

HASviolet

Installation Guide

Hudson Valley Digital Network

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v1.1

Introduction

This guide will walk you through the required hardware for HASviolet, installing the Raspbian Lite image, and running the HASviolet automated installation. Internet access will be required for installation via onboard WiFi for Raspbian Lite updates and retrieving the HASviolet software.

All reference to “RPI” in this guide are an abbreviation for the Raspberry Pi Zero WH hardware.

Hardware

HASviolet consists of the following hardware:

<p><u>Raspberry Pi Zero WH (Wireless with Headers)</u></p> <ul style="list-style-type: none">You will need to solder the 20-pin header to the board.	
<p><u>Adafruit LoRa Radio Bonnet with OLED – RFM95W @915Mhz</u></p> <ul style="list-style-type: none">Antenna is via a male U.FL connector	
<p><u>SanDisk Ultra 16GB RAM Class 10 MicroSD</u></p> <ul style="list-style-type: none">RPI require quality microSD cards at least Class 10	
<p><u>Power Source 5V @ 2.5A minimum</u></p> <ul style="list-style-type: none">The hardware can be powered via USB to PC as part of setup but for operation it needs to be on a standalone power source	
<p><u>900 MHz Antenna with U.FL IPEX to SMA Connector</u></p> <ul style="list-style-type: none">We will use a simple omnidirectional antenna to get started. Permanent installations should use antennas with greater gain	

Installing Raspbian Lite

You will need another computer with an SD card reader in order to install Raspbian Lite. Instructions for Linux, OSX, and Windows are available from the official Raspberry Pi site at the following link:

<https://www.raspberrypi.org/documentation/installation/installing-images/>

When selecting an operating system, be sure to select Raspbian Lite. Within the Raspbery Pi Imager software it can be found under “Raspbian (other)” selection.

Pi Connectivity

Via connected keyboard, monitor and mouse

- You will require a mini HDMI adapter to your monitor (HDMI, VGA, mDP, etc)
- You will require a USB OTG cable to attach a keyboard



Via IP through Wireless Connection

- You can use this method if you wish to access the RPi via an existing WiFi network
- Change to the **boot** directory on the SD card
- Enable **ssh** access by creating a blank file named **ssh**
- Within the boot directory, create a file called **wpa_supplicant.conf** and edit

- When you have opened the new file, add the configuration at right and save
- Be sure to replace **SSID** with your local wireless network SSID

```
country=US
ctrl_interface=DIR=/var/run/wpa_supplicant
GROUP=netdev
update_config=1
network={
    ssid="MyWiFiNetwork"
    psk="aVeryStrongPassword"
    key_mgmt=WPA-PSK
}
```

Via IP through USB connection

If WiFi is not available, using zero-configuration networking services may be an option. This is available on OSX and Windows using [Apple Bonjour Services](#). Bonjour is installed by default with OSX whereas Windows users can install Bonjour Services from the [Apple site](#). Linux users will need to consult their distribution documentation on adding USB as an IP interface and any configuration changes to the installed [Avahi](#) software.

- Mount the SD card on your computer
- Change to the **boot** directory on the SD card
- Edit the **config.txt** file then save

Append config.txt with the following if it is not already there

```
dtoverlay=dwc2
```

- While in the boot directory, edit the **cmdline.txt** file
- Replace the line, then save file.
- Create a blank file named **ssh**

Replace with the following all as one continuous line:

```
dwc_otg.lpm_enable=0 console=serial0,115200 console=tty1
root=/dev/mmcblk0p2 rootfstype=ext4 elevator=deadline
fsck.repair=yes rootwait modules-load=dwc2,g_ether quiet
init=/usr/lib/raspi-config/init_resize.sh
```

Pi Setup

<ul style="list-style-type: none"> • Install Adafruit Radio Bonnet and Antenna • Insert SD card • Connect RPI and Power on • Log in with default pi:raspberrypi 	<p>If accessing via IP over USB, connect PC USB port to RPi USB Data port (next to mini-HDMI port)</p> <pre>ssh -l pi <yourpi></pre> <p>If connecting via SSH for first time click yes to accept fingerprint</p>
<ul style="list-style-type: none"> • Run Configuration tool 	<pre>sudo raspi-config</pre>
<ul style="list-style-type: none"> • Navigate through each menu making selections as noted then exit tool 	<ol style="list-style-type: none"> 1. Change User Password to <something> 2. Network options <ul style="list-style-type: none"> N1 Change hostname to your call + number [50-99] yourcall-50 3. Boot Options <ul style="list-style-type: none"> B1 Desktop/CLI choose B1 Console 4. Localization <ul style="list-style-type: none"> I1 Change Local to <your country>.UTF-8 I2 Change Timezone I4 Set to <your country> 5. Interfacing options <ul style="list-style-type: none"> P2 Enable SSH P4 Enable SPI P5 Enable I2C 7. Advanced Options <ul style="list-style-type: none"> A1 Expand Filesystem A3 memory Split Reduce GPU from 64 to 16 8. Update
<ul style="list-style-type: none"> • Run sync as sudo, and reboot 	<pre>sudo sync sudo reboot</pre>

HASviolet Install

<ul style="list-style-type: none"> • SSH into your Pi • Run OS update and upgrade • Retrieve the install script from Github • Make the install script executable • Run the install script 	<pre>sudo apt-get update sudo apt-get -y upgrade cd ~ wget https://raw.githubusercontent.com/hudsonvalleydigitalnetwork/hasviolet/master/HASviolet_install.sh chmod 755 HASviolet_install.sh ./HASviolet_install.sh</pre>
<ul style="list-style-type: none"> • Once the scrip is complete, chang directories to /home/pi/HASviolet • Edit the HASviolet.ini file • Change NOCALL to your call or name and save the file 	<pre>cd ~/HASviolet vi HASviolet.ini</pre>
<ul style="list-style-type: none"> • Installation is complete. Apps are run from /home/pi/HASviolet 	<p>Installed Directories include</p> <ul style="list-style-type: none"> ◦ /home/pi/HASviolet is where the programs with config files are run from ◦ /home/pi/HVDN-repo is local repo of HVDN projects ◦ /home/pi/HVDN-repo/hasviolet is local repo of HASviolet

HASviolet is now installed!