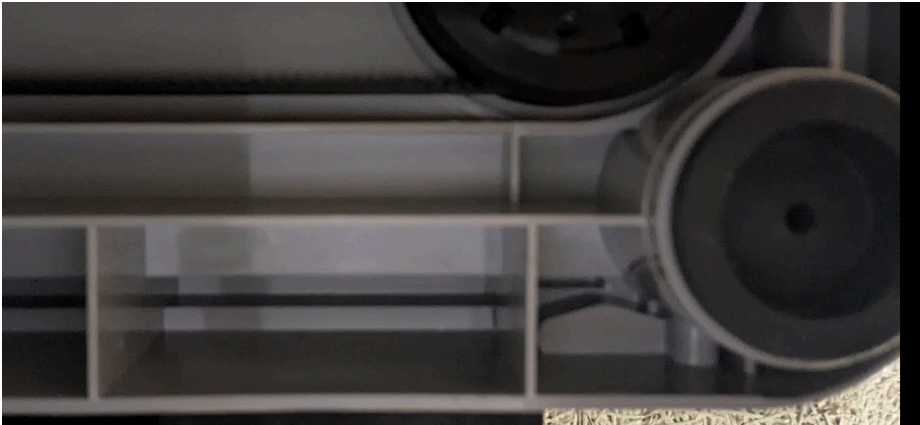# Door Opener User Manual

Last update: 25. Apr. 2025

Mechanical Installation

If you look below your Bambu X1 you'll see a structure or ribs that make the base rigid. We'll use one of the pockets between these ribs to hold the bottom part with the rail for the door opener.

All you need to do is lift your bambu, or pull it over the edge of a shelf like I did for this picture. Then push the rail part in like this (looking from below):

The upper servo holder part is attached using M3 bolts that go into the hinge of your glass door. So as a first step, you'll need to remove the two existing bolts at the lower hinge.


Don't worry, your door will not move as it's still held by the upper hinge.
Then attach the servo holder with the two provided M3 bolts in order to have it positioned like shown below. Be careful to not overtighten the bolts.
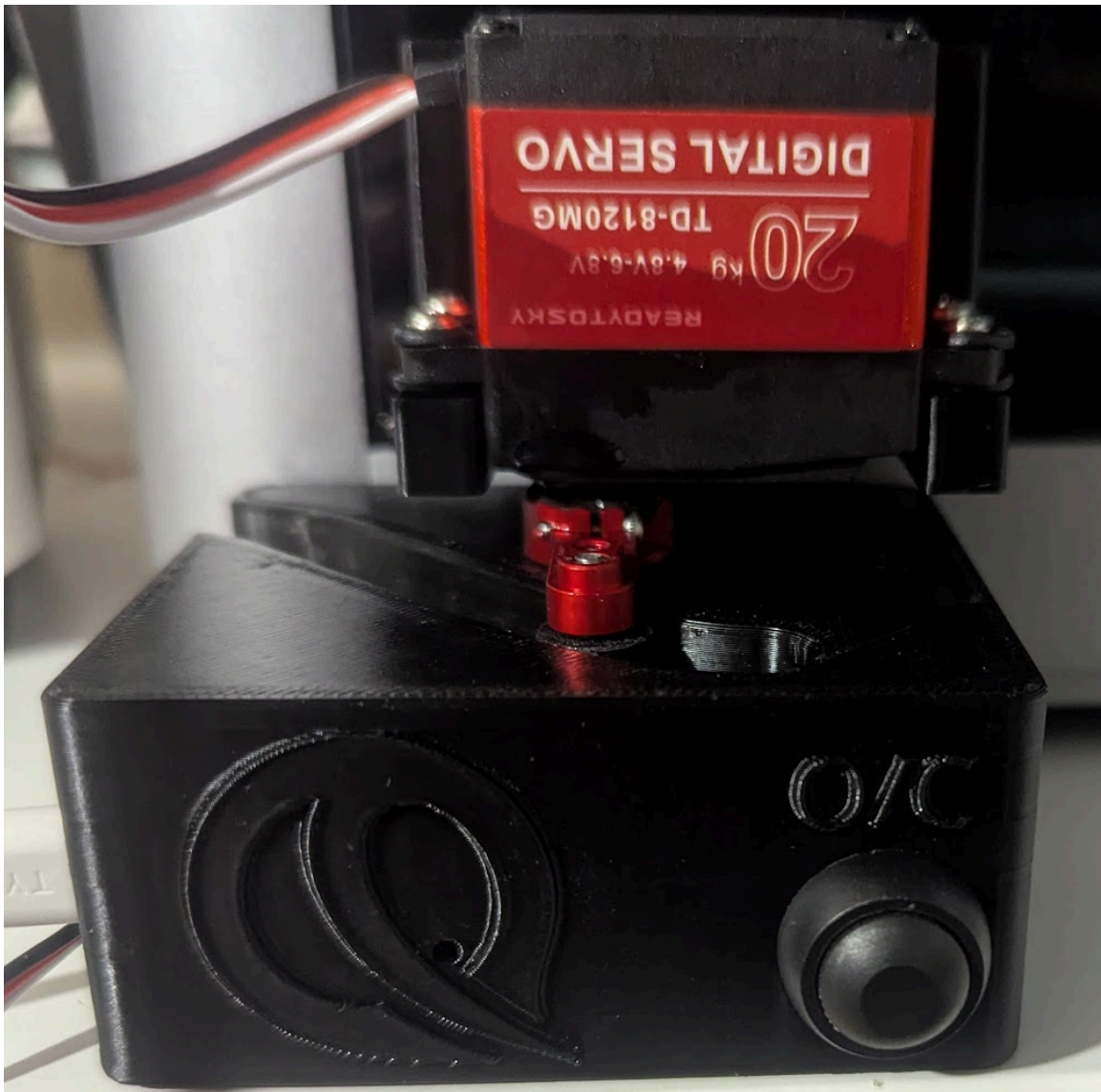
Once that is in place, you can add the servo with the pointy screws supplied. Ensure the servo is held tightly, but not more.
From the side It should look like this:
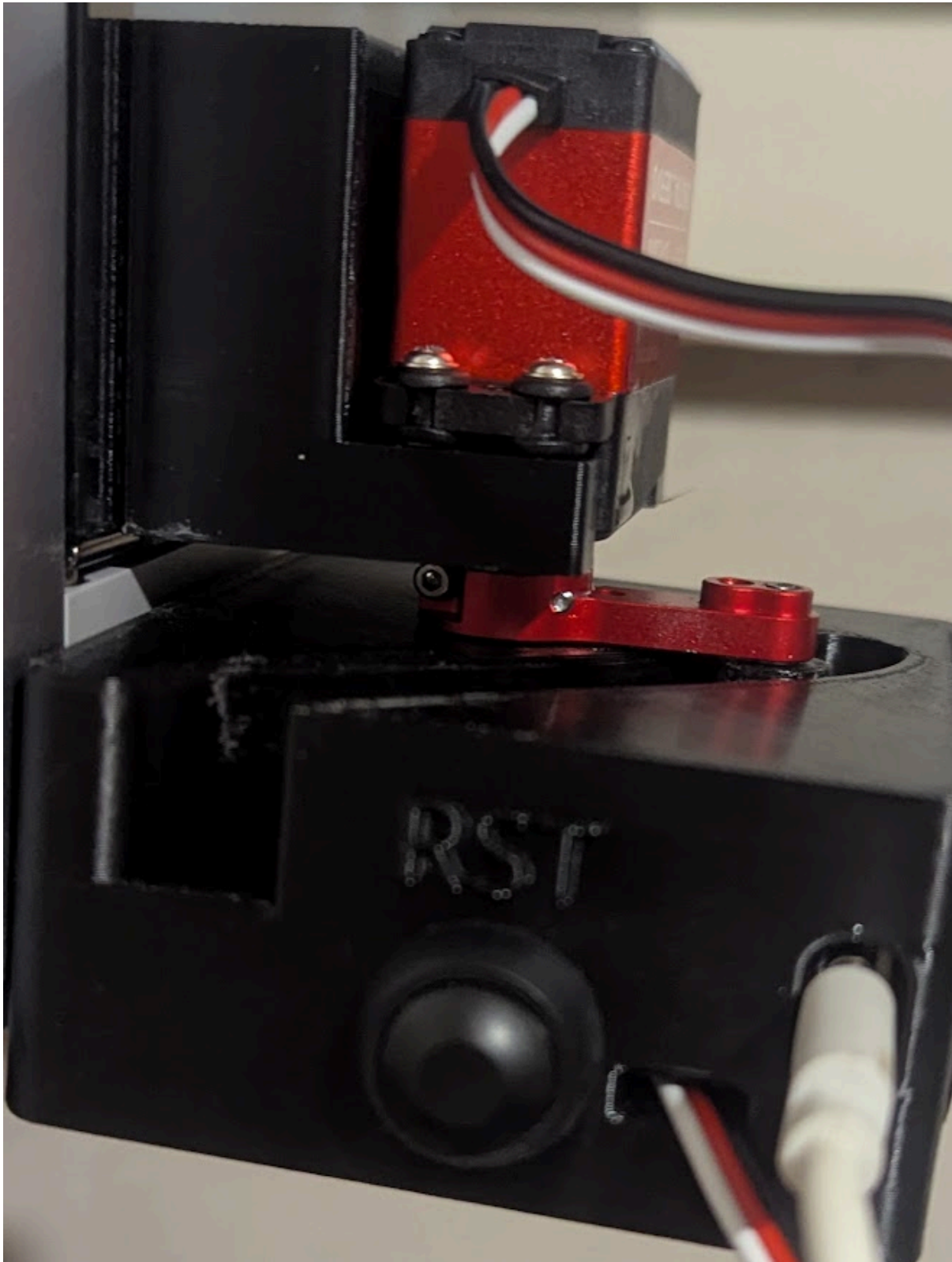
Now by default the servo should be in a closed position. If you can't assemble it due to the servo position, refer to the following chapter on calibration.

Powering up and Calibration

As soon as you connect your door opener to a n USB-C cable it will power up and create its own hotspot that you will see as "DoorOpener". "DoorOpener" is also the password to connect to that WiFi network. We recommend using a laptop or tablet to connect, but a smartphone will also work. Once connected, navigate to http://10.0.0.1 and you should see this:

Door Opener

Device name:

doorOpener

Closed Servo Angle:

220

Open Servo Angle:

20

Hub Address:

192.168.1.228

Select printer for this door opener:

Get Printers Bambu_1 ▾

Open door if printer Status is one of these:

WAITING_FOR_REMOVAL

Close door if printer Status changes to:

PRINTING

Printer Check Interval (seconds):

5

Wait Before Open (seconds):

30

Wait Before Close (seconds):

60

Printer Status:
IDLE

Door Status:
Closed

[Open] [Close] [Save Settings]

Here you can set:
Device name which you will need later to find the device in your WiFi.
Closed Servo Angle: This angle sets how far the servo moves to close the door. A higher number means a door closed further.
Open Servo Angle: This angle sets how far the servo moves to open the door. A smaller number means a door opened further.
Hub Address: Is the IP Address of your 3Dque hub controlling the printer you added the door opener to.
The rest of the settings are for the next step.

Now to calibrate the door movement, you can click on open and close and, if needed, adjust the numbers. The servo motion is programmed in a way that the servo moves back a bit after the main motion. This is to avoid having the servo under load all the time, which reduces wear and also saves energy. So at the end of the motion, after the servo moves back, the little wheel at the end of the arm should be able to rotate freely, indicating the servo is not pushing. Here is a step by step calibration procedure:

1. Click **Open**, see if the door opens far enough. It should be perpendicular to the printer but not further, to not overstretch it. The little wheel at the end of the arm should spin freely.
2. If not, adjust the **open angle** accordingly and press save settings. You can press the **open** button again to move to that position.
3. Do the same for the closed position
4. Test again for open and closed, just to be sure. If needed, start again at point 1.

Set up the connection to the 3Dque hub

First you'll need to set the **device name** and **hub address** in this dialog:

Device name:

doorOpener

Closed Servo Angle:

210

Open Servo Angle:

20

Hub Address:

enter your hub IP here

Remember the device name for later as it will be needed to find the device in your network.
For the **hub address** you need just the numbers like x.x.x.x but the software should trim it automatically,
so you can just copy paste the URL from another tab where you access your hub.
After that connect to your WiFi using the network settings, setting the device as client, like this:

Network Settings

SSID:

your network

PASSWORD:

your password

Wifi Mode: ○ Access Point   ◉ Client

Save Network Settings

And then click save. Wait about a minute and you should be able to access it by typing:
devicename.local in your browser (when connected to your WiFi, of course).

Now that your door opener is connected to the WiFi, you can adjust the last details.

Hub Address:

192.168.1.228

Select printer for this door opener:

Get Printers Bambu_1 ˅

Open door if printer Status is one of these:

WAITING_FOR_REMOVAL

Close door if printer Status changes to:

PRINTING

Printer Check Interval (seconds):

5

Wait Before Open (seconds):

30

Wait Before Close (seconds):

60

Ensure the **hub address** is correct.
The click on **get printers** and the pulldown menu next to it should fill with all the printers connected to your hub. Choose the one you have installed the door opener to. Then click **save settings**.
Within a few seconds you should see the printer status below.
The **printer check interval** defines how often the door opener will query for the printer status. It's preset to 5 seconds to avoid unnecessary network traffic.
The **open door if printer** status field is to define when the door is to be opened when the hub switches from any state to this state. The **wait before open** setting defines how long the opener waits before opening after the hub reaches that state.
The **close door if printer** status field defines when the door closes after the hub changed from any state to this one.
The **wait before close** setting defines how long the door stays open after reaching IDLE state. By then the part should be ejected and we'll close the door so it doesn't stand out.

In case you see this status:

Printer Status:

UNKNOWN response, check your settings.

Door Status:

Closed

Make sure you have selected your printer and clicked save.

In case the status indicates this:

Printer Status:

UNKNOWN invalid IP address

Door Status:

Closed

You haven't set a valid ip address for your hub.

If everything goes well, you should see:

Printer Status:

IDLE

Door Status:

Open

Or similar. This is also where you can get the printer status if you want to customize the opening behaviour.

Buttons

The door opener has two buttons, the **O/C** button on the front to open and close manually and the **RST** button on the side to reset the device to factory settings. The **O/C** button only works when you are not connected to the hub yet to ensure proper operation when connected to the hub. If connected to the hub the opener will do what the hub says every time it queries the status. So if you set that interval to a higher value like 60, you can manually open the door for 60 seconds before the hub interferes again. The **RST** button needs to be pressed for 10 seconds to reset the device .

API Specification

We have several API URLs active on the door opener:
- http://dooropener.local/getStatus will give you the current status. It returns a JSON with:
  - "readyToEject":true meaning the logic came to the conclusion that the door should be opened
  - "printerStatus":"IDLE" gives a feedback of what we received from the hub
  - "doorOpen":"1" gives the current status of the door (which will be the same as "readyToEject" after 1 second of opening time)
- http://dooropener.local/getPreferences will return all preferences as shown in the UI
- http://dooropener.local/open will open the the door and answer "Door is opening"
- http://dooropener.local/close will close the door and answer "Door is closing"

Firmware update

The firmware comes with two files. This is due to the underlying hardware, an ESP8266.
- firmware.bin with the main firmware
- littlefs.bin with the filesystem that includes the web interface

Both can easily be updated by dragging and dropping them into the web interface.

Updating the littlefs.bin will overwrite your settings, so make sure you have backuped any custom settings before doing it and you'll also have to reconnect the door opener to your wifi.

Update

Drop files here. Use littlefs.bin to update file system, firmware.bin will update the firmware.
Free Storage: 770 | Build: Apr 24 2025 08:56:03

Further issues, suggestions, feedback:

Just send me an email to alexis@innovationsatelier.ch