

Multiplex P4000 settings for a V-tail F3F model.

Credits – I'm indebted to Mike Shellim and his contributors for the coherent 'manual' on the P4000 plus a lot of the ideas here came from Mark Passingham.

Overview

This setup is for a typical F3F model having a 4 servo wing and a v-tail. The file is for a P4000 Version 2 only.

Requirements.

- 1) Easy in-flight adjustment of elevator compensation for spoiler.
This is achieved by using a cascading mix to the two v-tail servos that is driven from the spoiler stick.
- 2) Variable Snap Flap
Achieved via a cascading mix using a pure stick input the snapflap movement is controlled from a slider.
- 3) Cancellation of any differential when using spoilers
Achieved via an analogue switch run from the spoiler stick.

Base Type

Universal (as if there is a choice!)

Controls

I fly mode 2 so

- A – Rudder
- B – Spoiler
- C – Aileron
- D – Elevator
- E – Flap
- F – Aux 1 (Snapflap volume)

Note: If you don't fly mode 2 then you will also need to change the Analogue switch sources as well to make this setup work with your mode.

Servos

1. Servomix (Left Aileron)
2. Servomix (Right Aileron)
3. Servomix (Left Flap)
4. Servomix (Right Flap)
5. Servomix(Left V-Tail)
6. Servomix (Right V-Tail)
7. Servomix (Not used redundant)

Note: None of the usual inbuilt mixers are used.

Switches

- Transfer SW: T1 S01
- Analogue SW: A1 From Control B (Effect Max 100%, Min 0%)
- Analogue SW: A2 From Control D (Effect Max 100%, Min 0%)
- Analogue SW: A3 From Control F (Effect Max 100%, Min 0%)
- Logical SW: LOG1 (Inputs 1 S02^ AND, 2 S06^ AND, T1-1v AND)
- Combi Switch S04v Following 50% Aileron -> Rudder (Lazy!)

Flight Modes

I use 4 flight modes (Normal, Thermal, Speed, "F3F", and Landing.

- 1) Normal is S01 Middle. S03 Up. S02 Up
- 2) Thermal is S01 Down. S03 Up. S02 Up
- 3) Speed is S01 Up. S03 Up. S02 Up
- 4) F3F is S01 Any. S03 Down, S02 Up
- 5) Landing is S01 Any. S03 Any. S02 Down

Control Definitions.

Here I am only going to document the critical parts. The throws etc are so model dependent that they are meaningless.

- A. Rudder. No flightmode specific stuff.
- B. Spoiler. For flightmodes 1-4 Fixed Val on S02^ is set to 100%. I.e. No spoilers unless in landing mode.
- C. Aileron. The differential settings are 60% for flight modes 1,3&4. 70% for 2 and in flight mode 5 60% reducing via analogue switch A1 when spoilers are applied. This is to maintain roll authority when the spoilers are applied at the expense of adverse yaw.
- D. Elevator. Travel is reduced to 75% for flightmode 4
- E. Flap. The Centre value is 0 for flightmodes 1 & 5. -36% for flight mode 2, +100% for flightmodes 3 & 4
- F. Aux-1. No flightmode specific stuff.

MultiMix Definitions.

MIX13:Pure Elev (See Mike Shellims guide on Pure Stick input)

Is operated by

- 1) Fixed Val
- 2) Fixed Val

MIX14:Snapflap

Is operated by

- 1) Pure Elev

MIX15:Spoiler V

Is operated by

- 1) Spoiler

Travel and Curves

Starting with the Multimix Settings as they cascade logically to the physical servos.

MIX13:Pure Elev (See Mike Shellims guide on Pure Stick input)

- 1) Fixed Val Switch:A2-D 3 Point Curve All values are 100%
- 2) Fixed Val Switch:A2-D 3 Point Curve All values are -100%)

MIX14:Snapflap

- 1) Pure Elev Switch:A3-F 13 Point Curve (Values as required) In the model points 1 thru 10 are 0, point 11 is 75% 12 is 87% 13 is 100%. This gives a sharp dose of snapflap towards the end of up elevator. Adjust the curve to suit you remembering that the actual output is modified by the analogue switch A3. i.e. Don't set the actual travel here just the curve profile you want. Also as this mixer is driven from a pure stick position dual rates, expo etc will have no effect on this mix.

MIX15:Spoiler V

- 1) Spoiler Switch On 3 Point Curve (Values as required) You should modify this mix to give your preferred elevator compensation when the spoilers are deployed. I set this by leaving this screen open while test flying and use the digi-adjuster to set the values at the various spoiler stick positions. The model this memory is based on only required a three position curve. You may need more depending on your model. This allows you to change the compensation safely in flight rather than having to land and adjust each v-tail half individually.

Actual Servos

Servos 1 thru 4 are basically the same with different curves so I will only document 1 showing the inputs and switch settings.

- 1) Aileron Switch On
- 2) Flap Switch On
- 3) Spoiler Switch On
- 4) Snapflap Switch LOG1

Servos 5 and 6 are again the same as follows

- 1) Elevator Switch On
- 2) Combi Rudder Switch On
- 3) Flap Switch On
- 4) Spoiler V Switch On

Operation.

Slider F controls the amount of snapflap that you get. With the slider fully up you will obtain 100% of the movement defined by the servo travel. With the slider in the middle you get 50%. With the slider all the way down you get no snapflap. Snapflap is also disabled in flightmodes 2 and 5 and if Switch S06 is down as defined by the logical switch LOG1. If you are converting an existing model to 'variable snapflap' modify the travel to double what you currently have. Then with the slider in the middle you should have the same amount of snapflap you had before.

The combi switch is on S04. It is there only so I can smoke while flying! Learn to fly properly!

My "F3F" mode can probably be better done using dual rates/expo etc. I do it this way and am too old to change.

The spoiler – elevator compensation requires some thought. You have to guess roughly how much movement you will need (plus a suitable margin) and put that in the servo mix remembering that that is the maximum elevator travel you are going to get. The fine tuning is done on the multimix curve while in flight. At height move the spoiler stick (when in landing mode) to each point on the curve and adjust the amount of compensation you need via the digi-adjuster. I try to trim the model so it is always pointing slightly “down hill” with spoiler deployed.

My Snapflap Philosophy.

I’ve been asked why I use a pure stick input to drive the snapflap so here are my views. I want the snapflap to come into effect at a certain stick position (in my case at about half up stick) and I then adjust the elevator control to provide the appropriate movements to suit that position. When doing a turn on a halfway decent F3F run I’m pulling around 80-90% up stick, well into the active area for snapflap. I find it easier to alter the elevator curves to suit the predefined snapflap curve and it also means that I can easily experiment by altering elevator travel/expo etc for my “F3F” mode and still get back to “standard” or a known good setup while flying at the flick of a switch. This helps while doing fine tuning as I don’t have to constantly land/fiddle/fly/etc. It’s also useful at a comp where I’ve changed some snapflap/elevator settings in that if I decide it’s no good I can revert back to what I had before while still doing the run.

Final Caveat.

This works for me – it may not suit you and please don’t blame me if your pride and joy hits the hill. Don’t expect to load this into your TX find your model is suddenly fast. It won’t happen – it takes ages to set a model up properly and I never ever found the perfect setup yet. 95% of all bad times are pilot induced. I often have several copies of a model for varying conditions that have been derived by trial and error. All travels are model and flyer specific so alter them to suit you and your model. The snapflap function is driven from a pure stick input. This may not be what you want as it is not directly affected by expo, dual rates etc. You may prefer to run it off just elevator. Finally the switches used are my standards. For instance S02 enables spoiler on all my models with spoiler or crow braking. I strongly suggest you stick with your standards or if you don’t have a standard get one and stick to it.

If you have suggestions or queries you can reach me via Mike Shellim (who knows the P4000 better than me anyway).