E2CF *3D Printer*
User Manual

* Please review this entire manual before operating the printer.

E2CF

RAISE3D

The contents of this User Manual maybe updated overtime. For the latest version, scan the QR code or visit the link below.

CONTENTS

A. Safety

Read the following information to ensure safe usage of the appliance.

1 General information

This section focuses on general information about the instruction manual.

- Any failure and losses caused by ignoring the following mentioned items, and cautions mentioned in the operation and installation instruction are not covered by our warranty and any liability.
- Read this instruction manual carefully. Only this will ensure you use the appliance safely and efficiently.
- This manual is intended for the installer and the user of the appliance.
- Follow the safety instructions and warnings.
- Keep the instruction manual and the product information safe for future reference or for the next owner.
- Check the appliance after unpacking it. Do not connect the appliance if it has been damaged in transit.
- If you have any questions, please contact our local service center or distributors.

2 Intended use

Intended Use gives information regarding the correct and safe usage of the appliance.
Only use this appliance:

- According to this installation and instruction manual.
- Use in a well-ventilated and dry environment.
- The environmental conditions used are:
  · Ambient temperature of 0-35°C;
  · Relative humidity of the air is below 95% (when the temperature is 25°C).

3 Restriction on user group

- Avoid risks to children and vulnerable persons.
- Individuals with reduced physical, sensory, and mental abilities can use this printer. Individuals with less 3D printing expertise can also use the printer provided they are supervised or properly trained. Training should include how to use the printer safely and understand the resulting dangers.
- Children must not play with the printer.
- Keep children and pets away from the printer.

A. Safety

④ Safe installation

Take note of the safety instructions when installing the printer.

⚠ WARNING – Risk of electric shock!

■ Improper installation is dangerous.
- Connect and operate the printer according to the specifications on the rating plate.
- Connect the printer to a power supply with an alternating current only via a properly installed socket with earthing.
- The protective conductor system of the domestic electrical installation must be properly installed. The installation must have a sufficiently large cross-section.
- Please ensure that the power supply system (current, voltage, and cables) can meet the normal load requirements of the printers.
- Please ensure that the power supply system (current, voltage and cables) can meet the normal load requirements of the electrical appliances.
- Never equip the printer with an external switching device, e.g. a timer or remote control.
- When installing the printer, check that the power cable is not trapped or damaged.
- Select the fuse according to the fuse safety identification requirements.
- The power plug and the socket must match, the grounding blade must work properly, and the body must be properly grounded.

■ Damaged insulation of the power cord is dangerous.
- Never let the power cord come into contact with hot appliance parts or heat sources.
- Never let the power cord come into contact with sharp points or edges.
- Never kink, crush or modify the power cord.

■ If touching the machine shell once it is energized results in feeling electrostatic inductance, then the machine is not well-grounded. Stop the machine and repair the power connection immediately to ensure a good grounding.

■ If you have any questions, consult a professional electrician.

⚠ WARNING – Risk of fire!

■ It is dangerous to use an extended power cord and unapproved adapters.
- Do not use extension cables or multiple socket strips.
- If the power cord is too short, contact Customer Service.
- Only use adapters approved by the manufacturer.

A. Safety

⚠ WARNING – Risk of injury!

- Careful when lifting the machine. The weight of the machine may cause injury when lifted.
  - ・Do not lift the machine on your own.

⚠ WARNING – Risk of suffocation!

- Keep packaging material away from children. Do not allow children to put packaging material over their heads or wrap themselves up in it as it could lead to suffocation.
  - ・Do not let children play with packaging material.

⚠ CAUTION – Risk of injury!

- The appliance may vibrate when in use.
  - ・Place the appliance on a clean, even, solid surface.
- Incorrectly laid tubes and power cords may result in a tripping hazard.
  - ・Lay tubes and power cords to avoid creating a tripping hazard.
- If the appliance is moved by holding onto protruding components, such as the appliance door, the parts may break off.
  - ・Do not move the device by holding onto protruding parts. Holding the machine by a protruding part, such as the door, may result in the part breaking off the machine.

⚠ CAUTION – Risk of cutting!

- Touching sharp edges on the appliance may lead to cuts.
  - ・Do not touch the sharp edges on the appliance.
  - ・Wear protective gloves when installing and transporting the appliance.

5 Safe use

Follow these safety instructions when using the machine.

⚠ WARNING – Risk of electric shock!

- A damaged printer or power cord is dangerous.
  - ・Never operate a damaged machine.
  - ・Never pull on the power cord to unplug the machine. Always unplug the machine at the mains.
  - ・If the machine or the power cord is damaged, immediately unplug the power cord.
  - ・Call Customer Service.
  - ・Repairs to the appliance should only be completed by trained specialist staff.

A. Safety

■ **An ingress of moisture can cause an electric shock.**
  · Never expose the machine to intense heat or humidity.
  · Do not use steam cleaners or sprays to clean the machine.

⚠ WARNING – Risk of harm to health!

■ **If a child locks themselves in the machine, their life is at risk.**
  · Do not install the machine behind a door as this may obstruct the machine door or prevent it from opening.
  · With redundant appliances, unplug the power cord and cut through the cord.

⚠ WARNING – Choking Hazard!

■ **This machine contains many small parts and pieces. Do not allow children to breathe in or swallow small parts.**
  · Keep small parts away from children.
  · Do not let children play with small parts.

⚠ CAUTION – Risk of injury!

■ **The covering plate may break if you stand on or climb onto the appliance.**
  · Do not stand on or climb onto the appliance.
■ **The appliance may tip over if you sit on or lean against the open door.**
  · Do not sit on or lean against the appliance door.
  · Do not place any objects on the appliance door.
■ **Reaching into the chamber while the three-axis system is still moving may cause hand injuries.**
  · Wait for the three-axis system to come to a complete stop before reaching inside.
■ **The shovel provided in the accessory box has sharp parts. If the shovel is incorrectly used, the user may be injured.**
  · Do not touch the edge of the shovel.
  · Keep children away from the shovel.
■ **Some parts in the printer are sharp and may cause injury.**
■ **When removing the printing model, please refer to the operate guide.**

⚠ WARNING – Risk of burns!

■ **When operating or printing at high temperatures, the shell of the printer becomes hot.**
  · Do not touch the shell of the printer when it is hot.
  · Keep children away from the printer when it is hot.

⚠ WARNING – Risk of scalding!

A. Safety

■ When operating or printing at high temperatures, the print bed becomes hot.
   ・Do not touch the print bed when it is hot.
   ・Please operate with the heat-resistant gloves in the attachments box.
   ・Keep children away from the print bed when it is hot.

■ When operating or printing at high temperatures, the extruder head becomes hot.
   ・Do not touch the extruder head when it is hot.
   ・Please operate with the heat-resistant gloves in the attachments box.
   ・Keep children away from the extruder head when it is hot.

6 Safe Maintenance

Take note of the safety instructions when performing maintenance work on the printer.

⚠ WARNING – Risk of electric shock!

■ Improper repairs are dangerous.
   ・Repairs to the appliance should only be carried out by trained specialist staff.
   ・Only use the manufacturer's original spare parts and original accessories
   ・when repairing the appliance.
   ・If the printer's power cord is damaged, it must be replaced by the manufac-turer, the manufacturer's Customer Service, or a similarly qualified person in order to prevent any risk.

■ Ingress of moisture can lead to electrical shock.
   ・Do not use a steam cleaner or spray to clean the appliance.

⚠ CAUTION – Risk of injury!

■ The use of non-original spare parts and non-original accessories is dangerous.
   ・Only use the manufacturer's original spare parts and original accessories.

RAISE3D

B. FCC Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.
This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.
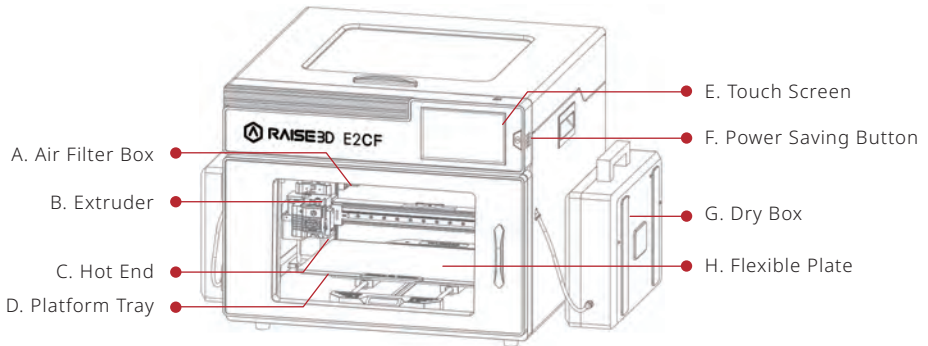
Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

C. Technical Specifications

Printer	E2CF	
Build Volume (W×D×H)	Single Extruder Print	Dual Extruder Print
	330×240×240 mm	295×240×240 mm
Machine Size (W×D×H)	607×596×465 mm	

Electrical	Power Supply Input	100-240 V AC, 50/60Hz 230 V @ 2A
	Power Supply Output	24 V DC, 350 W

General	Print Technology	FFF
	Print Head System	IDEX Independent Dual Extruders
	Filament Diameter	1.75 mm
	XYZ Step Size	0.78125, 0.78125, 0.078125 micron
	Print Head Travel Speed	30-150 mm/s
	Build Plate	Flexible Steel Plate with BuildTak
	Max Build Plate Temperature	110 ℃
	Heated Bed Material	Silicone
	Build Plate Leveling	Mesh-leveling with Flatness Detection
	Filament Run-out Sensor	Support
	Supported Materials	PA12 CF, PA12 CF Support, OFP Certified Third-Party Filaments
	Layer Height	0.1 - 0.25mm
	Nozzle Diameter	0.4 mm (Default), 0.6/ 0.8 mm (Available)
	Hot End	V4P
	Max Nozzle Temperature	300 ℃
	Connectivity	Wi-Fi, LAN, USB port, Live camera
	Noise Emission (Acoustic)	< 50 dB (A) when building
	Operating Ambient Temperature	15-30 ℃, 10-90% RH non-condensing
	Storage Temperature	-25 to 55℃, 10-90% RH non-condensing
	Filter	HEPA filter with activated charcoal

Software	Slicing Software	ideaMaker
	Supported File Types	STL/ OBJ/ 3MF/ OLTP
	Supported OS	Windows/ macOS/ Linux
	Machine Code Type	GCODE

Printer Controller	User Interface	7-inch Touch Screen
	Network	Wi-Fi, Ethernet
	Power Loss Recovery	Support
	Screen Resolution	1024×600
	Motion Controller	Atmel ARM Cortex-M4 120MHZ FPU
	Logic Controller	NXP ARM Cortex-A9 Quard 1 GHz
	Memory	1 GB
	Onboard Flash	8 GB
	OS	Embedded Linux
	Ports	USB 2.0×2, Ethernet×1

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D. List of Parts

1. Front Parts

A. Air Filter Box

B. Extruder

C. Hot End

D. Platform Tray

E. Touch Screen

F. Power Saving Button

G. Dry Box

H. Flexible Plate

A. Air Filter Box

Contains the air filter, which can filter out part of the harmful gas produced in the printing process.

B. Extruder

Feeds the filament into the hotend.

C. Hot End

The hot end consists of a nozzle, heater block, thermocoupler, heater rod, throat tube, and heat sink.

D. Platform Tray

The platform tray is highly magnetized to ensure that the build plate stays in place.

E. Touch Screen

On-board computing system to display printer status, error messages, and receive commands.

F. Power Saving Button

Quick press to put the screen and LED in sleep/wake mode; Long press for 10 seconds to restart.

G. Dry Box

Avoid absorbing the moisture from the air and keep the filament dry.

H. Flexible Plate

You can easily remove your models after they've finished printing by bending the plate.

D. List of Parts

2. Back Parts

A. Electric Control System
B. Camera
C. LED Light Bar
E. Input Power

F. Filament Exit
G. Filament Run-out Sensor
H. Switching Power Supply
I. Air Filter Fan
J. Ethernet Port
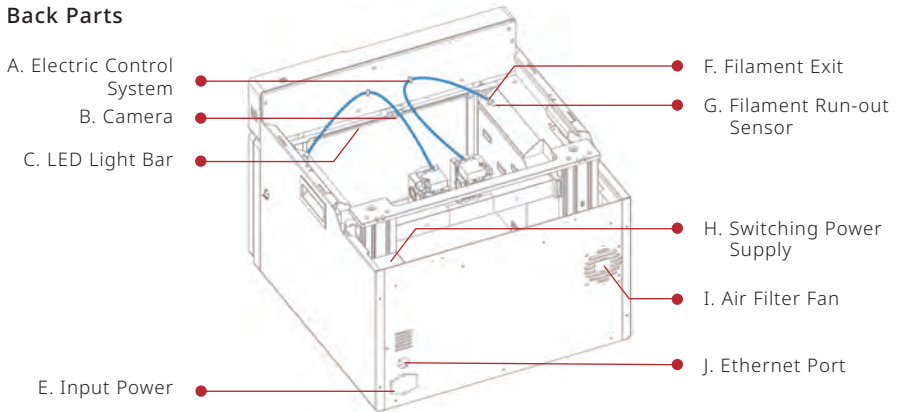
A. Electric Control System

Includes screen components and the motion control panel. Do not open without permission.

B. Camera

Used to observe the operation of the printer.

C. LED Light Bar

Provides interior lighting of the chassis.

E. Input Power

AC input and switching.

F. Filament Exit

The filament leads from here to the extruder.

G. Filament Run-out Sensor

Detects when the material has run out.

H. Switching Power Supply

Switches from alternating current to direct current. Please be careful, it's dangerous! Do not remove the power box without permission.

I. Air Filter Fan

Pulls air out of the machine through the air filter.

J. Ethernet Port

RJ45 port to connect the printer to a network.

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D. List of Parts

3. Other Parts

A. Z-axis Endstop Limit Switch
B. Left Extruder
C. X-axis Guide Rail
D. X-axis Left Motor
E. Z-axis Left Motor

B. Right Extruder
C. X-axis Guide Rail
D. X-axis Right Motor
E. Z-axis Right Motor
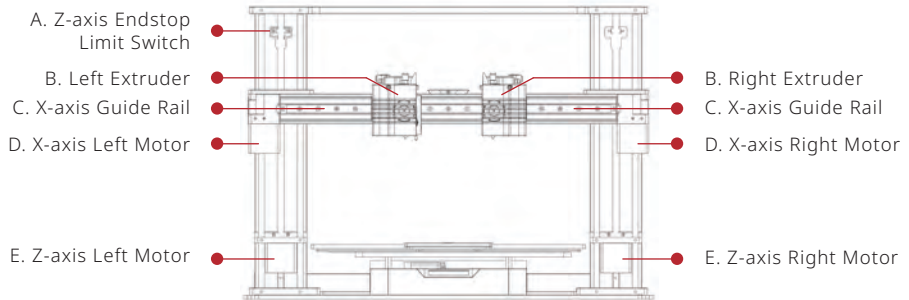
A. Z-axis Endstop Limit Switch

Limits the maximum position in the Z direction and provides a Z-axis zero reference.

B. Extruder (Left/Right)

Feeds the filament into the hotend.

C. X-axis Guide Rail

Guides the extruder's movement along the X-axis.

D. X-axis Motor (Left/Right)

Respectively controls the corresponding extruder for horizontal movement.

E. Z-axis Motor (Left/Right)

Controls both ends of the X-axis beam for synchronous lifting movements.

E. Safety Marks

Hot Surface: The hot surface sign indicates the presence of devices with high temperatures. Always use extra care when working around heated components.
Wait half an hour after switching off the printer before handling parts to prevent burned fingers.

Hot parts!
Burned fingers when handing the parts.
Wait one-half hour after switching off before handing parts.

Moving Parts: Please do not put fingers, clothing or hair into gears and other hazardous parts to avoid electric shock, injury, fire, or damage to the device.

This equipment is not intended for use by children.
Avoid touching the media feed opening with the hands, clothing or hair.
Unplug this equipment when not in use for an extended period of time.

High Voltage: The high voltage sign indicates the presence of high voltages. Always stay away from exposed circuitry. It is recommended that all conductors be removed.

Replacement fuse identification and rating markings: Identification of a suitable replacement fuse shall be marked adjacent to the fuse holder.

F10AL 250VAC

Protective Earthing Conductor Terminal: Marked near the protective earthing conductor terminal.

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E. Safety Marks

1 Installation

To facilitate operation and maintenance, please keep a proper distance of 50cm on the side of the printer, 80cm on the front, 20cm on the back, and 60cm on the top during installation. No flammable materials are allowed around the installation location.

2 Filament and Electrical Precautions

It is strongly recommended to use Raise3D official filaments and/or default settings for better performance. The Raise3D printer is designed with strong compatibility with filaments. However, please be very careful when using unverified filaments and settings. This may cause abnormal printing tasks or damage the printer.

Please consult Raise3D or authorized dealers in your area for technical support and services.

Warning: The printer belongs to EN55032 Class A. In a residential environment, the printer may cause radio interference.

3 Odor

When the printer is operating, it emits a thermoplastic smell.
NOTE: Please place the printer in a well-ventilated and dry environment.

E. Safety Marks

Electromagnetic Compatibility - EMC

Simplified EU Declaration of Conformity
Raise3D declares that this device is in compliance with the essential requirements and other relevant provisions of Directive 2014/53/EU. Full text of the EU declaration of conformity is available at https://www.raise3d.com.

CE Mark Warning
This is a Class A product, in a domestic environment, may cause radio interference, in which case the user may be required to take adequate measures.

CE

AT	BE	BG	CZ	DK	EE	FR
DE	IS	IE	IT	EL	ES	CY
LV	LI	LT	LU	HU	ME	NL
NO	PL	PT	RO	SI	SK	TR
FI	SE	CH	UK	HR		

CE Output power table:

Function	Frequency	Frequency
Wi-Fi	2412-2472 MHz	18 dBm(b)/ 18 dBm(g)/ 13 dBm(HT)
	5150-5250 MHz	19 dBm(a)/ 18.5 dBm(HT20)/ 17.5 dBm(HT40)
	5725-5850 MHz	14 dBm(a)/ 14 dBm(HT20)/ 14 dBm(HT40)

FCC Output power table:

Function	Frequency	Frequency
Wi-Fi	2412-2462 MHz	18.31 dBm(b)/ 15.62 dBm(g)/ 14.9 dBm(HT20)
	5150-5250 MHz	15.36 dBm(a)/ 14.79 dBm(HT20)/ 14.41 dBm(HT40)
	5725-5850 MHz	15.48 dBm(a)/ 14.49 dBm(HT20)/ 14.06 dBm(HT40)

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F. Hardware Installation and First Print

Raise3D Supplies and Accessories
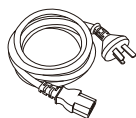
Power Cable
(×5)

Hex Wrenches
3mm
2.5mm
2mm
1.5mm
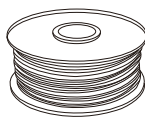
Filament
(×2)

Tweezers
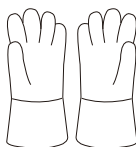
Heat Resistant Gloves

Spatula

Filament
Guide Tube
(×2)

USB Storage

Quick Connectors

Fuse
5A
10A

Glue

0.3 mm Feeler Gauge
(×1)

G. Precaution and Hardware Installation

1 Read the entire installation section before starting installation

⚠️ Connect the printer to a grounded facility power source. Do not defeat or bypass the ground lead.

- Know the location of equipment branch circuit interrupters or circuit breakers and how to turn them on and off in case of emergency.
- Know the location of fire extinguishers and how to use them. Use only ABC type extinguishers on electrical fires.
- Know local procedures for first aid and emergency assistance.
- Use adequate lighting for the printer.
- Maintain the recommended range of temperature and humidity.
- Do not use this product in an environment containing volatile or flammable compounds.

2 Environmental requirements

- E2CF is for indoor use only.
- Excessive solids (conductive or non-conductive) in the air may cause system damage.
- The accumulation of oil in the air can damage the plastic parts of the printer.
- The operating temperature should be in the range of 15°C to 30°C, with a relative humidity range of 10% to 90% without condensation. The storage temperature shall be in the range of -25°C to 55°C, and the relative humidity range shall be 10% to 90% non-condensation.
- The altitude shall not exceed 2,000 meters.
- Noise (Acoustics) : <50dB(A) during printing.
  NOTE: E2CF printers may generate vibrations which depend mainly on the geometry of parts being printed and material characteristics. This shall be taken into account if placing the printer near vibration sensitive equipment. During transportation in low temperatures, the printer may frost or freeze. The printer can resume use after being kept 4 - 6 hours in the room temperature.

3 Input supply connection and grounding

During installation, the main outlet socket shall be protected according to appropriate rules. Check the input voltage, phase, and frequency supplied to this printer before using. Verify the connection of grounding wires from the printer to the input source. The allowable input voltages are 1x (90-240) V 50Hz/60Hz. For more information about input supply refer to the technical specification and to the rating plate.
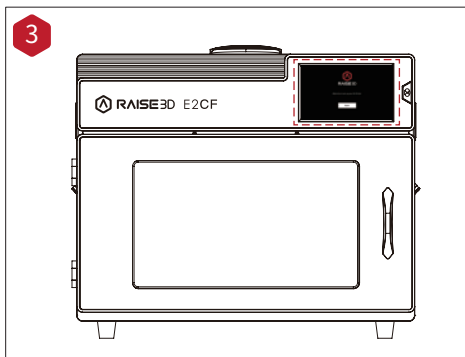
RAISE3D

H. Hardware Installation and First Print
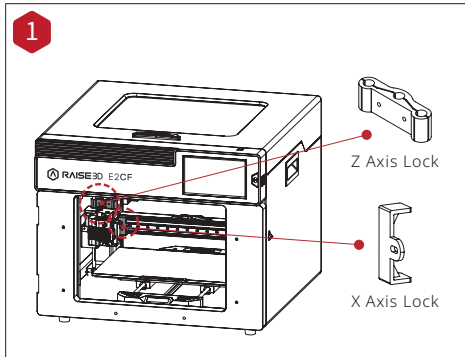
Use hands to remove the Z-axis and X-axis locks. Please carefully store the removed locks, so that they can be installed again and used in subsequent transportation.

Z Axis Lock

X Axis Lock
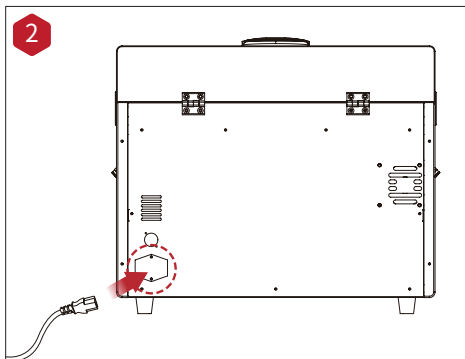
The top foam contains five power cords of different standards. Please use the power cord that conforms to your current country (or region) and connect it to the power socket. Turn on the switch and start the device.

Turn on the power and the printer will enter the boot process. Your Raise3D printer will take about 60 seconds to boot. When the touch screen displays the "Welcome" window, the printer is ready. Then you can finish the installation and first print according to the Setup guide.

*For the details of the dry box installation, please refer to the brochure attached to the dry box.

Ⅰ. ideaMaker Installation

The slicing software, ideaMaker, is available on the USB storage device included with your printer. Additional downloads and versions are available online at:

https://www.raise3d.com/download/

www.raise3d.com

Download ideaMaker

WINDOWS

1 Install ideaMaker, and click "Next".

install_ideaMaker_x.x.x.exe

ideaMaker

Welcome to the ideaMaker X.X.X Setup

Setup will guide you through the installation of ideaMaker X.X.X.

It is recommended that you close all other applications before starting Setup. This will make it possible to update relevant system files without having to reboot your computer.

Click Next to continue.

Next >   Cancel

Choose Install Location
Choose the folder in which to install ideaMaker X.X.X.

Setup will install ideaMaker X.X.X in the following folder.To install a different folder, click Browse and select another folder. Click Next to continue.

Destination Folder

Browse...

Space required: 137.6MB
Space available: 31.5GB

< Back   Next >   Cancel

1. ideaMaker Installation

2 Follow the instructions provided by the guide, and click "Install". After the installation is finished, click "Next" to go to the next step.
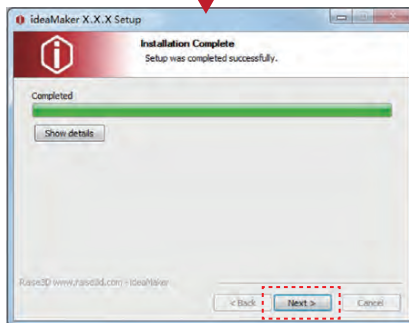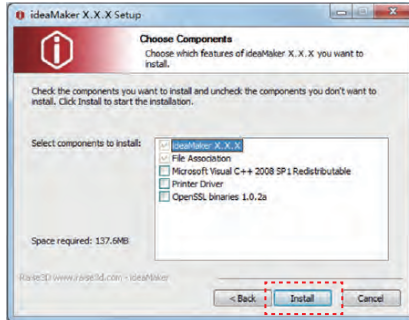
3 Click "Finish" and ideaMaker is installed.

I. ideaMaker Installation

MAC OS X

Open the Disk Image for the ideaMaker installer. This is located in the USB storage device included with your printer. Alternatively, you can download the latest version from www.raise3d.com/pages/download#down-im.
Next, drag the ideaMaker icon(left) into the Application folder on the right side.

J. ideaMaker Initial Settings

1 When launching ideaMaker for the first time, you will need to select your printer model from the drop-down list, then press "Next".
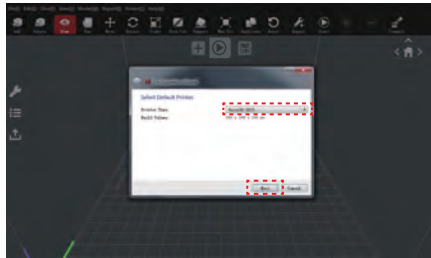
2 Select the diameter of your filament. Press "Finish" to finalize the initial settings.
NOTE: ALL E2CF printers use 1.75 mm filaments.
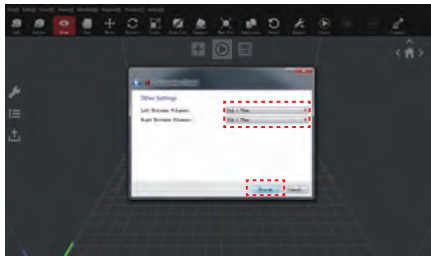
K. Using ideaMaker

1 Click the "+" button to import "Giveaway Spinner" included in the USB storage device.
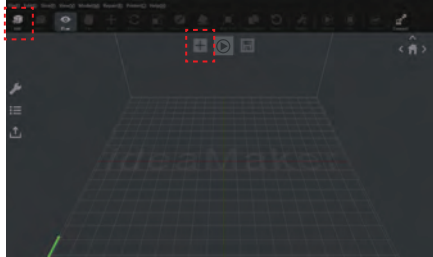
2 Click the "Start""▶"button to begin slicing the model.
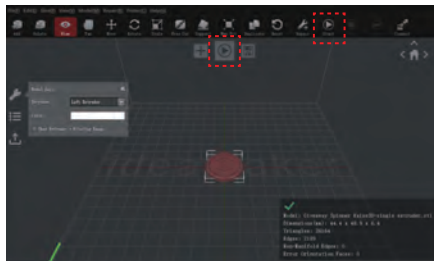
3 Confirm that the selected printer type and material are correct, then select the standard slicing template. Click "Edit" to select the type of Platform Addition and the type of Support.
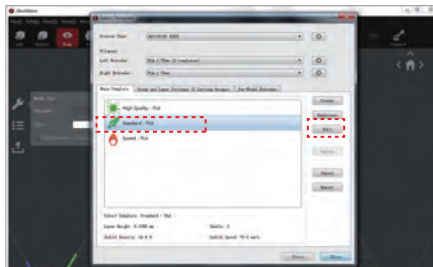
K. Using ideaMaker

4 Select your type of Platform Addition and Support in the "Edit" window. Click "Save and Close" to return to the previous menu. Click "Slice" to generate your file.
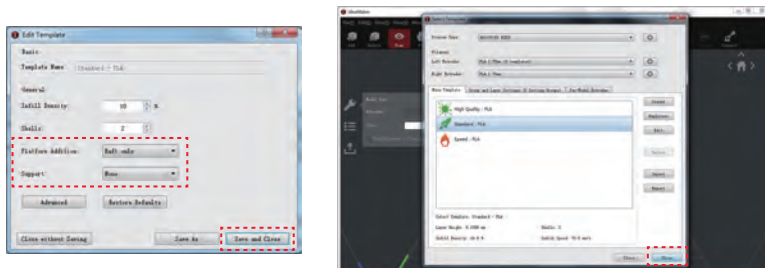
5 Save the sliced files (.gcode and .data) by exporting them on the USB storage device.
NOTE: File names that do not conform to the Western Latin character set may not display properly.
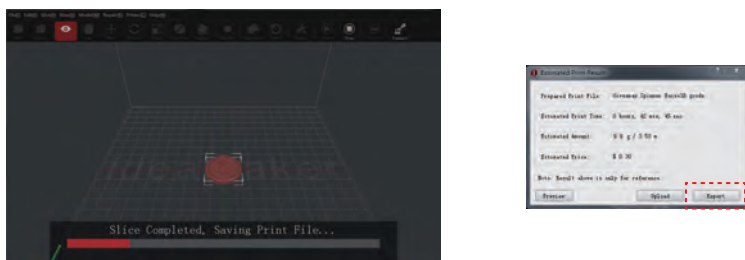
6 Confirm that the files are saved and eject the USB storage device.

L. Annealing

- Annealing is a very important post-processing procedure for PA12 CF.

- Through annealing, FFF process induced inner-stress of PA12 CF can be released.

- Annealing accelerates the post-crystallization process and improve stiffness and dimensional stability for end-use.

- Place the printed part together with support material into a dying oven.

- Set the oven temperature at 80 ℃ for the annealing.

- Avoid any direct contact on hot surface in the oven chamber (may lead to material melting).

- Normally, the annealing time depends on the size of printed part, at least for 6-8h.

M. WLAN Connection
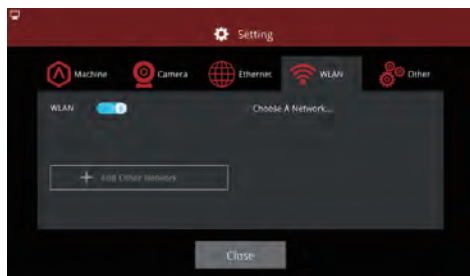
You can connect to a network by selecting the SSID and inputting the password. When the Wi-Fi module is manufactured, 2.4G is set at HT20, 5GHz is set at HT40.
NOTE: The Wi-Fi's frequency is fixed before being manufactured. The customer is not allowed to modify the Wi-Fi's parameters.
(If needed, please contact our tech support team).
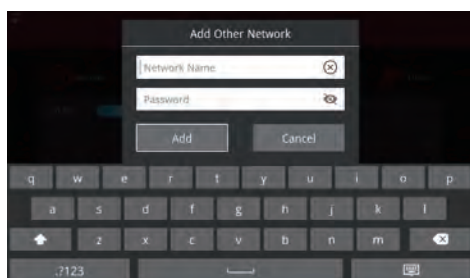
Alternatively, you can select "Add Other Network" and input a name and password.

N. Maintenance
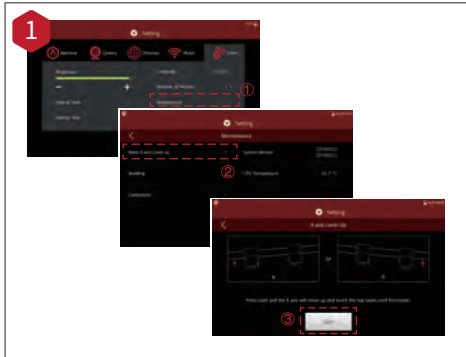
The printers are pre-leveled at the factory, but we recommend verifying that the leveling has not changed during shipping.

How to level up the X-axis:
As shown in figure 1, click "Maintenance" to level up the X-axis and it will touch the top beam until horizontal.
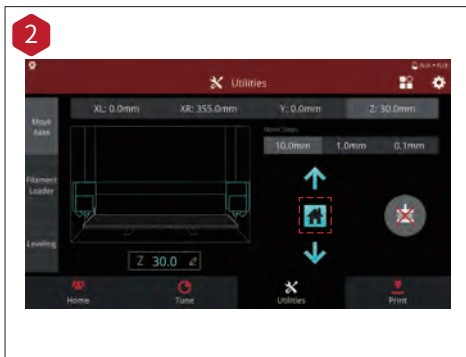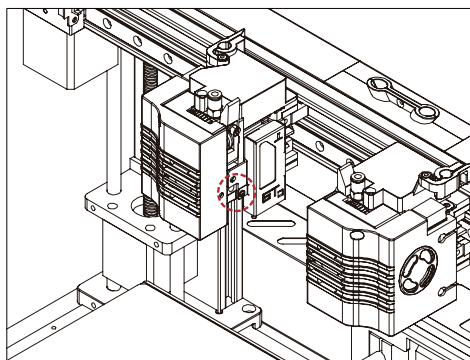

Click the "Utilities" menu and home the Z-axis. Press the upward arrow to lift the Z-axis about 0.3 mm-0.7 mm.
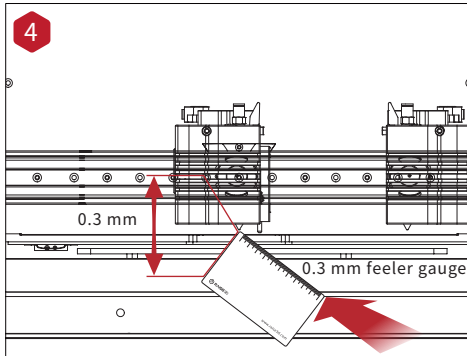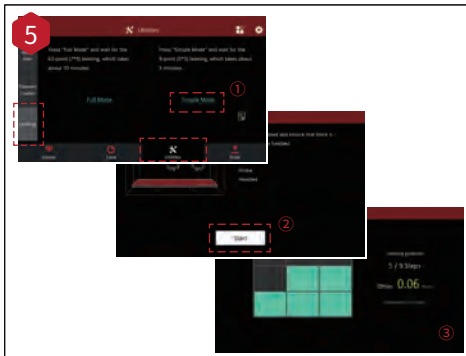
N. Maintenance
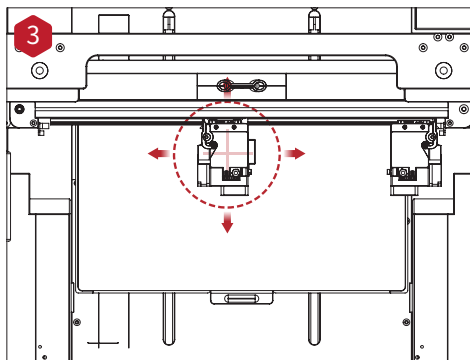
Check the distance between the nozzle and the printing platform. After pushing the left extruder to the center position on the platform, loosen the nozzle screw.

N. Maintenance



0.3 mm

0.3 mm feeler gauge

Take out the gauge from the Accessory Kit and insert it between the nozzle and the platform. Adjust the nozzle so that the distance between the nozzle and the printing platform exactly matches the thickness of the gauge (about 0.3 mm). Tighten the nozzle screw and remove the gauge. The other nozzle is adjusted in the same way.
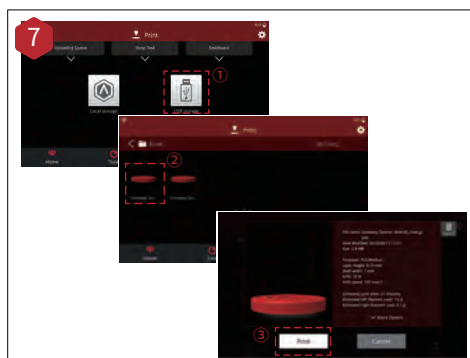

Follow the steps shown in the figure on the touch screen to run 9-point automatic leveling.

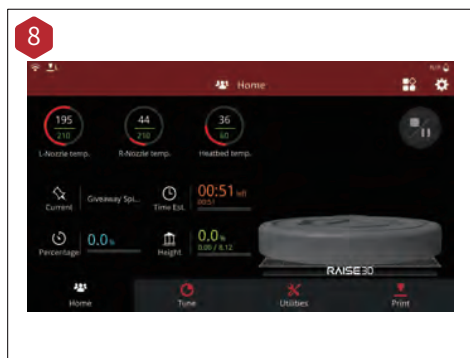After the 9 grid interface automatically closes, the leveling is finished.

N. Maintenance
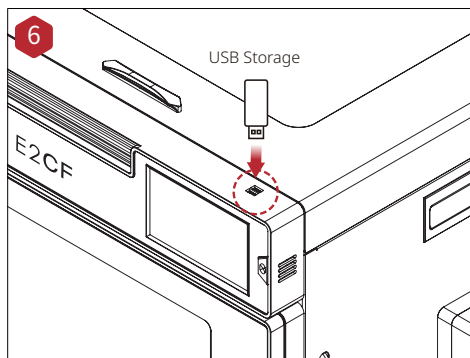
USB Storage

Insert the USB storage device into the USB slot on the side of the touch screen.

Select the "Print" tab, and choose "USB Storage". Select the file and check the printing parameters and settings. Press "Print" to start printing the test file.

During printing, you can check the status of your printing, including printing time and other parameters, from the touch screen in the "Home" interface.
NOTE: The touch screen will display an image of your model on-screen during printing. This image will only be shown when the file is sliced by ideaMaker before being uploaded to the printer.

O. User Interface

Status
Menu, Set button

Extruder and heating plate temperature

Pause, Restore button
Stop button

Current model name
Total print time
Current print status
Print height

Visual display of the current mode

Taskbar

Home

Print parameters and adjustment interface

Tune

Choose the X/Y/Z axis

Move distance "Unit Settings"

Move the axis
Loading/Unloading
Leveling

X/Y/Z axis move and return button

Disable motor button

Visual display of X/Y/Z axis
Coordinate value and Custom edit function

Utilities

Upload list, Resume print task list, Print statistics list

The storage location of the printed file

Printing

*Contents of this brochure could be changed without written notice.

Experiencing Difficulties/Contact Information

If you run into any issues during this guided setup, please contact our expert technicians by opening a ticket online at support.raise3d.com.