12X 6-Servo Aileron Programming

The 12X has built-in four aileron servo programming; to extend this to six aileron servos requires two program mixes. If you are using rudder-to-ailero mixing, differential, and/or flaperon/spoileron mixing there are additional steps to follow to complete the necessary programming.To begin programming the 12X for six aileron servos, press and hold the ENT key and turn the system on to enter the system menu.

In this programming guide, channels 2, 7 and 9 are the right aileron channels. Channels 5, 6 and 8 are the left aileron channels.

Device Select, Code 17
Select and enter the device select function. Use the rolling selector to highlight the [OUT] column beside the FLAP and Aux 4 channels and select each to INH. It is a good idea to set all unused channels to INH. Press the LIST key to return to the system menu.


Wing Type, Code 22
Select and enter the wing-type function. Use the rolling selector to highlight NORMAL next to Wing:, press the roller and select 4-AILE.
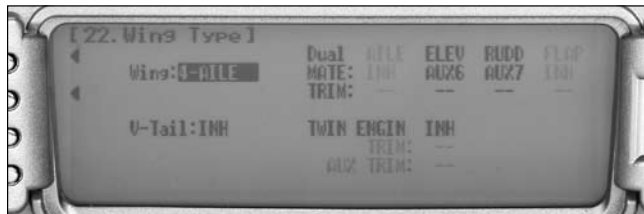
Press the ENT key to exit the system menu, then press the LIST key to enter the function menu.

Program Mix 1, Code 51
Select and enter Program Mix 1, code 51. Select the master channel, and select AIL+. Next select the slave channel and select AUX1. Scroll with the roller to select the L Pos.0 value and enter +100%. Repeat for the R Pos.0 value and again set the value to +100%.
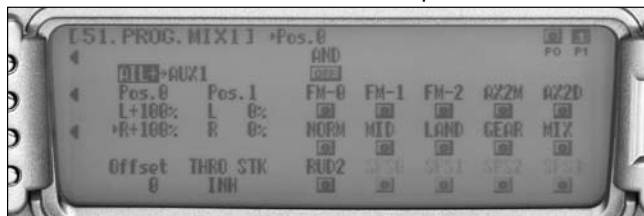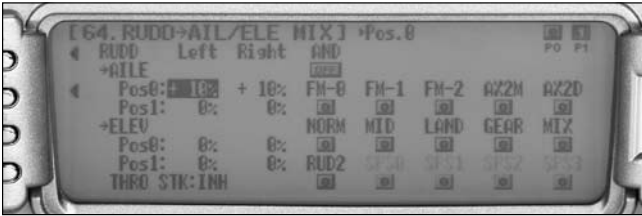

Program Mix 2, Code 52
Select and enter Program Mix 2, code 52. Select the master channel, and select AIL+. Next select the slave channel and select AUX4. Scroll with the roller to select the L Pos.0 value and enter +100%. Repeat for the R Pos.0 value and again set the value to +100%.
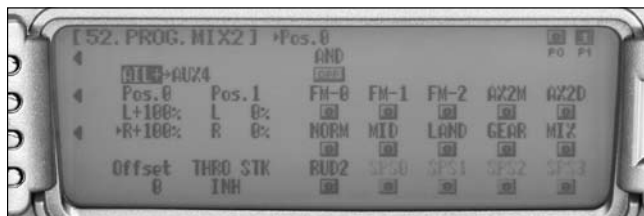
Note: The next mixes described, may or may not be required for your setup. Choose these as you wish when setting up and adjusting your aircraft to perform as desired.

Rudder-to-Aileron/Elevator Mixing, Code 64 - Optional

If Rudder-to-Aileron mixing is desired, select and enter the rudder-to-aileron/elevator mixing function, code 64. Select the aileron Pos0 values for both left and right and set the value as needed to keep the aircraft from rolling with rudder input in knife edge. Repeat as desired for the elevator to keep the aircraft from pitching with rudder in knife edge. 10% has been entered in both directions for illustration purposes only. Complete the rudder to aileron mixing with the following two mixes.


Program Mix 3, Code 53 - Optional, Rudder-to-Aileron Mixing Continued

We'll use this mix and mix 4 to complete the rudder-to-aileron mixing for the 5th and 6th aileron channels. Select and enter Program Mix 3, code 53. Select the master channel and select RUDD. Next select the slave channel and select AUX1. Scroll with the roller to select the L Pos.0 value and enter the same value as used in the rudder-to-aileron mixing in code 64 to the left. Repeat for the R Pos.0 value and again set the value to match the rudder-to-aileron mix in code 64 to the right. 10% has been entered in both for illustration purposes only.
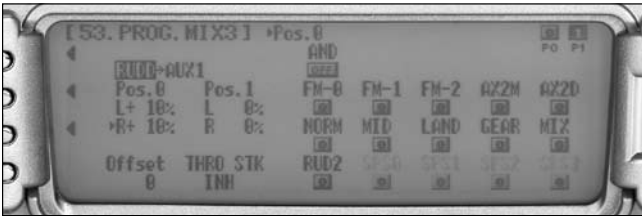
Program Mix 4, Code 54 - Optional, Rudder-to-Aileron Mixing Continued

We'll use this mix and mix 3 to complete the rudder-to-aileron mixing for the 5th and 6th aileron channels. Select and enter Program Mix 3, code 53. Select the master channel, and select RUDD. Next select the slave channel and select AUX4. Scroll with the roller to select the L Pos.0 value and enter the same value as used in the rudder-to-aileron mixing in code 64 to the left. Repeat for the R Pos.0 value and again set the value to match the rudder-to-aileron mix in code 64 to the right. 10% has been entered in both for illustration purposes only.
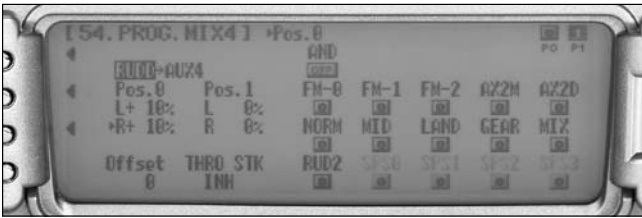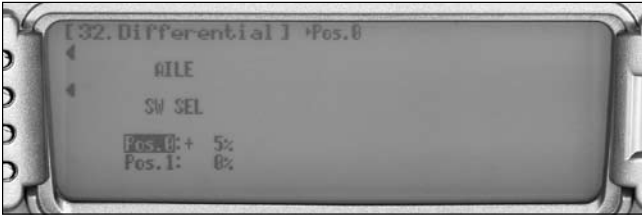

Differential, Code 32 - Optional

If differential is desired, select and enter the Differential function, code 32. Select the Pos.0 value under aileron and adjust this value as needed when flying the aircraft to make it roll axially. We'll complete the differential set up for the 5th and 6th aileron channels in the following step. 5% has been entered for illustration purposes only. The differential setup will be completed with the travel adjust function in the following step.

Travel Adjust, Code 12 - Optional, Differential Continued

Use the travel adjust function to complete the differential setup for the 5th and 6th aileron channels. Select and enter the Travel Adjust function, code 12. Select the AUX1 channel values, and hold right aileron with the aileron gimbal. Reduce the travel percentage by the same percentage used in the Differential function, code 32. Next select the AUX4 channel values, and hold left aileron with the aileron gimbal. Reduce the travel again by the same percentage as the percentage used in the Differential function, code 32. The value has been reduced by 5% for each channel for illustration purposes only.
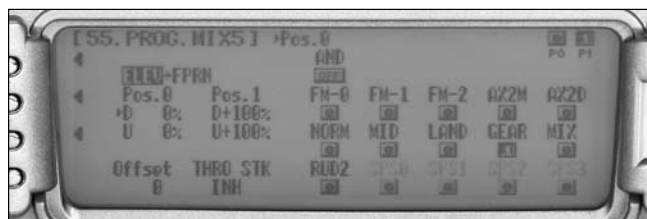
Elevator-to-Flap Mixing, Code 63 - Optional

If flaperons or spoilerons are desired, select and enter the Elevator-to-Flap Mix, code 63. This will set up the Aux 1 channel to move as a flaperon or spoileron with elevator. Begin by selecting a switch to use to activate the flaperons or spoilerons as desired. The gear switch has been selected for illustration purposes. Select the Pos.1 values and set them to +100% as desired. The value can be increased or decreased as desired. If the direction is incorrect, you can reverse the function by switching from positive values to negative values. We'll use the next 2 mixes to complete the flaperon or spoileron functions.


Program Mix 5, Code 55 – Optional, Elevator-to-Flap Mixing Continued

This mix will be used to set the first four aileron channels to move as flaperons or spoilerons as desired. Select and enter Program Mix 5, code 55. Select a Normal type mix. Select the master channel, and select ELEV. Next select the slave channel and select FPRN. Begin by selecting a switch to use to activate the flaperons or spoilerons as desired. Use the same switch as the elevator-to-flap mix, code 63. The gear switch has been selected for illustration purposes. Select the Pos.1 values and set them to +100% as desired. The value can be increased or decreased as desired. If the direction is incorrect, you can reverse the function by switching from positive values to negative values.

Program Mix 6, Code 56 - Optional, Elevator-to-Flap Mixing Continued

This mix will be used to set the Aux 4 channel to move as flaperon or spoileron as desired. Select and enter Program Mix 6, code 56. Select a Normal type mix. Select the master channel, and select ELEV. Next select the slave channel and select AUX4. Begin by selecting a switch to use to activate the flaperons or spoilerons as desired. Use the same switch as the elevator-to-flap mix, code 63. The gear switch has been selected for illustration purposes. Select the Pos.1 values and set them to -100% as desired. The value can be increased or decreased as desired. If the direction is incorrect, you can reverse the function by switching from positive values to negative values.
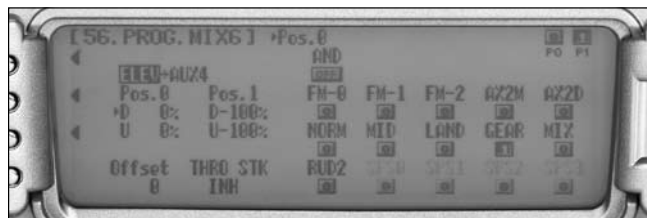
Final Setup

Once all mixes are set up as desired, proceed to the Monitor screen, code 75. Use the monitor screen to verify all six aileron channels are moving in the same direction with aileron input. Channels 2, 7 and 9 should always move in the same direction and the proper amount. And channels 5, 6 and 8 should always move in the same direction and the proper amount. If the direction of the flaperons or spoilerons with elevator is not going the direction you want, remember to reverse all three mixes from positive to negative or vice versa. Be certain that the channels on the servo monitor move the proper direction as described above before operating the model.

Use the Balance function (code 33), sub trim (code 15) and travel adjust (code 12) functions to ensure that all six aileron servos do not fight one another and the current draw remains as low as possible. Use a current meter such as the Hangar 9® Digital Servo and Receiver Current Meter (HAN172) to measure the current draw.