

# **MJKZZ 3 Axes Motion Controller**

## **User Manual**

### **Overview**

MJKZZ 3 axes motion controller is a high performance motion controller capable of controlling up to three step motors. Each step motor port of the three can supply up to 1.5A of current (2.0A peak) with silent drive technology. It has dual communication interfaces - USB and WiFi. It can be used with MJKZZ Focus Stacking Studio for PC (on Windows Platform) or for Raspberry Pi



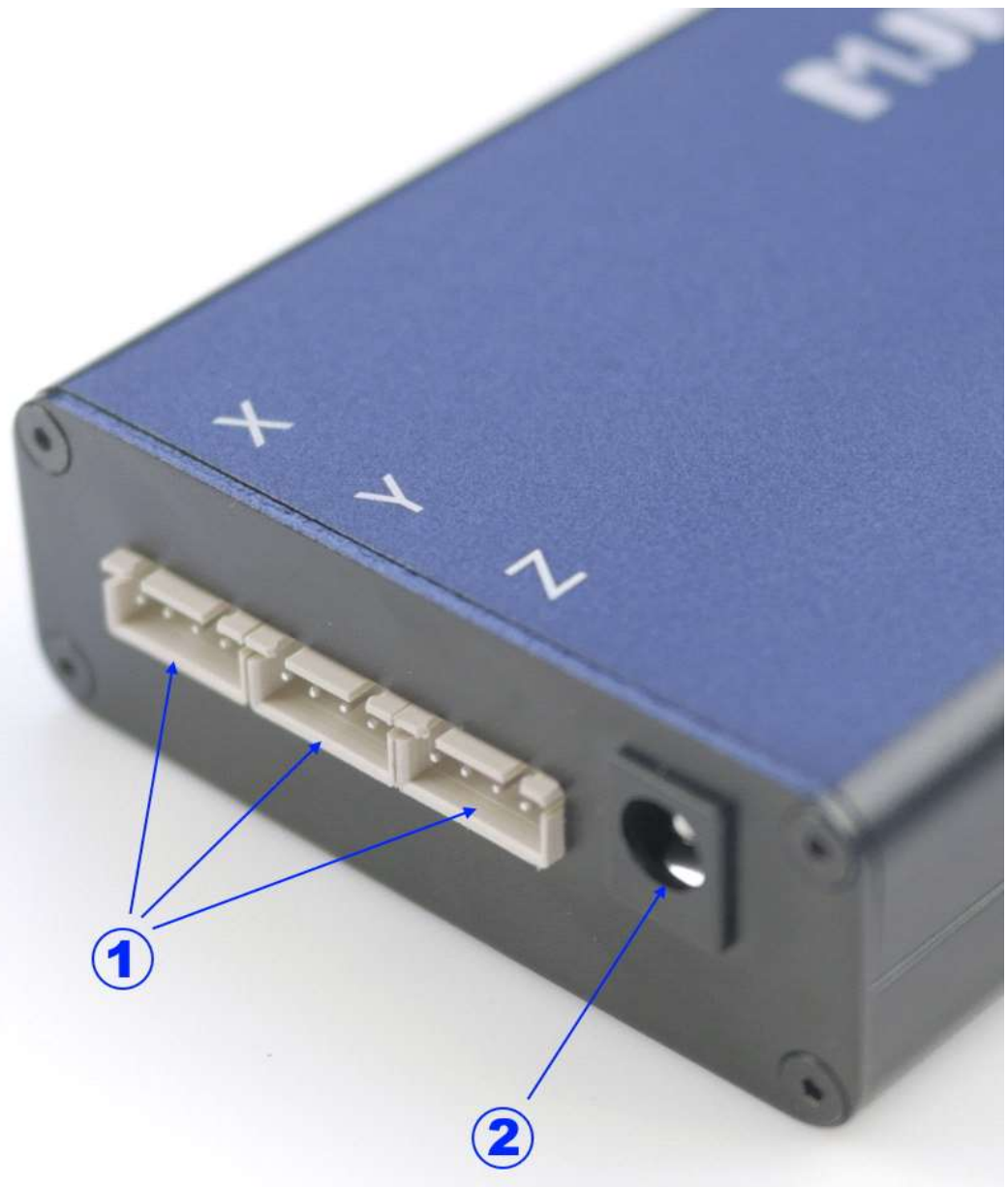
Here are some of the key features:

- Built-In USB-Serial chipset
- Built-In WiFi capability with external antenna
- Three step motor ports
- 32 Configurable power levels from 0.0625A to 2.0A (peak)
- 8 configurable microsteps, from full, to 1/256th. Though current Focus Stacking Studio only have 7 microstepping enabled (missing

1/256)

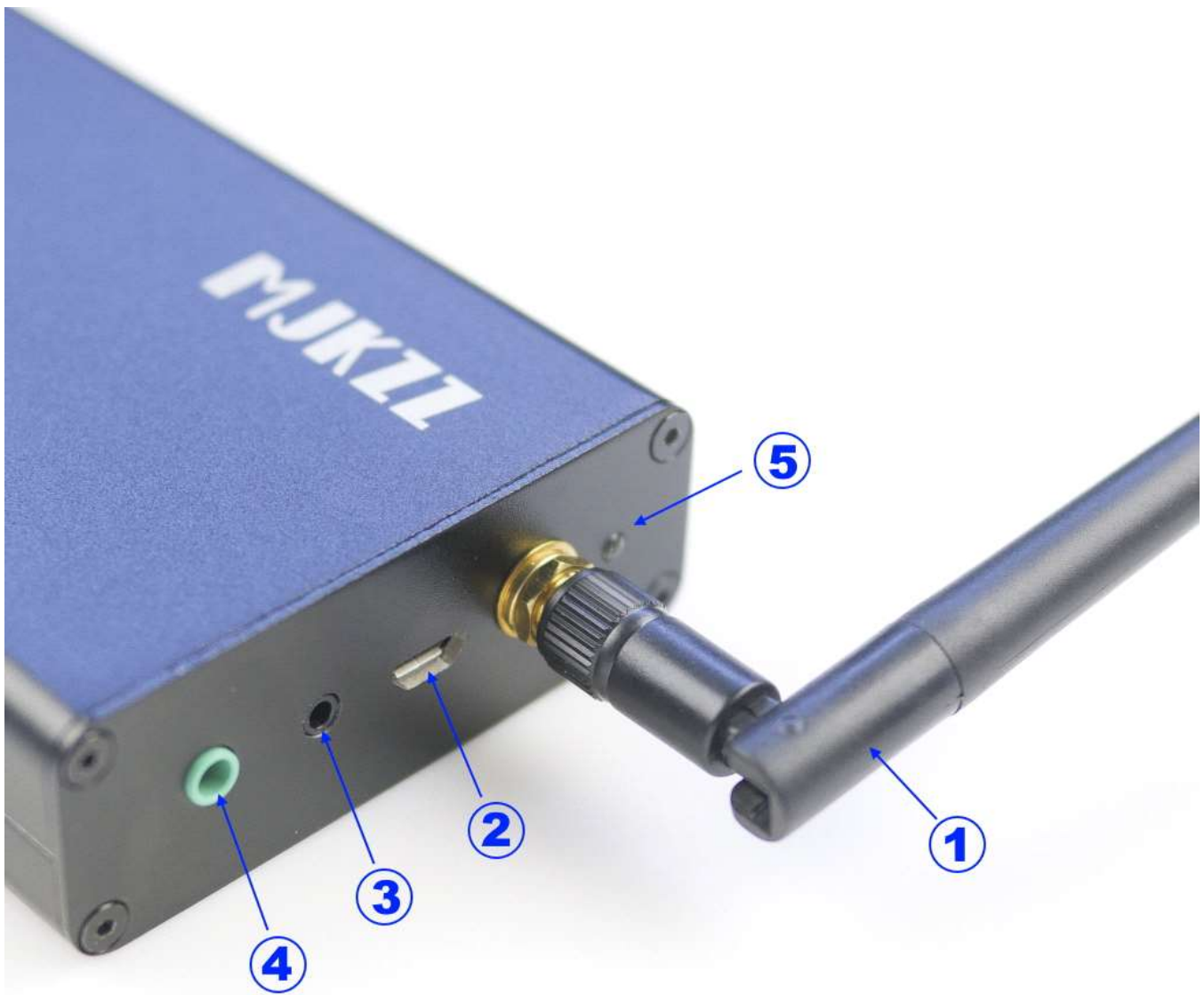
- Silent drive technology (so silent that it might be mistaken that motor is not running)
- Logical axis definition. This feature allows control application, such as Focus Stacking Studio, to control more axes by combining multiple units. For example, with two units, it is possible to control up to six axes like X,Y,Z,R and two other axes. This is analogue to drive letters in a PC
- Single power supply for one unit
- Limit switch support for all axes
- Firmware update is possible and is done via USB port

## **Description**



In above picture, marker 1 shows three step motor ports. Though they are labeled as X, Y, and Z, these can be changed by controlling application to something else

Marker 2 is the power supply port. Voltage of power supply **MUST** be lower than 12V and current rating must be over 5A, the more the better.



In above picture:

- marker 1 is the antenna for WiFi.
- Marker 2 is the USB port (micro-usb). This USB port can be used to connect to controller application, such as MJKZZ Focus Stacking

Studio or it can be used to update firmware.

- Marker 3 is camera control port.
- Marker 4 is limit switch port. It is standard 3.5mm 4 segments audio plug. The base is the common ground, first segment for X axis, 2nd segment for Y axis, and 3rd segment for Z axis
- Marker 5 is blue LED indicator of WiFi connection. If it is blinking, it means the device is trying to connect to WiFi network specified. Once it is connected, this LED will be steadily lit. If it could not connect to the WiFi network for some reason, it will be off after 3 seconds

## Focus Stacking Studio For PC

As already described, this device can be used with MJKZZ Focus Stacking Studio for PC.

**Driver Download:** This device uses CH340 USB to serial chipset. For some version of Windows, it is necessary to download driver for it. Here is the download site:

<http://www.wch-ic.com/products/CH341.html>

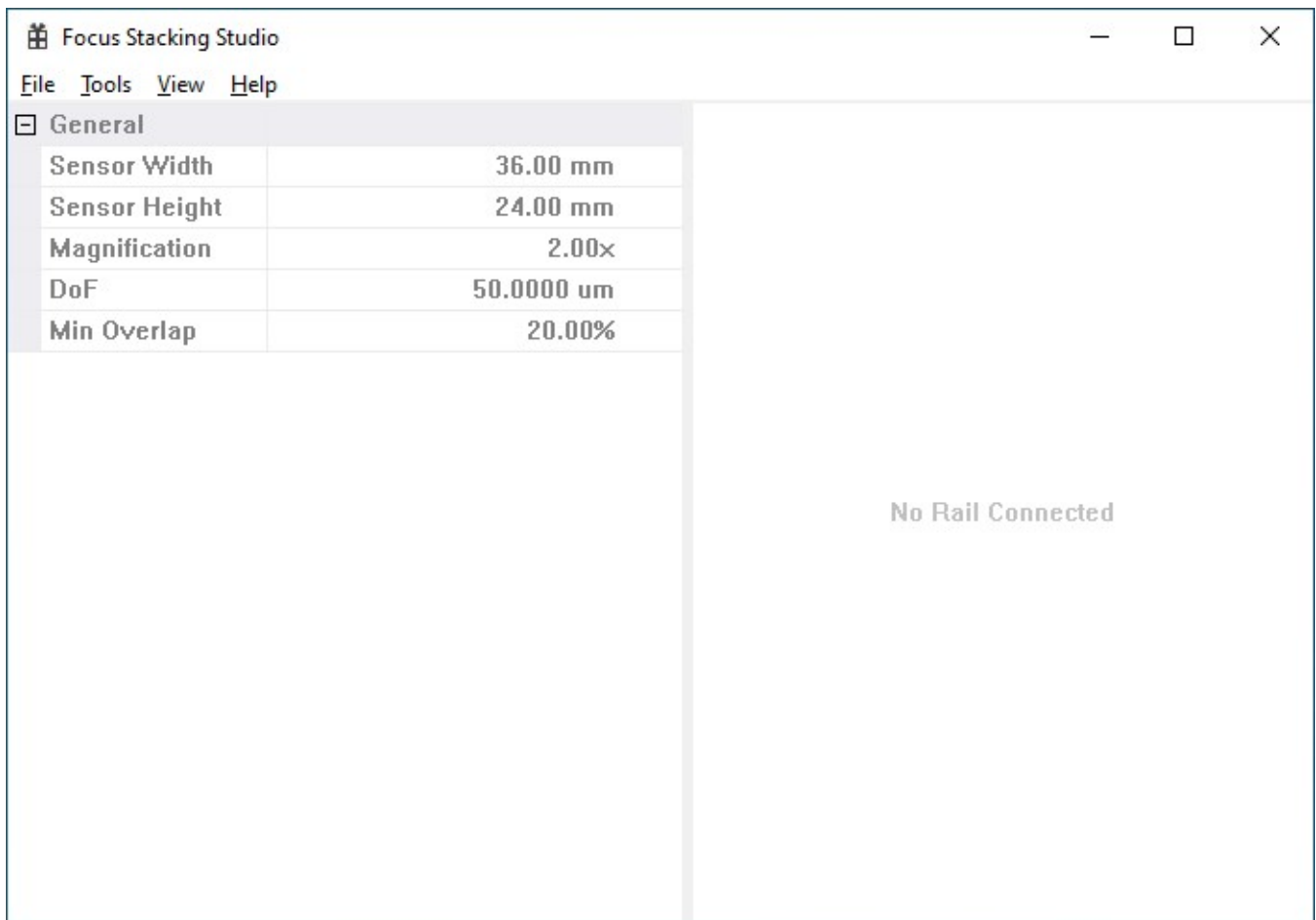
At the end of that page, select CH341SER.EXE

For Raspberry Pi running latest Raspian OS, it is not necessary to download the driver because it is already included in Raspian OS

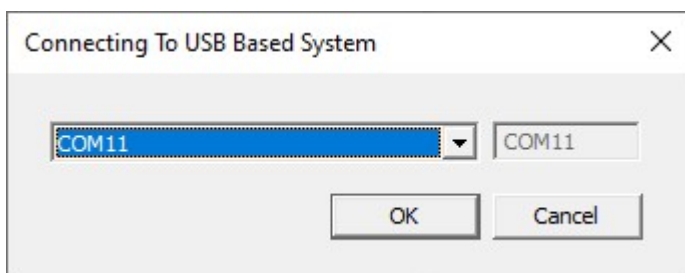
**Setting Up USB:** Here are steps on how to use it

Step 1: Download MJKZZ Focus Stacking Studio and install it

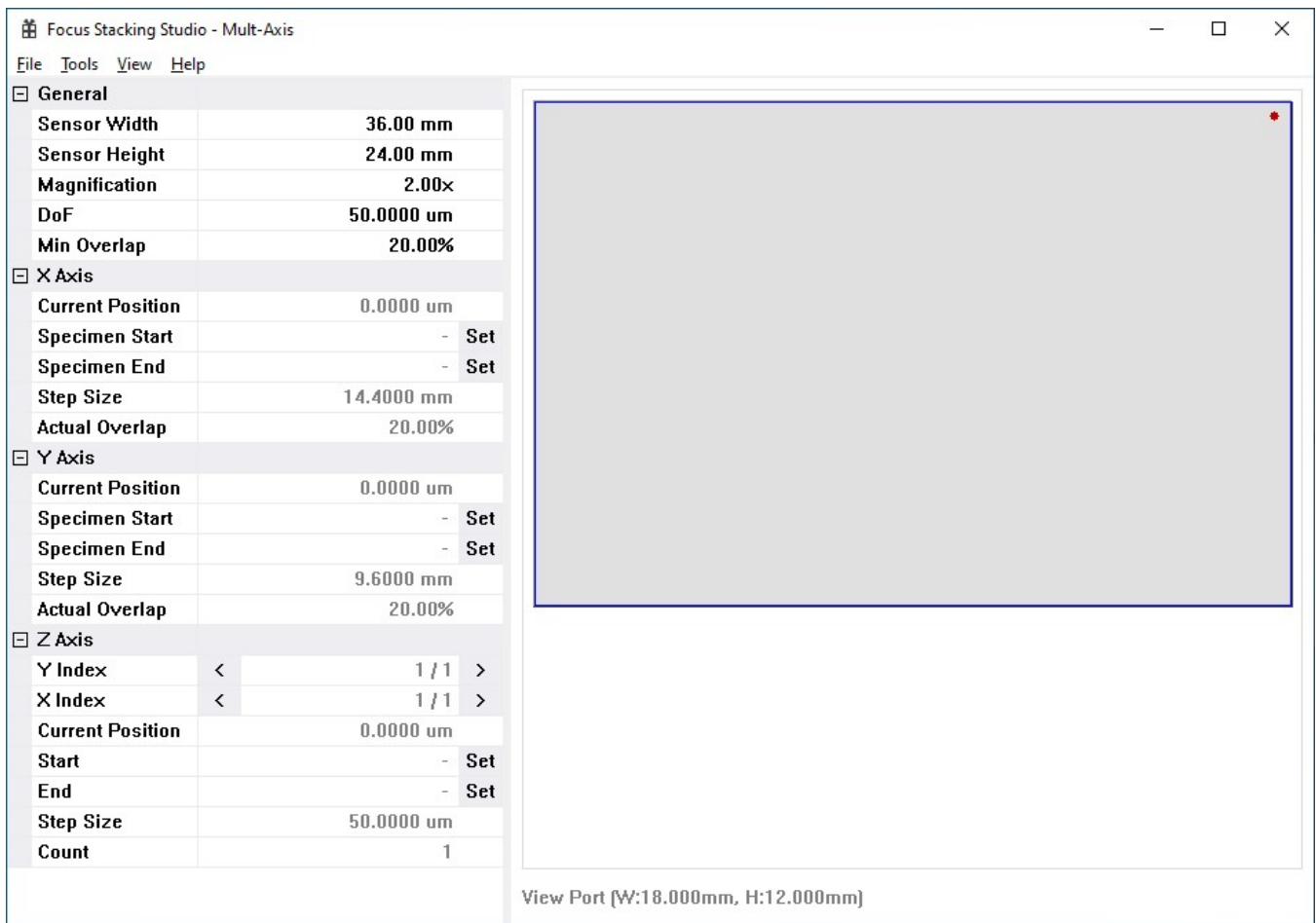
Step 2: Start up Focus Stacking Studio, see picture below



Step 3: Under menu *File*, select *Connect* and then select *USB*. After that, the USB connection dialog will show up, see below. Make sure the right serial port is selected.



Step 4: Click on OK to connect. Once it is connected (assuming the right port is selected), the following screen will show up

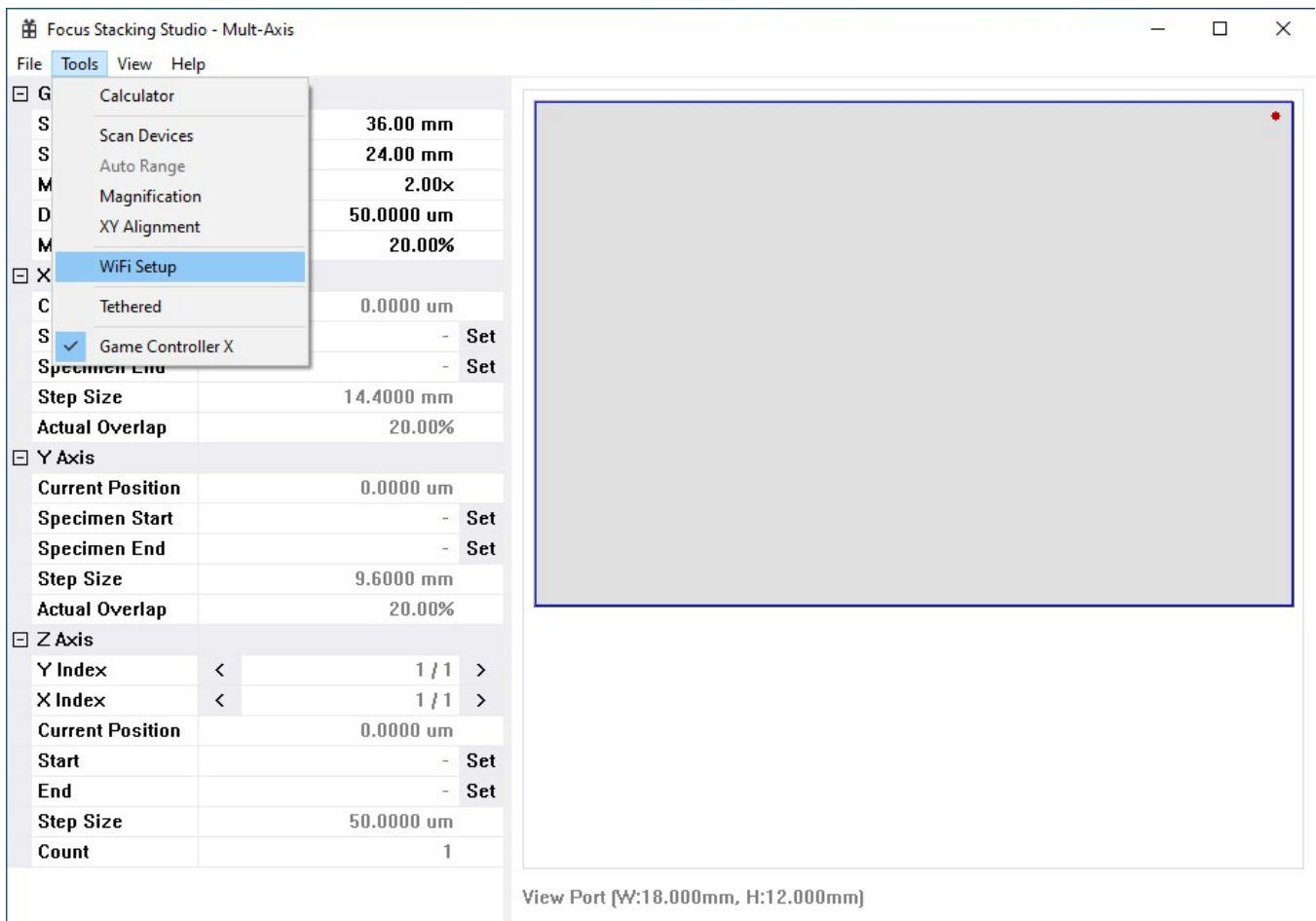


Step 5: Moving rails around is easy.

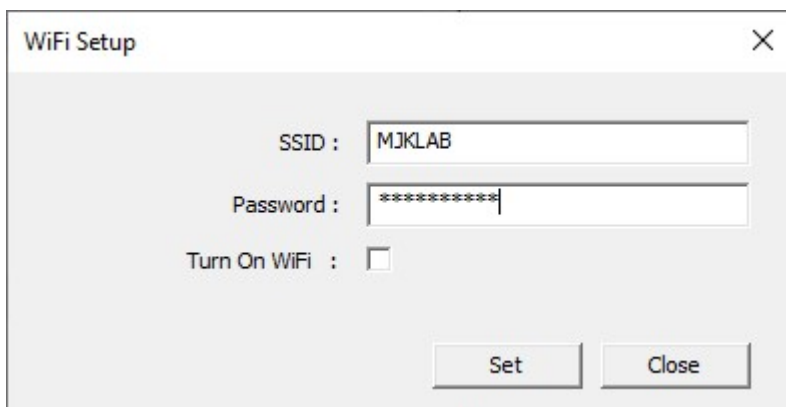
- Press (and hold) left or right arrow key will move the X axis.
- Press (and hold) the Up or Down arrow key will move the Y axis.
- Press (and hold) the PgUp or PgDn key will move the Z axis.
- Press (and hold) the + or - sign key will move the R axis (if the R axes is assigned to a motor port on a unit)

**Setting Up WiFi:** To set up WiFi, it is necessary to connect to the device via USB first. Once connected to a device via USB, choose *Tools* and then select *WiFi Setup*, like below.





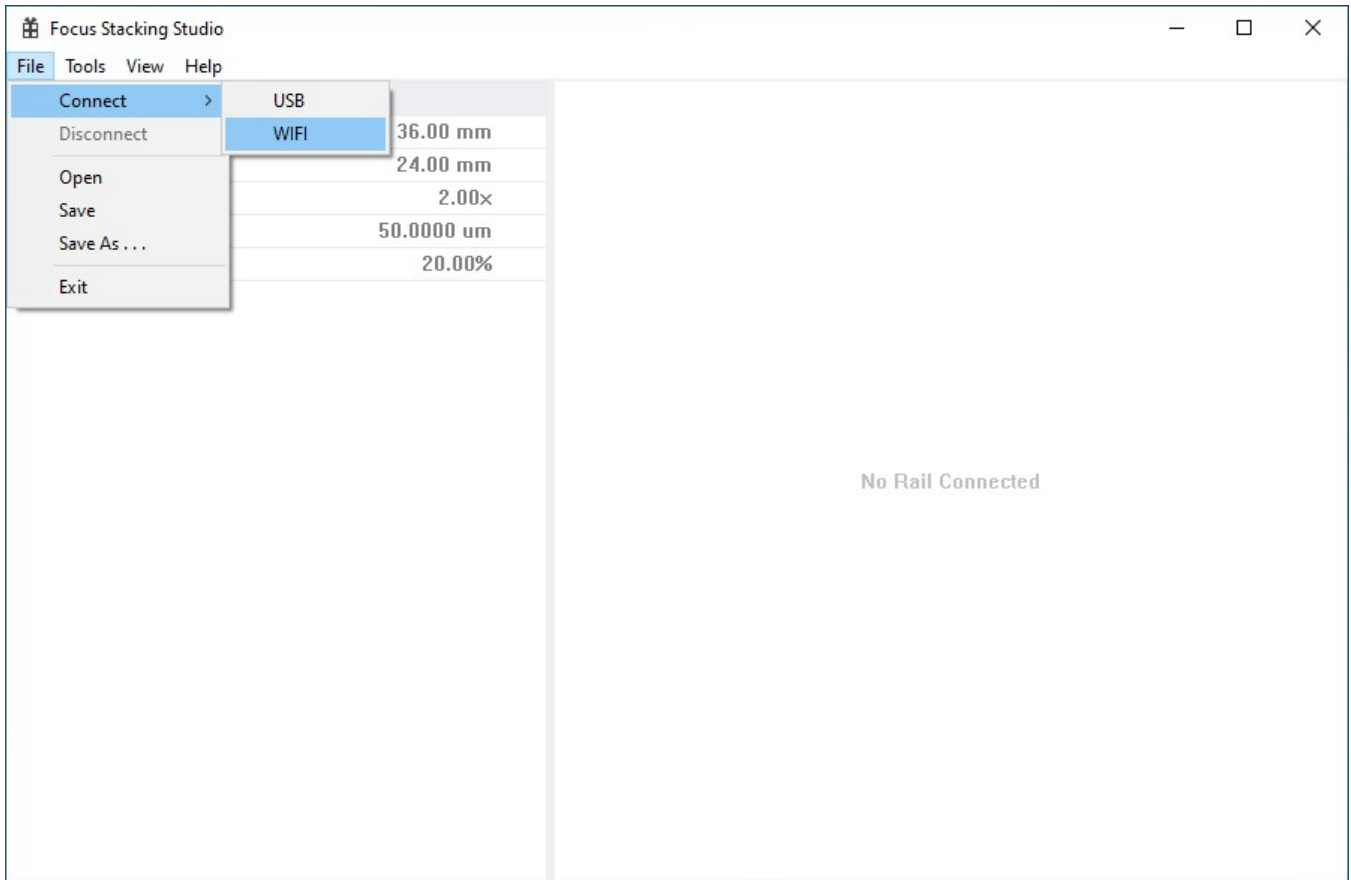
After that, WiFi Setup dialog will show like below



Here, enter the SSID, as well as password for your WiFi network. Check 'Turn On WiFi' to make the device make connection to your WiFi network. If the device connects to the WiFi network, the blue LED status will be steadily lit, else, the LED light will be off after 3 seconds

After setting up WiFi, disconnect Focus Stacking Studio from USB

connection or restart it. Then the device can be connected via WiFi as follows:



Once it is successfully connected via WiFi, all operations is the same as USB connection.

For detailed operation, please consult user manual for Focus Stacking Studio.

## FAQ

Q: Serial Port Is Not Visible.

A: Please download driver for CH340 chipset

Q: Serial Port Is Still Not Visible After Intalling Driver

A: Power up the device

Q: The Device Is Warm, Is That Normal?

A: Yes, it is normal, particularly after some usage.

Q: Can Not Connect To WiFi Network.

A: Check network SSID and password. Move everything closer to the WiFi router

Q: There Is Some Lag Under WiFi When Arrow Key Is Pressed vs Rail Moving

A: It is most likely WiFi connection issue. One solution is to use high gain antenna or move all equipment closer