



Before use, please read the explanations carefully!

# Pulama 3D-EPP

## ELECTRIC 3D FLYER ARF Instruction Manual



### Specifications

Fuselage length: 865mm (34.1 in.)  
Wingspan: 800mm (31.5 in.)  
Wing Area: 400 sq in (25.8 sq dm)  
Flying Weight: 260g-285g (with battery)

### Additional Required Equipment

Motor: C20 or 2205 brushless motor  
ESC: 18Amp brushless ESC  
Propeller: 8040 slow flyer prop  
Servo: 5-8g  
Radio: 4/ more channel  
Receiver: 4/ more channel  
Battery charger  
Battery: 11.1V 500-800mAh Li-po

[www.techonehobby.com](http://www.techonehobby.com)

### Introduction

Thank you for purchasing the Pulama 3D-EPP Indoor flyer.

The Pulama 3D-EPP is engineered to be as adept at slow-speed 3D as it is precision aerobatics. The biplane design not only provides crisp roll response, but also it gives the Pulama 3D-EPP superb slow flight stability so you can fly high-alpha 3D with authority. Its carbon fiber reinforced Depron foam construction provides the solid, precise in-flight feel of a balsa profile plane but without the weight.

The Pulama's biplane design increases the wing area and dramatically reduces wing loading so hovering and slow flight 3D can be performed with more precision. Plus, the shorter wingspan makes for crisper roll rates at all speeds.

These assembly instructions are designed to guide you through the entire assembly process of your new airplane in the least amount of time possible. Along the way you'll learn how to properly assemble your new airplane and also learn tips that will help you in the future. We have listed some of our recommendations below. Please read through them before beginning assembly.

### Warning

1. The Pulama 3D-EPP is not a toy and is not suitable for the flyer under 14 years. If misused, it can cause serious bodily harm and damage to property.
2. Do not fly near houses or buildings, children's play areas, road traffic, railways airports, overhead power lines and pylons. Do not fly over people.
3. Fly only in open areas, preferably AMA (Academy of Model Aeronautics) approved flying sites, following all instructions included with your radio.
4. Assemble the kit according to the sequence provided in the instruction manual.
5. Do not fly in the strong winds.
6. Do not try to catch the plane by hand when it is flying.
7. The children who are younger than 14 years old should be assisted by an experienced adult when the plane is being flown.

## Kit Contents

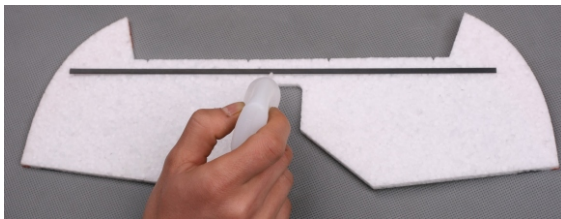
Fuselage	- 1
Bottom Wing with Ailerons	- 1
Top Wing with Ailerons	- 1
Horizontal Stabilizer	- 1
Elevator	- 1
Rudder	- 1
Outer Wing Struts	- 2
Spoiling Flap	- 4
Wheel Covers	- 2
Main Gear Wheels	- 2
Landing Gear Struts	- 2
Pushrod Supports	- 4
Plain Wires 0.8*360	- 1
Control Horns	- 4
Carbon Fiber Strips 1*4*800	- 3
Carbon Fiber Strips 1*4*400	- 1
Carbon Fiber Rods 1.3*700	- 7
Heat-Shrink Tubing 1.5*400	- 1
Wood Screws	- 4
Velcro 100mm	- 1
Clevis	- 12
Hinges	- 25



### 1. Horizontal Stabilizer



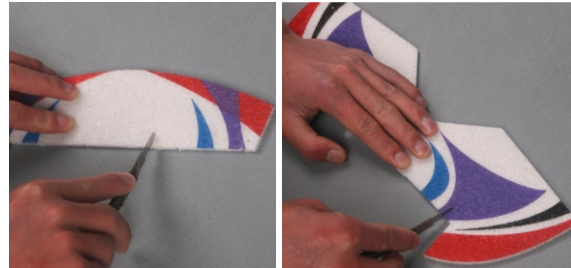
Sand a 45° bevel into the bottom leading edge of the elevator.



Glue the carbon strips on the elevator.



Insert the elevator into the fuselage and center it.



Cut four slots where the hinges will be installed, make sure the distance is symmetrical.



Insert the hinges into the slots, then glue the cut.



Insert the stabilizer into the fuselage, against the elevator, glue the hinges on it.

## 2. Vertical Stabilizer



Sand a 45° bevel into the left side of the leading edge of the rudder.



Cut four slots where the hinges will be installed, make sure the distance is symmetrical.



Insert the hinges into the slots, then glue the cut.



Cut the same slots on the stabilizer, then insert the hinges into the slots, and glue the cut.



Sand a 45° bevel into the bottom of the leading edge of the four wing ailerons.



Cut the same slots on the wings and wing ailerons, then insert the hinges into the slots, and glue the cut.

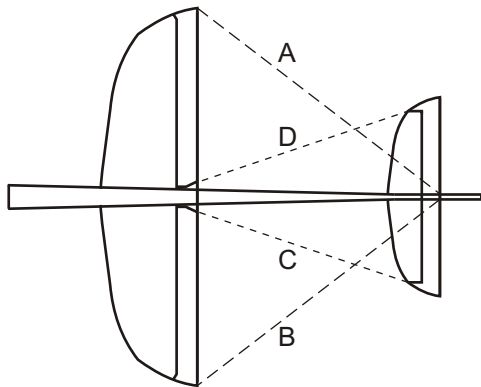


Cut a piece of carbon fiber strip as long as the slot of the wing, then glue it to the slot.



Hinge the ailerons to the top wing, using the same techniques that you used to hinge the bottom wing.

### 3. Wing



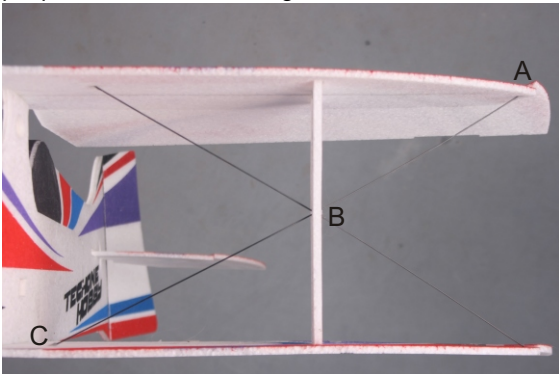
Make sure  $A=B$ ,  $C=D$ .



Glue the horizontal stabilizer to the fuselage.



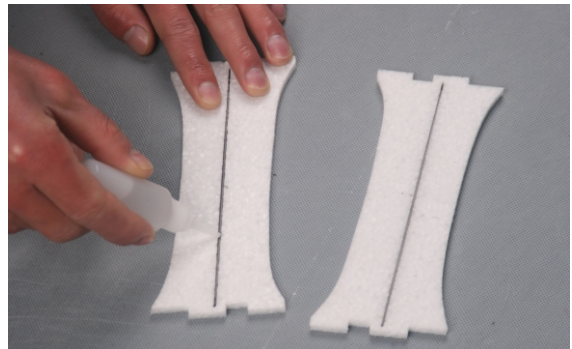
Glue the two outer wing struts to the bottom wing, make sure the wing struts are perpendicular to the wing.



Push the carbon fiber rod down through the outer hole in the top wing (**A**) and slide it through the hole in the outer wing strut (**B**). Push the end of the carbon fiber rod through the inner hole in the bottom wing (**C**).



Glue the bottom wing to the fuselage, make sure the slots in the wing are pushed firmly over the mounting tabs on the fuselage.



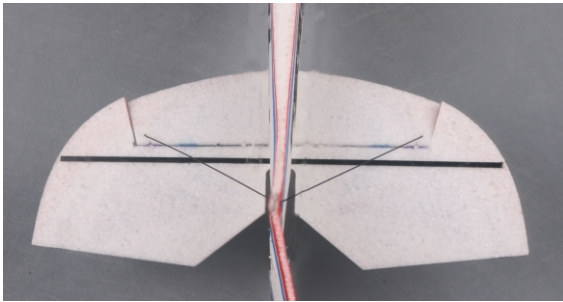
Cut two carbon fiber strips as long as the slots of the outer wing struts, then glue them to the slots.



Glue the top wing to the center wing mount and the outer wing struts, make sure the wing is perfectly flat while the glue cures.



Glue the two carbon fiber rods to wings.

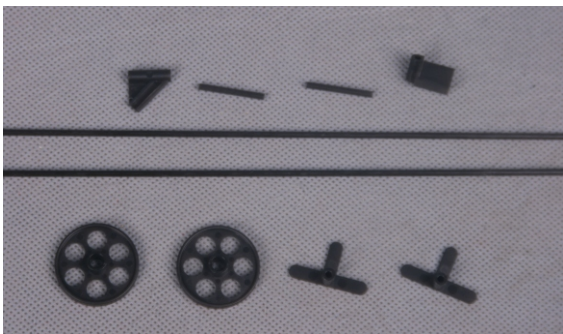


Cut two pieces of carbon fiber rod of 160mm. Install them as above picture.

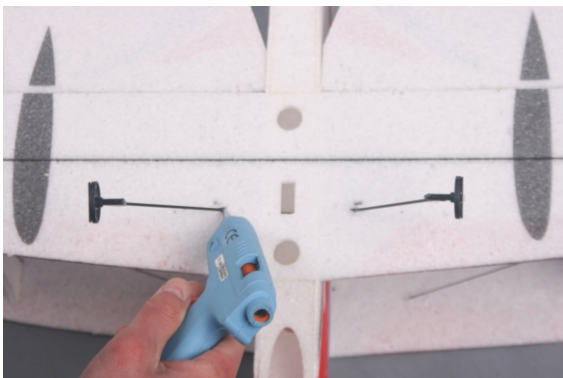


Glue the two carbon fiber rods to the stabilizer.

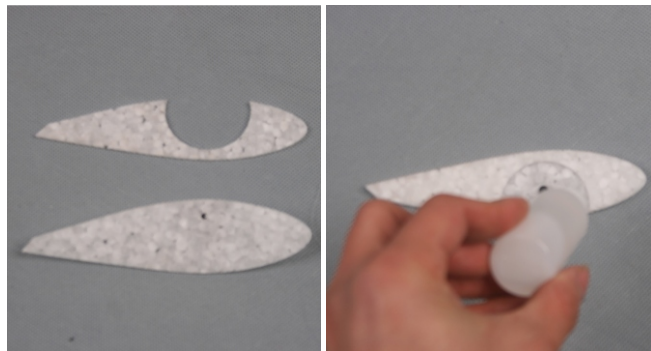
#### 4. landing Gear



Install the two wheels and wheel chocks. Keep 1mm distance between wheel and its chock. Apply some foam-friendly thick C/A to glue the chocks.



Push the landing gear strut into the precut hole in the fuselage side, then twist the landing gear strut so that the axle is straight. When satisfied with the alignment, glue the landing gear strut to the fuselage side and the bottom wing.



Glue the two wheel covers together.

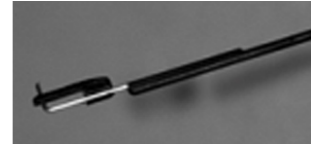
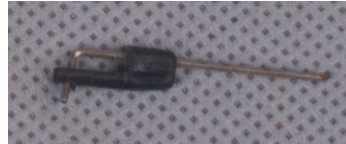
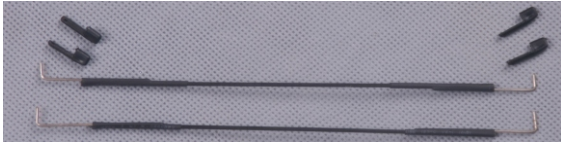


Slide one wheel cover onto each axle and up against the wheels. Align the wheel covers, then glue them securely to the axles.

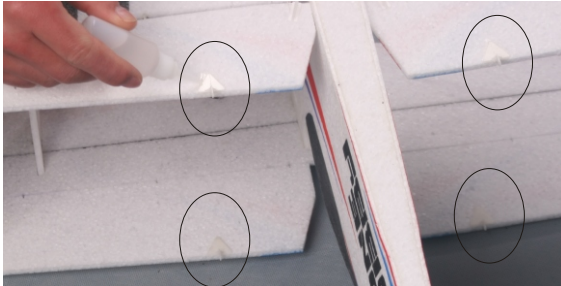


Cut one piece of carbon fiber rod of 50mm, then insert it to the fuselage and glue it.

## 5. Control System



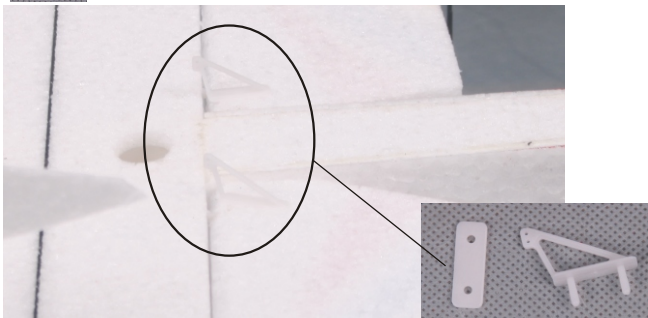
Cut two pieces of carbon fiber rod to a length of 150mm, four pieces of heat-shrink tubing to a length of 25mm, four pieces of plain wire to a length of 38mm. Heat the heat-shrink material with a heat gun to shrink it into place. For extra security, apply some C/A to the end of the pushrod and allow it to "wick" into the joint.



Glue them to the ailerons.



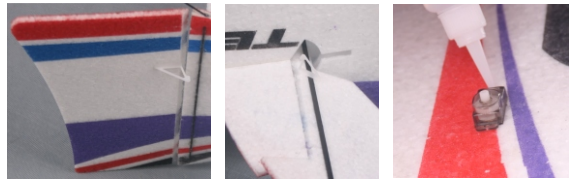
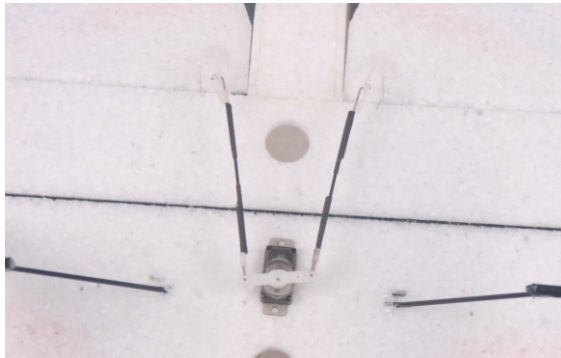
Install the aileron control linkage.



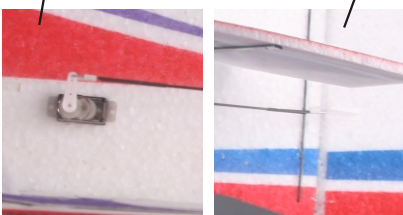
Install the control horns.



Install the aileron, elevator and rudder servos into the servo mounting hole in the fuselage. Use some glue to secure them into place. Because the size of servos differs, you may need to cut the servo mounting hole larger to fit your particular servos.



Cut two pieces of carbon fiber rod of 60mm, then follow the same steps.



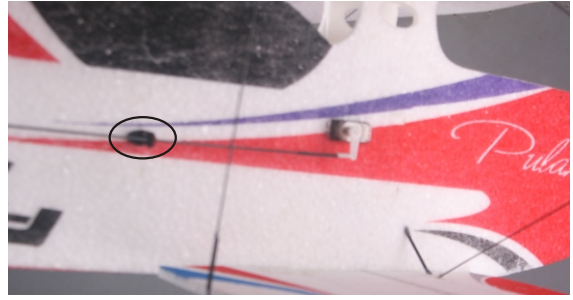
Install the rudder control linkage(480mm).



Slide two plywood pushrod supports over the end of the carbon fiber rod . Notice : Glue the plywood pushrod supports to the fuselage after finish the installation of linkage.



Install the elevator control linkage(380mm).



## 6. Final Assembly



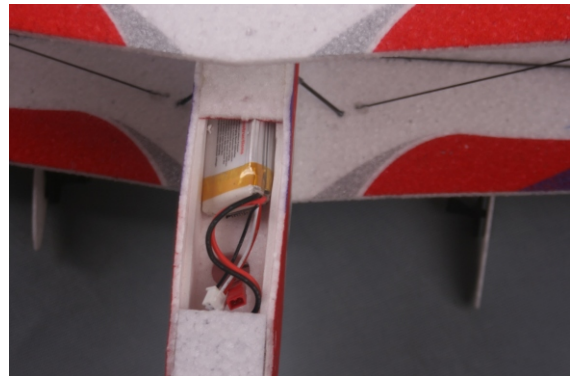
Glue the spoiling flap to the wing.



Install the cabin door with the same way.



Mount your ESC and receiver, using a piece of hook and loop material.

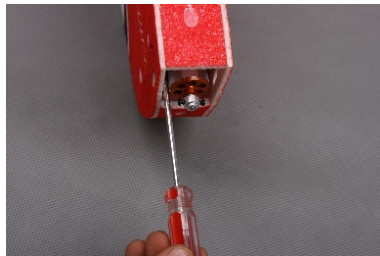


Install your battery into the battery compartment, using a piece of hook and loop material.

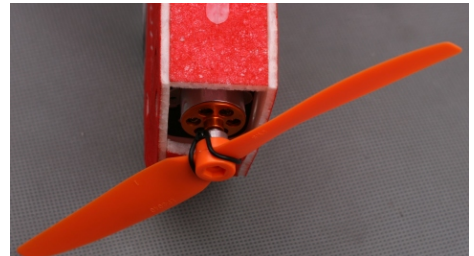
## 7. Motor



Apply some foam-friendly C/A into the four motor mount screw holes in the firewall.



Install the motor assembly onto the firewall, using the four wood screws provided.



Install the and propeller onto the motor.



### Motor Thrust

To ensure great flight performance and to be able to trim your airplane properly, it is critical that you adjust the motor thrust as described. We suggest that you add 2 degrees of down-thrust and 1 degree of right-thrust. This can be achieved by adding a washer or two behind the top and right side of the motor (between the motor and the firewall). When set properly, the trim for the elevator and the rudder should be neutral. Fine-tune the down-thrust and right-thrust until this trim is achieved.

### Balance Point

The Center of Gravity (C/G or Balance Point) is 72mm from the leading edge of the TOP wing, measured at the center of the wing.

WARNING For test flying and general sport flying, we suggest you balance the airplane at the C/G recommended above. For 3D flying, you may want to experiment moving the C/G back in small increments until you're satisfied with the result.

### Control throws

#### Sport Flying

Ailerons: (28mm) 1. 10" Up and Down

Elevator: (32.4mm) 1. 28" Up and Down

Rudder: (40mm) 1. 57" Right and Left

#### 3D Flying

Ailerons: (70mm) 2. 76" Up and Down

Elevator: (81mm) 3. 19" Up and Down

Rudder: (100mm) 3. 94" Right and Left

The control throws are measured from the widest point of the control surfaces

### Exponential

#### Sport Flying

Ailerons: 20%

Elevator: 20%

Rudder: 20%

#### 3D Flying

Ailerons: 35% - 50%

Elevator: 35% - 50%

Rudder: 35% - 50%

Exponential softens the response of the control surfaces

around neutral stick. This makes the airplane easier to

control while using such large control throws. The

Exponential values shown are given as a percent. Please

note that different brands of radio control systems may call

for + or - Expo. Please check your transmitter's owners

manual for more info.

### Seek Assistance

If you are new to R/C we suggest you find an experienced pilot to check out your aircraft and help you with the first few flights. This will help prevent damage to your model and will speed up the learning process and making your R/C experience all the more enjoyable. You can contact local R/C clubs or your dealer to obtain the names of experienced R/C pilots who would be willing to help you with your first few flights. Although this is an ARF (Almost-Ready-to-Fly) kit, it does have some construction features that can be challenging to the less experienced modeler. If you encounter difficulty in any construction sequence, please feel free to contact one of our technicians, we stand ready to provide any assistance we can.

Contact us at:

E-Mail: [techonehobby@gmail.com](mailto:techonehobby@gmail.com)



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