Pachinko Sound

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Company Goal:

As a user-based company, PAVSoftworks strives to produce useful and cost-conscious products. Our intent is to create products that you will use. All items we manufacture are used in our environment, and we update our products as we find new and better features to include. Thank you for considering our company's products. We know you have choices, and we hope you will continue to choose our products.

Introduction:

Older Pachinko machines are marvels of mechanical engineering, operating solely through the elegant interplay of gravity and a spring-loaded shooting arm. Their straightforward mechanics and the nostalgic clatter of metal balls cascading through the pins evoke a sense of timeless charm. However, while their simplicity is part of their appeal, there's always room for a touch of modern flair to elevate the experience. That's where this innovative device comes in—a compact, feature-rich upgrade designed to enhance your Pachinko machine with dynamic LED lighting, sound effects, and interactive responses.

This device takes the classic Pachinko experience to the next level by introducing customizable LED lighting effects that can be synchronized with gameplay. Imagine vibrant light patterns that react to the movement of the balls or illuminate the machine in dazzling colors as you play. But it doesn't stop there—this system is equipped with smart event-triggered responses. For example, if the feed ball tray runs empty, the device can activate a warning light and play a subtle alert sound. Similarly, if the lower tray becomes overly full and risks causing a jam, the system will notify you with both visual and audio cues, ensuring smooth gameplay.

To further immerse players, the device includes a library of high-quality recorded sound effects. Hear the satisfying click of the launch mechanism as you shoot a ball into play, or celebrate your wins with triumphant audio fanfares that add excitement to every victory. Additionally, the device offers the ability to play background music, allowing you to set the mood with your favorite tunes or thematic soundtracks that complement the Pachinko experience.

Despite its advanced capabilities, this device is designed to be incredibly user-friendly and unobtrusive. Its compact form factor allows it to be discreetly mounted behind the Pachinko machine, preserving the machine's classic aesthetic while adding modern functionality. Powering the device is a breeze—it runs on a simple 5V DC power source, making it easy to integrate into your setup without the need for complex wiring or modifications.

In summary, this device is the perfect blend of old-school charm and modern innovation. It respects the mechanical brilliance of traditional Pachinko machines while enhancing them with eye-catching lighting, immersive sound effects, and practical features that elevate gameplay. Whether you're a nostalgic enthusiast or a tech-savvy gamer, this upgrade brings a new dimension of excitement to your Pachinko experience.

Overview:

The Pachinko Sound Device is a feature-rich upgrade designed to enhance your Pachinko machine with dynamic lighting, sound effects, and interactive functionality. Below is a detailed breakdown of its features:

Key Features:

1. **32 Preconfigured LED Effects:**
   Choose from a variety of dynamic lighting patterns to customize the visual experience of your Pachinko machine. Supports a string up to 255 LED Lamps.
2. **7 Trigger Inputs:**
   - **4 Predefined Triggers:**
     - **Winner:** Activates celebratory effects when a win is detected.
     - **Top Tray Empty:** Alerts you when the ball feed tray is empty.
     - **Bottom Tray Full:** Warns you if the lower tray is at risk of causing a jam.
     - **Ball Launch Lever:** Requires a user-installed switch to trigger effects when the lever is pulled.
   - **3 User-Configurable Triggers (Auxiliary 1, 2, and 3):**
     Customize these inputs for additional events or interactions.
3. **Screw Pinch Terminals:**
   Secure and reliable wire attachment for easy installation and connectivity.
4. **Music Control Buttons:**
   - **Song Skip Forward/Back:** Navigate through your playlist with ease.
   - **Song Pause Button:** Pause or resume background music as needed.
5. **Dual Speaker Outputs:**
   Separate outputs for sound effects and music allow for independent audio control and enhanced clarity.
6. **Power Input Options:**
   - **LED Strand Connector:** Powers the device when LEDs are in use.
   - **USB Port:** Provides power when no LEDs are connected.
7. **Independent Volume Controls:**
   Adjust the volume levels for sound effects and music separately to create the perfect audio balance.
8. **OLED Display:**
   A clear and intuitive display for real-time feedback and system status.
   Storage and File Management:

- **MicroSD Card Slots:**
  - **Sound Effects:** Stores all sound effect files.
  - **Music:** Stores background music files.
  - **System Config:** Stores the device's configuration file.
- **Card Requirements:**
  - All MicroSD cards must be 32GB or smaller.
  - Cards must be formatted as FAT16 for compatibility.

Configuration:

Song1	1	Current Song to Play 1 is first on SD Card
Volume1	15	Music Volume May Be 0 to 30
Volume2	15	Music Volume May Be 0 to 30
PlayOn1	0	0= Pause 1= Palying
Payouts	0	Number of times the machine has payed
BallsShot	0	Number of times the Shooting lever has been pulled
LED_Brightness	128	Global LED Brightness 1-255
LED_NumberUsed	254	Number of LED lamps on the strip (0-254)
LED_EffectArray	00000000000000000000000000000000	BitMaped LED effect array each Bit represents one of 32 effects See The LED Effect Table
LED_EffectSeconds	10	Number of seconds each effect in the array will be displayed
InputAux1IsPressed	0	Turns on the function to test Aux1 Switch is Closed 0 = Disabled / 1= Enabled
InputAux1IsReleased	0	Turns on the function to test Aux1 Switch is Opened 0 = Disabled / 1= Enabled
InputAux2IsPressed	0	Turns on the function to test Aux2 Switch is Closed 0 = Disabled / 1= Enabled
InputAux2IsReleased	0	Turns on the function to test Aux1 Switch is Opened 0 = Disabled / 1= Enabled
InputAux3IsPressed	0	Turns on the function to test Aux2 Switch is Closed 0 = Disabled / 1= Enabled
InputAux3IsReleased	0	Turns on the function to test Aux1 Switch is Opened 0 = Disabled / 1= Enabled

Table 1

Contents of Configuration File:

Song1=0
Volume1=0
Volume2=0
PlayOn1=0
Payouts=0
BallsShot=0
LED_Brightness=255
LED_NumberUsed=254
LED_EffectArray=11111111111111111111111111111111
LED_EffectSeconds=10
InputAux1IsPressed=0
InputAux1IsReleased=0
InputAux2IsPressed=0
InputAux2IsReleased=0
InputAux3IsPressed=0
InputAux3IsReleased=0

If you edit the config file using Notepad or Notepad++ or any plain text file editor you can change the preconfigured settings to your needs and save it back to the MicroSD card.

The items Song1 – BallsShot get rewritten to the SD card when you use the software to make changes., They are tracking items and will allow the system to recover from a power off without losing the information.

The input Aux items play a sound when an item is set to 1
and are silent if set to 0.

LED Effects Array:

The Effects array is just an array of 1's and 0's that tell the software that you want that effect to be added to the looping process that plays the effects. These start at 0 and play sequentially to 31 and the loop back to 0, any item represented by a 0 in this array will be skipped and any item represented by a 1 will be played for the duration set in the config file.

[00]: LED_Rainbow1	10000000000000000000000000000000
[01]: LED_Rainbow2	01000000000000000000000000000000
[02]: LED_Rainbow3	00100000000000000000000000000000
[03]: LED_Rainbow1WithGlitter	00010000000000000000000000000000
[04]: LED_DrawRainbowMarquee	00001000000000000000000000000000
[05]: LED_DrawRainbowMarqueeMirrored	00000100000000000000000000000000
[06]: LED_Confetti	00000010000000000000000000000000
[07]: LED_Sinelon	00000001000000000000000000000000
[08]: LED_Bpm	00000000100000000000000000000000
[09]: LED_Juggle	00000000010000000000000000000000
[10]: LED_Cylon	00000000001000000000000000000000
[11]: LED_Fire	00000000000100000000000000000000
[12]: LED_Rainbow_Slide	00000000000010000000000000000000
[13]: LED_Comet_II	00000000000001000000000000000000
[14]: LED_Theater_Chase_Red	00000000000000100000000000000000
[15]: LED_Theater_Chase_Blue	00000000000000010000000000000000
[16]: LED_Theater_Chase_Green	00000000000000001000000000000000
[17]: LED_Theater_Chase_White	00000000000000000100000000000000
[18]: LED_Theater_Chase_Yellow	00000000000000000010000000000000
[19]: LED_Theater_Chase_Purple	00000000000000000001000000000000
[20]: LED_Candy_Cane_Red_White	00000000000000000000100000000000
[21]: LED_Candy_Cane_Blue_White	00000000000000000000010000000000
[22]: LED_Candy_Cane_Green_White	00000000000000000000001000000000
[23]: LED_Candy_Cane_Black_White	00000000000000000000000100000000
[24]: LED_Candy_Cane_Yellow_White	00000000000000000000000010000000
[25]: LED_Candy_Cane_Purple_White	00000000000000000000000001000000
[26]: LED_All_One_Color_Sparkles_Red	00000000000000000000000000100000
[27]: LED_All_One_Color_Sparkles_Blue	00000000000000000000000000010000
[28]: LED_All_One_Color_Sparkles_Green	00000000000000000000000000001000
[29]: LED_All_One_Color_Sparkles_Black	00000000000000000000000000000100
[30]: LED_All_One_Color_Sparkles_Yellow	00000000000000000000000000000010
[31]: LED_All_One_Color_Sparkles_Purple	00000000000000000000000000000001

Table 2

The LED Effects Table allows you to select which affects you want to have.

Future software releases will likely have other features and more flexibility as this is an area that can be expanded on.

00 – 05 are variations on a rainbow theme.
06 – 13 are random different pattern effects.
14 – 19 are a marque chaser in different colors.
20 – 25 are candy cane effects in different colors.
26 – 31 are solid color all on effects with a sparkle.

OLED Display:

The OLED display will present you with some basic information of what is going on. It will show which song out of the number of songs found on the MicroSD card is currently playing, Payouts and Number of Shots and also it will display temporary messages like what the volume is when you are rotating the volume pots. If you press the Music Volume control (Right Control Knob) it will pause music play and display Paused press it again to start playing, the screen will also display info messages like a tray is full or empty. And on start up it will display the software version also.

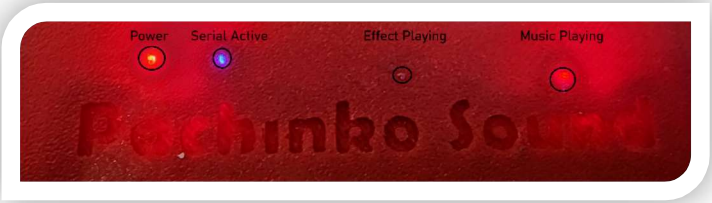
Volume Control:

Right control is for the Music Volume, Pause and Unpausing, Left is for the Sound Effects Volume, Clockwise increases and Counter Clockwise decreases the volume.

Music Skip:

Right button skips to the next song in the loop and left button skips back.

Indicator Lamps:



Left to right the lamps are Power On (Red), Serial Data Present (Blue), Sound Effect Playing (Red) and Music Playing (Red)

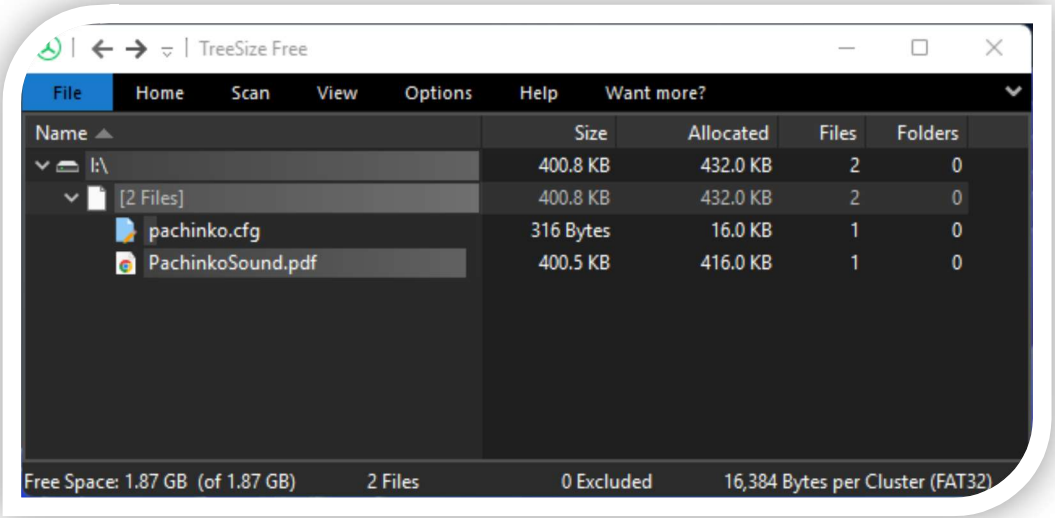
MicroSD Cards:

The MicroSD cards provided are 1Gb or 2Gb cards, The MicroSD card slots Left to right, (SYS) 1Gb card is used for the config file (this also contains a copy of this manual in PDF format). The Config file name is pachinko.cfg and is a flat file with as described in the configuration file section of this manual.

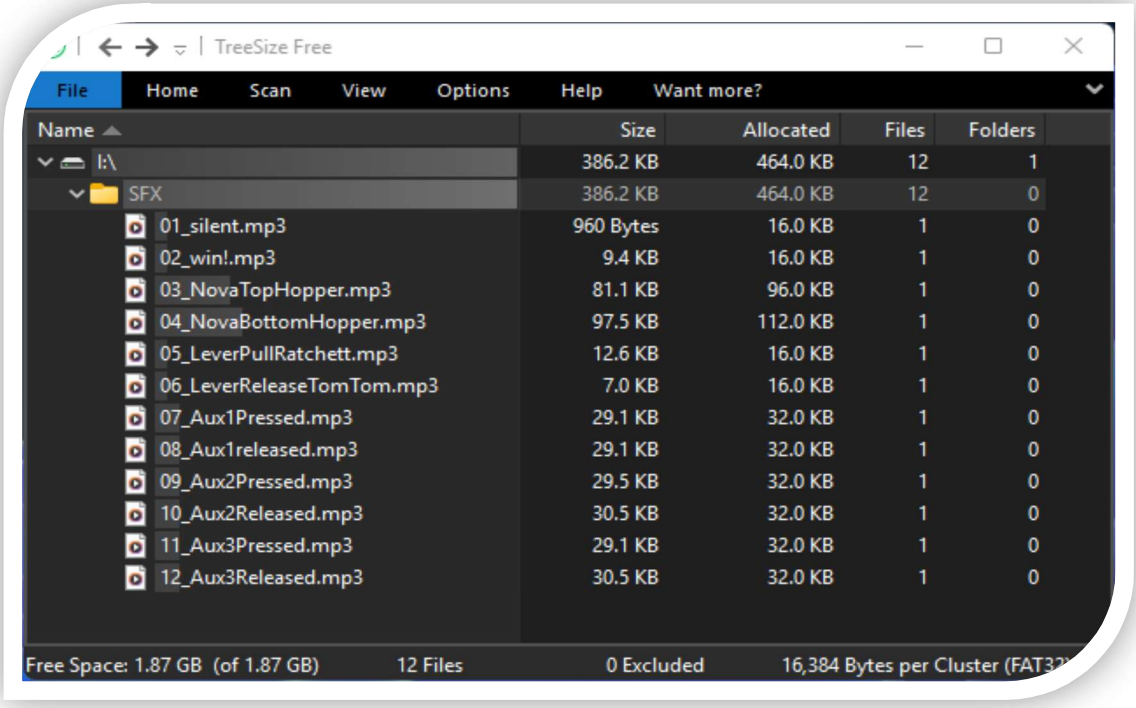
The Sound Effects SD card (SFX) in this case could be a 1Gb but likely is a 2Gb card. It contains the files used for the switch triggered sounds or messages.

The Music SD card (MUS) is the 2Gb SD card that contains the mp3 music files that can play in the background on a loop.

System Folder:



Sound Effects Files/Folder:



The files on the SFX MicroSD card are numbered and required to be numbers like this for the system to find the correct file for the correct function.

- File 1 is a special file and should always be included as it is used to silence sound playback under some conditions.
- File 2 Is the sound file to be played when the win switch is closed and should be a short sound file as wins can happen back-to-back and you want the file to play before the next win.
- File 3 will be played when the top hopper is empty.
- File 4 will be played when the switch (if present, not all have this switch) on the bottom hopper is triggered.
- Files 5 and 6 are used in conjunction, File 5 is when the switch is closed and file 6 will be played when it is released. You can replace both or one with a copy of the silence file (File 1)
- File 7 and File 8 are used for Aux 1 file 7 is played when Aux 1 switch is closed and File 8 is played when Aux 1 switch is closed. This is enabled in the config file
- File 9 and File 10 do the same for Aux 2
- File 11 and File 12 do the same for Aux 3

The files should be kept small so that the playback time is short.
When you copy the files to the MicroSD card you should create a folder on your computer and only place these files in it. Then you need to ensure your files have the Number as the included files do and you must start with a formatted MicroSD to ensure the file table is cleared. This is a function of the sound modules and how they look at files and how they order files to be played back. If you want to be super safe you can copy them one file at a time onto the MicroSD card that will ensure they are in the correct order. First file copied to the drive will be file 1 as the player is concerned and so on.

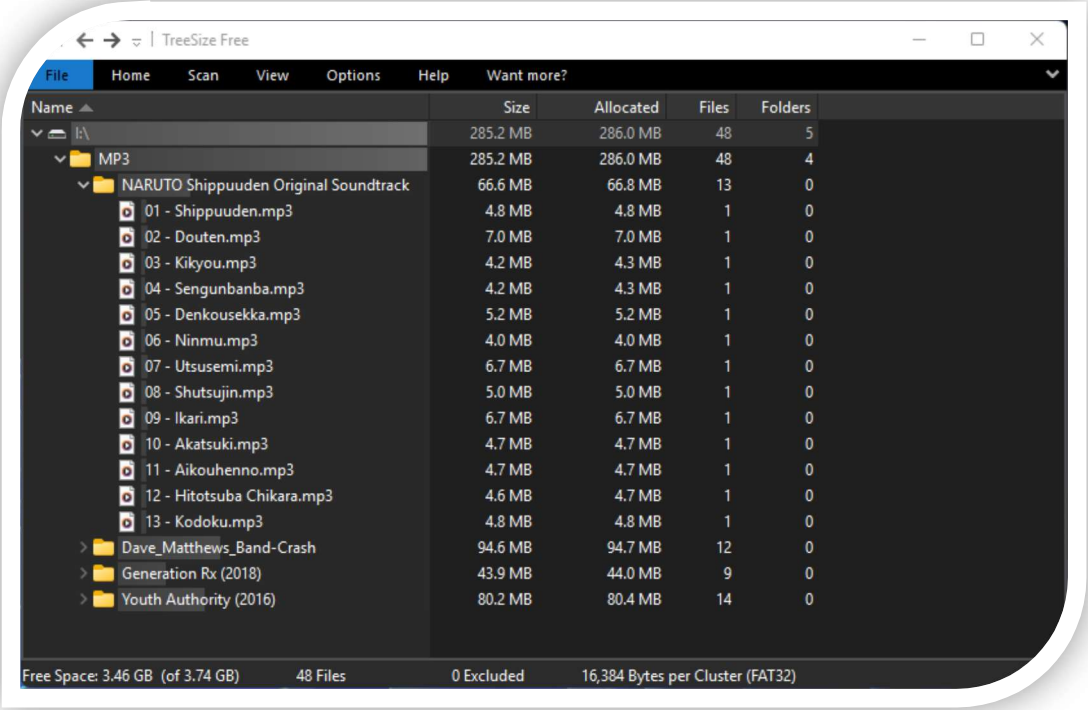
I use a PowerShell script to copy my files so that it is does correctly each time. Start with blank MicroSD.

```
clear-host
# This is the fill path to when the source sound files are located
$path_to_sorce_folder = "Z:\player files\sfx\"  # Change This to yours
# Drive letter of the MicroSD card as yourt system knows it.
$drive_letter_of_MicroSD = "I:" # Change This to Yours
# Make a folder on the formated MicroSD card located at $drive_letter_of_MicroSD
New-Item -ItemType "directory" -Path "$($drive_letter_of_MicroSD)\SFX" -Force -ErrorAction
SilentlyContinue -WarningAction SilentlyContinue
# Gather the full path of all the source MP3 files starting from $path_to_sorce_folder and
store them in $files sort the list by name
# this is why you want the file number as the first item in the sound file file name
$files = (Get-ChildItem "$($path_to_sorce_folder)\*.mp3" | sort-object -Property Name)
# Loop through each file name in $files and copy the files one by one
foreach($file in $files){
    write-host "`"$($file.FullName)`""
    Copy-Item -Path "$($file.FullName)" -Destination "$($drive_letter_of_MicroSD)\SFX\"
}
```

Table 3

If you are not working with windows you will need to evaluate the best way to perform the same tasks so that you get the results you need.

Music Files/Folders:



I like to keep my background music organized in folders with the top-level folder being MP3 and then a folder for each album that I plan to include. And then the songs will be renamed with the Song number on the album to keep them playing in the correct order.

```
DriveLetter:
          :AlbumFolder1 :                                                    :01-
My Song 1
                        :02-My Song 2
          :AlbumFolder2 :
                        :01-That Song 1
                        :02-That Song 3
ETC.
```

Table 4

Port Connections:

Switch Connections:

Win 1st & 2nd to win light micro switch.
Top 3rd & 4th to Top tray out micro switch.
Bot 5th & 6th Bottom tray full micro switch.
Lau 7th & 8th to added switch launch handle.
Aux1 9th & 10th to a switch of your choice.
Aux2 11th & 12th to a switch of your choice.
Aux3 13th & 14th to a switch of your choice.

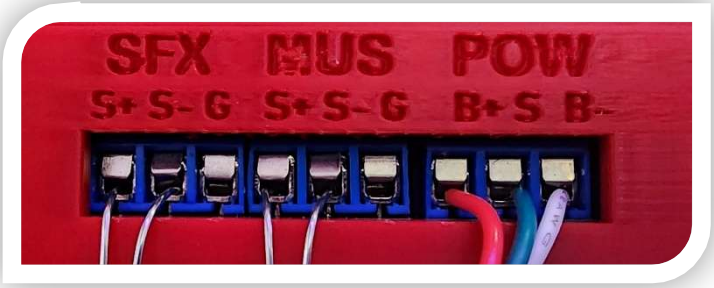
The ball launch arm does not normally have a switch and you will need to devise a way to install a micro switch I used a long arm cherry switch from a pinball application and screwed it to the back side of the play board and bent the wire to make contact with the launch arm levers in the back of the machine, when the arm is pulled back it activates that switch

Not all machines have a Bottom tray switch if not you could repurpose that connector so a different switch or leave it empty it is only activated when the switch is closed not when it opens.

Aux 1-3 are configurable to work on switch close or switch open or on both conditions.

All of the contact pairs are not polarized and are just simple switch closure detection, do not apply voltage to these connections as you may burn out the digital ports of the microcomputer.

Speaker And Power Connectors:



The speakers should be 4 Ohm 5 Watt or better and can be wired as mono or stereo. A single speaker may be connected to the SFX or MUS connections by using S+ and S-, if you want to use 2 speakers per channel you can connect speaker 1 positive to S+ and speaker 2 Positive to S- and both speakers' grounds to G (Ground). And you can do this for both SFX and MUS or you can mix and match if you want to use 3 Speakers. Each sound channel is separate.

SFX

S+ single or dual speaker +
S- single speaker + dual speaker -
G dual speakers' grounds.

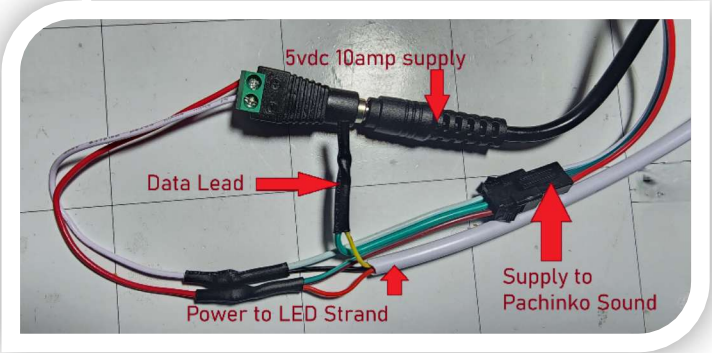
MUS

S+ single or dual speaker +
S- single speaker + dual speaker -
G dual speakers' grounds.

POW

B+ Must be 5 volts.
S digital output to LED Strand.
B- 5 volt ground.

The power connector is used to power the pachinko sound when a LED Strand is in use and will power the unit with 5V DC and amperage needs to be calculated but I recommend a 10 Amp 5vdc power supply (we can supply this). The power source positive lead will be connected to the B+ and the power supply negative lead will be connected to the B- these will also provide power to the LED Strand as well. The LED Strand Data line will connect to S and should be of the type WS2812B and with an arrangement of GRB and a maximum of 255 LED's anymore and the system will truncate the used lights to 0 to 254 or 255 lamps total.



This shows one way to do the power injection using a off the shelf power supply from amazon.

If you are not using LED functions then you can run the system from the USB port in the same slot as the system configuration MicroSD card.

WARNING:
Only Use One Power Source. And if you do try LEDs without a proper power supply do not try to power more than about 3 or 4 LEDs from the USB Port power it will cause low power and system crashes.

Notes:
LED From Amazon,

WS2812B ECO LED Strip Light 16.4FT/5M 60LEDs/m 300Pixels Individually Addressable Programmable 5050SMD Digital RGB Alloy Wires Flexible Dream Color IP30 Non-Waterproof PCB Black DC5V.
Or
WS2812B LED Strip Light 3.3FT 100LEDs DC5V Individual Addressable LED Strip SMD5050 RGB 100Pixel Dream Color Programmable LED Light Strip Flexible IP30 Non-Waterproof Black PCB.

Care And Cleaning:

Please only use a light spray of household cleaner (such as Windex) or water on a lint-free towel to wipe the surface clean. Do not wet the device, as it is neither water-resistant nor waterproof.

Final Notes:

If you want to reset the counters for shot balls and wins you can press the music volume control knob down during power up that will reset the counters to zero.

Above the S in SYS on the top cover there is a small hole if you use a paper clip and gently press that will reset the microprocessor.

When not in use, turn the power off to conserve energy.

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Notes: