward = 80% down elevator

Technical note: In Landing mode, (a) The base trim is derived from Cruise mode and (b) the function of the elevator trim lever changes so that it becomes an adjuster for the compensation mix. Total trim = base trim + compensation.

Adjusting the curve.

The response with partial brake can be tuned by editing curve CV7:BrC. *Alter points 2 – 4 only, do not alter the end points!* The default curve is a typical 'S' shape.

6.2 ZOOM SAFE EXIT

Zoom Safe Exit prevents the brakes from suddenly deploying when exiting Zoom mode.

If the stick is away from the home position when you exit Zoom mode, a warning sounds. The brakes will remain retracted, and the next lower priority flight mode will be selected (Cruise, Thermal1, Thermal2, or Speed).

The brake stick will be active again after it's returned to the home position.

7 CUSTOMISING YOUR SETUP

This section describes how to customise your setup. You can customise at any time without breaking the setup.

7.1 HIDING THERMAL 2

If you prefer, you can hide thermal_2. In that case, only thermal_1 is available; the selector switch (SwT2) can then be re-used for another function.

Function	Menu point	Value	Default
Thermal_2 enable	LOGICALSWITCHES→L4→V2	99 = disabled 100=enabled	Enabled

If hiding Thermal_2 mode, you may wish to change the sound file for Thermal_1 to say just 'thermal' or 'slow'. Suitable WAV files are provided in the package, assign in the **SPECIAL FUNCTIONS** menu=>SF9.

7.2 ADDING RATES

Rates are managed in the **INPUTS** menu. To add a new rate:

1. Go the **INPUTS** menu.
2. Highlight the last line in the target group (Ail, Ele or Rud).
3. Press {long Enter} and choose 'Insert Before'
4. Create a new input line.
5. Set source = Ail/Ele/Rud as appropriate
6. Set weight to the new rate.
7. Set expo as required
8. Tick applicable flight modes (0: Cruise, 2: Launch, 3: Zoom, 4: Landing, 5: Speed, 6: Thermal2, 7: Thermal1).
(Alternatively, you can select via a switch instead of via flight modes.)

Here is an example showing triple aileron rates linked to flight modes. Rate = 50% for FM5, and 80% for FM4. For all other flight modes, rate = 75%.



The screenshot shows the INPUTS menu with aileron rates configured for flight modes. The menu is titled 'INPUTS' and shows a list of inputs. The aileron group is highlighted, showing three lines: '50%Ail FM---5--- Lo rate', '80%Ail FM---4--- Hi rate', and '75%Ail ---'. The 'Lo rate' and 'Hi rate' labels are on the right. The '75%Ail' line is the last line in the group and has all flight modes checked (indicated by dashes). The '50%Ail' and '80%Ail' lines have flight mode 5 and 4 checked respectively. The '75%Ail' line has no flight modes checked, indicating it is the fallback rate for all other flight modes.

INPUTS	5/64	0.0	5/14
Rud	100%Ail	---	
Ele	100%Ail	---	
Ail	50%Ail FM	---5---	Lo rate
	80%Ail FM	---4---	Hi rate
	75%Ail	---	
IO4			
IO5			

The last (or only) line in each group must have all flight modes checked, and switch = '---'. This provides a safe fallback in case none of the previous lines is selected due to a data entry error. For a deeper explanation [see 'more about inputs'](#).

7.3 REVERSING THE BRAKE STICK

By default, zero brake is with the throttle stick forward. To reverse the stick:

1. Open the **MIXER** menu
2. Scroll down to channel CH23:RawBr
3. Open the mixer editor
4. In the Curve field, change the curve from CV9:Thr to the inverse curve CV9:!Thr (note leading '!').

7.4 LAUNCH HEIGHT ANNOUNCEMENT

If you have ALT telemetry, you can enable the announcement of launch height. This is the difference between the height at launch, and the maximum height achieved until 3 seconds after exiting Zoom mode. To configure,

1. Switch on the receiver and establish telemetry.
2. Open the **TELEMETRY** menu
3. Delete all sensors, then Discover sensors.
4. Verify that the Alt sensor is discovered.

Then edit special function as follows:

Function	Menu point	Note
Launch height callout enable	SPECIAL FUNCTIONS →SF14 (L26) → PlayValue	Set value to ALT+

You can configure the delay for recording the launch height:

Function	Menu point	Note
Callout Zoom delay	LOGICAL SWITCHES →L25→Duration	Default=3secs

Note 1: ALT telemetry should reset when pressing the launch switch (SwMom). If it doesn't reset (go to zero), then to the **TELEMETRY** menu. Then edit the ALT entry ensuring that 'Auto Offset' is enabled.

Note 2: If running EdgeTX, pressing the launch switch may generate an unwanted "telemetry connected" alert. To suppress the alert remove the sound file /SOUNDS/SYSTEM/telemco.wav.

7.5 SETTING DIFF ADJUSTMENT RANGE

Aileron diff is adjusted via the rudder trim. The default range is -30% to +70%. The range can be adjusted by editing the end points of curve CV10:Dif.

7.6 ADJUSTING BRAKE STICK DEADBAND

The brake stick incorporates some deadband to prevent accidental deployment. The amount of deadband can be adjusted as follows:

Function	Menu point	Value	Default
Brake stick deadband	CURVES →CV9:Thr	Set point 2 for required deadband	85

7.7 MAKING SNAPFLAP BI-DIRECTIONAL

By default, snapflap is positive only. To make it bi-directional:

1. Backup your setup (make a clone)
2. Open the **MIXER** menu
3. Skip to CH11:CmF, and go to the 3rd line (source = 'Ele')
4. In the Curve field, change 'Func x<0' to 'Diff 0'

7.8 MAKING ELEVATOR TRIM 'RELATIVE' (ADVANCED USERS)

By default, elevator trim is independent in all flight modes. However, you can change this behaviour, so that elevator trim is *relative* to that in Cruise mode. This can be useful, for example, if the addition of ballast causes a change in trim. Instead of re-trimming for each flight mode separately, 'relative' option allows you to make just one adjustment in Cruise mode and the trim in the remaining flight modes will change by the same amount.

To make the elevator trim 'relative' to Cruise mode (FM0), go to the Flight Modes menu, scroll to the target flight mode, select the elevator trim column, and set the trims>elevator to '+0'. *Important:* Only use the 'relative' option for Launch, Zoom, Thermal, and Speed modes. Do not use for Landing mode (it should remain ':0'). Make sure your trims are re-centred after any changes.

For more information about relative trims, see [Advanced trims](#), 'Trim Basics'.

7.9 MAKING YOUR OWN MODIFICATIONS

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:

- Set up your model as described in this guide.
- Backup your work
- Apply your modifications incrementally, testing and backing up as you go along.

8 DISCLAIMER

Although this setup is well 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!!

If you find any errors in this document, or have any queries, you can contact me at <http://rc-soar.com/email.htm>. For technical queries, please provide the following information:

- Transmitter manufacturer and model
- Operating system (Open/EdgeTX)
- Operating system version
- DLG template version

Safe flying!

- Mike Shellim