

Crow-aware Adaptive Trim for Taranis

Version 2.2 - integration notes

Script file: adpt22.lua

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URL: <https://rc-soar.com/opentx/lua/adaptivetrिम/>

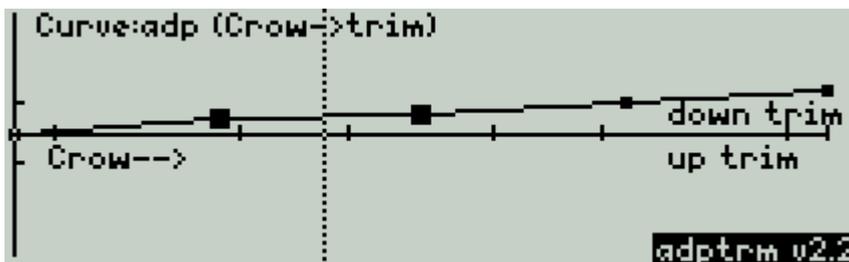
NOTE: These new instructions describe a simpler integration method, and is recommended for new installations. The original instructions are [available here](#).

Description

This script allows the pilot to adjust pitch trim using the elevator trim, regardless of crow. Behind the scenes, the trim bends a crow/trim ('compensation') curve.

When a trim click is detected, the script identifies the active point(s) on the curve, and moves them up or down.

The trim value for the current crow setting is obtained from a mixer where *source=crow_channel* and *curve=crow/trim curve*. The script also displays the crow/trim curve in real time:



Compatibility

Radios with large mono screen (212 x 64) e.g. X9D, X9D+, X9E

OpenTx 2.2.2 or above

The script works well with the author's Pro templates (*F3F*, *F3J*, *E-Soar Plus*, *Wingy4S*).

Integration notes

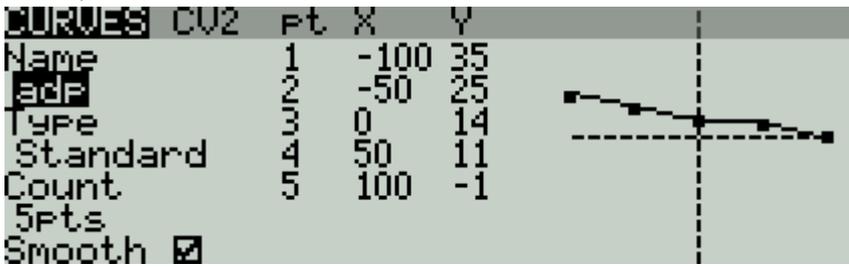
This section shows how to integrate the script in your setup. Remember to backup your setup first.

1. Create the crow-trim curve

In the Curves menu, find an unused curve for the crow-trim curve. Set the options as follows:

- Name = 'adp' (exact spelling required)
- 5 points
- Standard (Fixed) X
- smooth.

Initial point values are not critical.



2. Suppress elevator trim in crow mode

Normal trim behaviour must be suspended when crow is active.

1. Go to the Flight modes menu.
2. Highlight the flight mode where crow brakes are active ('Landing' mode on the author's templates).
3. Set elevator trim mode to '--' or 'Trim disabled'



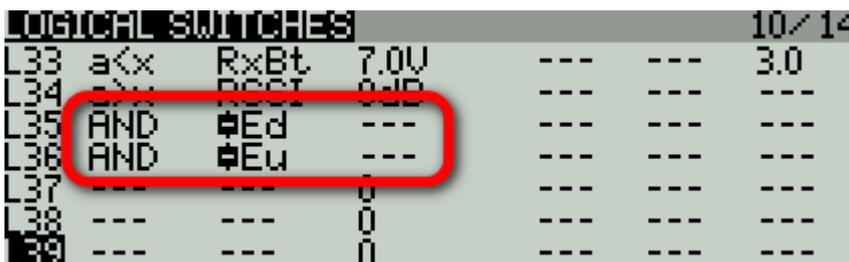
The trim now behaves like a pair of dumb switches.

3. Capture trim clicks

Create two logical switches L(n) and L(n+1) to capture trim clicks.

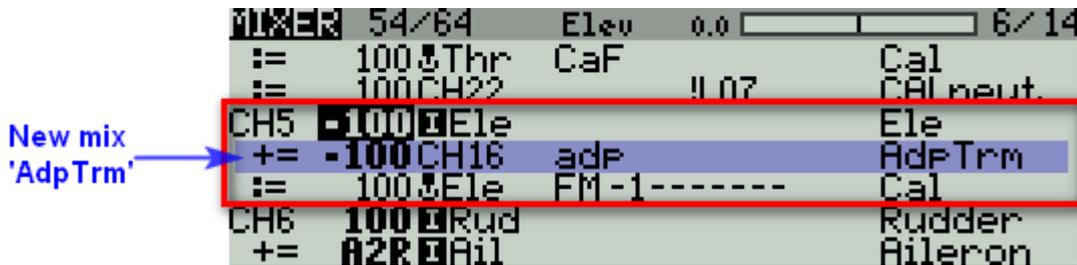
- L(n) captures the lower switch (Ele trim down/'Ed')
- L(n+1) captures the upper switch (Ele trim up/'Eu').

The LS's must be adjacent, and the order is important.



4. Add mix for adaptive trim

Next, go to the elevator channel, and create a new mix 'AdpTrm'. This will supply the trim value in crow mode. The mix must be inserted above the CAL mix (if provided). *If using the author's V-tail setups, then make the changes in the VeeCm channel – this handles elevator for both V surfaces.*



The options for the new mix are as follows

Name='AdpTrm'

Source = Crow value (normally CH16 in the author's templates).

Weight= -100% (note sign)

Modes = FM in which crow is active (Landing mode in the author's templates). All other FM's disabled.

Curve = 'adp' (not 'ladp')



Finally, tidy up the other lines in the Ele channel:

- Delete the old crow compensation line if present. In the author's Pro templates, the line is typically called 'CrComp' or 'SpComp'.
- In the Ele line, check that the 'include trim' option is 'Yes'.
- No change is needed to the CAL line (if present), however it must remain the last line in the channel.

5. Pass information to the script

In the step, you'll create the curve which passes information to the script.

Find an unused curve and set the options as follows:

- Name = 'prm' (exact spelling required)
- 5 points
- Standard (Fixed) X
- Set the points as follows:

Point 1: flight mode 0-8 in which crow is active (Landing mode in author's templates)

Point 2: Value = $-L$, where L = logical switch for lower microswitch state which you set earlier. *Note negative sign.*

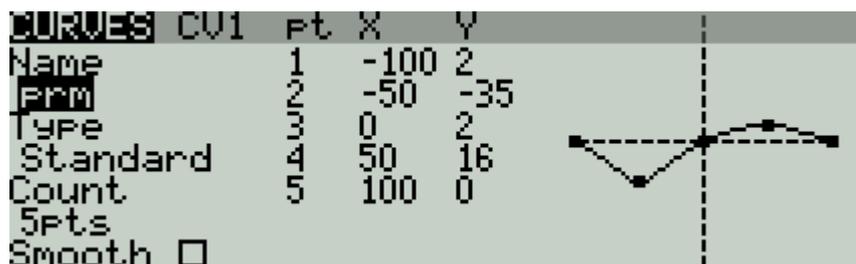
Point 3: [not used]

Point 4: Channel number 1-32 containing crow value (normally CH16 in the author's templates). -100 must correspond to full crow, $+100$ to zero crow.

Point 5: Adaptive trim behaviour at minimum crow:

- 0 - emulates normal trim behaviour, $\pm 25\%$ trim travel, with centre/limit callouts (*recommended*)
- 1 - trim is pinned to zero
- ≥ 2 - trim is not constrained

Here is an example. Note that the point values may differ with your setup:



6. Install the script in your transmitter

In this step, you'll copy the script to the SD card, and link it to your setup:

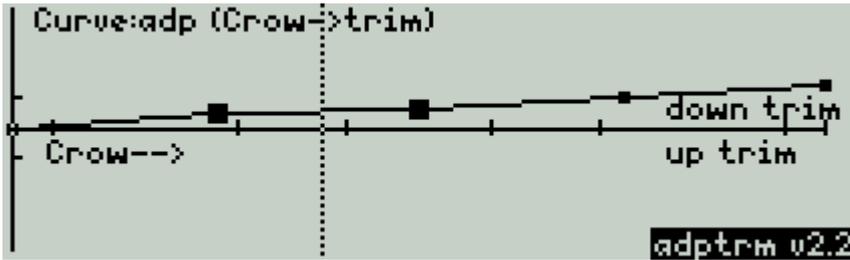
1. Copy file 'adpt22.lua' to the SCRIPTS\TELEMETRY folder on the SD card
2. Power up the transmitter.
3. In the Display menu, scroll down. In the first free screen choose 'script' and 'adpt22.lua'.



7. Test the system

It's important to test the system carefully.

From the main menu, press {long Page} to get to the adptrm telemetry screen:



Test basic operation:

- Enter crow mode
- Check that the dotted bar moves with the crow stick
- Click up and down on the elevator trim and verify that the active points move.

With the model assembled, check mix directions:

- Check elevator trim direction in Landing mode
- Check elevator trim direction in other FMs
- Check elevator *stick* direction

8. How to refresh script parameters

After making changes to curve 'prm', the script can be refreshed by pressing '+' from the telemetry screen (or power cycle the transmitter).

Restrictions and failure mode

Only one instance of the script should be run per model. In the event that the script is not loaded or terminates prematurely, the trim curve will remain active but the trim lever will have no effect on the curve.

Safety

Test carefully before flight!

USE AT YOUR OWN RISK. IF IN DOUBT, DO NOT FLY!!

Feedback

Feedback and queries are always welcome, you can contact me by email via:

<https://rc-soar.com/email.htm>

Change log

02/07/19	2.2	Added option to pass trim state via two logical switches (saves a GVAR)
21/04/19	2.1	Fixed run time error if crow value exceeds +/-100 limits.
16/04/19	2.0	param 3 (CV number) removed. Instead, looks for crow trim curve called 'adp'. up-trim limits now match downtrim. renamed adpt20.lua fixed broken zero-crow mode x-axis label derived from crow channel name or number fixed bug crow mix value not clipped (can exceed +/- 100 if thr trim enabled)
04/03/19	1.0	first version