

# DLG 6S

OpenTX template for six-servo DLG's

Version 1.0

## Setup Guide

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## 2 INTRODUCTION

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### 2.1 DESCRIPTION

*DLG6S* is a full feature template for six-servo DLGs with ailerons and flaps (Yoda etc.). It features several neat features to help you get the best out of your model. Yet it is quick to set up, and fully customisable. Full documentation is provided.

Specification:

#### **APPLICATION**

- For DLG gliders with flaps and ailerons
- Any stick mode

#### **LAUNCH HEIGHT CALLOUT**

- Optional launch height callout (using ALT telemetry)

#### **7 FLIGHT MODES**

- Launch followed by Zoom
- Thermal1, Thermal2, Cruise, Speed
- Landing
- Voice confirmation

#### **IN-FLIGHT ADJUSTERS**

- Adjuster for aileron diff
- Adjuster for brake compensation

#### **CAMBER CONTROL**

- Camber presets, per flight mode.
- Snapflap, per flight mode.

#### **CONTROL SURFACE CALIBRATION**

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

#### **CROW BRAKE FEATURES**

- In flight compensation adjustment
- Auto diff suppression
- Reverse diff

#### **MISC**

- Assignable controls and switches
- Integrated 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!**

### 2.2 PACKAGE CONTENTS

What's included in the ZIP file:

Filename	Description
DLG6S_10_SetupGuide.pdf	This document
DLG6S_10_SettingsRef.xls	Settings reference
DLG6S_10*.otx	Model settings
DLG***.wav	Sound files

### 2.3 REQUIREMENTS

The following are required:

- Any OpenTX transmitter with OpenTX 2.2.1 or later
- A momentary switch on the correct side, for launching
- OpenTx Companion software + USB cable.

## 3 OVERVIEW

### 3.1 STICK MODE AND CONTROL ASSIGNMENTS

The stick mode is defined in **RADIO SETUP → MODE** menu. Any stick mode may be used.

The default control assignments are as follows:

Function	Control
Launch/Zoom and CAL	SH (see section 8.2)
Cruise/Thermal/Speed	SA (see section 8.1)
Thermal1/2 selection	SF (see section 8.2)
Landing	Throttle stick
Aileron diff adjust	Rudder trim

### 3.2 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 (defaults shown)	Priority
Launch	FM2	SH↓ (momentary switch)	High
Zoom	FM3	Follows Launch mode. Down elevator to exit	High
Landing	FM4	Throttle stick ↓ (activates brakes)	Mid
Cruise	FM0	SA —	Low
Speed	FM5	SA ↑	Low
Thermal 1	FM6	SA ↓ and SF↑	Low
Thermal 2	FM7	SA ↓ and SF↓	Low

### 3.3 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	Y(RudTrm)	Y			Y	Y	Y
Zoom	Y(RudTrm)	Y				Y	Y
Landing	Y(RudTrm)	Y	Y	Y(Ele trim)			Y
Thermal1/2	Y(RudTrm)	Y				Y	Y
Speed	Y(RudTrm)	Y				Y	Y
Cruise	Y(RudTrm)	Y				Y	Y

### 3.4 SERVO ASSIGNMENTS

Channel	Function
1	Right aileron
2	Left aileron
3	Right flap
4	Left flap
5	Elevator
6	Rudder

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.

### 3.5 FLIGHT TIMER

Timer1 is the flight timer.

- *To reset and start:* release Launch switch
- *To stop:* pull and hold Launch switch

### 3.6 CAL MODE

CAL mode (FM1) is a special flight mode for calibrating the outputs. When CAL is activated, trims are ignored and stick values are passed through directly to the outputs. This allows servo end points and centres to be visualised.

To activate CAL mode:

1. Apply full left aileron and full up elevator, and hold.
2. Pull and release SH
3. Release sticks.
4. Listen for voice confirmation that CAL mode is activated.
5. Choose the submode
  - **SA—**: for calibrating servo end points, and balancing the flaps. **In this mode, the flapperons move in 25% increments.** (No, you don’t have a faulty gimbal! 😊)
  - **SA↓**: for calibrating the neutral offset for flaps
  - **SA↑**: for calibrating using 50% aileron movement (to avoid damage to linkages)

To exit CAL mode, pull SH.

### 3.7 BASIC OPERATION

#### Trims

- Aileron trim is shared across all flight modes.
- Elevator trim is independent in each flight mode (but see section 7.1 for Landing mode).
- Rudder trim is repurposed to adjust differential.

#### 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 presets are configured individually for Launch, Zoom, Cruise, Thermal1/2 and Speed modes.

### Brake compensation (brake=>elevator)

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

### Roll rate enhancement

- Aileron diff is suppressed as brakes are applied, for greater roll authority.
- The downgoing movement can be further increased via a 'reverse diff' setting

### Aileron=>rudder mix

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

### Snapflap

- Snapflap (elevator=>flap,ail) can be set independently for each flight mode.

## 3.8 THE FLIGHT SEQUENCE

The flight sequence is as follows:

1. Rotate the model whilst pulling the launch switch. Model is in Launch mode.
2. As the model leaves the hand, release the launch switch. Model enters Zoom mode.
3. Near the top of the climb, **push forward on the elevator stick**. Model exits Zoom mode.
4. Once out of Zoom mode, the flight mode is determined by FM switch (SA) and throttle stick.

## 4 PREPARING THE TRANSMITTER

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### 4.1 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 sound files to the */SOUNDS/{language}* folder on the SD card. For example, the English folder is */SOUNDS/en*.

#### Transfer template to transmitter

1. Start the Companion software, using the correct profile for your transmitter
2. Open supplied file *DLG6S\_10.otx*.
3. If using a transmitter other than the X9D, you may receive warnings that the **SA** and/or **SH** are not available. Make a note of the warnings, and reassign switches if necessary (see sections 8.1 and 8.2).
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 *DLG6S\_10* model into an empty slot in the model list.
6. Close the *DLG6S\_10.otx* window.
7. From the File menu, choose *Write Models and Settings To Radio*.
8. Close OpenTx Companion

## 4.2 HARDWARE CALIBRATION

The transmitter hardware (sticks, sliders etc.) must be properly calibrated, so do so now if you haven't already calibrated or are not sure. To do 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.

## 4.3 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).

## 4.4 FAMILIARISATION

Using the transmitter on its own, practise the following:

- Activate Launch, Zoom, Thermal1, Thermal2, Cruise, Speed and Landing modes (see Section 3.2).  
**TIP:** start with the throttle stick pushed fully forward.
- Activate CAL mode and sub-modes (see Section 3.6)
- Start/stop/reset integrated flight timer (see Section 3.5)
- Verify that the sounds are working correctly. If not, check that the sound files are in the correct location.

# 5 CALIBRATING THE OUTPUTS (SERVOS)

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In this section you will set the rotation and operating range of the servos.

## 5.1 SET SERVO ROTATION

First, set the rotation of each servo:

1. Switch on the transmitter (do not power up the receiver yet)
2. Crow stick to centre
3. Enter CAL mode
4. Switch SA to middle.
5. Power up the receiver
6. Open the **OUTPUTS** menu
7. Set the servo rotations according to table below. **Pay attention to the notes for the aileron and elevator servos!**

Stick command	Control surface	Notes
Aileron stick right →	RtAil goes up ↑ LtAil goes up ↑	In CAL mode, both ailerons <b>move up together.</b>
Ele stick forward ↑	Ele goes up ↑	In CAL mode, the elevator goes in <b>reverse to normal.</b>
Thr stick forward ↑	RtFlap goes up ↑ LtFlap goes up ↑	In CAL mode, the throttle response is stepped.
Rudder stick right →	Rud goes right →	

To change the direction of an output:

1. Go to the Direction field

2. Press {enter}, and immediately {return}

Channel	Label	Min	Mid	Max	Direction	Label	Value
CH1	RtAil	0.0	-150.0	150.0	←	RtA	1500Δ
CH2	LtAil	0.0	-150.0	150.0	→	LtA	1500Δ
CH3	RtFlap	0.0	-150.0	150.0	↔	RtF	1500Δ
CH4	LtFlap	0.0	-150.0	150.0	→	LtF	1500Δ
CH5	Elev	0.0	-150.0	150.0	→	Ele	1500Δ
CH6	Rudd	0.0	-150.0	150.0	→	Rud	1500Δ
CH7		0.0	-100.0	100.0	→	---	1500Δ

Do a final check:

1. Exit CAL mode
2. Enter Cruise mode.
3. Check for correct direction of aileron, elevator and rudder. **Note: The flaps cannot be checked yet.**

## 5.2 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 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!**

Channel	Calibration procedure
<input type="checkbox"/> CH 3 – Rt Flap	<p>Start with the right flap (it will be used as the reference when calibrating the left flap):</p> <ol style="list-style-type: none"> <li>4. Enter CAL mode</li> <li>5. SA to middle</li> <li>6. Go to <b>OUTPUTS</b> menu</li> <li>7. Highlight right flap channel (default CH3)</li> <li>8. Skip to curve field <b>RtF</b>, and press {long enter} to open curve editor</li> <li>9. Throttle stick fully back (↓), adjust point 1 for <i>lower</i> end point.</li> <li>10. Throttle stick fully forward (↑), adjust point 3 for <i>upper</i> end point.</li> <li>11. Adjust point 2 so it lies on the <b>straight line</b> 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.</li> </ol> <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 – Lt Flap	<p>Next, CALibrate the left flap so it precisely matches the right flap:</p> <ol style="list-style-type: none"> <li>1. Return to <b>OUTPUTS</b> menu</li> <li>2. SA to middle</li> <li>3. Highlight the left flap channel (default CH4)</li> <li>4. Skip to curve field <b>LtF</b>, press {long enter} to open curve editor</li> </ol> <p>Adjust points 1 – 5 to exactly match the right flap:</p> <ol style="list-style-type: none"> <li>5. Stick fully back, adjust point 1</li> <li>6. Stick ½-back, adjust point 2</li> <li>7. Stick to centre, adjust point 3</li> <li>8. Stick to ½-forward, adjust point 4</li> <li>9. Stick fully forward, adjust point 5</li> </ol> <p>To match the end points on left and right sides, it may be necessary to reduce one or other end points for the right flap.</p>

Channel	Calibration procedure
Flap offset	<p>Next, CALibrate the flap offset:</p> <ol style="list-style-type: none"> <li>1. Return to <b>OUTPUTS</b> menu</li> <li>2. Page to <b>GLOBALVARS</b> menu.</li> <li>3. <b>SA</b> down – listen for ‘calibrate flap neutral’</li> <li>4. Go to cell GV5:FOF→FM0</li> <li>5. Adjust offset so that flaps follow the neutral profile</li> </ol> <p>If flaps are not in line, redo the calibration of the left flap (see previous step), paying attention to the two points either side of the neutral position.</p>
CH 5 – Ele	<p>CALibrate elevator.</p> <p><b>IMPORTANT: in CAL mode, the elevator moves in the opposite direction to normal.</b></p> <ol style="list-style-type: none"> <li>1. Go to the <b>OUTPUTS</b> menu</li> <li>2. Highlight the Ele channel (default CH5)</li> <li>3. Skip to curve field ‘Ele’, press {long enter } to open curve editor</li> <li>4. With Ele stick at centre, adjust point 2 so elevator is central</li> <li>5. Move Ele stick forward (↑), then adjust point 3 for <i>upper</i> limit</li> <li>6. Move Ele stick back (↓), then adjust point 1 for <i>lower</i> limit</li> <li>7. Check elevator travel is equal up &amp; down, reduce one or other side as necessary.</li> </ol>
CH 6 – Rudder	<p>CALibrate the rudder</p> <ol style="list-style-type: none"> <li>1. Return to the <b>OUTPUTS</b> menu</li> <li>2. Highlight the rudder channel (default CH6)</li> <li>3. Skip to curve field ‘Rud’, press {long enter } to open curve editor</li> <li>4. With stick in centre, adjust point 2 so rudder is central</li> <li>5. Move Rudder stick right (→), then set point 3 for max right movement</li> <li>6. Move Rudder stick left (←), then set point 1 for max left movement</li> <li>7. Check equal travel left/right, reduce one or other side if necessary.</li> </ol>
<input type="checkbox"/> CH 1 – Rt Ail <input type="checkbox"/> CH 2 – Lt Ail	<p>Finally, CALibrate ailerons:</p> <p><b>IMPORTANT: in CAL mode, the ailerons move together.</b></p> <ol style="list-style-type: none"> <li>1. Return to the <b>OUTPUTS</b> menu</li> <li>2. <b>SA</b> down – listen for ‘calibrate flap neutral’.</li> <li>3. Highlight CH1:RtAil</li> <li>4. Skip to curve field ‘RtA’, then press {LONG ENTER } to open curve editor</li> <li>5. With aileron stick centred, adjust point 2 for correct centre.</li> <li>6. Move aileron stick right →, then set point 3 to desired upper limit. Allow for both crow and aileron movement.</li> <li>7. Move aileron stick left (←), then set point 1 so that down-travel = up-travel. If you cannot get sufficient down movement due to geometry, then <ol style="list-style-type: none"> <li>1. Move <b>SA</b> up (↑) – this reduces aileron movement by 50%. <i>Note: this reduced rate applies only in CAL mode!</i></li> <li>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 <b>INPUTS</b> menu, and to aileron diff, will reduce the movement.</li> </ol> </li> <li>8. Repeat all steps for CH2:LtAil.</li> <li>9. Check: (a) equal up/down movement, (b) left and right ailerons match.</li> </ol>

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.

## 6 CONFIGURING TRAVEL AND MIXERS

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

*Note:* Transmitters with small mono screens (TX12, X-Lite, X9 Lite etc.) do not have a GLOBALVARS menu. Instead, GVARs are accessed through the **FLIGHT MODES** menu.

### 6.1 AILERON, ELEVATOR AND RUDDER TRAVEL (INPUTS MENU)

Following calibration, the travel of the control surfaces may be excessive. In this section, you'll reduce the input rates to achieve the required travel.

1. Enter **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. Skip to the weight field
6. Adjust weight for required travel.
7. To add expo, skip to Curve field, choose 'Expo' as the curve type. Set required value.

When adjusting aileron travel, *consider upward travel only* (downward travel will be adjusted in the next section.)

### 6.2 AILERON DIFF (RUDDER TRIM)

Aileron differential reduces the downward travel of the ailerons in response to roll commands. Diff is adjusted using the rudder trim. The range is 70% to 0% as the trim is moved from left to right, in other words the downward travel increases (think of the rudder trim as a roll rate control!).

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

### 6.3 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 momentary switch, and hold.
4. Adjust the GV for required offset
5. Release SH
6. Push forward on elevator stick to exit **Zoom** mode.

### 6.4 CROW BRAKE TRAVEL (GV: CMA, CMF)

Set the brake=>aileron and brake=>flap travel as follows:

1. Open **GLOBALVARS** menu
2. Enable Landing mode
3. Move throttle stick back (full brake)
4. Go to row 'CmF', column FM4:Landing
5. Adjust for required down flap movement
6. Go to 'CmA', column FM4:Landing
7. Adjust GV for required up aileron movement

## 6.5 AILERON=>FLAP MIX (GV:A2F)

This mix can increase the roll rate. Adjust per flight mode as follows:

1. Open **GLOBALVARS** menu, go to row 'A2F'
2. Activate flight mode to be adjusted - the column is highlighted
3. Adjust value in highlighted column

## 6.6 CAMBER/REFLEX PRESETS (GV:CMA, CMF)

Camber and reflex are independently adjustable in Launch, Zoom, Thermal, Cruise and Speed modes.

Ailerons and flaps are configured separately as follows:

1. Open **GLOBALVARS** menu
2. Go to row 'CmA' (for ailerons)
3. Activate the flight mode to be adjusted
4. Adjust value in highlighted column. May be positive or negative.
5. Repeat for row 'CmF' (for flaps)

Typical settings are: zero camber for Cruise and Launch, positive camber for Thermal1/2, and negative camber ('reflex') for Speed and Zoom.

## 6.7 AIL=>RUDDER (GV:A2R)

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

4. Open **GLOBALVARS** menu, go to row 'A2R'
5. Activate flight mode to be adjusted - the column is highlighted
6. Adjust value in highlighted column

## 6.8 SNAPFLAP (GV:SNA, GV:SNF)

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

1. Open **GLOBALVARS** menu, go to row 'SnA' (this adjusts ailerons)
2. Activate flight mode to be adjusted - the column is highlighted
3. Adjust value in highlighted column
4. Repeat for row 'SnF' (adjusts flaps).

## 6.9 REVERSE DIFF (CH19->AIL)

To enhance the roll rate under braking, the template suppresses differential so that full down movement is restored with full crow. You can further increase the downgoing aileron travel by applying reverse diff as follows:

1. Open **MIXERS** menu,
2. Scroll to CH19, 'Ail' line
3. Press {long Enter} to open mixer editor
4. Apply full brakes and full aileron
5. Increase *weight* from the default 100% until the required down movement is achieved.

For best roll response, the downgoing aileron should be a little below the aerodynamic neutral.

## 7 FLYING NOTES

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### 7.1 TRIMMING CROW BRAKES

DLG6S features a novel and very simple way of adjusting crow trim.

1. Enter Cruise mode
2. Adjust trim using the elevator trim.
3. Deploy 100% brakes, and adjust compensation, *also using the elevator trim.*
  - Trim fully back = zero compensation
  - Trim fully forward = 80% down elevator

#### Adjusting the compensation curve.

Once the full-brake compensation has been adjusted, the response with partial brake can be tuned by editing curve CV7:BrC. *Alter points 2 – 4 only.* The default curve is a typical 'S' shape.

(*Technical note:* the base trim in Landing mode is shared with Cruise mode. However, in Landing mode, the elevator trim lever is transparently repurposed to adjust the compensation.)

## 8 CUSTOMISING YOUR SETUP

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

### 8.1 CHANGING THE FLIGHT MODE SWITCHES

#### Main flight mode switch

The main flight mode switch is defined in logical switches L2 and L3:

Function	Menu point	Assign to	Default
Speed mode	LOGICALSWITCHES→L2	3-pos switch	SA↑
Thermal mode	LOGICALSWITCHES→L3		SA↓

The same 3-position switch must be used for both modes, and the positions must be different.

Cruise mode is automatically assigned to the remaining position.

#### Thermal 1/thermal 2 mode switch

The selector for thermal\_1 is defined in logical switch L28:

Function	Menu point	Assign to	Default
Thermal_1 mode	LOGICALSWITCHES→L28	2- or 3-pos switch	SF↑

The remaining switch position(s) are assigned to Thermal 2 mode.

### 8.2 CHANGING THE MOMENTARY (LAUNCH) SWITCH

A momentary switch is used to select Launch and CAL modes. The default setting is SH. You can specify a different momentary switch as follows:

Function	Menu point	Assign to	Default
Momentary switch	LOGICALSWITCHES→L1→V1	Any momentary switch	SH↓

**SAFETY:** The switch must be a momentary type, do not use a regular switch!!

### 8.3 DISABLING FLIGHT MODES

To disable a flight mode, go the **FLIGHT MODES** menu, scroll to the relevant flight mode, and set the flight mode switch to '---'. Notes:

- Cruise mode cannot be disabled
- If disabling Launch mode, *disable Zoom mode also*. Launch height callout will not be available.
- It is not recommended to disable CAL mode.

### 8.4 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 Ail, Ele or Rud group.
3. Press {long Enter}, 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: Thermal1, 7: Thermal2).

Alternatively, you can specify a switch to select rates directly rather than by flight mode.

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%.



Note that 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'](#).

### 8.5 REVERSING THE THROTTLE/BRAKE STICK

By default, zero brake is with the throttle stick fully forward. To reverse the stick, so zero is at the bottom:

1. Open the **MIXER** menu
2. Go to CH23:RawBr
3. Go to the Curve field, and change the curve from CV9:Thr to !CV9:Thr (note leading '!').

### 8.6 LAUNCH HEIGHT ANNOUNCEMENT

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

Function	Menu point	Note
Callout enable/disable	<b>SPECIAL FUNCTIONS</b> →SF14	<i>Disabled:</i> L26, '---' (default) <i>Enabled:</i> L26, ' <b>ALT+</b> ' (make sure to discover sensors first, otherwise ALT+ will not be available)
Callout Zoom delay	<b>LOGICAL SWITCHES</b> →L25→Duration	Default=3secs

To minimise the effect of sensor drift, telemetry values are reset on launch (**SPECIAL FUNCTIONS**→SF15).

## 8.7 SETTING THE RANGE OF DIFF

Aileron diff is adjusted via the rudder trim. The default range is 0% to 70%. The range can be adjusted by editing the end points of curve CV10:Dif. Negative diff is *not* supported.

## 8.8 ADJUSTING BRAKE STICK DEADBAND

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

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

## 8.9 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:

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

## 9 DISCLAIMER

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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, please contact me at <http://rc-soar.com/email.htm>.

Safe flying!

- Mike Shellim