Unprecedented flexibility & ease of uses makes this affordable radio a winner

FLY RC EXCLUSIVE

HITEC RCD USA
Aurora 9

I have to admit something here: I may be a bit of a radio snob, but I've always considered Hitec to be primarily a servo company. When I look for incredibly durable high-performance servos for virtually any RC application, I look to Hitec first. Sure, they have radios, but I never really considered them to be cutting edge or even really that suitable for the large and complex projects that I was interested in as an experienced modeler. That all changed with Hitec's introduction of their new flagship radio, the Aurora 9. With what will likely be considered a revolution in radio design, the Aurora 9 signifies a major shift in programming flexibility and intuitive functionality. I've certainly never before seen this level of performance in a similarly priced radio system and rarely even in radios costing much more.

INITIAL IMPRESSIONS

The Aurora 9 has the basic look and feel of most other high-end radios. It has two very high-quality ball-bearing gimbals that center nicely and have completely adjustable tension, stick length and ratchet feel on the throttle. It is somewhat lighter than comparable radios while retaining a solid feel. Each side has a rubbery grip surface that provides a soft touch and firm grip. The radio has eight easily accessible switches along the top and front face, a slider at each forefinger and three rocker switches along the front face. These switches are completely assignable and programmable.

What makes this radio physically unique is the complete absence of an obvious programming interface—no dial, roller, or even a button around the generous touchscreen LCD. Touchscreen? Yep; the entire programming interface is through a remarkably intuitive touchscreen display.

Unlike some other 2.4GHz transmitters, the Aurora 9 is designed to be able to switch between 2.4GHz, shift-assignable 72MHz and Hitec's QPCM modulation options. This means that with a simple module and antenna change, you can switch from Hitec's 2.4GHz AFHSS system to a synthesized 72MHz/QPCM receiver and back. Each module snaps into place on the back of the radio. In the case of the 2.4GHz AFHSS module, there is an external wire that connects the short antenna to it. Although some may feel that the exposed wire gives a slightly unfinished feel, the added flexibility of switching between frequency modulation schemes makes it more than worthwhile in my mind.

The included 6-cell 1300mAh NiMH battery can be slow-charged using the included 110V overnight wall charger or removed and fast-charged at no more than 2 amps (roughly a 45-minute quick-charge time). The manual also mentions substituting a Ni-Cd or LiPo pack but offers a couple of small caveats: the included wall charger can only be used to charge the stock NiMH pack, so you'll have to remove any aftermarket pack and use an appropriate charger. If you do change to a LiPo pack, you'll need to tell the transmitter so that it can correctly dis-

play the remaining capacity based on the different voltage discharge curve of the 2S LiPo pack. Based on a tested discharge rate of 175mA—quoted conservatively at 190mA—the stock 1300mAh pack will deliver around 6 hours of run time. As a test, I replaced the stock pack with a 2S Thunder Power 2600mAh ProLite V2 pack. The pack fit perfectly, and will provide an amazing 12+ hours of run time between charges. That is certainly enough for a full weekend of flying or a month (or more!) of sporadic trips to the field. Hitec will soon have a LiPo battery specifically for the Aurora.

PROGRAMMING FUNCTIONALITY

Turning on the radio for the first time, I was struck by the brightness of the touchscreen. It is clearly visible in bright sunlight while the backlit screen provides more than enough illumination for late-night programming sessions. Another thing you'll notice is that the Aurora likes to ask you questions. The first is a request to verify the correct frequency. Remember, this radio can also use 72MHz frequencies. Accepting "yes" forwards you to the home screen. It is from here that you'll make all programming changes. There is no need to hold down a specific button while restarting the radio to enter a programming mode; simply touch the area that you want. The touchscreen itself is very responsive. Even my fat fingers can easily find their intended target. I found the programming options intuitive and easily accessed.

PHOTOS BY WALTER SIDAS

SPECS

Basic features
- AFHSS 2.4GHz/PPM/PCM compatible
- Easy-to-read 5.1-in.-wide backlit touch-screen
- Customizable menus
- One-stop model-type setting
- 3 multi-tasking digital trims
- Fully assignable control switch, knob, stick & digital trims
- Highly sensitive 8 ball-bearing gimbals with adjustable tension
- Full-size comfortable hand grips featuring top-quality elastomer
- Selectable control-stick mode/change hardware without opening case
- Power management system—adjustable backlight & auto shut-off time
- Digital-trim Nano-Adjuster—approx. 0.025 deg. per step up to 5 deg.

Standard Programming Features
- 9 assignable control channels
- 3 model types—Acro/Glid/Heli programming
- 30 model memories
- 20-character model naming
- 8 flight conditions with 10 characters
- Throttle lock
- Failsafe
- Channel function
- EPA
- Dual rate & Exp
- Subtrim
- Servo-reverse
- Servo speed—up to 25 sec. in each direction
- Servo monitor—monitor & servo test
- 8 programmable mixes—5x2-point, 3x7-point curves
- Trainer port

Advanced Acro Programming
- 9 wing types—6 main wings, 3 flying wings
- 5 tail types—main wing: normal, V-tail, ailevator; flying wing: 1 servo rudder, 2 servo rudders
- Quick model options select—dual engine, retracts gear, airbrake, fuel mixture
- 7-point throttle curve
- Throttle cut
- Idle down
- Fuel mixture
- Airbrake
- Airbrake to elevator mix
- Aileron to rudder mix
- Elevator to camber mix
- Rudder to aileron mix
- Aileron differential
- Aileron to flap mix
- Camber mix
- Flap control
- 3 x gyro sensitivity—ex: Aile/Elev/Rudd
- Snap-roll—4-way switching multi-direction
- V-tail
- Delta mix
- Ailevator

Advanced Glider Programming
- 9 wing types—main wings: 6; flying wings: 3
- 5 tail types—main wing: normal, V-tail, ailevator; flying wing: 1 servo rudder, 2 servo rudders
- Quick model-options select—motor, retracts gear, airbrake
- Motor control—switch on/off
- Airbrake
- Airbrake to elevator mix
- Aileron to rudder mix
- Elevator to camber mix
- Rudder to aileron mix
- Aileron differential
- Aileron to flap mix
- Launch—stick position auto cut function
- Camber mix
- Flap control
- 3 gyro sensitivity—ex: Aile/Elev/Rudd
- Butterfly
- V-tail
- Delta mix
- Ailevator

Advanced Heli Programming
- 6 swash types—90° type: 1 servo, 3 servos, 4 servos; 120° type: 3 servos; 140° type: 3 servos; 180° type: 2 servos
- Quick model-options select—governor, needle control, fuel mixture
- 7-point pitch curve
- 7-point throttle curve
- Throttle cut
- Gyro sensitivity
- Needle control
- Swash to throttle mix
- Rudder to throttle mix
- Fuel mixture
- Throttle hold
- Swash mix—swash rate/calibration
- Revolution mix
- Governor—3 rates

The Aurora 9 features eight switches, two side sliders and 3 rocker toggles. Any functions you want can be mapped to any of these inputs.

The 2.4GHz AFHSS module mounts in the back of the Aurora just like the modules we have been using for years with 72Mhz systems. You don't have to give up your 72Mhz legacy gear to enjoy the benefits of the Aurora 9. The 2.4GHz module and antenna can be replaced at will with 72Mhz components.

There are three basic folders:

• System—includes specific model selection, model type, timer, and other non-model specific functions.

• Model—includes all model-specific functions, including servo-reverse, channel selection, dual rates and expo, all mixing functions and a wide variety of additional functionality that supports full acro, heli and glider programming.

• Custom—this folder is completely programmable and allows you to identify the most commonly used functions and put them into a separate folder where you can more quickly locate them. For me, they include dual rates and expo, P-mixes, EPA and subtrim. The Custom folder is really nice, as it saves me from sorting through less used functions while looking for those that I adjust regularly. Very cool!

The easiest way to become more familiar with a new radio is to program a model. Starting fresh, when you select a new model from the system menu, the transmitter prompts you to name it and gives you a full 20 characters to work with—no more cryptic coding or abbreviations! Next, you'll need to identify it as an airplane, helicopter, or glider. From that point, the logic diverges into three variations of the same theme. The Aurora asks you a set of questions to help set up the model. These questions include wing type, tail type, single or multi-engine, retracts, airbrakes and mixture control. For helis and gliders, the questions relate more closely to the aircraft type selected and include such items as swash setup, flap/crow setup, etc. These


This is the first screen you get when turning on the Aurora. It lets you confirm that you want to transmit a signal, or just turn it on for programming and setup.

You don't have to remember which switch is which when programming the Aurora. This screen appears whenever you select a switch. Just touch the marker you want, and then tap the return doorway in the upper right corner. I've selected switch D here.

The dual rate / expo programming screen has an interesting offset option. This lets you move the entire output curve up or down the stick input range. Think subtrim that affects the entire output range.
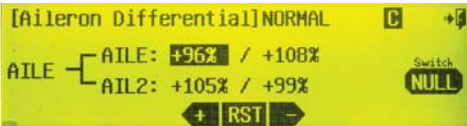
The aileron differential screen lets you set the up and down range of each aileron quickly and easily. These screens are only a small representative of the ease of programming available with the Aurora.

questions help to more fully flesh out your setup, which adjusts the settings accordingly. Why didn't anyone think of this before?

The next step is my favorite—the Channel Function page. This page allows you to set the function of each and every channel. Channel 1 does not have to be ailerons. It can be flaps, throttle, elevator, or any other function. This makes radio setup incredibly simple. Plug in the leads, assign the functions, and identify which switch, gimbal, or dial you want to activate it. Similar functionality exists for every mixing option, including dual rates, flight modes, heli stunt modes and sailplane wing configurations. This may seem complicated, but in practice, I have found that it is simple and flexible. Traditional function selections are standard if you choose to forego this flexibility. This open architecture offers a huge step up for advanced hobbyists, but it's easy to use for less experienced pilots.

OPTIMA RECEIVERS

Our review radios arrived with the 7-channel Optima receiver; 6- and 9-channel versions will soon follow, and I also expect a full range of micro-receivers. Interestingly, the 7-channel Optima has servo ports on both ends. This offers the lowest possible profile for

A SPORT FLIER'S PERSPECTIVE
by Thayer Syme

I'll never hold a candle to Scott's thumbs or Bob's legacy in our hobby, but I can offer the perspective of a day-to-day sport flier who loves the endless variety of challenges that RC offers. I've bought a lot of Hitec gear over the years, and I was very excited when I first heard about their 2.4GHz development work. Never did I dream that their first offering would be as capable and all-encompassing as the Aurora 9! Here is just one example of its incredible flexibility. Many of the programming options can be varied according to the 8—yes, 8!—available flight conditions. Multiply that by the 3-position switches you might use to activate them, and theoretically, you could set up your model with 24 different settings for dual rates, expo, flap deflection, etc.!

The first model I flew with the Aurora was the Multiplex MiniMag Sport Trainer park flyer. This is a basic little 4-channel bird that I reviewed in the December 2007 issue

of *Fly RC*. It has proven to be a great friend over the last two years, and I thought it would be a perfect test bed for the Aurora. Programming took only a few moments, as I quickly stepped through the menu with its prompts. Other than a few minor trim clicks, I was immediately comfortable flying the Aurora. I find it very comfortable in my hands and easy to use.

I have also flown the Aurora with the Multiplex Blizzard (*Fly RC*, December 2008). This high-performance electric sailplane is capable of speeds of up to 100mph or so, and it offers a bit more programming complexity with its multi-servo wing and the desire for different launch, glide and landing configurations. To be honest, I was able to program it almost as quickly as the MiniMag! The question and response format of the menu tree makes it very easy to program when setting up a new model, and I find working with the touch-screen much faster than

dials, rollers, or switches.

The Aurora 9 easily holds its own when compared with other radios with similar features, and it costs significantly less. Download the manual, give it a read, and look over its expansive capability. The intuitive interface and ease of use have guaranteed it a regular spot in my rotation. Keep your eyes open; you will definitely be seeing a lot of Hitec's Aurora 9 in *Fly RC*!

A Retrospective
by Bob Aberle

Now that I am flying Hitec's new Aurora 9 2.4GHz system, I can't help but look back over my 56 years in this very enjoyable hobby. I started in 1953 by assembling a single-channel receiver from a variety of military surplus parts. That first receiver weighed only 4.5 ounces, operated on the only frequency available (27.255MHz) and provided control of the rudder only! Those limitations seem incredible by today's standards.

After years of making do with just a few channels, in 1983, the FCC authorized 50 new channels for model aircraft. That assignment prompted a long, drawn-out phase-out/phase-in plan to eliminate the old channels and begin to use the new. When the 50 new channels were finally active, we had to be extremely careful with frequency control. We also had to have new narrowband RC equipment to allow the new tightly spaced channels work safely.

Now some 20 years later, almost out of the clear blue, 2.4GHz spread-spectrum technology comes along and turns our hobby around. I never would have believed that this could happen, but it did! The widespread adoption of 2.4GHz technology has been very fast, eclipsing 72MHz in the blink of an eye. Fortunately, RC manufacturers also offer conversion transmitter modules allowing us to use existing transmitters. As a result, the transitional cost has been held to a minimum. Of course, brand-new dedicated spread-spectrum systems are also hitting our market.

The Hitec Aurora 9 features a completely new transmitter design. This hybrid radio can use both 2.4GHz and Hitec's earlier 72MHz modules making it especially attractive to pilots looking to keep their72MHz fleet flying. This radio brings many high-end features to pilots at a very reasonable price, as Scott Stoops has detailed.

Looking back to where we were a few years ago and then back to today, the changes are astounding. We can now literally fly anywhere without the worry of interfering with one another, or other services. Frequency flags, frequency control boards and flying-field separation concerns are all in the past.

At the time of writing, I have nearly completed a new model designed specifically for this new Aurora system. It is small and light, owing, in part, to the low profile, $^1/_2$-ounce Optima 7 receiver. Look for a full construction article in the near future.

Hitec's new $^1/_2$-ounce 7-channel Optima receiver clearly highlights RC's progress when seen with Bob Aberle's 1953 original Miller hard-tube single-channel 4.5-ounce receiver on the right. We sure have come a long way!

slim fuselage installations such as sailplanes and some park flyers. The 6- and 9-channel Optima receivers will have traditional servo ports on one end. Both the transmitter module and the receiver have LEDs that light while binding and setting the failsafe modes.

Unlike other 2.4GHz systems, the Optima's receivers are really transceivers. Not unlike my children, the receivers talk back to the transmitter, though in this case, they offer valuable data. If the receiver voltage or signal strength falters, a transmitter alarm will sound. The actual voltage at the receiver is also displayed on the transmitter's main screen. Monitoring signal quality and receiver voltage are huge steps forward that you can enjoy right now, and Hitec has promised additional telemetry functionality going forward.

AFHSS

Advanced Frequency Hopping Spread Spektrum is Hitec's 2.4GHz protocol. It involves the radio selecting 20 of the 79 available 2.4GHz channels. The transmitter hops between these channels as necessary to maintain signal quality. Once linked, the transmitter and receiver continuously monitor signal quality and hop between signals as needed. This is completely transparent to the pilot.

The Aurora 9 uses two distinct pilot-selectable ways to determine which 20 channels it will use in the 2.4GHz frequency spectrum. The recommended and default "Normal Mode" selects 20 specific channels when the receiver is initially linked to the transmitter. This method also allows almost instantaneous system re-link if either the transmitter or the receiver loses power briefly.

The secondary AFHSS mode is Scan Mode with the receiver choosing the 20 cleanest channels at each power-up. This mode is recommended in operating environments with very high 2.4GHz use such as at large RC gatherings. The downside of this mode is the additional time required to re-link if the signal is interrupted. The delay is created by the time required to analyze the band and reset the 20 channels.

PERSONAL EXPERIENCE & CONCLUSION

I've been flying the Aurora 9 for almost two months now, and I've yet to have a substantive complaint, and that, for me, is unusual. My flying with it includes many dozens of flights with small electrics, helicopters and gas airplanes of up to 100cc. Probably my favorite aspect of the radio is its flexibility. If I want a certain switch to activate ignition, I tell it to do so. Similarly, if I want flight mode on a specific switch, I simply assign it. There are so few restrictions in the Aurora's architecture that the programming and customization options are almost unlimited.

It seems that every time I go flying, I discover a new function or option hidden in the Aurora's vast programming array. The latest is the throttle lock, which I regularly use with electric models. Simply touch and hold the airplane icon on the home page for two seconds, and the throttle is held at zero, regardless of stick position. Another option I've come to love is the integrated timer. Two unique timers are clearly displayed on the home page and can be operated from any of the radio's many switches, although I prefer the throttle stick. I set a throttle position above which the timer runs, and I am rewarded with a reasonably accurate valuation of fuel or electrons used and, thus, flight time remaining.

It is options such as these that make me believe that the world of computer radios will never be the same. After programming and flying the Aurora with several models, I am now a firm believer that Hitec is a world-class radio company. ✪

Links
Hitec RCD USA, LLC., www.hitecrcd.com, (858) 748-6948

Multiplex, www.multiplexusa.com, (858) 748-6948

For more information, please see our source guide on page 121.