Fix Offset

Fix Offset is ON by default. It corrects an issue with previous versions of the firmware, which added offset values early in the mixing process and consequently had outcomes that were hard to calculate. Fix Offset instead adds offset values at the end of the mixing process, where their impact is clear and predictable. Fix Offset should only be turned OFF when using a model definition created under an earlier version of the firmware.

What it Does

When Fix Offset is ON, offset is added at the end of Mixer processing, as follows:

1. Obtain the source value, with expo/dual rates applied to sticks.

2. Apply Delay and Slow.

3. Apply Curve/Differential/Expo.

4. Multiply by Weight.

5. Add Offset.

The Fix Offset approach ensures that the offset value is not subjected to mixer processes that might change its value; hence it makes the mix results easy to predict.

When Fix Offset is OFF, the offset value is added immediately after the source value is defined (i.e., after step 1 above). The offset value is thus affected by subsequent processing and the results are often hard (if not impossible) to calculate. This is how previous versions of ER9x worked. The ability to turn OFF Fix Offset is therefore provided to allow existing model definitions to be used without modification.

When programming new model definitions it is strongly recommended that the new approach be used, i.e., that Fix Offset be left turned ON. Indeed, even when modifying an existing model definition, it is preferable to use Fix Offset and adjust the programming accordingly.

Understanding "Fix Offset"

NOTE: The following examples assume that all values for Dual Rates, expo, etc, are default, just in case you decide to use other inputs to the mix, like the sticks for example.

Consider the following mix:

>   CH6 50% P1 offset 50%

If the offset is not taken into account, a weight of 50% means that the output value of the mix will travel from -50% to 50% when the input P1 (pot) is moved through its full range. The offset of 50% simply adds 50 to the value, giving a final mix output range of 0% to 100%.

To put it slightly differently:

>   P1 fully counter clockwise gives an output of -50%.

>   Adding 50% offset gives a final mix output value of -50 + 50 = 0%.

>   Moving P1 fully clockwise gives a value of 50 + 50 = 100%.

So, with the mix above, moving the pot through its full range will give mix output values between 0% and 100%, centered on 50%.

Let's take another example:

>   CH5 20% P1 offset 10%

If there were no offset, the 20% mix would output values between -20% and 20%.

P1 fully counter clockwise gives an output of -20%. Now add 10% offset:

Adding 10% offset gives a final mix output value of -20 + 10 = -10%.

Moving P1 fully clockwise gives a value of 20 + 10 = 30%.

So, moving the pot through its full range will give us Mix output values between -10% and 30%, centered on 10%.

In essence, Fix Offset ON ensures that the Mix output is simply shifted by the amount set in the offset field.

Now try it yourself with other values for Weight and Offset. You can also use other inputs (like the sticks) if you get fed up with moving the little Pot. 😊

Turn on your radio with a servo attached to the receiver and you will see that changing the value of the offset shifts the center of the servo travel by the offset amount. As well, you will observe that the servo travels the value of -*weight* to one side of the new centre and +*weight* to the other when you move the input, in this case P1, to the extremes.

Then try calculating the result of the examples above with Fix Offset turned OFF, that is with the offset applied to the P1 input. You will find (a) it's hard to do even for these simple examples and (b) the results are totally different from what you might expect! Imagine how difficult it would be to predict the result of a Mix output when other complex processing is applied after the offset.

Please note that Mix Output value and Channel Output value are quite distinct. The Mix Output is the final value of a single mix; it can be added to, multiplied by, or used to replace other mixes in the same channel. The Channel Output is the result of all the mixes applied to that same channel.

To fully understand offset, it's a good idea to program the above examples in your radio, if possible with a receiver and a servo connected, so you can see what the different fields of the mixer do. Of course you can also use the eePe program on your computer for this purpose (see page XX).