

Crow-aware Adaptive Trim for Horus

Version 2.4 - integration notes

Widget file: main.lua

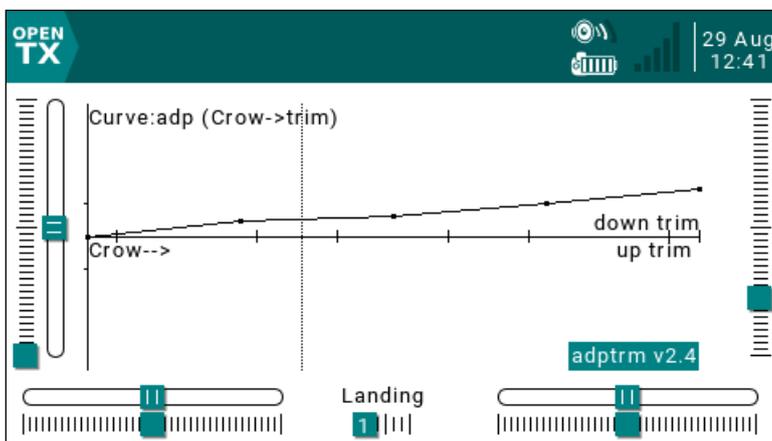
Author: Mike Shellim

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

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 is bending a crow/trim ('compensation') curve. The script also displays the crow/trim curve in real time:



Compatibility

The script works with any Tx with colour screen, e.g. X10, X12, Jumper T16, RM TX16s etc.

OpenTx 2.2.2 or above

How it works

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 is obtained via a new mix with `source=crow_channel` and `curve=crow/trim curve`.

Integration instructions

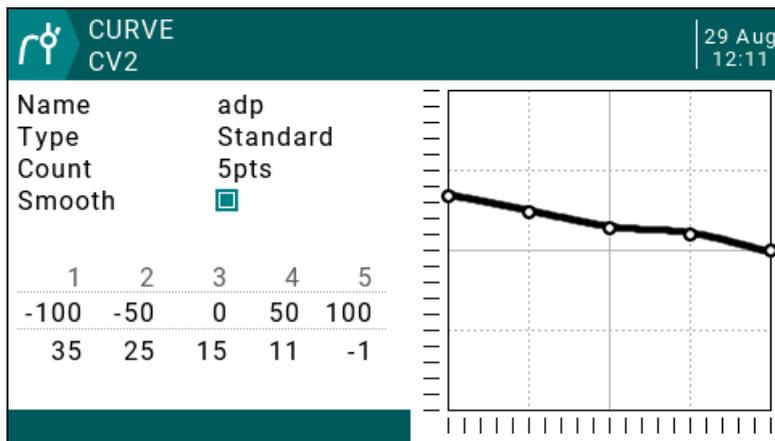
This section shows how to integrate the script in your setup. Remember to backup your setup first.

1. Create a 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!*)
- 5 points
- Standard (Fixed) X
- smooth.

Point values are not important.



2. Suspend normal trim behaviour

In this step, normal trim behaviour will be suppressed when crow is active. This will allow the trims to function as a dumb two-way momentary switch.

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'

FLIGHT MODES							Elevator Trim	
FM0	Normal	N/A	:0	:0	:0	:0	0.0	0.0
FM1	CAL	L20	:1	:1	:1	:0	0.0	0.0
FM2	Landing	L17	:2	--	:2	:0	0.2	0.2
FM3	Reflex	L17	:3	:3	:3	:0	0.0	0.0
FM4	---	---	:4	:4	:4	:0	0.0	0.0
FM5	Pump	L30	:5	:5	:5	:0	0.0	0.0
FM6	Climb	L08	:6	:6	:6	:0	0.0	0.0
FM7	---	---	:0	:0	:0	:0	0.0	0.0
FM8	---	---	:0	:0	:0	:0	0.0	0.0

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.

Make a note of ‘n’, as you will need this later.

LOGICAL SWITCHES						
L31	a<x	CH23	-5.0	SC↓	---	---
L32	a<x	CH23	-95.0	SC↓	---	---
L33	---	---	0	---	---	---
L34	---	---	0	---	---	---
L35	AND	Ed	---	---	---	---
L36	AND	Eu	---	---	---	---
L37	---	---	0	---	---	---
L38	---	---	0	---	---	---
L39	---	---	0	---	---	---

4. Get adaptive trim value

In this step, we add a new crow compensation mix to the elevator channel. Note: *If using the author’s V-tail setups, then make the changes in the VeeCm channel.*

1. Delete any existing compensation mix if present. In the author’s Pro templates, the line is typically called ‘CrComp’ or ‘SpComp’.
2. Create a new mix ‘AdpTrm’. This will supply the trim value in crow mode (since the regular trim was disabled in Crow mode). The new mix must be inserted *above* the CAL mix (if present).

Name=‘AdpTrm’

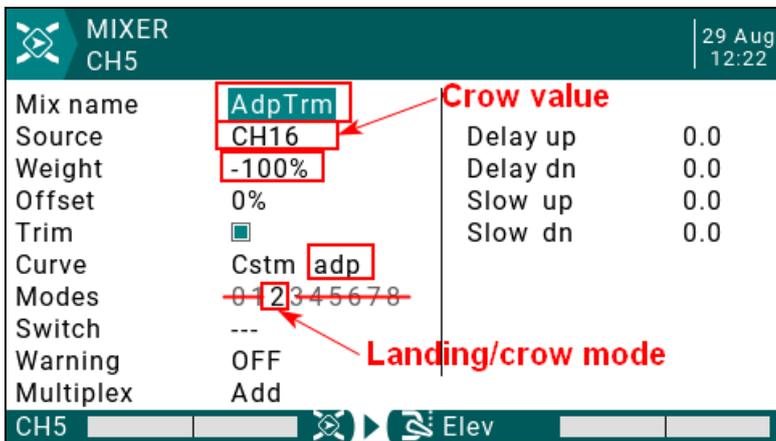
Source = Crow value (normally CH16 in the author’s templates).

Weight= –100% (note minus sign)

Modes = Tick the crow/landing FM. All other FM’s must be *unticked*!

Curve = ‘adp’ (*not* ‘ladp’)

MIXER 54/64						
⊕	-GV1	Ed	Ail	TrR		AilTri
⊕	100%		CH11			FlapCm
⊖	100%	⊖	Thr	CaF		Cal
⊖	100%		CH22		L07	CALneu
CH5	-100%	⊖	Ele			Ele
⊕	-100%		CH16	adp		AdpTrm
⊖	100%	⊖	Ele			Cal
CH6	100%	⊖	Rud			Rudder
⊕	GV2	⊖	Ail			Ailero
CH4						LtFlap



5. Pass information to the script

In this step, you'll create the curve which passes information to the script, and set the points.

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.*

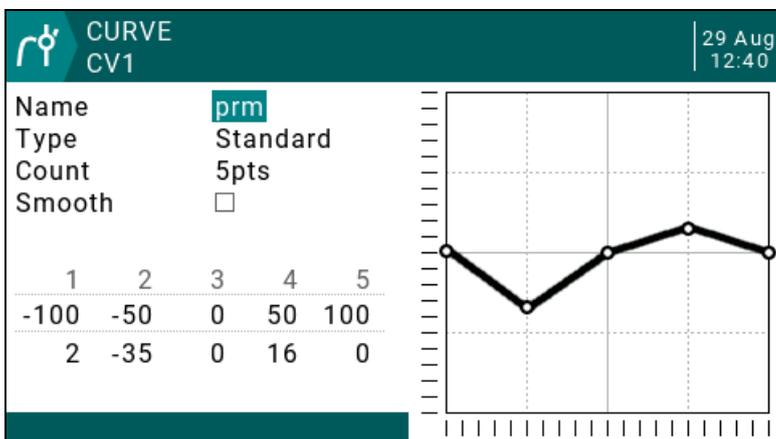
Point 3: [not used]

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:

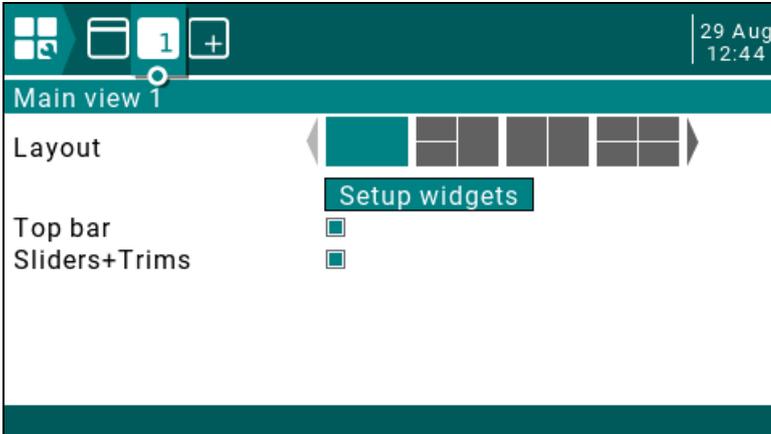
- 0 - emulates normal trim behaviour, $\pm 25\%$ trim travel, with centre/limit callouts (*recommended*)
- 1 - trim is pinned to zero
- ≥ 2 - trim is not constrained

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



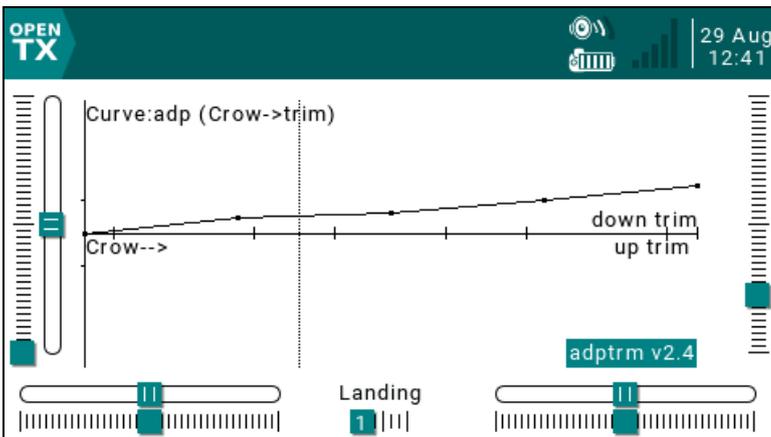
6. Install the script in your transmitter

1. On SDcard, create sub folder \SCRIPTS\WIDGETS\ADP24
2. Copy file *main.lua* to ADP24 subfolder
3. Power up the transmitter.
4. Press 'TELEMETRY' and install the widget



7. Testing

From the widget screen:



Test basic operation:

1. Enter crow mode
2. Check that the dotted bar moves with the crow stick
3. 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 deleting then reselecting the widget, or power cycling the transmitter.

9. 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.

10. SAFETY

Test carefully before flight!

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

11. Change log

08/06/20	2.4	MS: Removed transmitter checks
04/11/19	2.3	MS: Removed colour options (fixes colour affecting other widgets)
02/07/19	2.2	MS: Added option to pass trim state via two logical switches (saves a GVAR) Added Jumper T16 to supported tx's list Fixed colours, added text color option.
19/04/19	2.1	MS: Fixed crow bar shown solid
19/04/19	2.0	MS: Bug fixes. Up-trim range now same as down-trim. Trim curve must be named 'adp' (param 3 not used).
08/04/19	1.0	LT: Forked by Lothar Thole from adptrm.lua v1.9

12. Feedback

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

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