ShakerBot Manual - 4/17/2023

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Introduction

Explanation of what the ShakerBot is and what it can be used for?

So ShakerBot came from what to us was an everyday irritation, an itch that needed scratching.

Some of us are in a work environment that has a policy to time out and log off our computers for no activity very quickly (like a few minutes quickly). When that does happen the login process to get back up and working requires dual factor authentication so it's not the quickest. If you scramble, you might be able to make a trip to the restroom, the coffee bar or the vending machines without being logged off but you better not putter around getting back to your computer.

You may be fortunate enough to be working in an environment that is more forgiving but you get the general idea.

We have also seen examples of problems of the screen going blank if you are doing a presentation but not using "Presentation Mode" or are on a zoom or teams call and a lack of activity on your system could log you out, again similar problem if you have to go back through the login process again (so much for grabbing a cup of coffee while someone is rambling on about something that is only important to them)

So, a couple of us started talking about what we could do to keep our laptops up and on line even if we stepped away for a few minutes.   We started by looking at other products that are on the market and honestly, they really weren't very attractive.

We found that you could get either a device that "jiggled" your mouse around if you set it on top of an optical turntable. While some of those are programmable, they assume that you are using a mouse and not a touch pad and they are pretty chunky.

An alternative to that is a USB device that plugs into your computer but those aren't programmable and kept jiggling as long as your computer was left on so that didn't work for us either (plus, if you are in an environment that doesn't permit additional devices plugged into your computer's USB port, it automatically rules these types of devices out)

Being a bunch of engineers, we were unimpressed and decided that we could do better. So, to "scratch the itch" we came up with what we're calling the ShakerBot.

We started by putting together a wish list of things that we would want in the "perfect" mouse jiggler.

We wanted the flexibility to plug in as a standard USB device and have it function normally as a secondary mouse or pointing device or use the USB port or an external Wall Wart for power only and connect to the computer as a Bluetooth mouse.

It needs to have an easy way to set which days of the week it needs it needs to operate and what starting and quitting times for each day

We wanted to be able to have it "wake up" the computer so that it was ready to be logged into first thing in the morning when we sat down in front of the keyboard and have it stay on throughout the work day.

To make sure it didn't look like we were running off of a fixed timer, we added a randomization feature so that it turned on a few minutes early and turned off a few minutes later than the normal working day but never at exactly the same time. Plus, we wanted the randomization to only work to add a few more minutes to the work day and never take any away (it will never show up late or leave early).

We thought it would be ideal if we had a way to make sure that the correct date and time were always right so we added the ability to connect to the internet and periodically sync up by pulling down the current date and time for your time zone.

As an added feature, we wanted the ability to update the device "over the air" (OTA) so that it could take advantage of any improvements that come along in the future.

Finally, we wanted to be able to completely isolate the USB signaling lines so you could plug it into your computer and only use it for power and not have it appear as a USB device

So a pretty ambitious wish list for a mouse jiggler but we figured it out, we figured all of it out

Overview of the features and capabilities of the device

- Intelligently move your mouse – Will create mouse movement on your computer following one of a few intelligent algorithms. This will keep your computer, phone or tablet awake and make sure any software monitoring your device thinks your online and working
- Supports Windows, Linux, Chromebooks, Android devices, Apple devices – There are other devices that can be supported and well. The main requirement is that your device must support a HID compliant mouse and keyboard.
- Gets time, date and day of the week over the internet so you are always working in current time

- Supports getting "over-the-air" (OTA) updates – This allows us to get you future updates automatically downloaded over the WiFi connection.
- Has built-in Webserver for configuration, can be accessed constantly while ShakerBot is running – This allows settings to be changed live while device is working
- Can connect to your device via USB port or as a Bluetooth device – ShakerBot can connect directly to your desktop and move the mouse as a USB device, or just use the USB port to draw power and emulate a Bluetooth mouse
- Can control, or keep alive applications or games on your device – The scheduled movement can help keep your applications or games thinking you are still there and working so they don't time out.
- Circuitry added to allow data signals of USB connector to be disabled so device is only drawing power from the USB connector – some companies do not allow USB devices to be added to company computers so we have added circuitry to allow the data lines going to the USB port to be electronically disabled.
- Randomization capabilities built in so that ShakerBot mouse movement and frequency are random – The ShakerBot allows selection of several different algorithms for shaking the mouse using different methods.

Technical Hardware Overview:
- Uses a ESP32-S3 Package, for CPU, Bluetooth, Wifi, Storage.
- Provides a "quick switch" to allow the data lines of the USB connector to be disabled. (This allows power lines only to be enabled from the USB connector.
- High quality USB connector which allows a high number of insertions and maintaining stable connection.
- Double sided Motherboard to maximize heat dissipation and maximize Wifi signal strength.
- 3 high intensity LEDs (Red, Blue and Green) to indicate status through the case.
- Reset button to allow easy pairing of device to your wifi.

Top of ShakerBot

Bottom of ShakerBot

ShakerBot / Case / Button

Getting Started

Unpacking the ShakerBot

To unpack the ShakerBot is a straight forward process. Remove any packing safety material from the ShakerBot unit and make sure the vents on the bottom are clear and the USB connector is clear of any packaging materials. This should not be an issue but it is always a good practice to check.

Hardware and software requirements

The hardware requirements are:

- A single powered USB port on the device you want to control. *(This will allow ShakerBot to get power from the USB and provide mouse emulation from the USB port OR just get power from the USB port and provide mouse emulation via Bluetooth connection)*
- A power block to supply power to the ShakerBot. *(This will allow ShakerBot to be powered from the power supply and provide mouse emulation via a Bluetooth connection)*

The software requirements are:

- Android, IOS, Windows, ChromeOS or Linux operating system that support USB HID devices. *(Almost every Android, IOS, Windows, ChromeOS or Linux system in the last 10 years should work fine)*

Setting up the ShakerBot for first use

To setup and configure your ShakerBot follow these steps:

- Plug the ShakerBot into a USB port or a USB wall charger.
- On your phone, tablet or Laptop select a the wifi SSID for your ShakerBot. (see picture below) This will allow you to connect to your ShakerBot local Wifi. The Wifi SSID for your ShakerBot will be something like "ShakerBot-XXX".
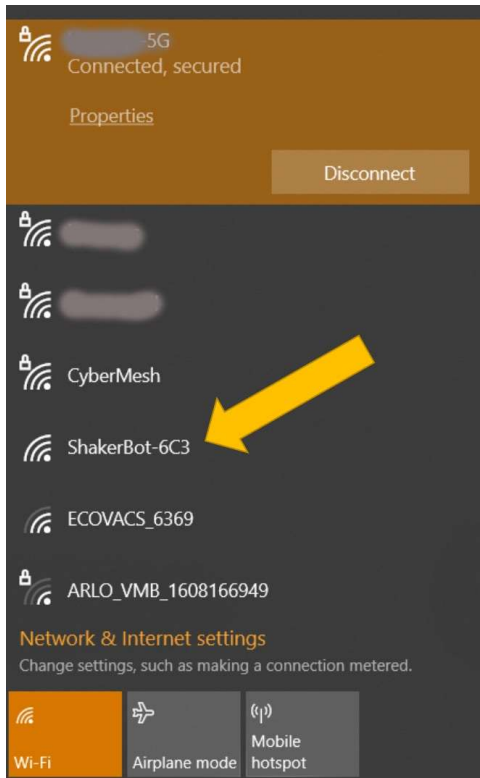
Wifi Selection Page on Windows

- Select the "ShakerBot-xxx" WiFi and you will be directed to the Wifi setup page. This allows you to connect to the ShakerBot internal webpage. (If you are not automatically redirected to the setup screen on your device, go to your browser and type in "192.168.4.1") See screen below.
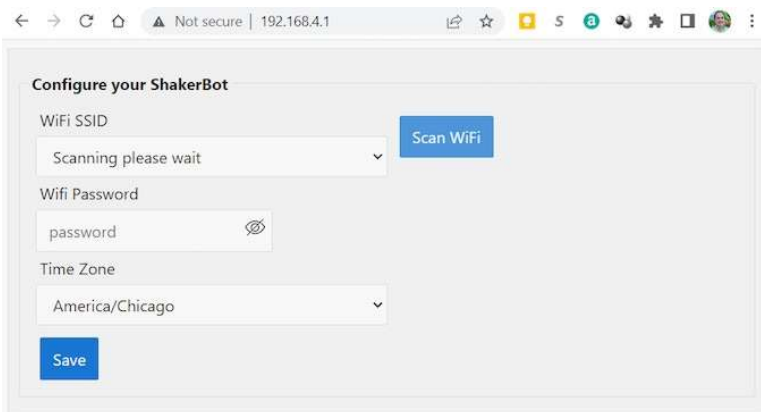

ShakerBot Wifi Setup Screen

- Select the home SSID and then enter your Wi-Fi password so the ShakerBot can join your network. Then click the save button to store these settings to your ShakerBot.
- After 20 seconds your ShakerBot will have joined your network and synchronized Date and Time.

- It is now time to configure your ShakerBot. Make sure your Phone, tablet, or laptop is connected to the SAME SSID as the one you connected ShakerBot to in the previous step.   Then simply go to your browser and enter "shakerbot.local". This will take you to your ShakerBot personal configuration page. (If this does not work for you then use a program like FING from FING.COM, to find the IP address of your ShakerBot and then type that IP address into your browser)
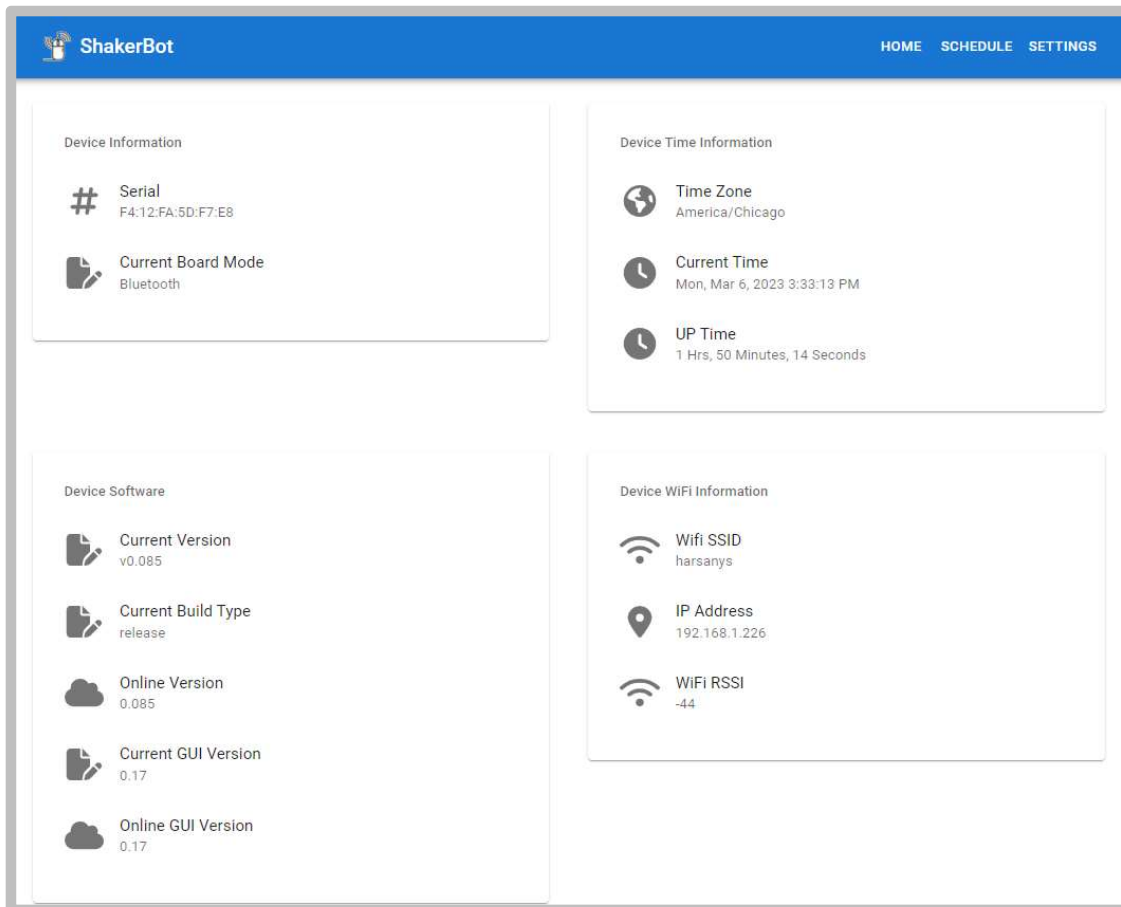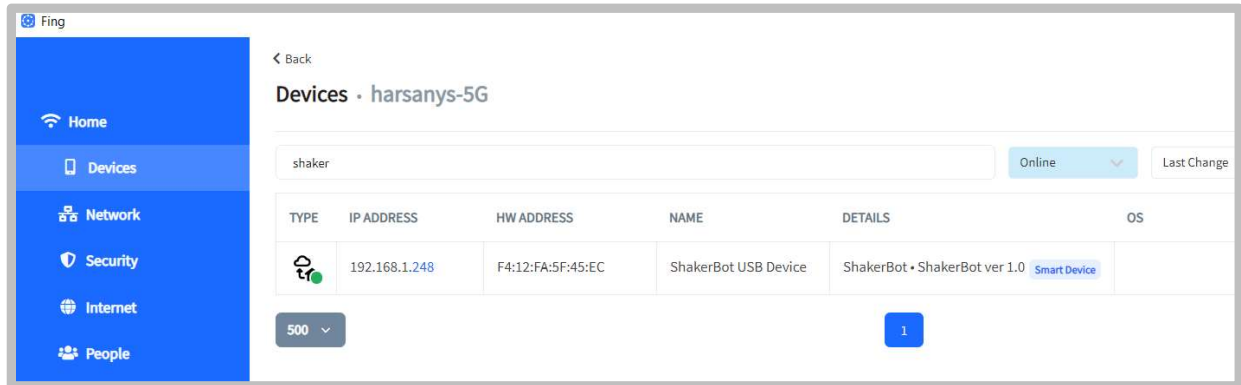

ShakerBot Home Screen

- Now you can click on the "Configuration" button at the top right corner of the screen to get to the configuration screen below.
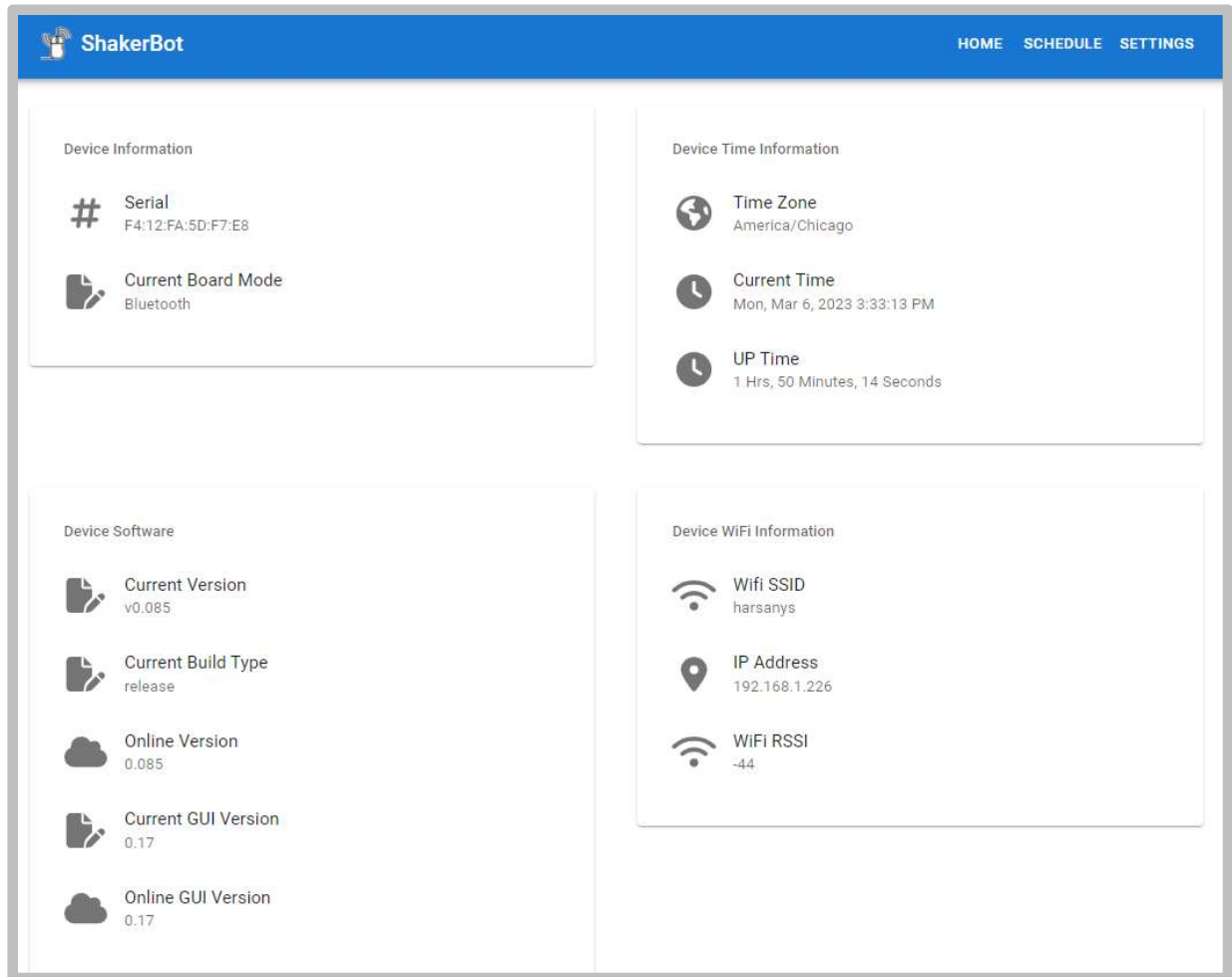
ShakerBot Configuration Screen

- From the above screen you can now configure which days, and what times you want the ShakerBot to work it's magic and keep your device alive and your applications and games online.
- You can select if you want ShakerBot to connect to your device via Bluetooth or directly via the USB port. (Note: ShakerBot will always draw power from the USB connection, and if you are in Bluetooth mode, the datalines on the USB connector are disabled)
- If you select USB mode and have selected "Save Changes" then you are Ready to go!
- If you are operating in Bluetooth mode and have selected "Save Changes" then your ShakerBot is needs to be paired to your device (Laptop). Now you need to go to your device and pair it as a Bluetooth device as you would for any other device in your specific OS. It will show up in your list of devices as "ShakerBot Keyboard/Mouse". Just select it and it will now be able the provide all the

capabilities for your device! See below for example pairing on Windows 10 machine.
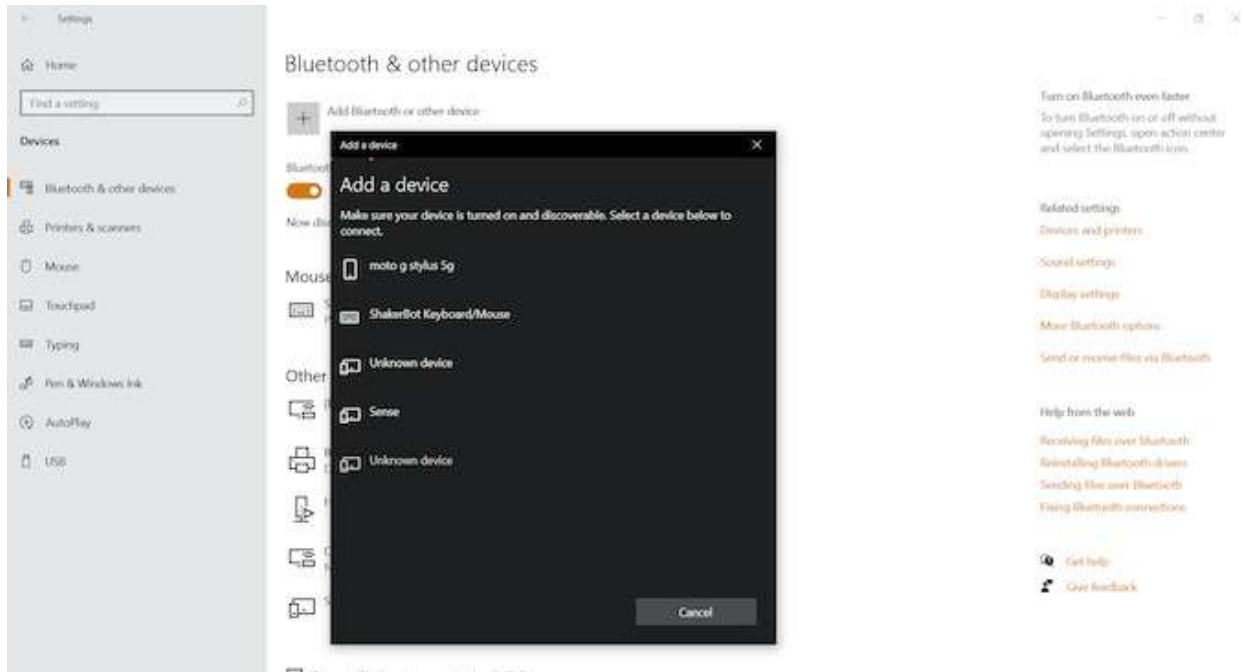
Bluetooth Pairing
PLAY

Advanced Configuration

Instructions on how to configure the ShakerBot for optimal performance

Explanation of various settings and options

Step-by-step guide to setting up the ShakerBot for specific tasks

Operating the ShakerBot

Detailed instructions on how to operate the ShakerBot

Explanation of various functions and controls

Troubleshooting tips for common issues

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Overview of advanced features and functions of the ShakerBot

Explanation of how to access and use these features

Tips and tricks for getting the most out of the ShakerBot

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Tips for keeping the ShakerBot in good condition

Instructions for cleaning and storing the device

Information on how to troubleshoot and repair common issues

Frequently Asked Questions

Answers to common questions about the ShakerBot

Tips for troubleshooting common issues