



RaspiNOAA V2 Setup Instructions

RaspiNOAA V2 v1.8.0 Image Released December 2021

Vince VE3ELB

<http://qsl.net/ve3elb/RaspiNOAA>

Raspberry NOAA V2 -- v1.8.0 Released October 28th, 2021

<https://github.com/jekhokie/raspberry-noaa-v2>

Thanks to Jekhokie for the great software.

+++++

I recommend using a A1 or A2 Class 16GB SD Card or higher.

Burn RaspiNOAA V2 Disk Image to your SD card using one of the following software.

Raspberry Pi Imager:

<https://www.raspberrypi.org/software/>

Etcher:

<https://www.balena.io/etcher/>

+++++

Start by configuring the raspberry pi.

Step 1: Open Terminal and type the following command.

- `sudo raspi-config`
- Select option 6: Advanced Options
- Select A1: Expand Filesystem

Reboot.

Step 2: Open Terminal and type the following command. (Lets make sure everything is up to date.)

- `sudo apt update && sudo apt upgrade`
- Do you want to continue [Y/n] Y
- Enter

Step 3: Open the Application Menu (THIS STEP IS VERY IMPORTANT)

- Preferences
- Raspberry Pi Configuration
- Go to the Localisation Tab
- Set your Localisation, Timezone (Timezone MUST match raspberry-noaa-v2 settings.yml file)

MUST Reboot before moving to step 4.

RaspiNOAA V2 Setup Instructions:

Step 4: Go to folder.

- /home/pi/raspberry-noaa-v2/config

Step 5: Right click on, and edit settings.yml file in text editor. Save file once done.

- settings.yml

Change the following settings to get you up and running:

Station Lat/Lon/Alt: (Use 8 digits, MUST match MeteorDemod settings.ini file.)

- latitude: 43.698286
- longitude: -79.435966
- altitude: 0.0

TimeZone Offset:

- timezone_offset: -4

NTP Configurations:

- ntp_server: DO NOT ADD ANY LEAVE BLANK

##Test Setting:

- test_gain: 44.5
- test_sdr_device_id: 0
- test_enable_bias_tee: false
- test_freq_offset: 0

##Receiver Setting: Select which receiver method to use (either 'rtl_fm' or 'gnuradio')

- meteor_receiver: 'rtl_fm'
- noaa_receiver: 'rtl_fm'

Satellite Setting:

- noaa_15_enable_bias_tee: false
- noaa_15_gain: 44.5
- noaa_18_enable_bias_tee: false
- noaa_18_gain: 44.5
- noaa_19_enable_bias_tee: false
- noaa_19_gain: 44.5
- meteor_m2_enable_bias_tee: false
- meteor_m2_gain: 44.5

USER Info: Please fill in your information

- ground_station_location: ' Station ID | Location'
- antenna_infomation: ' Antenna Type'

TimeZone Location: (MUST match system localisation and timezone)

- timezone: America/New_York
- lang_setting: en

Note:

Make sure to set your location/timezone information correctly, if not your TLE information will be wrong.

Location/Timezone examples: https://en.wikipedia.org/wiki/List_of_tz_database_time_zones

Discord Link:

- discord_webhook_url: 'USER Discord Webhook'

Save the file and exit

Note: Images can be viewed via:

- Raspberry Pi web browser 127.0.0.1
 - Home network raspberry pi ip address Exp: 192.168.x.x
 - Online outside your home network you must have a Discord account and input your webhook into the settings.yml file. Create an account at: <https://discord.com/login>
- Discord webhook video: <https://www.youtube.com/watch?v=fKksxz2Gdnc>

Step 6: Open terminal and type the following commands.

- cd raspberry-noaa-v2/
- ./install_and_upgrade.sh
- ./scripts/schedule.sh -t -x (Wipe's all existing and future scheduled captures and start fresh)
- exit

Done. Reboot and you are ready to capture.

Any and every other changes made to the settings.yml file you will have to run the following commands for them to take effect.

- cd raspberry-noaa-v2/
- ./install_and_upgrade.sh

Any changes made to the satellite elevation setting you have to run the following commands for them to take effect.

- cd raspberry-noaa-v2/
- ./install_and_upgrade.sh
- ./scripts/schedule.sh -x (Wipe's all existing and future scheduled captures and start fresh)

To manually update the TLE data run the following commands.

- cd raspberry-noaa-v2/
- ./scripts/schedule.sh -t -x (Wipe's all existing and future scheduled captures and start fresh)

Fix your pass conflicts via the web browser in the "admin" Tab. Just click on the X of unwanted pass conflicts to delete them.

Web: 127.0.0.1

The webpage can be viewed on any computer or device within the same network via the raspberry pi network ip address. Exp: 192.168.1.xx

To get the raspberry pi network ip address open terminal and input this command.

- ifconfig

Raspberry NOAA currently ONLY works with RTL Dongles.

To test the RTL Dongle:

Open terminal type the following command.

- `rtl_test -t`

If RTL is found and working you should get a message like this.

Found 1 device(s):

0: Realtek, RTL2838UHIDIR, SN: 00000001

Using device 0: Generic RTL2832U OEM

Found Rafael Micro R820T tuner

Supported gain values (29): 0.0 0.9 1.4 2.7 3.7 7.7 8.7 12.5 14.4 15.7 16.6 19.7
20.7 22.9 25.4 28.0 29.7 32.8 33.8 36.4 37.2 38.6 40.2 42.1 43.4 43.9 44.5 48.0 49.6

[R82XX] PLL not locked!

Sampling at 2048000 S/s.

Note the supported gain values for the RTL Dongle listed above or in terminal when you run `rtl_test -t`. DO NOT exceed these gain values as you may damage the RTL Dongle or Overload the SDR Software.

In testing I found these RTL gain settings worked best for me. However everyone's setup is different so you will have to adjust gain a few times to get the right setting for you..

NO LNA - Gain set between 40.2 - 44.5

With LNA - Gain set between 7.7 – 15.7

To delete images, audio files and video files manually. Go to `/srv` folder to free up storage space.

RaspiNOAA V2 has been setup to automatically delete audio files after each pass and image files older than two days everyday at midnight.

- `/srv`

Last thing you can run the raspberry pi headless. Setup VNC or Teamviewer to view and control the pi remotely.

You can now reboot the raspberry pi one last time. All done now you wait for the image captures.

RaspiNOAA V2 Was Built on a Raspberry Pi 4B and Tested and worked 100% on the Raspberry Pi 3B+ and Pi 4B

I take no credit for any of the software,

This image was compiled to help others who wanted to try Raspberry NOAA V2.

I am not responsible for any damages caused to your equipment.

Enjoy,

Vince VE3ELB

Discord: <https://discord.gg/5wgwAF3KdF>

Web: <http://ve3elb.ham-radio.ch/>

APT Discord:

<https://discord.gg/MWceuQfYam>

I recommend that all users join the 2 discord groups as you can get help and support for RaspiNOAA V2 - Raspberry NOAA V2 from the users.

Disclaimer:

This RaspiNOAA V2 Image automatically uploads decoded images to the following Discord servers.

VE3ELB and APT discord servers for sharing purposes only.

Please be kind and keep sharing as we do.

Thank You, 73.

+++++

Other useful Installed Software:

Day and Night Map:

Active Day and Night map in satellite passes page. Map automatically refresh every 5 minutes.

KlaTrack:

Simple program that plots the elevation of upcoming satellite passes and then updates it in real time.

Gpredict:

Real time satellite tracking and orbit prediction application.

HamClock:

A full featured desktop program showing accurate time, geography, time zone, solar activity, sunrise and sunset times, Maiden-head locators, beam heading, beacons, news headlines, and other timely information.

Gparted:

Disk partition editor for graphically managing your disk partitions.

Disk Usage Analyzer:

Disk space analyzer shows how your disk space is being used.

ScreenShot:

An easy way to take images of your screen or individual program windows.

Conky:

Raspberry Pi desktop system monitor and information widget.

WebCord:

Discord desktop app for linux.

Audacity:

Easy to use audio editor with numerous features.

Snapdrop: (<https://snapdrop.net/>)

Local file sharing via your web browser between computers on the same network.