



## ***Spektrum Receiver AR 635***

The Spektrum AR635 is an excellent gyro stabilized receiver. But its reputation has been marred somewhat by a cloud of confusion regarding its programming, operation, and feature set. The responsibility for this confusion rests solely on Horizon Hobby and Spektrum as their documentation is confusing, conflicts with itself and other product manuals, conflicts with their training videos, and conflicts with what their own support representatives say. A large part of the confusion in the documentation stems from the fact that they failed to properly separate documentation for the Sport Aircraft option from the 3D Aircraft option. The other major contributor to the confusion has to do with computer versus non-computer transmitters.

I have spent a lot of time using and trying to understand this receiver as I find the technology behind it fascinating. Below I have attempted to better explain some of the points of which I am often asked. I am not an AR635 expert, nor do I play one on TV .

## **Step 1:**

Throw away the little black manual that came with your AR635 or with your BNF aircraft with an AR635 included. Actually...recycle it so it is at least of some use. At the time of this writing it is out of date. Download the latest PDF version of the AR635 manual from Spektrum. Do yourself a favor and don't read the outdated manual and then the new manual as the conflicting information will only serve to confuse. But even the new manual may confuse you so I recommend reading my primer below before diving into the actual manual.

The Spektrum AR635 has 3 programming options. Those options are:

- Sport Aircraft
- 3D Aircraft, computer transmitter
- 3D Aircraft, non-computer transmitter (Spektrum DX4e, DX5e)

Which mode should you choose? You probably want the Sport Aircraft option. But read below for a detailed description of each option so you can make an informed decision.

### **Sport Aircraft**

This is the most commonly needed option. This is for all types of planes except for 3D specific planes. Even acrobatic planes need to use the Sport Aircraft option. For this option it makes no difference whatsoever what type of transmitter you have (computer or non-computer). You may configure your transmitter with any dual rates (servo throws and expo) you like. And you may set your servo travel to 100% or 125%. It does not matter, so configure to your liking.

#### Gear channel usage in Sport Aircraft option

The AR635 Sport Aircraft option uses the gear channel to control which gain bank is active.

Gear switch position 0 (Gain bank 0): This lets you use your own custom set of aileron, elevator, and rudder AS3X gain settings.

Gear switch position 1 (Gain bank 1): This lets you use your own second set of custom aileron, elevator, and rudder AS3X gain settings.

Note that by default the gain settings in gain bank 0 and 1 are exactly the same. So why would you want to set them differently? Because sometimes you may want a higher set of gains for different conditions (perhaps higher settings for when landing). Or sometimes you may want the ability to turn off AS3X stabilization completely while in flight. Very handy indeed.

### **3D Aircraft, computer transmitter**

If you are flying an airplane specifically designed for 3D flight and if you have a transmitter capable of increased servo travel (DX6i or above) you want this option. Note that an acrobatic plane is not the same as a 3D plane. The 3D Aircraft option is specifically for 3D planes, not for a plane you simply plan to try some 3D moves on. A 3D plane will have very large control surfaces and is specially designed to “fly” in post-stall conditions.

When using the “3D Aircraft, computer transmitter” option you should set aileron, elevator, and rudder travel to 125% in your transmitter. This is because the AR635 is expecting this increased servo travel and has AS3X tuned accordingly.

What makes the 3D Aircraft option so different from the Sport Aircraft option is that when the AR635 is programmed to 3D Aircraft it enforces some hard-coded dual rates. In other words, it has built-in servo travel limits and built-in expo. This means 2 things:

- Any dual rates you use in your transmitter will be combined with the AR635 hard-coded dual rates. So if you program 70% rates in your transmitter you will end up with 70% of the already limited servo travel enforced by the AR635 when using the 3D Aircraft option.
- You will find the elevator travel to be very limited; perhaps disastrously so if you use this option on a non-3D aircraft.

I believe the reason for the above is because AS3X must respond differently for a 3D aircraft because of the extremely large control surfaces. Plus when “flying” in post-stall conditions (doing 3D maneuvers) AS3X must react differently.

### **Gear channel usage in 3D Aircraft option**

The AR635 3D Aircraft option uses the gear channel to control flight modes, and it also uses it to provide you with 2 gain banks (2 sets of customizable gain settings for aileron, elevator, and rudder). You need 2 different flight modes when using the 3D aircraft option because AS3X needs to react differently when doing 3D maneuvers versus all other general flying around.

Gear switch position 0 (General flight mode): This position is for when you are flying your 3D plane in any way other than actively\ performing 3D maneuvers. The receiver enforces receiver controlled dual rates (servo throws and expo). Gear switch position 0 also gives you gain bank 0. (Terminology side-comment: The AR635 General flight mode is NOT the same thing as the AS3Xtra General flight mode. So if you happen to have an AS3Xtra don't confuse the two just because they use the same name).

Gear switch position 1 (3D flight mode): This position is for 3D flight and is to be used for when the aircraft is performing 3D maneuvers. 3D flight mode enforces receiver controlled dual rates (servo throws and expo). Gear switch position 1 also gives you gain bank 1.

### **3D Aircraft, non-computer transmitter**

This is exactly the same as the “3D Aircraft, computer transmitter” option except AS3X is tuned for 100% servo travel instead of 125%. This is because a non-computer radio (DX4e, DX5e) is not capable of 125% servo travel.

It is a lot of fun to use actually. I usually have it configured so I can turn the stabilization on and off as desired while in flight. So if it is particularly windy I can enable stabilization and it helps turn what would be a crappy day for flying into a more relaxing experience. It is like it turns down the wind speed a few knots.

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