

SCADA SOFTWARE INSTALLATION

To install the Desktop based Raspian OS on your SD card you will first need to download the Raspberry Pi Imager on any desktop computer to which you can insert a microsd card in . The Raspberry Pi Imager can be downloaded for Windows , MacOS, and Ubuntu using the following link: <https://www.raspberrypi.org/software/>

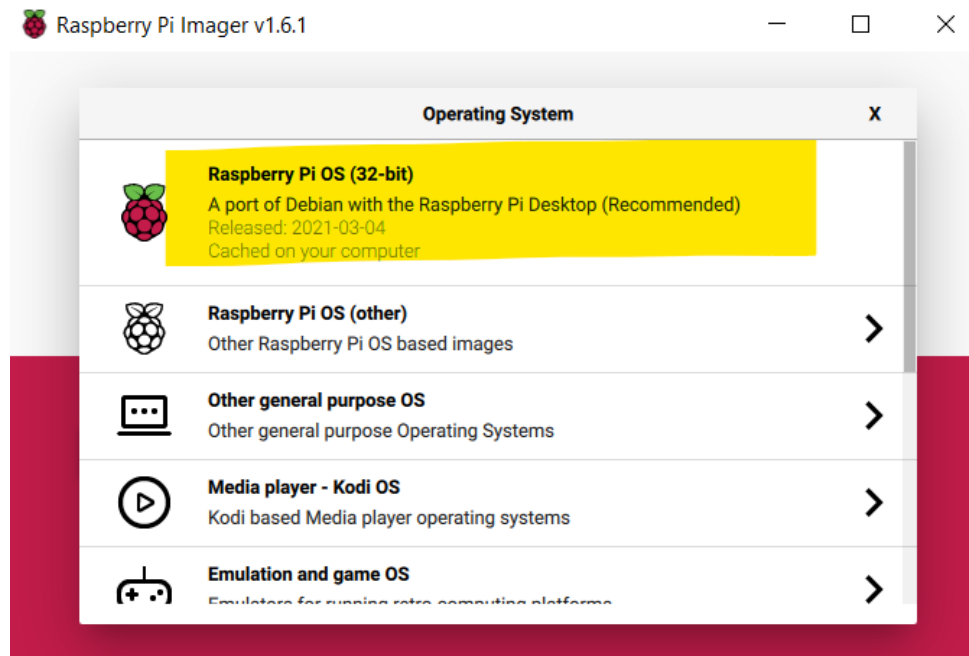


Figure 1: Screenshot of Raspberry Pi Imager, after clicking on “Choose OS” under Operating System and further clicking on “Raspberry PI OS (other)” and then further selecting “Raspberry PI OS Lite (32-bit)”

1. Update New Raspberry Pi

If you are using an old Raspberry Pi or one with a newly installed Operating System, it will likely need to be updated. Even if updated and well-maintained in the past, it doesn’t hurt to update the operating system now. Updating will allow it to locate the Linux and Python software dependencies installed in the next step. To update the Pi, use the following shell command:

```
$ sudo apt-get update
```

2. Clone Git Repository and Run Bash Install Script:

To initiate the installation, open up the terminal and write the following shell commands:

```
$ cd ~/Desktop  
$ git clone https://github.com/Lafayette-FSAE/SCADA_2021.git  
$ cd SCADA_2021  
$ sudo bash install
```

After running the install file, answer ‘y’ to all y/n prompts.

3. Run The Bash Make Shell Script

To initiate the Make Shell Script , run the following shell command in command line,making sure that you are already in the scadafsae repository:

```
$sudo bash make
```

4. PostgreSQL Database Setup

To configure the database, run the following commands in the command line:

This switches to the local Postgres user to configure the database .

```
$sudo su postgres
```

Creates a database user and when prompted with a password type “scada”

```
$createuser pi -P --interactive
```

Answer the following questions accordingly when prompted

Shall the new role be useruser ? (y/n) - Select n

Shall the new role be allowed to create databases? (y/n) Select y

Shall the new role be allowed to create more new roles? (y/n) Select y

*Connect to Postgres using the shell and create “test” database. Note that **the semicolon is not optional***

```
$ psql
```

```
> create database test;
```

To return to main terminal, press Ctrl + D twice

5. Enable I2C On The Raspberry PI

In command line type the following command:

```
$ sudo raspi-config
```

1. This should launch the raspi-config utility where you would want to select (5)- Interfacing Options
2. Navigate to and select the “I2C” option to activate the Raspberry PI I2C protocol
3. Select **Yes**

6. Enable SSH

In the Interfacing Options of the raspi-config menu, navigate to SSH and be sure to enable this as well. Enabling SSH would allow you to remotely connect to your raspberry pi via its IP

address as long as your raspberry pi is either connected to the internet via ethernet or wifi. This is beneficial when it comes to sensor configuration.

7. Reboot Raspberry PI

Type the command `'sudo reboot'` in the terminal window.

Note that after completing the above steps, there will be a working version of SCADA on the Raspberry Pi, but it will not utilize Kiosk Mode or be able to run the dashboard software on a second display. For integration in the dyno room and onto the final car, set up Kiosk Mode using the instructions in the SCADA Maintenance Manual immediately following the installation steps you just performed.