

STAGE ZERO

RPI Zero setup

Setup image on github

HARDWARE

BOX OF ZERO SETUP STUFF

OS

3x MicroSD with OS installed with dev-env
μSD 70MB/s flash cards

CABLES

Micro usb to USB x 2

POWER

Wallwart to μusb 5V

HEADERS

Start here: <https://learn.adafruit.com/introducing-the-raspberry-pi-zero/gpio-header-options/>

Female GPIO

Female GPIO short

Female right-angled

MISC

Maybe's

Banana for power supply
banana to clips
Alligator-to-breadboard wires

SOLDERING BOXEN

STATIONARY

FX-888D \$110 Adafruit \$100 Sparkfun

There is a chinese knockoff—some of decent quality. It's hard to tell by looking at them

Could offer both

tip **tips**

China tips \$.50 - \$2

FX-888D 5star 40 order **14 piece set** \$11.42

Solder

Flux

Brass sponge

Spring pop Solder sucker

MOBILE

3D printed iron & extractor kit

Good for 300 solders, 30 minutes

<https://learn.adafruit.com/usb-rechargeable-cordless-soldering-iron/overview>

Hakko FX-901 + USB charger

PowerBoost 500C Charger

Fume extractor

<https://learn.adafruit.com/usb-rechargeable-mini-solder-fume-extractor?view=all>

PowerBoost 500 Charger

500 mAh Lithium Polymer battery

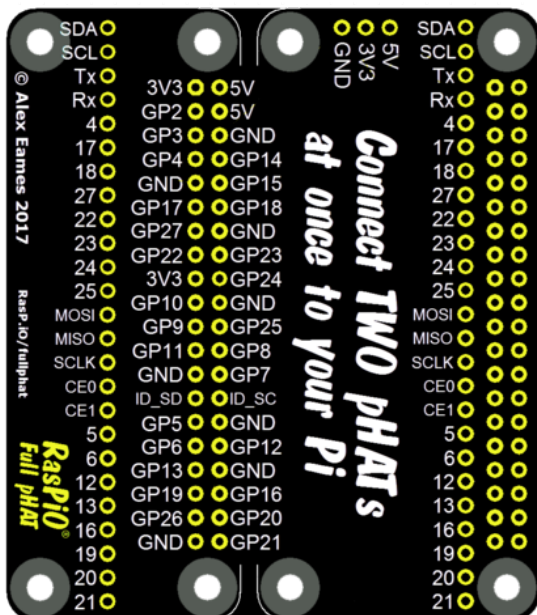
Breadboard-friendly SPDT Slide Switch

Digi-Key part #259-1576-ND

2 (two) #4-40 x 1/2 inch pan head machine screws and matching nuts

Activated carbon filter Weller WSA350F or MCM Electronics #21-7961

BASIC BUS TO GET STARTED



SOFTWARE

No green light

Usually get green light if disk image ok.

But sometimes no. If no, then give it a nudge as follows

The name of the file should be **wpa_supplicant.conf** and its contents will get copied to the system folder at boot time. It will then be deleted. So this a one time only process. If you want to try again, you have to recreate the file and reboot.

`./etc/wpa_supplicant/wpa_supplicant.conf`

`vesc% cat boot/config.txt`

`# http://rpf.io/configtxt`

`dtoverlay=dwc2`

`enable_uart=1`

`dtparam=i2c_arm=on`

`dtparam=i2c1=on`

`dtparam=i2c_vc=on`

`touch boot/ssh`

`sudo cp ../9a7608bd-5bff-4dfc-ac1d-63a956744162/etc/
wpa_supplicant/wpa_supplicant.conf .`

If booting, but no network

Console in on serial

Can configure ethernet gadget **adafruit**

console & net

`echo "dtoverlay=dwc2" >> config.txt`

`cmdline.txt: modules- load=dwc2,g_ether`

`sudo apt-get install avahi-daemon`

look for it in sidebar/shared/bonjour computers

raspberrypi.local

the portion that precedes the .local suffix is always the hostname of the device.

Jessie Lite includes and automatically enables **avahi**

or manual network:

pref/network/RNDIS/Ethernet Gadget.

unplugged

some need echo "options g_ether use_eem=0" >> /etc/modprobe.d/g_ether.conf

or go to VM

Enable console

<https://learn.adafruit.com/raspberry-pi-zero-creation/text-file-editing>

Burn Rasbian Image

diskutil unmountDisk disk2

sudo dd bs=1m if=/Users/jerry/Desktop/2017-09-07-raspbian-stretch-lite.img of=/dev/rdisk2

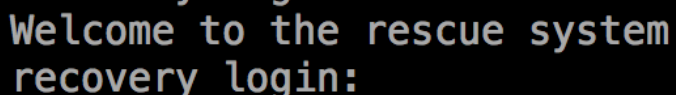
The image has two partitions, one is an ext4 which can't be mounted so need //

or

Adafruit Noobs 2.1

Works with any and all Raspberry Pi computers except Raspberry Pi Zero W.

Since NooBs has recently updated to add Pi Zero W support we recommend reformatting/burning NooBs on from scratch if your Pi Zero W doesn't run!



```
Welcome to the rescue system
recovery login:
```

root/raspberry

From read-only fs Buildroot

Cross-compilation toolchain, root filesystem generation, kernel image compilation and bootloader compilation

<https://buildroot.org> PRETTY_NAME="Buildroot 2015.02-git"

```
# df -h
Filesystem                Size      Used Available Use% Mounted on
/dev/root                  22.6M    22.6M          0 100% /
devtmpfs                   100.9M         0    100.9M   0% /dev
tmpfs                      116.3M    188.0K    116.1M   0% /tmp
/dev/mmcblk0p5             30.0M    397.0K     27.4M   1% /settings
/dev/mmcblk0p1             1.2G     1.1G     90.0M  93% /mnt
# ls /settings
lost+found                noobs.conf                wpa_supplicant.conf
# ls /mnt
BUILD-DATA                os
INSTRUCTIONS-README.txt  overlays
RECOVERY_FILES_DO_NOT_EDIT recovery.cmdline
bcm2708-rpi-b-plus.dtb    recovery.elf
bcm2708-rpi-b.dtb         recovery.img
bcm2709-rpi-2-b.dtb       recovery.rfs
bcm2710-rpi-3-b.dtb       recovery7.img
bootcode.bin              riscos-boot.bin
defaults
```

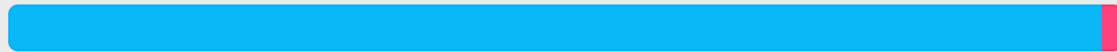
```
# df -h
Filesystem                Size      Used Available Use% Mounted on
/dev/root                  22.6M    22.6M          0 100% /
devtmpfs                   100.9M         0    100.9M   0% /dev
tmpfs                      116.3M    192.0K    116.1M   0% /tmp
/dev/mmcblk0p5             30.0M    397.0K     27.4M   1% /settings
/dev/mmcblk0p1             1.2G     1.1G     90.0M  93% /mnt
```

```
# ls /mnt/os/Raspbian/
Raspbian.png      os.json          partitions.json  root.tar.xz
boot.tar.xz       partition_setup.sh release_notes.txt slides_vga
```



APPLE SD Card Reader Media

15.93 GB USB Internal Physical Disk



RECOVERY

1.27 GB

Linux

33.6 MB

Location:	Internal	Capacity:	15.93 GB
Connection:	USB	Child count:	2
Partition Map:	Master Boot Record	Type:	Disk
S.M.A.R.T. status:	Not Supported	Device:	disk2

DESCRIPTION

NooBs 2.1 is the fastest way to have a variety of operating systems on your Pi. Available on a 16G card, you can now boot multiple OS's such as Raspbian, Pidora, RaspBMC, Snappy Ubuntu, etc. There's a boot up menu for selecting which one you like. **This card has NooBs 2.1 on it, works great and has enough space for 2 or 3 simultaneous OS options!**

Works with any and all Raspberry Pi computers except Raspberry Pi Zero W. [Since NooBs has recently updated to add Pi Zero W support we recommend reformatting/burning NooBs on from scratch if your Pi Zero W doesn't run!](#)

Contains:

- Raspbian 2016-11-29

Plug in Ethernet cable to also download the latest versions of

- PiDora
- RiscOS
- RaspBMC
- Snappy Ubuntu Core
- OpenELEC

Recovery/INSTRUCTIONS-README.txt

This section contains two download cards. The left card is for 'NOOBS' (Offline and network install), version 2.4.4, released 2017-09-08. It features a Raspberry Pi logo on a SD card icon and two buttons: 'Download Torrent' and 'Download ZIP'. The right card is for 'NOOBS LITE' (Network install only), version 2.4, released 2017-04-10. It also features a Raspberry Pi logo on a SD card icon and two buttons: 'Download Torrent' and 'Download ZIP'. Below these cards, the SHA-256 hash for the NOOBS ZIP file is provided: affd54ab863330c03e64398d5ae38b0ea6c9e22e10374e714e94707f3380ea34fcaf10fa60066437b20aa597cd1f3791f4e3b9b1404390c85714f583dab2769b.

3. Extract the files contained in this NOOBS zip file.
4. Copy the extracted files onto the SD card that you just formatted so that this file is at the root directory of the SD card. Please note .
5. Insert the SD card into your Pi and connect the power supply.

Once you have installed an operating system, **you can return to the NOOBS interface by holding down shift during boot**; this allows you to switch to a different operating system, or overwrite a corrupted card with a fresh install of the current one.

Note: NOOBS version 2.2.0 disables SSH by default, for security reasons. It can be re-enabled, should you wish, through either raspi-config in the terminal or the Raspberry Pi Configuration in the desktop menu.

Network

```
pi% sudo rm /etc/ssh/ssh_host_*  
pi% sudo dpkg-reconfigure openssh-server
```

/boot/wpa_supplicant.conf will copy the file into /etc/wpa_supplicant.
wpa_supplicant.conf settings detailed below.
touch /boot/ssh

```
pi% ls /etc/wpa*  
action_wpa.sh* functions.sh* ifupdown.sh* wpa_supplicant.conf
```

For headless setup, SSH can be enabled by placing a file named 'ssh', without any extension, onto the boot partition of the SD card.

Enter sudo raspi-config in the terminal, first select advanced options, then navigate to ssh, press Enter and select Enable or disable ssh server.

/etc/network/interfaces

```
allow-hotplug wlan0  
iface wlan0 inet manual  
    wpa-roam /etc/wpa_supplicant/wpa_supplicant.conf
```

Power

bonjour

Recent versions of Raspbian (which use dhcpcd) allow ssh to work over a link-local address and avahi (which is a zeroconf implementation) enables programs to discover hosts running on a local network. can

plug the Pi into a Computer (with an Ethernet cable) or a local network router and connect without knowing the IP address.

Config

```
apt-get update  
apt-get install python3-pip  
pip3 install pymata-aio  
apt-get git  
apt-get i2c-tools  
apt-get install libi2c-dev
```