

A web based 3D printer management and environmental monitoring system.

## User Documentation



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## 1 Hub

### 1.1 Set up

1. Ensure the hub is plugged in to an outlet, and the switch is in the **ON** position (it should be ON by default). The red light will be illuminated on the node when it is on.  
TODO ADD GRAPHIC NODE ON



- 2.
- 3.

## 2 Nodes

### 2.1 Set up

1. Ensure the node is plugged in to an outlet, and the switch is in the **ON** position (it should be ON by default). The red light will be illuminated on the node when it is on.  
TODO ADD GRAPHIC NODE ON



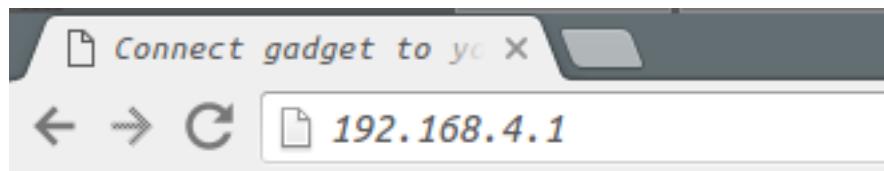
If the node has already been activated, you are done with this section, proceed to the Web section (Part 3).

2. If this is the first time the node is being connected to the hub, you will need to activate it. To do this you will need a device capable of connecting to a wifi network, such as a smart phone, tablet, or computer.

Under wifi networks, you should see a network called **SetUpGadget\_FPPDHI**

Note that the "FPPDHI" can be any sequence of letters and is specific to the node. Connect to that network. *Once connected you may get a warning that the network does not have access to the internet. That is normal, proceed anyway.*

3. Open your browser and navigate to **192.168.4.1**



This will bring up a wifi login page:



Type the information as follows (*case matters, use both upper- and lower-case letters as indicated*):

The wifi name is **StratusPrint**

The password is **FusRoDah**

*This is the default wifi name and password for the hub and can be changed later.*

4. Click the save button. If successful, the **SetUpGadget\_FPFIDHI** network should disappear from your visible networks. This may take 1-3 minutes. If the network is still visible, please turn your wifi off and on again to confirm it remains visible. If it is still there, please start over from step 2 and make sure you correctly input all information.

## 2.2 Sensors

*This section provides more information on the sensors currently attached to the node, and how to add new sensors. You may skip this section if you are not adding or replacing sensors.*

### Node Pinout



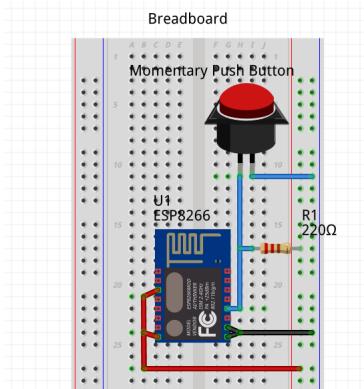
### Job Button

The "Job Button" indicates when a job is complete, and starts a new job when pressed. This provides an easy way for a user to know when a job is completed.

## Operation

Once a print is complete this button will blink repeatedly until it is pressed. Remove the completed project, clean the print bed, then press the button to start the next job in the print queue.

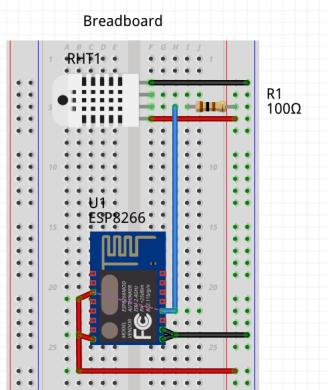
## Wiring Diagram



## Temperature and Humidity

The temperature and humidity sensor will report the current room conditions. It can detect dangerous conditions for 3D printing and act as an early warning system if the conditions may lead to print errors.

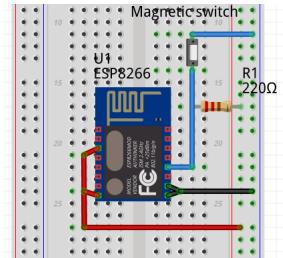
## Wiring Diagram



## Door Sensor

The door sensor is a magnetic switch mounted to the entrance of the printing lab. This allows for detection of an open or closed door, which may affect printing conditions.

### Wiring Diagram



### Additional Sensors

The nodes were set up to be universal, therefore they are compatible with many sensors. The nodes come with a breadboard so they can easily be reconfigured.

## 3 Web

### 3.1 Set up - Administrator

*Skip this section if you are not an Adminstrator. Go to Set up - User.*

#### Adding/Deleting/Managing Users

Click the **User Management** menu on the left-hand side of the page. This page will show you the current users, along with information about each user.

TODO ADD user-manage



1. **Adding a User:** Scroll down to the Add New User portion of the page. Add the user's name, e-mail address, and check the box titled "Grant Admin Privileges" if you would like the user to be an admin. You will receive a confirmation message below the "Users" section if successful.
2. **Deleting a User:** Click the red trash icon under the "Actions" column to remove a user. You will receive a confirmation message below the "Users" section if successful.
3. **Managing a User:** Click the yellow notepad icon under the "Actions" column to edit user details (Name, Email Address, or Add/Remove Admin Privileges). Then click the "Edit User" button to confirm. You will receive a confirmation message below the "Users" section if successful. TODO ADD user-edit



### 3.2 Set up - User

Contact your administrator and request a username and password. When they set up your account, you will receive an e-mail titled "Confirmation instructions". Click the link titled **Confirm my account**, then login using the username and password contained in the email. The password is case-sensitive.

TODO ADD login-first



Once you have entered your username and password correctly, you will see the dashboard page.

### 3.3 Dashboard Page

TODO ADD dash-admin



The Dashboard Page displays current print job information.

Along the top, you will see print jobs in progress, the wait time until the job is completed, the number of printers that are online, and the number of printers with errors. Click the **View Details** under each option to see more details, including the temperature and humidity of the room, and whether the door to the room is open or closed.

To upload a file, either drag-and-drop the file into the box labeled **Drag N' Drop File(s)**, or click the **Select File** button, select the file you would like to print, and click the **open** button. Your file will be uploaded to the website.

### Manage Printer

TODO ADD manage-printer



This page shows you information about the current job, commands that were issued to the printer, a list of recent jobs, and the option to upload a new job.

To upload a file, click the **Select File** button, select the file you would like to print, and click the **open** button. Your file will be uploaded to the website.

### Starting a Print Job

TODO What else do we need?

## 4 Troubleshooting

### 4.1 Nodes

#### How do I reset the nodes?

Turn the switch the the off position and unplug the node. Then plug the node back into the outlet and turn the switch to the on position.

#### Node is not connecting to the hub

1. Ensure the node has the correct wifi credentials. If the default is not working make sure the password hasn't been changed.
2. If the node seems to be connected and isn't communicating, reset the nodes.

#### Node is connected but no data is being sent from the sensors

Make sure the sensors are connected correctly. You can reference the wiring diagrams in this manual.

### 4.2 Webpage Issues

#### Webpage is not loading correctly

1. Try reloading the webpage.
2. Try closing the webpage, then reopen the webpage.
3. If both steps fail to fix your issue, log out of the website, then log back in.

### 4.3 Other Troubleshooting

#### If everything else fails?

Turn off the node and hub by unplugging both from the outlet, then plug both back into the outlet. The system is designed to restart itself and reconfigure automatically once set up.