

Panda Breath

Important firmware update

Before you use the Panda Breath please ensure that you have updated to the firmware located [here](#) (ignore if your unit shipped with later firmware)

This firmware adds some important new features as well as bug fixes. Without installing it, there is the possibility that your Panda Breath may turn off after 30s of heating each time you try to use it as a result of the integrated software safety monitor being overly sensitive on one of the thermistor inputs. This firmware adds a small self-calibration feature on the very first startup which helps to identify the specific characteristics of your Panda Breath.



- Product Link: [Buy Here](#)
- Print files are available on: [GitHub bigtreotech/Panda_Breath](#)
- Github: https://github.com/bigtreotech/Panda_Breath

Revision Log

Version	Date	Revision
v1.00	December 12th, 2025	Initial Version

Introduction

The BIQU Panda Breath is a chamber heater and filter for Bambu Lab printers. It uses a 300W PTC heater to warm the chamber, which helps prevent warping, strengthens layer adhesion in engineering materials (ABS, ASA, PC, PA...), and improves first-layer adhesion for all filaments.

Its dual HEPA and carbon filters remove fine particles and VOCs from the air during printing, reducing odors and improving air quality.

Key Features

- **Easy Firmware Updates:** Includes quick-flash interface for DIY firmware burning and future upgrades.
- **Main Power Switch:** Convenient one-touch total power cutoff.
- **Quick-Access Controls:** Dedicated function buttons for streamlined operation.
- **Automatic Start/Stop:** Intelligently manages chamber heating and air filtration by monitoring the print bed's temperature in real time.
- **High-Temperature Capability:** Reaches up to 60°C chamber temperature, ideal for engineering-grade filaments.
- **Wireless Control:** Onboard ESP32 WiFi module enables remote operation.
- **Rapid Heating:** High-power PTC heater ensures fast temperature ramp-up.
- **Wide Voltage Compatibility:** Broad input voltage range maximizes printer compatibility.

Technical Specifications

Product Name	BIQU Panda Breath
Compatibility	For Bambu Lab P1S, P1P, X1C, A1 3D Printers <i>Supports Klipper printers (Snapmaker U1, Voron, and more). Currently requires manual heating control; automatic operation coming soon via firmware update.</i>
Main Controller	ESP32-C3-MINI
Power Input	AC110V-220V
PTC Heater Power	300W
Fans	2pcs 75×75×30mm, 7.8W rated, 5000 RPM, 19.2 CFM max airflow
Standby Power	0.45W
Operating Power	330W
Logic Voltage	3.3V
Power Cable Length	1.1m
PTC Temperature Limit	105°C
Maximum Chamber Temperature	60°C
Minimum Operating Ambient Temperature	15°C

Dimensions

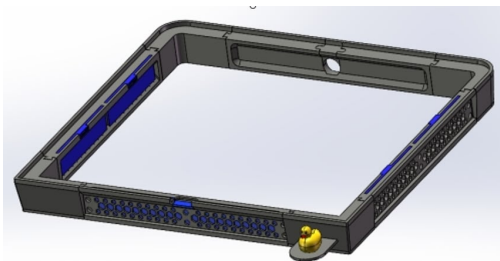


Installation Guide

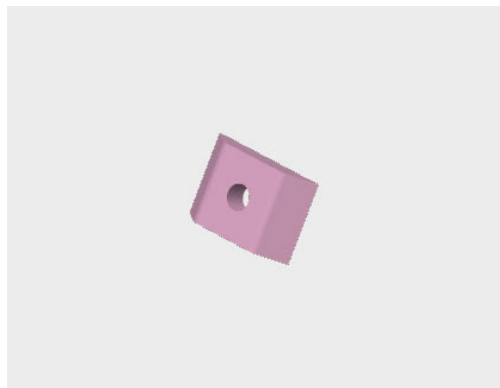
Preparation Before Assembly

- P, X Series:

Print the Riser: Use your 3D printer to print the Riser. [Download print files here.](#)

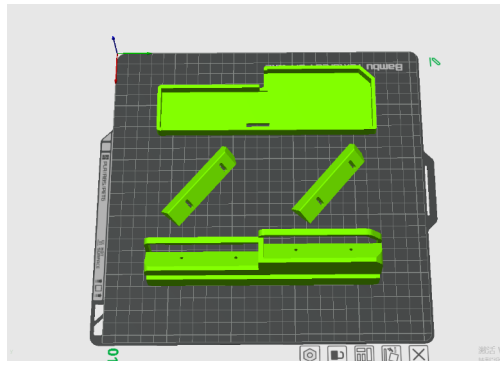


X Series models also require the Mounting Insert [Download print files here.](#)



- Snapmaker U1:

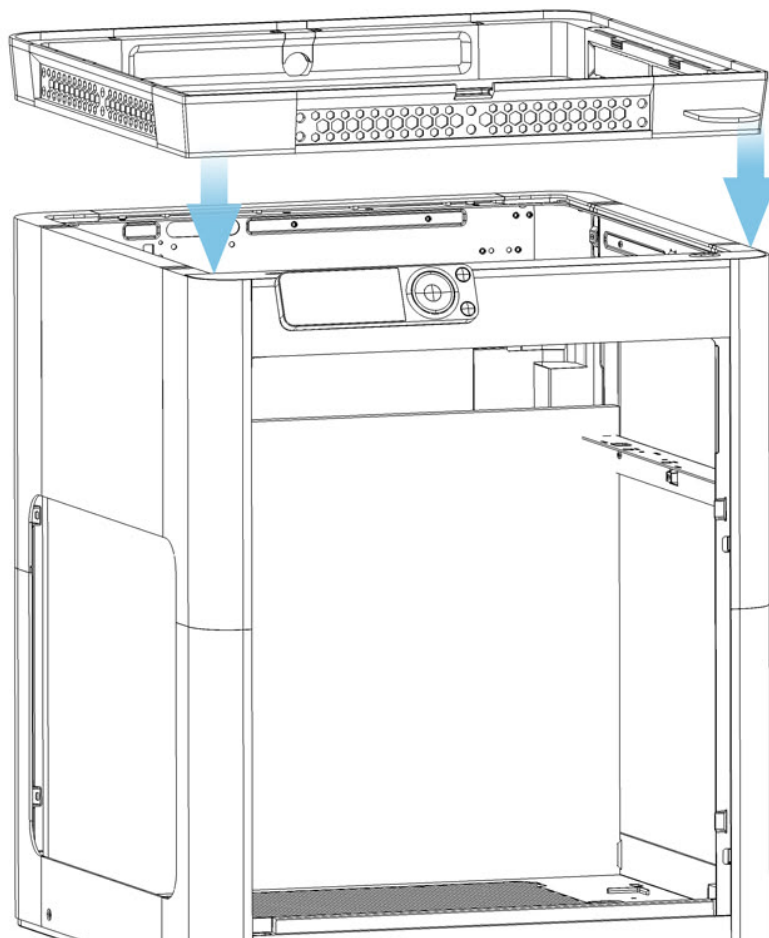
Print the Left and Right Mounting Brackets using your 3D printer. [Download print files here.](#)



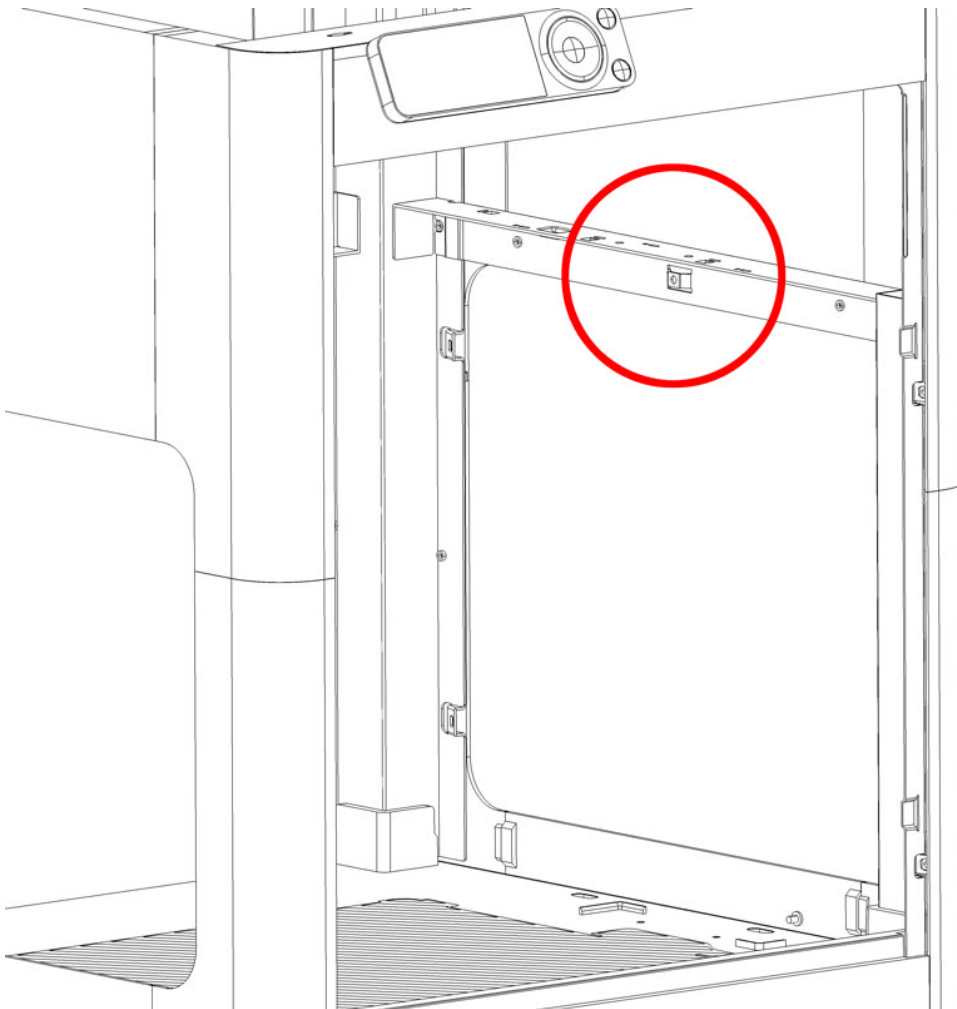
Safety First: Power off and unplug the printer completely

Installation Steps for P Series

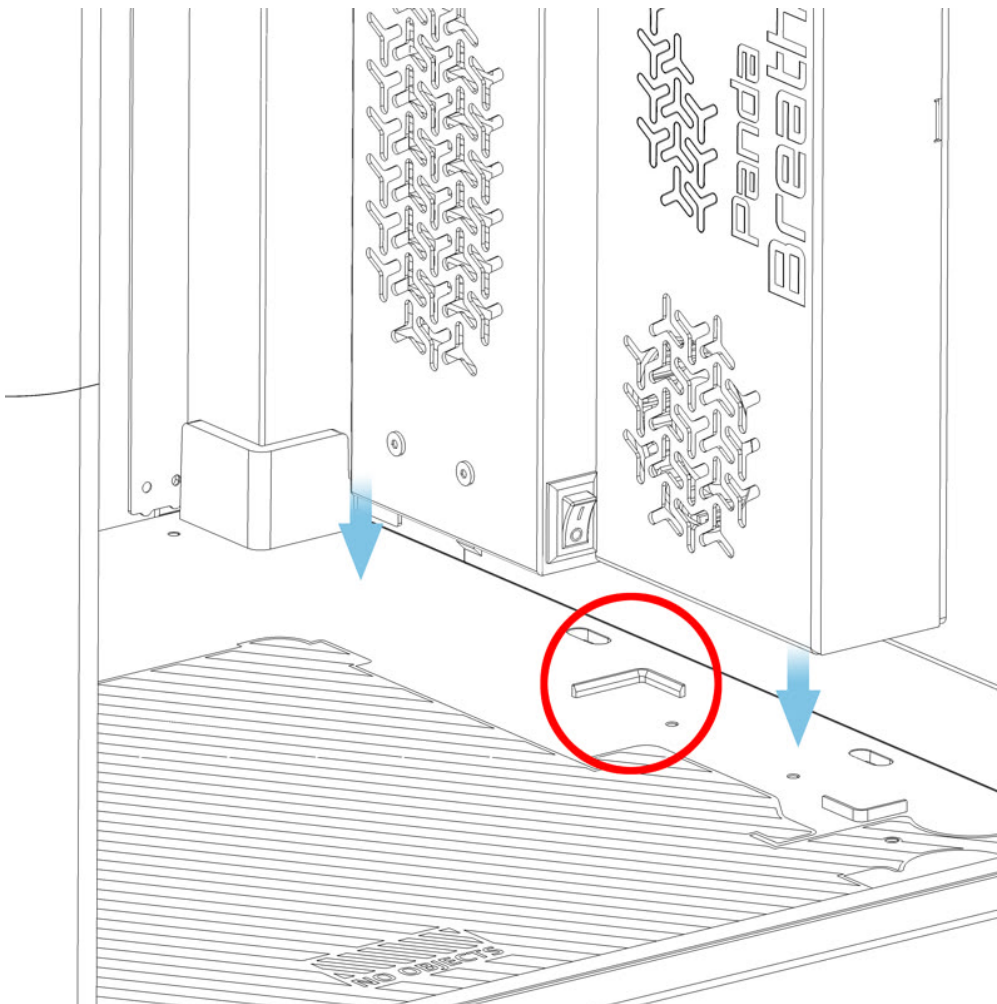
1. Remove the top glass panel and place the printed riser on the top of the printer.



2. Locate and remove the mounting screw at the center of the right-side crossbar using a screwdriver.



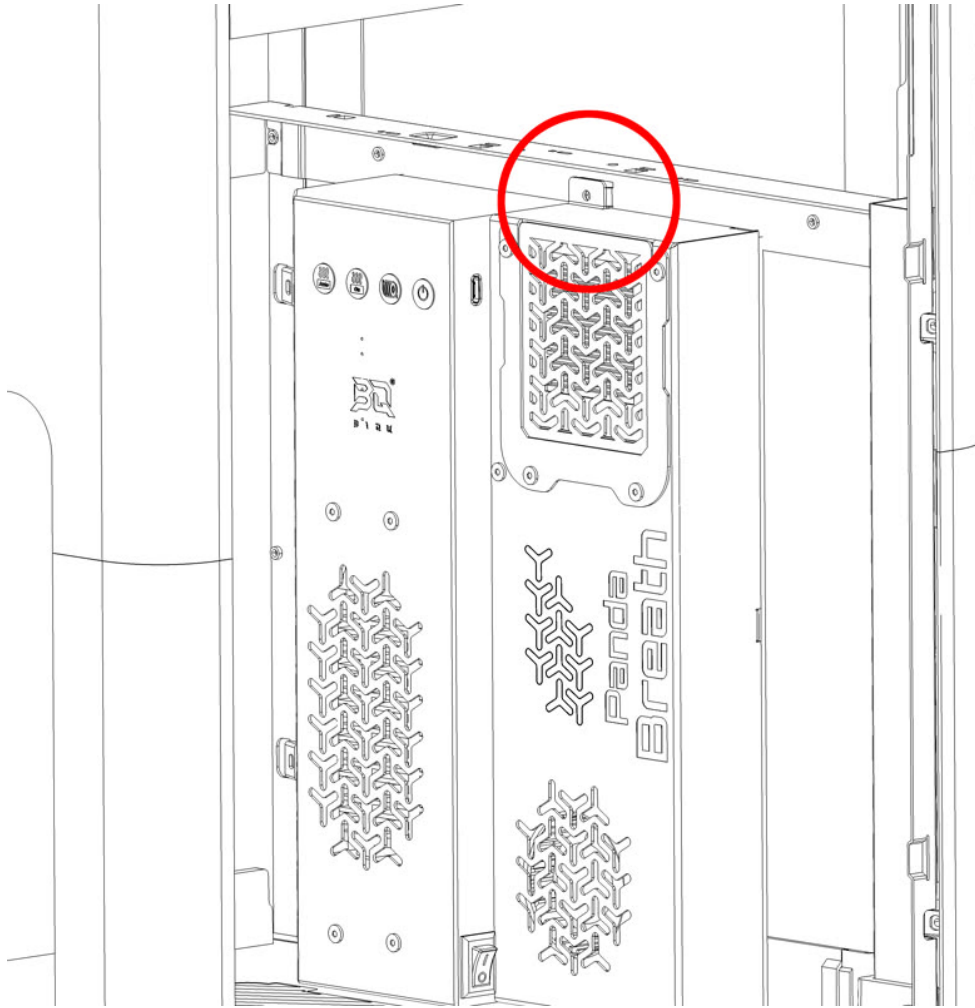
3. Align the bottom mounting tabs of Panda Breath with the printer's alignment posts.



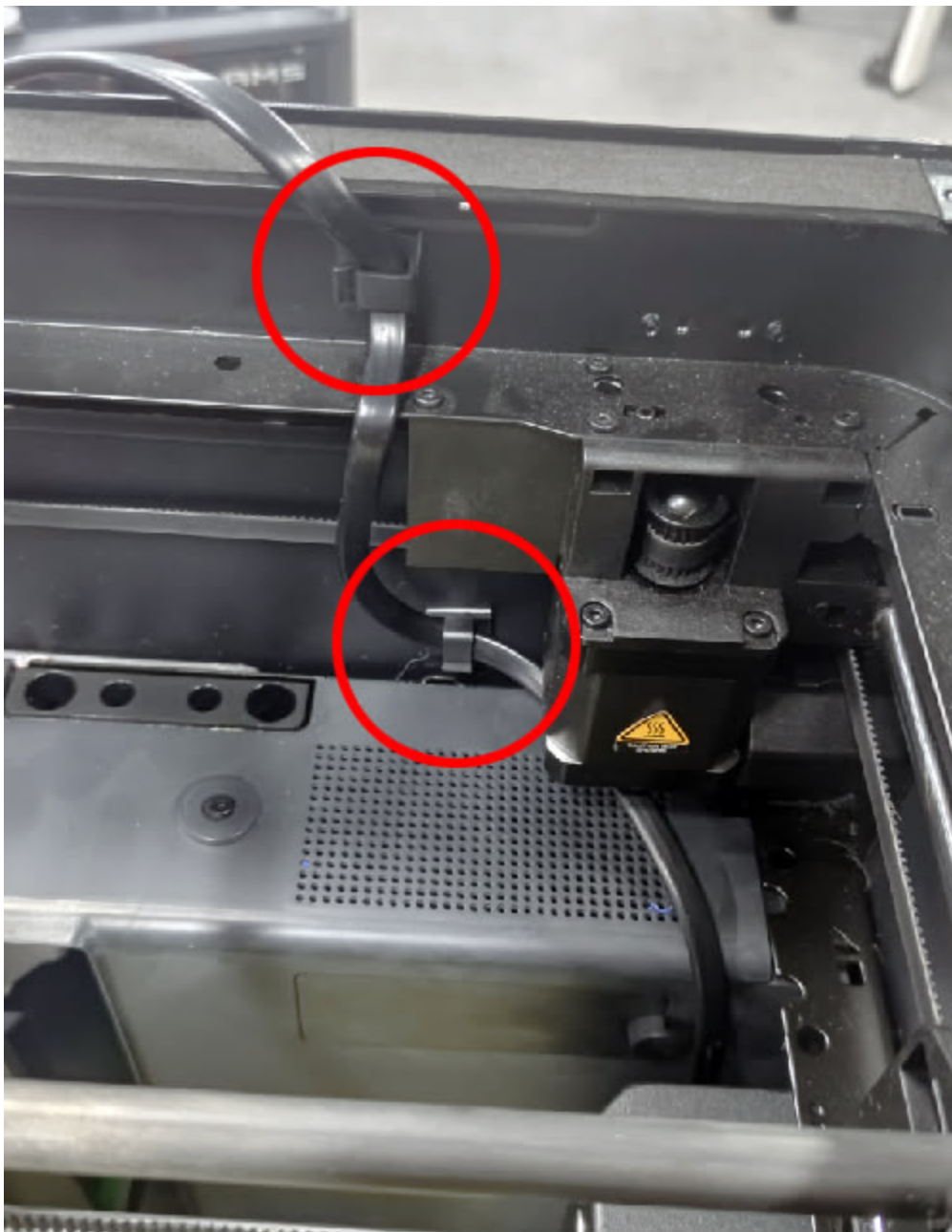
4. Fasten Panda Breath using the included M3×8 self-tapping screws.

Important

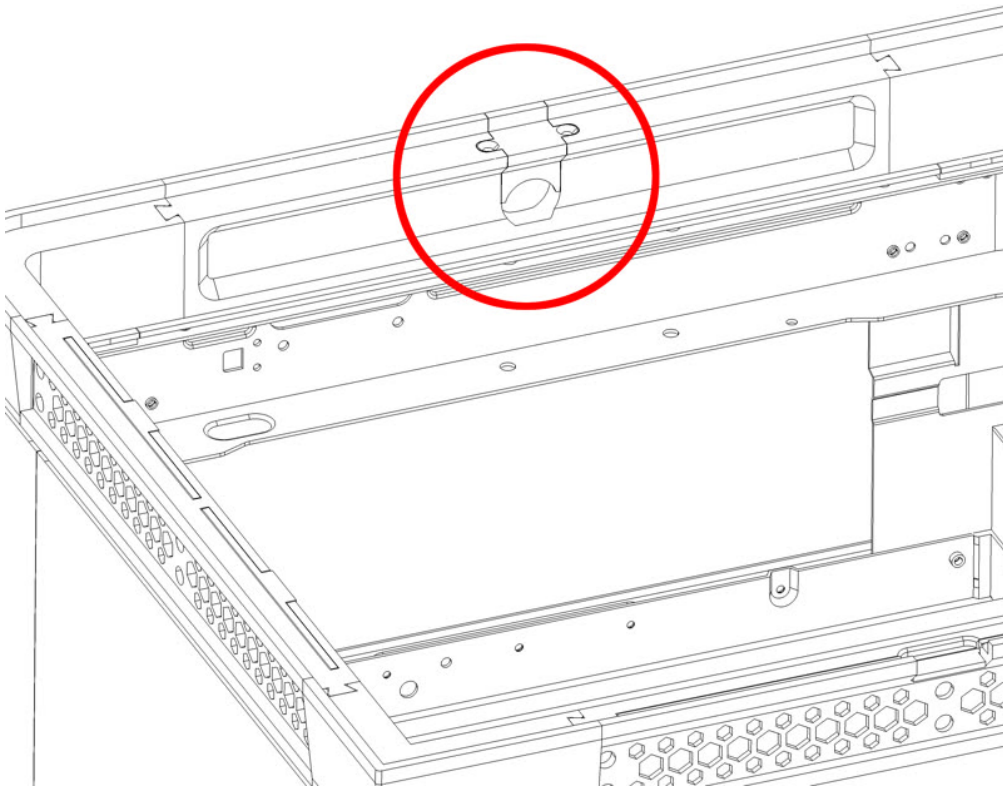
Tighten all screws securely, but avoid using excessive force. Over-tightening can strip the threads or crack the housing.



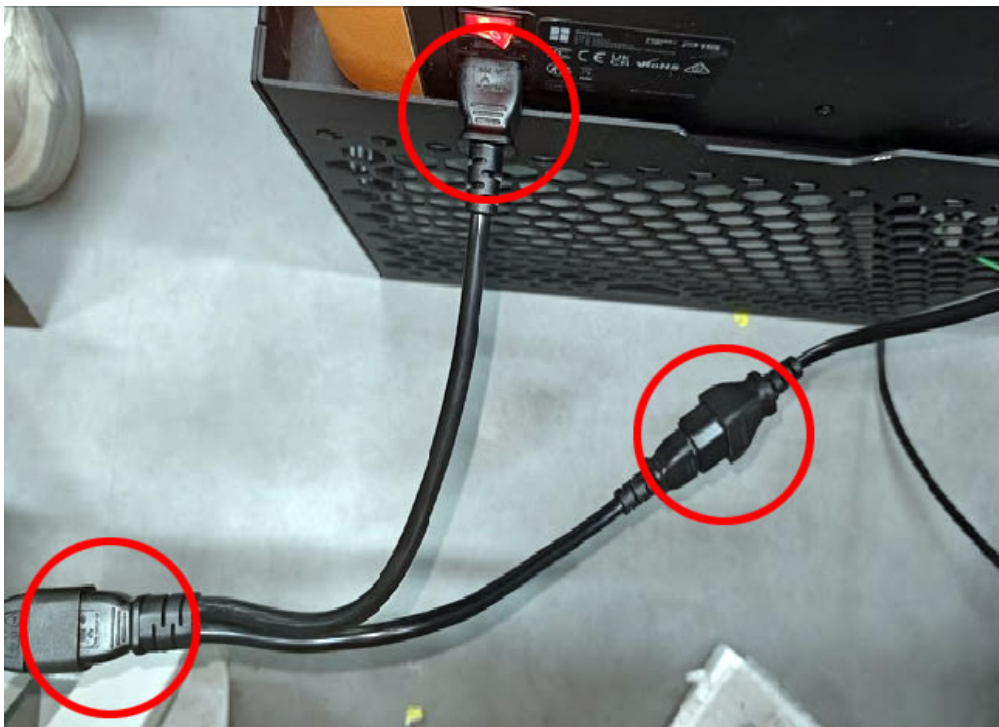
5. Route and secure the power cable using the included cable clips, following the reference diagram.



6. Pass the cable through the rear opening in the printed riser.



7. Unplug the printer's original power cable and connect the included Y-cable as shown in the diagram.



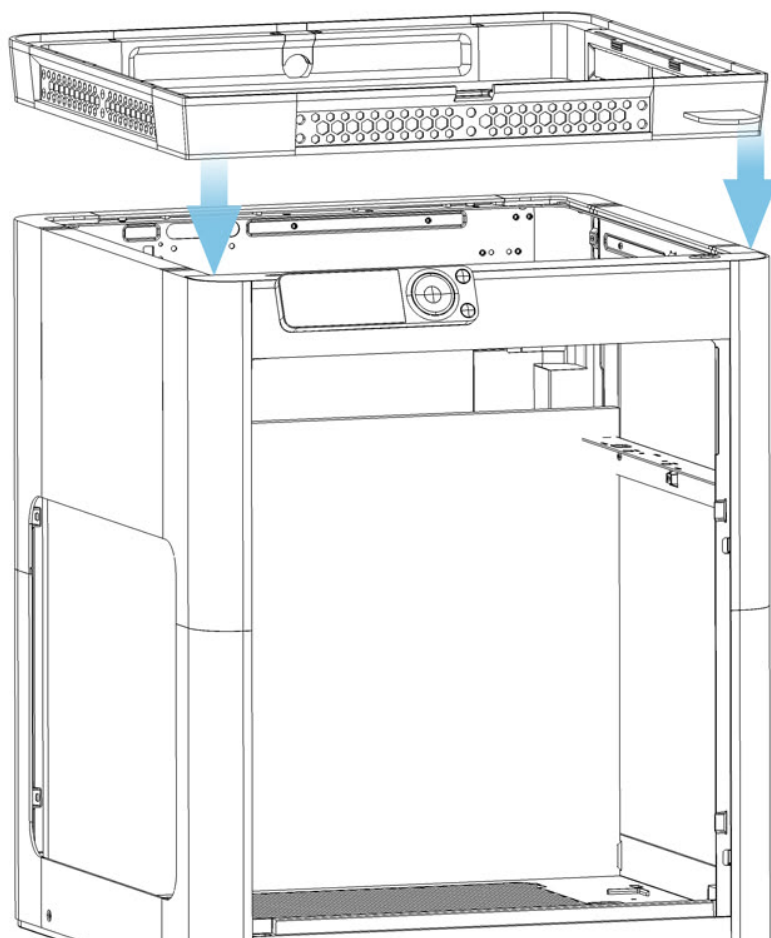
8. Remove the backing from the 2 included aluminum foil insulation pads and stick them to the bottom and right side of the left fan inside the printer to prevent the exterior from getting too hot during prolonged use.



Installation Complete!

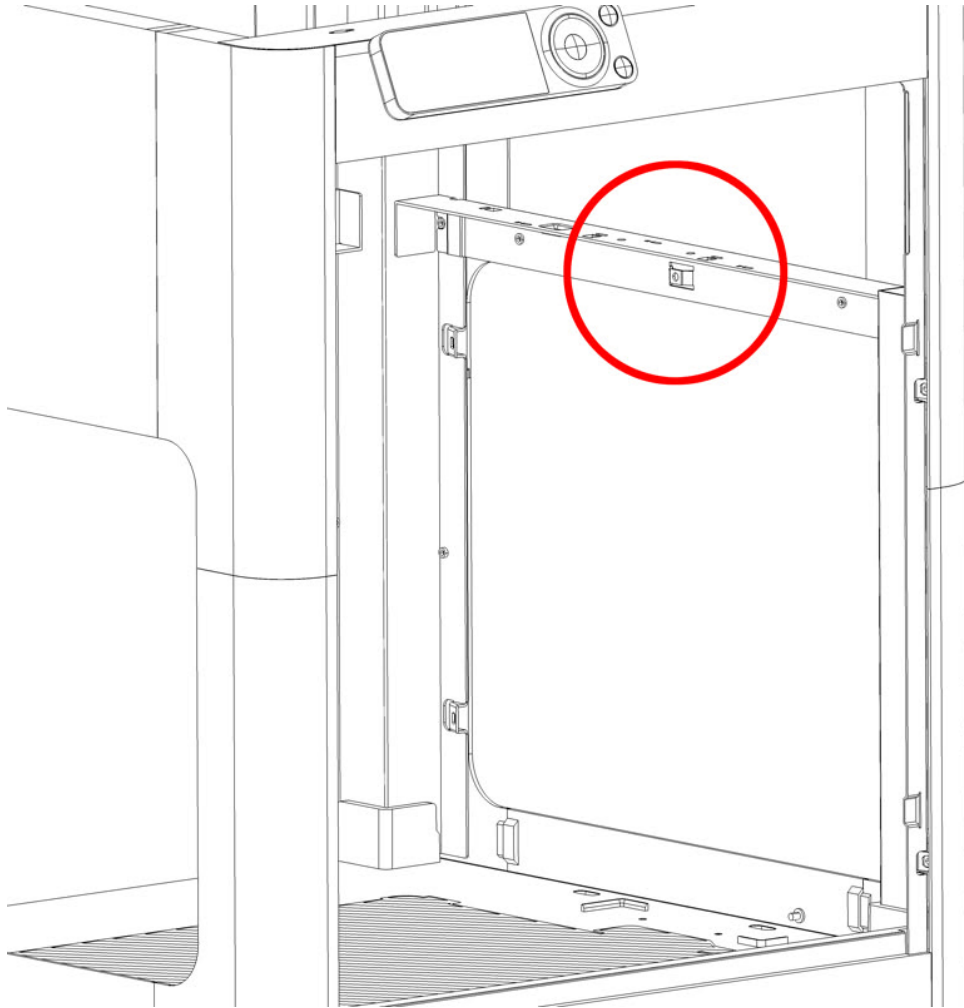
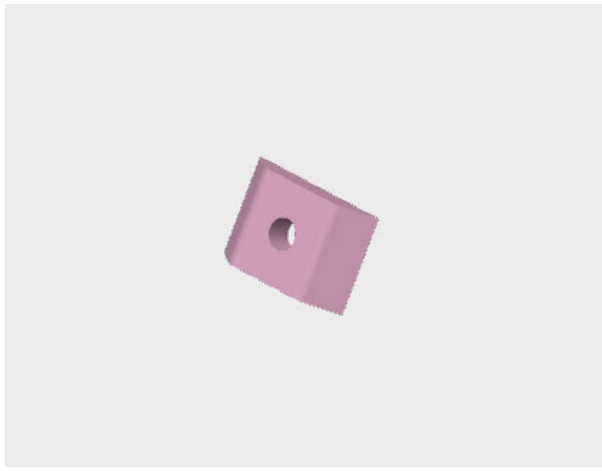
Installation Steps for X Series

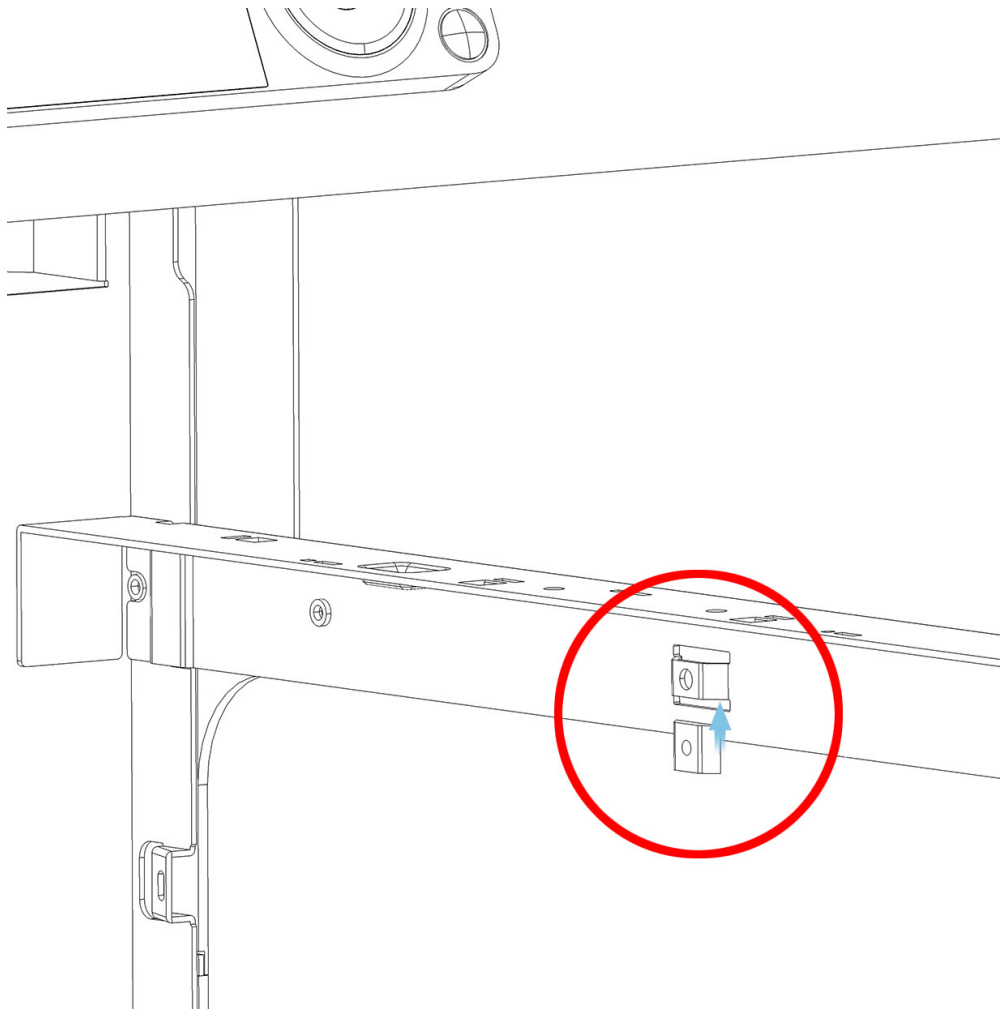
1. Remove the top glass panel and place the printed riser on the top of the printer.



2. Prepare the Mounting Insert

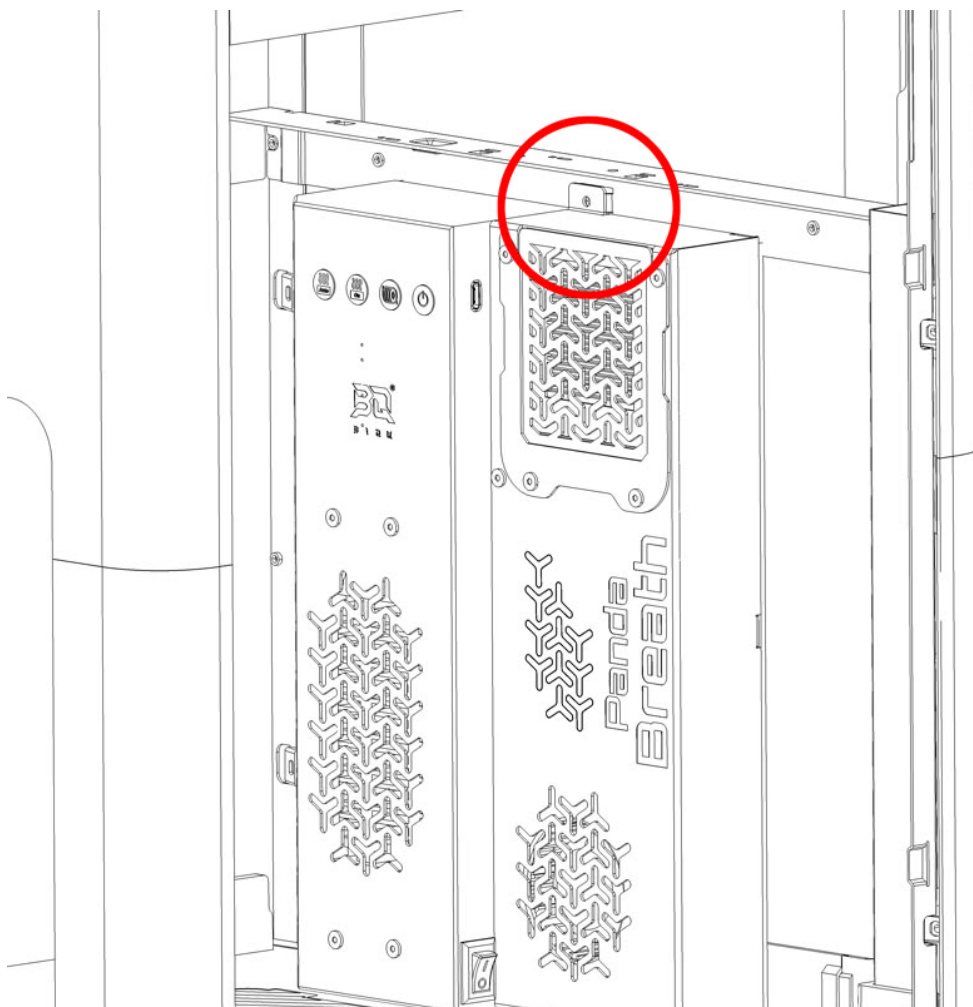
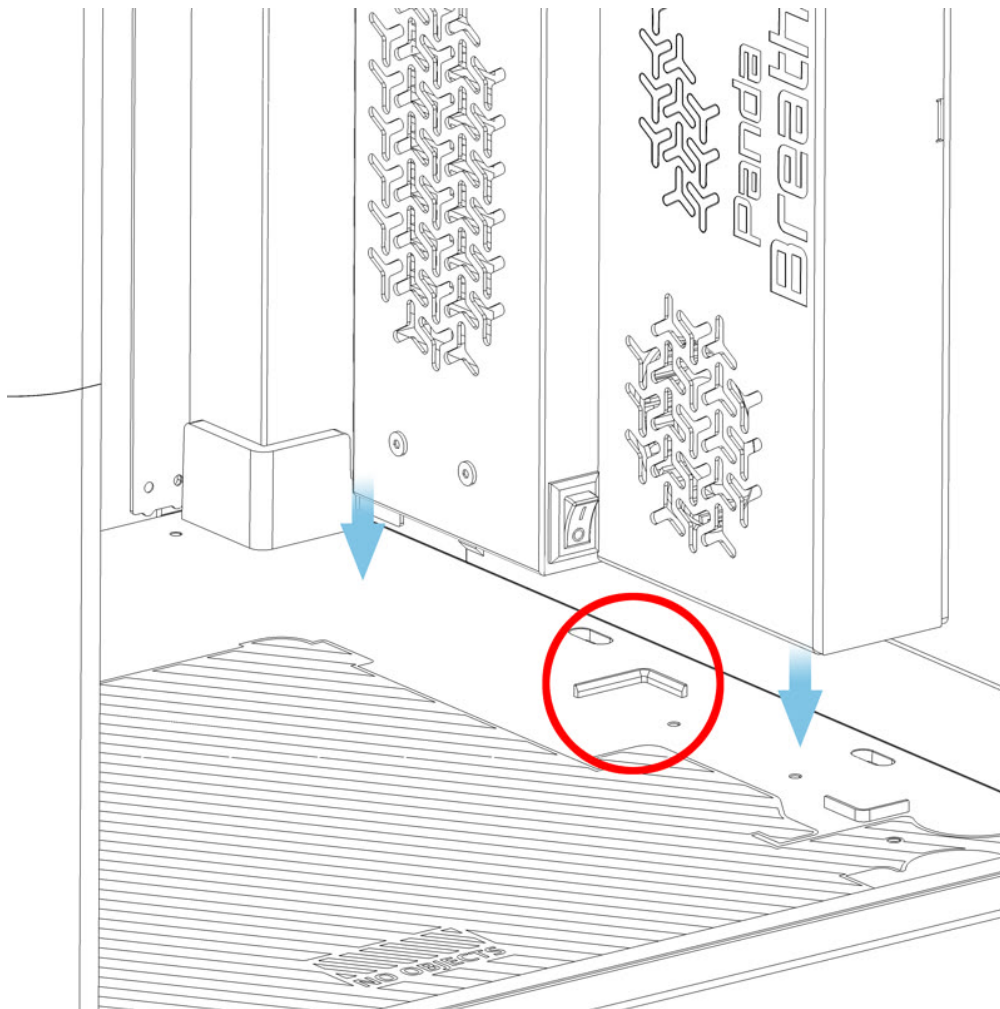
Remove the factory screw from the center of the right-side crossbar, and insert the printed part into the crossbar channel.





Early Production Units: If your X1 has factory-installed threaded posts on the right side (early batches), use the included M3×8 machine screws directly—no printed insert needed.

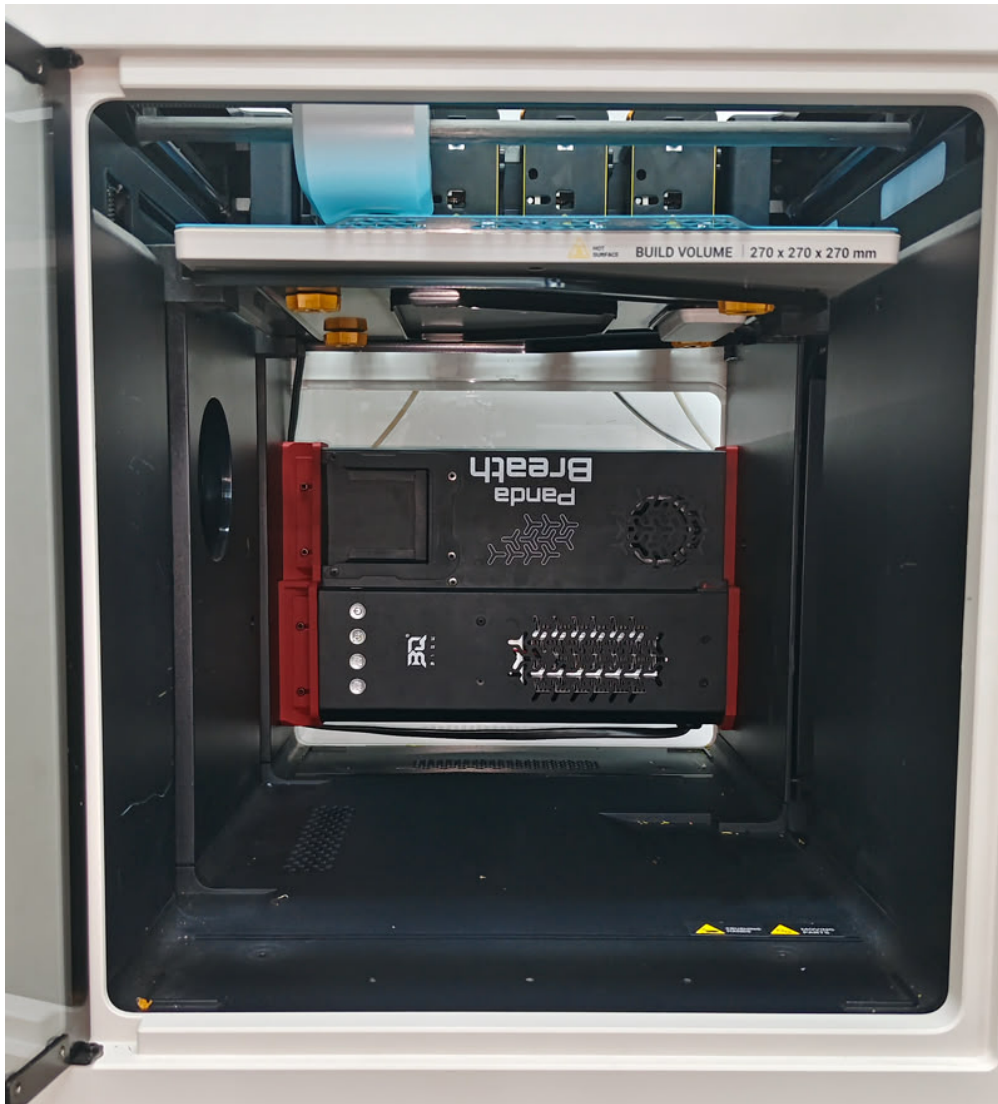
3. Align Panda Breath's bottom tabs with the alignment posts and fasten using the included self-tapping screws. Avoid over-tightening, as previously mentioned.



Remaining Steps: Follow P Series Steps 5-8 for cable management and power connection.

Installation Steps for Snapmaker U1

Final Installation View: When correctly installed, your setup should match the following illustration:

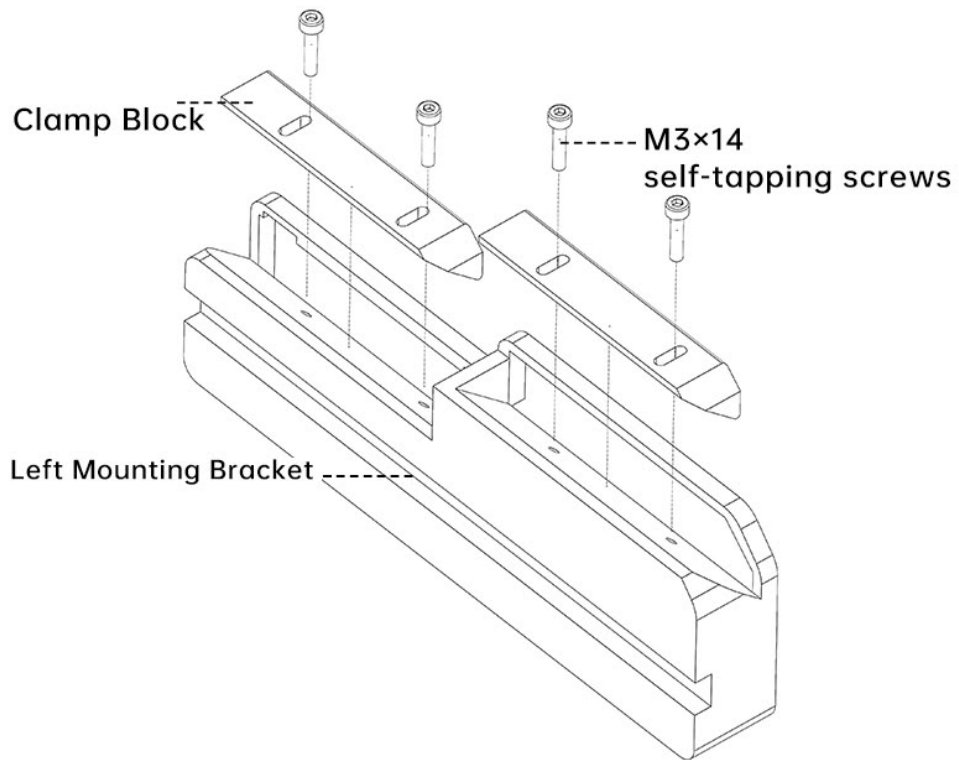


1. Prepare the Mounting Brackets

Take the two pre-printed clamp blocks.

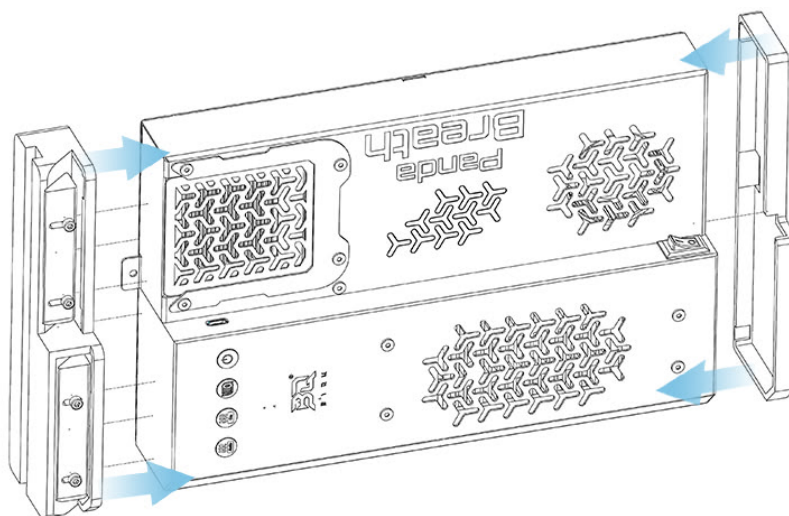
Insert an M3×14 self-tapping screw into each hole on the left mounting bracket.

Do not tighten the screws completely at this stage; leave them loose for adjustment.



2. Mount the Panda Breath Module

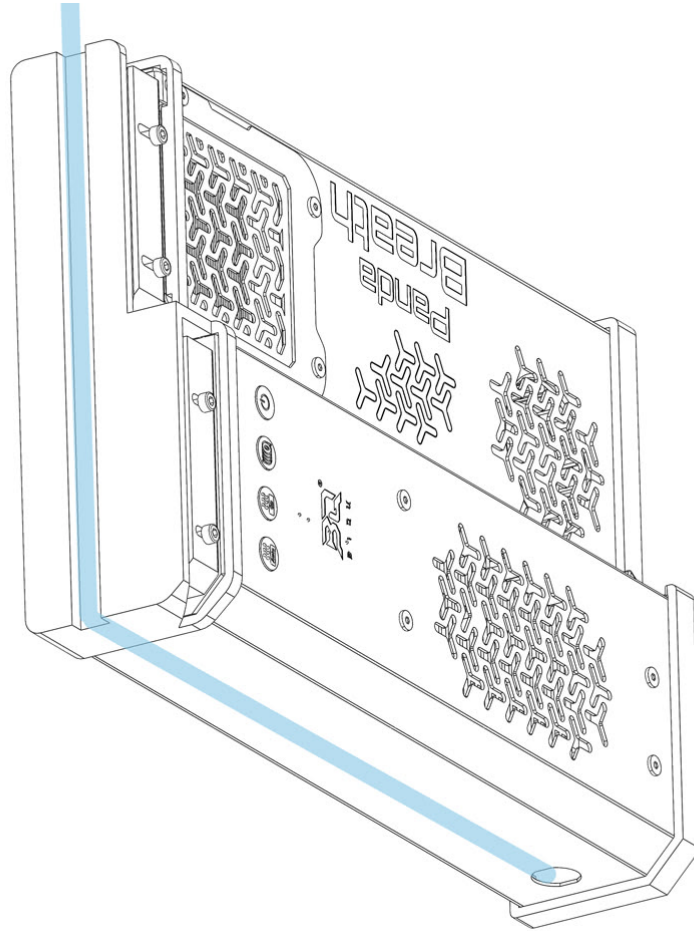
Slide the left and right mounting brackets onto the corresponding sides of the Panda Breath module.



3. Route the Cable

Guide the Panda Breath cable toward the left side of the module.

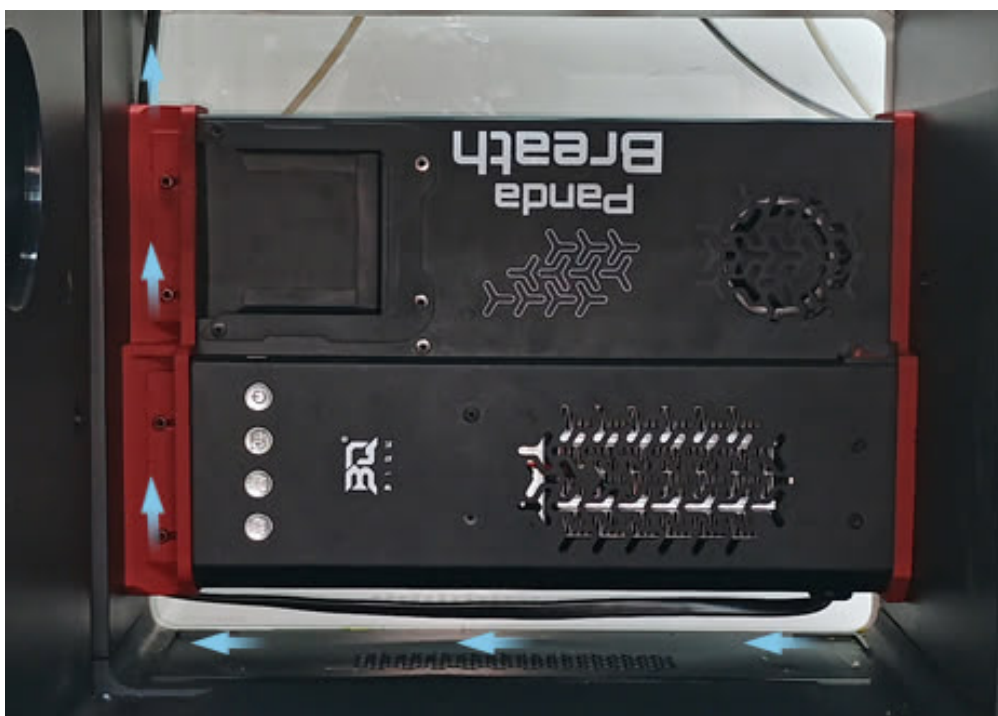
Thread the cable through the dedicated channel on the left mounting bracket.
Gently pull the cable upward and out through the top exit of the channel.

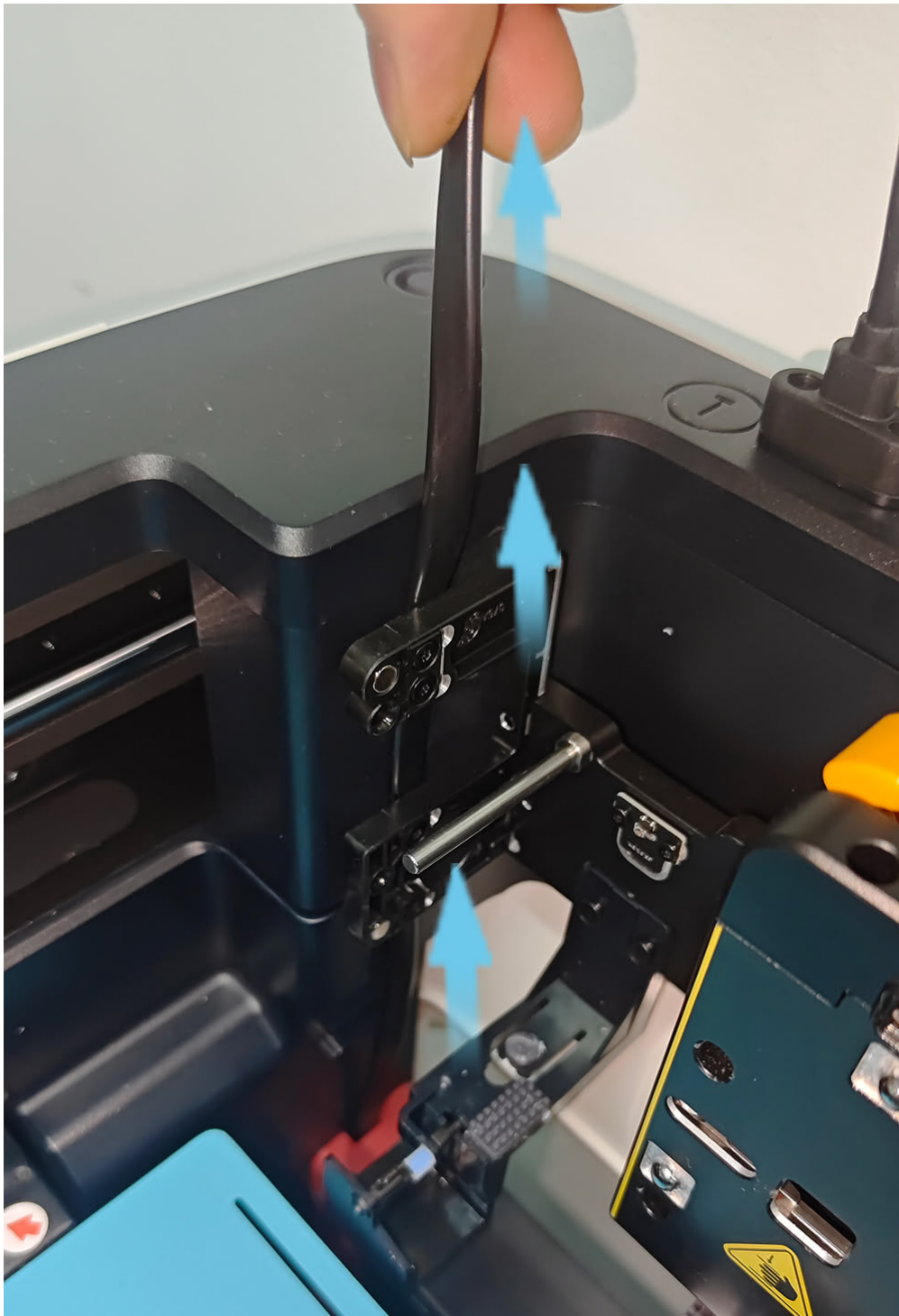


4. Position the Module

Place the Panda Breath at the very back of the Snapmaker U1 chamber, gently pressing it against the transparent rear panel.

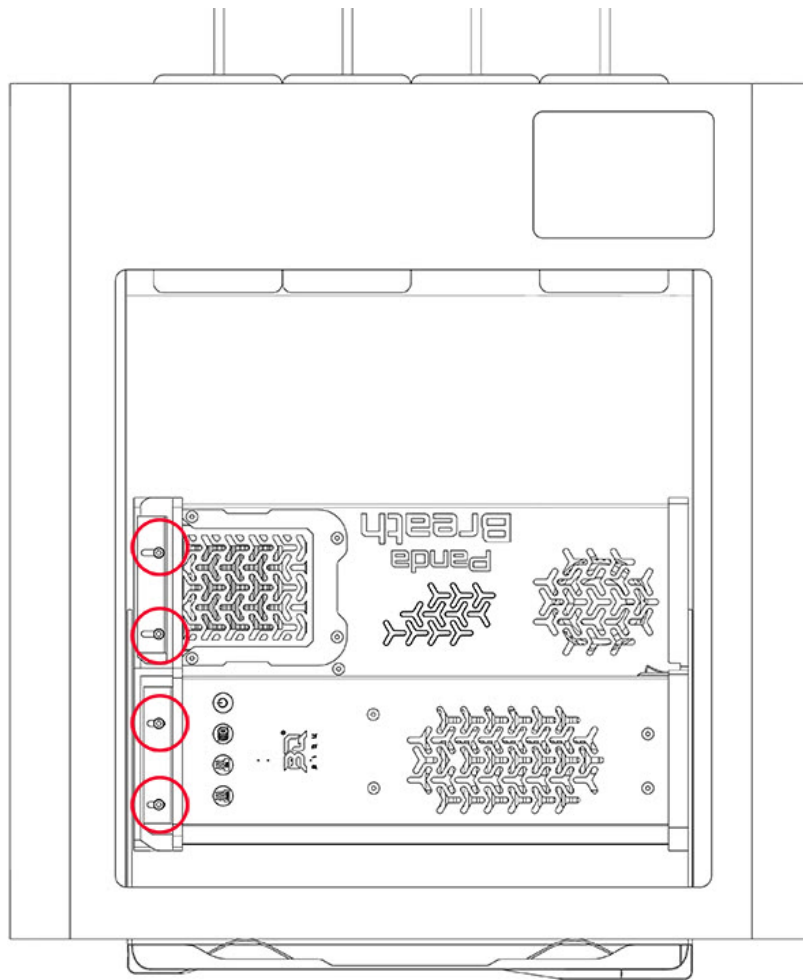
Important: Ensure the bottom of the Panda Breath is suspended—do not let it press on the cable.





5. Secure the Installation

Once the module is correctly positioned, fully tighten all four screws on the left mounting bracket to secure it in place.



Installation is now complete.

Interface and Button Functions



The image shows a black, rectangular device with a textured front panel featuring a repeating 'Y' pattern. On the top left, there are four circular indicator lights in green, orange, blue, and red. To their right is a USB Type-C port, which is circled in orange. Below the lights is a small logo. On the right side of the device, the text 'Panda Breath' is printed vertically. At the bottom right, there is a power switch with 'I' and 'O' markings, circled in red. Above the switch, there is a red text box explaining its function. At the top right, there is a label that says 'Replace filter every 3-6 months'.

USB Type-C port
for firmware update/flashing

Power Switch:
"I" = ON, "O" = OFF.

The indicator light turns on
when the power is on.



Press a mode button to switch modes; the selected button's backlight will turn on.

Example:

After power-on, the Panda Breath enters Auto Mode by default (Auto button: green).

Press On to switch to Forced On Mode (On button: yellow).

While Panda Breath is operating, the Off button backlight remains on. It turns off automatically when the device stops, indicating the operating status.

Initial Connection

After the first power-on, the Panda Breath defaults to Auto Mode, and the green indicator on the button turns on.

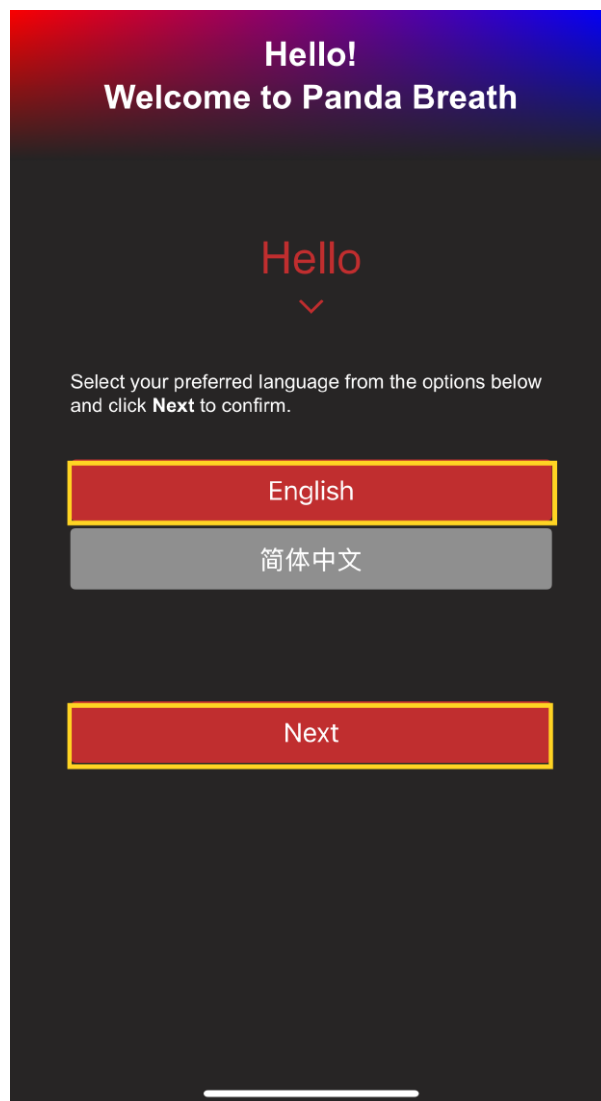
Note: Auto Mode requires the Panda Breath to be paired with a printer.

WiFi Connection Guide

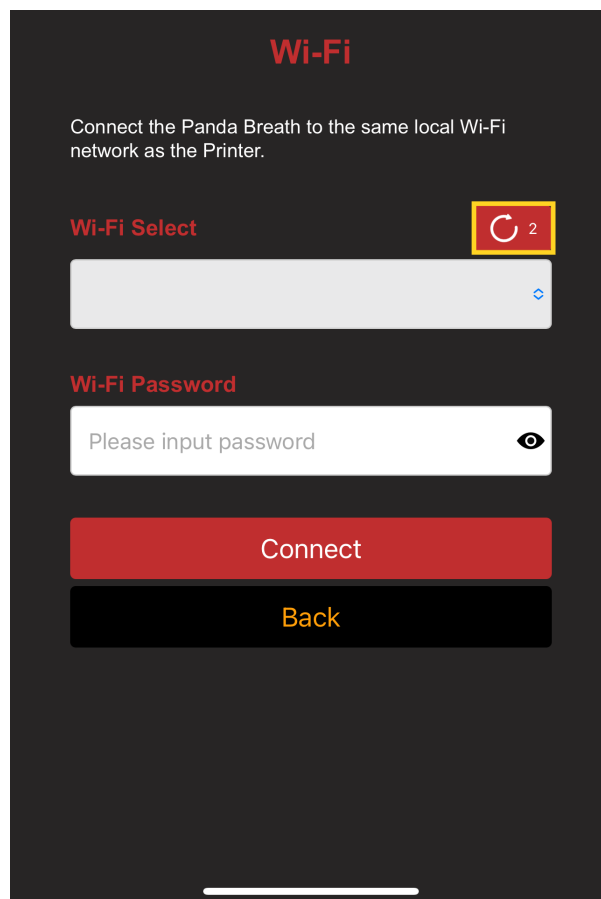
- Connecting to the Panda Breath's WiFi_AP Hotspot
 - Connect to the Panda Breath AP hotspot: `Panda_Breath_XXXXXXXXXX`. The default password is `987654321`.



- Accessing the AP Page
 - After connecting to the AP, open a browser on your computer and enter the default IP address: `192.168.254.1`. On mobile devices, the Panda_Breath Web UI will automatically appear, or you can manually enter the IP address in the browser: `192.168.254.1`. Below, the mobile version will be used as an example for explanation. The web version operates similarly. For Mobile:
- Select Language (Default: English)
 - After selecting a language, tap `Next`



- WiFi Connection Page
 - After initial setup or a factory reset, the interface will automatically scan for available Wi-Fi networks. If your network is not listed, tap Scan to refresh the list manually.

A mobile application screen with a dark background. At the top, the title "Wi-Fi" is in red. Below it, a white instruction text says "Connect the Panda Breath to the same local Wi-Fi network as the Printer." There are two red labels: "Wi-Fi Select" and "Wi-Fi Password". Under "Wi-Fi Select" is a grey dropdown menu with a blue arrow icon on the right. A yellow box highlights a refresh icon (a circular arrow) and the number "2" in the top right corner of the screen. Under "Wi-Fi Password" is a white text input field with the placeholder text "Please input password" and an eye icon on the right. At the bottom are two buttons: a red "Connect" button and a black "Back" button with yellow text.

Wi-Fi

Connect the Panda Breath to the same local Wi-Fi network as the Printer.

Wi-Fi Select

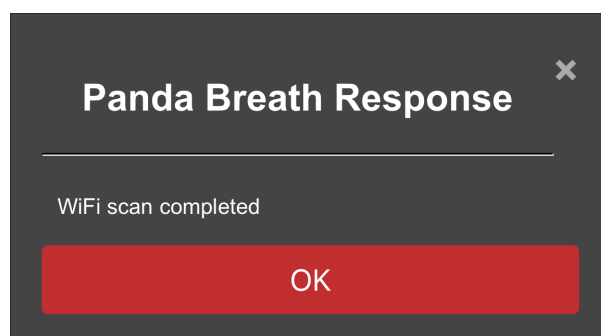
Wi-Fi Password

Please input password

Connect

Back

- A confirmation message will appear when the scan is complete.

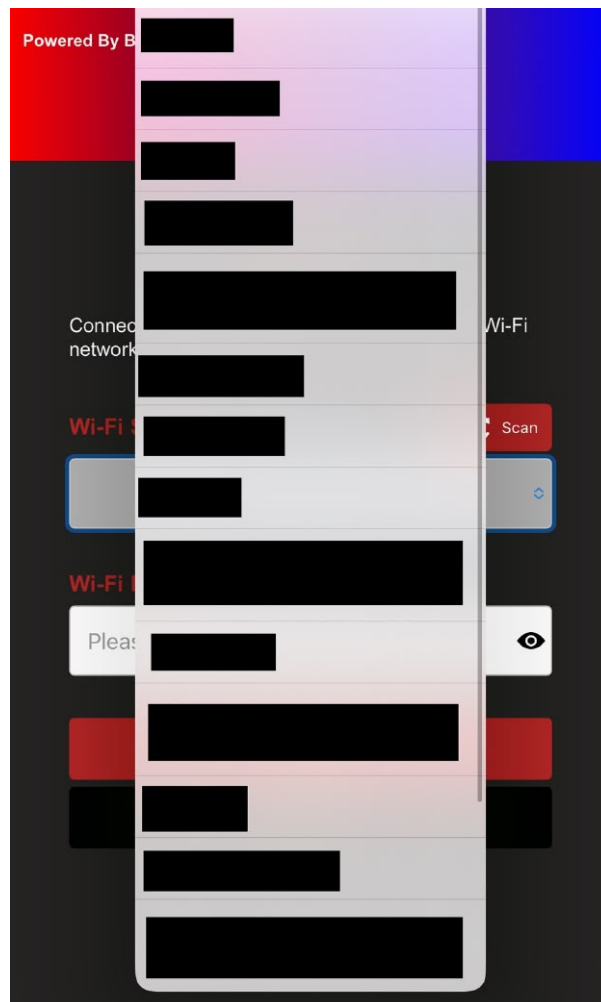
A dark grey dialog box with a close button (an 'x' icon) in the top right corner. The title "Panda Breath Response" is in white. Below the title is a horizontal line. Under the line, the text "WiFi scan completed" is in white. At the bottom is a red button with the text "OK" in white.

Panda Breath Response

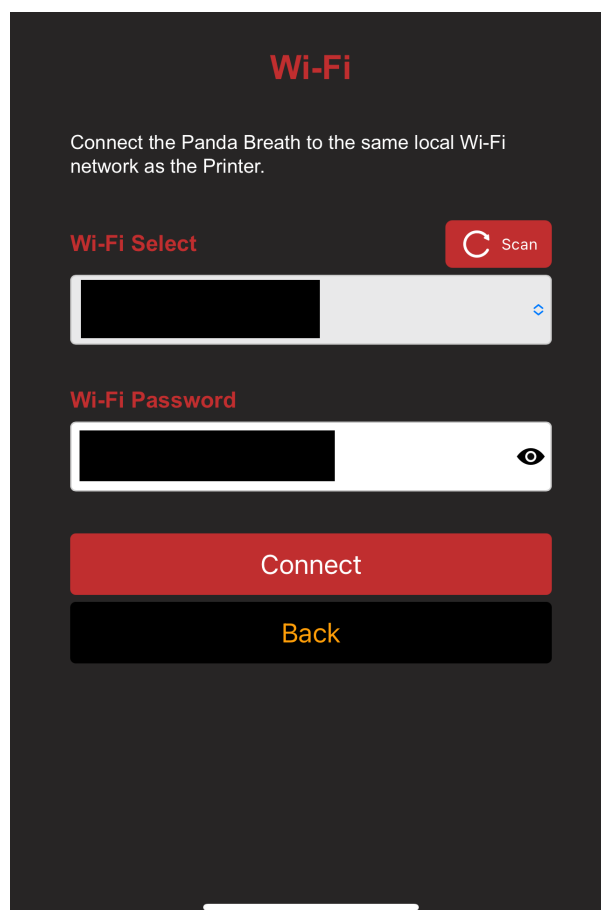
WiFi scan completed

OK

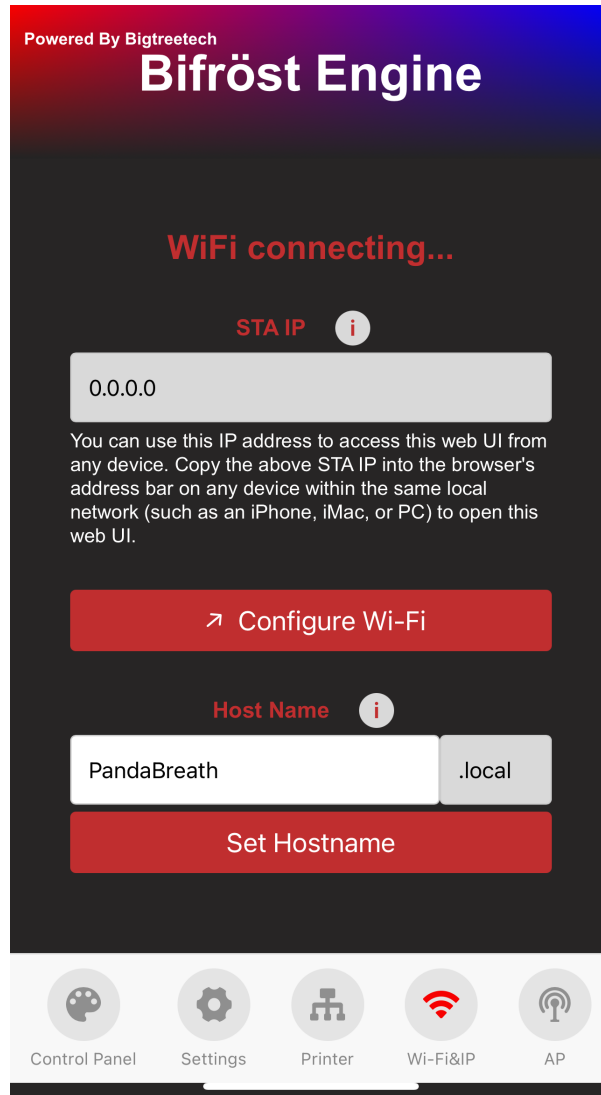
- Select the WiFi network you want to connect to.



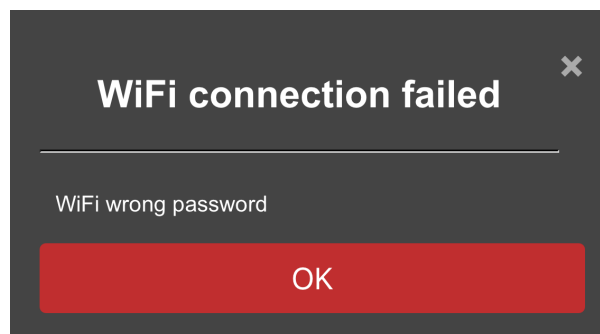
- Type your password and tap the **eye icon** if you'd like to see the password you've entered.



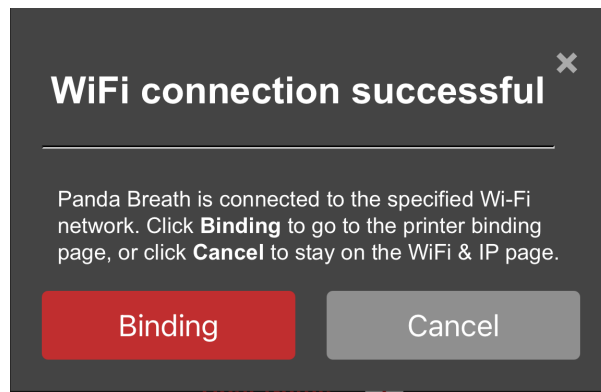
- Tap Connect. You will then see the WiFi connection page with the status `WiFi connecting...`



- Wait a moment, and a WiFi connection status pop-up will appear.
 - Connection Failed:

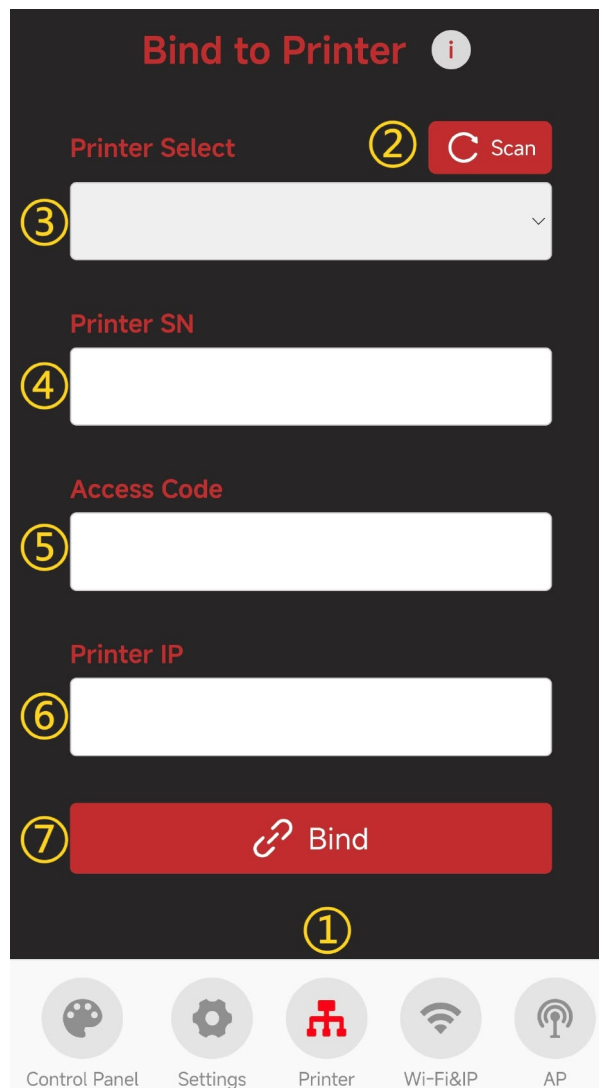


- Connection Successful: You can either [bind the printer](#) and proceed to the printer interface or tap Cancel to stay on the WiFi page.



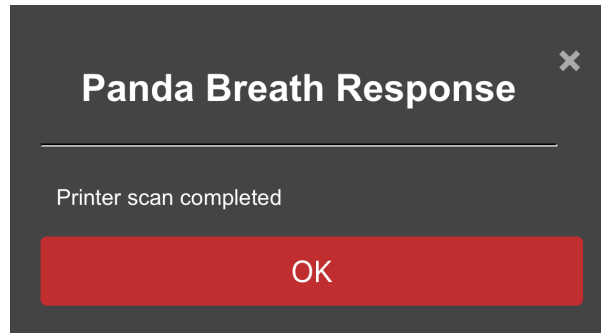
Printer Binding Page

- Features Overview

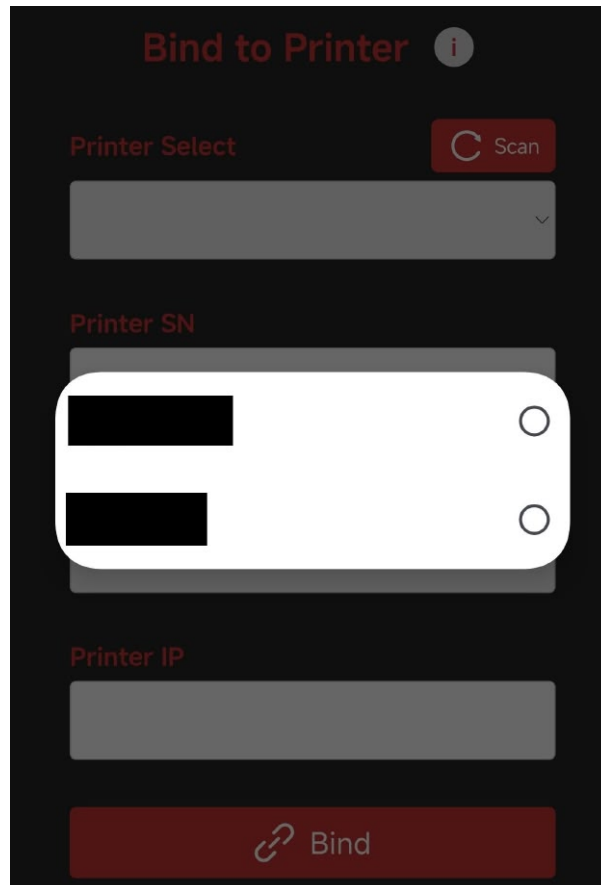


- ① Printer Page Selection: When you tap the icon, it will turn red to indicate that you are on the Printer page.
- ② Scan for Printers on the Same Local Network
- ③ Select the Detected Printer
- ④ Enter Printer's SN Code
- ⑤ Enter Printer's Access Code
- ⑥ Enter Printer's IP Address
- ⑦ Confirm to Bind This Printer
- How to Bind a Printer (Using P1P as an Example)

- Tap **Scan** button. After a short wait, a pop-up will appear confirming that the scan was successful.



- Select the printer from the list. The printer's SN code and IP address will automatically fill in.



- Enter the printer's **Access Code**
 - Find the access code in the printer's settings, enter it in the box, and tap Bind to successfully bind the printer.





绑定打印机 ⓘ

选择打印机 🔄 扫描

打印机 SN 码

打印机访问码

42749726

打印机 IP

🔗 绑定

控制面板 设置 打印机 Wi-Fi&IP AP

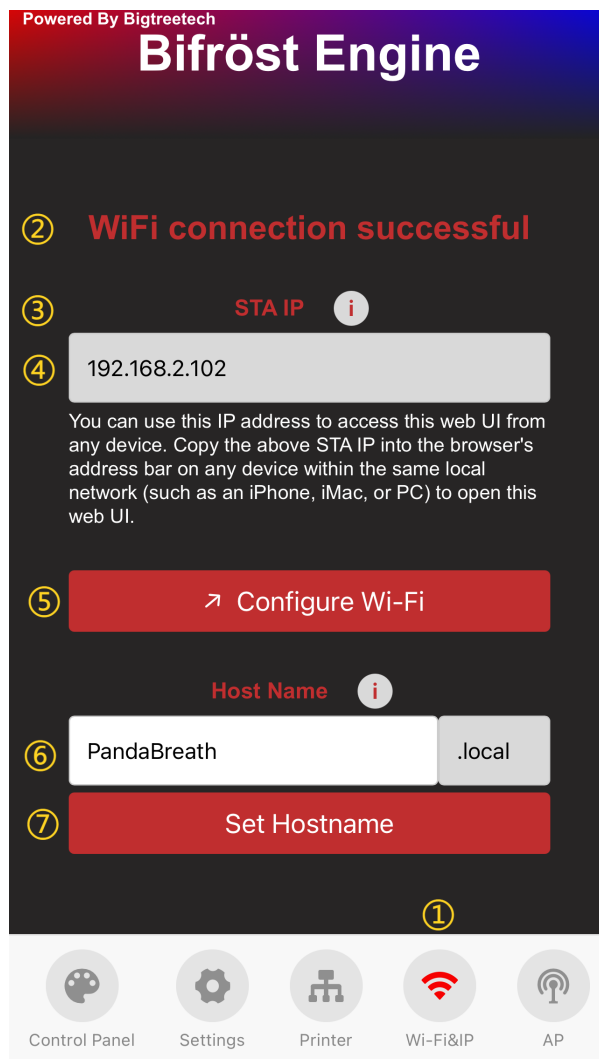
Binding successful ✕

Panda Breath has been bound to the designated printer.

OK

Introduction to Each Page

WiFi Page



- ① WiFi Page Selection: When you tap the icon, it will turn red to indicate that you are on the WiFi page.
- ② Current WiFi Connection Status
- ③ IP Address Icon: Tap the icon to display a pop-up. If the IP field is blank, ensure Panda Breath shows "Connected." If it says, "Not Connected," check your network settings.
- ④ IP Address Display: Entering this IP in your browser will take you to the Web page, as long as you're on the same local network.
- ⑤ WiFi Network Configuration Button: Tap to go to the [WiFi connection page](#)
- ⑥ Host Name: The default hostname is "PandaBreath." If you forget the IP, you can use the hostname followed by "local" in the browser (e.g., <http://PandaBreath.local>). To modify the hostname, tap the text box to edit it, then tap "Set Hostname" to confirm.
- ⑦ Confirm Hostname Modification

AP Page

Panda Breath AP

② Always ON ☒

AP Name

③ Panda_Breath_

AP Password

④

Hotspot IP ⓘ

⑤ 192.168.254.1

⑥ Confirm

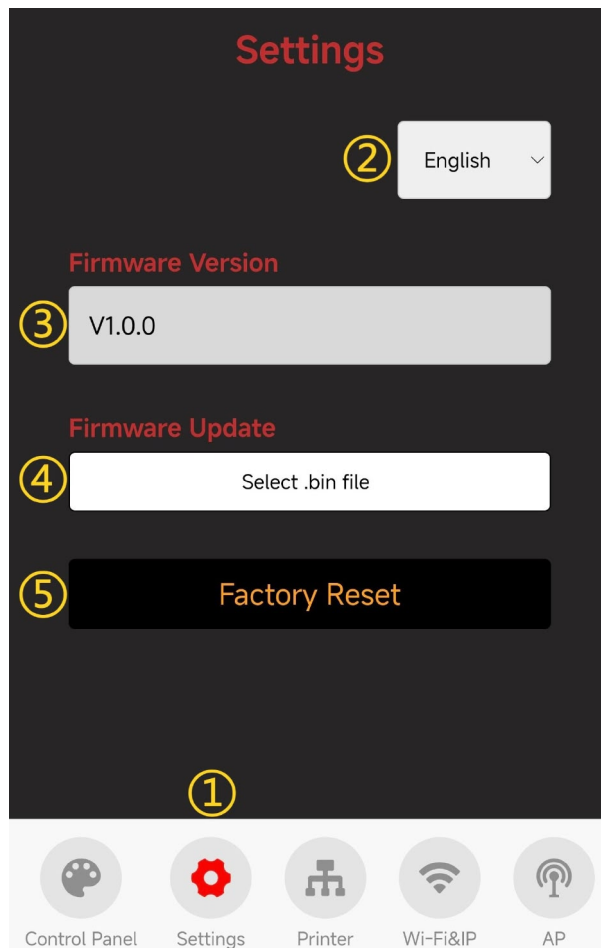
Note: if you're using AP mode to access the Web UI, turning ON\OFF the AP switch or modifying the AP name or password will disconnect you. It's best to access the Web UI using the IP address or hostname through a browser on the same local network to make these changes. Click the text box to change the AP name and password of Panda Breath. For better security, it's recommended to change the default password (987654321) to a personal one.

①

Control Panel Settings Printer Wi-Fi&IP AP

- ① AP Page Selection: When you tap the icon, it will turn red to indicate that you are on the AP page.
- ② AP Hotspot Switch
- ③ AP Name: Default is Panda_Breath_XXXXXXXXXX
- ④ AP Password: Default is 987654321
- ⑤ Hotspot IP: Default Hotspot IP is "192.168.254.1." If your router's IP range is "192.168.254.xxx," an IP conflict will prevent the device from binding to the printer. Change the Panda Breath hotspot IP to a different range.
- ⑥ Confirm Button: Tapping this button will restart the device. After the restart, you can connect to the AP hotspot. ([How to connect to the AP hotspot](#))

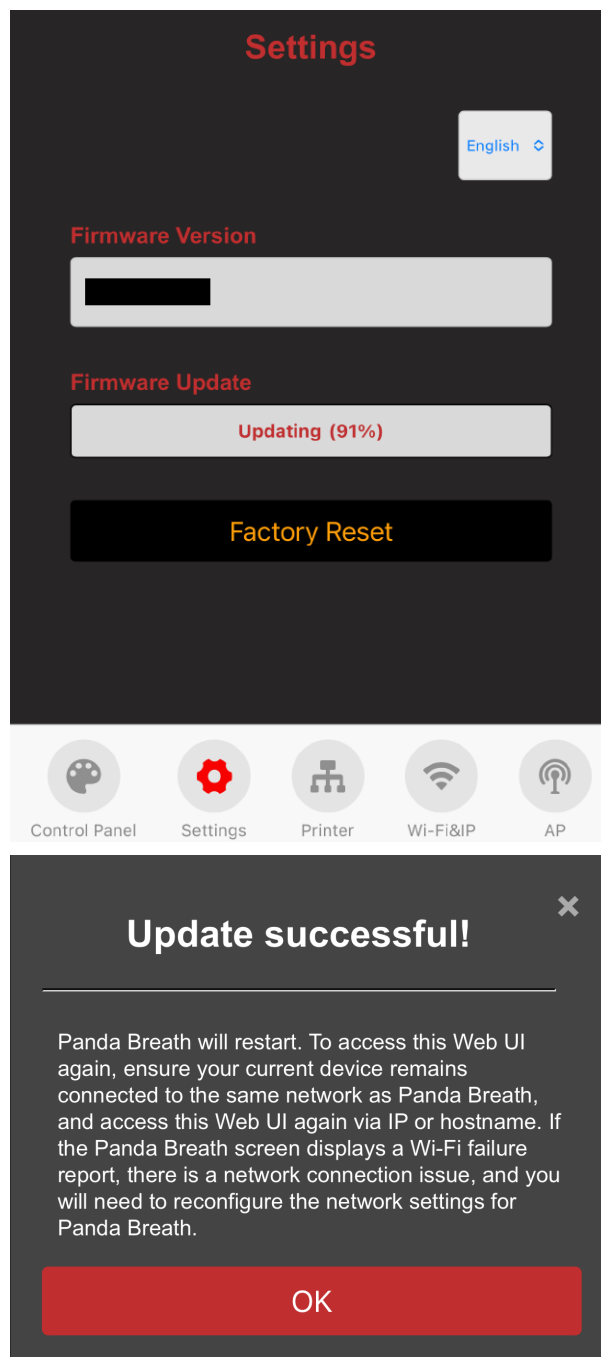
Settings Page



- ① Settings Page Selection: When you tap the icon, it will turn red to indicate that you are on the Settings page.
- ② Choose Language (Default: English)
- ③ Show Current Firmware Version
- ④ Firmware OTA Update: Select a `.bin` file for the update.
 - Tap the `select .bin File` button to choose the bin file that requires OTA.



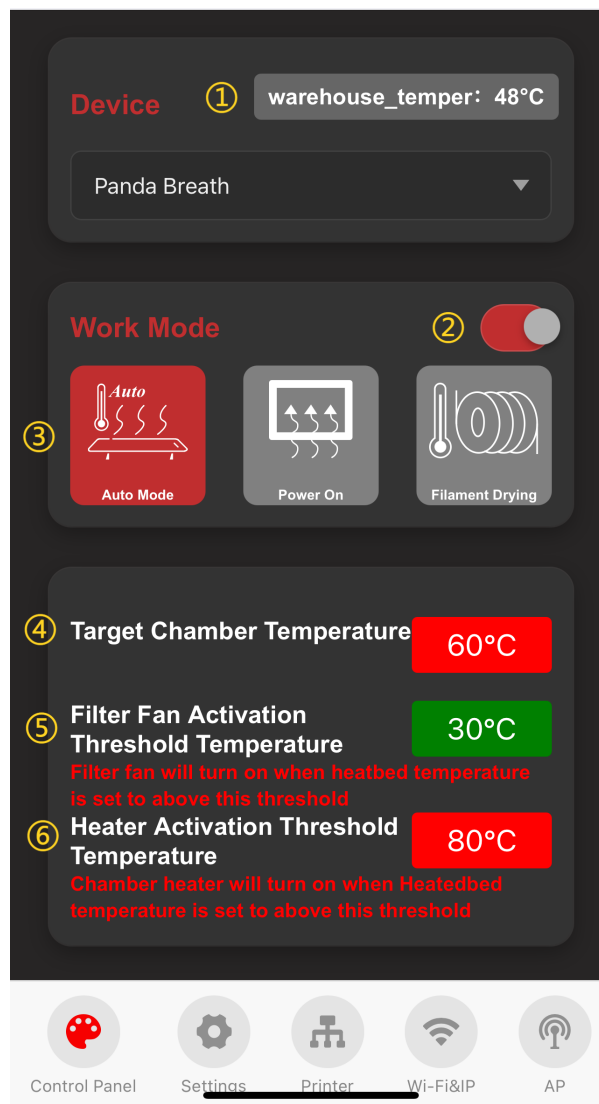
- Wait for the progress to complete. The device will automatically restart once the update is finished.



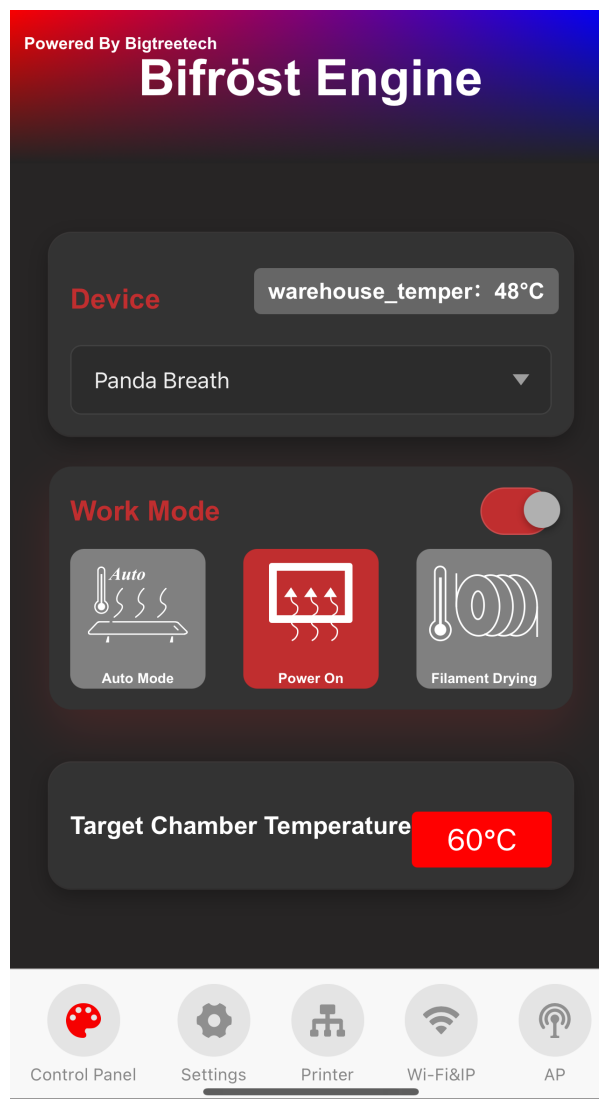
- ⑤ Tap to Confirm [Restore Factory Settings](#)

Control Page

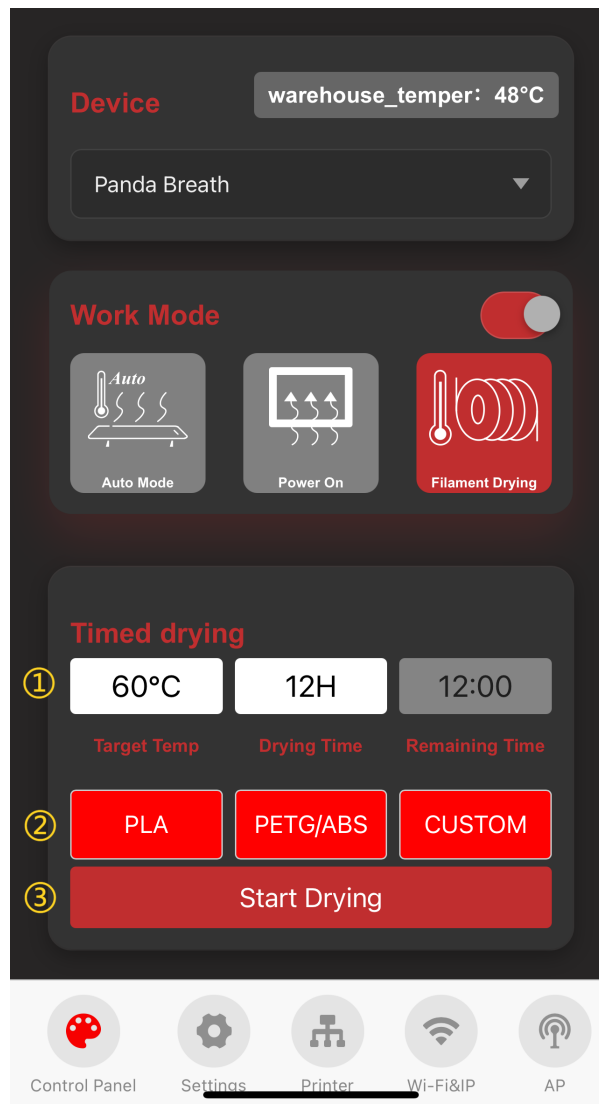
- Features Overview



- ① Real-time display of the chamber temperature.
- ② Turn the Panda Breath on or off.
- ③ Select the operation mode:
 - Auto Mode: When paired with a printer, the device follows the printer's heated bed temperature settings to perform the corresponding functions.
 - Forced-On Mode: No need to pair with a printer; the device heats directly to the set temperature.
 - Filament Drying Mode: Set a timer to dry the filament.
- Auto Mode
 - ④ Target chamber temperature.
 - ⑤ Filter fan activation temperature (when the printer's heated bed temperature exceeds this value, Panda Breath automatically turns on the filter fan).
 - ⑥ Chamber heating activation temperature (when the printer's heated bed temperature exceeds this value, Panda Breath automatically starts heating and filtration.)
- Forced On Mode



- Chamber target temperature (same value as the target temperature in Auto Mode).
- Filament Drying Mode



- ① Target chamber temperature and drying countdown timer.
- ② Quick parameter setting buttons:
 - PLA : Target temperature 60°C, drying time 12 hours.
 - PETG: Target temperature 55°C, drying time 12 hours.
 - Custom: Manually adjusted values will be saved as custom settings.
- ③ Start/Stop drying.

Firmware History

V1.0.2

- Fix the issue of incorrect self-test results of the device at certain temperatures. Fix the issue of abnormal shutdown of PTC heating device in low-temperature environment

V1.0.1

- Add a small self-calibration feature on the first heating(After restoring factory settings) to fix the issue of heating stopping due to mistakenly entering thermal protection mode

Feature Requests

If you'd like to see certain features in the upcoming firmware release, please submit a feature request on the official GitHub repository. [Feature Requests.](#)

Important Notice

Failure to follow the above instructions or any improper installation may void the product warranty and could result in damage to the product. BIQU is not liable for any damage or loss resulting from the misuse or incorrect installation of this product.

Navigation

- [BIQU Official Website](#)
- [BIGTREETECH Official Website](#)
- [Online Store](#)
- [Community Forum](#)

FCC WARNING

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

To maintain compliance with FCC's RF Exposure guidelines, This equipment should be installed and operated with minimum distance between 20cm the radiator your body: Use only the supplied antenna.