



Programming Guide for the JR 8103 radio system

The following is a programming example for plane using 2 elevator servos, the second servo plugged into aux 2 or channel 7, 2 aileron servos, the second aileron plugged into the aux 1 or channel 6, using spoilers for harriers and elevators. Keep in mind that any advise is for maximum control surface throw, and should only be used by well-experienced pilots. If you follow along, several features of the 8103 will be demonstrated, which should help better understand the abilities of the system.

System Set-Up Mode

To start with we will open a clear model, so press and hold the up and down keys together and flip the power switch on and then release the up and down keys. Press the + and – keys to go into model select. Press the + key until you get to a clear model. Then press the up key twice to get to the model type. To get to the correct type, press the + key to get to ACRO, if it is not already in ACRO mode. Next you will press the up key to model reset. Press CLR so that it will restore the system to factory defaults. Press the up key to select the modulation of the system. Here you will use the + and – keys to set this to the desired modulation. Press the up key twice, to set the wing type selection. Press the + key to set this to mix wing FLAPERON. Then you can press the up key till you get to the name selection, and re-name the model.

At this point we have set up the system mode for our plane. One important thing to note is the flaperon set-up that we put into the wing type selection. This feature mixes the aileron channel with the aux 1 or channel six, so that they will both work as ailerons, and we can set them up to work as flaps as well. Plug the right aileron in to channel 2 and the left into channel 6.

Function Mode

Next we will set up the function mode of transmitter. If you are still in the system mode, just press the up and down keys together twice, or turn the radio off and back on, and press the up and down keys together again. This will get you into the function mode.

Dual Rate and Exponential Set-Up

Now that we are in the function mode, it brings you to the dual rate set-up. You can set these to your desired amounts. Press the channel key to select the channel, and the + and – keys to set the rates. I would set up the high rate at 100% and the low rate between 50% and 75% for the elevator and aileron, and between 60% and 80% for the rudder. Next press the select key to get to the expo set up for each channel, and use the + and – keys to set the values. You can set various values for each rate. I use around 50% expo on high rate elevator and aileron and between 20% and 50% on high rate rudder. I would use around 20% to 30% on low rate elevator and aileron, and 10% to 15% on low rate aileron.

Travel Adjustment

Next we will set up the travel adjustments, so press the up key till you get to the screen where it says TRVL ADJ. in at the top left hand side of the screen. Your manual gives a good description of how to adjust these. Press the select key to get to the second set of 4 channels for adjusting the travel. For a full 3D plane, I would set the travel adjustments to 150% on the control surface channels including aux 1 and aux 2 which in the travel adjustment will be labeled FLAP and SPOI. This will help enable the large control surface throws using the highest mechanical advantage possible, as you are using the full movement of the servo. Then set your distances out on the servo arm to the linkage as small as possible and the control horn to the linkage to as large as possible, and still maintain 40 to 45 degrees travel on the surfaces. Follow the planes recommendations for the linkage set up. This is very crucial, as an incorrect set up will lead to flutter.

Aileron Differential

Next press the up key till you get to DIFFEREN. This is where you will set-up the differential in the ailerons. You will use this to help the plane roll more axially. This feature makes the aileron go further up, than down. This is necessary due to differences in lift and drag generated by the up and down going ailerons, creating a yawing moment on the plane. Having the up going aileron going further up than down, minimizes the effect. The amount required will vary plane by plane. If the manual for the plane gives a guideline for the amount of differential follow it. If it does not give a guideline, start out with 5% to 10%, and adjust after flying to improve the roll characteristics.

Completion of Aileron Set-Up

Now we need to remove the flap pot from operating the ailerons as flaps. If you like having this ability, you can continue to the next paragraph. Press the up key till the screen says FLAP POT. Press the CLR button until this says POT. INH. This will eliminate the pot function.

Dual Elevator Servo Set-Up

Now we will set up the elevators, so that we will have channels 3 and 7 working together. You will plug the right elevator into channel 3, and the left elevator into channel 7. Press the up key till you get to mix 5 or 6. We will use 5 or 6, as they are including mixes, meaning the elevator trim lever will operate both channels. If you do this mix on any other mix, the elevator trim will not work the second channel. Press the + key and change the first channel until it says elev. Press the channel key over to the second channel. Press the – key to change the second channel to SPOI. Make sure that beside SW: it says ON. If not, press the select key till the arrow points at SW, and press the + key to make this say ON. Press the select key till the arrow points at Rate: and make the percentage 100% by pressing the + key. Then move the elevator stick, and the arrow will move to the 0% in one direction of movement. Make this 100% also with the + key. Now we have the elevator working on both channels, but the aux 2 knob will operate the second channel. To eliminate this, will use another mix. For this mix, I would use mix 3. Press the DN key to get to this mix. Once at the mix, press the + key till it says SPOI for the first channel. Press the channel key so that the second channel is underlined. Press the + key and make the second channel is SPOI. Then press the select key till the arrow points at Rate. Press the – key till it

says -100%. Then rotate the aux 2 knob, which is on the top left hand side. Rotate this until the arrow points at the 0%. Press the – key till it says –100% also. This completes the set up of the elevators.

At this point, we have a fully functional set-up, but there are still lots of features you can add. You will of course need to set up your sub trims, servo reversing, and travel adjustments as required. Keep in mind that the lower sub trim value you use, for the most part, the better off you will be when trying to use large travels. If you use too much sub trim, your servos will reach the end of their movement before the surface moves very far.

Flaperon/Spoileron Set-Up

For a 3D set-up, we will set up the spoilerons. One good way to set up the spoilerons for harriers and elevator maneuvers, is to mix elevator to flap. An easy way to do this mix is with the elevator flap mix, which will work with the flap mix switch. Press the up key till it says ELEV-FLAP MIX in the top line. This will set it up so that they will work with the flap mix switch in the up position. Just flip the switch up, push down elevator, and press the – key until with down elevator the ailerons both go down. If they go up, press the + key instead of the – key. I use 100% in this mix to help keep the wings from rocking in an elevator or harrier. Now pull up elevator and press the – key until with the up elevator, both ailerons go up. If they go down, press the + instead of the – key. Again, I use 100% here. If you would like to have this on a different switch, or would like to have this function work with the spoilerons be active with the switch in the down or LAND position, follow the mix below. Lets set this up in mix 4. Press the up key till you get this mix. Now press the + key till the first channel says elev. Press the channel key so that the second channel is underlined. Next, you will press the select key until the arrow points at SW. You can put this on a few different switches, but lets set this up on the flap mix switch. Press the + key until it says LAND. This will activate when the switch is in the down position. Now we will press the select key to get back to where the arrow points at Rate. If it says OFF, move the flap switch down to the land position. Pull up elevator, and make the value –100% with the – key. Now push down elevator, and make the value –100% again. This should make the ailerons go up with up elevator and vice versa. If they go opposite of this, change the –100% values to + 100% to reverse it. Of course if you want to set-up flaperons instead of spoilerons you would make the ailerons go down with up elevator and vice versa.

Smoke system Set-Up

Another option that can be used is a smoke system. An easy set up for an electronic smoke system if one is to be used, is to plug the smoke into the gear channel and use the gear switch to turn it on and off.

Knife Edge Mixing

Many aerobatic planes require some elevator and aileron correction to keep knife-edge maneuvers straight. To do this, use mixes 1 and 2. Both these mixes are 5 point mixes, so you can use these either as standard mixes, or set all 5 points to have more mix at each end point than you would have otherwise. This is particularly useful when you have a plane that requires a lot of compensation at full rudder, but not very much at low stick movements. With the 5-point mix, you can set the curve to

have a low effect around center, but then have a lot of effect at the extents of the stick movement. Good starting points for the percentage of the mix for elevator is around 8% – 10% and increase or decrease the value as necessary. Usually the amount required for aileron correction is less, and will be closer to 5% or under for most planes.

To do this mix, press the up or down key until you get to mix 1. Now press the + key until the first channel says RUDD. Press the channel key, then press the + key until the second channel says ELEV. Press select once now. The screen should now say Point-L with –100 underneath it. Press the + and – keys until you get the mix value needed at full stick deflection. If the elevator correction responds in the incorrect direction, change the percentage of the points from + to – or vice versa. Press the CH key to adjust the next point, by again pressing the + and – keys to get the desired value. Repeat until you have adjusted all 5 points. Press the CH key one more time and it will give you the option of having exponential on the response curve. If you would like to have expo in the response, press the + key. Repeat this process for the rudder to aileron in mix 2.

I hope this clears up some questions you have in programming the 8103. There are a lot of things you can do to add and change to the above examples to customize it the set up to your taste. While the examples given may not be used in your case, they should show you how to use the features of the radio to your benefit.