

Klipper 固件使用说明-Nano V3

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一、准备

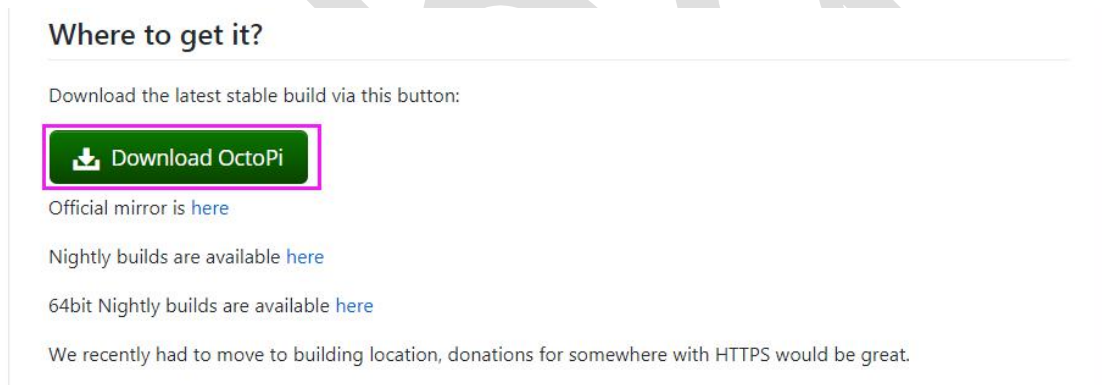
1) 硬件板卡准备

树莓派主板（含无线网卡）、Micro USB 线、方口 USB 线，3D 打印主板（MKS 系列均支持，本文以 MKS Robin Nano V3 为例）、2 张 TF 卡（一张用在树莓派，一张用在主板）、读卡器

2) 镜像文件下载

<https://github.com/guysoft/OctoPi>

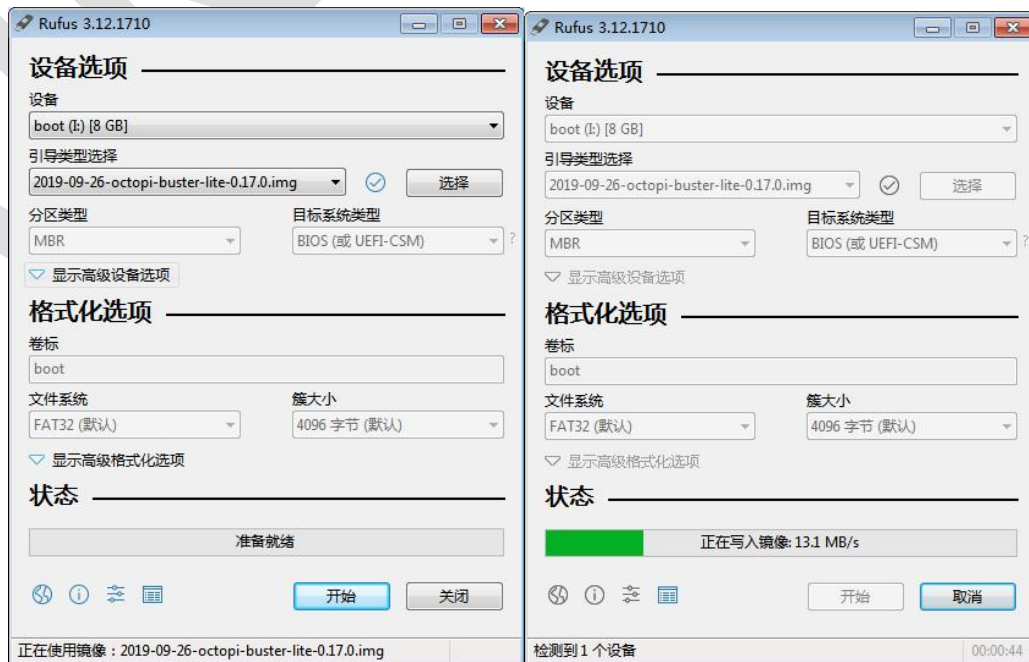
（文件夹：“2019-09-26-octopi-buster-lite-0.17.0.img”）



3) 镜像文件安装

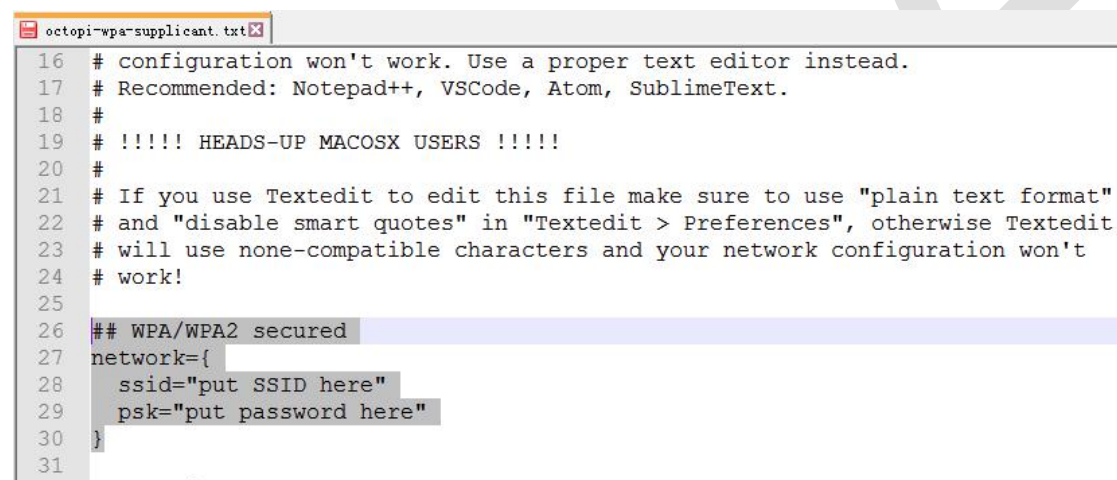
（文件夹：使用工具“rufus-3.12.exe”）

使用 TF 卡，读卡器接在电脑，运行“rufus-3.12.exe”，并选择“2019-09-26-octopi-buster-lite-0.17.0.img”进行安装，如下图



4) 无线网络配置

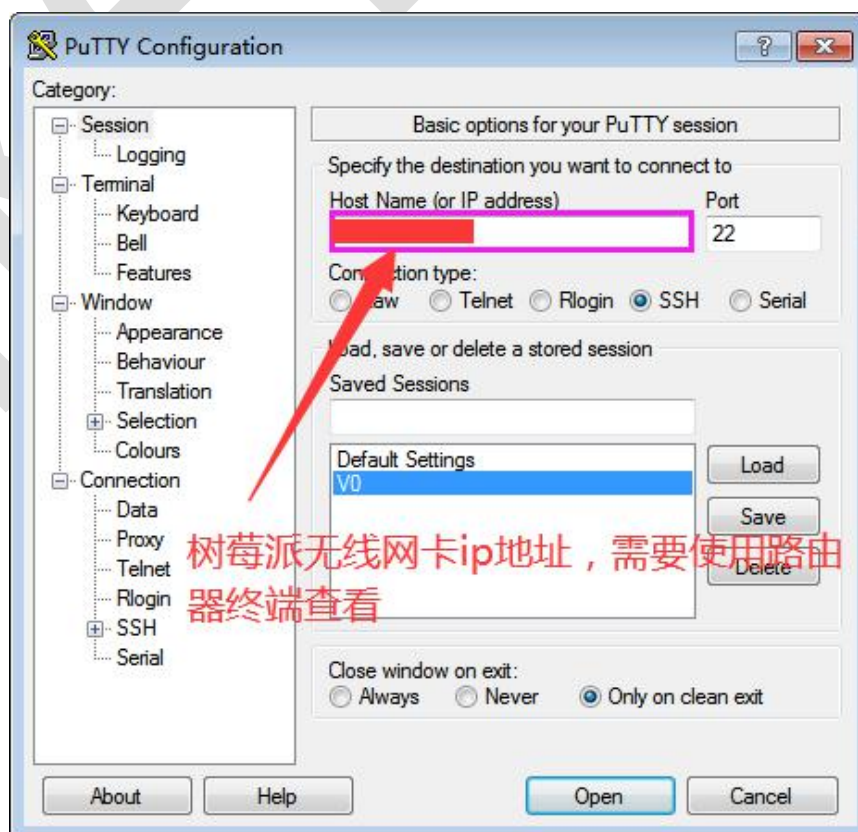
电脑选择 TF 卡目录，打开“octopi-wpa-supPLICant.txt”文件，输入无线网络名称和密码，并取消注释 # 号，设置好后，卡取出，装到树莓派上电，路由器终端查看 IP 地址。

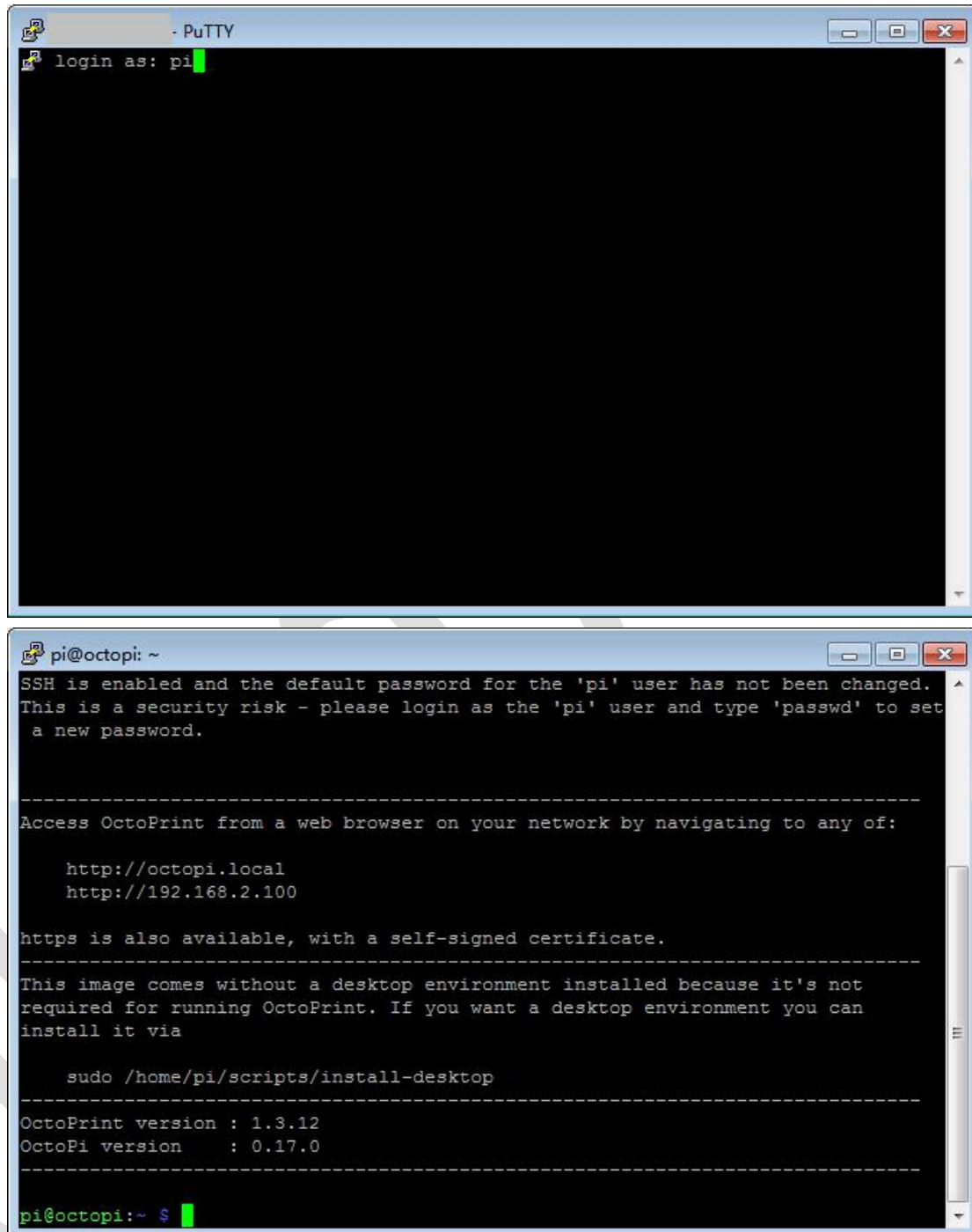


```
16 # configuration won't work. Use a proper text editor instead.
17 # Recommended: Notepad++, VSCode, Atom, SublimeText.
18 #
19 # !!!!! HEADS-UP MACOSX USERS !!!!!
20 #
21 # If you use Textedit to edit this file make sure to use "plain text format"
22 # and "disable smart quotes" in "Textedit > Preferences", otherwise Textedit
23 # will use none-compatible characters and your network configuration won't
24 # work!
25
26 ## WPA/WPA2 secured
27 network={
28     ssid="put SSID here"
29     psk="put password here"
30 }
31
```

5) 连接树莓派

运行：“putty.exe” 并设置好 ip 地址等参数，并分别输入“pi”“raspberr”进行树莓派登录





```

- PuTTY
login as: pi

pi@octopi: ~
SSH is enabled and the default password for the 'pi' user has not been changed.
This is a security risk - please login as the 'pi' user and type 'passwd' to set
a new password.

-----
Access OctoPrint from a web browser on your network by navigating to any of:

    http://octopi.local
    http://192.168.2.100

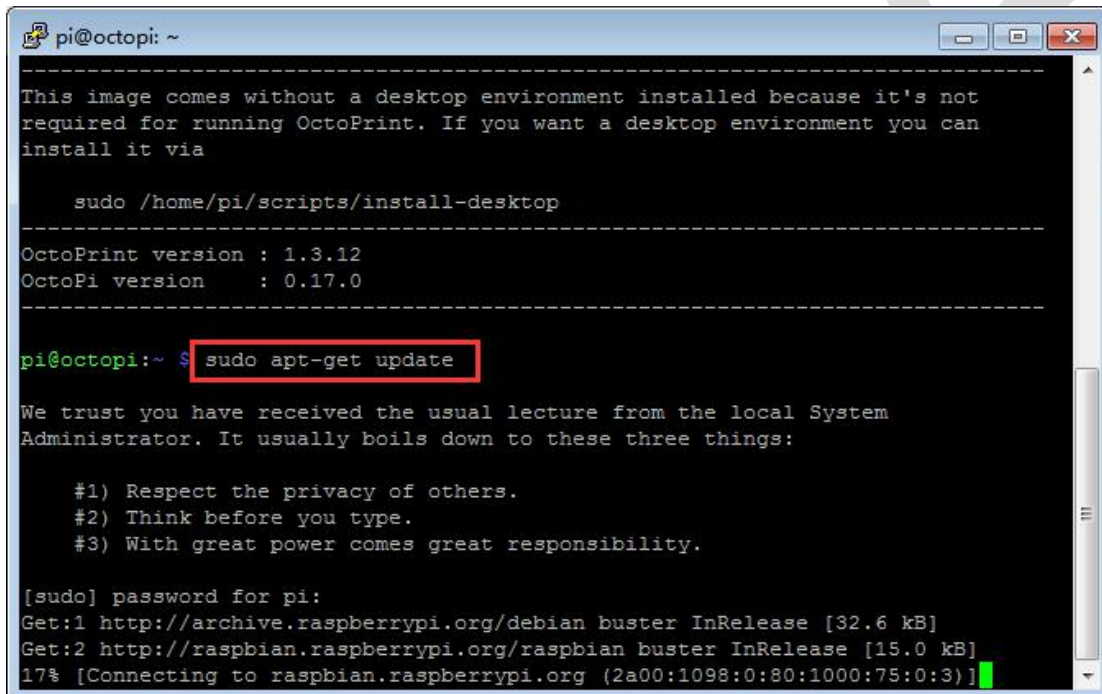
https is also available, with a self-signed certificate.
-----
This image comes without a desktop environment installed because it's not
required for running OctoPrint. If you want a desktop environment you can
install it via

    sudo /home/pi/scripts/install-desktop
-----
OctoPrint version : 1.3.12
OctoPi version    : 0.17.0
-----

pi@octopi:~ $
  
```

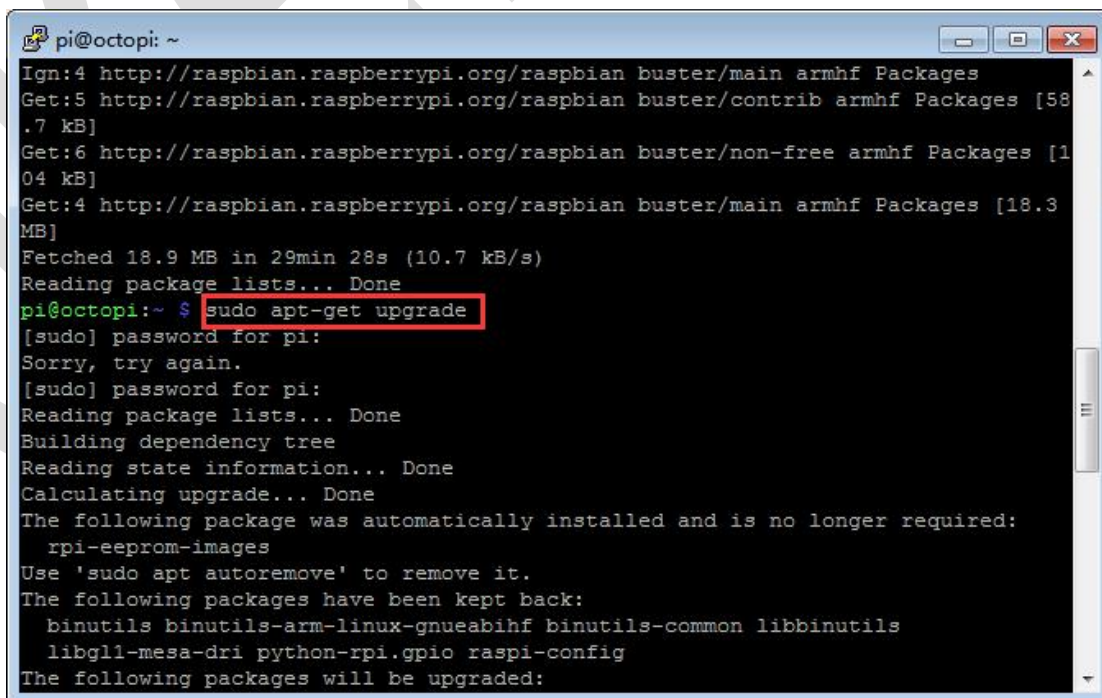
6) Octoprint 安装

更新指令：“sudo apt-get update”，安装过程中有可能输入密码“raspberrry”。等待完成安装。



```
pi@octopi: ~  
-----  
This image comes without a desktop environment installed because it's not  
required for running OctoPrint. If you want a desktop environment you can  
install it via  
  
    sudo /home/pi/scripts/install-desktop  
-----  
OctoPrint version : 1.3.12  
OctoPi version    : 0.17.0  
-----  
pi@octopi:~$ sudo apt-get update  
  
We trust you have received the usual lecture from the local System  
Administrator. It usually boils down to these three things:  
  
    #1) Respect the privacy of others.  
    #2) Think before you type.  
    #3) With great power comes great responsibility.  
  
[sudo] password for pi:  
Get:1 http://archive.raspberrypi.org/debian buster InRelease [32.6 kB]  
Get:2 http://raspbian.raspberrypi.org/raspbian buster InRelease [15.0 kB]  
17% [Connecting to raspbian.raspberrypi.org (2a00:1098:0:80:1000:75:0:3)]
```

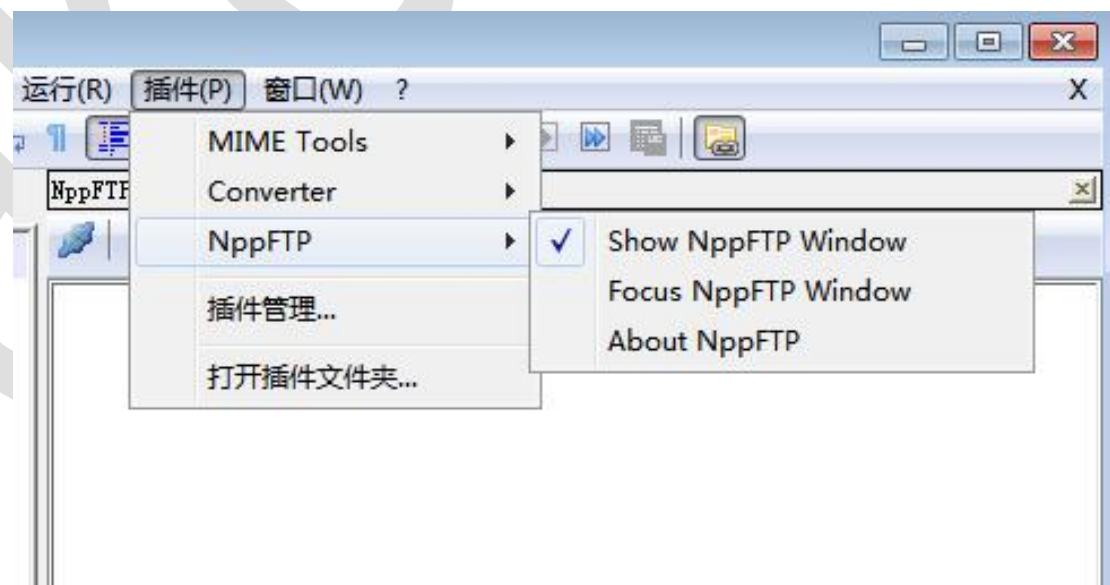
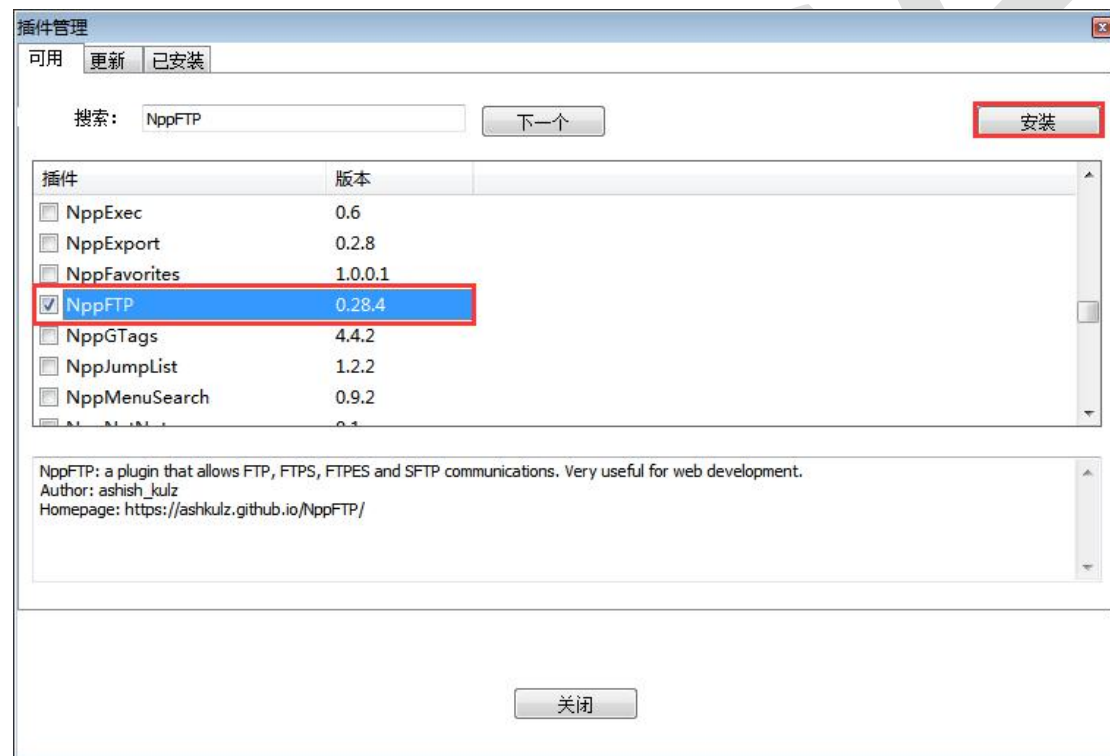
升级指令：“sudo apt-get upgrade”，安装过程中有可能输入密码“raspberrry”。安装过程中提示输入“Y”回车确认安装。安装过程中提示按下“Q”键确认，等待完成安装。



```
pi@octopi: ~  
Ign:4 http://raspbian.raspberrypi.org/raspbian buster/main armhf Packages  
Get:5 http://raspbian.raspberrypi.org/raspbian buster/contrib armhf Packages [58  
.7 kB]  
Get:6 http://raspbian.raspberrypi.org/raspbian buster/non-free armhf Packages [1  
04 kB]  
Get:4 http://raspbian.raspberrypi.org/raspbian buster/main armhf Packages [18.3  
MB]  
Fetched 18.9 MB in 29min 28s (10.7 kB/s)  
Reading package lists... Done  
pi@octopi:~$ sudo apt-get upgrade  
[sudo] password for pi:  
Sorry, try again.  
[sudo] password for pi:  
Reading package lists... Done  
Building dependency tree  
Reading state information... Done  
Calculating upgrade... Done  
The following package was automatically installed and is no longer required:  
    rpi-eeprom-images  
Use 'sudo apt autoremove' to remove it.  
The following packages have been kept back:  
    binutils binutils-arm-linux-gnueabi-hf binutils-common libbinutils  
    libgll-mesa-dri python-rpi.gpio raspi-config  
The following packages will be upgraded:
```


7) Notepad++安装 NppFTP 插件

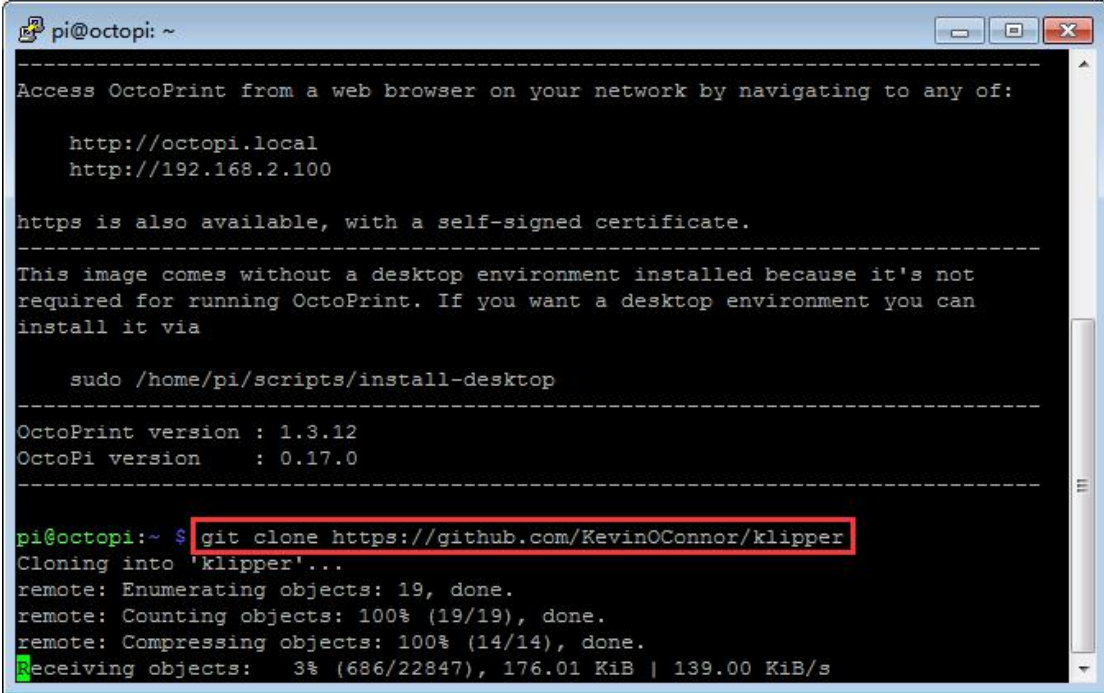
安装此插件过程中，会关闭 Notepad++，完成后会重新启动 Notepad++
安装此插件用处：用于后期编译出来的 bin 文件，便于另存和配置文件“printer.cfg”修改



二、Klipper 固件下载-设置-编译-更新

1) 下载

执行 “git clone https://github.com/KevinOConnor/klipper”



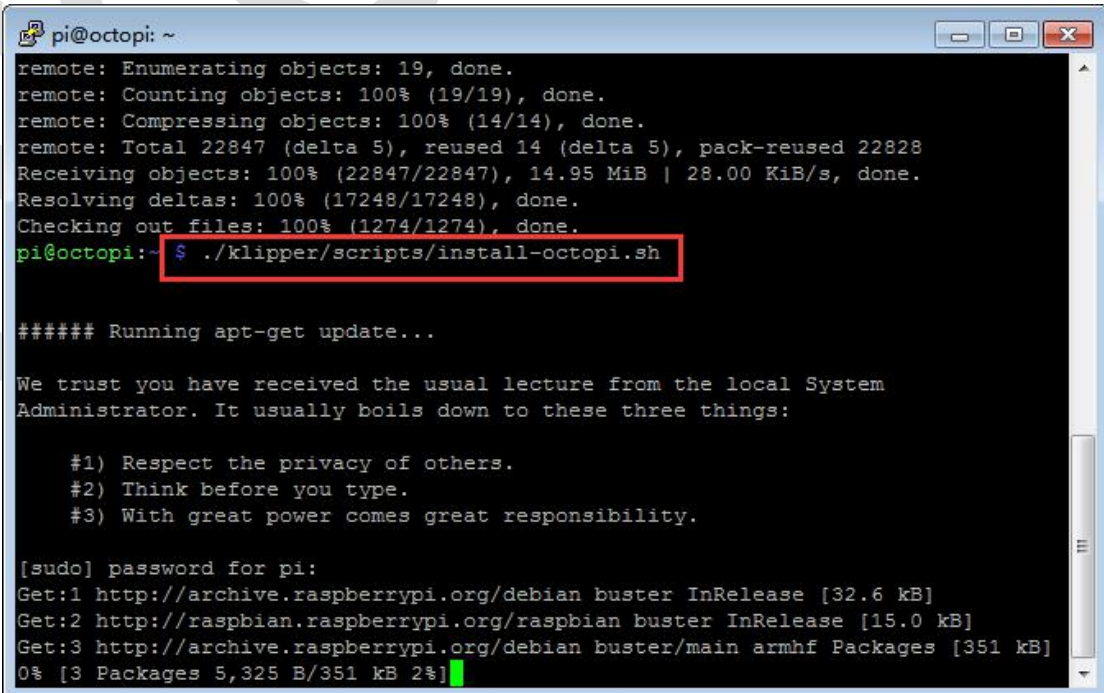
```
pi@octopi: ~
-----
Access OctoPrint from a web browser on your network by navigating to any of:

    http://octopi.local
    http://192.168.2.100

https is also available, with a self-signed certificate.
-----
This image comes without a desktop environment installed because it's not
required for running OctoPrint. If you want a desktop environment you can
install it via

    sudo /home/pi/scripts/install-desktop
-----
OctoPrint version : 1.3.12
OctoPi version    : 0.17.0
-----
pi@octopi:~ $ git clone https://github.com/KevinOConnor/klipper
Cloning into 'klipper'...
remote: Enumerating objects: 19, done.
remote: Counting objects: 100% (19/19), done.
remote: Compressing objects: 100% (14/14), done.
Receiving objects: 3% (686/22847), 176.01 KiB | 139.00 KiB/s
```

完成后执行: “./klipper/scripts/install-octopi.sh” 并输入密码 “raspberrypi”



```
pi@octopi:~ $ ./klipper/scripts/install-octopi.sh

remote: Enumerating objects: 19, done.
remote: Counting objects: 100% (19/19), done.
remote: Compressing objects: 100% (14/14), done.
remote: Total 22847 (delta 5), reused 14 (delta 5), pack-reused 22828
Receiving objects: 100% (22847/22847), 14.95 MiB | 28.00 KiB/s, done.
Resolving deltas: 100% (17248/17248), done.
Checking out files: 100% (1274/1274), done.
pi@octopi:~ $ ./klipper/scripts/install-octopi.sh

##### Running apt-get update...

We trust you have received the usual lecture from the local System
Administrator. It usually boils down to these three things:

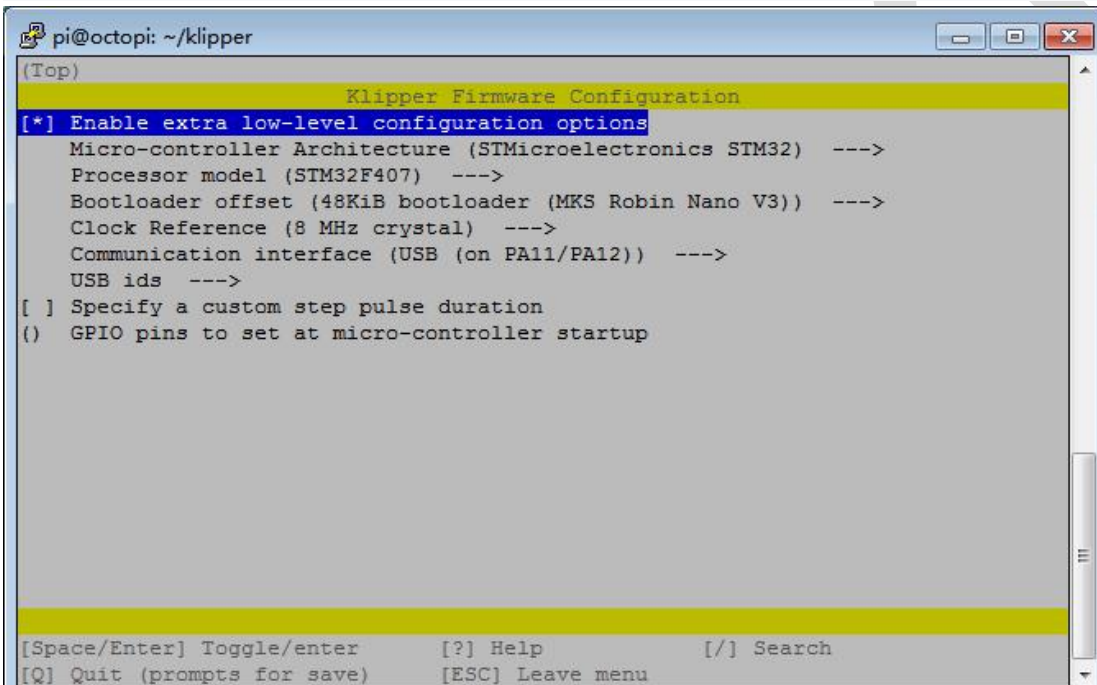
#1) Respect the privacy of others.
#2) Think before you type.
#3) With great power comes great responsibility.

[sudo] password for pi:
Get:1 http://archive.raspberrypi.org/debian buster InRelease [32.6 kB]
Get:2 http://raspbian.raspberrypi.org/raspbian buster InRelease [15.0 kB]
Get:3 http://archive.raspberrypi.org/debian buster/main armhf Packages [351 kB]
0% [3 Packages 5,325 B/351 kB 2%]
```

执行安装 GCC : “sudo apt-get install gcc-arm-none-eabi”

2) 设置

执行“cd ~/klipper/”，并执行“make menuconfig”。Nano V3 主板设置

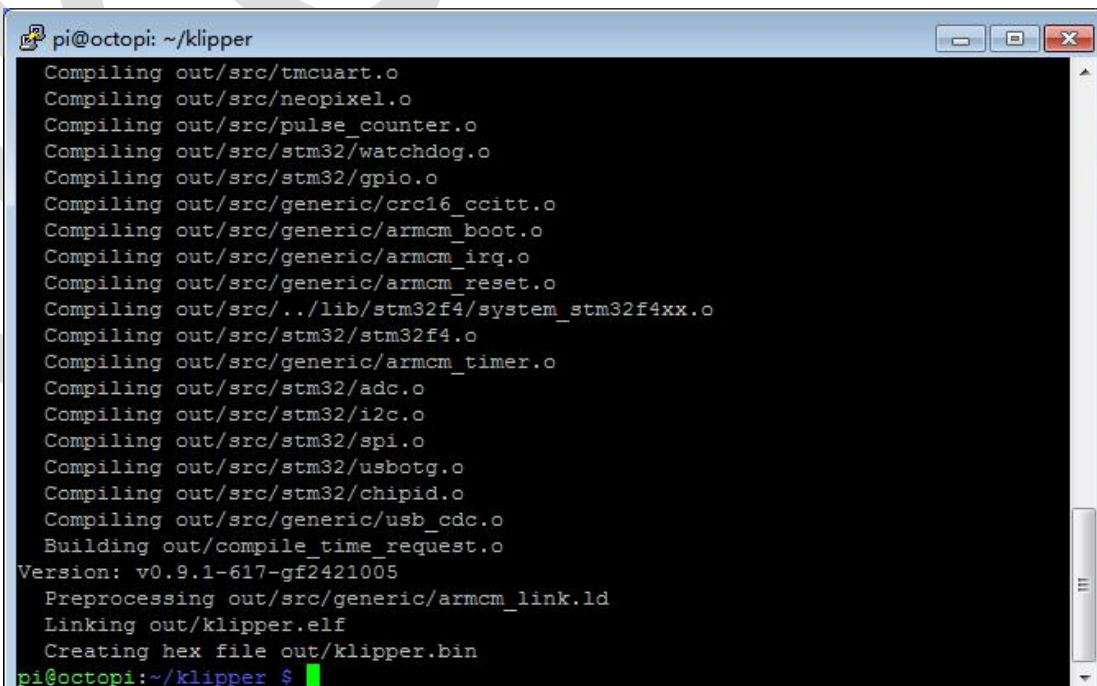


```
pi@octopi: ~/klipper
(Top)
Klipper Firmware Configuration
[*] Enable extra low-level configuration options
  Micro-controller Architecture (STMicroelectronics STM32) --->
  Processor model (STM32F407) --->
  Bootloader offset (48KiB bootloader (MKS Robin Nano V3)) --->
  Clock Reference (8 MHz crystal) --->
  Communication interface (USB (on PA11/PA12)) --->
  USB ids --->
[ ] Specify a custom step pulse duration
(i) GPIO pins to set at micro-controller startup

[Space/Enter] Toggle/enter    [?] Help    [/] Search
[Q] Quit (prompts for save)   [ESC] Leave menu
```

3) 编译

MKS Robin Nano V3 主板：执行“make”编译，并等待完成



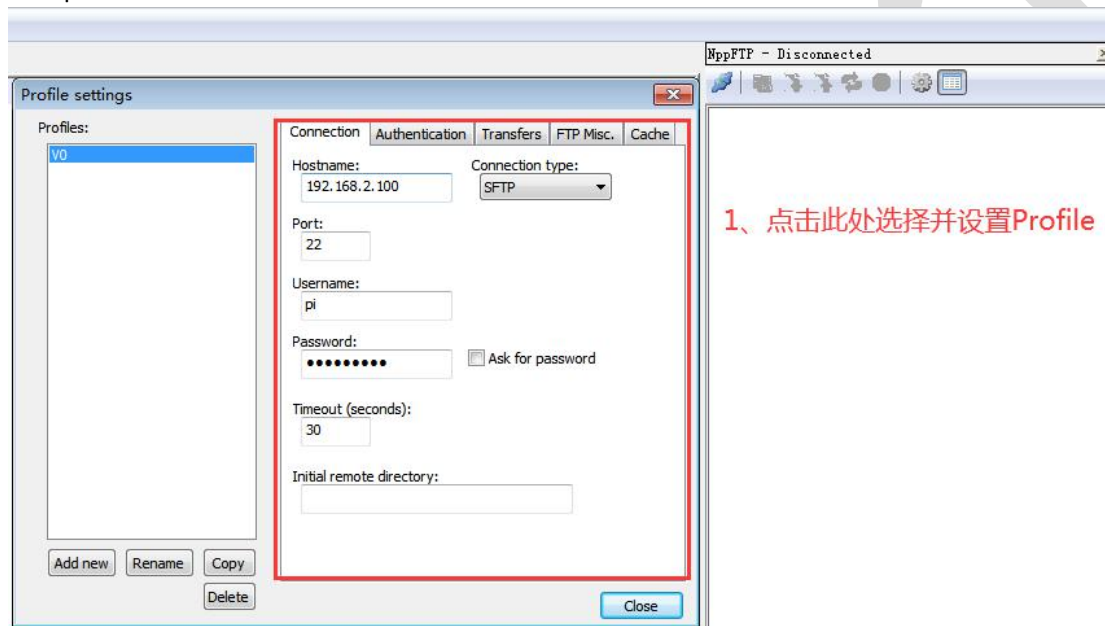
```
pi@octopi: ~/klipper
Compiling out/src/tmcuart.o
Compiling out/src/neopixel.o
Compiling out/src/pulse_counter.o
Compiling out/src/stm32/watchdog.o
Compiling out/src/stm32/gpio.o
Compiling out/src/generic/crc16_ccitt.o
Compiling out/src/generic/armcm_boot.o
Compiling out/src/generic/armcm_irq.o
Compiling out/src/generic/armcm_reset.o
Compiling out/src/./lib/stm32f4/system_stm32f4xx.o
Compiling out/src/stm32/stm32f4.o
Compiling out/src/generic/armcm_timer.o
Compiling out/src/stm32/adc.o
Compiling out/src/stm32/i2c.o
Compiling out/src/stm32/spi.o
Compiling out/src/stm32/usbotg.o
Compiling out/src/stm32/chipid.o
Compiling out/src/generic/usb_cdc.o
Building out/compile_time_request.o
Version: v0.9.1-617-gf2421005
Preprocessing out/src/generic/armcm_link.ld
Linking out/klipper.elf
Creating hex file out/klipper.bin
pi@octopi:~/klipper $
```

若提示“make: arm-none-eabi-gcc: Command not found”

请参考：[FAQ 问题一](#)

4) 更新

Notepad++设置并连接到树莓派（提示：IP 地址根据自己实际设置）



Klipper.bin 文件位于：“pi->klipper->out->klipper.bin” 右键另存为操作
MKS Robin Nano V3 主板，另存 Robin_nano_v3.bin 文件到 TF 卡，并插到主板进行固件升级。
升级完成后，蜂鸣器将滴滴两声

三、Octoprint 初始化-串口设置

1) Octoprint 初始化设置

Setup Wizard

[Start](#)[Access Control](#)[Anonymous Usage Tracking](#)[Online connectivity check](#)[Plugin blacklist](#)[Default Printer Profile](#)[Finish](#)

Hello!

Thank you for installing OctoPrint!

This wizard will guide you through the final steps to get your OctoPrint instance all set up and ready to go. We'll get you printing in no time!

1、点击Next

Previous Unless otherwise noted, you may just skip any wizard page by clicking "Next" or "Finish". Next

Setup Wizard

Start

Access Control

Anonymous Usage Tracking

Online connectivity check

Plugin blacklist

Default Printer Profile

Finish

Mandatory Step! You need to fill this out now.

Access Control

Please read the following, it is very important for your printer's health!

OctoPrint by default ships with Access Control enabled, meaning you won't be able to do anything with the printer unless you login first as a configured user. This is to **prevent strangers - possibly with malicious intent - to gain access to your printer** via an untrustworthy network and using it in such a way that it is damaged or worse (i.e. causes a fire).

If you plan on accessing OctoPrint remotely over the internet, **you should not only rely on the built-in Access Control mechanisms** however - **take additional precautions**. Your OctoPrint enabled printer is a critical home appliance you really should not give anyone who happens to be connected to the internet access to - even read-only! **An instance available publicly on the internet will be found, and people will try to break it open.**

It looks like you haven't configured access control yet. Please **set up a username and password** for the initial administrator account who will have full access to both the printer and OctoPrint's settings, then click on "Keep Access Control Enabled":

Username

Password

Confirm Password

2、设置自己Octoprint 登录账户及密码

Note: In case that your OctoPrint installation is only accessible from within a trustworthy local network and you don't need Access Control for other reasons, you may alternatively disable Access Control. You should only do this if you are absolutely certain that only people you know and trust will be able to connect to it.

Do NOT underestimate the risk of access from the internet to your printer and OctoPrint instance!

3、选择此处，并点击Next

Previous Unless otherwise noted, you may just skip any wizard page by clicking "Next" or "Finish". Next

Setup Wizard

[Start](#)[Access Control](#)[Anonymous Usage Tracking](#)[Online connectivity check](#)[Plugin blacklist](#)[Default Printer Profile](#)[Finish](#)**Mandatory Step!** You need to fill this out now.

Configure Anonymous Usage Tracking

Anonymous usage tracking provides valuable insights into how many instances running what versions of OctoPrint are out there, whether they are successfully completing print jobs and various other metrics.

By enabling it you help to identify problems with new releases and release candidates early on, and to better tailor OctoPrint's future development to actual use.

For details on what gets tracked, please refer to tracking.octoprint.org and also the [Privacy Policy at tracking.octoprint.org](#).

Note: You can always change your decision and also access more granular controls via Settings > Anonymous Usage Tracking.

[Disable Anonymous Usage Tracking](#)[Enable Anonymous Usage Tracking](#)

4、选择Enable，并点击Next

[Previous](#)

Unless otherwise noted, you may just skip any wizard page by clicking "Next" or "Finish".

[Next](#)

Setup Wizard

[Start](#)[Access Control](#)[Anonymous Usage Tracking](#)[Online connectivity check](#)[Plugin blacklist](#)[Default Printer Profile](#)[Finish](#)**Mandatory Step!** You need to fill this out now.

Configure the connectivity check

If the connectivity check is enabled, OctoPrint will regularly check if it's connected to the internet. This is **useful to prevent resource intensive operations** (such as checking for updates) if it's already clear that they won't succeed anyhow.

If it is disabled OctoPrint will always assume to have a working connection to the internet. If that should not actually be the case, server startups, update checks and the like might take longer.

OctoPrint comes preconfigured to perform the connectivity check every 15 minutes. You may change the value here.

Check interval min

OctoPrint comes preconfigured to utilize Google's DNS server , port 53 for the connectivity check (if it's enabled). If you have concerns about using that, define the IP and port of a different online server that you trust and that has a high availability.

Host IP Port [Test host & port](#)

Finally, please decide on whether to enable or disable the connectivity check. You may change the configuration at any time through Settings > Server right from within OctoPrint.

[Disable Connectivity Check](#)[Enable Connectivity Check](#)

5、选择Enable，并点击Next

[Previous](#)

Unless otherwise noted, you may just skip any wizard page by clicking "Next" or "Finish".

[Next](#)

Setup Wizard

[Start](#)[Access Control](#)[Anonymous Usage Tracking](#)[Online connectivity check](#)**Plugin blacklist**[Default Printer Profile](#)[Finish](#)

Mandatory Step! You need to fill this out now.

Configure plugin blacklist processing

To protect against known severe issues with certain versions of third party plugins, OctoPrint supports the use of a centralized plugin version blacklist to automatically disable such plugin versions before they can interfere with normal operation, allowing you to uninstall or update them to a newer version.

By default, OctoPrint will use the blacklist hosted at plugins.octoprint.org/blacklist.json which you can also take a look at in a more human readable format [here](#).

Please decide whether to allow fetch and use of this centralized blacklist starting with the next server start. You may also change your decision at any time through Settings > Server right from within OctoPrint.

[Disable Plugin Blacklist Processing](#)[Enable Plugin Blacklist Processing](#)

6、选择Enable，并点击Next

[Previous](#)

Unless otherwise noted, you may just skip any wizard page by clicking "Next" or "Finish".

[Next](#)

Setup Wizard

[Start](#)[Access Control](#)[Anonymous Usage Tracking](#)[Online connectivity check](#)[Plugin blacklist](#)**Default Printer Profile**[Finish](#)

Set up your printer profile

Please make sure the settings below match your printer. If you plan on connecting more than one printer to OctoPrint, you can also configure additional printer profiles under Settings > Printer Profiles

[General](#) [Print bed & build volume](#) [Axes](#) [Hotend & extruder](#)Name Identifier Model

7、设置打印机，并点击Next

[Previous](#)

Unless otherwise noted, you may just skip any wizard page by clicking "Next" or "Finish".

[Next](#)

Setup Wizard

[Start](#)
[Access Control](#)
[Anonymous Usage Tracking](#)
[Online connectivity check](#)
[Plugin blacklist](#)
Default Printer Profile
[Finish](#)

Set up your printer profile

Please make sure the settings below match your printer. If you plan on connecting more than one printer to OctoPrint, you can also configure additional printer profiles under Settings > Printer Profiles

[General](#) **[Print bed & build volume](#)** [Axes](#) [Hotend & extruder](#)

Form Factor ☒ Rectangular ☐ Circular

Origin

Heated Bed ☒

Heated Chamber ☐

Please define the print volume.

Width (X) mm

Depth (Y) mm

Height (Z) mm

打印机参数设置

If your printer's print head may move slightly outside the print volume (e.g. for nozzle cleaning routines) you can define a custom safe bounding box for its

[Previous](#) Unless otherwise noted, you may just skip any wizard page by clicking "Next" or "Finish". [Next](#)

Setup Wizard

[Start](#)
[Access Control](#)
[Anonymous Usage Tracking](#)
[Online connectivity check](#)
[Plugin blacklist](#)
[Default Printer Profile](#)
Finish

All Done!

Your OctoPrint installation is now all set up and ready to go.

For your printer's safety

Even with OctoPrint attached you should **never leave your printer running completely unattended**. The electronics in our consumer printers can and sometimes sadly do catch fire, so stay or have someone else stay close enough to physically intervene in case of such catastrophic failure.

You also should **never make your OctoPrint instance available for everyone on the public internet**, even with Access Control enabled. Your instance *will* be found, and bad people *will* try to abuse it. Don't put yourself at risk, [use a safe way to access your instance remotely](#).

If you enjoy OctoPrint...

Please consider [supporting OctoPrint's ongoing development](#), which can only continue with funding by users like you! You can also find this link in the "About" dialog.
Thank you!

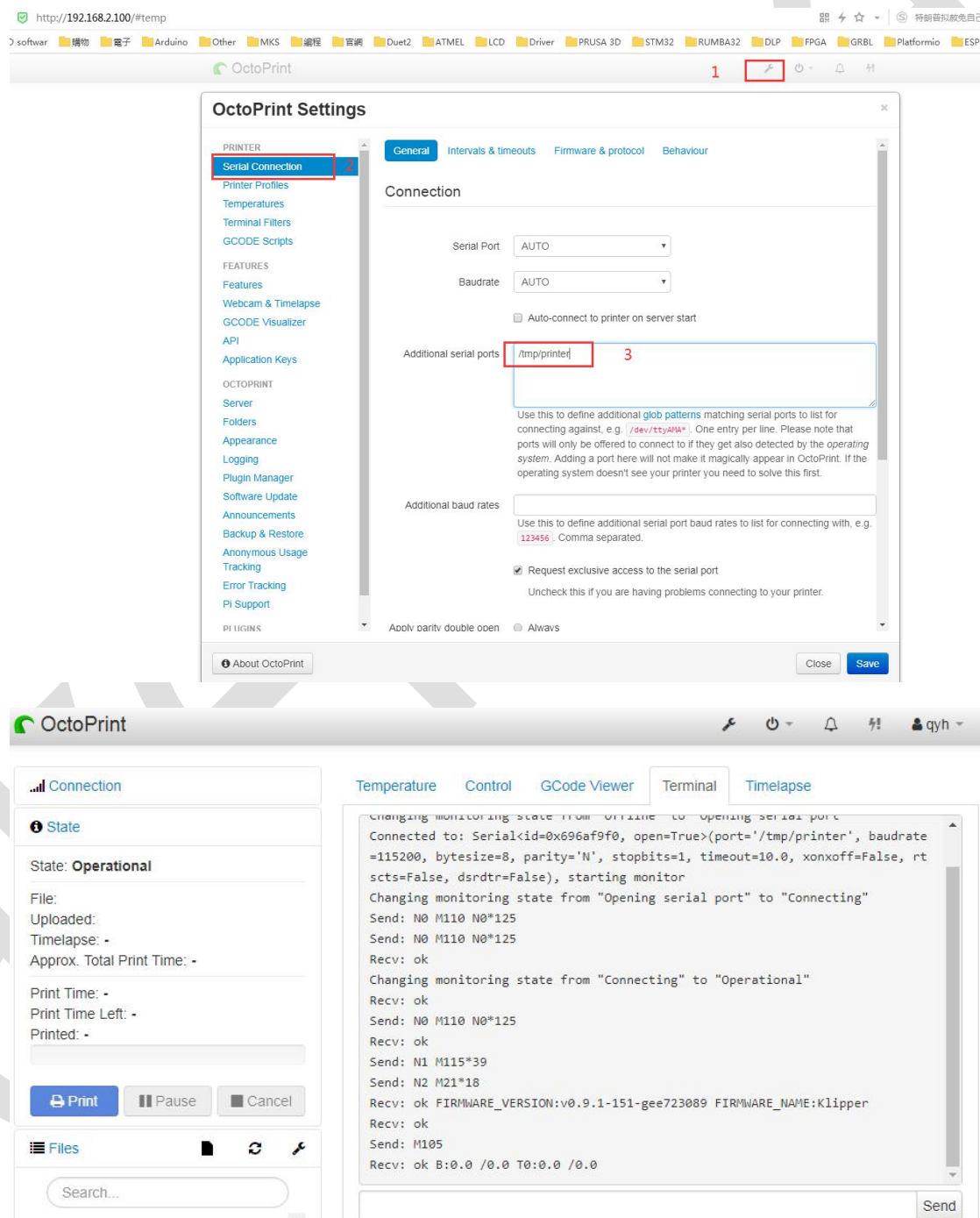
With all that being said, **Happy and Safe Printing!**

[Previous](#) Unless otherwise noted, you may just skip any wizard page by clicking "Next" or "Finish". [Finish](#)

8、点击完成初始化设置

2) 串口设置

使用网页连接好 OctoPrint 后，进行初始化设置后，增加串口：“/tmp/printer” 并连接



The image shows the OctoPrint web interface. The top part displays the 'OctoPrint Settings' dialog box, specifically the 'Serial Connection' tab. In the 'Additional serial ports' field, the path '/tmp/printer' has been entered. The bottom part shows the OctoPrint main interface with the 'Terminal' tab selected, displaying the log output of the Klipper firmware. The log shows the process of opening the serial port, connecting, and starting the monitor, with the state changing from 'Opening serial port' to 'Connecting' and finally to 'Operational'.

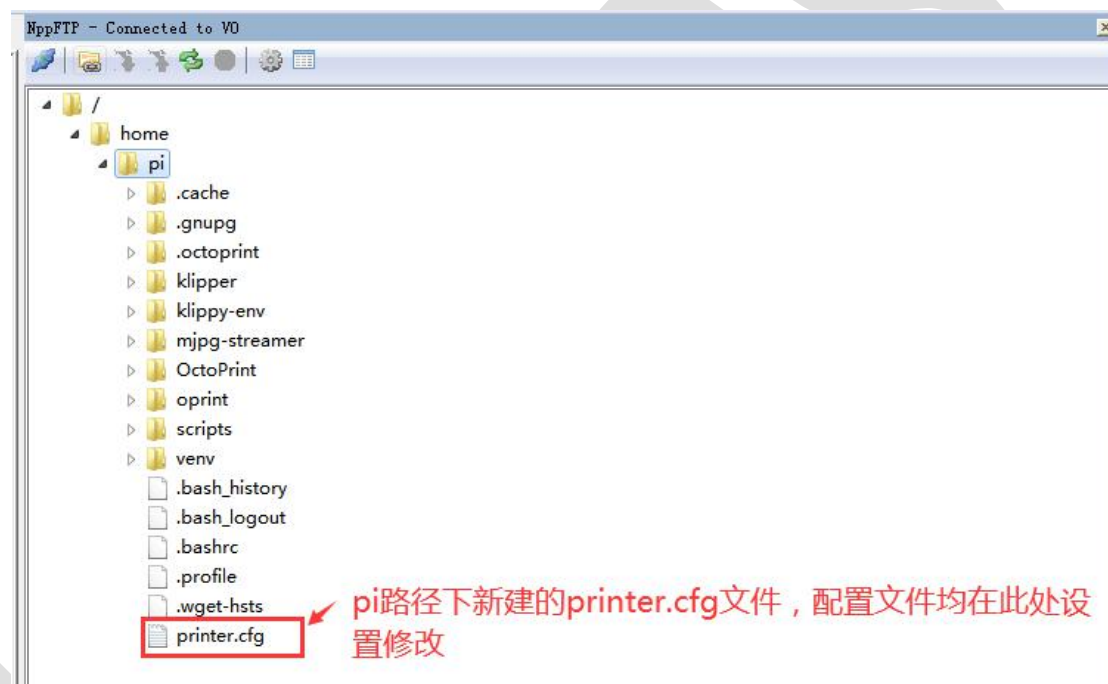
若无法添加 “/tmp/printer”，执行：./klipper/scripts/install-octopi.sh

详细请参考：[FAQ 问题三](#)

四、Klipper 配置文件

1) printer.cfg 配置文件

Klipper 固件，读取配置文件均从此文件。可在 pi 文件夹下新建 printer.cfg 文件。相关主板配置文件示例，可参考：Klipper->config 文件夹，可对应打开并复制到 printer.cfg 文件。也可以参考 MSK Github: <https://github.com/makerbase-mks/Klipper-for-MKS-Boards>



mks-viva Add duet2wifi/gen-l/rumba32 klipper firmware and config, update readme 6088dbb 3 days ago 7 commits		
Duet2wifi	Add duet2wifi/gen-l/rumba32 klipper firmware and config, update readme	3 days ago
MKS Gen I	Add duet2wifi/gen-l/rumba32 klipper firmware and config, update readme	3 days ago
MKS Lcd Config	Add klipper firmware and config for Robin lite, #2	4 days ago
MKS Robin E3-E3D	Add duet2wifi/gen-l/rumba32 klipper firmware and config, update readme	3 days ago
MKS Robin Lite V1.1	Add duet2wifi/gen-l/rumba32 klipper firmware and config, update readme	3 days ago
MKS Robin Nano V1.x	Add Robin series	7 days ago
MKS Robin Nano V2.x	Add duet2wifi/gen-l/rumba32 klipper firmware and config, update readme	3 days ago
MKS Robin Nano V3.x	Add duet2wifi/gen-l/rumba32 klipper firmware and config, update readme	3 days ago
MKS Rumba32	Add duet2wifi/gen-l/rumba32 klipper firmware and config, update readme	3 days ago
MKS Sgen I V1	Add duet2wifi/gen-l/rumba32 klipper firmware and config, update readme	3 days ago
MKS Sgen I V2	Add duet2wifi/gen-l/rumba32 klipper firmware and config, update readme	3 days ago
LICENSE	Initial commit	10 days ago
README.md	Initial commit	10 days ago

2) 基本参数

以 MKS Robin Nano V3 主板为例，包括步进、加热、热敏、限位、细分、行程、回零、回零速度、屏幕类型等设置

步进设置

```
[stepper_x]                # 适用于 X Y Z E (E 没有限位、回零、最大行程等设置)
step_pin: PE3              # 步进脉冲管脚
dir_pin: !PE2              # 方向管脚，增加或者删除 “!” 可换向
enable_pin: !PE4           # 步进使能管脚，有 “!”：低电平使能；无则是高电平使能
microsteps: 16             # 细分设置
rotation_distance: 40      # 脉冲设置
endstop_pin: !PA15         # 限位设置，“!” 表示 S G 断开，即是常开，常闭去掉 “!”
position_endstop: 0        # 回零到最小设置，若设置为最大行程，则为回零到最大处
position_max: 300          # 最大行程设置
homing_speed: 50          # 回零速度设置
#####
#   rotation_distance = <full_steps_per_rotation> * <microsteps> / <steps_per_mm>      #
#   rotation_distance = ((360° / 1.8°) * microsteps) / 80                          #
#   旋转距离 = (圆周 360° / 步距角) * 细分 / 每 MM 脉冲值                        #
#####
```

挤出机设置

```
[extruder]
nozzle_diameter: 0.400    # 喷嘴直径
filament_diameter: 1.750  # 耗材直径
heater_pin: PE5            # 加热头管脚
sensor_type: ATC Semitec 104GT-2 # 测温类型
sensor_pin: PC1           # 测温管脚
control: pid              # 加热控制类型
pid_Kp: 14.669            # PID 参数 kp
pid_Ki: 0.572             # PID 参数 ki
pid_Kd: 94.068            # PID 参数 kd
min_temp: 0               # 最小温度
max_temp: 250             # 最大温度
```

热床设置

```
[heater_bed]
```


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```
heater_pin: PA0          # 热床加热管脚
sensor_type: EPCOS 100K B57560G104F  # 测温类型
sensor_pin: PC0          # 测温管脚
control: pid             # 加热控制类型
pid_Kp: 325.10           # PID 参数 kp
pid_Ki: 63.35            # PID 参数 ki
pid_Kd: 417.10           # PID 参数 kd
min_temp: 0              # 最小温度
max_temp: 130            # 最大温度
```

风扇设置

```
[fan]
pin: PC14                # FAN 控制管脚; FAN2 is use PB1 control
```

机器设置

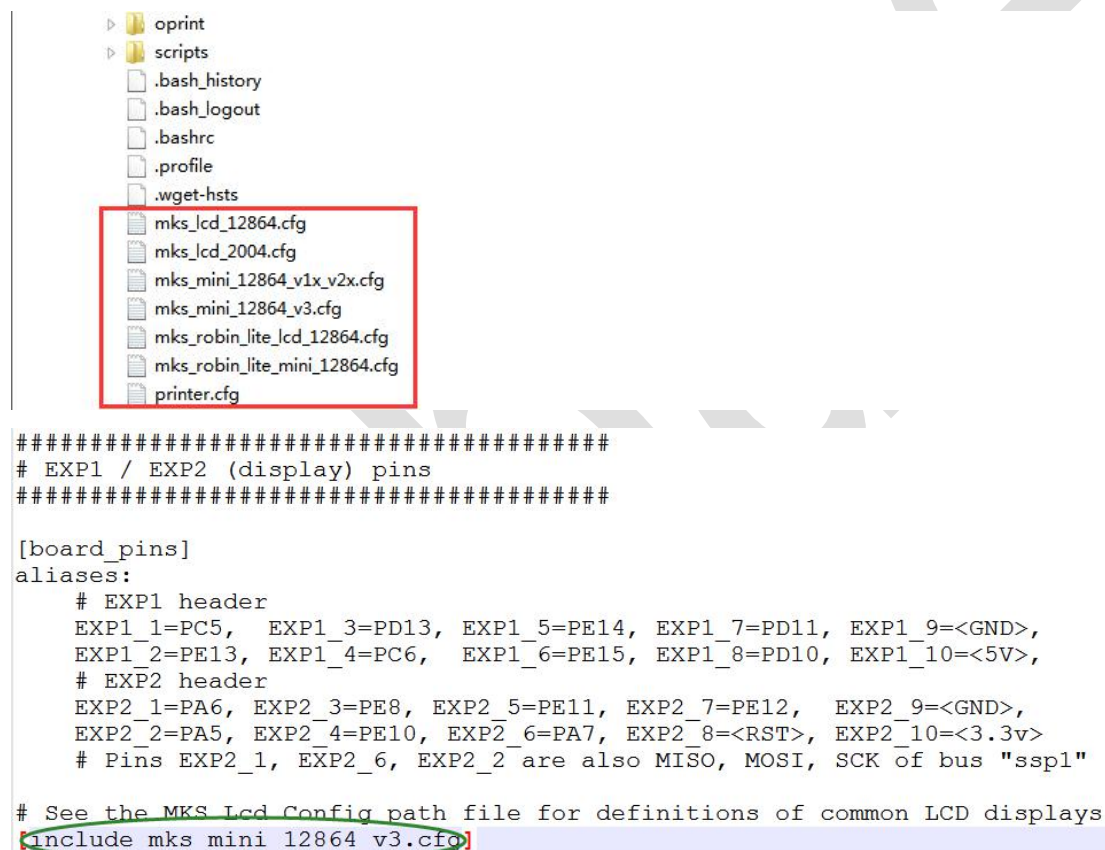
```
[printer]
kinematics: cartesian    #机型设置, cartesian、corexy、delta……
max_velocity: 250        # XY 最大速度速度设置
max_accel: 4500          # XY 加速度设置
max_z_velocity: 25       # Z 最大速度速度设置
max_z_accel: 100         # Z 加速度设置
```

EXP1/EXP2 接口

```
#####
# EXP1 / EXP2 (display) pins
#####
[board_pins]
aliases:
    # EXP1 header
    EXP1_1=PC5, EXP1_3=PD13, EXP1_5=PE14, EXP1_7=PD11, EXP1_9=<GND>,
    EXP1_2=PE13, EXP1_4=PC6, EXP1_6=PE15, EXP1_8=PD10, EXP1_10=<5V>,
    # EXP2 header
    EXP2_1=PA6, EXP2_3=PE8, EXP2_5=PE11, EXP2_7=PE12, EXP2_9=<GND>,
    EXP2_2=PA5, EXP2_4=PE0, EXP2_6=PE10, EXP2_8=<RST>, EXP2_10=<3.3v>
    # Pins EXP2_1, EXP2_6, EXP2_2 are also MISO, MOSI, SCK of bus "ssp1"
# See the sample-lcd.cfg file for definitions of common LCD displays.
# Refer to: https://github.com/makerbase-mks/Klipper-for-MKS-Boards MKS Lcd Config 路径
```

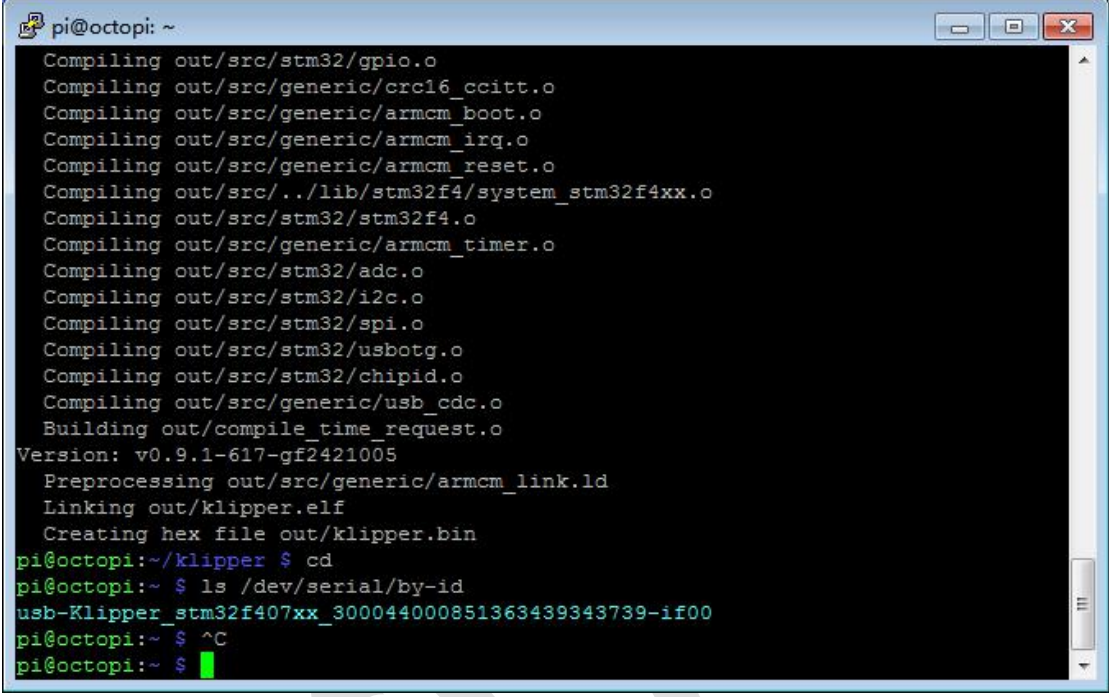
屏幕设置

可以直接拷贝对应的屏幕设置到 `print.cfg` 文件中; 也可以将 LCD 的配置文件, 放到同 `print.cfg` 路径, 然后在 `print.cfg` 文件中使用 "[include ***.cfg]" 包含对应的屏幕文件



串口设置

获取串口需要执行: `ls /dev/serial/by-id`
MKS Robin Nano V3 主板串口显示如下



```
pi@octopi: ~
Compiling out/src/stm32/gpio.o
Compiling out/src/generic/crc16_ccitt.o
Compiling out/src/generic/armcm_boot.o
Compiling out/src/generic/armcm_irq.o
Compiling out/src/generic/armcm_reset.o
Compiling out/src/./lib/stm32f4/system_stm32f4xx.o
Compiling out/src/stm32/stm32f4.o
Compiling out/src/generic/armcm_timer.o
Compiling out/src/stm32/adc.o
Compiling out/src/stm32/i2c.o
Compiling out/src/stm32/spi.o
Compiling out/src/stm32/usbotg.o
Compiling out/src/stm32/chipid.o
Compiling out/src/generic/usb_cdc.o
Building out/compile_time_request.o
Version: v0.9.1-617-gf2421005
Preprocessing out/src/generic/armcm_link.ld
Linking out/klipper.elf
Creating hex file out/klipper.bin
pi@octopi:~/klipper $ cd
pi@octopi:~ $ ls /dev/serial/by-id
usb-Klipper_stm32f407xx_300044000851363439343739-if00
pi@octopi:~ $ ^C
pi@octopi:~ $
```

[mcu]

serial: /dev/serial/by-id/usb-Klipper_stm32f407xx_300044000851363439343739-if00

Octoprint 识别端口，根据实际设置

[fan]

pin: PC14 # fan1

#pin: PB1 # fan2

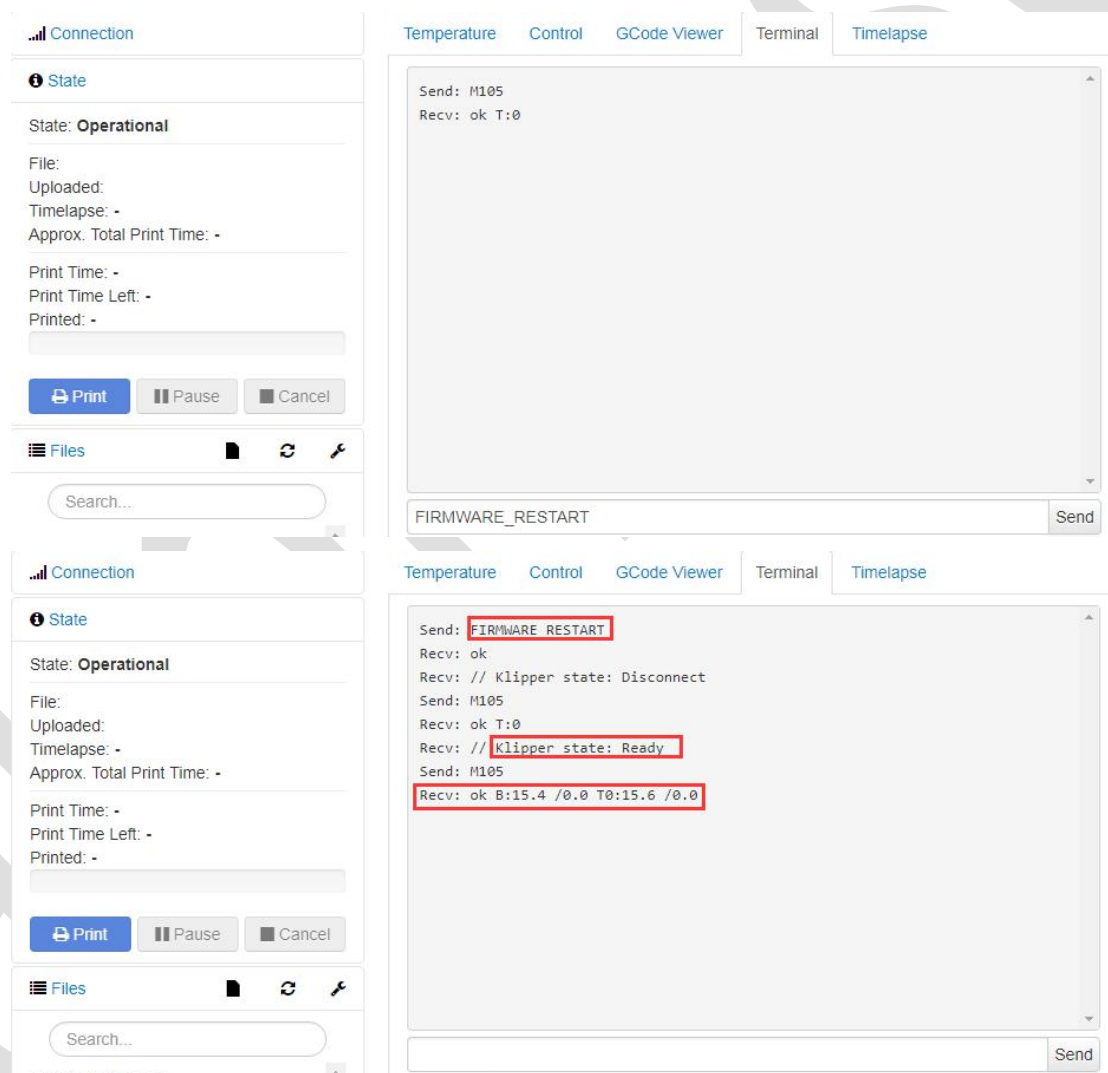
[mcu]

serial: /dev/serial/by-id/usb-Klipper_stm32f407xx_300044000851363439343739-if00

五、Octoprint 连接控制打印机

1) 连接主板控制

配置好 printer.cfg 文件后，在网页 Octoprint 终端发送：FIRMWARE_RESTART 命令，可查看到主板温度，此时，可对打印机进行操作。比如，移动轴等



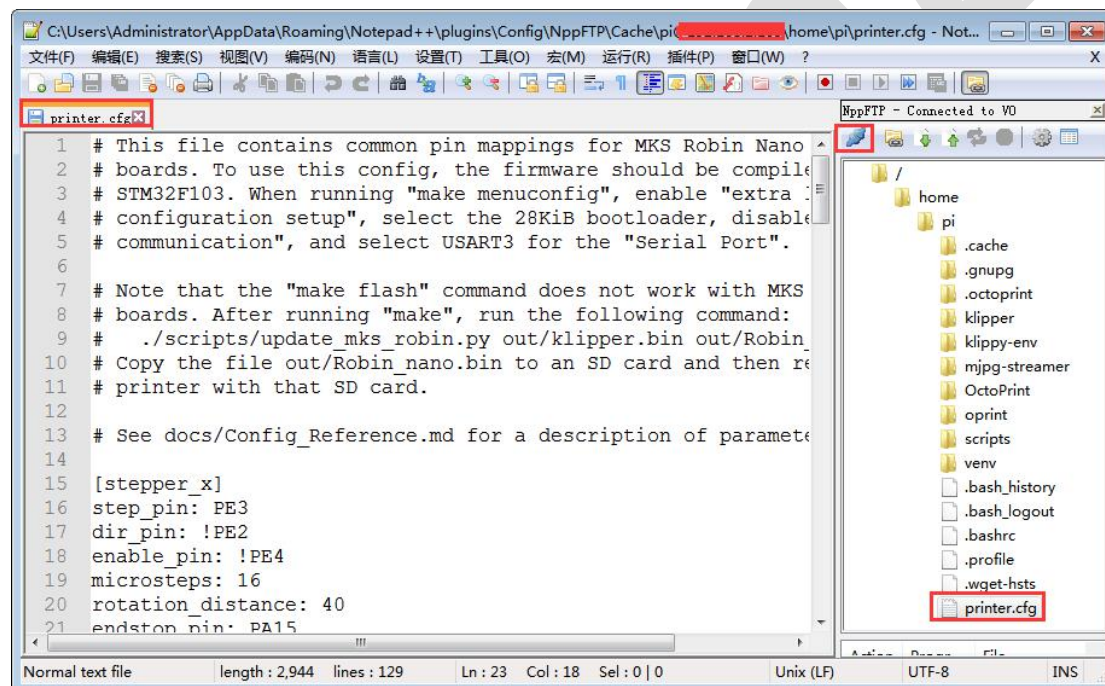
The image displays two screenshots of the Octoprint web interface, illustrating the process of connecting to the printer's firmware.

Top Screenshot: The interface shows the 'Terminal' tab selected. The 'Send' input field contains the command 'FIRMWARE_RESTART'. The terminal output shows the command being sent and received: 'Send: M105' and 'Recv: ok T:0'.

Bottom Screenshot: The interface shows the 'Terminal' tab selected. The 'Send' input field contains the command 'FIRMWARE_RESTART'. The terminal output shows the command being sent and received: 'Send: FIRMWARE_RESTART', 'Recv: ok', 'Recv: // Klipper state: Disconnect', 'Send: M105', 'Recv: ok T:0', 'Recv: // Klipper state: Ready', 'Send: M105', and 'Recv: ok B:15.4 /0.0 T0:15.6 /0.0'.

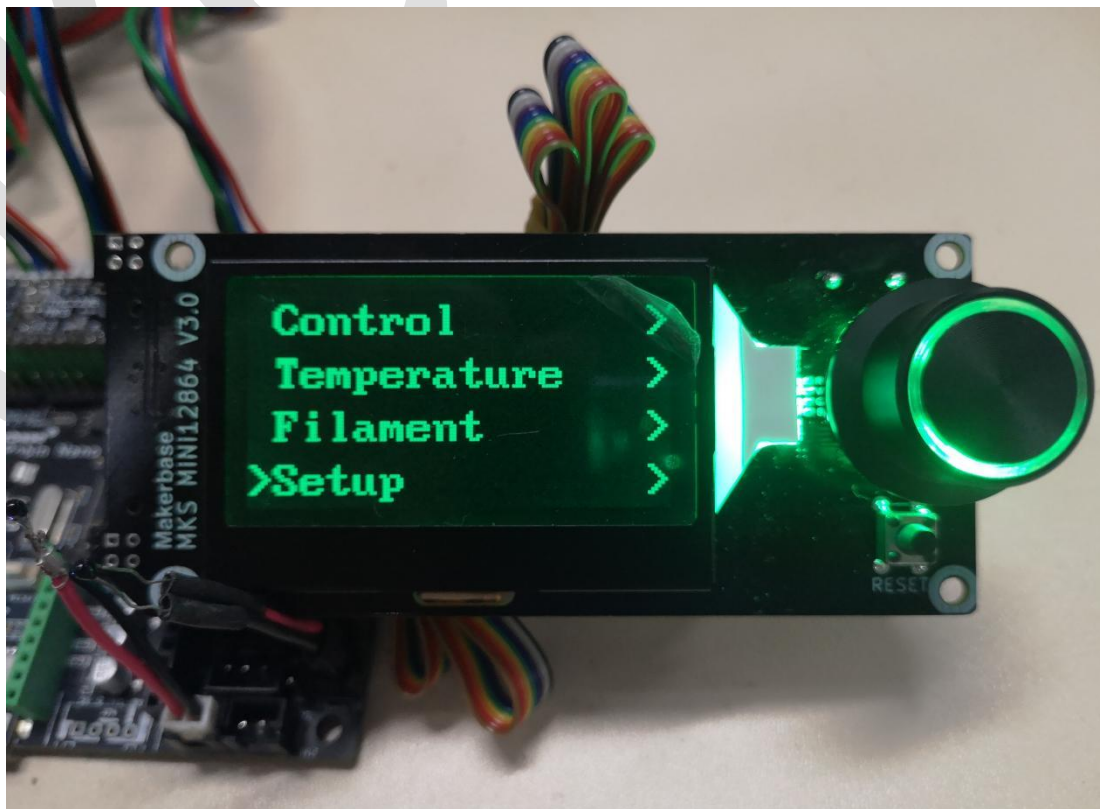
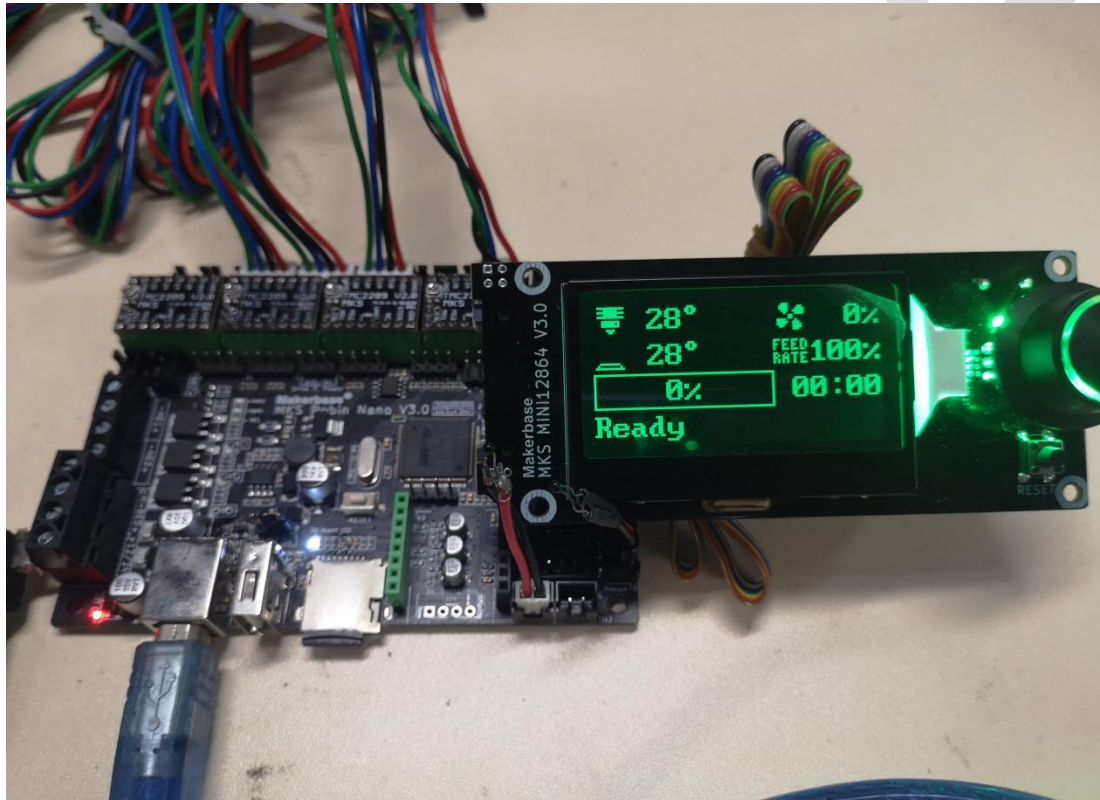
2) FIRMWARE_RESTART 指令

说明：若在此网页操作过程中，发现参数需要调整修改，均需要在 Notepad++ 中连接树莓派，并打开 printer.cfg 文件进行编辑并保存。之前都要在 Octoprint 终端发送“FIRMWARE_RESTART”指令，以重新加载设置



六、测试

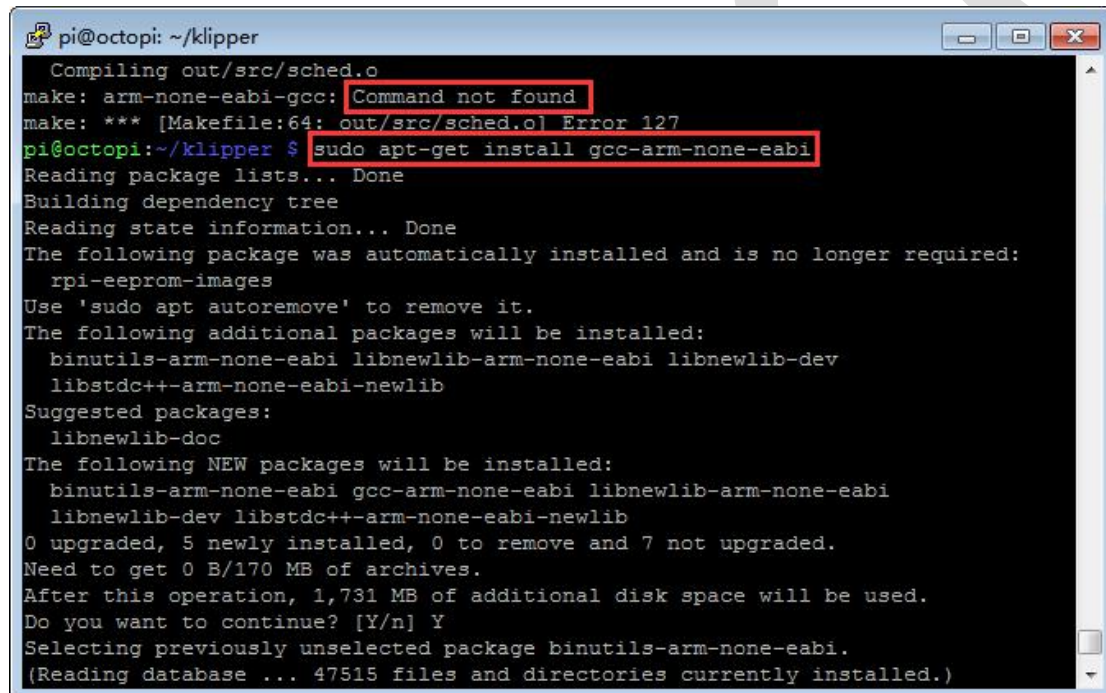
MKS Robin Nano V3+MKS MINI12864 V3 测试



七、常见问题处理（FAQ）

问题一：make: arm-none-eabi-gcc: Command not found

解决 执行：“sudo apt-get install gcc-arm-none-eabi”，并输入“Y”确认并等待安装



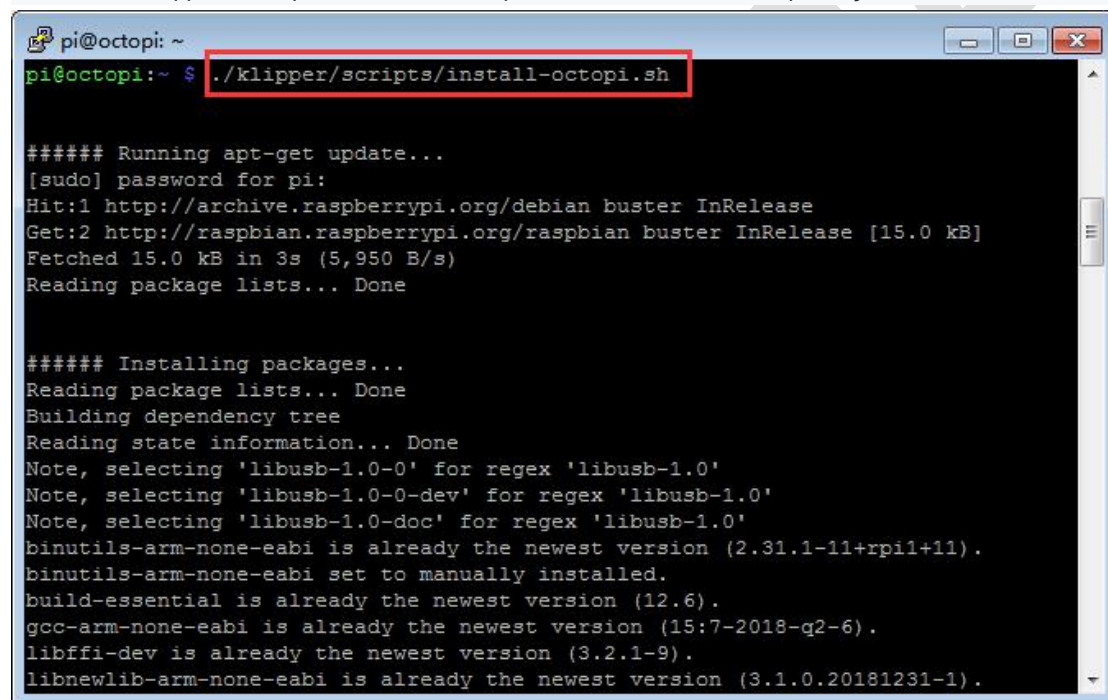
```
pi@octopi: ~/klipper
Compiling out/src/sched.o
make: arm-none-eabi-gcc: Command not found
make: *** [Makefile:64: out/src/sched.o] Error 127
pi@octopi:~/klipper $ sudo apt-get install gcc-arm-none-eabi
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following package was automatically installed and is no longer required:
  rpi-eeeprom-images
Use 'sudo apt autoremove' to remove it.
The following additional packages will be installed:
  binutils-arm-none-eabi libnewlib-arm-none-eabi libnewlib-dev
  libstdc++-arm-none-eabi-newlib
Suggested packages:
  libnewlib-doc
The following NEW packages will be installed:
  binutils-arm-none-eabi gcc-arm-none-eabi libnewlib-arm-none-eabi
  libnewlib-dev libstdc++-arm-none-eabi-newlib
0 upgraded, 5 newly installed, 0 to remove and 7 not upgraded.
Need to get 0 B/170 MB of archives.
After this operation, 1,731 MB of additional disk space will be used.
Do you want to continue? [Y/n] Y
Selecting previously unselected package binutils-arm-none-eabi.
(Reading database ... 47515 files and directories currently installed.)
```

问题二：Octoprint 终端发送 FIRMWARE_RESTART 无法返回温度

解决 执行：对主板手动复位，重新发送“FIRMWARE_RESTART”指令

问题三：Octoprint 添加 “/tmp/printer” 但 “Serial Port” 选项无法显示

执行：./klipper/scripts/install-octopi.sh，并输入密码“raspberry”等待安装。



```
pi@octopi: ~  
pi@octopi:~$ ./klipper/scripts/install-octopi.sh  
  
##### Running apt-get update...  
[sudo] password for pi:  
Hit:1 http://archive.raspberrypi.org/debian buster InRelease  
Get:2 http://raspbian.raspberrypi.org/raspbian buster InRelease [15.0 kB]  
Fetched 15.0 kB in 3s (5,950 B/s)  
Reading package lists... Done  
  
##### Installing packages...  
Reading package lists... Done  
Building dependency tree  
Reading state information... Done  
Note, selecting 'libusb-1.0-0' for regex 'libusb-1.0'  
Note, selecting 'libusb-1.0-0-dev' for regex 'libusb-1.0'  
Note, selecting 'libusb-1.0-doc' for regex 'libusb-1.0'  
binutils-arm-none-eabi is already the newest version (2.31.1-11+rp11+11).  
binutils-arm-none-eabi set to manually installed.  
build-essential is already the newest version (12.6).  
gcc-arm-none-eabi is already the newest version (15:7-2018-q2-6).  
libffi-dev is already the newest version (3.2.1-9).  
libnewlib-arm-none-eabi is already the newest version (3.1.0.20181231-1).
```


八、附录-相关资料

固件获取: <https://github.com/KevinOConnor/klipper>

固件编译: <https://www.klipper3d.org/Installation.html>

固件配置: <https://www.klipper3d.org/Overview.html>

功能介绍: <https://www.klipper3d.org/Features.html>

步进旋转值计算: https://www.klipper3d.org/Rotation_Distance.html

MKS 主板, 已编译 Klipper 固件:

<https://github.com/makerbase-mks/Klipper-for-MKS-Boards>