

MULTIPLEX
Cularis

by Jonathan Pope

High performance from a foam sailplane?
You bet!

Multiplex has developed another new model to join its growing fleet. This time, the design is a high-performance glider hailed "Cularis." That's right. Multiplex has engineered a 2.6-meter full-house-control sailplane made of Elapor, its proprietary super foam, which is strong, durable and light. Strong as it may be, building a wing that is over 8 feet long out of foam is challenging. The Multiplex solution is to use double carbon wing spars in a two-piece wing design. Each wing half plugs into a state-of-the-art retainer system that proves to be more than robust. Push in on the flush-mounted tab to release the wing halves, slide them apart, and remove them when you want to transport the plane. This is an elegant, efficient system that makes storage, transportation and setup a snap!

To be sure, sailplane enthusiasts will have a lot to be excited about with this offering. The Cularis boasts the full control achieved only with a 4-servo wing featuring ailerons and camber changing flaps. The light wing loading makes the Cularis an ideal platform for a weekend of thermalling and soaring. With good glide performance to hunt through a lot of air and an ability to move through sink quickly and to exploit lift, each powered ascent lasts and lasts. Butterfly/crow mixing makes tight spot landings predictable and broadens the choice of flying locations.



PHOTOS BY WALTER SIDAS

The Cularis has enough performance packed in to get the attention of a wide audience. It is capable of mild aerobatics and has a broad speed range. Its robust design can handle some surprising G-forces in very un-glider-like fashion. Its clean, long lines and recommended power setup allow the Cularis to fly like a thoroughbred. There is enough onboard juice to take it up to 500 feet more than half a dozen times, so it offers the quiet fulfillment of soaring and also satisfies the urge for an adrenaline-pumping performance on a single flight.



SPECS

PLANE: Cularis

MANUFACTURER: Multiplex Modellsport GmbH & Co.

DISTRIBUTOR: Hitec/Multiplex USA

TYPE: High-performance electric glider

FOR: Intermediate glider pilots

FLYING WEIGHT: 56 oz.

LENGTH: 49.6 in.

WINGSPAN: 102.75 in.

WING AREA: 853 sq. in.

WING LOADING: 9.5 oz./sq. ft.

RADIO: 7-channel required; flown with Hitec Eclipse 7 transmitter, Hitec Supreme IIS 8-channel receiver, 4 Hitec HS-55 servos (ailerons, flaps), 2 Hitec HS-85 servos (rudder, elevator)

POWER SYSTEM: Himax HC3522-0700 outrunner motor, 12x6 folding prop, Multiplex BL-37A speed control, Multiplex 3S 2500mAh 18C LiPo battery, Castle Creations CC BEC switching regulator for radio power

FULL-THROTTLE POWER: 19.85 amps, 218.4 watts, 3.9 watts/oz., 62.4 watts/lb.

TOP RPM: 6,800

DURATION: 6 - 8 min., climbs to 500 feet

MINIMAL FLYING AREA: RC club field

PRICE: \$179.99

COMPONENTS NEEDED TO

COMPLETE: Power system for electric flight, radio system, 8 servo extensions, two at 6 and 24 in. and four at 18 in.

SUMMARY

The Cularis is a 2.6-meter high-performance sailplane sporting full-house control with flaps. It can be built as a pure glider for the slopes— aero-tow, winch or high-start launch—or equipped with a high-performance electric power system. Innovative features and Elapor foam construction set this glider apart from the rest. The recommended Hitec radio system and Himax outrunner motor system are all a drop-in fit and give excellent performance and duration. This is a thoroughly engineered airplane that has benefited from Multiplex's great attention to design and manufacturing detail.

TIPS FOR SUCCESS

Multiplex did its homework and worked out many small details when designing the Cularis. Even the shipping box indicates the thought and engineering that went into this product. Foam supports cradle every major component and ensure that even the largest parts emerge undamaged. Keep this packing material. You will use it later as a jig to assemble the 4-foot wing halves accurately. I immediately got a clear sense that this project would move quickly. To check out the parts and pieces, I dry-assembled the Elapor foam components and had a full

mock-up of the entire airframe in less than a minute. Multiplex's molding produces parts that fit together perfectly. This keeps build time low and project enjoyment high.

The 8-page assembly manual is specific and well sequenced in 30 steps. Each step references a separate seven-page section of 47 very clear illustrations. Though I didn't have a problem following the well-organized directions, it took me a while to become accustomed to the back-and-forth process of reading the instructions in one document and correlating them with the illustrations in the other. At the end of



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Multiplex has done a great job of designing a larger sailplane that's easy to transport. The main wings and full-flying two-piece horizontal stabilizer are removable, so the Cularis can fit into the back of even a small sports car. Once at the flying site, getting it ready for the wind takes no time. The main wing halves and stabilizer halves plug into mechanical retainer systems. The plastic, injection-molded wing-root caps and mid-fuselage wing joiner are ingeniously engineered to secure the four carbon-fiber wing spars to the fuselage and lock them in with a flush-mounted tab while automatically making the wing servo connections. The full-flying horizontal stabilizer likewise clips into the all-moving tailplane bellcrank and takes just a moment to securely lock into place.



Getting airborne is a simple matter of throttling up and lightly tossing the sailplane skywards. The recommended power system will pull the Cularis in a sustainable 60-degree climbout to an altitude of your choosing. Once aloft, the high aspect ratio wing and wing loading do a great job of sustaining a flat glide, and the model retains its energy well. Full trailing-edge camber changes have a noticeable effect on speed and lift. Raising the flaps and ailerons ever so slightly reduces drag and increases speed, helping you to scoot across the sky to find the next thermal and evade some sink. When you see a little bump, droop the trailing edge to slow down and increase the lift for maximum climbing. If the speed gets too low, there's a noticeable mush in control effectiveness and then a stall that will eat up some of your hard-earned altitude. This is very predictable, and it isn't a problem on landings during which you'd typically have a crow configuration with the flaps down and the ailerons raised.

I was introduced to the aerobatic capabilities of the Cularis by a video on Multiplex's website that shows it flying rolling circles with admirable roll rates. Most of the time, I fly with an aileron-flap mix to affect more control-surface area. This creates less drag when banking into thermal turns.

I admit that I also took my time seeing what the airframe stress threshold would be. Without making me too nervous, the wings showed the expected flex during high-G maneuvers. Pulling out of an extended dive with a suitable arc, level and in line with the landing strip, I heard the whistling that only a high-performance sailplane can produce, and I followed this with a steep climb back into the blue while I set up for the next pass.

Eventually, it was time for a landing. The recommended flap and spoiler deflection leaves an effective amount of aileron response for last-minute changes to your final approach. Spot landings with full butterfly/crow can be made with any level of accuracy; it depends on your skill level.



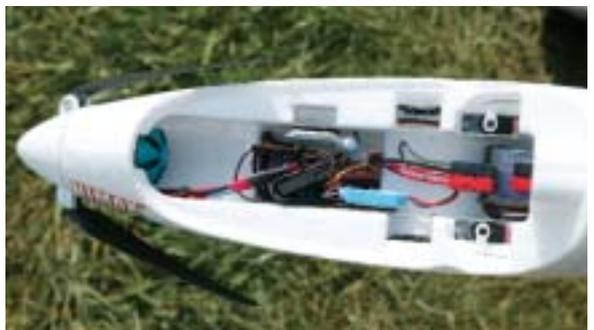
the build, the margins didn't have my typical notes, and that further indicates the kit's thoroughness. From the first glue joint to the last step of radio programming, building the Cularis took a relaxing 8 hours.

Multiplex recommends that you build Elapor airframes only with regular thick CA—not the foam-safe variety—and use kicker when needed. This works very well, and I only once ran out of time to position a part accurately. In that case, I think I had carelessly fogged the part with kicker during a previous step without noticing it. I used fine sandpaper to scuff the mating surfaces very lightly to help the glue to bond, even though I know this was not necessary.

Since all the hardware is included, I was able to complete the project without running to the hobby store. The recommended power set includes a spinner and a folding prop. The only additional items needed were for the radio gear. You will need 8 servo extensions to run from the 4 wing servos to the wing root, and then 4 more extensions to run from the wing joiner in the middle of the fuselage to the front of the radio compartment. A large removable foam canopy is clipped on there and allows access to the electronics and battery. The recommended Hitec radio system and Himax outrunner motor system are all a drop-in fit.

Probably the only step I took that is not in the manual was that I lightly sanded the leading edges of the wings, rudder and horizontal stabilizer. This was to remove the molding line, and it took less than five minutes using 400-grit sandpaper on a sanding block. I also gave the spar cover a final once-over to remove the ridge left by the assembly process.

Multiplex highly recommends that you use a separate receiver/servo battery in an electric setup to power the 6



The canopy functions as a large access hatch that snaps down over all the equipment. The battery sits right on the CG, so you could use batteries in a variety of sizes without having to re-trim.

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The unique center-section fittings let you snap the wing panels into place. Brackets hold the servo leads to make connections automatically as you mount the wings.

servos. I opted to save weight and boost radio power for longer flights. Knowing that I would be sport flying this model and landing it at the first sign of reduced power, I used the new Castle Creations CC BEC switching regulator instead. I also opened the small air outlets behind the battery to enhance the airflow, and all the components have so far remained cool.

The Cularis balanced almost perfectly without needing adjustment. Molded dimples under the wing make checking the balance very easy. By following the instructions and using the included trim ballast weights, I was able to balance the recommended motor setup very well. Battery placement offers a way to fine-tune any preferential adjustments from there. To get better indications that I'm flying into lift or have just brushed by a thermal, I prefer to have the CG set slightly aft of the position recommended. I found that I was able to swing the Cularis around more easily when chasing good air with this new CG setting.

CONCLUSION

"Tough, resilient, survivable" are Multiplex's words for its Elapor foam airframes. "Well designed and manufactured" are my words for the Cularis. This model really highlights the advantages of this construction material with truly innovative features. For the many pilots who have learned to fly and grown their skills with Multiplex's Easy Star and Easy Glider, the Cularis will be a natural to continue their affair with that company's planes. ☺

Links

Himax Motors, distributed by Maxx Products Intl. Inc., www.maxxprod.com (847) 438-2233

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