Using an Open Source Transmitter for Spektrum BNF Models

There is a whole range of models, sold under brands such as E-Flite, Parkzone, Hobbyzone and Blade, that are designed to be "plug and play" with the basic Spektrum transmitters, DX4e and DX5e, as well as to be compatible with more capable Spektrum transmitters like the DX6. So the aim here is to help you fly these models using a transmitter with ER9x or OpenTX firmware. We want to program the transmitter to act just like a Spektrum. Specifically we want to emulate the latest DX5e with a three-position gear switch on Channel 5 and momentary lever switch on Channel 6. This will prepare it to work with models such as the Apprentice and Sport Cub S that use SAFE stabilization technology. Moreover, this model will serve as a template that you can adjust to virtually any other conventional model.

Having created such a model definition on your transmitter (or in the supporting program on your computer), all you have to do to setup a new BNF acquisition is to copy and rename the model memory. Keep the original model definition intact (let's call it "DX5 Emulate"), so you can use it again for another aircraft (or go back to it if you make modifications that don't work out).

These instructions are generic, so you'll have to figure out how to apply them to your Taranis, 9x, 9XR or 9XR Pro transmitter. It's a good programming exercise.

Emulating a DX5e

Here's what needs to be set to make your transmitter work like a Spektrum DX5e:

- **Channel order TAER**. This affects future default models. It does not change ones already created.

- **Throttle Trim disabled**. You don't need throttle trim for electric models.

- **Trim Increment**. Medium is a good compromise setting. Your choice.

- **Dual Rate** on channels 2, 3, and 4. Use 100% for high and 75% for low to match the DX5e.

- **Default mixes for channels 1-4**. Leave at 100%. Check TAER channel order.

- **Three position switch on channel 5**. Should give -100 in position 0, 0 in position 1, +100 in position 2. Controls mode (Beginner, Intermediate, Advanced) for SAFE technology.

- **Momentary switch on channel 6**: Should give -100 when off, +100 when pressed. Acts as "panic button" for SAFE technology models.

- **Set limits to +/-80%, all except low throttle (CH1)**: Open source 100% is Spektrum 125%.

- **Set the lower limit for CH1 to -100%.** Equivalent to Spektrum low throttle, full down trim.

- **Reverse (invert) channels 2 and 4**. To match the Spektrum for aileron and rudder.

In addition to these basic changes, you may want to add the following:

- Set **Timer** to 5:00 countdown (good starting point), throttle (THs) trigger.

- **Throttle Lock**. Override CH1 to -100. Disables throttle stick.

How you implement these requirements will vary a bit from one type of transmitter to another but should not be too hard to figure out. Use the graphic servo outputs screen to verify that all controls are functioning as intended.

Module

To add DSMX/DSM2 capability, you need a module that will fit the external JR-type bay on Taranis. The major choices are the following:

- **Spektrum DM9 module**. These look a bit pricey at about $110 but they include a Spektrum receiver that can be sold for $60 or more. They have the advantage of being a genuine Spektrum product. While limited to DSM2, they are fully compatible with DSMX receivers.

- **OrangeRX Module**. Probably the most popular approach, this module costs about $30. It works well on both DSM2 and DSMX. It supports all four DSM2/DSMX receiver types but must be shifted manually from one mode to another if you use receivers of different types. The antenna is rather vulnerable as it sticks out the back of the module.

- **"Hack" module**. You can salvage the RF module from within a DX4e, DX5e or DX6i and adapt it for use with Taranis. Advantages include ModelMatch to ensure that you select the right model memory. This option does require soldering. For details go to: http://www.hacksmods.com/2012/07/hp6dsm-module-wired-up/

To use any of these modules, use the following parameters:

- The Spektrum DM9 requires PPM mode in Er9x or OpenTX. Change 300u to 400u. Polarity may need to be reversed (change + or -) if the module doesn't work.

- The OrangeRX module requires PPM mode and the default settings.

- A hack module requires DSM2 mode, plus DSMX or DSM2 as second item on the line.

Daedalus66 on RCGroups

Revised June 3, 2015