Horizon Hobby & Spektrum's DX9 9 Channel Transmitter Review

You talking to me? You talking to ME you DX9 transmitter? Good! Now I can hear the desired information while keeping my eyes on my plane, sailplane or helicopter!

Review By Michael Heer | May 07, 2014, 10:14 AM

Introduction

This opening video is an overview of the DX9 from Spectrum.

DX9 9-Channel DSMX® Transmitter by Spektrum (3 min 49 sec)

Spektrum DX9

Channels:	9
Band:	2.4GHz
Modulation:	DMS2/DSMX
Included Receiver:	No Receiver Included
Battery:	2000mAhg 2S Li-Ion battery
Gimbals:	Premium Professional Grade

Model Memory:	250 (Yes 250 models)
Programming:	Airplane, Helicopter, Sailplane
Modes:	1-4 user selectable, comes in Mode 2
Range:	Full
Resolution:	2048
Telemetry:	Yes
Experience Level:	Advanced
Frame Rate:	11/22
Programming Method:	Intuitive with roll selector & two push-button entry keys
Manufacturer:	Spektrum
Available From:	Horizon Hobby And Fine Hobby Stores Everywhere
Price:	$449.99

In reviewing the Spektrum DX9 it was obvious to me that I needed to test, review and discuss the two most prominent new features that are included in this transmitter: its "Voice Alerts" and aspects of its 250 model memory. I knew I also needed to discuss the broadcast protocols of DSM2 and DSMX as well as what receivers Spektrum makes that will work with this transmitter. I wanted to test the charging system and the included battery for how long it could operate with a full charge and how long to recharge. The transmitter is equipped with an included SD card and I will cover what it can be used to do. I also needed to read, review, evaluate and discuss the instruction manual. Since telemetry is available in this transmitter that is another major feature deserving attention and since I have Spektrum telemetry sensors I will be able to test the telemetry system as well. A lot of the features included in the DX9 are included in other Spektrum transmitters and a number of the special features have been previous discussed in connection with other reviews. However, since there are always a number of people new to the hobby that want to learn about this transmitter I want to try and make this a one stop review and briefly cover as much of the basics as is reasonable. Accordingly, I advise those of you that are experienced Spektrum users to please skip sections discussing features you already fully understand. I won't sneak information about a new feature in under a different Heading. For the experienced pilot doing that may make this a relatively quick review to read yet still be informative. For you newer pilots I have done my best to try and cover the most important points about this transmitter and its instruction manual.

Here is a video of the programming used to control my Blade 350 QX Quadcopter and the sounds I programmed for the switches used. Programming is a two part process. Program the transmitter to control the selected aircraft. Secondly, program the voice alerts desired to the switches desired. I subsequently learned to program the Flight Mode text on the screen and that is covered later in this review. Now the current sounds for my Blade 350 QX.

Spektrun DX9 Programmed for the Blade 350 QX Quadcopter (2 min 2 sec)

As close as I get to a selfie with my reflection on the screen.


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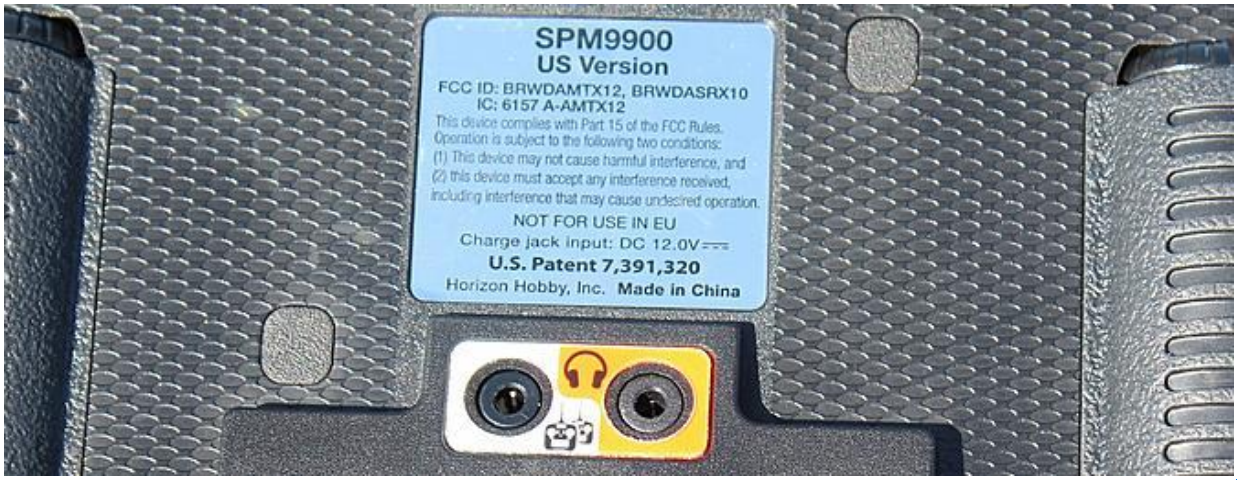


Included Items

Included Items

- Spektrum DX 9 Transmitter
- 2000mAh 2S Li-Ion transmitter battery installed
- SD Card
- Custom DX9 neck strap
- 12V Global power supply
- Instruction Manual for the DX 9

Spektrum's Promoted Key Features

Key Features

- 9 fully proportional channels

- User-configurable switch and stick assignment
- Voice Alerts Available in five languages (English, German, Spanish, Italian & French) for Telemetry Information
- Wireless trainer System (Instructors can work with multiple students without having to re-bind to each student
- Virtually unlimited model memory: Transmitter stores up to 250 models and only populates the model list with models the user has configured
- Direct system menu access: It is not necessary to power off the transmitter to access the key system menu
- Active gyro and governor trim in heli, 3-axis gyro support for aircraft; allows adjustment of gyro gain in all three-axes in flight
- Absolute Travel Feature prevents over-driving servos using mixes
- High Resolution 192 x 96 backlit LCD screen
- User Mode selectable (1-4). comes in Mode 2 configuration
- User-configurable switch and stick assignment
- 7 point curves gives the ability to fine tune model setups to allow precision adjustments of mixes and pitch/throttle curves
- Helicopter electronic "E Ring" electronically prevents overdriving the cyclic servos
- Forward programming capability already built into the DX9 will ensure customers can take advantage of the next generation of Spektrum components
- SD card support for backing up files, BNF setups and firmware updates
- Binds with any DSM2 or DSMX aircraft receiver

Programming Features

Airplane

- 10 wing types: Normal, Dual Aileron, Flaperon, 1 Aileron 2 Flaps, 2 aileron 1 Flap, 2 Aileron 2 Flaps. Elevon, Elevon-B, 4 Aileron
- 6 tail types: Normal, V-Tail A, V-Tail B, Dual Elevator, Dual Rudder, Dual Rudder/Elevator
- Flap delay and elevator compensation
- 5 Flight modes
- Dual rates & Expo
- 10 programmable mixes

Helicopter

- Active gyro trim
- 7-point throttle curve
- 7-point pitch curve
- 7-point tail curve
- 7-Swash plate types: Normal, 3 Servos 120 degrees, 3 Servos 135 degrees, 3 Servos 140 degrees, 3 Servos 90 degrees, 4 Servos 90 degrees, 2 Servos 180 degrees

- Swash Plate timing
- 5 Flight modes
- Dual rates and expo
- 10 programmable mixes

Sailplane

- 5 Wing types: 1 servo, 2 Aileron, 2 Aileron 1 Flap, 2 Aileron 2 Flap, 4 Aileron 2 Flap
- 3 Tail types: Normal, V-Tail A, V-Tail B
- Flap delay and motor compensation
- 10 Flight modes
- Dual rates and expo
- 10 Programmable mixes

Receivers

Spektrum makes a wide variety of receivers on 2.4 GHz and they work on DSM2 and DSMX and both of those are compatible with the DX9 transmitter. Here is a sample of some of the receivers that work with the DX9.

Spektrum AR635

Spektrun AR6310

Spektrum AR7610

Soektrum AR8000

The next four are all nine channel Spektrum receivers

Spektrum AR9110 is a Power Safe Receiver

Spektrum AR9310 is for carbon fuselage planes

Spektrum AR9020 became available this spring

Spektrum AR9350 receiver will have AS3X and is scheduled for release in November of 2014.

I have used the AR9310 receiver in my Zeus in the course of this review and an older Spektrum nine channel receiver in my friends Carbon-Z Cub and they have worked flawlessly even at extended ranges. I have also used the AR9310 in some of my other sailplanes with carbon fiber fuselages and they have also proved to have full range and excellent reception. They are

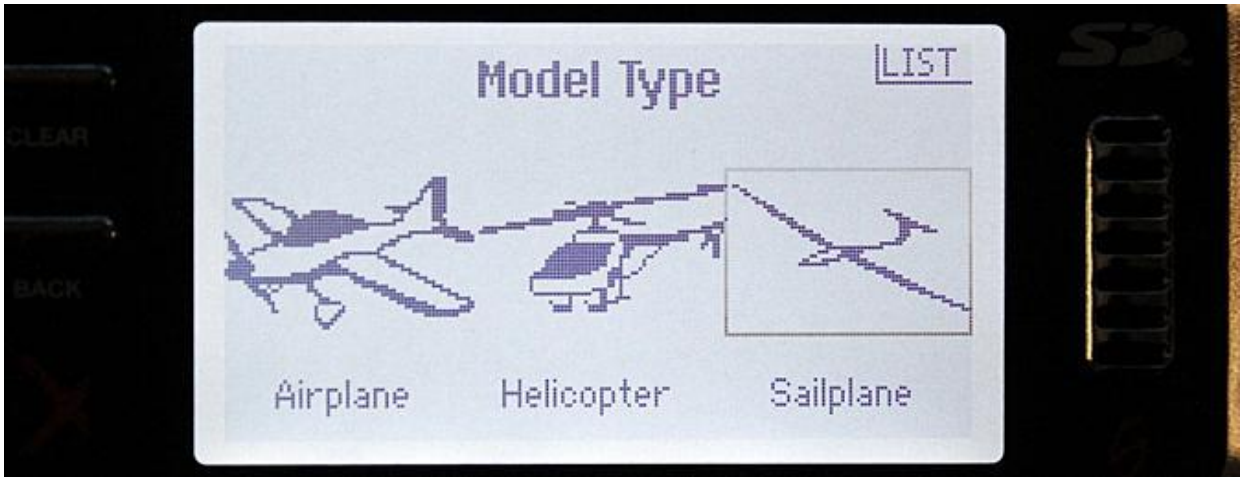
installed with the antennas coming out of the side of the fuselage to receive the signal despite the carbon fiber fuselages.

I have also used the transmitter with numerous other Spektrum receivers and all have responded perfectly.

Reviewer's Statement

This review was performed with the author performing research and hands on testing in the field with this transmitter. Actual range tests and flight experimentation were performed in the field as discussed and programming for airplanes and sailplanes was done in the course of this review. However, as stated in the Introduction, the author has made no attempt to do sophisticated electronic testing or monitoring of the transmitter. This review was done with hands on testing of the transmitter but no laboratory testing.

Spektrum Airware Software: Designed to Control: Airplanes, Sailplanes and Helicopters

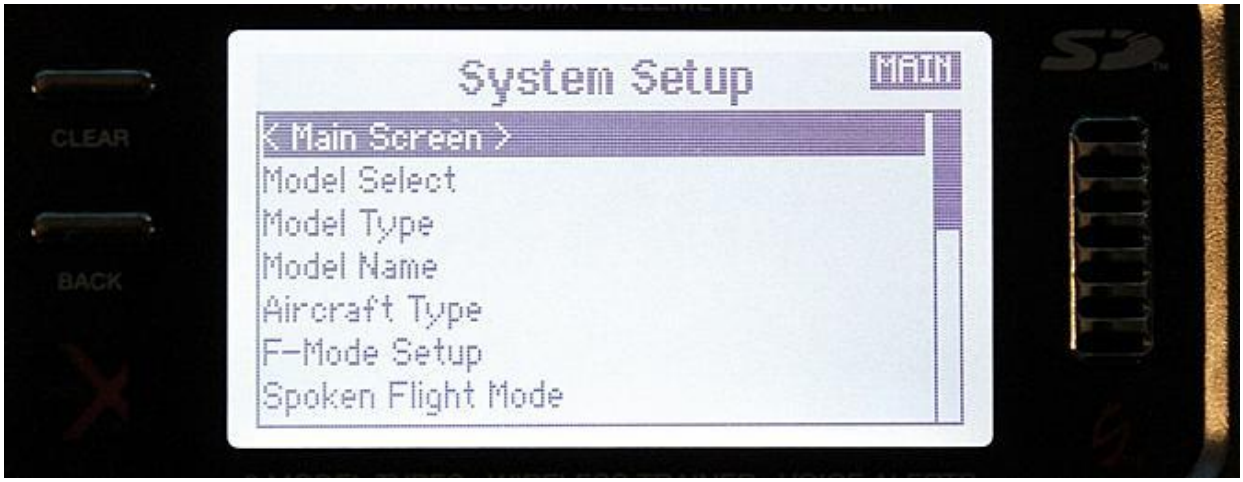


I select the model type from this screen in the System menu.

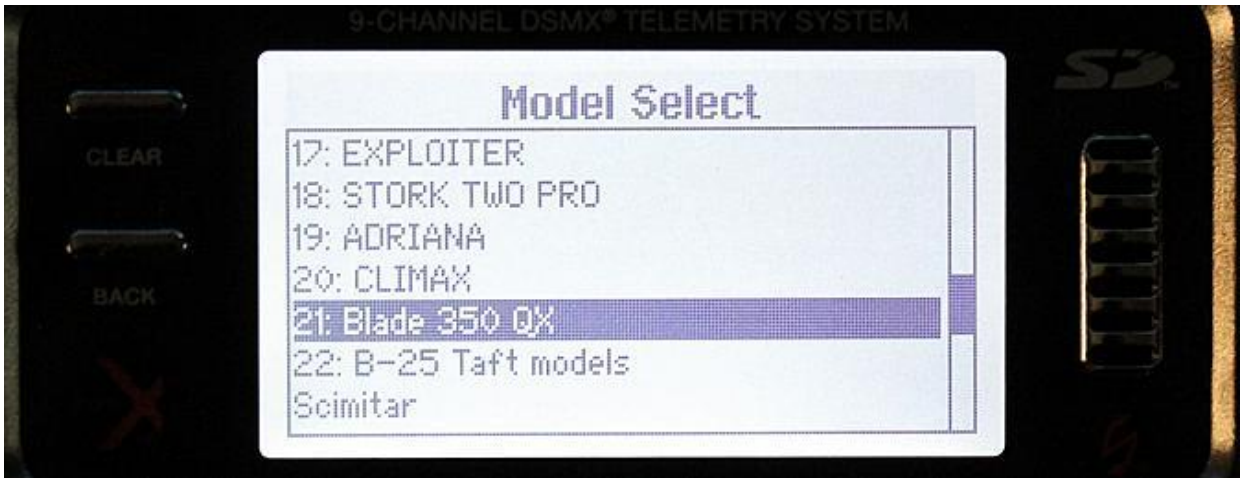
The DX9 is equipped with Spektrum AirWare developed by Spektrum from the ground up. They claim it includes all the programming functions an airplane, sailplane or helicopter pilot could want yet doesn't require an expert to use them. Whether I am flying a full house competition sailplane, a 3D aerobatic 700 size helicopter or a scale fighter, this software can handle my needs. In the course of this review I have programmed it for most of my sailplanes and have flown a full house competition sailplane with it utilizing five flight modes. I have flown and

reviewed my Blade 350 QX quadcopter, my Blade 350 helicopter and several of my airplanes from micro to large and it met my needs in all cases perfectly. I don't fly any Giant planes so I haven't tested that possibility. It handles my full house sailplanes and that was my biggest concern and it met that test and passed. Also used in testing where my Delta Ray, Bind N Fly and my Friends Carbon-Z Cub and his DX9. The main interface is the scroll wheel which they call the "Intuitive Simple Scroll." They state it makes navigating menus and changing settings as simple as roll and click and it does! They compare it to using a computer mouse. This software is not new and has been used and tested in various transmitters including the DX18. I have found it both simple to use and easy to remember how to use. Making adjustments to my programming easy for me to perform without the manual. If the system is new to you the manual is helpful but you should soon be operating without need of it for all of your basic programming functions and adjustments.

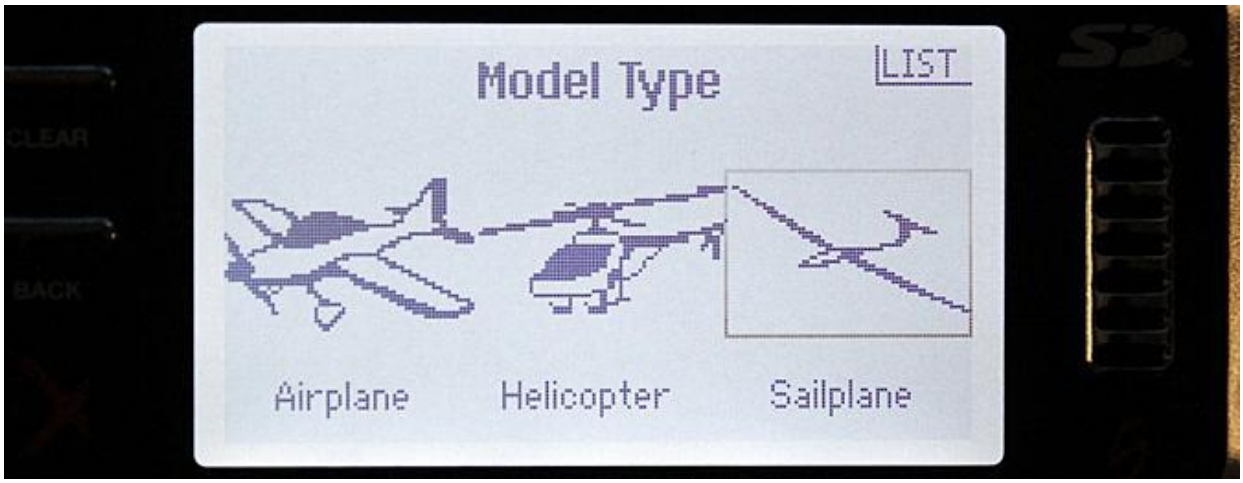
Systems List: Getting Started



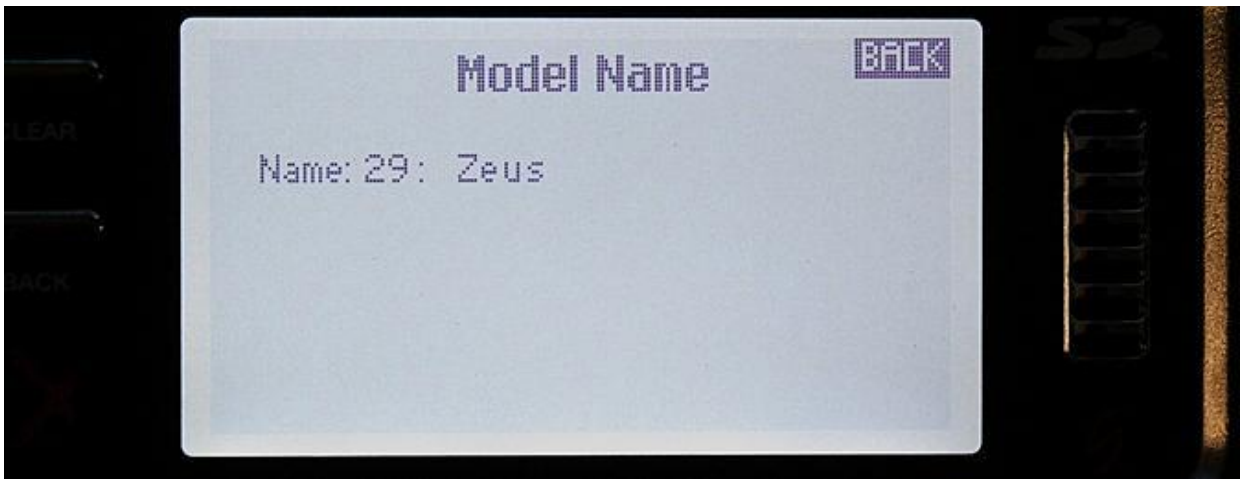
I select the programming for my aircraft with the Systems portion of the transmitter. I can get here from the Functions list or by holding down the select wheel as I turn on the transmitter. Here I start at the System's List Menu.



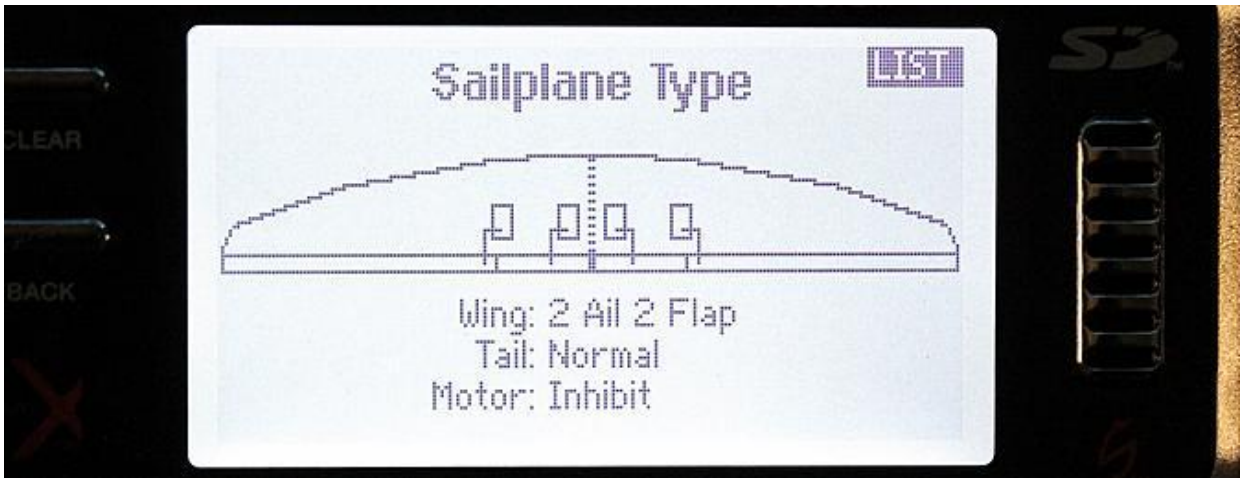
From this screen I highlight and select the model I want to fly or program or if I want to add a new aircraft.



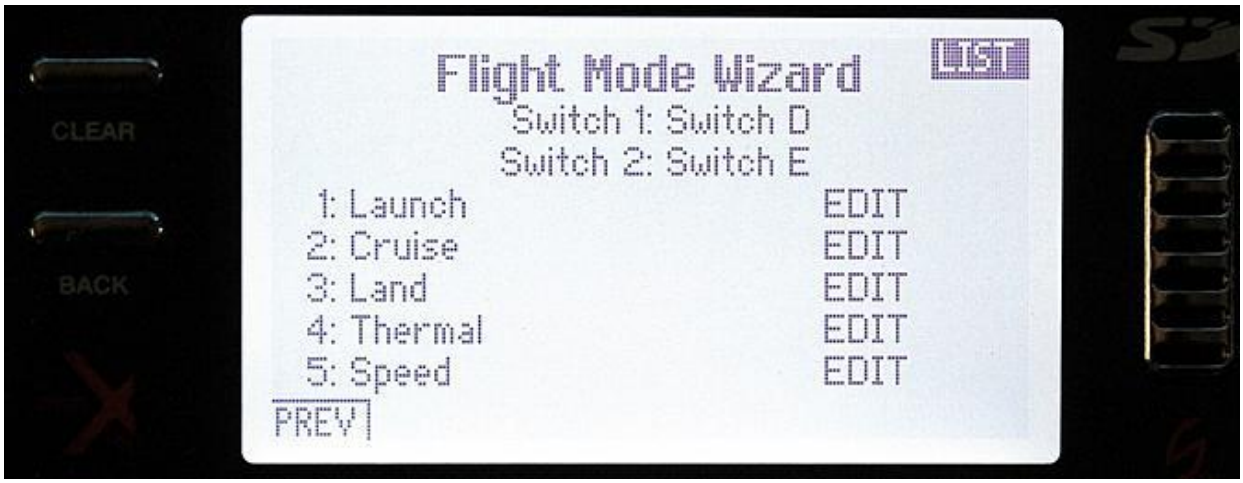
If I am programming a new aircraft my first selection is for what type of aircraft programming I will be using: Airplane, Sailplane or Helicopter.



After I select the aircraft type I name my model. There are up to twenty character spaces to use for the name.



For an airplane or in this case a sailplane I select the wing type that matches my model. More on this below.



Depending on my aircraft I may make more selections here or I may go to the Function list and program there. Just remember to start with the Systems list with any new aircraft.

Languages

My DX9 came out of the box and the voice alert system was in English. However, if you prefer the alerts to be in another language some optional languages are available to download and install into the transmitter. They are downloaded from Spektrum's DX9 website and then transferred into the DX 9 using its memory card. The use of the card is covered later in this review. The languages available at the time of this review include: English, Spanish, German, French and Italian.

Wireless Trainer Links

It is possible to bind with another Spektrum transmitter with wireless trainer links and once they are bound, Model Match technology will allow the DX9 to re-link without having to go through the bind process again. As with all "Buddy Box" arrangements both transmitters have to be set up identically. The DX9 can also be used with a trainer cord as it has the traditional trainer cord jack so it can work with Spektrum transmitters without a wireless system. I had an opportunity to test out the system with my DX9 and my friend's DX9 when we got together to fly his Carbon-Z Cub. The wireless system works.

The DX9 can be used in a buddy box system with or without a wire depending on the second transmitter.

Spektrum DX9 Ergonomics

"The weight distribution and ergonomics of the DX9 have been optimized to fit the way you fly. The result is a sense of balance and comfort that perfectly complement the speed and precision of DSMX technology."

Notable features include:

- Comfortable, no-slip rubber grips
- Adjustable stick length and tension
- Smooth, quad-bearing gimbals
- User-adjustable mode configurations (1, 2, 3 or 4)
- User-assigned switch functions
- Easy-to-read backlit screen
- Intuitive SimpleScroll programming interface

I found the DX9 to be comfortable to hold and the no slip rubber grips made holding it with just one hand very easy for hand launches. I did not adjust the stick tension but did verify that I could adjust the stick length. The gimbals feel good and respond smoothly to large or small movements. I have spent hours at a time flying with it and programming and operating it for this review and it remained comfortable in my hands for the entire day. The backlit screen is much appreciated by me and I have had no trouble reading the screen day or night. One friend said the backlit screen was one of the reasons he upgraded to the DX9. I will discuss the assignable modes and switches later in this review.

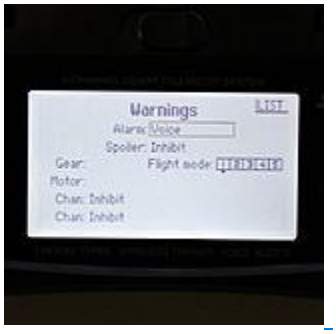
Voice Alerts

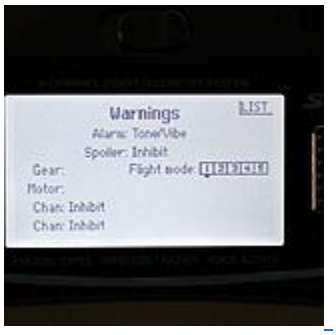
With voice alerts you can now get the data and information you want without having to take your eyes off of your airplane again. You need not be afraid of not hearing the sounds at the field. I am deaf in one hear and I can hear my transmitter just fine! The volume is adjustable in 10% increments and is easy to adjust. I use a lower level at home and a higher level at the field. If you don't want others hearing your transmitter you can use earbuds or headphones that plug into your transmitter (not included). My wife appreciates when I use them when we are in the same room and I am programming my transmitter. There are a lot of options for alert combinations and a lot of sound alerts available to choose from:

Alert Options

- Off
- Tone
- Vibrate
- Tone & Vibrate
- Voice
- Voice & Vibrate

The voice alerts must be programmed to the desired switches. There are a number of voice alerts available and I get to pick which ones I use and for which functions. While I am over all happy with the choices available I do have recommendations for alerts I want. I cannot program in new alerts but I can download any new voice alerts that might be created using the memory card. That process is covered later in this review.



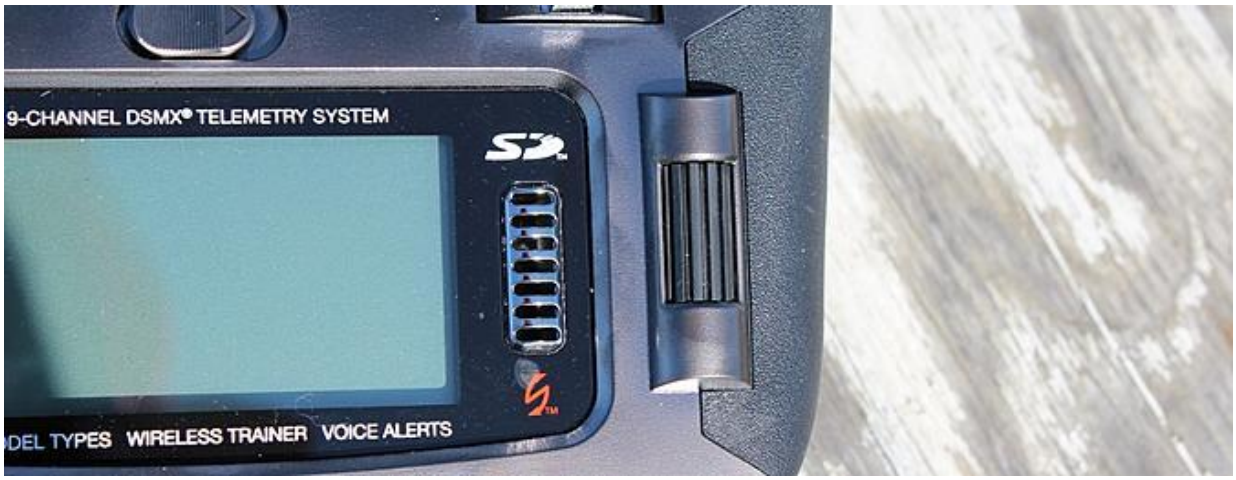


Volume Control

The volume is programmed from the Main Screen. I just pressed the back button to the left of the screen and a volume bar appeared on the top right of the screen. It was initially set at 50%. It can be adjusted up or down in increments of ten by rolling the scroll wheel. I found the sound

was good up to 90 on the volume bar but there was noticeable distortion at 100 which is its highest volume. I found zero was off and from 10 to 90 all were good.

Press the back button while on the main screen and the volume bar appears where I am pointing. Adjust with the scroll wheel.



The speaker is located between the scroll wheel and the screen.

The following video shows how to program the volume on the DX9.

Setting the Volume on the Spektrum DX9 (0 min 59 sec)

Custom Voice Setup

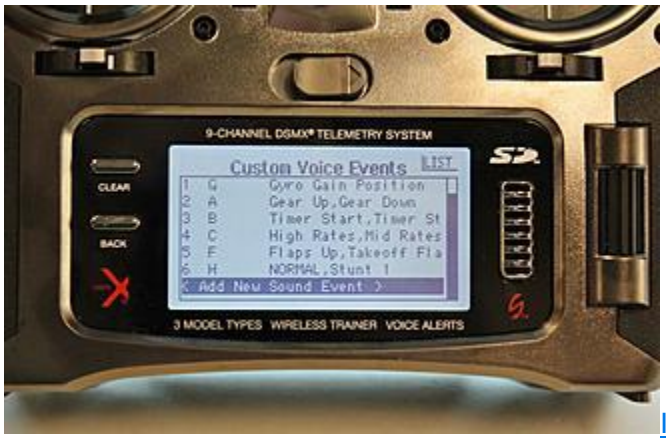
The custom voice setup screen is in the Function List and it is where the voice alerts are programmed. For my planes and sailplanes for switches C, F and G I program in "High Rates" for position 0, "Mid Rates" for position 1 and "Low Rates for position 2. These are my triple rate switches for elevator, aileron and rudder. I know by the voice alert what rate a given control

function is operating at thanks to the alert. It is necessary to program in both the actual functions to be controlled by the switches and the voice alerts desired. Her I am just covering how to program the voice alerts. To do this programming scroll to the "Custom Voice Events" and press down on the scroll wheel to get into the programming. On the next screen highlight : "ADD NEW SOUND EVENT" and press down on the scroll wheel. On the next screen there is an option to program 1 sound alert or a series of sound alerts. For this example we are going to program Gear up and down sounds to switch A.

Scroll Down and Highlight: "Switch Change Report" and press down on the scroll wheel. Scroll Down and Highlight: "Inhibit" and press down on the scroll wheel. Scroll Down and Highlight "Switch A" and press down on the scroll wheel. Scroll Down and Highlight <Silence> at Pos 0 and press down on the scroll wheel. Scroll to "Gear Up" and press down on the scroll wheel. Scroll Down and Highlight <Silence> at Pos 1 and press down on the scroll wheel. Scroll to "Gear Down" and press down on the scroll wheel. Scroll up to the BACK command in the top right corner and press down on the scroll wheel. Sounds have been programmed for switch A. Exit the screen or Highlight "Switch Change Report" to start programming an alert for another switch.

To start programming Voice Alerts highlight and select the Custom Voice Setup selection from the Function List screen.

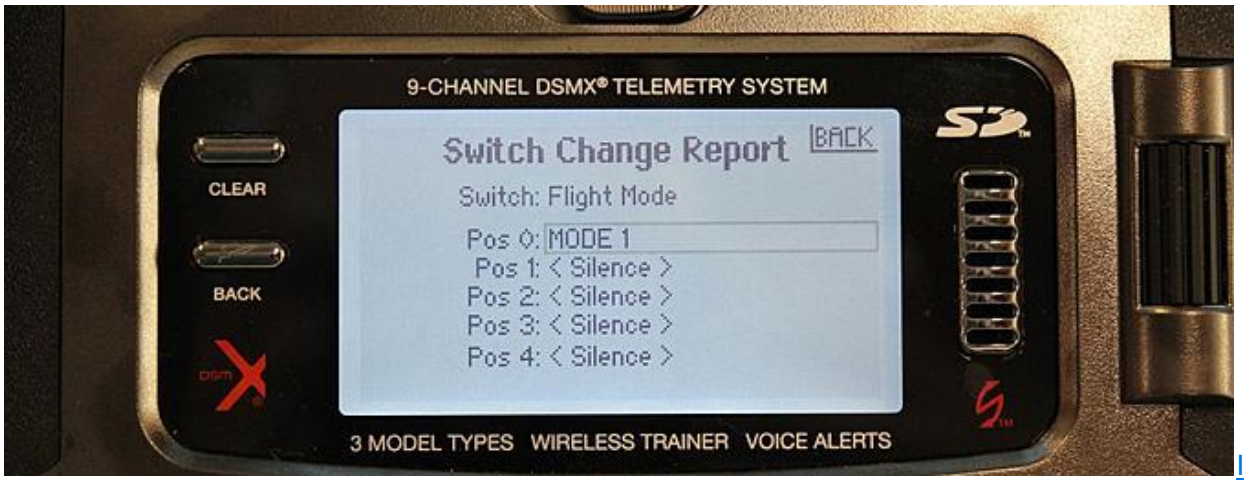
Here is a screen for a model I have already programmed. I can change the programming by selecting any of the listed items.



I can add voice Alerts by selecting: "Add New Sound" it can be to a switch already programmed (Multiple voice alerts on the switch) or a new switch.

To add one new sound highlight and select the "Switch change Report option.

Next offering was flight mode but it could have been a number of switches or other options.



I highlighted POS O silence and scrolled through and selected an available sound: Mode 1.

Here is a short video demonstrating how to program Voice Alerts.

Programming Voice Alerts with the Spektrum DX9 (2 min 6 sec)

250 Model Memory

To some this large a model memory feature may sound crazy and it may sound scary absurd to some of our spouses. If you don't need that much model memory storage, don't worry about it, be happy! However, if like me you have over 50 aircraft on DSM2 / DSMX this increased memory is wonderful! It has even allowed some people to sell some of their transmitters and now they have an easier time going to the field and being sure they have the transmitter that is needed to fly the aircraft they are taking with them. There is still a memory card for the

transmitter but now I don't need it to save my planes to the card to make room for another plane. I will discuss the memory card uses later in this review.

The transmitter only shows the number of planes that are actually programmed into it. Any new program at all will utilize a memory slot. Select a model and pick Acro and stop programming and that will save the slot and the label will be "Acro." The good news is that it doesn't show the spaces for models that are not being used. Program in five planes and it only shows five models in memory. You don't have to cycle through empty spaces saved for future planes. They don't appear until they are in use. If you sell plane # 22 just select that plane and scroll to the Model Utilities screen and select: Delete Model and it is gone forever. If you plane to get another one you can go to "Sort Model" on the same Model Utilities Screen and move the model as discussed below.

Sort Model List

Most pilots seem to fly their newest plane the most and some old favorites get flown less and less. As the number of planes/aircraft increase the list of programmed planes gets longer. Sort Model List in the Function programming section on the Model Utilities screen lets me select the order my models appear on the Model Select screen. Just go to: "Sort Model List," Highlight the desired model by pressing down on the scroll screen and then with the roller move it to the desired location on the list and press the roller. New plane programmed as #225 can be moved to first place on the list if desired. (NOTE: The numbers for aircraft once assigned don't change even if the model is moved. Planes programming uploaded from the Spektrum Website don't get assigned numbers.)

To get to the Sort Model List start with the Model Utilities screen.

Programmable Operation Modes, Channels and Switches

By having programmable modes they only need to manufacture one transmitter that they can sell anywhere in the world that allows 2.4GHz transmission. Here in North America the vast majority of us fly in Mode 2 while in Asia and Europe I understand it is Mode 1. My transmitter is set to Mode 2 and it will not be changed so long as I am flying. However, should I have a friend visit from China or Japan I can set it to Mode 1 and let the friend fly my planes.

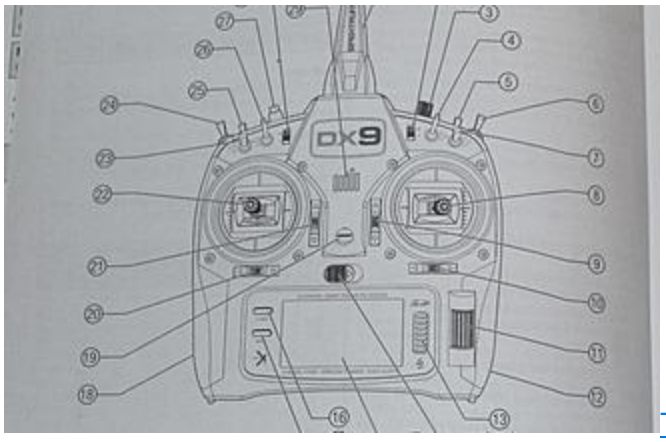
Programmable switches can be a mixed blessing. It is great to have the ability to assign different functions to any switch but if every plane is set up with the same function on a different switch for each plane that is a recipe for trouble. I strongly recommend everyone have a system where they use the same switches to control the functions they use most of the time. This way their hands go to the switch they want with no need to stop and think which switch controls that function? In sports it is called muscle memory to be able to repeat the same action without having to stop and think about it. Here are my main assignments for my DX9 switches. I reprogrammed the aileron rates switch for Blade 350 QX since shooting the opening video from switch E to Switch F so that my aileron "dual" rates are always on the same switch. These are consistent with the way my switches have been set up for sailplanes for years. Compare to the Diagram picture of Transmitter Functions Below.

Switches

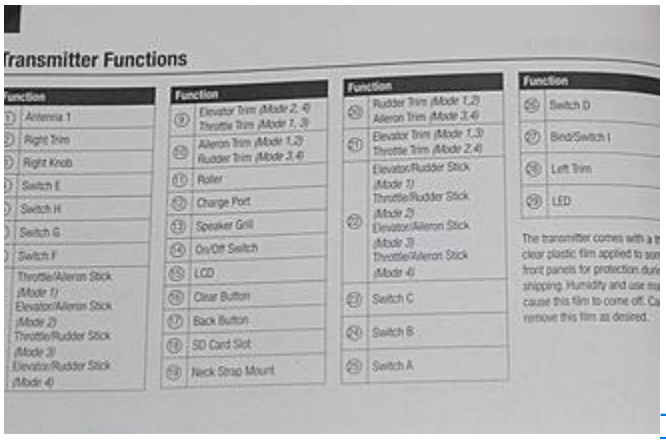
- A (25) Landing gear
- C (23) Elevator rates
- D (26) Flaps
- F (7) Aileron rates
- G (6) Rudder rates

Again you can program the functions to the switches in a variety of ways. For sailplanes I use switch D (26) for two of my flight modes and switch E (4) for three more and the left stick that is normally throttle for my planes is flaps or spoilers for my sailplanes. The switches have to be programmed for the functions desired for every aircraft or you can program template aircraft so that by copying the template aircraft the switches are assigned where I want them and then I can make individual modifications to the switch assignments and the desired rates and expo. I have made a template for airplanes and sailplanes and have programmed in both the controls and the voice alerts for my standard setups and it does save time as a starting point for a new

plane or aircraft. This has made the COPY MODEL function important to me and how to copy is discussed on page 16 of the manual.



Transmitter diagram from the manual.


Transmitter Functions

Function		Function		Function	
Antenna 1	Elevator Trim (Mode 2, 4) Throttle Trim (Mode 1, 3)	Rudder Trim (Mode 1,2) Aileron Trim (Mode 3,4)	Switch D
Right Trim	Aileron Trim (Mode 1,3) Rudder Trim (Mode 3,4)	Elevator Trim (Mode 1,3) Throttle Trim (Mode 2,4)	Bind/Switch I
Right Knob	Roller	Elevator/Rudder Stick (Mode 1) Throttle/Rudder Stick (Mode 2) Elevator/Aileron Stick (Mode 3) Throttle/Aileron Stick (Mode 4)	Left Trim
Switch E	Charge Port		LED
Switch H	Speaker Grill		
Switch G	On/Off Switch		
Switch F	LCD		
Throttle/Aileron Stick (Mode 1) Elevator/Aileron Stick (Mode 2) Throttle/Rudder Stick (Mode 3) Elevator/Rudder Stick (Mode 4)	Clear Button	Switch C	
	Back Button	Switch B	
	SD Card Slot	Switch A	
	Neck Strap Mount		

The transmitter comes with a clear plastic film applied to front panels for protection shipping. Humidity and use cause this film to come off. remove this film as desired.

Transmitter functions listed with numbers to match the diagram.

Flight Modes

I got into a discussion with a number of general RC pilots and was surprised at the lack of interest in Flight modes by them and how for a number of them the flight modes of my Blade 350 QX was their first exposure they could recall to flight modes. So I then discussed the new Delta Ray trainer plane and how many of the new SAFE planes from Horizon had three flight modes and that for decades I have been using five flight modes with my full house sailplanes. As mentioned above under programming Features the DX9 has five flight modes for airplanes and ten for sailplanes.

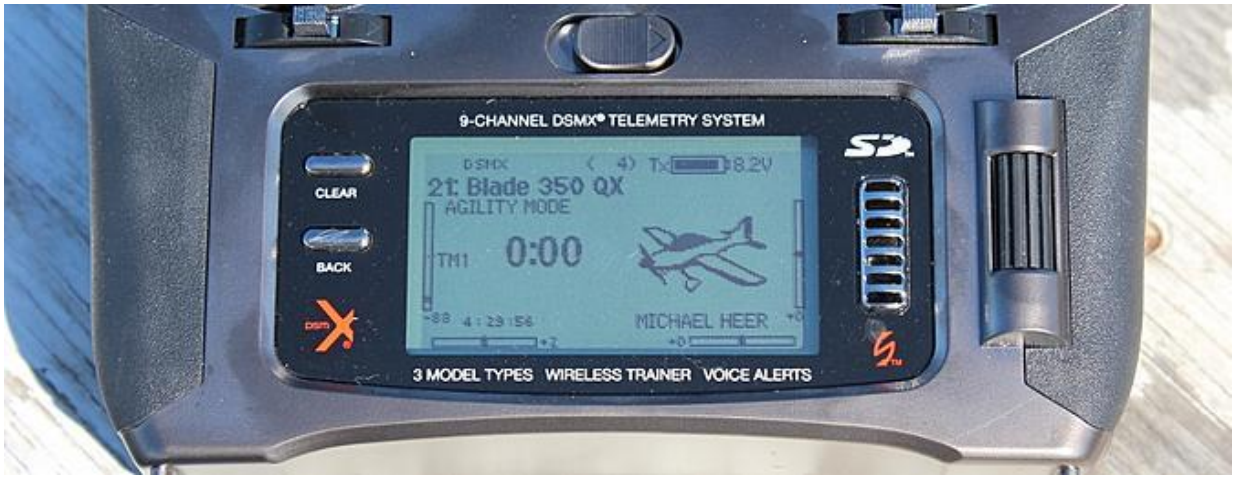
Flight modes are a fantastic feature because with the flick of a switch we can change the flight characteristics and the handling of an aircraft. It is a feature that is being utilized on an increasing basis by Horizon Hobby and one we should all be aware of regardless of what we fly.

My Delta Ray has three flight modes with flight mode one set for the beginner with restricted servo movements for turns, climb or dives and it does more as well that I won't go into. Mode two is less restricted and I can make wider turns with steeper climbs and dives and Mode three allows me to perform full aerobatics. With my Blade 350 QX (Original Firmware) mode 1 is Smart Mode with a number of features related to it including: stick relativity, safe circle, altitude limited to 45 meters, throttle determines altitude up to 45 meters, limited turning and banking in mode 1, position and altitude hold. In Mode 2 I can turn, dive and climb more sharply. I have position hold but not altitude hold, stick relativity, safe circle and the altitude limit are all gone and throttle is now a normal throttle. Mode 3 is agility mode and I have full movement and can do flips and spins and other aerobatic flying.

The names of the main three flight modes can be reprogrammed. For my 350 QX I originally named them: Smart Mode, Stability Mode and Agility Mode as shown on the screen pictures below.

Flight Mode 1 renamed: "Smart Mode" for my Blade 350 QX

Flight Mode 2 renamed: "Stability Mode" for my Blade 350 QX



Flight Mode 3 renamed: "Agility Mode" for my Blade 350 QX

With my sailplanes the various flight modes let me program in the positions for my flaps and ailerons and mixes with the elevator. The flight modes I use are: launching, cruising, thermal, speed (penetration) and landing. I set the positions of the flaps and ailerons from a few degrees down to a few degrees up to major movement for landing including Crow position for some planes. The programing of elevator for landing with some of my planes, to keep a level flight path, when the flaps deploy for landing is very helpful. Proper utilization involves test flying and programming adjustments at the field. The proper use of flight modes are critical to success for most full house sailplane pilots. The DX9 supplies all the flight modes I need and more. However, they way the use of flight modes has been expanding as referenced above I am glad to have more available in case I want to learn some new tricks.

My Sailplane Flight Modes are Programmed to the Following Switches:

- Switch D Position 0: Launch Mode
- Switch D Position 1: Defers to selection on switch E
- Switch D Position 2: Landing Mode
- Switch E Position 0: Cruise Mode
- Switch E Position 1: Thermal Mode
- Switch E Position 2: Speed Mode

In this video I show the flight modes for my Zeus, full house sailplane.

Five Flight Modes for My Sailplane (1 min 23 sec)

Flight Mode Testing Confirmation

I have done a number of flights with the two aircraft mentioned above: The Blade 350 QX, and the Delta Ray as well as a third plane, my Zeus, a full house sailplane designed and molded by my friend, Jeff Hunter. Below is a short video going through the programming for the Zeus.

Wing Types and Tail Types

The programming features for wing and tail types have expanded (Listed as Programming Features above) and have made programming of these features much easier. Having these different types readily available has also made it easier for Horizon Hobby to post downloads that let us quickly set up our planes from Horizon Hobby for which they have posted downloadable programs. Now even a beginner can successful program the transmitter for the C-Ray flying wing by just following directions. Does the plane have 1, 2 or 4 aileron servos? Select the correct wing type in programming and the transmitter will send simultaneous signals to the necessary servos for proper and accurate control.

Programming My First 21 Models into My DX9

I Programmed 20 sailplanes that I have had on a different transmitter into my DX9. I did this the old fashioned way, I programmed the sailplanes into the transmitter one by one, function by function. To keep my sanity I set up the switches the same way they were on my old transmitter for flight modes, flaps and dual/triple rates. This way the controls remain where they have been for me for about twenty plus years. I will carefully go over these programs individually and make sure everything is working properly before I fly any of the individual sailplanes involved in this programming into the DX9. But having checked one fully and found it was programmed perfectly I have every reason to believe that they will all be good.

The first new aircraft I needed to program into my transmitter was the Blade 350 QX which I am reviewing separately. Horizon Hobby has made a video covering this programming and I have copied that video into this article. I followed the described programming and set up my DX 9 per the recommendations including the recommended Expo and Dual Rates. I put the dual rate for the elevator on switch C and for the ailerons on switch E because that is how I have had them for years and as mentioned above I am used to they way they have been set up. I also believe in KISS (Keep it Simple Stupid). Although the video is listed as being 15+ minutes it is only 5 1/2 minutes long. (FYI: Only spaces in use appear on the transmitter screen. I have loaded and seen 40 models but I am trusting that the system can hold 250. I am not testing it to the maximum at this time.)

350 QX - DX9 Radio Setup (15 min 13 sec)

Downloadable Setups Using the Included Memory Card

Horizon Hobby has a number of programming setups available for the DX9 & DX18. I tried to download the file for the 350 QX for my Spektrum DX9 But I initially had a problem. However, I over came that problem and used the downloadable setups for my next 8 aircraft starting with my Scimitar. (FYI: The downloadable files install in the next blank space in the list of models. I had opened one for an Acro model thinking that might be needed but it was skipped. If you delete a model that model disappears and doesn't leave a space.) Since I had some initial difficulty doing this downloading, I have listed the process that I used step by step. There are probably easier ways to do it but this has worked for me. If the basic instruction manual leaves you confused as it did me I hope the following will help you.

Downloading a model program setup

- Go to the DX9 Webpage in the Horizon Hobby Website
- Left click on manuals and support
- Right click on DX9 and DX18 setups
- Left click download
- I saved DX9 and DX18 setups in my Music Library
- Next went to view the Download page Internet Explorer and right click save and closed file
- Left clicked on Documents Folder
- There I left clicked on Downloads
- Highlighted DX9 and DX18 setups, right clicked on open with WinZip
- Highlighted the Scimitar file and right clicked

- Scrolled down to "Send TO" and went to the right and scrolled down to SD Card and right clicked
- I closed the file and removed the SD Card from my computer

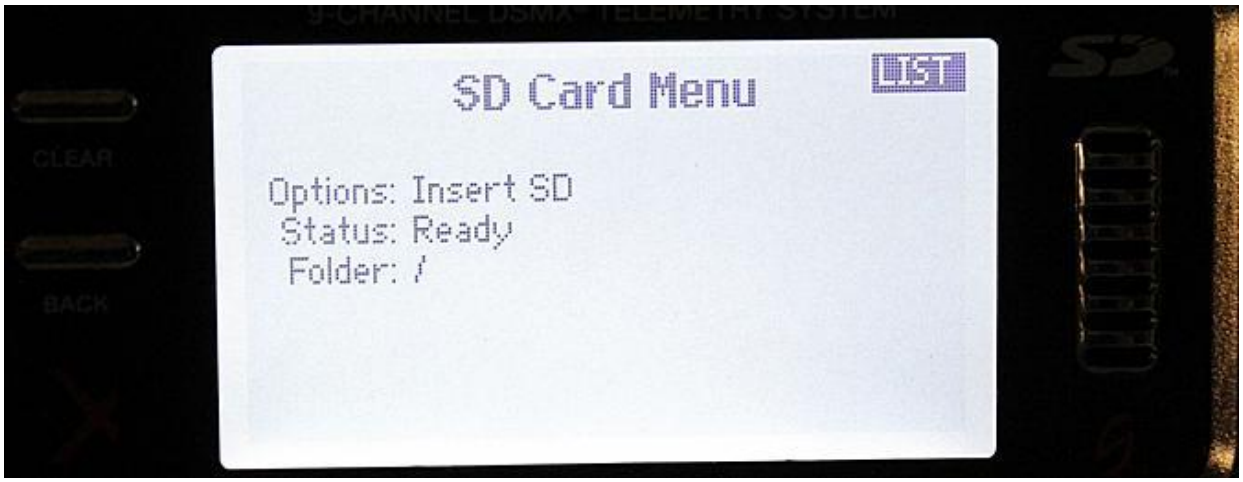
Installing in the Transmitter

- Inserted the SD card into the transmitter
- While holding down the selector dial I powered up the transmitter
- Transmitter opened in System section and I scrolled to the bottom

The upload into the transmitter took only about a second. I repeated this process to load seven more of the setup aircraft programs into my transmitter for planes I have that I can now fly with this transmitter by simply binding the aircraft to the transmitter.

Using the Memory Card for Sound Updates, Forward Programming, Saving/Sharing Programs

Following pretty much the same process described above I downloaded and installed the DX9 sound file update into my transmitter. Spektrum is planning for a new generation of Spektrum components and they are planning for them to be programmed into the DX9 using the memory card. The card will also be able to allow regular Spektrum Airware software updates to be installed into the DX9 to keep it cutting edge well into the future. The memory card will also allow me to download the programming I create for a plane and I can then save it in my computer or directly allow a friend to install it into his transmitter. This function has been around in previous Spektrum transmitters and is still available in the DX9.



This is the screen for using the SD card in the transmitter.

Dual (Triple) Rates and Exponential

Dual rates allow us to have a plane be very aerobatic at one moment and then with the flick of some switches handle in a tame and relaxed fashion as a Sunday Flyer. They control the amount the servos controlling the ailerons, elevator and rudder move in response to stick movement. High rates is normally 100% movement but can be more than that thanks to other programming functions or even less than that if desired. Low rates are less than 100% and depend on the plane and the pilot. 70% is used on some of my planes. On the DX9 all of the switches I use for my rates (C,F and G) are three position switches so I no longer have dual rates I have triple rates. During the course of this review I find I am enjoying triple rates on some of my planes much more than I ever though I would. On others I usually skip the middle rate but it is there if I want to use it.

Exponential allows a pilots motions on the sticks to appear to be smoother that they may actually be in real life. At full stick throw I get all the movement the servo is set for regardless of the exponential setting. It is at the smaller stick movements that exponential comes into play. A high speed jet can move quite a bit with a small movement. Exponential tones down the initial stick movement by the amount we program into the transmitter. For a slow trainer plane I need no Exponential. For the high speed jet I may use 25% so my smaller stick away from the center position movements have less effect and my control is as a result smoother when flying a very responsive plane.

Broadcast Protocol for the Spektrum DX9

The DX9 transmits on 2.4GHz and is compatible with DSM2 and DSMX these are both wide band spread systems that have been in use now for several years. I have tested my DX9 with receivers using both of these systems and have experienced no glitches but all of my testing has been done by necessity in situations with less than ten other transmitters operating at a given time. I prefer the newer DSMX system as it provides extra interference protection and faster reconnection times (if needed) due to improved frequency agility. The DSMX system has been extensively tested by others with 100 transmitters operating simultaneously without interference. Each DSMX transmitter, including DX9s, has its own unique shift pattern giving improved channel interference protection. Spektrum has a very wide variety of receivers available to use with the DSX9 and small micro planes and copters are sold by Horizon Hobby with compatible receivers on the mother boards of those aircraft. There are now too many to

name here but I will discuss the nine channel Spektrum receivers that are compatible with this transmitter.

It is recommended to have the transmitter set in DSMX (default) modulation mode. When DSMX is active it operates with DSMX and DSM2 receivers. If binding to a DSMX receiver it selects that but if the receiver only operates in DSM2 it will bind in that modulation. Since DSMX has benefits over DSM2 as mentioned above it is best to use that modulation when possible. If the transmitter is set for DSM2 it will only bind in that modulation.

Frame Rate

The DX9 has two frame rates. 22ms is the standard rate and 11ms is high speed and the receiver needs to be able to operate in high speed and the servos must be digital for high speed operation. You can select your option by using the scroll wheel. The DX9 will tell you the speed and show it on the monitor in the binding process as well as the modulation mode of DSMX or DSM2 mention in the previous paragraph.

Binding

As with all Spektrum DSM transmitters it is necessary to bind the receiver to the transmitter. The first step is to get the receiver ready to bind. Some are always ready to bind by powering them up first and others require a binding plug be inserted in the proper port on the receiver and then powering it up to get it ready to bind. With the receiver ready I just hold down the binding button on the top of the transmitter to the left of the antenna and hold it down while powering up the transmitter. The DX9 tells me if my binding attempt is successful or not and also shows me on the screen of the DX9. I have made a short video to share this with you as well as a couple of still pictures showing the screen. It even lets me now the speed that will be used depending if I am using a normal receiver or a high speed receiver.

Holding down the Bind button when turning on the transmitter leads to the Bind screen and it will report success or failure concerning binding.

The following video shows a failed binding attempt and a successful bind with my Blade 350QX. The beeping after the bind was due to the compass on the 350 having been near a magnetic source.

Binding the Spektrum DX9 RC Transmitter (1 min 20 sec)

Always Re-bind the receiver after completing programming. If the model has retracts they should be in the down position when doing the re-bind. This re-bind sets the failsafe positions and also stops servos from moving when powering up in the future such as the retracts opening and closing, etc.

With the binding and re-binding process complete the turn on sequence should always be to turn on the transmitter first. Confirm it is set for the model you plan to operate. After a minimum of five seconds power up your models receiver.

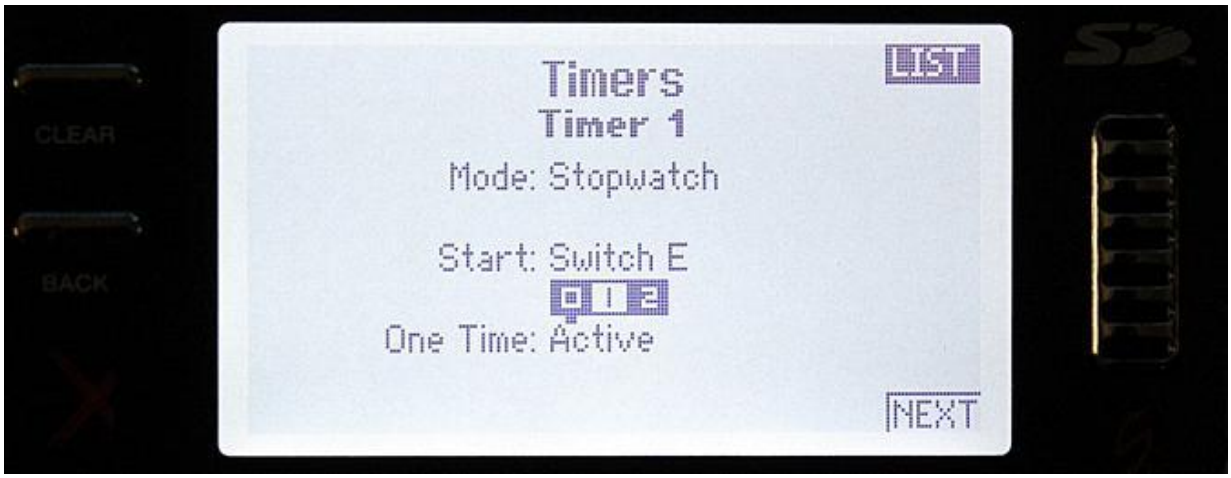
SmartSafe

SmartSafe failsave only affects the throttle channel. It prevents the speed controller from arming until the throttle is moved to the low throttle position. Prevents electric motors from operating when the receiver is powered but the transmitter is off. Powers off an electric motor and reduces speed on a power motor to idle if signal is most. To program this on just have the throttle at the low/off position before starting the binding mode.

Timers

There is an integrated timer that keep tracks of how long the transmitter has been operating overall and how long total it has been used to operate a particular model. "Operating" simply means the time the transmitter has been on and active on a given model. During the course of this review I have racked up a good deal of time on three models without having the models on except out at the field. This information can be found on the integrated timer screen.

I can set up two functioning timers. They will both appear on the main screen when they are programmed to available. They can be used to count down or to count up (stopwatch). They can be programmed to turn on and shut off from one of the switches or from the throttle when it is activated by moving the throttle stick up beyond a programmed position. With electric models I use the timer in a count up fashion to provide a warning so that I know when it is time to come down due to limited available battery. I can program a switch or a throttle and time the amount the motor has run. By tracking that I have a pretty good idea based on experienced how much motor run time is left.



On this screen I can program the first of two timers for countdown or stopwatch functions.

With sailplanes I usually set it as a countdown program and practice flight times to try and obtain exact flight times from the time of launch to the time of landing. I can program Voice Alerts by minutes, thirty seconds left and countdown the last ten seconds. It then switches to counting over time. Great for practice but not for actual official timing.

Not Discussed But Thankfully Still There

Model Match

This is no longer a promoted feature for Spektrum but it is still a great safety feature. The only mention I recall of Model Match in the manual was in regards to connecting two transmitters or more for Buddy Box linkage. Between transmitter and receiver Model Match prevents a pilot from trying to fly planes that the transmitter is not presently set to fly. For example: If I fly my Blade 350 QX I have my transmitter set on it. If I later try to fly my E-flight Albatros without resetting my transmitter to the program for the Albatros, I will get no response. This feature prevents a pilot from accidently flying a plane with the DX9 on the wrong program. To fly my Albatros it is necessary for me to go to Model Select on my transmitter and select the Albatros and then Model Match will let me fly it.

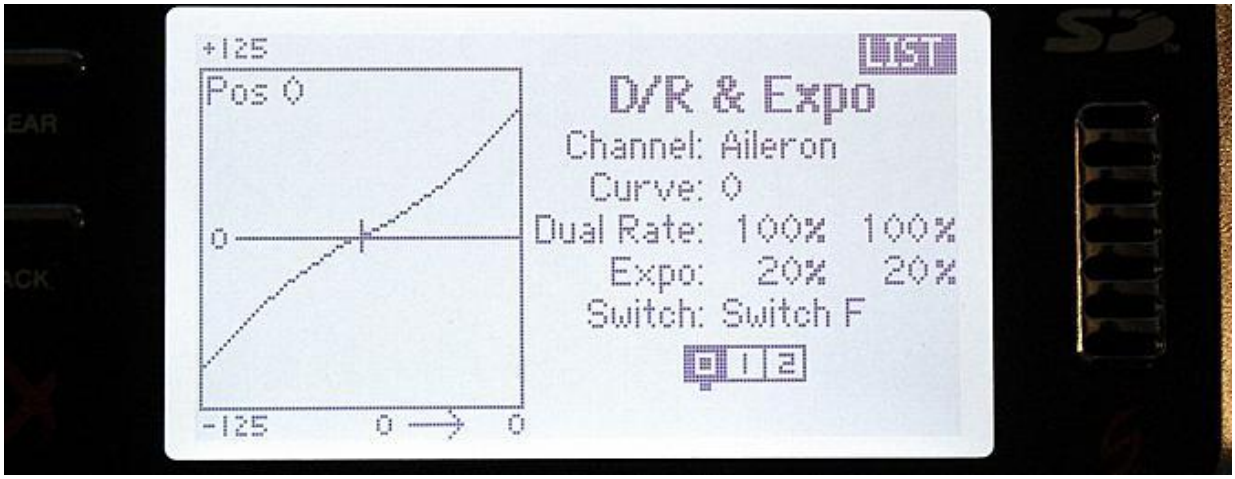
Spektrum Servosync

Servosync automatically re-sequences data for transmission depending on mixes and servo setup. It makes sure that servos programmed to work together receive their pulses together so they operate at the same time together. The result is properly synchronized servo movement for complete control. Two examples that affect my flying include mixes of flaps and elevator and ailerons and rudder. Servosync has the servos move together in these mixes.

Servo Programming

Dual (Triple) Rates

Dual rates allow us to have a plane be very aerobatic at one moment and then with the flick of some switches handle in a tame and relaxed fashion as a Sunday Flyer. They control the amount the servos controlling the ailerons, elevator and rudder move in response to stick movement. High rates is normally 100% movement but can be more than that thanks to other programming functions or even less than that if desired. Low rates are less than 100% and depend on the plane and the pilot. 70% is used on some of my planes. On the DX9 all of the switches I use for my rates (C,F and G) are three position switches so I no longer have dual rates I have triple rates. During the course of this review I find I am enjoying triple rates on some of my planes much more than I ever though I would. On others I usually skip the middle rate but it is there if I want to use it.



Dual Rates and Exponential Title screen

Exponential

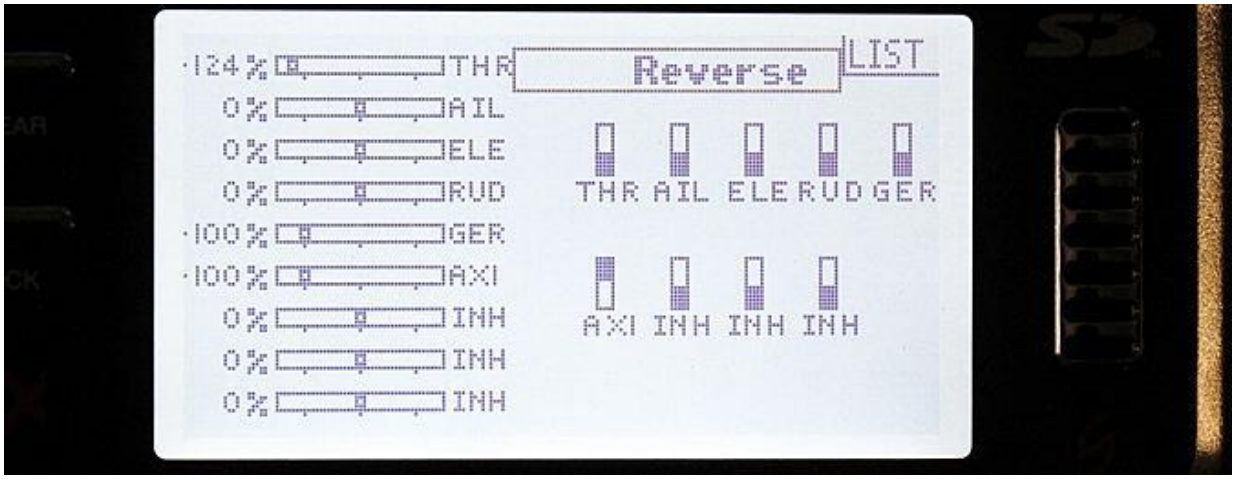
Exponential allows a pilots motions on the sticks to appear to be smoother that they may actually be in real life. At full stick throw I get all the movement the servo is set for regardless of the exponential setting. It is at the smaller stick movements that exponential comes into play. A high speed jet can move quite a bit with a small movement. Exponential tones down the initial stick movement by the amount we program into the transmitter. For a slow trainer plane I need no Exponential. For the high speed jet I may use 25% so my smaller stick away from the center position movements have less effect and my control is as a result smoother when flying a very responsive plane.

Servo Setup

From the servo setup screen in the Function List a number of servo operations can be programmed by scrolling through the available servo options. Here is a brief description of the available servo adjustments here.

Servo Reversing:

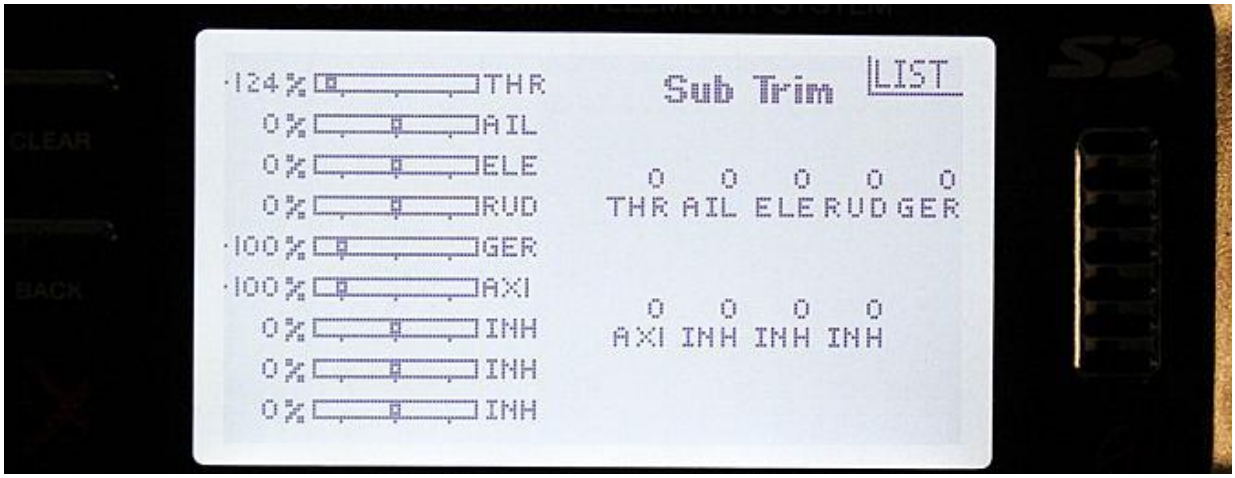
Allows for the reversing of the channel direction. Example if the rudder is moving right when it should be moving left just reverse that servo and it now operates in the desired direction.



In this screen I can reverse the servos.

Sub-Trim:

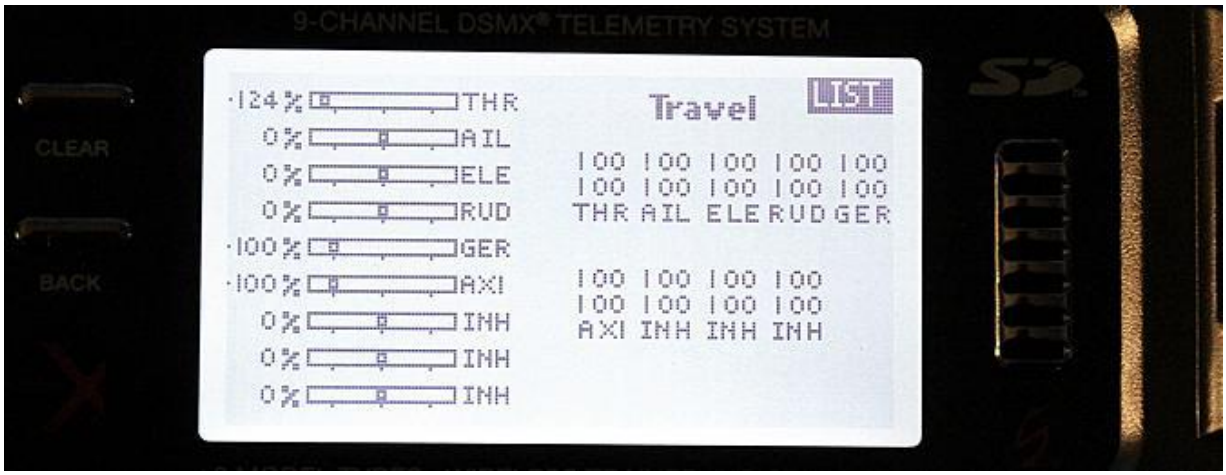
Allows for the centering of the servo. Used properly it moves the servo so that the control surface moves the last little bit to the neutral position. WARNING: Your control rods should be set up mechanically so they are in the neutral position or very close to it. Use this for the last little movement to center the control surface. Used to excess it can reduce the range of movement in one direction.



This is the screen to go to to adjust the Sub-trim.

Travel Adjust:

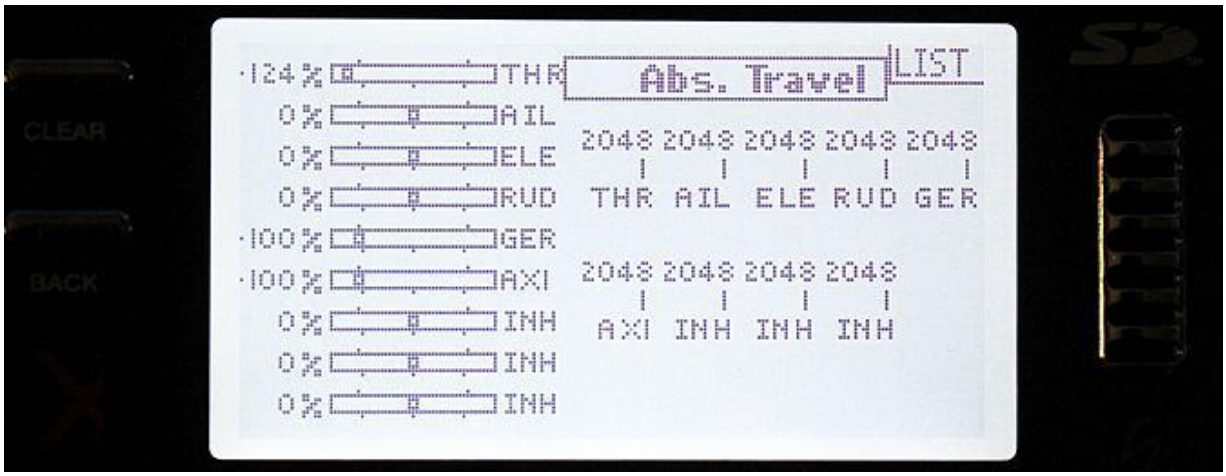
Allows the programming of the end points of the servo travel. If 100% of normal is not enough movement you can expand to 150% to get more movement. If 100% is too much you can reduce the amount of travel to avoid problems.



The screen for adjusting servo travel.

Absolute Travel:

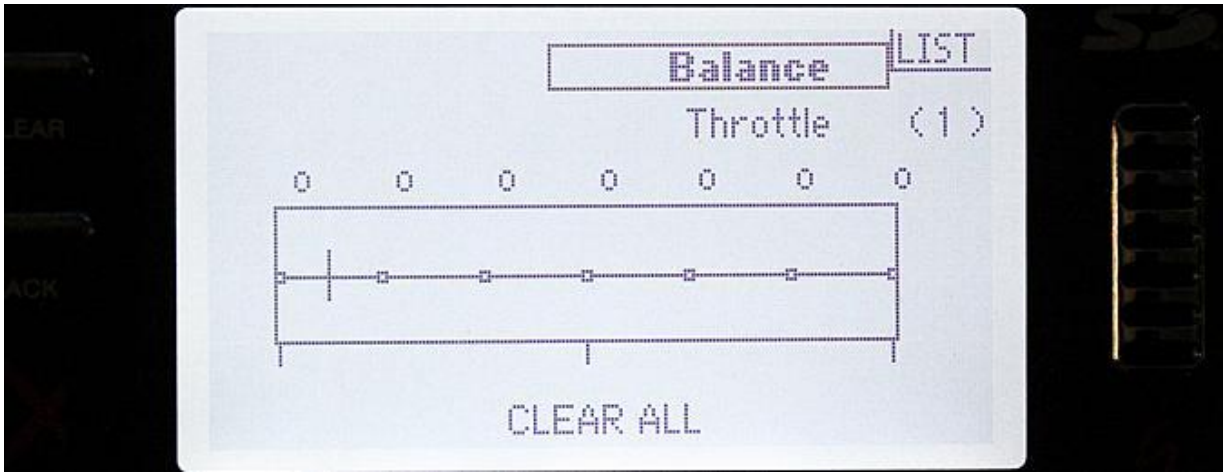
This function is used when mixing functions to avoid binding by too much travel by a servo. With elevons for example you are mixing ailerons and elevator. Full up and full right may cause too much travel with the right elevon and create binding. Absolute travel used properly prevents that.



The Absolute travel Screen

Balance:

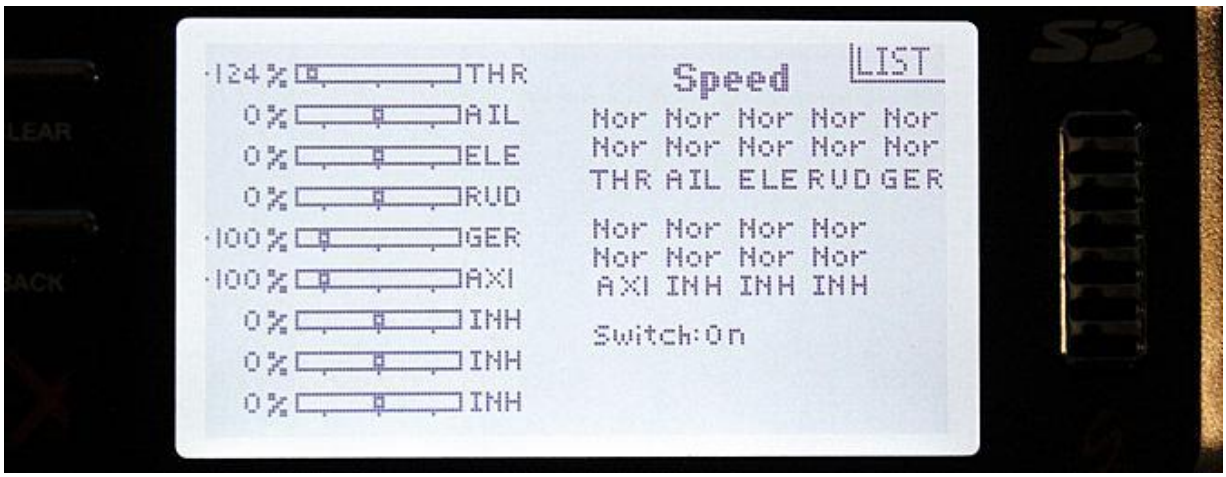
Allows fine tuning of a servo position at up to seven points. Common use is with multiple servos connected to a swashplate on a helicopter or two servos used for throttle on a gas powered twin so that the motors advance and return equally to get the power from the engines to be equal.



The servo balance screen

Speed:

Allows for the slowing of the response time on any individual channel. Frequently used to slow down electric retracts and the operation of flaps to allow them to appear more scale like in operation. Delay starts at .1 second increments and then.2 second increments and after 2 seconds by 1 second increments up to 8 seconds. (Not all electric retracts will respond to this programming and some won't let you slow them down more that a certain amount without malfunctioning. Be sure to test fully before flying.)



Allows me to slow down the servo response time.

Differential:

Available for planes and sailplanes with two or more servos for aileron control. Allows for a different amount of movement between the servos depending on the direction. Both positive and negative differential is available. Also available for V-Tail.

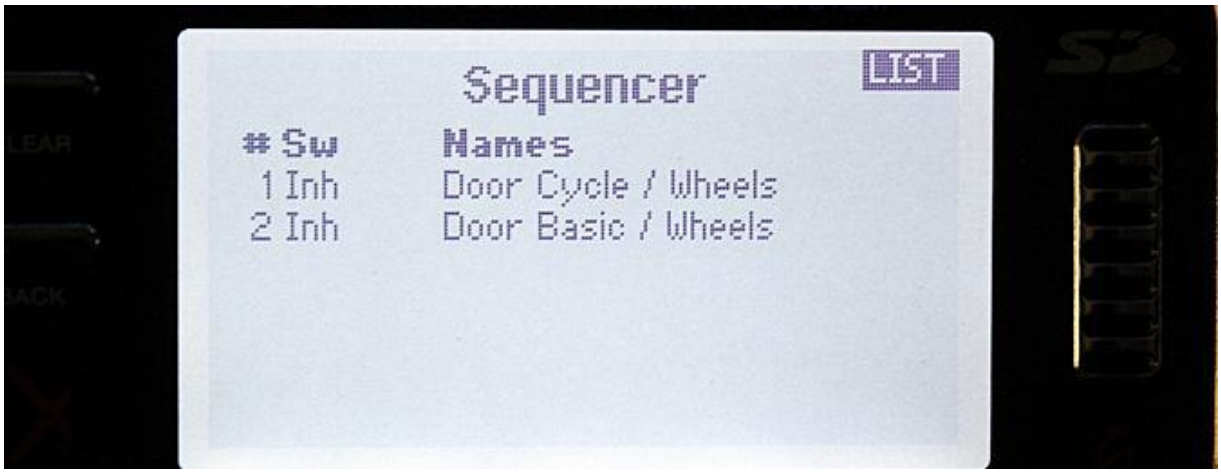
Mixing:

Allows movement of one control to affect more than one channel. Two often used mixes are aileron to rudder and flaps to elevator. The first includes rudder movement with the movement of the aileron control stick. For example on a ratio of 4 to 1 (aileron to rudder) the mix may allow a plane to turn with much less yaw and turn in a more scale like manner. Flap and elevator mix may help prevent a plane from ballooning up when the flaps are deployed by including some down elevator. Practice is necessary to get the correct amount.

A wide number of mixes can be programmed with the DX9.

Sequencer:

This is just another type of mixing but here it is: first this, than that. An example is a plane with wheel bay doors and retracts. The sequencer allows the doors to open and then the wheels come down and in reverse the wheels go up and then the doors close.

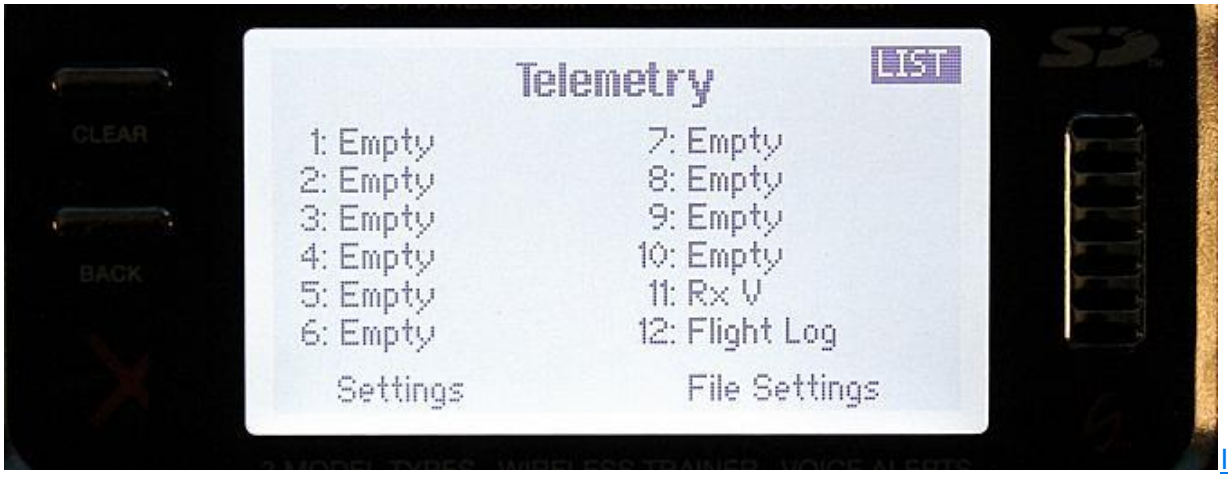


The Sequencer mix allows to program wheel bay doors to open before the retracts come down, etc.

Telemetry Is Available During and Post Flight

The DX9 is equipped with a built in telemetry feature that with optional accessories gives me real-time information on things like my model's battery voltage, signal quality, air speed, RPM, engine or motor temperature, airspeed, altitude and more. It requires the use of optional accessories to get this real time information on a variety of subjects. Using the voice alert system I can, with a flick of a switch, have the DX9 call out specific telemetry values that reach or exceed limits I define. I can also have the DX9 call out a sequence of telemetry values on demand with the flip of a switch. If I want to review telemetry after a flight, the DX9 can be set up to record the data to its SD card. The telemetry information can also appear on the DX9 screen, or it can be viewed by an assistant using another accessory on an Apple iPhone or iPad. To obtain telemetry information from my aircraft in addition to the DX9 I needed a DSMX receiver that is Flight Log capable such as my Spektrum AR9010. A telemetry module was needed and presently there are two: the TM1000 full range module and the smaller TM1100 fly-by (short range) module. Finally I needed the sensors and accessories that read or generate the information I wanted to receive and these are listed below. Telemetry information can be obtained just for fun or to track critical functions on your aircraft.Spektrum has an article and video on telemetry on their website for those of you that are interested in more information on Telemetry. Go to the video by clicking on the following link:

http://www.spektrumrc.com/Articles/A...ArticleID=2338



I can program what switches I use to view the Telemetry information and program them to hear the information as well.

Some Telemetry Related Accessories

- TM1000 DSMX Full Range aircraft telemetry module
- TM1100 DSMX Fly-by aircraft telemetry module
- 2.5" Aircraft telemetry data lead
- STi Telemetry Interface for use with Apple products
- Aircraft telemetry Altimeter
- Aircraft telemetry 3-axis G-force sensor 8G
- Aircraft telemetry 3-axis G-force sensor 40G
- Aircraft telemetry temperature sensor
- Aircraft telemetry airspeed indicator
- Multiple types of air telemetry flight pack voltage sensors
- Aircraft telemetry brushless RPM sensor
- Aircraft telemetry RPM sensor and bracket

TM1100 fly-by telemetry receiver

TM1000 full range telemetry receiver

GPS sensor unit

Speed sensing equipment

Voltage sensor equipment

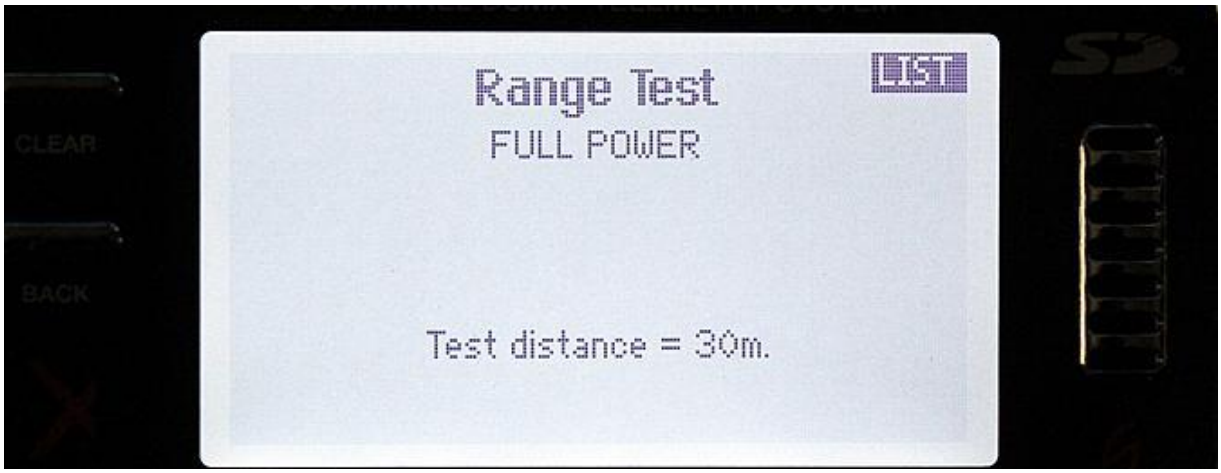
Altimeter sensor equipment

DX9's Range Test by Reducing Broadcast Power

Power up the DX9 and then the receiver. Walk 30 paces (90 feet) away from the plane with the plane on the ground. Face the model with the transmitter in the normal flying position. Place the DX9 in the range test mode.

To Perform Range Test

- Turn on the transmitter
- Press the scroll button and the Function screen displays
- Rotate roller and highlight range test. press the roller to access range test function
- Then push and hold down the trainer button on the top of the DX9 transmitter.
- This causes reduced power output from the transmitter and a screen stating that appears.



On this screen I can perform a range test by reducing the broadcast power per the procedure given above.

Despite the reduced power output there should still be complete control of the model at that distance. If there is a problem check again and if it persists contact Spektrum's product support

as listed in the manual. I did three tests each with three different aircraft as part of this evaluation and all passed the range test.

Actual Range Testing

Although I have flown about a half dozen aircraft in the course of this review of the DX 9 and have had no loss of control I have only attempt extreme ranges with two planes. The first was the E-flight Carbon-Z Cub that is owned by a friend and the test was performed by us using his DX9 transmitter. His son was located 7/10s of a mile away from us on the ground per the odometer of his car. I flew the Carbon-Z Cub with a seven channel Spectrum receiver with one satellite receiver over the son's head at about 300 feet of elevation. The Cub was darn small to our eyes but was also under observation with binoculars. I then climbed to about 600 feet and made a return flight after a sequence of turns and climbs at the far range of this flight. There was no loss of control or signal. The second range test was with my Radian with the standard six channel Spektrum receiver sold with the Bind-N-Fly version of the Radian. My plane has numerous LEDs on it and the range test was performed at twilight. The plane was flying overhead and reached a mile high when I started her back down. The plane without LEDs would not have been visible to my eyes in daytime at that distance. The DX9 meet my field test requirements for a full range transmitter.

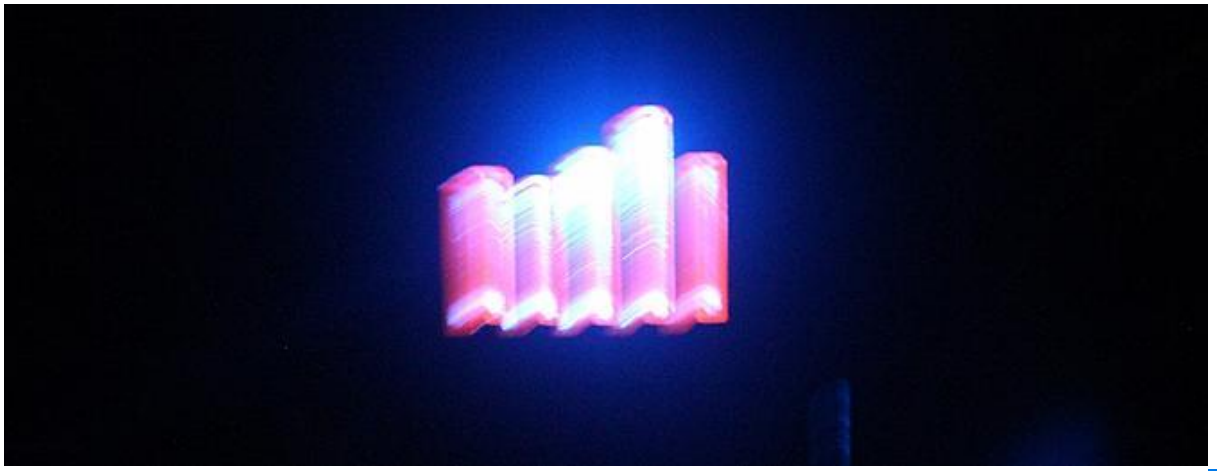
Spektrum's Smart Charge Global Charging System

This system has been included with several prior transmitters. They include a 12-Volt power converter that comes with a number of outlet clips that attach to it and they allow it to be used internationally to charge the transmitter. I have of course attached the connector that is designed for use in North American wall outlets and placed the others in a box for possible future use. When the charger is connected to a power source and connected to the transmitter the blue charging light goes on on the transmitter. The battery in the transmitter is a 2000 mAh 2S Li-ion battery and the charger turns off when the battery is fully charged. The battery recharges taking 12 hours and 20 minutes to fully charge from Low Voltage of 6.4V back up to 8.2V and turn off. The charger in the transmitter turns off and the blue light goes out when fully charged. It was at 8.2 Volts after 11 hours but it didn't turn off by itself for another hour and twenty minutes. It takes a bit more than a minute of charging for every minute of operation.

In one long test a fully charged battery went from 8.2 volts to 6.4 volts and the low voltage alarm activated after operating 9 hours and fifty five minutes. In operating the DX9 for two hours a day the low voltage alarm went off on the sixth day and I had ten hours and fourteen minutes of operating time. I always stop operation as quickly as I can after the low voltage alarm goes off. Land and turn off the receiver and then power down the transmitter.

The Charger Comes with a variety of connectors so it can be used internationally.

The Light is normally orange but it is blue when charging and goes off when fully charged.



Conclusions

The DX9 has proven itself to me to be an excellent transmitter! The features I reviewed have been discussed above and I won't run through the entire list here. The DX9 passed all my tests and was easy to program. Even if the voice alerts were removed from the transmitter I would consider this transmitter to be an excellent deal at the price. I have replaced two transmitters operating on DSMX with a total of only 40 model memory with this one transmitter and gained additional features in the process. I have had nothing but success in flying with this transmitter in regards to everything the transmitter can do. The ability to operate all day and recharge overnight makes it a great transmitter for flying all day at the slope or a fun fly from dawn to night flying with normal breaks during the day. I can even do an eight hour continuous slope duration flight with the battery that comes with the DX9.

The transmitter feels good in the hands and the textured material gives me a great grip and feel even when only holding it with one hand. Don't just think about the Voice Alerts as this transmitter has so much more to it. Mikey says: "Try it! You'll like it!

Pluses and Minuses

Pluses (These are just some of mine)

- 9 channel control
- Controls: airplanes, helicopters, sailplanes and quadcopters
- Can import setup programs for Horizon Hobby models with the SD Card
- 250 model memory
- Backlit screen

- Two programmable timers
- Programmable switches
- Operates 9-10 hours on a charge
- Recharges over night
- Voice alerts

Minuses

- Non folding antenna so it won't fit in my older aluminum transmitter box
- I want the following additional Voice Alerts: Smart Mode, AP Mode, Stability Mode, Agility Mode,
- As well as: Return Home, Beginner Mode, Intermediate Mode, and Expert Mode
- I know someone who would like: "Greetings Master" as a Voice Alert when he turns it on.

Last edited by Michael Heer; May 06, 2014 at 03:42 PM..