

# RC REPORT

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## E-flite Opterra 2m

Generally when introducing a product during an evaluation it starts with a history of the aircraft if it's scale, or if it's a sport platform its purpose or perhaps its intended market. But the E-flite Opterra 2m defies a simple definition.

Perhaps the best thing to do is start with the product. Packed in a fairly large box, it's obvious from the start this is a nice size airplane. The next thing that gives away the size is the 2m. For the last few releases E-flite has started using the size in the title. As an example, recent reviews include the Radian 2.6m and the Variant 1.3m with the "m" standing for the wingspan in meters. Once this simple concept is understood, it doesn't take a genius to figure out the Opterra has a span of two meters, or for those who continue to be metrically challenged, approximately 78 inches, which when matched to a cord at the vertical stabilizers of 44cm, or about 17.25 inches, provides a total wing area of 1033 square inches and a wing loading, depending upon the payload, of roughly 10oz per sq ft.

Manufactured from the company's popular Z-foam, the Opterra is available in either a Plug-N-Play or Bind-N-Fly version, with the BNF's included UMX AR636 6-channel AS3X receiver being the only difference between the two packages. Installed from the factory is a 40amp ESC, along with a 1300kV outrunner motor, which is equipped with an 11x5 folding propeller, and two 13 gram servos, one in each wing panel, to operate the elevon control surfaces. To complete the model the end user will need to supply a flight battery from 2200mAh to 5000mAh (more on this later) and a six or more channel Spektrum protocol transmitter. For the evaluation flights the recently reviewed Spektrum DX6e (HM 2/17) was chosen.

Since I'm such a smart guy, I figured I'd get a jump on the programming before even opening the box. Entering the DX6e's menu, under wing type the flying wing was selected, along with dual rates of 100/80 and 20 percent exponential throw. WrongO – BuckO. It's been said over and over again, and this is a perfect example, but manuals are printed for a reason. Tell your customer, no matter how experienced he thinks he is, to read the instructions, and that means from the front to the back.

In the case of the Opterra, the servo mixing for the elevons is programmed into the receiver from the factory. It is also suggested that dual rates be kept at 100/100 with no expo added. All that was accomplished by not reading the manual was going back into the transmitter's menu locating the data reset function and starting over. Not a great loss on my part, but—READ THE MANUAL—including the paragraph on spin recovery.

There are only about 10 components that need to be assembled to complete the airframe. These include the fuselage pod

### An airframe that defies a simple definition.

with removable nose piece, two vertical stabilizers, two wing panels and two wing tips. The entire airplane is held together with cam locks, no glue is required or even suggested, making field assembly easy. Once together, the Opterra resembles something of a Horton Ho-229 with Rutan winglets attached to the tips. Even though the Opterra

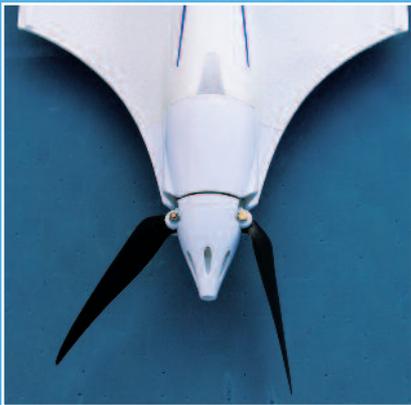
assembles into a relatively large wing, because of the different manner in which the airframe can be broken down the model will fit into any car, big or small, the customer might drive.

With the model assembled and a freshly charged battery mounted it was time for a few orientation flights. For the Opterra, the engineers at Spektrum have programmed a new fea-

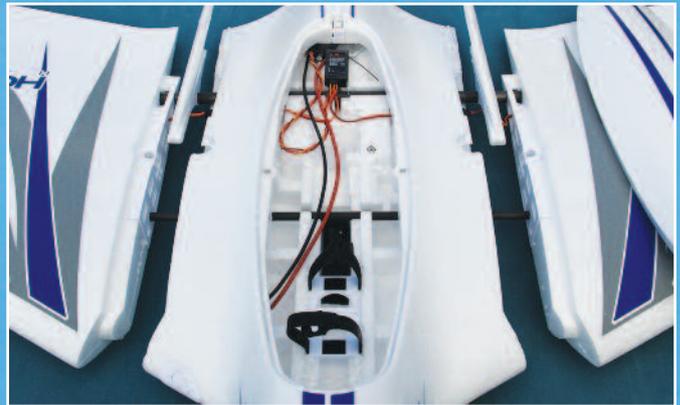


The size of the Opterra is given away by the large box, but even though it's a large model, there are only 10 pieces to be assembled to complete the wing, so it goes together very quickly.





Power is supplied by a 1300kV outrunner motor and 11X5 folding propeller mounted in a pusher fashion. Cool air flow is provided by an inlet just forward of the motor, while the hot air is exhausted through the hollow and vented spinner.



The equipment bay is cavernous, allowing for the use of just about any lithium polymer flight battery from 2200mAh to 5000mAh the purchaser may have available.

ture into the AR636 receiver. This is called launch mode. The idea is that once properly programmed a two position switch on the transmitter can be used to turn the launch mode on, and once the model is in the air, turn the launch mode off. With launch mode on, and the motor spooled to full throttle, the Opterra was released into the wind. As the model continued forward, making the slightest of climbs while the wings remained perfectly level. Wow, this is pretty slick, and as soon as the thumbs were where they belonged on the transmitter's right stick, the launch mode was deactivated and flying commenced. This said it is important to make certain the model is properly balanced as launch mode will not make up for a nose-heavy and definitely not a tail-heavy airframe.

This is a really nice flying model. The motor provides brisk but by no means outrageously fast flight. The control throws are modest—there is no bank and yank, and let's see what happens—but the available throw does provide for nominal aerobatics. Delta and swept back wing configurations are noted for their inherent stability, and the Opterra features both, so even without AX3S the platform will have a decent degree of built-in aerodynamic stability, and the AX3S adds to what is already a great layout.

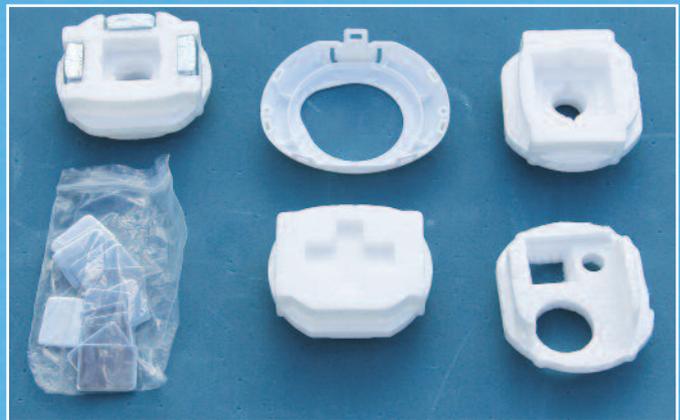
One of the things that can be confusing when flying a wing is the lack of a tail assembly. By no means does the Opterra need a tail for flight, but a few pilots, especially if they are newer, will use the fuse and tail assembly for added orientation. With this model the graphics are so bright and colorful and there is such a contrast between the top and bottom of the platform if the pilot does get confused while flying this airplane there is no hope for his future. Yet no matter how frustrated you get as a dealer, and we've all gone through this, never tell a customer to get another hobby. In this case just show him a different sport aircraft and suggest he fly an airplane within his level of ability, or perhaps what his eyesight will allow.

As mentioned the fuselage nose piece is removable, and included with the model is the aerodynamic piece fitted when the box is opened, along with another nose piece with an open front and four different inserts for the open nosepiece. The idea is just about any style of camera can be fitted to the open nose for aerial photography or to experiment with First Person View (the inserts are designed for the lens to point directly out the hole). A person could even mount a stick style video camera such as a Mobius or perhaps an older style of FPV camera that uses WiFi to the flat on top of the fuselage front. However should the purchaser plan on using an internally mounted video transmitter he might want to open the space at the back of the flat and remove the cover from the fuselage's vertical camera mount. Although I've not heard of any meltdowns, FPV transmitters can get a bit warm, and by doing this it will allow extra airflow to pass through the fuse, cooling the flight battery and FPV Tx.

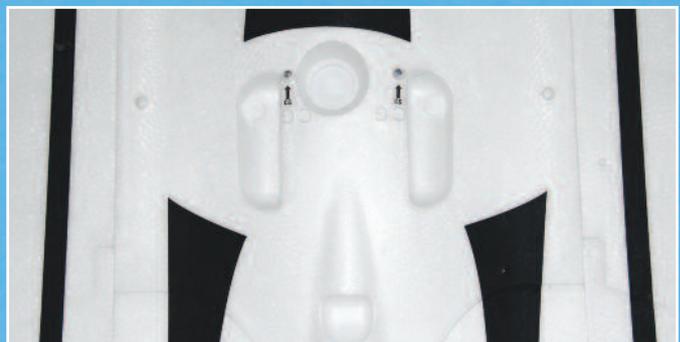
With three potential camera mounting locations the options are



Potential glue joint failure has been eliminated by screwing the control horns to the elevon surfaces and using through bolts and lock nuts on the horn to servo connections.



Included with the Opterra are a hollow plastic nose piece and four foam inserts (along with a bag of weights) to allow the internal mounting of just about any of the popular action or FPV cameras currently available.



The center of gravity is indicated by two small protrusions molded into the fuse at the finger recesses used for launching. In addition there is a provision for a vertically mounted action camera (shown with the lens opening covered) which is also located on the balance point.



The first few orientation flights were completed without a camera mounted and the Opterra proved to be an extremely stable platform, which is capable of reasonable speed and modest aerobatics. With its bright and colorful graphics and unusual design the aircraft is a real eye catcher and will draw considerable interest at the flying field.

many. There's no one set rule, one camera, or one setup, for the Opterra. You can even mount a camera inside the fuse pointing straight down through the fuselage bottom. It's pretty much try what you want (or don't want), in any combination you want. The rule to this platform is there are no rules. Currently FPV is the hot ticket, but if the purchaser already owns FPV equipment other than battery packs there isn't much add-on sale potential. However if your customer plans on changing the nose piece regularly sell him one or two packs of DuBro 2mm x 10mm socket head cap screws (#2113) as he will most likely be losing the small securing screws regularly.

The manual shows a simple GoPro, Hero-3/4 (a Hero-5 will not fit without modification) style of installation and mentions that with a camera of this size and weight, and a 3S 2200mAh LiPo (EFLB22003S30) mounted as far forward as possible, the model's balance will be spot on. Another suggestion offered is a smaller FPV camera (a number of possible options are listed in the manual) and a 3s 3200mAh battery (EFLB32003S30) or a few weights can be added and a smaller battery used, and this will get the model within the C/G range. But here again, there are so many possible combinations of camera styles, sizes and weights, and battery sizes and weights it's just about impossible to offer a single fixed setup that will work every single time. As a further example, like many, the thought of carrying around useless weight is nauseating, but removing some of the weight that's part of the aerodynamic nose piece would not be an easy task, yet a 3S 5000mAh LiPo (DYNB3803EC) can be mounted further back in the fuse and the model will still balance. Just be certain to wear a wide brimmed hat and extra sunscreen, as even without playing thermals the flight times will be in the range of 20+ minutes.

So what package should you recommend to the potential purchaser? If your customer is a Spektrum user the BNF package is a no brainer, but don't let this deter users from other brands. The PNP package is perfect for alternate brands of radio control equipment, and even though the end user won't have the benefits of AS3X he will still have a really great mount for his equipment and all told he will be

extremely pleased with the results.

Now with all of the provided information what are we going to call the Opterra? That's a really good question. For starters it is a really big and great flying wing. Remove the fuselage hatch and there's enough room to place a dining room table for Ken and Barbie to have a meal.

AS3X provides an incredible amount of stability, still it is not a three axis gimbal so even though the video and especially stills will be of superior quality, they aren't studio grade. The aircraft is brisk, but not a speed demon; and it's somewhat aerobic, yet by no means on the edge of control. My choice is to mechanically increase the elevon control throw, add dual rates and reduce the gain values on the receiver. This is just another example of how versatile this platform really is. The bottom line is Opterra is an open book for experimentation on the part of the purchaser.

If it sounds like out of the box the model is being described a bit negatively this is not the case at all. The Opterra is impressive, and I mean really impressive. You can buzz around the flying field, or search out a thermal and go soaring. It's a fun flying wing in its own right, a camera platform for either horizontal or vertical photos (or both). It's superb for FPV, especially at entry level where a person will want to experience the sensation, but isn't interested in all out speed or a multirotor. During the half dozen evaluation flights all sorts of 3S battery capacities from 2200mAh to 5000mAh were fitted. Provided the airframe was properly balanced when using the different size batteries the only change in the Opterra's characteristics was in the duration of the flight, the heavier batteries didn't seem to have any noticeable effect at all.

A reasonable definition would be a jack of all trades, yet a master of none. This is not a bad thing, not at all, as it doesn't narrow the market to a few select customers. Many enthusiasts, each with different interests will be attracted to the Opterra; it is that flexible of an airframe.

Like all E-flite products the Opterra, including the suggested flight batteries along with the suggested FPV cameras are available exclusively through Horizon Hobby. **HM**



One of the nose inserts is for a Go-Pro style of action camera and it includes openings for access to the camera's various function controls.



A Sony camera was mounted to the recess located on top of the fuselage, and although a clean installation, the location of the camera's controls made operation difficult. Decided upon was a Hero-3 mounted to a simple snap connector that allows the camera to be taken on and off as desired.

