Pi-RAQ 2 Manual

(Touch Controller)

Earth Computer Technologies Inc.

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OVERVIEW

Thank you and congratulations on your purchase of the pi-RAQ! The pi-RAQ has a powder coated sheet metal enclosure holding a Raspberry Pi B+ with an EarthLCD 10x1 LCD adapter board, the EarthLCD-10.4 1024x100 TFT color display, and a user interface control utilizing a touch controller. The solid works files are included for the metal enclosure along with the schematic and gerber for the LCD Driver. With the innovation of the Pi-Raq and existing EarthLCD 10” x 1” display, rock mount equipment such as power controllers, network hubs, and routers, can now have an easily programmable front panel with the Color TFT LCD.

Running Raspbian, a Debian Linux based operating system, the pi-RAQ is opened up to standard network analyzer software, music servers and numerous other open source applications. The Raspberry Pi in the pi-RAQ includes 4 USB Ports and a 100 MB Ethernet Port, allowing for network expansions and extensive I/O connectivity. The pi-RAQ operates off of 9-20 Volts D.C. The pi-RAQ design will save months of design time and allow for a more rapid product development cycle.

PRODUCT SPECIFICATIONS

Specifications:

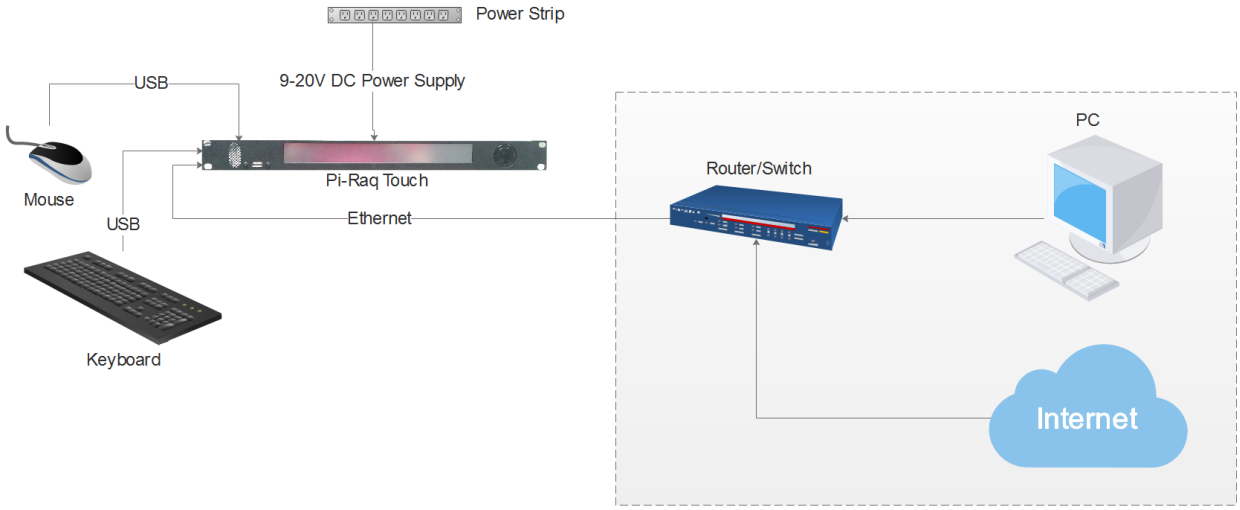
- 10” x 1” Color TFT Touch LCD.
- 1024 x 100 Pixels
- 250 Nits
- 9 – 20V Input Power Supply
- 10 x 1 LCD Adapter Board
- 4 USB Ports
- 100 MB Ethernet Port
- 19” x 3” x 1 3/4”

Items Provided:

- 1 x 9-20V DC Power Supply
- 1 x Pi-Raq unit
- 1 x SD Card with Image

CONNECTION AND SET-UP INSTRUCTIONS

Connection



Set-Up Instructions

Note: The pi-RAQ requires a keyboard and mouse to be able to use.

1. Connect the 9-20V DC Power Supply to the pi-RAQ.

2. Insert the SD Card with the image into the Raspberry Pi (if it's not already inserted.) If the SD Card is not imaged properly then please go to the SD Card Imaging instructions to learn how to load your SD Card with the latest Image for the pi-RAQ.

3. Plug a keyboard and mouse into the USB ports of the Raspberry Pi.

4. Connect an Ethernet cable into the Raspberry Pi coming from an Ethernet Switch or a Router. This is done to enable Internet and/or external access into the Raspberry Pi which can be done via an SSH/SCP program; the instructions for this it can be viewed in the SSH Connection Instructions.

USING THE PI-RAQ

Note: Please connect and set up the Pi-Raq first.

1. Power on the pi-RAQ and wait for it to load and process all the files on the SD Card first.

2. Once it finishes loading, the pi-RAQ will go into an EarthLCD demo. Please note the IP address of the pi-RAQ which can be seen on the bottom left of the screen with the following syntax "**eth0 ip: xxx.xxx.xxx.xxx."**

3. Please write down this number for your reference, alternatively you can access it later by using the "**hostname -i**" command in the Rasbian Terminal.

4. Please setup an SSH/SCP Connection to your Raspberry Pi in the pi-RAQ.

5. Using the SSH/SCP you will be to view the files inside the SD Card in the Raspberry Pi to modify and use them.

6. The pi-RAQ will be running X-Windows on the Raspberry Pi and the touch driver is loaded automatically by the X-Windows OS to emulated a mouse. To utilize the touch a GUI based application is needed. Any application ran under X-Windows that works with or requires a mouse will work with the touch screen in the pi-RAQ.

   Note: The touch driver automatically loads under X-Windows in the Raspbian Linux provided on the SD card provided with your pi-RAQ. It emulates a mouse so any development software or language that supports a mouse under X-Windows will see the touch actions as mouse actions. Customers developing on the pi-RAQ and other Linux platforms may program in 'C' or python or QT with X-Windows loaded. There are numerous development environments under Linux and all that support a mouse. You must run X-Windows to utilize the mouse driver. Utilizing the above requires Linux development experience.

SSH CONNECTION INSTRUCTIONS

To easily navigate the inside of the pi-RAQ (and the SD Card inside the Raspberry PI) requires an SSH/SCP connection to it. This requires an Ethernet/Network connection to the pi-RAQ which can be done via Console/Terminal or a GUI based application.

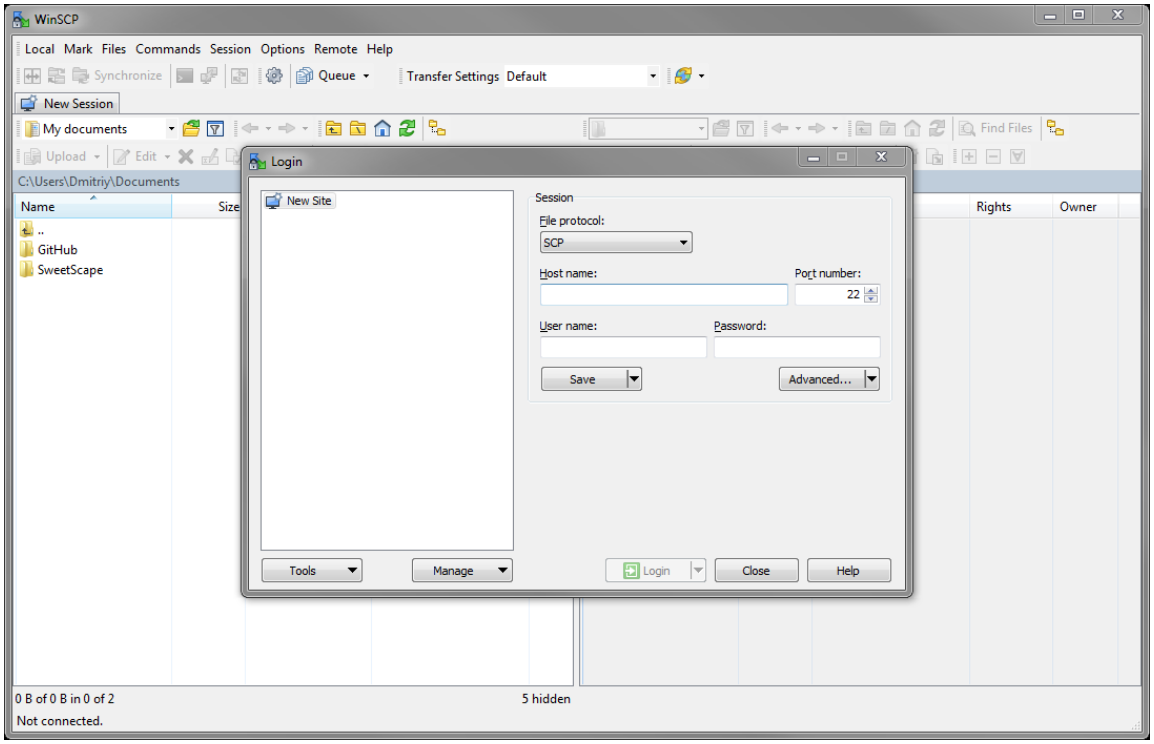
Note: This tutorial is done using WinSCP, other alternatives are PuTTy, MobaXterm, OpenSSH, etc.

Comprehensive List: SSH Clients

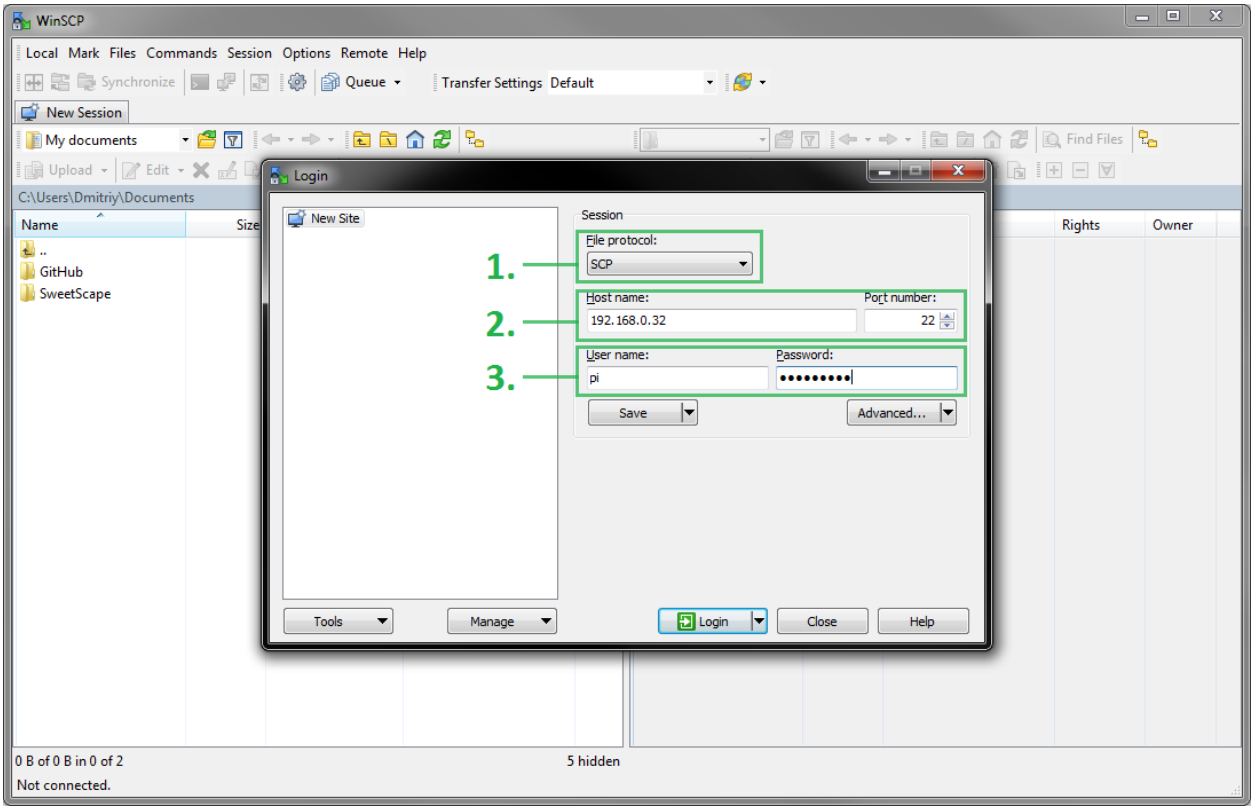
Download: WinSCP

Instructions

1. Connect the pi-RAQ via the Optional connection as shown in the Connection guide and log-in into the pi-RAQ as instructed in the Using pi-RAQ guide.
2. Once logged in and inside pi-RAQ terminal, use the command "**hostname -i**" to find the IP Address of the pi-RAQ, make sure the pi-RAQ is connected to a computer network.
3. Install and run the SCP/SSH client that you have chosen.

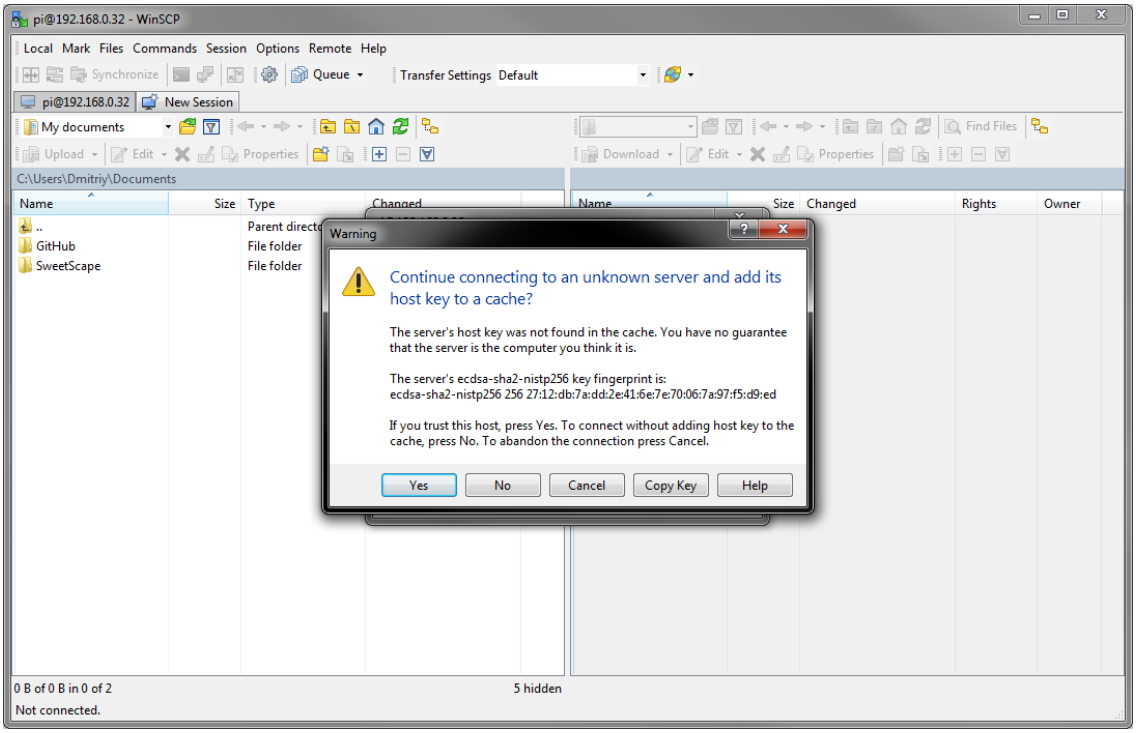


4. For **1. File Protocol**, select **SCP**
   For **2. Host name**, enter the **IP Address** obtained from Step 2. and enter **Port number: 22**.
   For **3. User name**, enter **"pi**" and for **Password**, enter "**raspberry**." These credentials are the same as the log-in credentials set for Pi-Raq.

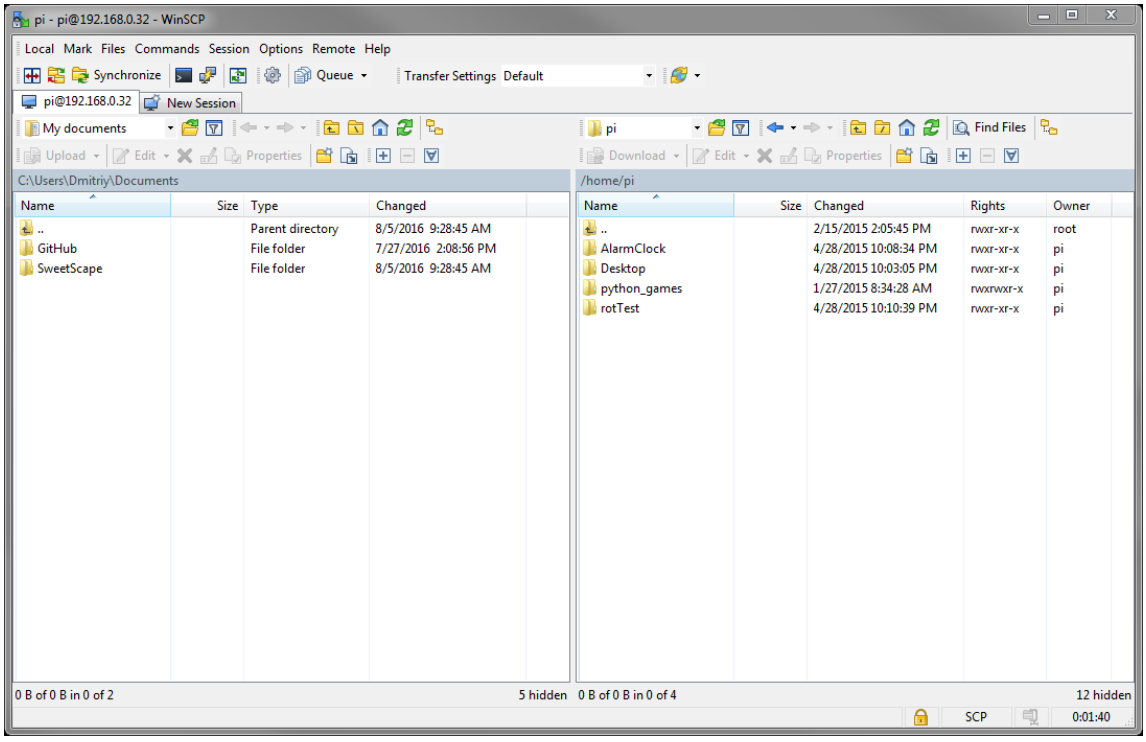


5. Press "**Save**" which will save this connection to use for the next time.
6. Press "**Login**" to log-in into the Pi-Raq and view the files.

7. Accept the Warning about the connection and press "**Yes**"



8. After successfully login in the application will allow you to see the files currently on the SD Card of the pi-RAQ and allow you to modify them and add new ones. This is useful for adding new code to files to the device to test them with the pi-RAQ.



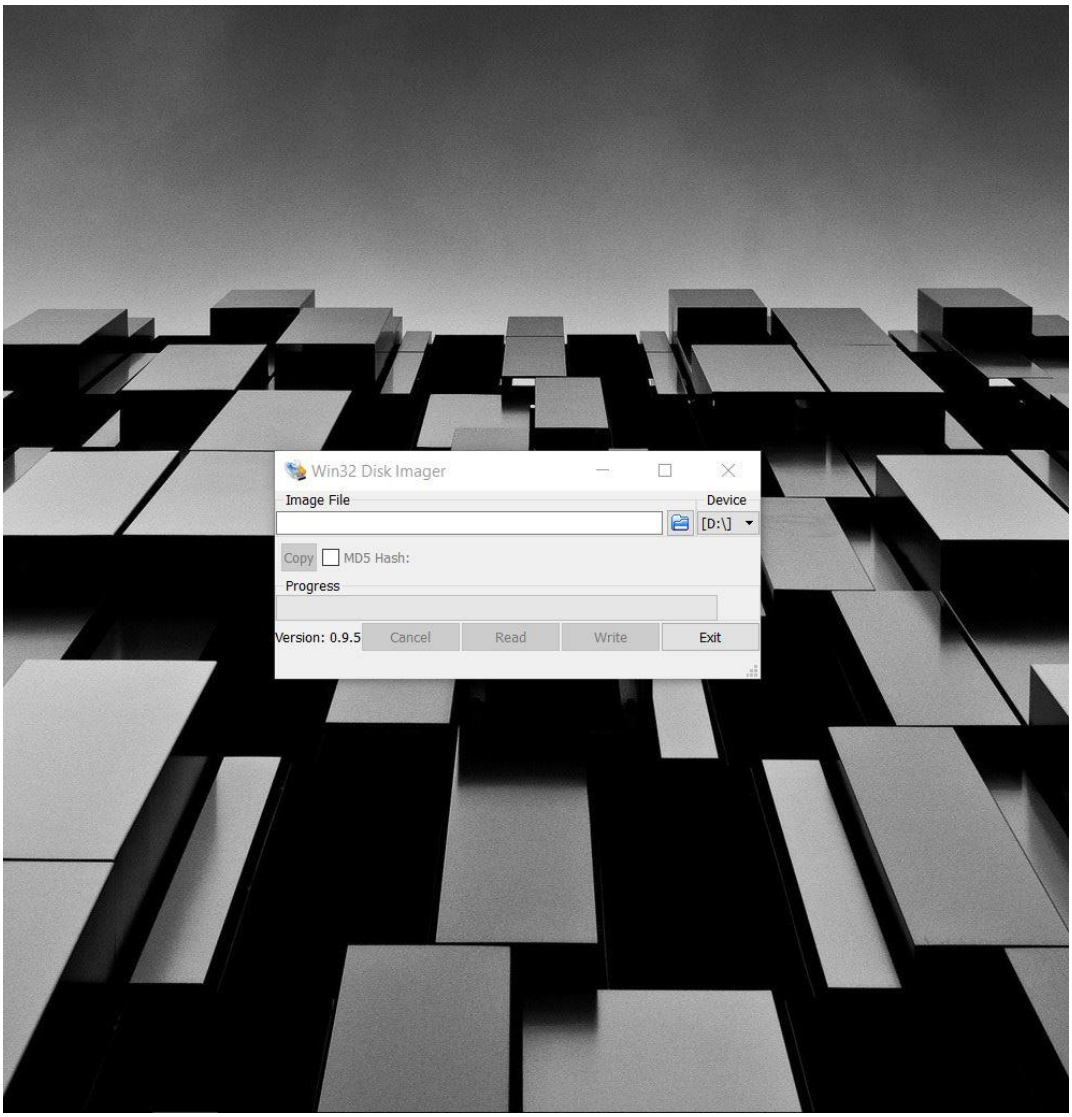
SD CARD IMAGING INSTRUCTIONS

1. Download the Win32 Disk Imager program at: Link, a tool used for writing images to USB Drives or SD/CF cards.

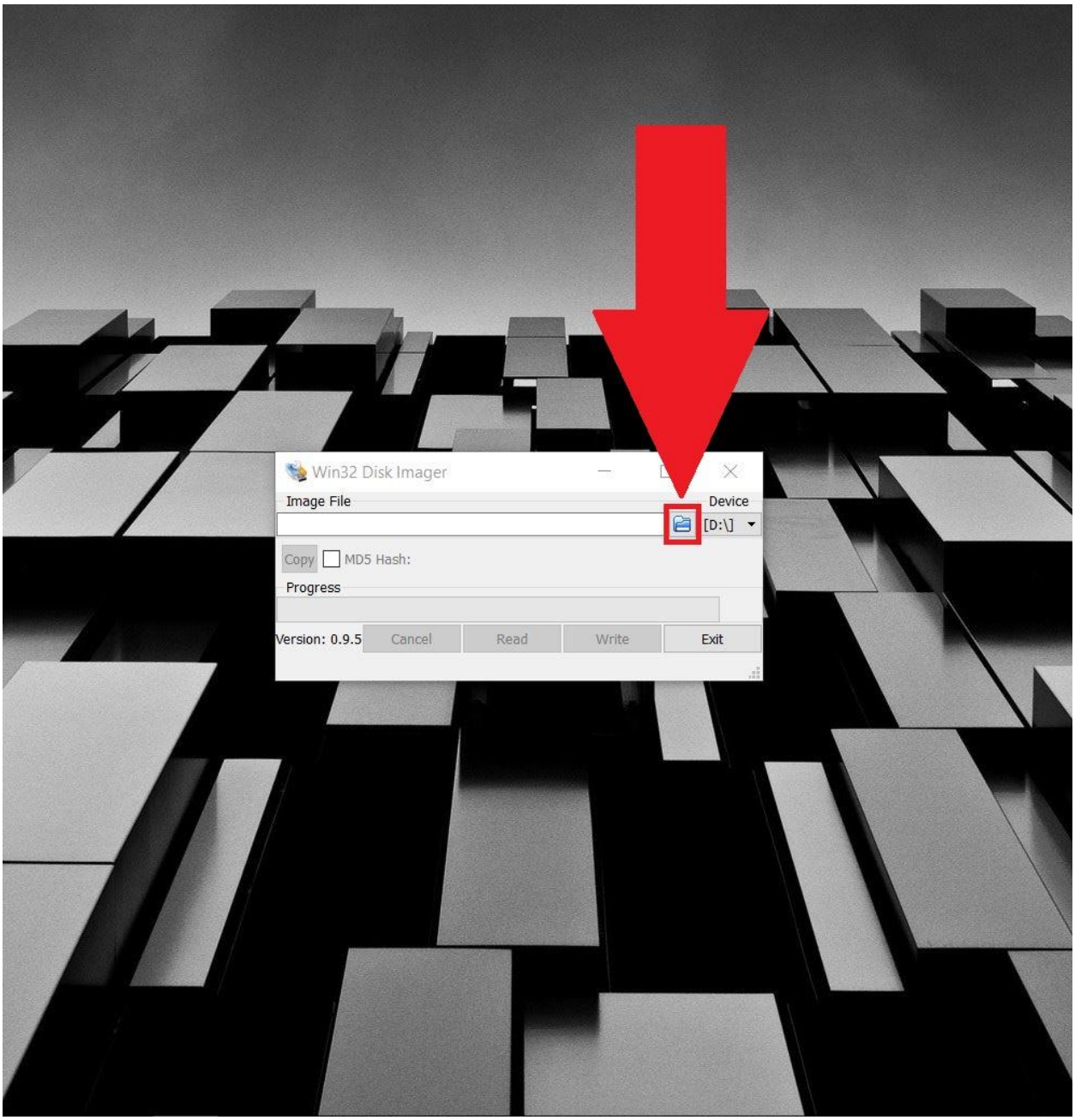
2. Download the latest SD CARD IMAGE from our EarthLCD GitHub at: Link, and store it where you can easily navigate to it.

Note: If the website link for the product is no longer working then navigate to our EarthLCD website via a web search engine and search for the pi-RAQ 10x1 1U Rackmount product.

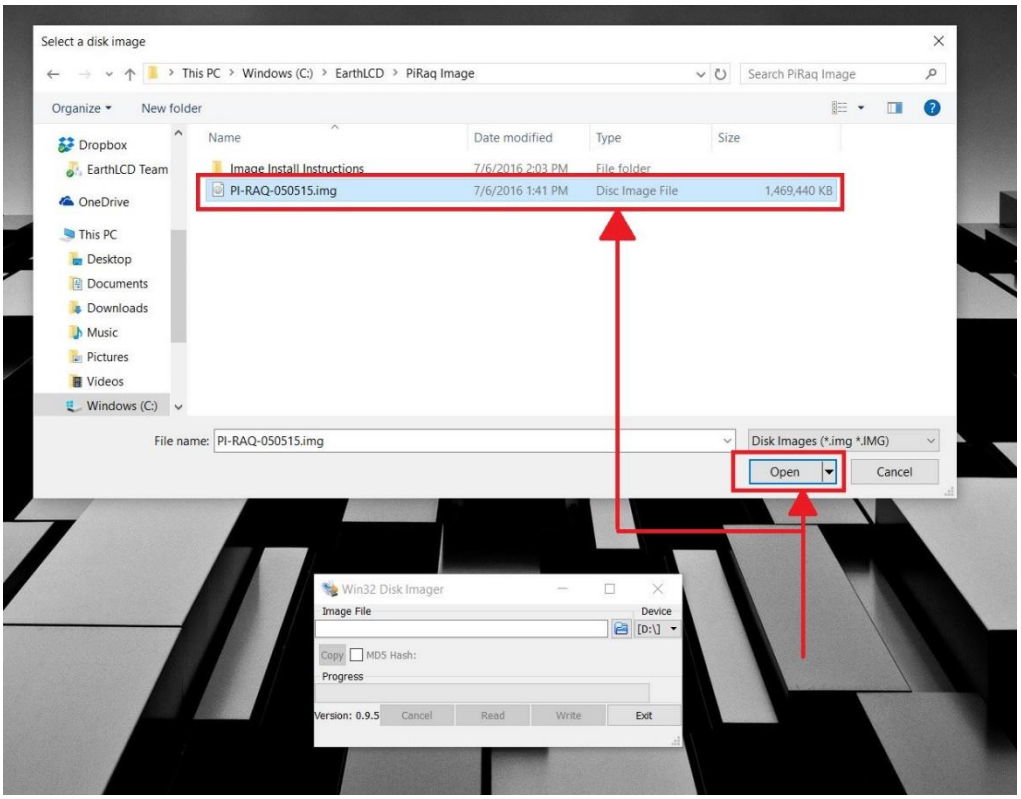
3. Launch the Win32 Disk Imager Program.

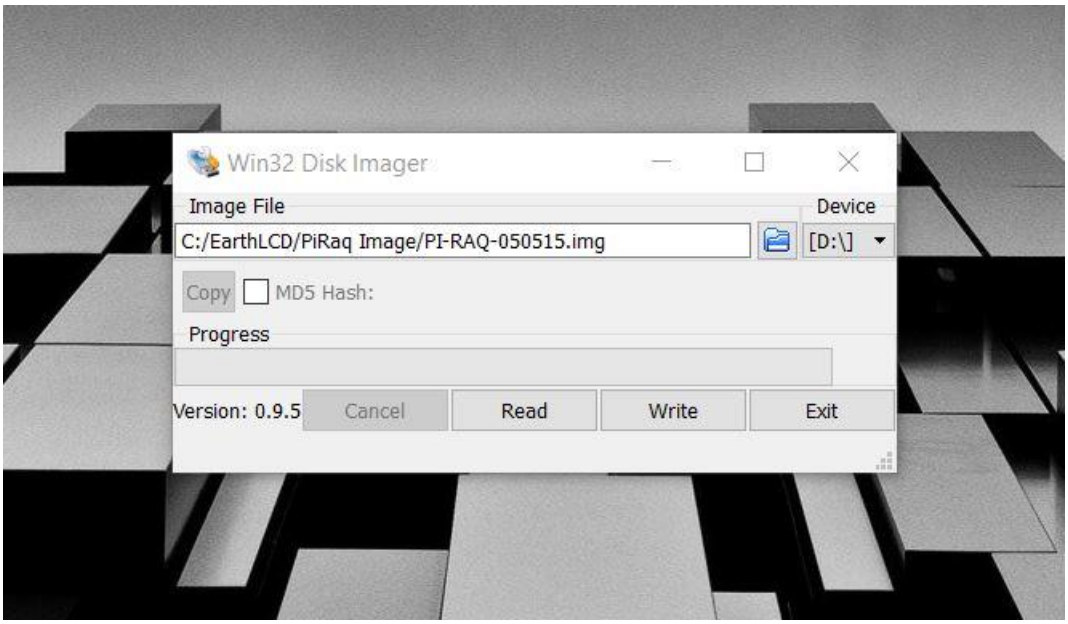


4. Press the select an image button and navigate to where you stored the SD CARD IMAGE downloaded earlier at step 2.



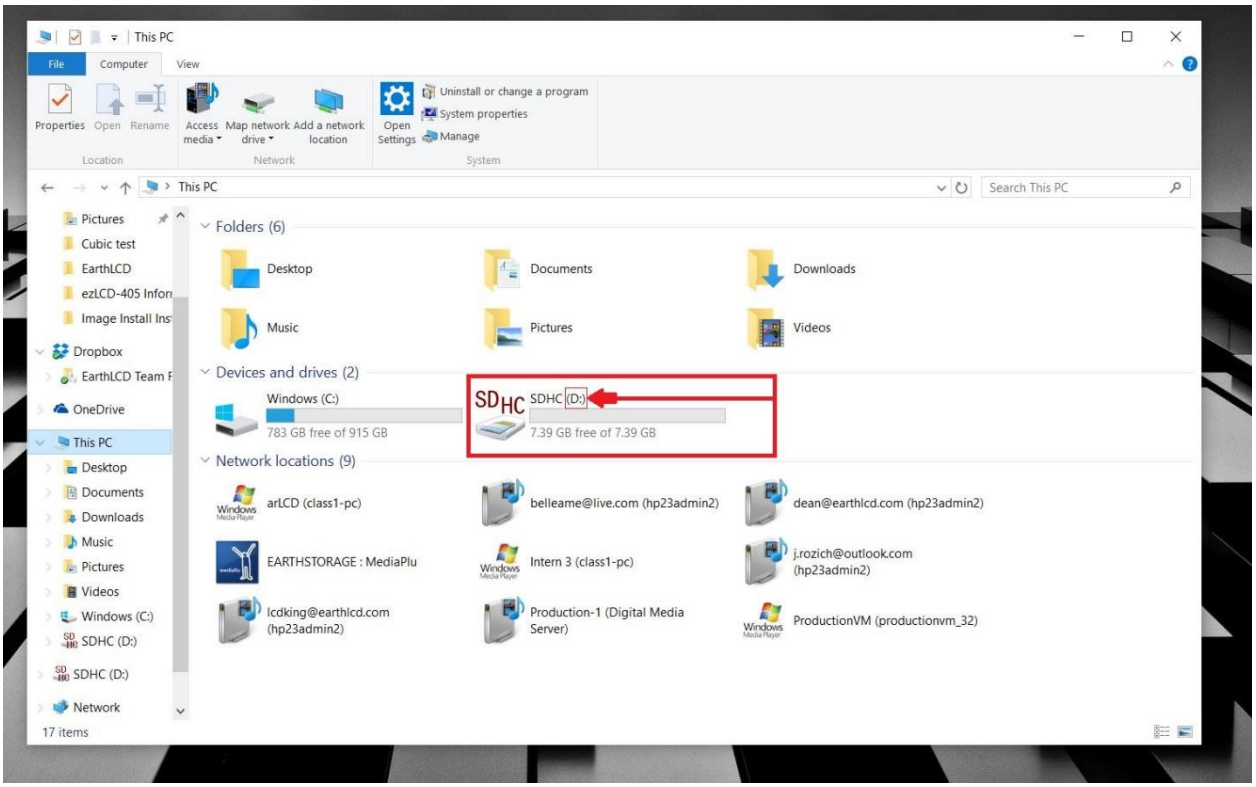
5. Once you found the image file, click it and open the image. This will tell Win32 Disk Imager which image you want to use.

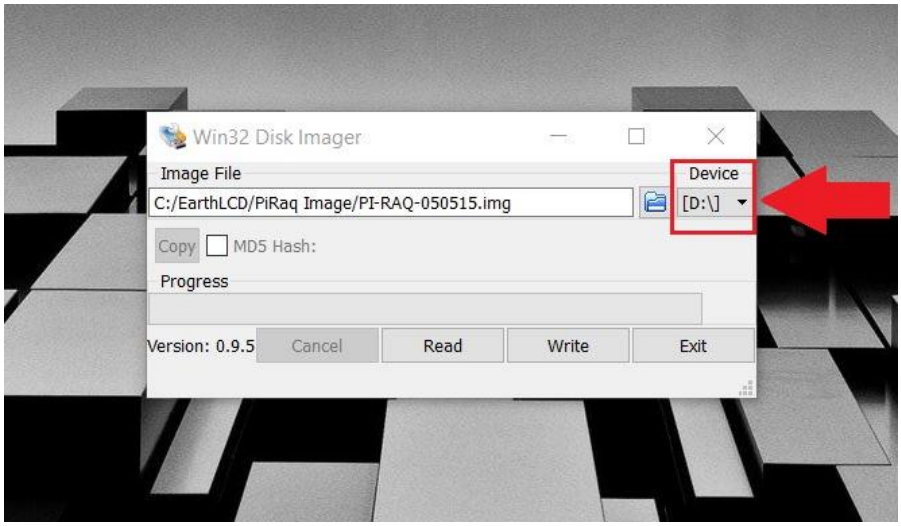




6. Insert an SD card into your computer and make sure it's big enough. (Minimum size: 8 GB) for the image.

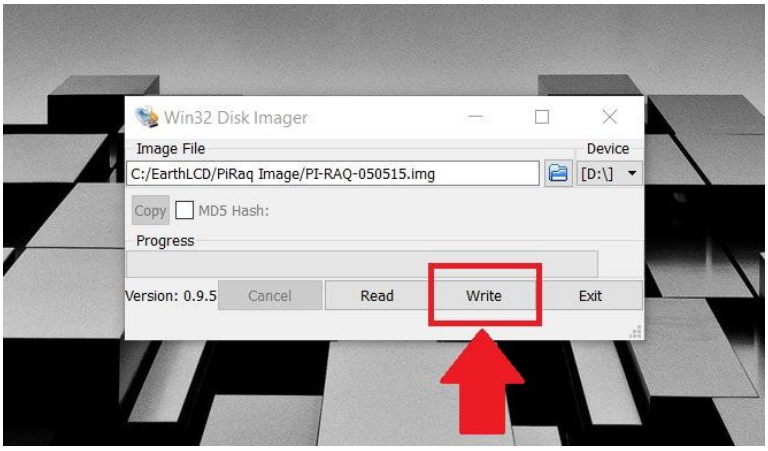
7. Check the driver letter of the SD card and make sure the drive letter is selected under Device in Win32 Disk Imager.

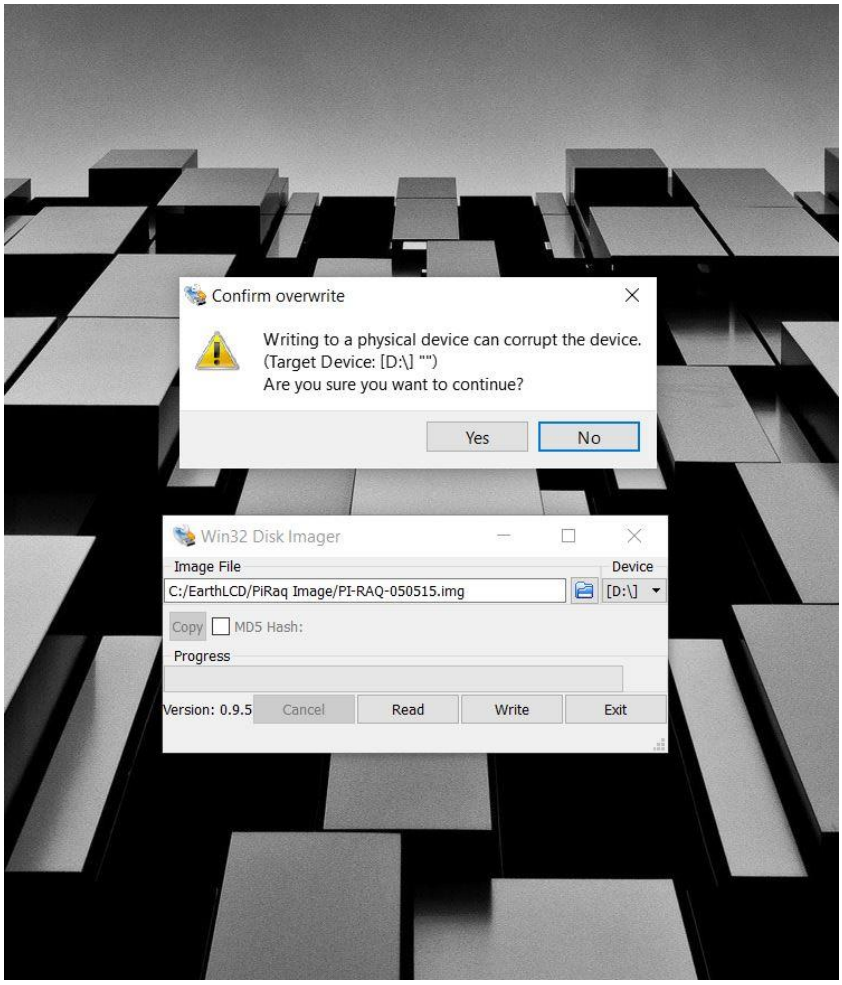




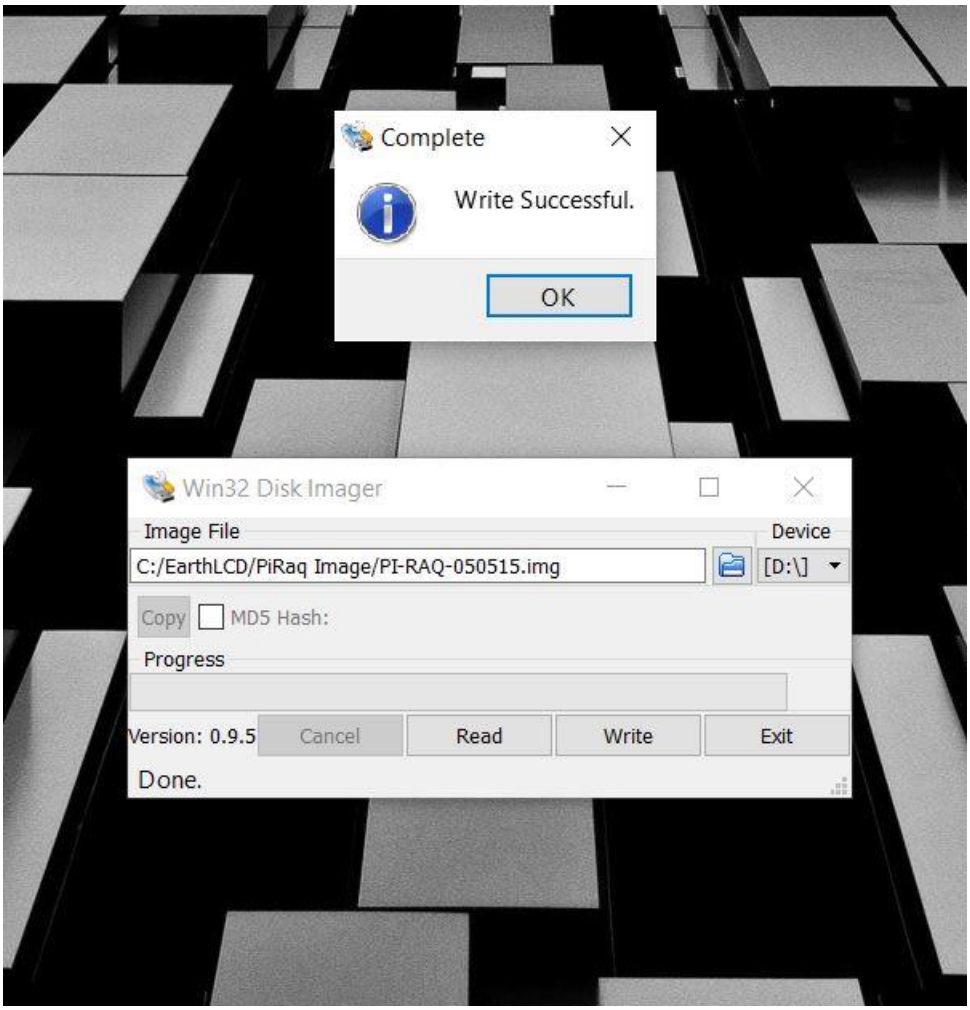
8. Press the Write button and click Yes to continue.

Warning: The SD card will be reformatted and all data currently on the card will be ERASED. Please backup any and all data you wish to not be deleted through this process. EarthLCD is not responsible for any malfunction caused by the Win32 Disk Imager program.





9. Upon completion a window will pop-up stating "**Write Successful**."



10. The SD Card is now ready to be used with the Pi-RAQ.

