Spektrum AR7700 Serial Receiver FAQ

(SPMAR7700)

Q – Can I use normal servos with my AR7700?

A – Yes; but only through the Gear, Aux1, and Aux2 ports (channels 5, 6, and 7). These are the only output ports on the AR7700 that can drive conventional (PWM) servos. The AR7700 cannot control conventional (PWM) servos for primary flight controls (channels 1 through 4).

Q – I normally use a remote receiver with my flight controller, how is the AR7700 different/better?

A – Signal Path Diversity: Using only a single remote receiver does not offer RF signal diversity, so resistance to interference is reduced. The AR7700 can be used with its single internal receiver for short range (parkflyer) applications such as racing, or for full range performance with the most robust RF link the remote receiver can be added. Always re-bind after removing or adding the remote receiver.

A – Binding Ease: The AR7700 binds with a bind plug like other Spektrum receivers. A remote receiver requires an external method to bind. Some flight controllers enable this through the user interface; others require you to use a secondary receiver to bind the remote receiver.

A – Failsafe Setup: As with existing Spektrum receivers the AR7700 allows the setup of preset failsafe by pulling the bind plug after the receiver is in bind mode and before binding to the transmitter. Preset failsafe will output the settings you designate at binding if RF signal is lost so you don't have to configure your flight controller for failsafe operation which varies among current controller offerings.

A – Wider Voltage Range: Remote receivers are designed to run at 3.3 volts. In order to run the remote most flight controllers use a 3.3 volt regulator on the board that may or may not have sufficient capabilities to support the remote receiver. The AR7700 operates in the same voltage range as any common receiver (4.5v-9.6v) so it can be powered with the same 5 volt supply that powers the flight controllers.

A – PPM Output: The AR7700 offers PPM output which you cannot get when running a remote receiver alone. PPM is widely implemented in many systems and offers the easiest path for many applications. Prime example is the Immersion RC Vortex; It's compatible with the AR7700 out of the box with PPM, but if you want to run a remote receiver you have to build a cable and go through some configuration steps.

A – Transponder Power: On some aircraft like **the Immersion RC Vortex** there is nowhere to plug in a transponder for racing. The AR7700 provides extra ports available giving you a simple and direct option to power your transponder.

Q – How does SRXL and Remote Receiver compare to S Bus?

A – SRXL and **Remote Receiver** are both digital protocols, much like **S BUS**. The AR7700 **SRXL** and **Remote Receiver** protocols are both capable of 11ms latency with 2048 resolution, and support up to 18 channels.

Q – I have used SRXL with the AR9020 and AR12020, and AR12120, are these same as the SRXL on the AR7700?

A – It is very similar, but not the same: The SRXL featured in the X Plus receivers (AR9020, AR12020 and AR12120) do not have the ability to ensure proper timing for the channel outputs. Note that this is not a problem when used as intended with the X Plus module, but it could cause problems if trying to use the SRXL output to control a flight controller. Also, the AR7700 is backwards compatible with the X Plus module if you wish to have additional servo outputs, but it has the check built into the code to ensure proper timing with flight controllers.

Q – I want to race my quadcopters without the secondary remote receiver; can the AR7700 be used without the supplied remote receiver?

A – Yes: The AR7700 can be used without the supplied remote receiver, but will be limited to parkflyer range. Note that parkflyer range is suitable for most racing applications, but if you want to fly far and low, or are flying a mid to large size model, it is always best practice to utilize the remote receiver.

Q - The receiver number seems to indicate this is a 7 channel receiver, is that true?

A – No: Just like a standard 7-ch Spektrum receiver the AR7700 has 7 sets of pin-outs (connectors ports), but the number of channels is dependent on what transmitter you are using and what output you have selected. **PPM** output can support up to 8 channels, **SRXL** and **Remote Receiver** output can support up to 18 channels.
Example – DX6 will only support 6 channels, DX7 7channels, ect, on up to 18 channels with the DX18.

Q – What does serial mean?

A – Most common servos use an analog **PWM (pulse width modulation)** data stream that only controls one function. "**Serial"** refers to a type of protocol that combines all the signals into one data stream **(one wire)**. **PPM** combines all the control signals into one data stream **(one wire)** and supports 22ms latency for up to 8 channels. A digital protocol like **SRXL** or **Remote Receiver** steps up the performance with up to 18 channels @11ms and 2048 resolution. **Serial** protocols enable a 3 wire lead to supply power and all the command signals from the receiver to a flight control system. **Serial** protocols are not compatible with conventional **PWM** servos.