Beam Node Tutorial

FIBERPUNK

By Fiberpunk

parameter	description
Working voltage	4.75-5.25V
best working distance	is 5~15cm from the printing platform (the distance should not be too far)
32Mbit	default
RAM Internal	520KB + external 8MB PSRAM
Wi-Fi	802.11b/g
support interface (2Mbps)	UART, IO port
support TF card	maximum support 4G
serial port rate	Default 115200bps
antenna form	Onboard PCB antenna, gain 1.7dBi
Security	WPA/WPA2/WPA2-Enterprise/WPS
Working temperature	-20 ℃~ 70 ℃
Storage environment	-40 ℃~ 125 ℃, < 90%RH
Weight	10g

Beam Node Introduction

Node is an ESP32 based board that offers an easy and affordable way to manage and monitor your printing.
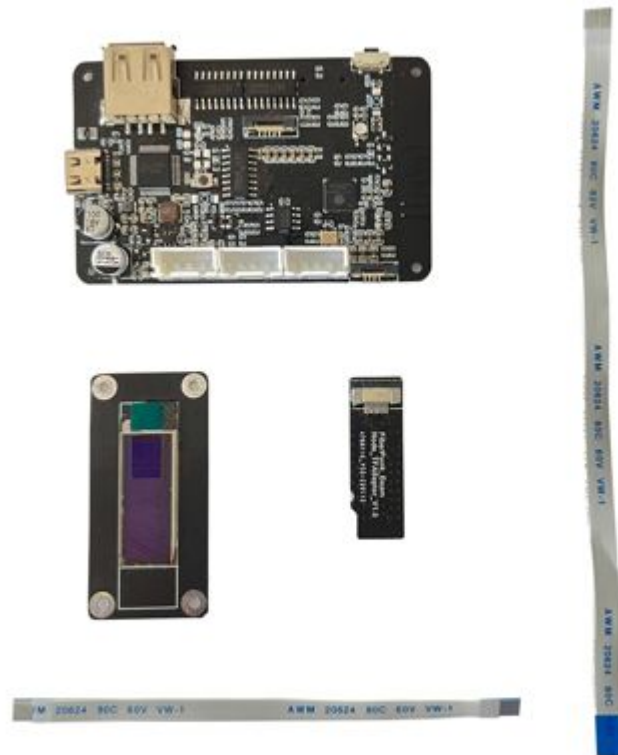
- Robust MCU design.
- Unique SDIO connector for faster and more reliable printing. Tested up to 120mm/s on Corexy and expected to go faster.
- Full set of ports for add-ons, including a filament sensor that is included in the shipment.
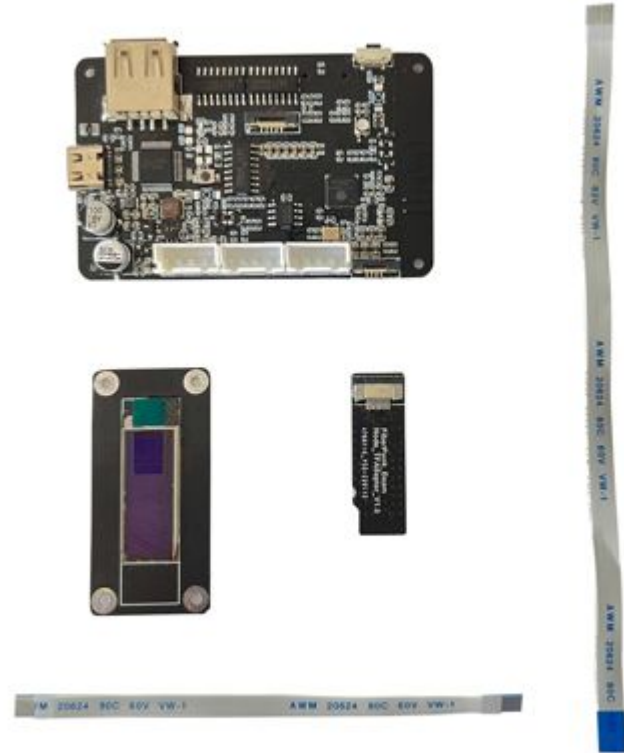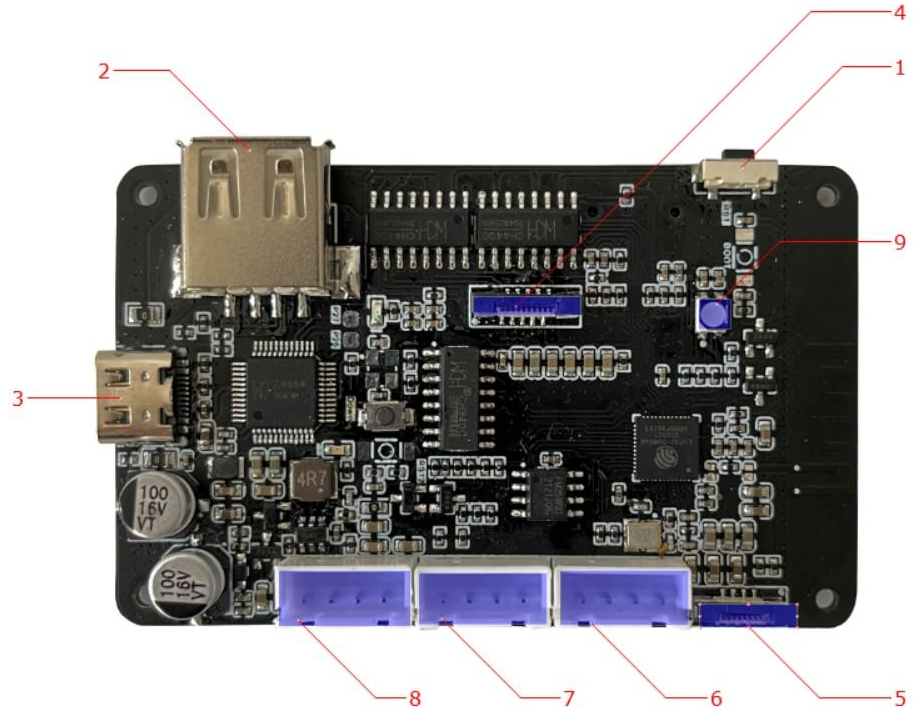
Beam Node Content

In the package you received, the following parts belong to Beam Node:

- An SD card slot.
- An OLED screen.
- Two FPC links.

Beam Node PCB layout

1. Reset button.
2. USB Host. (Printer)
3. USB-C power port.
4. SD socket slot. (FPC wiring)
5. OLED socket slot. (FPC wiring)
6. GPIO expansion port.
7. I2C expansion port.
8. UART expansion port.
9. Status light.
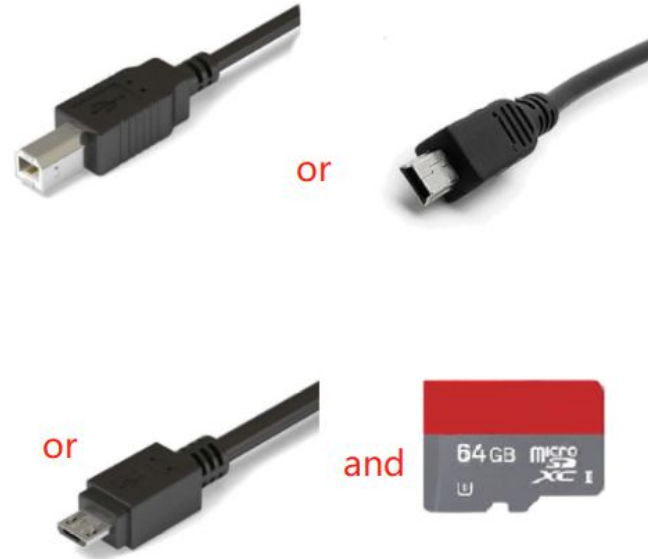
Installing OLED Screen and SD slot

Your Beam Node should come fully assembled is shown in the picture (connected when you receive it):

Prepare SD card and USB cable

1. Prepare an available Micro SD card.
2. Find a USB data cable based on your printer's USB connection. There are 3 common types, see examples in image.

Please make sure the USB Cable is data capable!

or

or   and

microSD card selection

Please use either the card we included or use a name brand microSD card from the list on the right We have found some no name microSD cards may have issues with data I/O for printing,

Download and print the Beam Node case

Because electronic components are fragile, please download and print the [Beam Node case here](#) for protection.
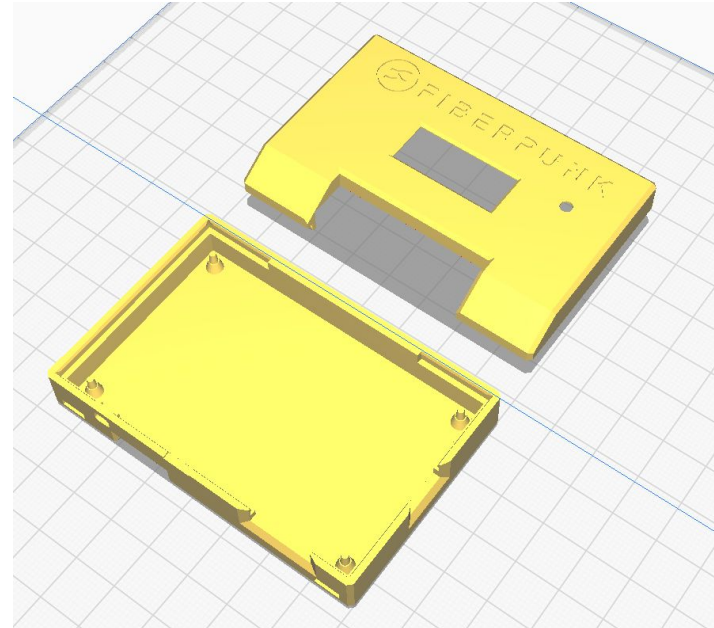
Printing Parameters:

0.4mm Nozzle/Extrusion

0.2mm Layer Height

15% Infill

3 Top/Bottom Layers

3 Perimeters

Beam Node Case

After printing the casing, fit the OLED screen and Beam Node motherboard to the printing casing as shown on the right.

Next Page has some tips for assembling the case

Case installation notices

1. The FPC cord needs to be bent; try to fold it at the end side instead of the middle position. The position selected by the red box in the right picture is the position we recommend to be folded 90 degrees.

2. The screen line will inevitably be bent; try to follow the principle of making the middle white segment without creases.

3. After installing the screen, turn on the power for the first time to see if the screen can still light up normally. It will display the Fiberpunk logo and then continue with the subsequent assembly.

4. Do not pinch the FPC wire or fray its sides.
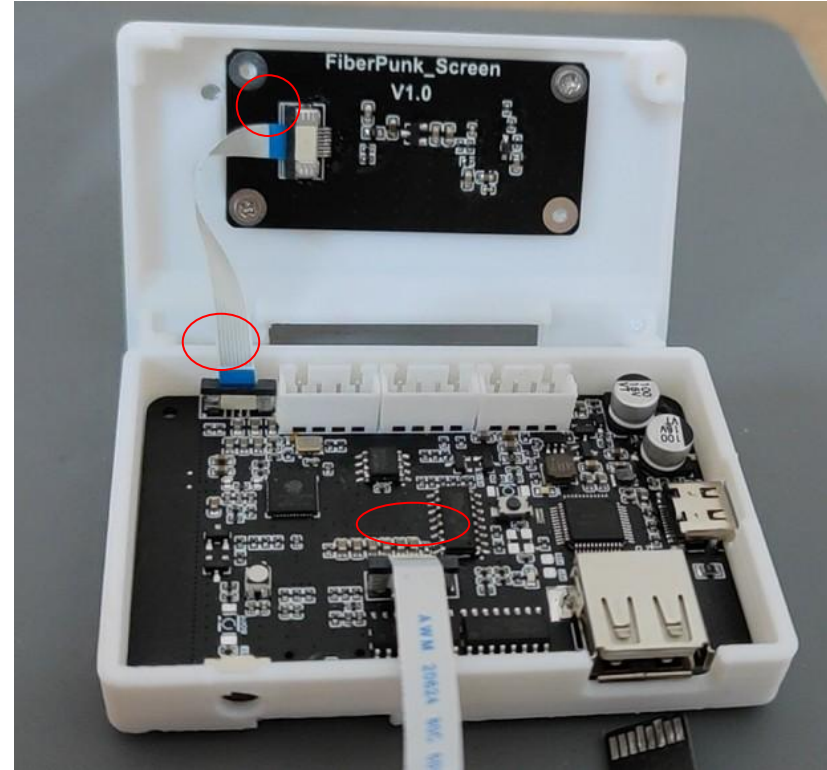
Download Node firmware and firmware update tool

After receiving Node, the first thing to do is to update the firmware to the latest version.

1. Download the latest firmware (.bin) from this link
2. Download the update tool. (Currently only supports windows)
3. And download and install the USB serial port driver. (unzip the driver file, then install it with administrator privileges)
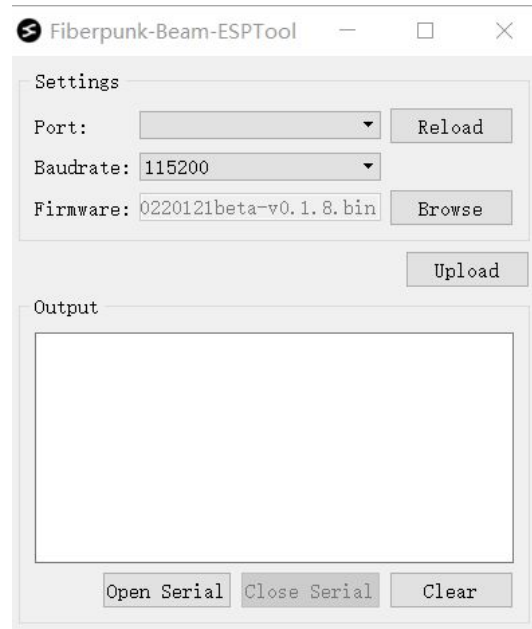
Connect Node to the computer

After downloading Node's firmware and the firmware update tool, connect Node to the computer through a USB-C data cable.
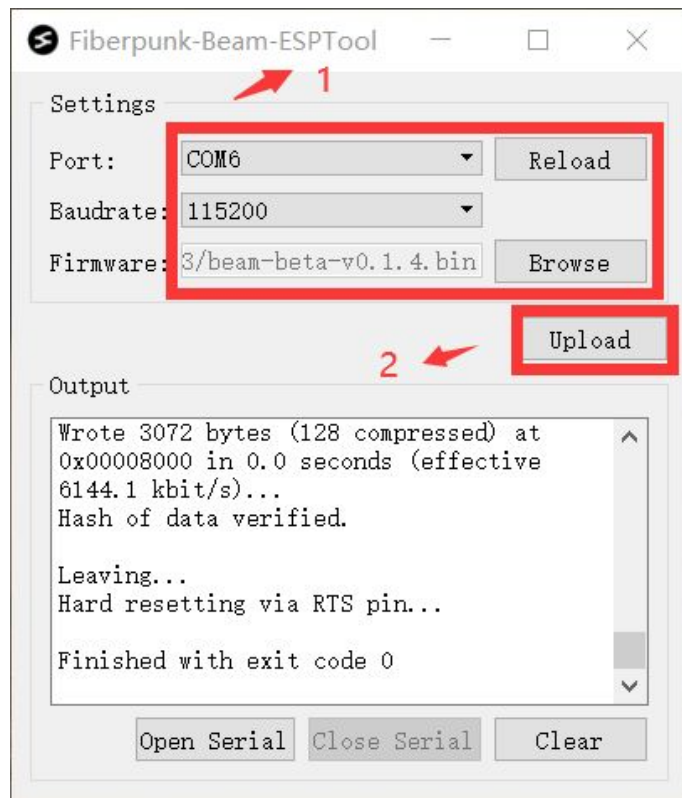
Note: Do not insert SD card into your Node module when updating firmware.
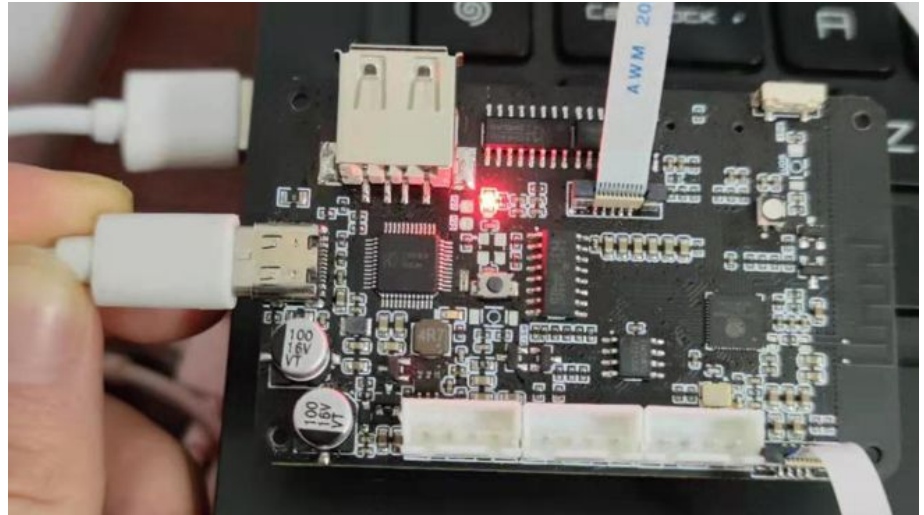
Update firmware

As shown on the right: Select the port for Node, select the latest firmware downloaded, and click "Upload"to complete the firmware update.

Seeing "Hard resetting via RTS pin…" Indicates that the firmware update was successful.

Download Beam Nexus

Please download the Windows version here

We only have a Windows version at the moment and we will add other OS later.

BeamNexus-Beta-v0.1.8

Compare ▾

🌀 **fiber-punk** released this 6 days ago · 1 commit to main since this release   🏷 Beta-v0.1.8   ⟋ 39c67e7

Beam-ESP32:

1. Added support for filament sensor
2. Modify the mechanism of ESP32 occupying the SD card, and only occupy the SD card when uploading files, printing lists and deleting files
3. Released a new shell

BeamNexus:

1. Add configuration support for material break sensor
2. Added SentryLCD related code
3. Fix display bug

▾ Assets 6

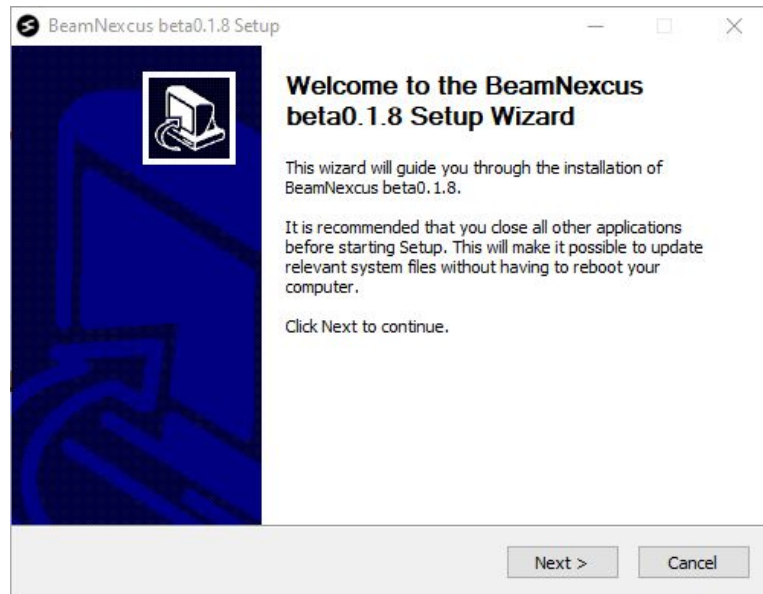|	
⬡ BeamNexus-beta0.1.8.exe	342 MB
⬡ beamnode-20220121beta-v0.1.8.bin	862 KB
⬡ Node.3D.Step.rar	15 MB
⬡ shell-stl.zip	110 KB
▤ Source code (zip)	
▤ Source code (tar.gz)	

Install Beam Nexus

Double click on the downloaded installer

BeamNexus-beta0.1.8.exe

You may receive warning about unknown publisher, please accept. And soon you will see the screen on the right.

Install Beam Nexus

Note: Beam Nexus currently only supports Windows versions

Note: When running Beam Nexus for set up, please run it with administrator privileges as SD card write access is required.

Right click on the BeamNexus icon and select "Run as administrator"
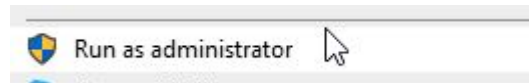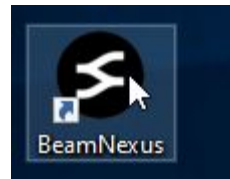
Prepare Micro SD Card for WiFi Settings

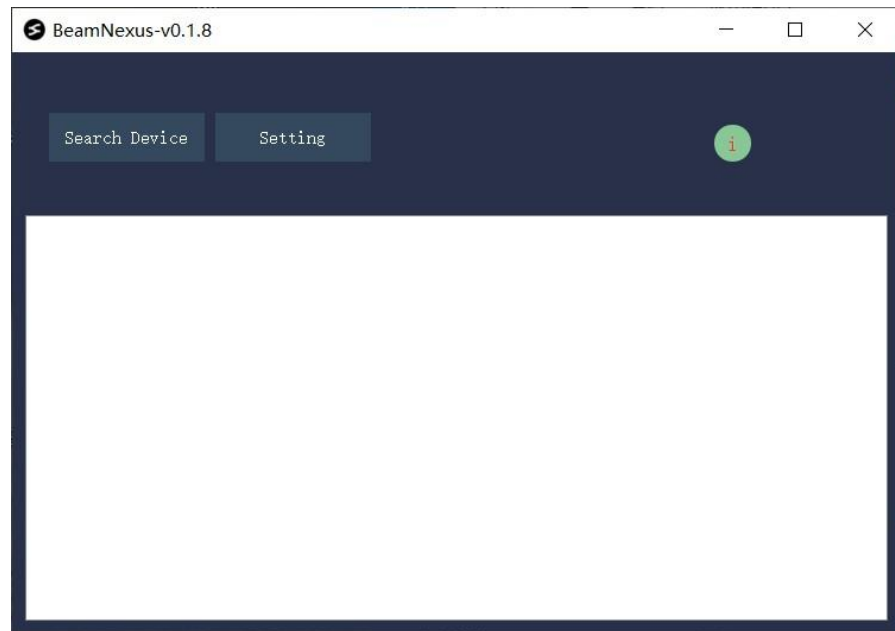Please connect your MicroSD Card to your computer, either via card reader or card slot

Setting up Wifi via SD card.

After Micro SD is loaded in Windows as a drive, Open Beam Nexus and Click "Setting" Button.

Setting

BeamNexus-v0.1.8

Search Device   Setting
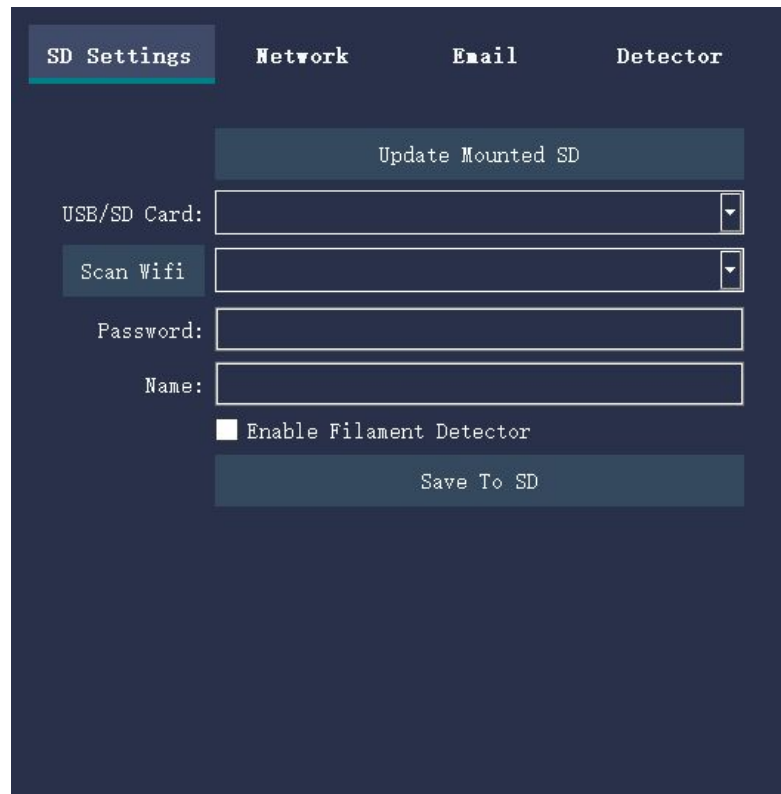
WiFi Setting

After clicking, the window shown on the right will pop up. You need to fill in your WiFI SSID and password here, as well as a name for your Beam Node module (Please keep device name unique for each Node in the same local area network).

Note 1: If your computer does not have a wifi module, Scan Wifi will fail and prompt you to enter your router's ssid name manually. If your wired network and wifi are under the same router, the Beam Node can still be accessed.
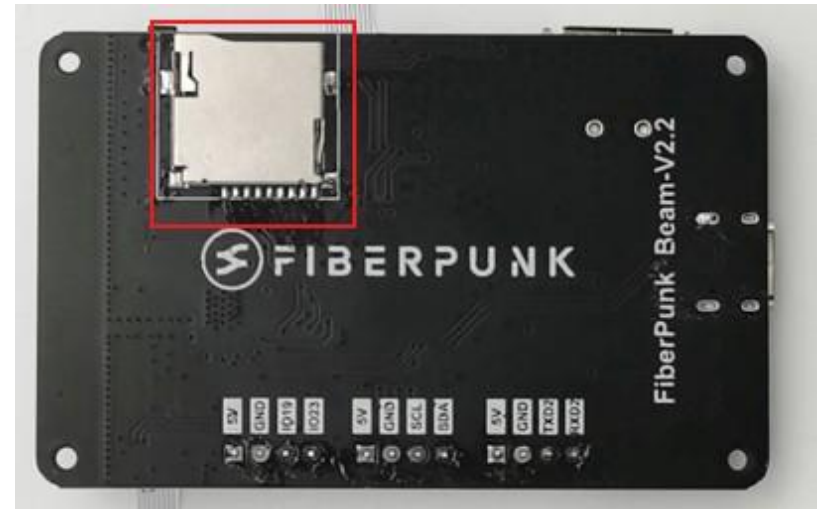
Install Micro SD card,

After filling in the information described above, click Save To SD to save the relevant configuration file to the SD card. Remove the SD card, then insert the SD card into the Beam Node module as shown in the figure below, push it slightly, and feel the spring rebound, indicating that the SD card is inserted tightly.

Connecting Beam Node to the Printer SD Slow

There are two small modules connected on Node. The smaller end is the SD Bridge. This goes into the printer's micro SD card slot.

This enables higher data transfer rate which is important for faster print speed, especially on coreXY machines.
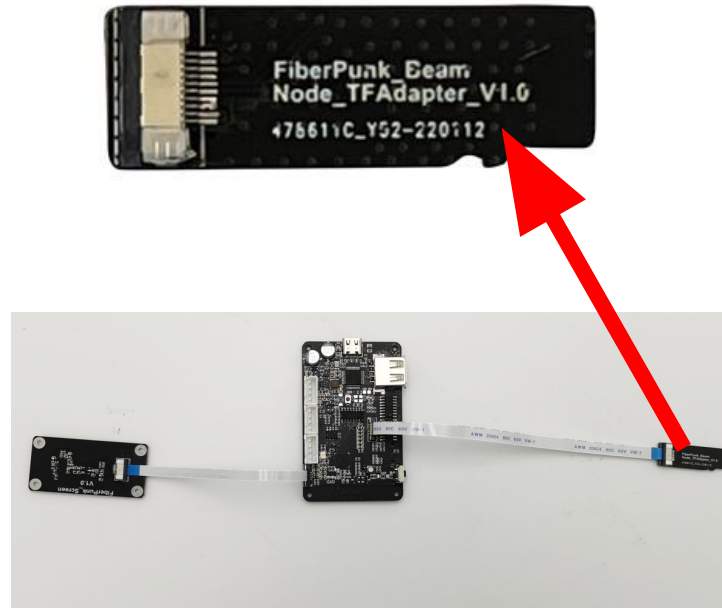
Connecting Beam Node to Printer's USB-Serial

See the circled connection. Many printers have their serial connection linked to a USB port. You must connect Node's USB port to the printers serial to USB port using the USB data Cable.

This connection is for Node communication with the printer and sending adhoc Gcode commands to printer board. Node does not use a serial connection to send gcode print files.
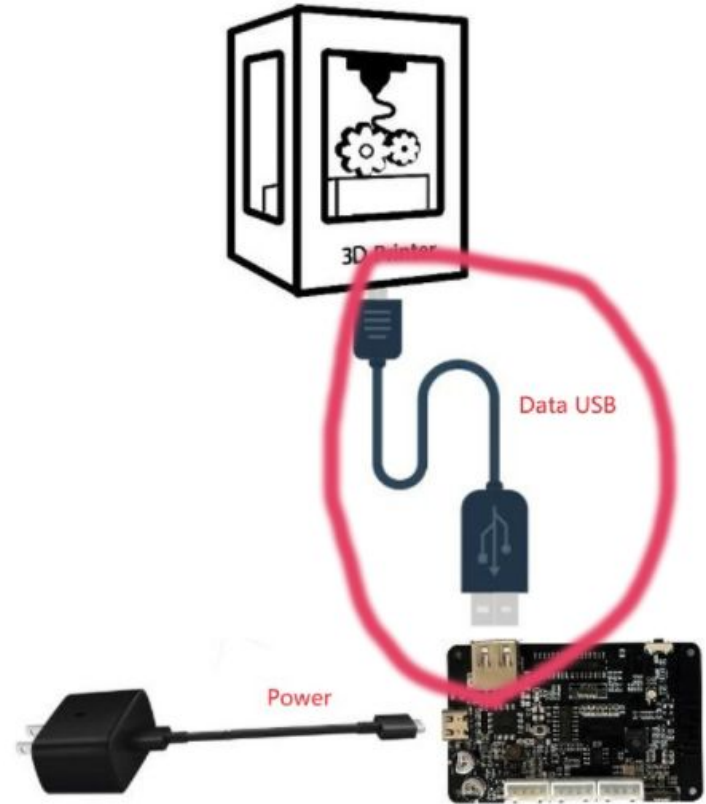
Connecting Beam Node to Power

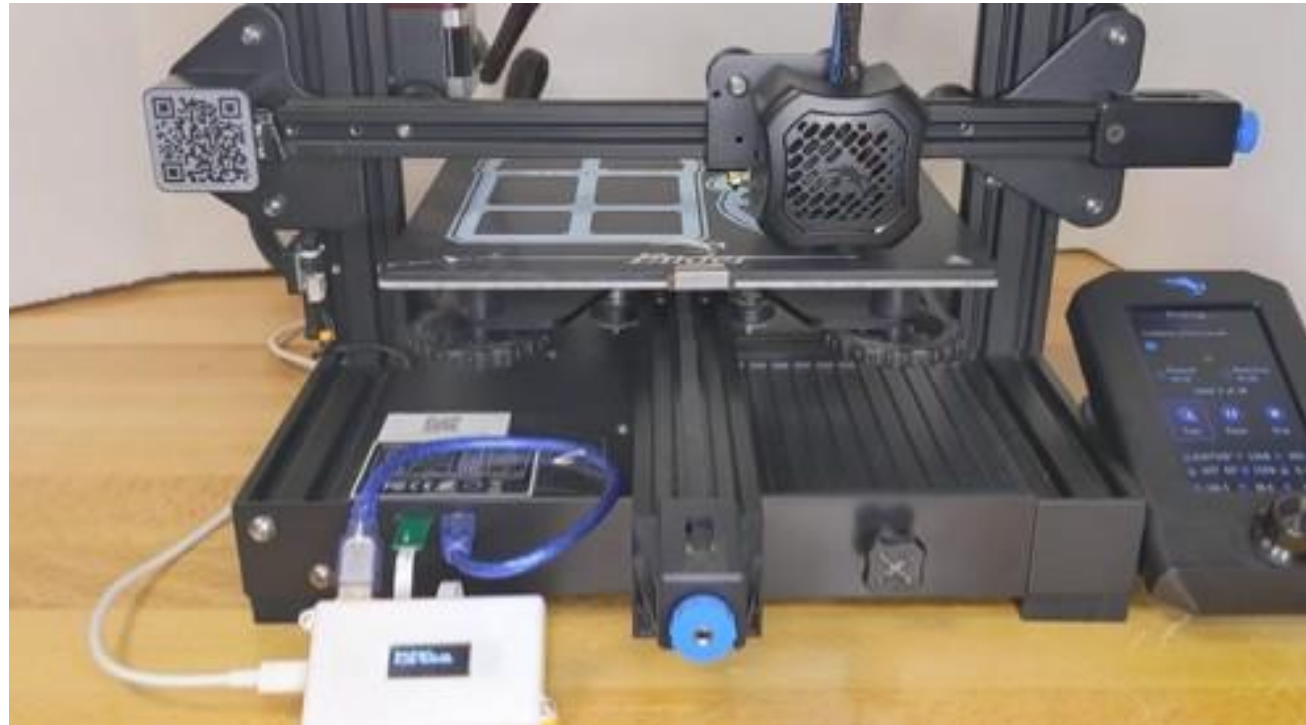Node's USB-C port is the power port. Connect a 5V USB-C power adapter to this port and Node will power up.

Make sure use a true 5V USB adapter. Avoid using PD type of adapter for now.
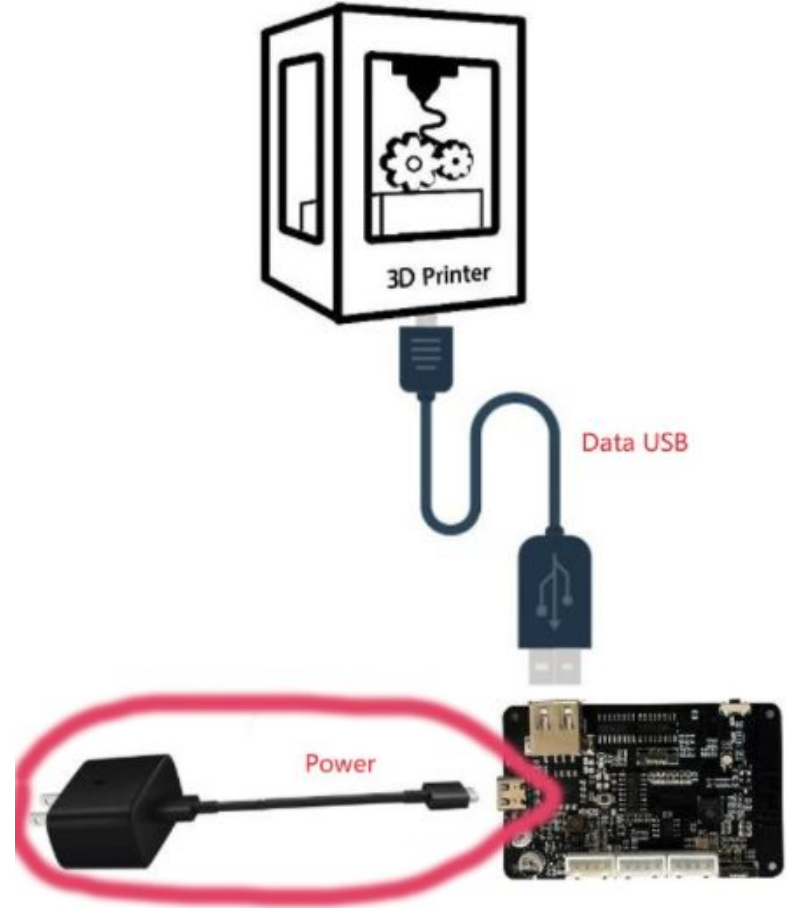
Checking connections

This is how all the connection would look like when Node is connected to your printer

Beam Node Power up

After the Beam Node is powered on, it will first perform a WiFi network configuration. If the network configuration is successful, the status light of the Beam Node will turn green. If the network configuration is not completed, the status light will be red.

If the 3D printer is also powered on at this time, the words "Printer Connected!" will be displayed on the OLED display of the Beam Node.
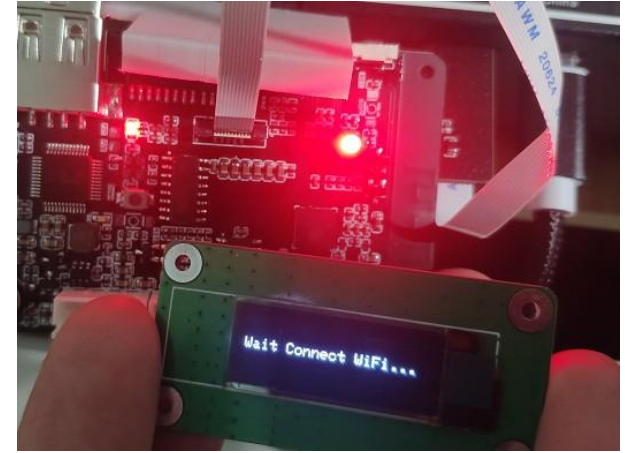
Connect Node to Beam Nexus

Once Node is powered on and connected to WiFi, you can click "Search Devices" on the Nexus main interface, and it will try to find all Nodes in the local area network.

Any Node found on the network will be listed as seen on the right. You can double click on the entry and a window will pop up for managing that Node.

Update Baud Rate for Node

On first run, please make sure the baud rate is set correctly for your printer. You can find this information in your printer manual. Marlin now mainly supports three baud rates of 115200, 200000, and 250000. The factory default baud rate of Beam Node is 115200. If your printer supports this baud rate, then leave it as it 115200.

If not, select the baud rate supported by your printer, and then click Set Baud rate to complete the setting. This setting only needs to be configured once, and the Beam Node will store the serial baud rate you set. If you switch Node to a different printer, remember to check and adjust to corresponding baud rate of the new printer.
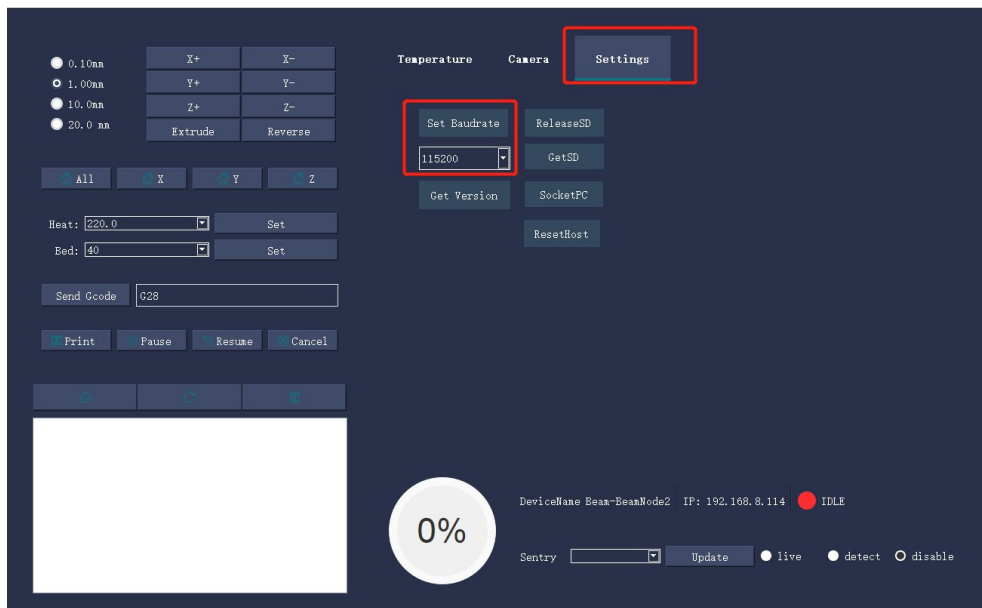
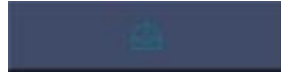# Testing Beam Nexus Controlling Node

After Setting the baud rate, you can test your connection by click on x/y/z and home on the right. This will show if the connection is working well.

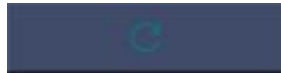Your printer should respond to the movement and homing commands.
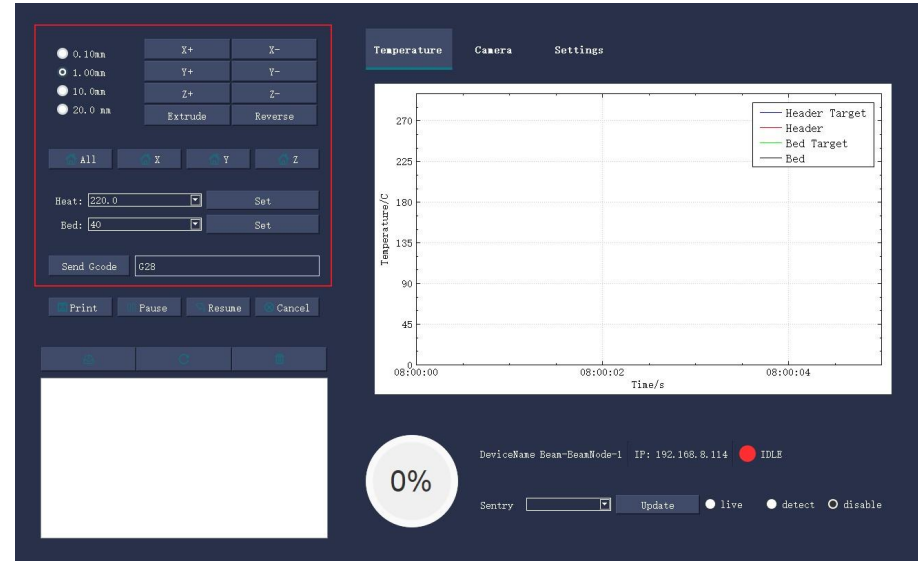
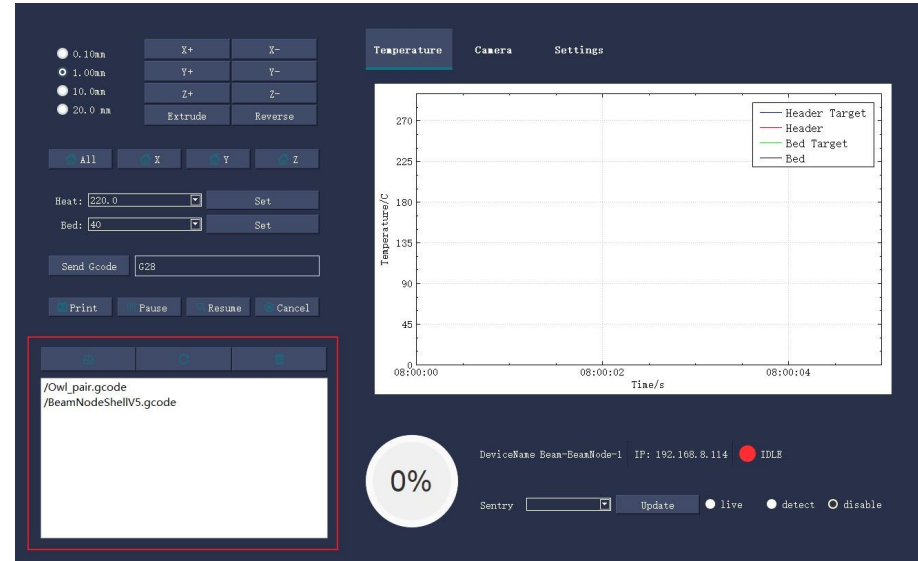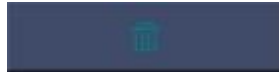# How to upload Gcode to Beam Node

Click here to upload

And you will see a window to select gcode file. Once you select and open a file, Nexus will start the file transfer to Node.

Refresh Node File List:

Delete Selected File:

Start Printing via Node

Select the file you want to print from the file list, see example image. The file header will automatically generate three random letters at the start of the filename, please ignore.

Due to the file system used by Marlin, the supported file name format is MSDOS 8.3. In order to avoid the confusion of incoming file names, we generate three random letters and place them in front of the file name.

After starting to print, after about 30 seconds, the temperature curve on the right side of the Beam Node will start to shift.
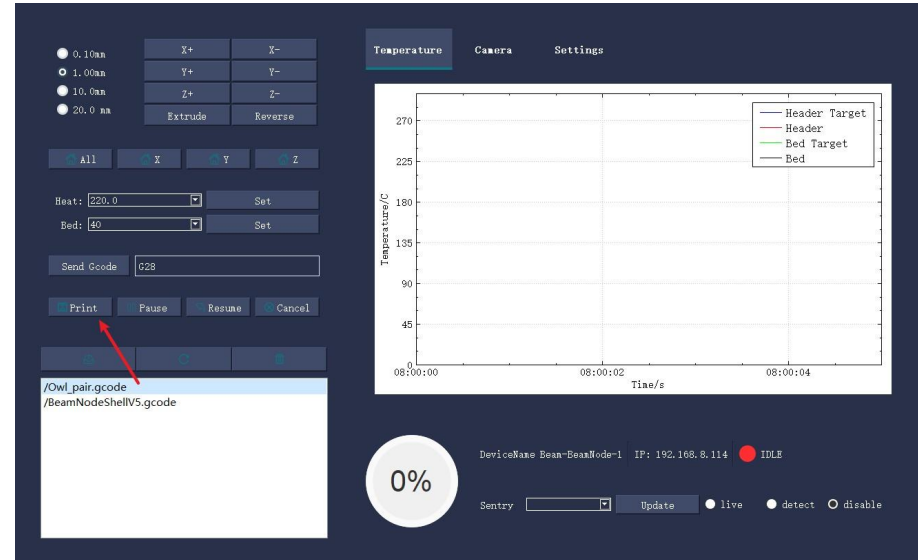
Test Print Done

Once the print is completed, please check the surface quality to ensure good results. Congratulations, your Node is ready to serve you.

In addition to basic printing, Beam Node has many other functions waiting for you to use. You are welcome to continue reading the introduction documents of the other detailed functions!

[Test video with Ender 3](#)

Sentry Tutorial can be [found here.](#)
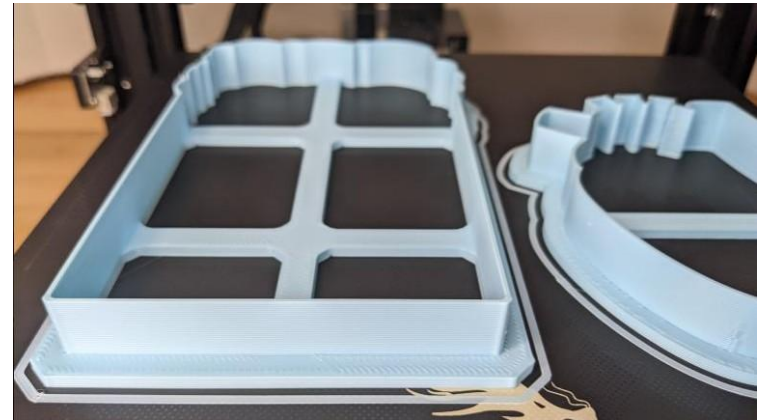
FCC STATEMENT :

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. Warning: 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.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.
This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.