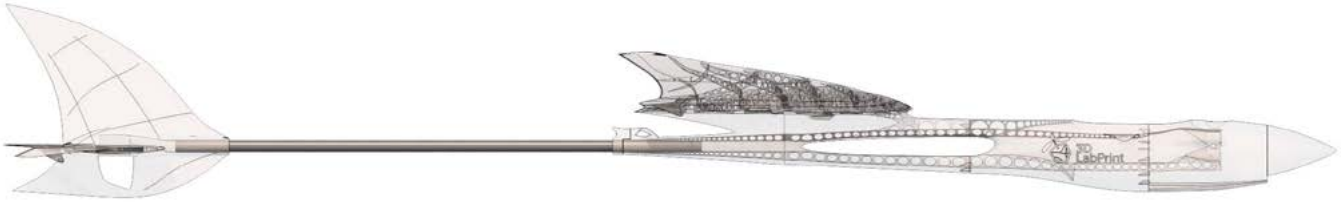
User Guide

rev. 2016/09



Fully 3d printable

EASYMAX 001 electric sailplane

wingspan 1527mm (60.1in)

EASYMAX 001 electric silplane – fully printable R/C plane for your home 3Dprinter

Future of flying - Print your own plane

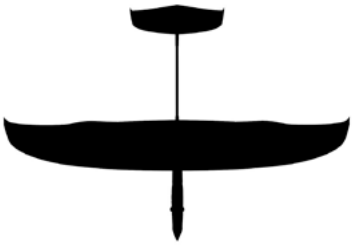
The first fully printable airplanes with suitable files prepared for your 3Dprinter. Flight charecteristics are comparable or even better than classic build model airplane. Simply download and then print it anytime you need only for $10 (filament cost).
This is not a dream, now you can print this HI-TECH .... at home, print spar parts, and so on...

Extensive hi-tech 3d structural reinforcement which makes the model very rigid while still maintaining lightweight airframe and exact airfoil even when it is made only from plastic. This perfect and exact 3d structure is possible only due to aditive 3dprinting technology. So welcome to the 21th century of model flying. Be The first at your airfield.

Easy to assembly, you do not need any extra tool or hardware, you only need to glue printed parts together and make pushrods for control. The rest of the assembly is very easy.Simply add brushless motor, ESC, servos and radio system. Don´t worry, detailed step by step PDF/VIDEO is included.
You will geteasy flying superb performance airplane with High efficient powerplant which let you fly 8+ minutes. of course low stall speed is achived for easy landing.

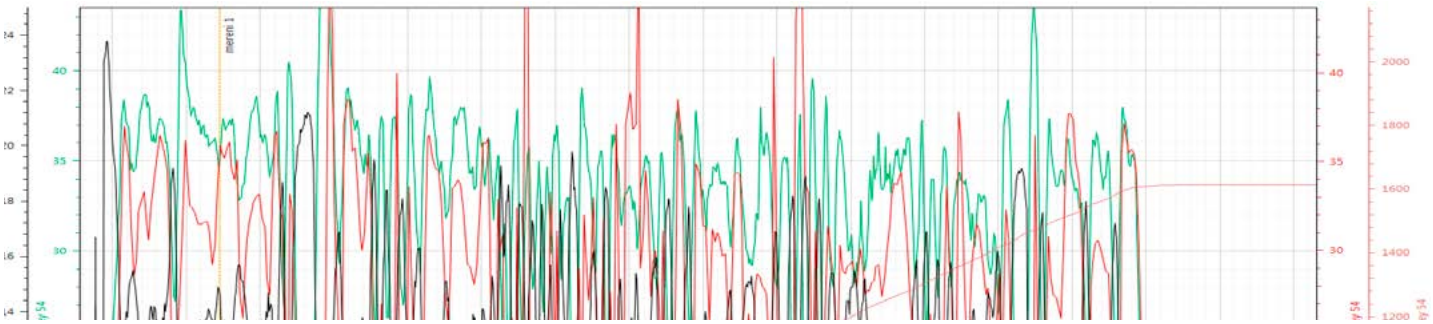
General specifications (HP setup):

Lenght:	approx 1033mm (40.7in)
Wingspan:	1527mm (60.1in)
Height:	177mm (7.1in)
Wing area:	29.6 dm2
Wing loading:	31.8 g/dm2
Airfoil:	E205 modificated
Print weight:	632g
Empty weight(eq. w/o baterry):	820g
Takeoff weight (3s 1500 lipo):	940g
Max takeoff weight:	1300g
Never exceed speed, VNE:	150 km/h
Design maneuvering speed, VA:	90km/h
Stall speed, VS:	20 km/h



Powerplant

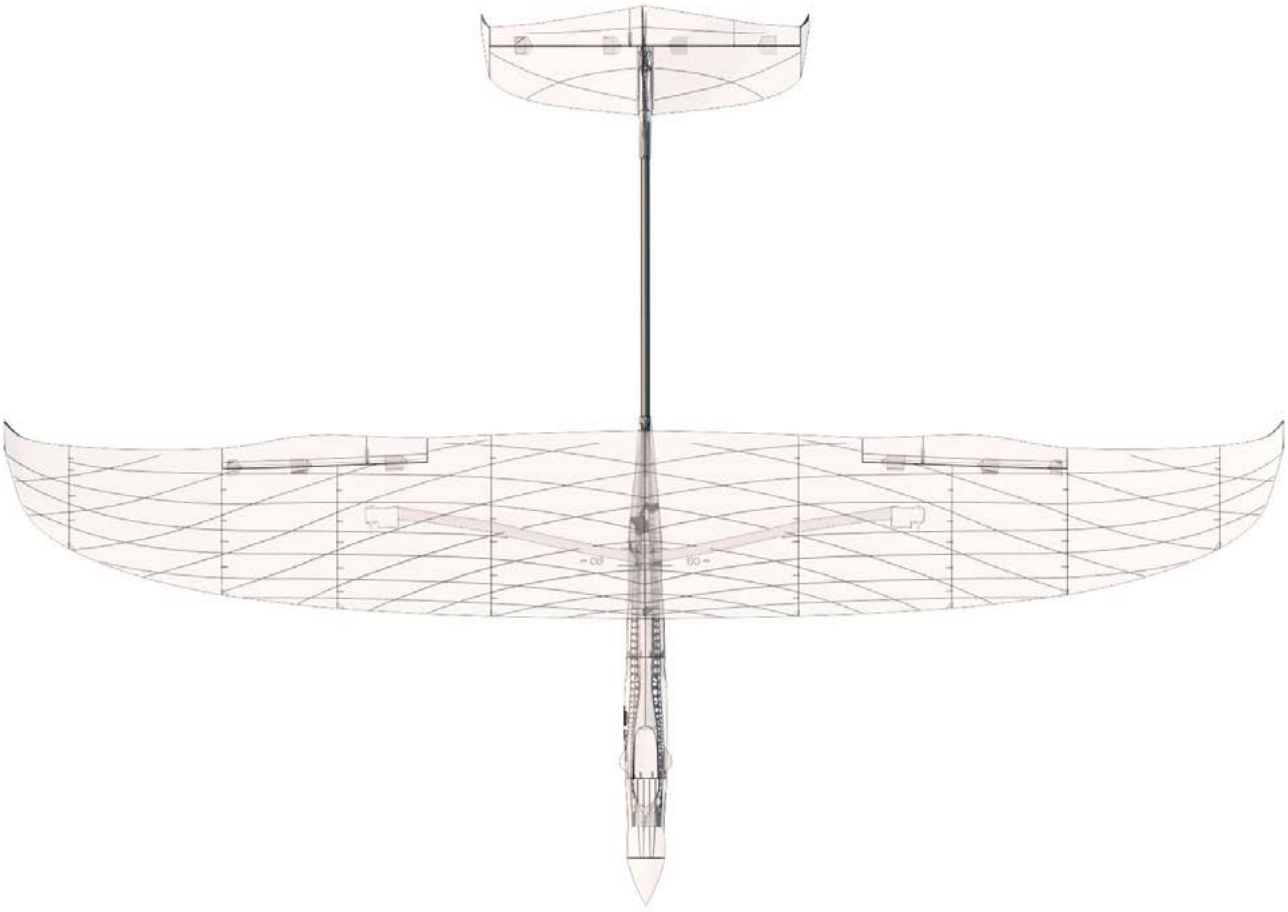
Propeller:	11/6 folding propeller
Motor:	Turnigy D3530/14 1100KV or similar 3530-35, 2830-36 1100kv
ESC:	Aerostar 40A Electronic Speed Controller or similar 40Amps
Battery:	Li-Pol Battery 1500mAh/3s – or similar



EASYMAX 001 - flight characteristic

This aicraft is based on our Easy001 project which is very suitable plane for beginner, very easy to fly and relatively slow.
We made some changes for better performance EASYMAX001, lower parasite drag and more interesting dynamic characteristic, BUT still maintain friendly flying characteristic,

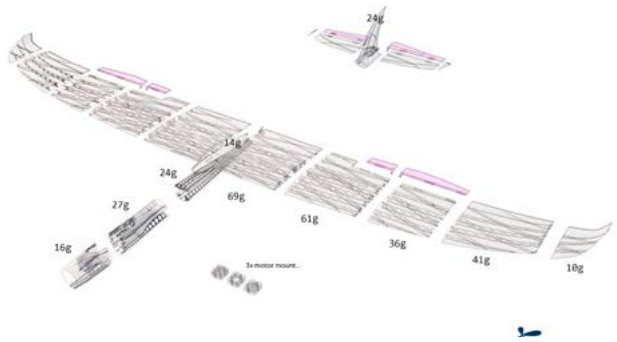
e a s y p e r f o r m a n c e f u n



Included:

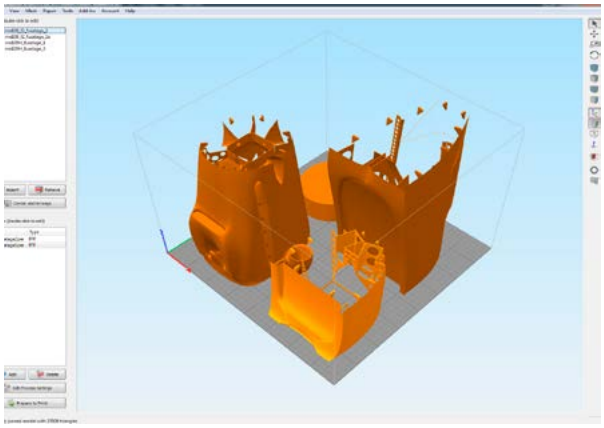
1.STL 3d files

universal STL files designed for use with desktop FMD 3d printers and slicer software as Simplify3D (recommend) CURA or MatterControl (this STLs are not compatible with Slic3r).



2.Factory files for Simplify3D slicer

with all our setting, this Factory files included all you need, note: we use PRUSA i3 ORIGINAL printers so you may need adjust the basic printing parameters to match your printer or use it as a start point for you, please give a look to Simplify3D



3.Step By Step PDF/VIDEO userguides

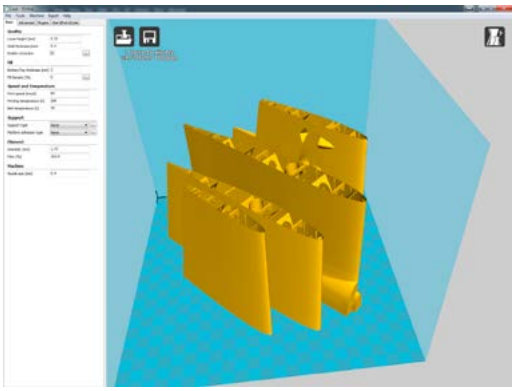
Apart from this userguide, please give a look to the Printing Guide with some Tips and Advices for airplane printing (Thin Wall Printing)

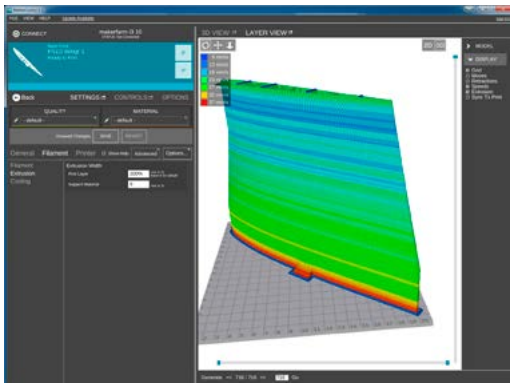
4.Gcodes

Basic Gcodes prepared for direct use, so universal as is possible. Should work with i3 style printers, you can try it out, but We can not guarantee that it will work with your printer.
100% works with PRUSA i3 ORIGINAL 3d printers...

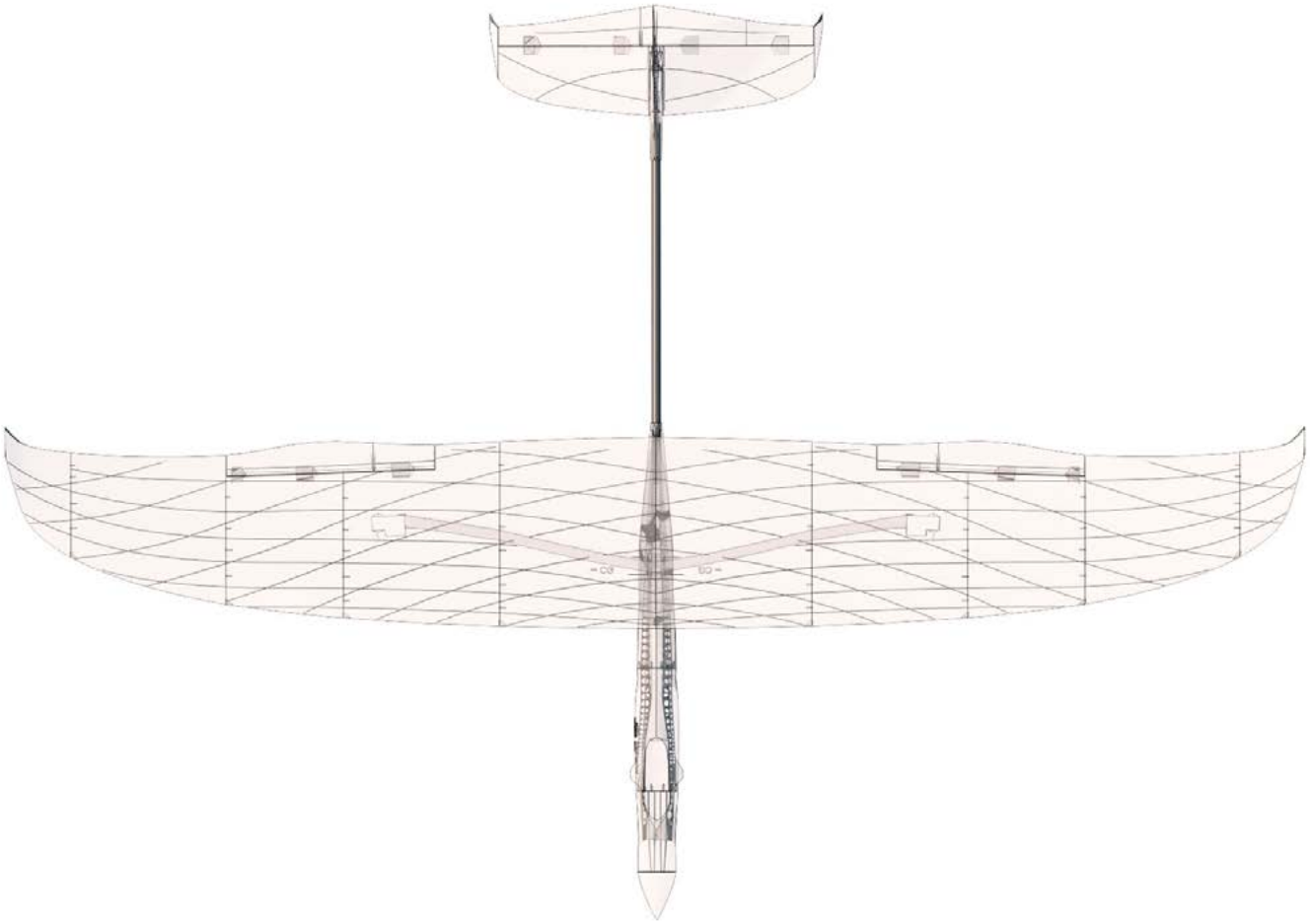
5.Prepared settings for CURA and MatterControl slicers

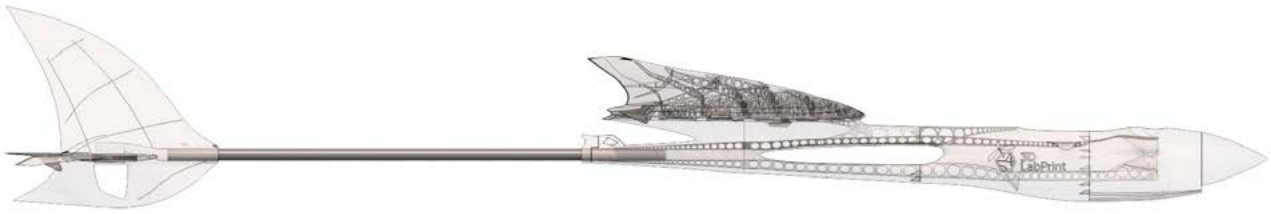
If you dont like Simplify3D for any reason, there is always possibility to use another free slicer you can use our basic setting (setting files) as a start point and edit it as you need.





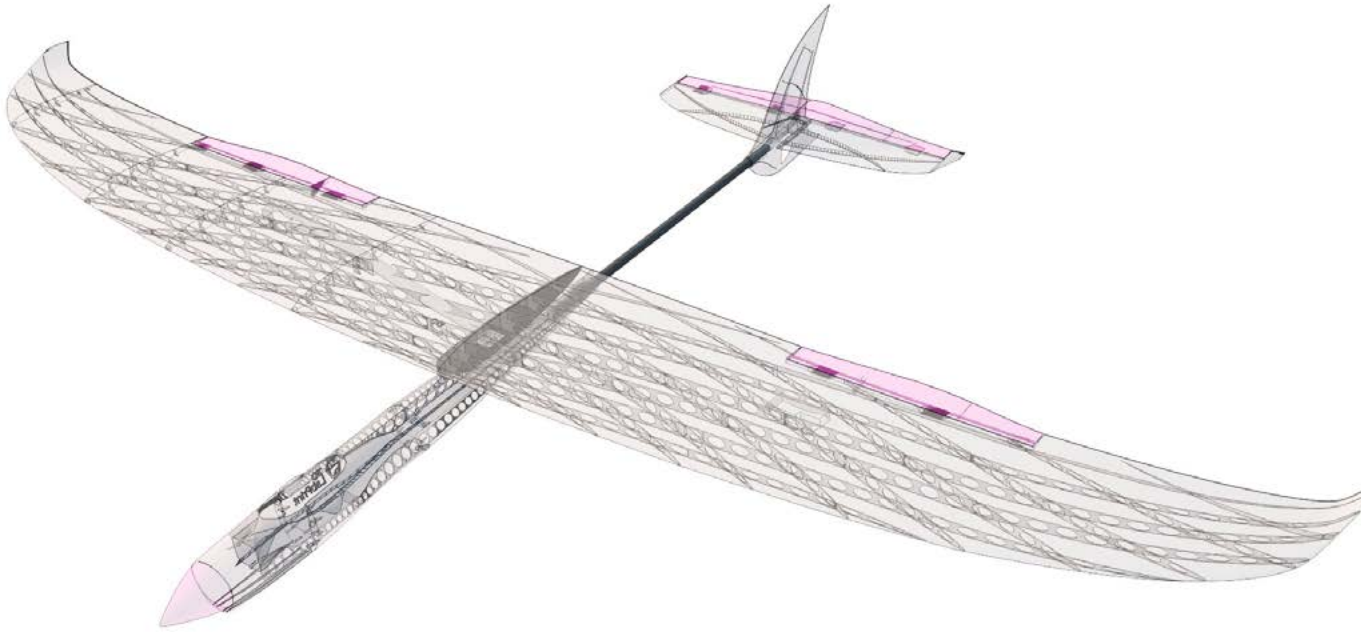
E A S Y M A X 0 0 1





approx 1033mm

1527mm (60.1in)



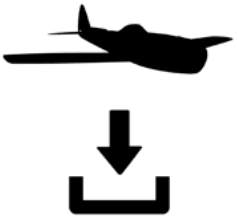
Step By Step PDF/VIDEO userguide

1. Choose airplane at www.3Dlabprint.com, our Facebook for live information...

Basic requirments (P51D Mustang):
min volume 195/195/185mm (250/120/185)
nozzle 0.4mm recommended (0.35 or 0.5mm alternatively)
Heated Bed recommended
PLA filament (or PETG, APLA, htPLA, PC-max....) not ABS
If you feel a little bit confused you can download wing test part from our websites or thingiverse, (the biggest part). Or contact support@3dlabprint.com

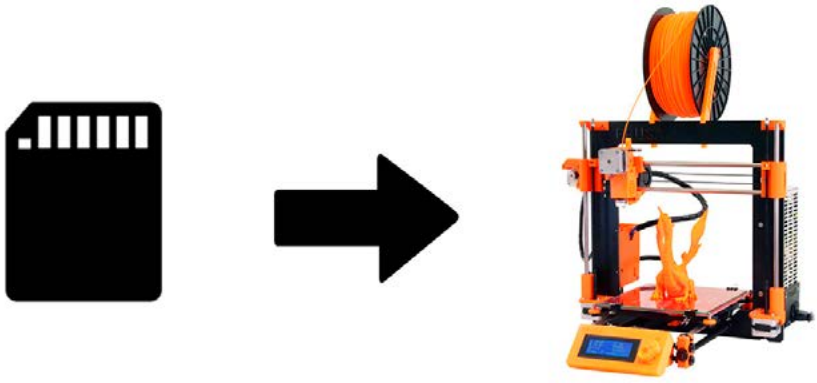
2. Create account, download

You will get download link for all files to your email (zipped)or you can log in to your account and download directly from our websites.



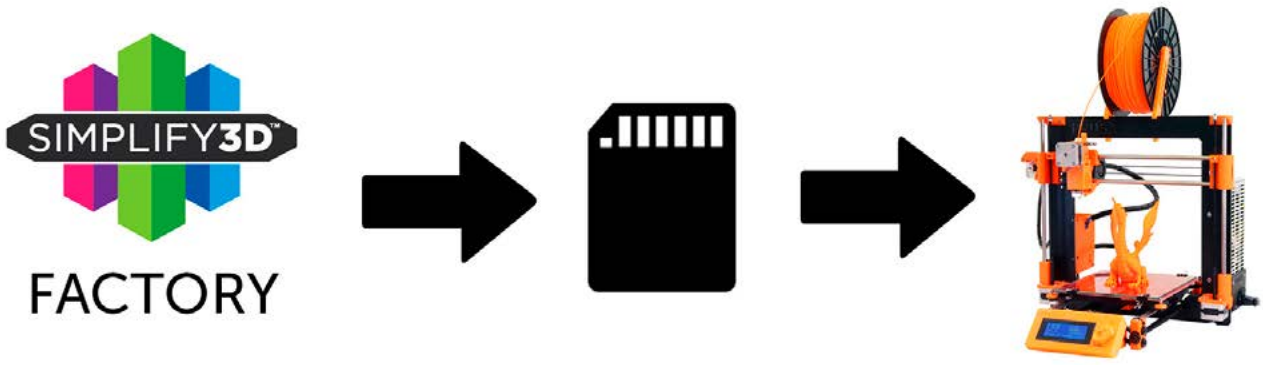
3. Gcodes preparing

options A Gcodes:
if your printer is i3 comptatible you can directly use prepared gcodes, simply save each to SD card and let 3d printer do his job, HE temperature is set to 230 for best layer bonding, you can edit speed and temperature on your printer LCD only. If Gcodes does not work please proceed to the next options.



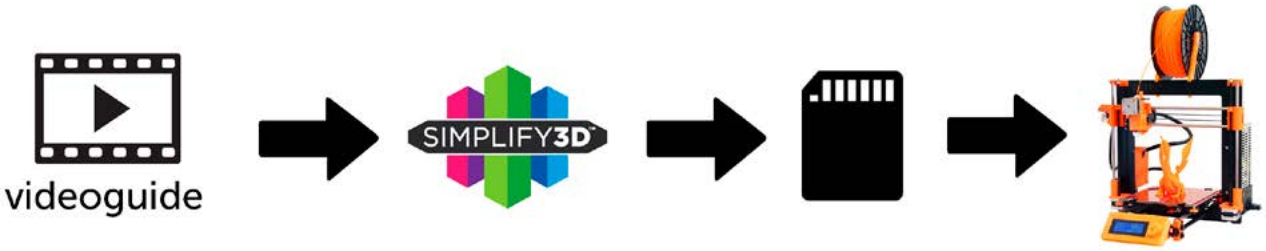
options B Factory files Simplify3D (recommended)

We prepare all you need in this files (basic FFF, parts arranged and so on...)
You can use this our setting as a start point and edit it as you need (adapt it for your printer), print only parts you need and so on... On moust 3d printers it should work as it is, but please give a look to the setting and edit it if is different to your printer, we are not liable for damages resulting from the use of our settings. If this does not work please proceed to the next option.



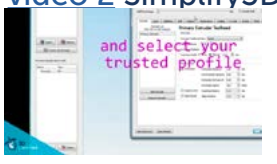
options C Simplify3D manual setting (watch and learn)

Use our video guide 2 for proper setting... this is very good option and you will learn a lot about Simplify3D and become an 3d expert. Of course you spend a lot of time and youtube pause button will become your friend.



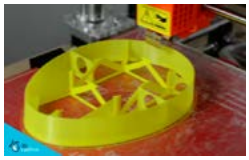
AND... please give a look to VideoGuides:

video 2 Simplify3D setting



video 2.1 before start printing

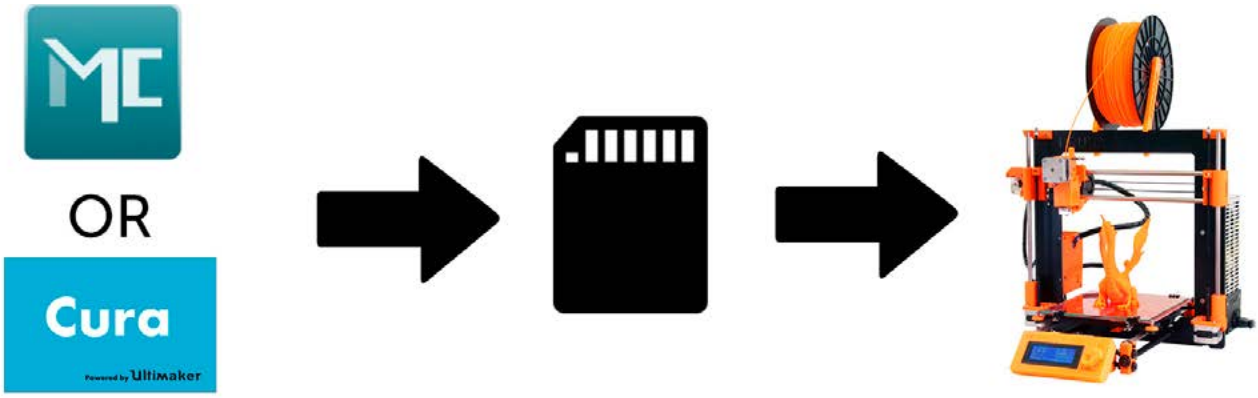
video about Thin Wall Printing



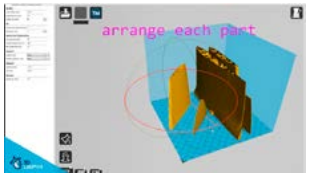
options D CURA or MatterControl
MatterControl and CURA are free :-) and also gives very good results and airframe is still strong enough, slicer setting is very easy.
Please try find right extrusion multiplier and temperature for good weight and bets layer bonding, give a look to parts weight list for proper multiplier setting.

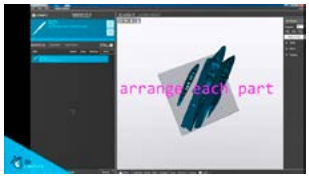
You can also use our predefined CURA or MC slicer setting file included in package (always adapt it for your printer, change build volume, filament diameter and so on... depends on your printer!!!):

CURA_wing_fuse.ini (wing and fuselage and so on... parts)
CURA_ailer_elev.ini (only ailerons, elevator and rudder parts)
CURA_thick.ini (motor mount, battery holder, spinner)
OR
MC_wing_fuse.slice (wing and fuselage and so on... parts)
MC_ailer_elev.slice (only ailerons, elevator and rudder parts)
MC_thick.slice (motor mount, battery holder, spinner)



AND... please give a look to VideoGuides:

video CURA slicer setting


video CMatterControl slicer setting


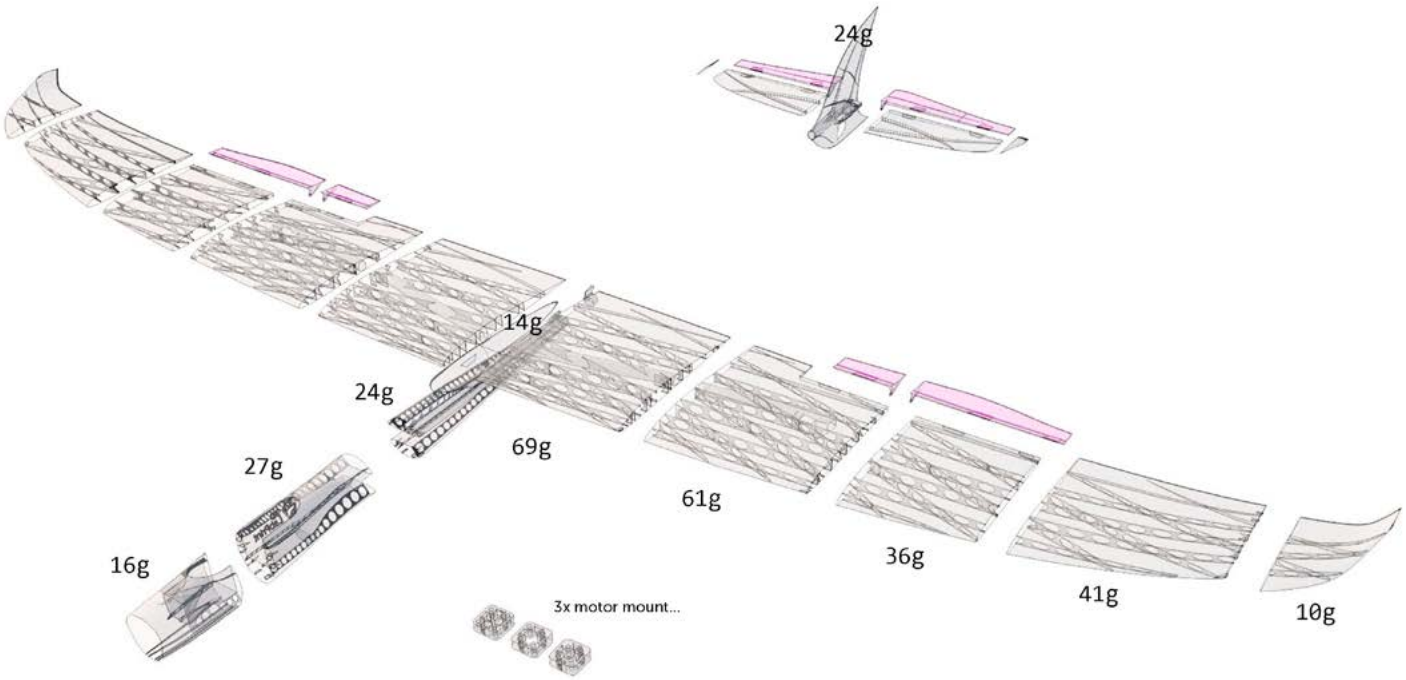
4. Print it

Save generated Gcodes and insert SD card to your printer, prepare your printer and start printing, we prefer to use SD than direct connection via USB Note: ABS filament is not suitable for this...
Scaling the model will lead to unusable result!
video guide about printing
you will need: PLA filament - good quality and strong PLA (we need good layer bonding)
Strong hair spray (or your favorite adhesive bed surface)
Razor blade

AND... please give a look to VideoGuides:

video3 printing guide

Main parts weight list:



Basic Typs and Advices

Plese Experiment with your extrusion multiplier...
Also HotEnd temperature is very important for strong result, please try increase temperature to find the best value (200 up to 260 celsius)
Turn OFF cooling fan for better layer adhesion (HE fan of course ON) we dont need it for our thin wall printing...
We try lot of filaments and so far PLA is still the best for our models (2016).
You can try aslo PETG and PC-max from polymaker is very promising filament.

HEATED BED is very recommended, 60-70celsius (print without warping ends)
Looks like any standard quality PLA is OK for our planes, BUT it always depends on combination PLA vs. Extruder vs. HotEnd.
We find that some color of filament has lower layer adhesion also.
Nowadays there is lot of 3dprinters on the market, very most of them is OK for printing our aircrafts (specific thin wall printing...) suficient volume, heated bed, 0.4mm nozzle.

Please give a look to Printing Guide:

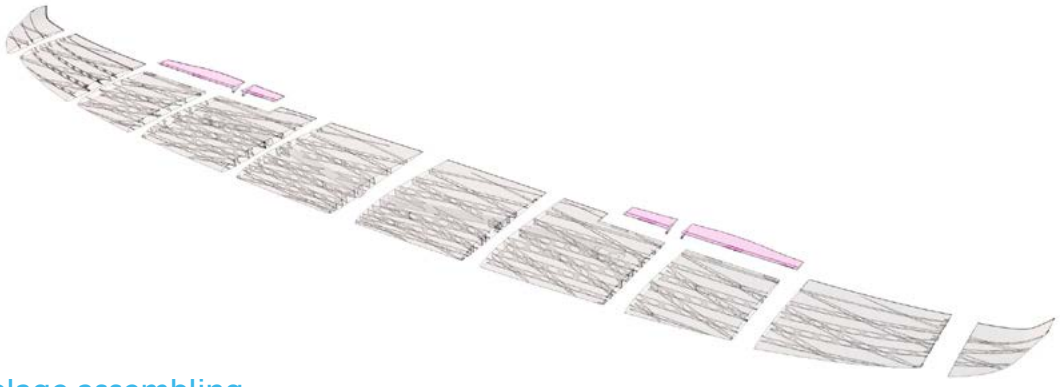
5. Assembling printed parts

5.1 Wing assembling

Glue wing parts with CAglue together, use activator and instal ailerons (updated)...

See video guide #4

you will need: CA Glue - medium or similar medium viscosity CA glue
Activator for CA Glue or similar, but not-mechanical is better
AC Hinge Sheet or similar
Scissors
Snap knife
Some cloth for wiping CA glue...

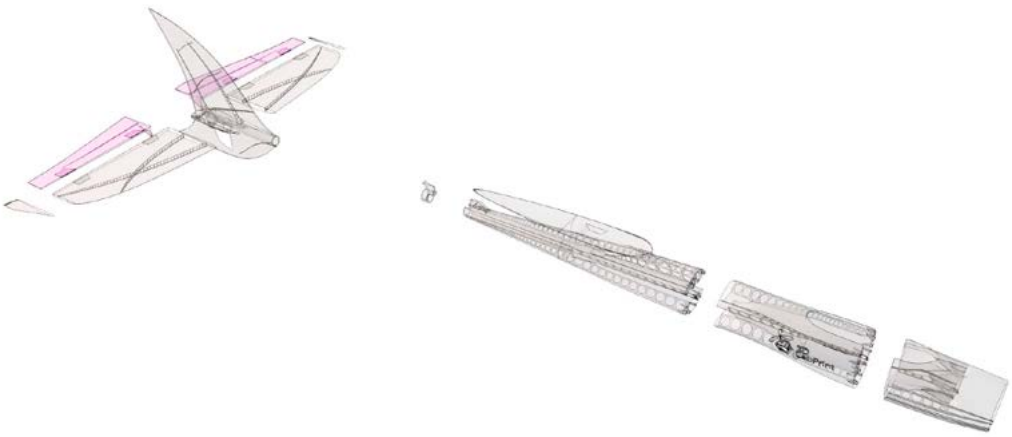


5.2 Fuselage assembling

Glue with CAglue fuselage parts together, use activator, instal elevator (updated), fine tune parts shape with knife or sandpaper.

See video guide #5

you will need: CA Glue - medium or similar medium viscosity CA glue
Activator for CA Glue or similar, but not mechanical is better
AC Hinge Sheet or similar
Scissors
Snap knife or Sandpaper
Optionaly some cloth for wiping CA glue...
Carbon tube 10/9mm lenght min. 460mm
Dremel or ...



6. R/C equipment

6.1 motor setup

Complete your RC Powerplanr unit, now without any soldering (differ from videoguide)
See video guide #6 (for HP setup)

ECO PERFORMANCE SETUP(spent only 30 bucks without any soldering)prop 9/6 10/5:
you will need: Turnigy D3530/14 1100KV or similar 3530-35, 2830-36 1100kv
40A Electronic Speed Controller or similar 40Amps
Turnigy 1500mAh 3S 20C or similar 1500-2400/3s
printed motor mount, find the one which fits... (25/19)

you can also use your own setup with suficient thrust, always check CoG

6.2 servos

Test and center all servos with servo tester or transmitter, then instal horns in midle position and cut wing Servos mount... use HXT900 or any 21x21x23mm
See video guide #7
you will need: 4x 9g Servo HXT900
2x Servo Lead Extension or similar
Snap knife
Soldering Iron or Small handsaw or Dremel

7. R/C Equipment instaling

Instal prepared RC equipment: Motor, ESC, Servos...
Nose and motor mount are already in angle for compensating rotating propeller stream.
Find the right Center of Gravity with moving the carbon tube in-out (CoG tags on wings)
See video guide #8
you will need: Printed motor mount, find the one that fits for your motor...
2-4x Screw 3/12-30mm depends on motor-mount
Small screwdriver+
Your earlier prepared R/C equipment
3x Self Tapping Screw M3x8mm or similar
Carbon tube 10/9mm lenght min. 460mm

8. Pushrods

Made steel pushrod for ailerons, elevator, rudder and connect within servo arms...
See video guide #9
you will need: Steel pushrod, diameter 1.0mm
Pliers
CA Glue - medium
Activator for CA Glue or similar, but not mechanical is better

9. Finalization

Instal your reciever, connect batery, setup servos and etc. with your trasmitter, lock servo position, then instal propeller...
!!!Make sure that the battery is placed properly and secured with wing battery holder, if battery moves during flight it can shifts the center of gravity backwards and aircraft will be uncontrollable!!!
See video guide #10
you will need:Your own Rx/Tx system
Li-Pol Battery 1500mAh/3s – or similar
Folding propeller spinner 11/6 +
Prop blades or better (Aeronaut, Graupner and so on)
(with fix prop you gain some drag..., but it is option)
Small screwdriver+
CA Glue - medium + activator

!!!Never set ESC with instaled propeller, this is very dangerous!!!

10. Go flying

Before flight check: center of gravity is very important (move it forward for the first flights see CG markings and chapter 11 bellow), battery properly charged, ailerons and elevator deflection check, your own flying skills or RC simulator training...
Then go flying: set full throtle, put the elevator little upwards (1-2mm) and throw it energetically to the wind approx 10 grades up, wait till plane gain speed, then fly it in your manner...
See video guide #11

11.Pilots Please Attention!!!

For the first flights we recommend set center of gravity of the airplane by about 5 mm forward of the CG tag (nose heavy, this increases the stability) is also good to increase expo settings on your transmitter for elevator and ailerons to 80 % (this calms response from your stick inputs)
Also you can decrease elevator and ailerons deflection.
Make sure the battery is well fixed in proper possition if it moves during flight it will cause move CoG aft and will lead to uncontrolable flight behavior...

You can then return to the center of gravity (balance aircraft)the CoG points and expo set to 60 % as stated in the video/instructions... this gain back extra maneuverability when you will be sure with flying your airplane.

!!!Never fly aft positioned CoG!!!

And Please, use this files only for your own purpose, do not send further... Thank you very much