

## Lab #1: Hardware Network Setup

### Objective:

Understand and build the network between computer (server), camera, and 3D printer.

### Equipment:

- Computer: a generic computer with Windows system (Win 7 or Win 10) installed
- IP camera: Panasonic BL-C111
- Router: Netgear AC1000 Wi-Fi router
- 3D printer: MTW Create

### Safety Rules:

1. Turn off power supply BEFORE disconnecting power line.
2. Don't touch any power source when your hands are wet.

### Step 1: Network hardware setup

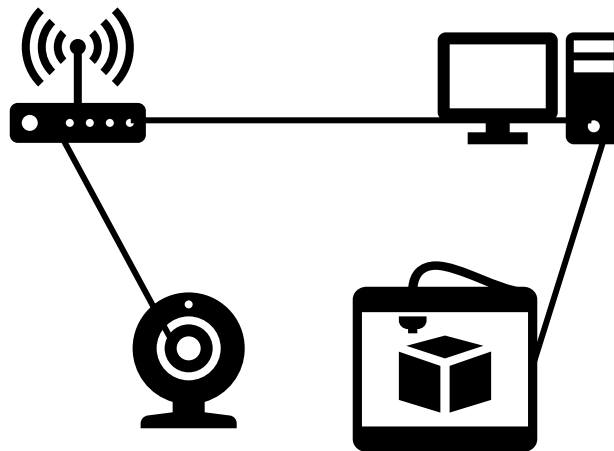


Figure 1 Diagram of the network

1. Using an ethernet cable to connect the computer to one of the router's ethernet (sometimes called "LAN") ports.
2. Connect the IP webcam to one of the router's ethernet ports.
3. (Optional) using another ethernet cable to connect the router's Internet port to the network port on the wall or to a modem. This way, the LAN will also have internet access.
4. Open the configuration page of the router using computers' browser. Normally, the address will be provided by the vendor of the router, such as <http://192.168.1.1>. Make sure the page shows up, which means the local area network (LAN) has been established.

### Step 2: IP camera configuration

1. Find the camera in the "Network":

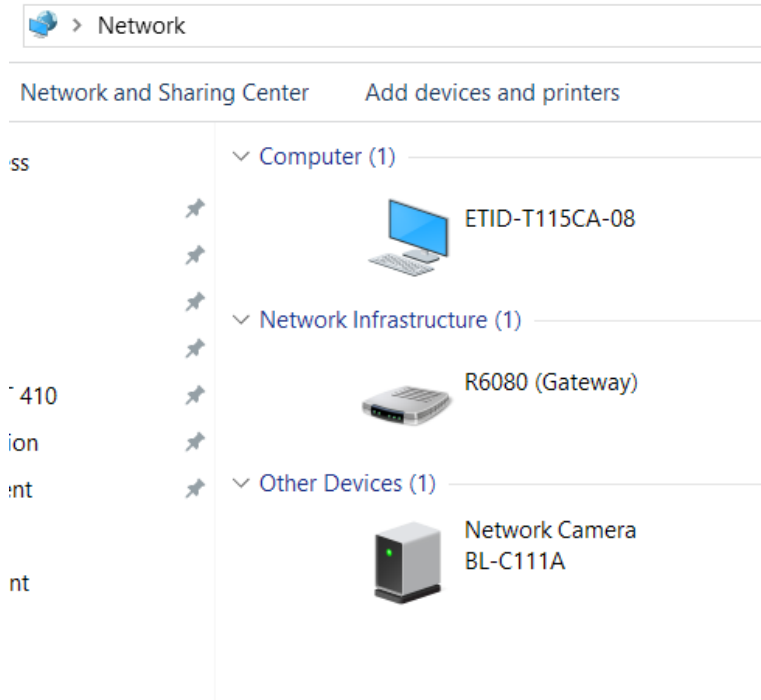


Figure 2 Webcam in Network

2. Visit the camera by double-clicking it. It should open a webpage such as <http://192.168.1.253>. There, you should be asked to setup the administrator account for the camera. Make sure you memorize the username and the password.
3. Log into the camera using the username and password defined above.
4. Go to “single” tab, check if the video can be seen.
5. Alternatively, use the software of the camera, namely G3G4\_EasyConfig\_Ver314R01.exe [1], to find the camera’s IP address and access it.

### Step 3: 3D printer setup

1. Before connecting the 3D printer, install MatterControlSetup-1.6.0.exe [2]. When asked, install the driver as well.
2. Run Matter Control and choose “MendelMax 3 (Dual Extrusion)” as the model. Install the driver if asked. Connect the 3D printer to the computer via a USB cable when asked to do so.
3. Modify the profile by clicking the pencil icon (see below). Change the Baud Rate to 115200.

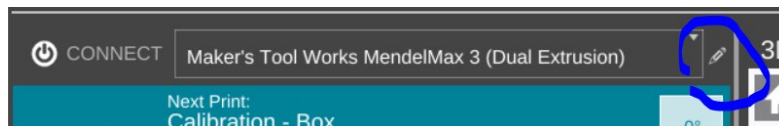


Figure 3 Editing 3D Printer setting

4. Connect the 3D printer and try to control it manually.

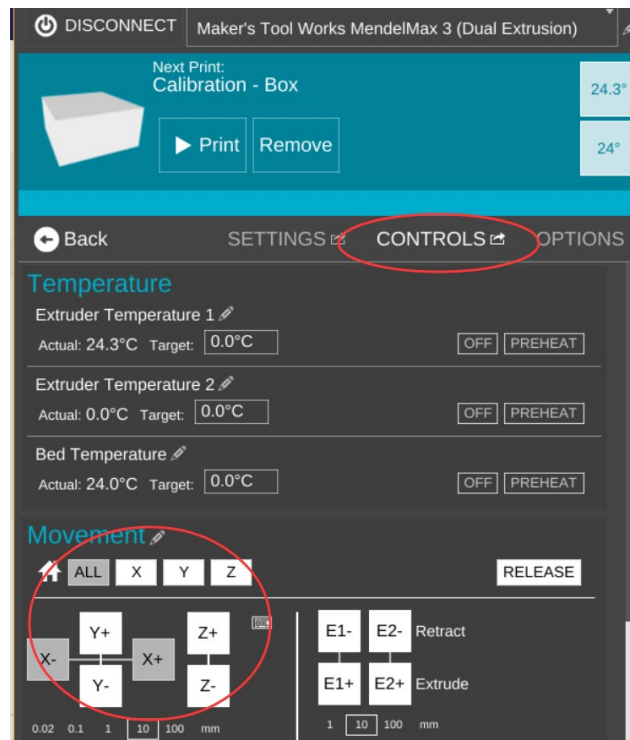


Figure 4 3D printer manual control

### Software download links

- [1] [https://www.dropbox.com/s/t88g5gdtvosmz5/G3G4\\_EasyConfig\\_Ver314R01.exe?dl=0](https://www.dropbox.com/s/t88g5gdtvosmz5/G3G4_EasyConfig_Ver314R01.exe?dl=0)
- [2] <https://mattercontrol.appspot.com/downloads/mattercontrol-maker%27s-tool-works-windows/release>