**User Manual**

Spiers Magic Wand

Capstone Spring 2023

A Team

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# Set Up

## **Battery Set up**

The Spiers Magic wand uses the VGE battery pack. Before beginning the charging routine, disconnect the VGE battery pack from the raspberry pi and any other connections. Verify the battery pack is turned off by looking at the indicator lights on the battery pack. To charge the battery pack, connect it to a voltage source using a USB-C or USB micro B. The status of how much charge is indicated on the VGE unit.

\*Note: no specific power source must be connected to charge the unit. Please not that different power sources may cause differences in charge time.

\*Note: For the battery pack, a red light indicates that the unit is charging. A blue light indicates that it is turned on. A green light indicates that the unit is fully charged.

\*\* **WARNING\*\*** DO NOT use both power inputs to charge the VGE battery pack simultaneously. This creates a significant risk of fire and/ or explosion.

\*\* **WARNING\*\*** DO NOT charge the VGE battery pack for more than 24 hours. This will damage the unit and decrease the lifetime of the

\*\* **WARNING\*\*** DO NOT connect the Raspberry Pi into an alternate power source while on the VGE battery pack.

## **1.2 Powering Up the Unit**

To start the process of powering on the Spiers Magic Wand, connect the VGE battery pack to the raspberry pi using the embedded USB-C cable. After the raspberry pi is connected, press the button on the side of the VGE battery pack to enable voltage output. The lights on the raspberry pi will light up once it is being provided power, meaning the battery pack is turned on.

For the scanner to operate properly, the network that the scanner is setup with must be broadcasting. If detected, the scanner will automatically connect to the network.

\*Note: If Spiers Magic Wand does not power up, check to see if the battery pack is charged. Discharged batteries will result in the unit not powering on. If a specific module is not working, check to see if the wires are fully connected. If a wire is not connected fully, disconnect the raspberry pi from the battery pack before fixing the issue. If the wire is damaged, follow the previously mentioned method, but replace the wire with a fully functional alternative.

## **1.3 Powering Down the Unit**

To power down the unit, simply disconnect the raspberry pi from the battery pack. After doing this, press the power button on the VGE unit until the battery indicators are off.

**\*\*WARNING\*\*** Do not leave the unit powered on overnight.

# Operating The Spiers Magic Wand

## **Adjusting the Volume**

To adjust the volume for the Spiers Magic Wand, turn the knob on the unit left or right. Turning the knob left will decrease the volume, while turning the knob right will increase it.

\*Note: If no sound can be heard from the speakers, power the unit down and check the internal connections within the unit. First, check to see if the speakers are properly connected to the audio amplifier. Second, check the audio jack connection between the raspberry pi and the audio amplifier. Third, check to see if the voltage and ground connections are properly connected. If all of these appear to be correct but the problem persists, either the speaker or audio amplifier may need to be replaced.

## **Adjusting the Network and Software Settings**

To adjust the software and network settings, bring the scanner near the previously set up network. The scanner will automatically connect and will have an SSH server enabled. Scan for the scanner’s IP address and connect with the username: pi and password: raspberry1. The network and software settings can then be configured on the linux platform. The scanning program can be found at: https://github.com/LoganS1/CapstoneScanner/tree/main

## **Adjusting Scanner-Specific Settings**

Specific scanner settings such as rescan times and lights can be configured via scanning setting barcodes located in the Scanner Module Manual provided.

## **2.4 Indicator Signals**

The Spiers Magic Wand has two separate indicator systems. The first of these systems is the LED system. The LED system is composed of three (3) separate lights that are different colors. These colors are red, yellow, and green. Green indicates a ready status and the scanner is ready to scan a barcode. A yellow color indicates a waiting status. Finally, a red light indicates an error. On a successful battery scan, the green and yellow led will flash. On a bad scan, the red led will show. If a network error occurs, the yellow and red led will alternate flashing.

The second indicator system is the sound system. On a scan, the scanner will emit a chirp. If the scan is a successful battery scan, an alternate Mario coin sound will play through the speakers. Lastly, if an error occurs a separate negative Mario sound will play.

## **2.5 How to Scan a Barcode**

To operate the Spiers Magic Wand, first make sure the unit is turned on and the scanner is emitting light along with a ready status. The scanner will automatically scan a barcode placed in front of it when detected. If the barcode is valid, the scanner will transmit the data to the data server.