Operating Manual

Vision8r

By HauntBots LLC

Date: 03-12-18
Revision: 2.1

Table of Contents

NOTICE

It is the user's responsibility to determine the suitability of this product for any given application. Do not use this device in any life-critical system or hazardous areas. An understanding of electronic terminology and practices are required to use this device. Mount the unit in a way that prevents exposure to moisture and within the parameters of any applicable codes.

1. Introduction

System Overview

The Vision8r (V8) is a self-contained, 8-channel prop controller. The unit contains an integrated MP3 playback system and a 40-Watt per channel Class D stereo amplifier. The V8 requires a low voltage power supply (12vdc – 24vdc). The controller has a sturdy aluminum case with mounting tabs.

Document Overview

The following terminology appears throughout this manual:

Controller, Vision8r, or V8 may be used interchangeably when referring to the Vision8r.

Ground, negative, or (**-**) may be used interchangeably when referring to the power supply connections.

The terms “Recording” or “Programming” may be used interchangeably when referring to the real time show creation process.

The terms “Show” “Program” or “Sequence” may be used interchangeably when referring to the animation data.

2. System Description

Specifications

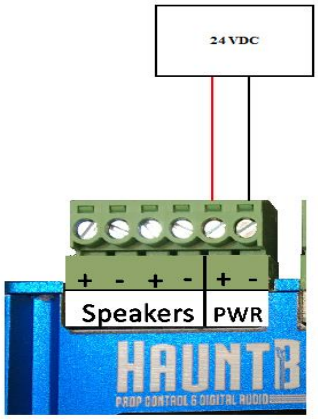
- Programmed from front panel buttons
- Full color 128 x 160 TFT LCD display
- 8 Meg flash memory shared between MP3 and show storage
- 25 frames per second (almost 45 minutes of available show recording time)
- Up to 8-1/2 minutes of audio
- 40-Watt per channel Class D stereo amplifier
- Stereo Line out connection
- 8 solid-state outputs.
- Wire terminals accept wire as large as 14 gauge
- Trigger input normally open or normally closed can be sinking, sourcing or contact closure
- USB connector to download audio files and backup shows
- SD card socket for copying show files and audio library to controller
- Same rugged case as our other pro series controllers with no exposed circuit board
- 6" square footprint
- Microcontroller runs 12 million instructions per second

Applications

The V8 is intended for stand-alone operation of animatronic characters or prop control.

3. Hardware

Power Supply



The V8 will operate on 12 to 24 volts DC. Connect the power supply to the terminals in the **PWR** section marked: **+ & -**

To produce the full rated 80 Watts of power from the amplifier, A 24-volt 5 amp power supply is required. If you intend to use the same supply for powering output devices (valves, relays, etc) additional amperage is required.

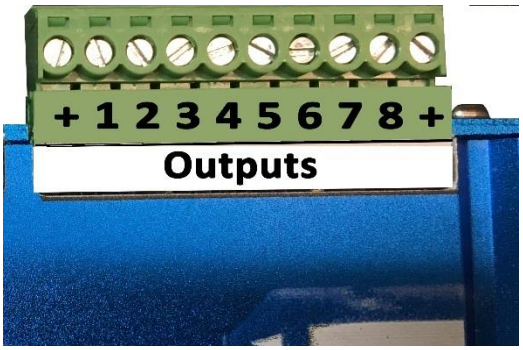
There are two extra **+** terminals for convenience on the output connector. The **+** terminals are internally connected. This provides extra terminals to attach other items requiring power.

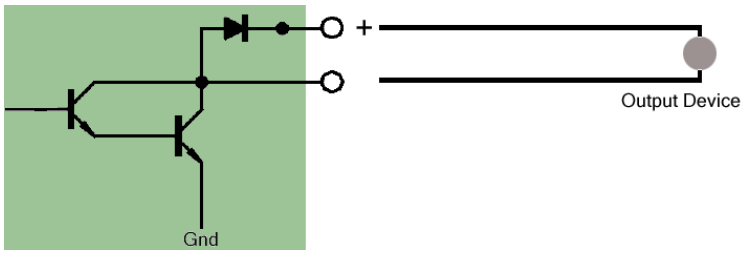
Note: The **12v** terminal in the **Triggers** section of the connector **is not** the same as the **+** terminals in the **PWR** section.

The **12v** terminal in the **Triggers** section is a 12vdc **output** from the V8's internal 12v regulator. This can be used to supply triggers that require power.

Outputs

The 8 outputs are driven by a ULN2803 chip in a socket for easy replacement. The ULN2803 is rated at 500-ma max. This rating must be considered when estimating the number of outputs you expect to activate simultaneously, their duty cycle and the ambient temperature. 125 ma per output is typically a safe value for the duty cycle experienced in most animatronic applications.

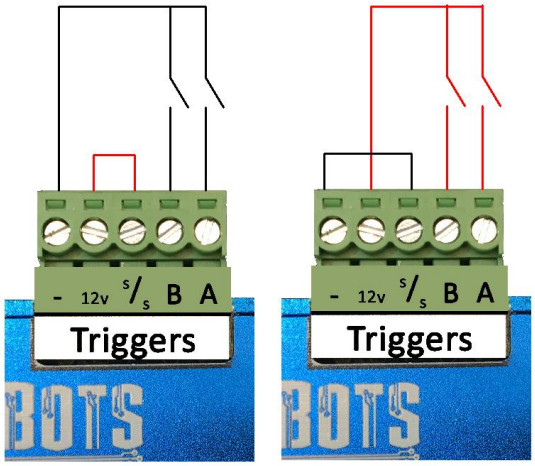




Two **+** terminals are available. These carry the same voltage found at the **+ PWR** terminal.

These outputs are "sinking". Your positive (+v) voltage source should be wired to every device and the V8 will switch on and off the ground (-) side of the connection.

Trigger Input



The 2 trigger inputs on the V8 can accept a variety of trigger devices; sinking or sourcing, & normally open or normally closed.

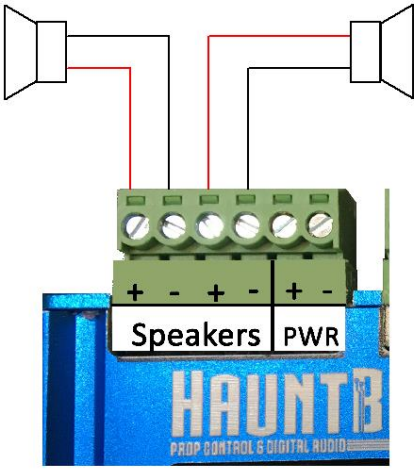
The **s/s** terminal is used to select whether you want to trigger on + or – voltage. To trigger with +voltage, connect the **s/s** terminal to the **–** terminal. Alternately, to trigger with ground (-), connect the **s/s** terminal to the **+** terminal.

For contact closure operation, either diagram may be used.

The function of each trigger and whether it is a normally open or normally closed switch is configurable in the Setup Menu.

Note for Older Versions: Previous versions of the V8 did not have an s/s terminal. These controllers will only trigger on + voltage.

Speakers



The V8 has a stereo 40-Watt per channel amplifier. Connect speakers to the + & - terminals with a minimum of 4 ohms per channel.

LCD Display

The integrated color LCD display provides feedback on all modes and functions.

This includes:

Menu options and values
Current show number
Countdown timers
Heartbeat
Output status

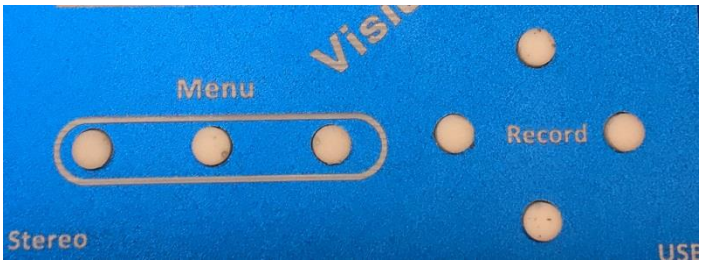
4. Programming

Basic Operation

The V8 is programmed using the buttons on the front panel in conjunction with the color LCD display.

The buttons are context sensitive. This means their function will change depending on the current menu or parameter. The bottom row of the LCD display will always display the button function for the current menu or parameter.

To enter programming mode for the **Ready** screen:



Hold down the center **Menu** button for 3 seconds.

The Main Menu will appear on the LCD display.

Main Menu

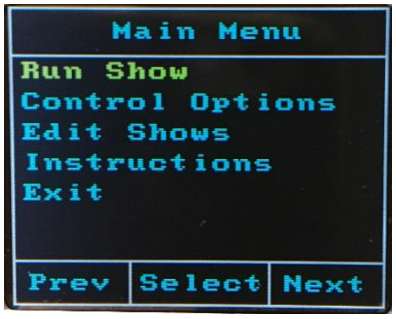
Run Show: Allows you to run the current show manually.

Control Options: Allows you to edit global settings (these settings apply to all programs). The show count and trigger modes are examples of Control Options.

Edit Shows: Allows you to create new shows and modify existing shows.

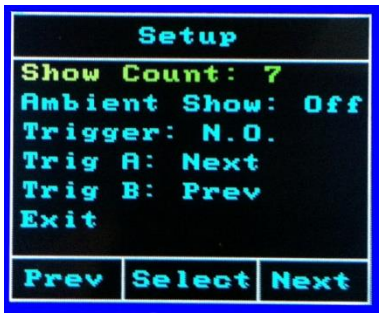
Instructions: Displays QR code that will take you to this manual.

Exit: This takes you back to the **Ready** system standby screen.



Use the **Prev** or **Next** buttons to highlight the desired item, and then press the **Select** button.

Control Options



Five global setup parameters determine the V8 Behaviour. These settings are Show Count, Ambient Show, Trigger polarity Trig A & Trig B.

Step through the highlighted options with the **Prev** or **Next** buttons.

Press the **Select** button to edit the value.

The current value will flash to indicate you are in edit mode.

Button functions will change depending on the parameter.

Press the Select button to accept your new parameter value.

Show Count:

The V8 can store up to 9 triggered shows. A show count value between 1 and 9 is valid.

Use the **Down / Up** menu buttons to modify the value. Press **Select** to accept the new value.

Note: The V8 only has 2 trigger inputs, so the manner in which these shows are activated depends upon the **Trig A** & **Trig B** setting.

Ambient Show:

Determines whether the ambient show is enabled. When enabled, this show will play whenever a triggered show is not playing. This will be either **On** or **Off.**

Trigger Mode:

This setting selects either a normally closed or normally open trigger source. **N.C.** or **N.O.** are the only valid options.

Trig A & Trig B:

This setting determines what will happen when a trigger is received on the input.

Next: Plays the next show in the list. If there is only one show, it will be played every time a trigger is received.

Prev: Plays the previous show in the list. If there is only one show, it will be played every time a trigger is received.

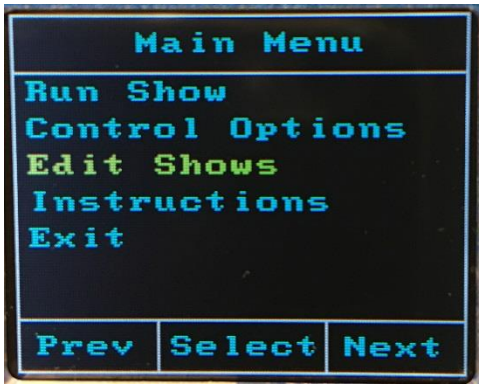
Stop: Stops a playing show.

Show 1 – Show 9: Plays a particular show when triggered.

Note: This setting will only go as high as Show Count.

These setting will allow the maximum amount of flexibility with the two trigger inputs.

Edit Shows



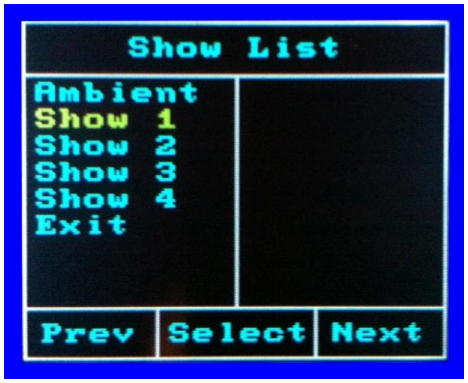
Immediately following the **Control Options** are the menus for configuring and programming the various shows stored in the V8.

Use the **Prev** or **Next** button to cycle through the available shows.

Press **Select** to enter the menu for a specific show.

Here you can change parameters associated with the show, or create / modify the show itself.

Show Menus



These menus display and allow editing of all show parameters. Each show (or program) has its own unique group of parameters/settings. Therefore, it is possible that show number 1 might have a different audio volume than show number 3, or show 2 shares the same audio clip as show 4. Perhaps show 7 needs a five second pre-show delay while the rest of the shows don't require any delay. All these combinations are possible.

The show creation process is just as flexible. You can program up to 4 outputs simultaneously or you can create the show in layers; recording one output sequence at a time. It is just as easy to come back a month later and re-record the sequence for just one or two outputs.

Play Show:

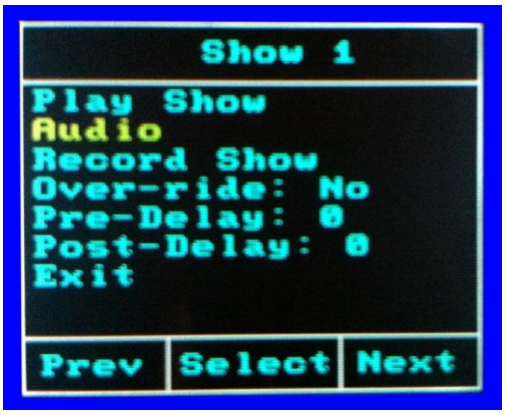
Pressing the **Select** button will cause the current show to play. During playback, the LCD will graphically display the output status. The various parameters associated with the show will also appear.

Pressing the **End** button will halt playback.

Audio Menu:

The Audio menu enables you to select the desired Audio Clip, set the Volume, and Fade state.

Press **Select** to enter the Audio menu.



Audio Clip:

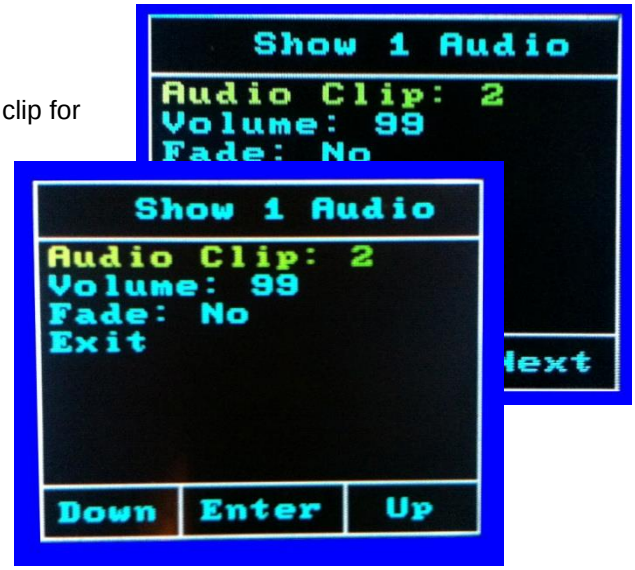
This parameter allows you to select the proper audio clip for your show from the library of audio clips.

Press **Select** to modify the clip number.

Press **Up** or **Down** to cycle through the available clips. You will hear each clip play as it is selected. Press **Enter** to lock in the desired audio clip.

The number of audio clips available depends on their length. It is possible to store roughly 9 minutes of high quality, stereo MP3 audio in the V8.

Audio Clip 0 will disable sound for this show.



Volume:

This parameter allows you to set the volume for each show.

Press **Select** to modify the volume.

Press **Up** or **Down** to raise or lower volume. You will hear the selected clip playing making it easy to set the proper volume.

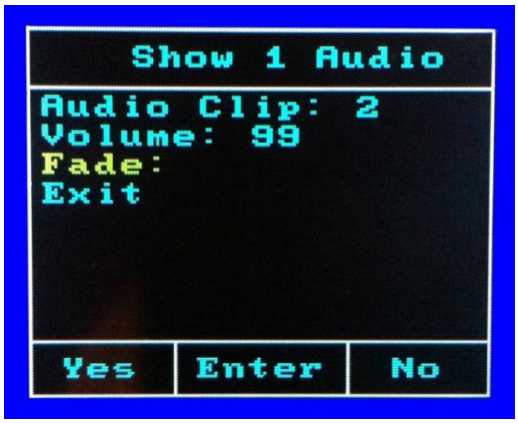
Press **Enter** to lock in the desired volume.

Fade:

This parameter works in conjunction with the **Over-ride** setting. Valid settings are **Yes** or **No.** When set to yes, the show audio will fade out rather than abruptly switching to the next show.

Press **Select** to modify the value.

Use the **Yes** or **No** buttons to choose the desired setting, Press **Enter** to lock in the value.



Record Show:

This menu allows you to create a show or edit an existing show. Press **Select** to begin.

Shows are created in layers.

Use the **Prev** or **Next** buttons to cycle through the various outputs.

Pressing the 4 record buttons on the right side of the control will toggle the on-screen graphic from green to red. When an output is red, it is armed for recording. When an output is green, it is in playback mode.

You can program up to 4 at once or program them individually. It is also possible to program all 4 then go back at a later time edit just one. It is a very flexible system.

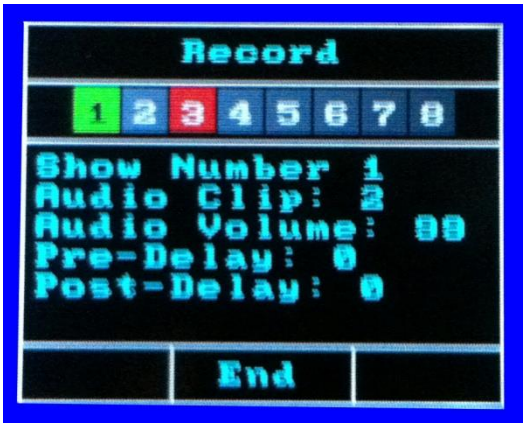
After selecting the desired outputs for programming, press the **Select** button.

This will begin a **3,2,1** countdown.

At the completion of the countdown, the controller will be live.

The selected **Audio Clip** will play at the selected **Volume**.

Pressing any of the four buttons on the right of the controller will directly control the output assigned to it.



Note: The controller ignores buttons for any output not selected (green) for programming.
Instead, that output will play back any show data that was previously stored for it.

Continue pressing buttons creating the show sequence for as long as required.

Press the **End** button to end the programming sequence and set the show length.

The V8 will jump back to the **Show Menu** allowing you to play back the show if desired.

I**mportant information regarding show length:**

- It is possible for a show to last longer than its audio clip; there will just be silence- the audio will not loop.
- Creating shows shorter than the audio clip is also possible however, the audio clip will be cut off to match the show length.
- Any show will be as long as the last time you programmed it. For example- You create a 20-second show. Sometime later, you redo the sequence for just one of the outputs but you run slightly longer, say 22 seconds- Your show is now 22 seconds long.

Override:

This parameter is active when the V8 is in multi-show mode (show count is greater than 1). It determines if the trigger input is active while a show is playing. Valid settings are **Yes or NO.**

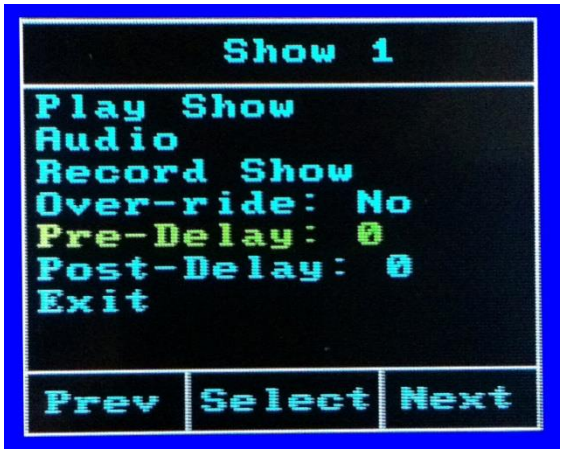
When set to “Yes”, the trigger input is active and the show can be over-ridden or “stepped on”.

Press **Select** to modify the value. Use the **Yes or NO** buttons to choose the desired setting, and then press **Enter** to lock in the value.

Pre Delay:

This is the pre-show delay function of the V8. A value of 0 to 99 seconds is valid. When triggered, the pre-show delay will count down on the LCD display prior to the show starting.

Press **Select** to modify the value. Use the **Up** or **Down** buttons to choose the desired delay, and then press **Enter** to lock in the value.



Post Delay:

This is the post-show delay function of the V8. A value of 0 to 99 seconds is valid. At the completion of the show, the post-show delay will count down on the LCD display. The trigger input will not respond while the countdown is in progress.

Press **Select** to modify the value. Use the **Up** or **Down** buttons to choose the desired delay, and then press **Enter** to lock in the value.

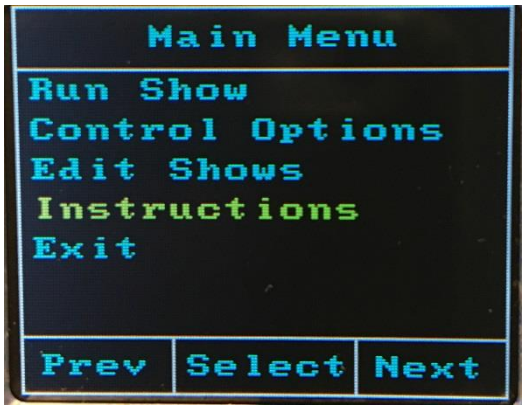
Loop Delay:

This parameter only appears on the ambient show menu.

This option takes the place of the pre and post show delay used with other shows.

A value of 0 to 99 seconds is valid and represents a time delay from the end of the ambient show until restarting it. Press **Edit** to modify the value. Use the ▲ or ▼ buttons to choose the desired setting, and then press **Edit** or **Esc** to lock in the value.

Instructions:



This menu item takes you to a QR code that will be recognized by your smart device as a website address leading to this instruction manual.

Pressing any navigation button will return to the Main Menu.

5. Software Operation

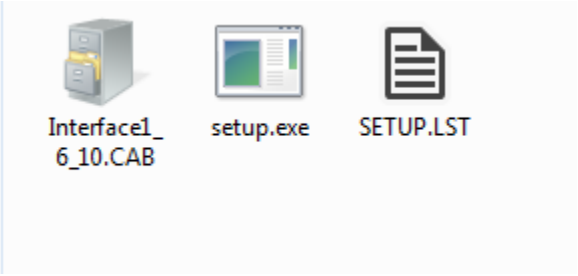
The computer interface provides tools that enable you to create an audio library for the V8. It also enables you to read previously created shows from a V8 via USB. These shows can be saved to your computer for backup, or to download to other V8 controllers. Shows and audio files can be sent to a V8 either via USB or SD card.

Software Installation

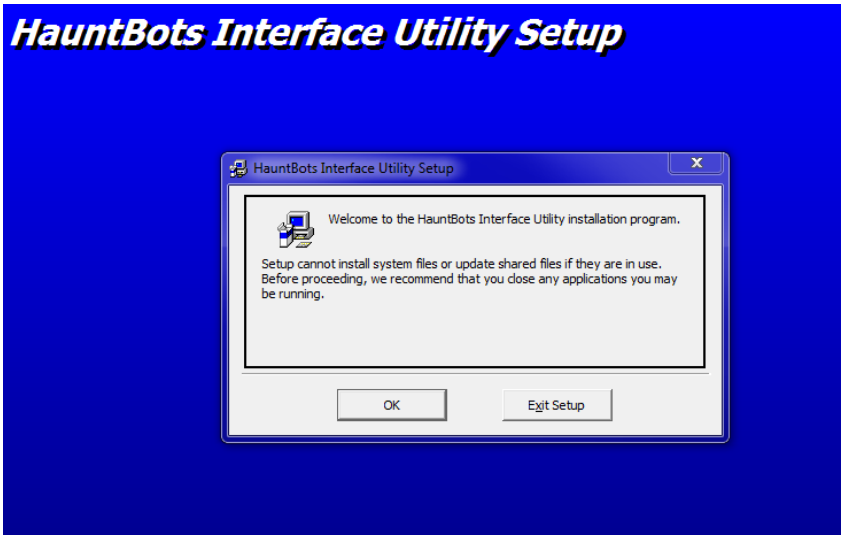
The installation package consists of three files

- Interface.CAB
- Setup.exe
- Setup.LST

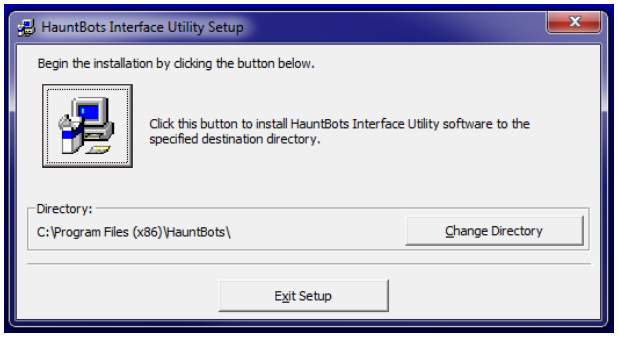
Double Click **setup.exe** to begin the installation.



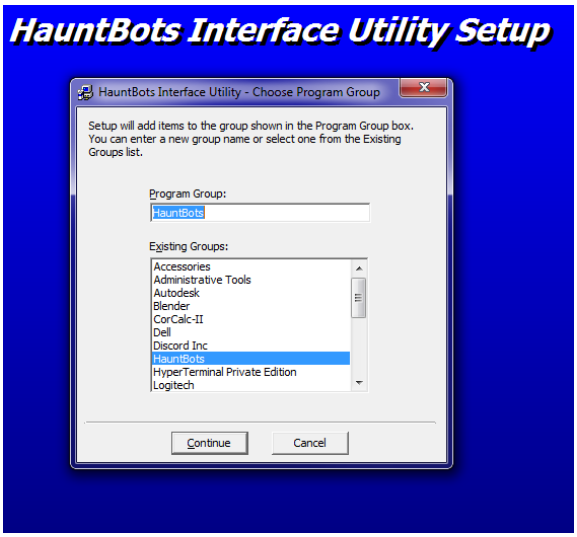
Click OK at the Welcome screen



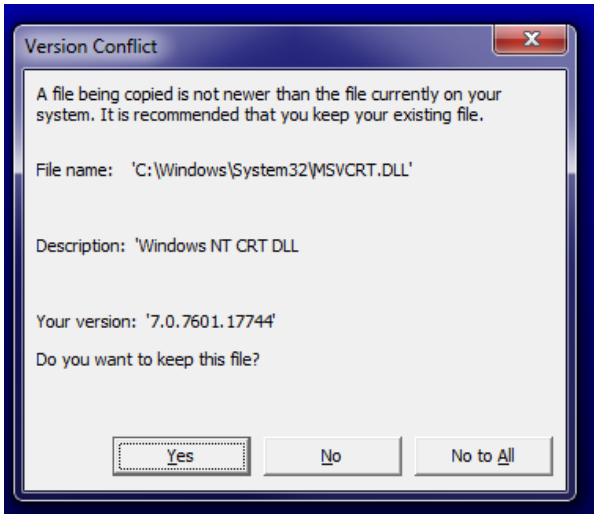
Click the large button to accept installation in the default directory.



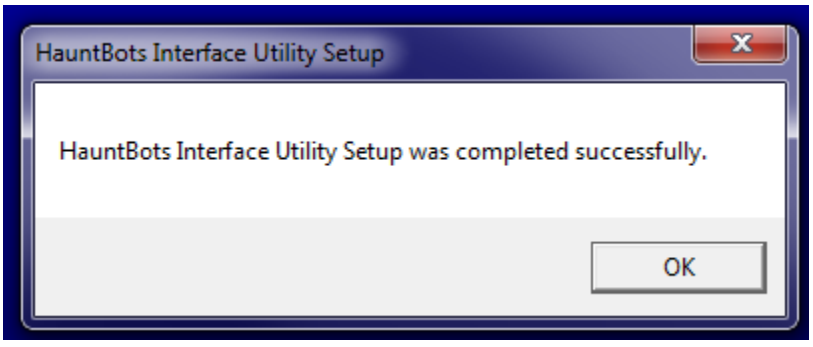
Click Continue to create the default Program Group



If you encounter any Version Conflicts, click **Yes** to keep your newer version of the file.



When the setup completes, click OK.



The Interface Utility will appear on your start menu in the HauntBots folder

Driver Installation

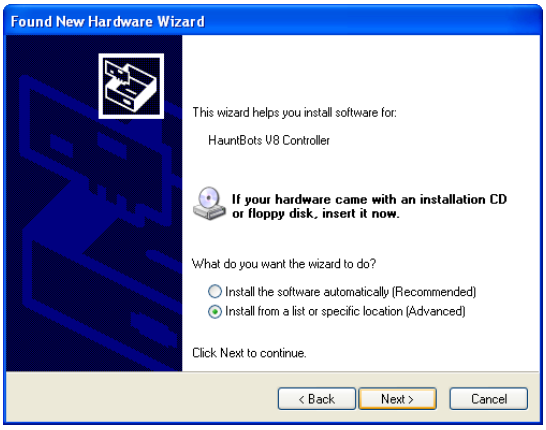
Upon connecting the V8 to a computer for the first time, you will need to load the appropriate driver before you can use it with the interface software.

The exact screens will vary a bit between different versions of windows. Newer versions of the V8 will be recognized by Windows as **CCS USB to UART** rather than **HauntBots V8 Controller**. These instructions cover an install on Windows XP.

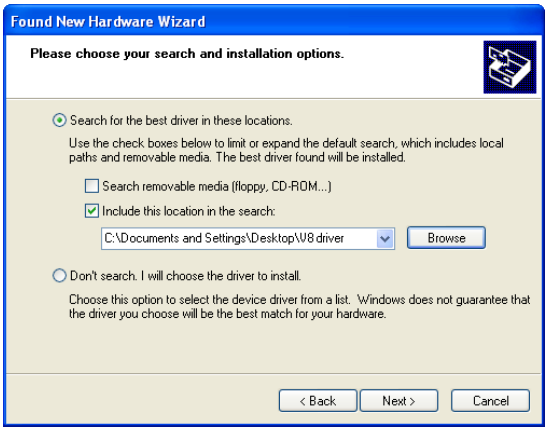
On the New Hardware Wizard window select:

"No, not this time" And click **"Next"**

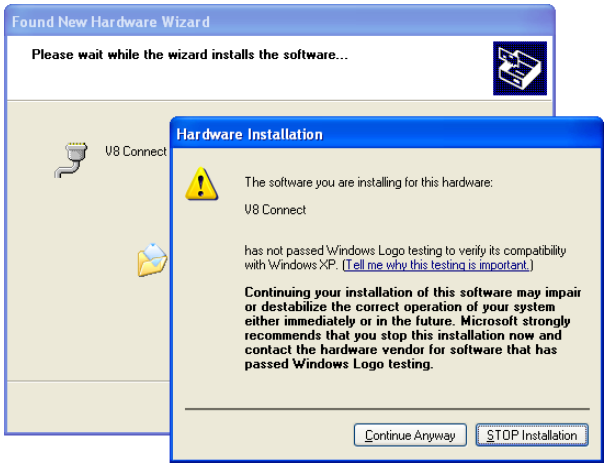
Click "**Install from a list or specific location (advanced)"** then click **"Next"**



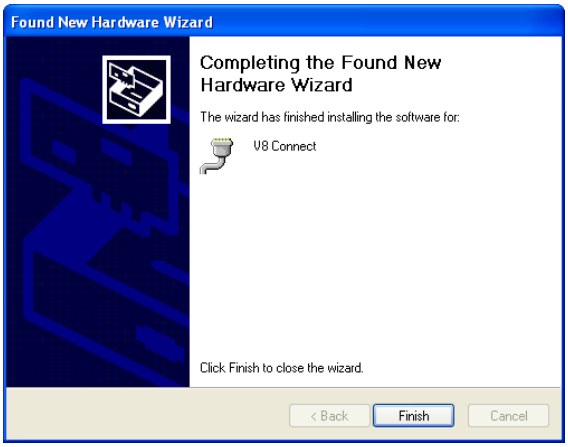
Click the **"Include this location in the search"** option check box. Then click **Browse** to find the folder containing the V8 driver. This may be on media supplied to you by HauntBots or directly downloaded from the HauntBots website.



When presented with the Windows Logo testing warning click **“Continue Anyway”**



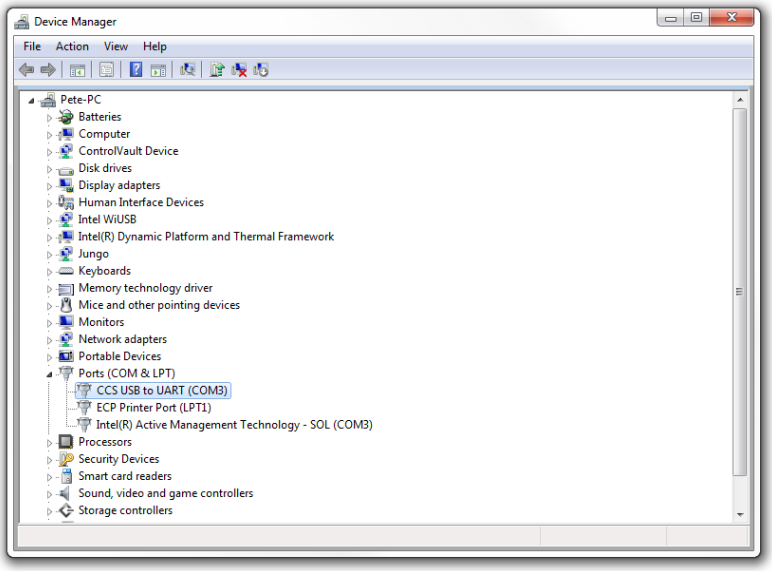
The hardware wizard will complete. Click **Finish** to close the wizard.



In Device Manager, you should see the connection listed in the “Ports” section.

This will display the com port that windows assigned to the connection- in this case COM3

Windows will typically assign a new com port number every time you plug the V8 into a different USB port.



If the assigned com port is higher than 16 it must be changed.

To change the assigned com port, double click V8 Connect in Device Manager.

The V8 Connect Properties window will open.

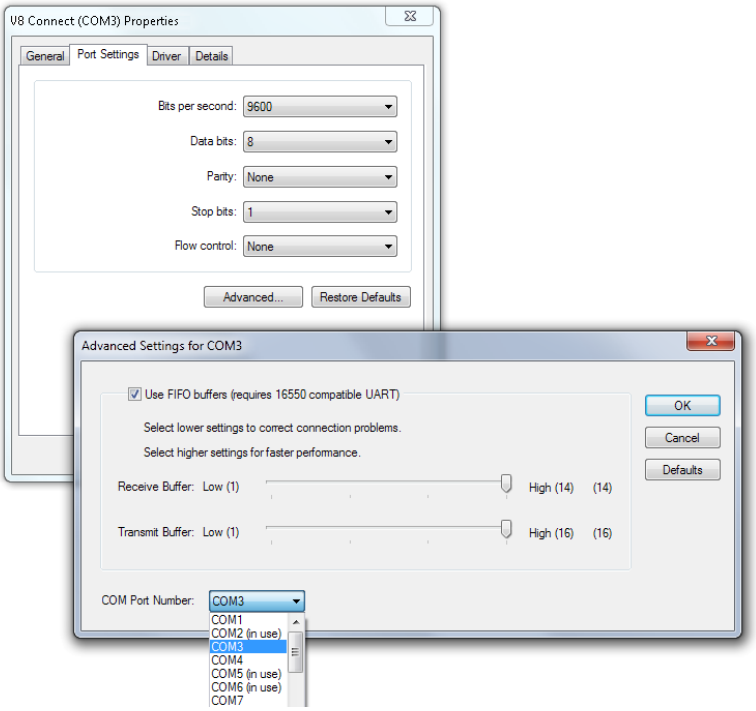
Click the **Port Settings** Tab.

Click the **Advanced...** button.

Change the com port number as desired

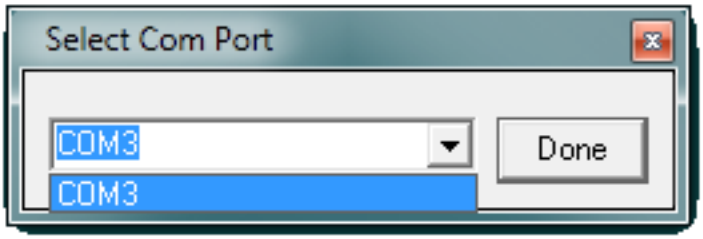
(1 through 16)

We also generally recommend clearing the FIFO buffers checkbox.

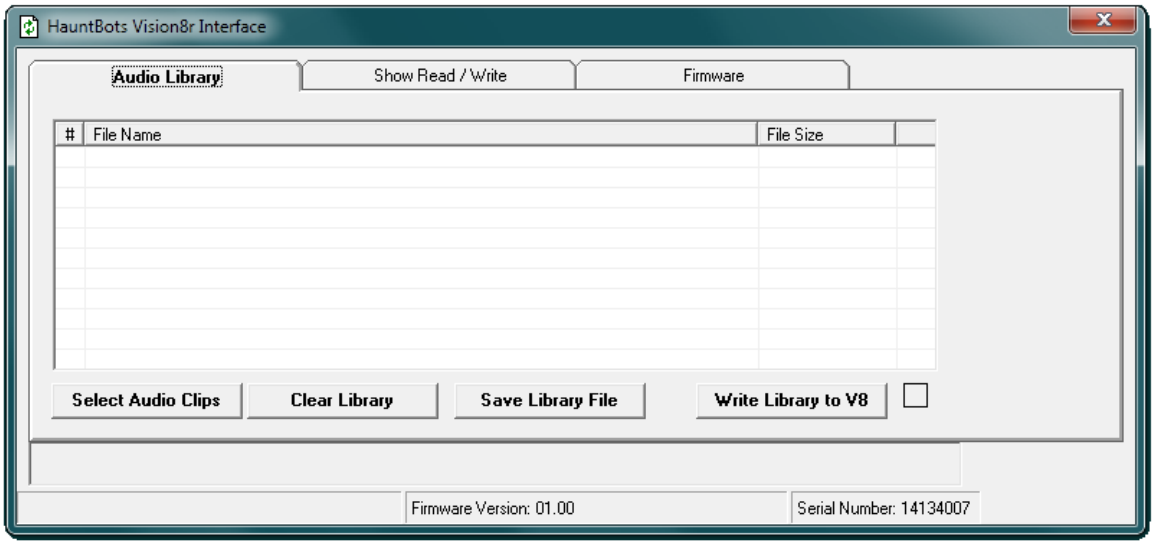


Starting the Software

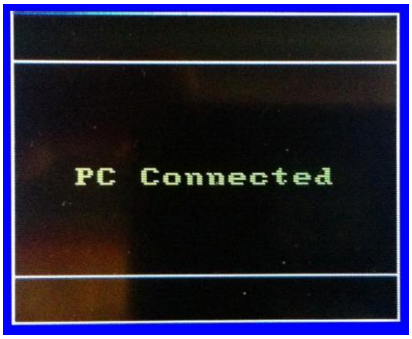
Start the "**Interface Utility"**, and a window will list all available com ports on your computer. Select the correct com port from the list for your controller then press "**Done**"



The main interface window will open. The screen is divided into three different tabs. The first tab handles audio library creation and downloading. The second tab handles reading and writing of show (animation) data. The third transmits firmware updates to the V8.



The V8 LCD will display “PC Connected”

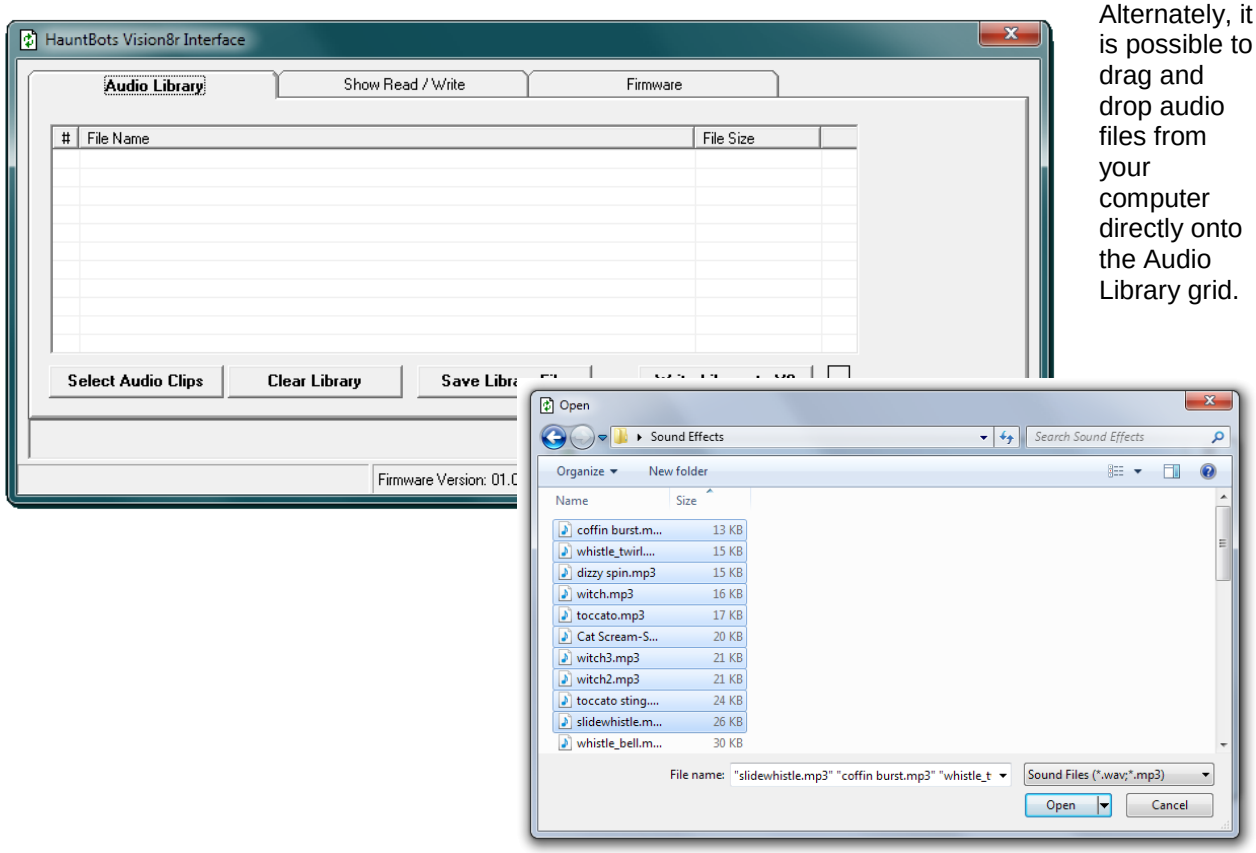


Creating Audio Library

The V8 uses a library of audio clips. The library can contain a single audio file or as many files as will fit into the roughly 8 Meg of Ram space. Creating your own library and copying it to the V8 will over-write the sample library that came with the unit.

To create a library, click the "**Select Audio Clips**" button. A computer browser window will open. Navigate to the folder containing the audio tracks you wish to use. The V8 is capable of playing WAV or MP3 files; however, WAV files will consume large amounts of memory very quickly.

Select the audio file (or files) you wish to use. To select a list of files, click the first file then hold down the shift key while clicking the last file. To pick multiple files not in a row hold down the Ctrl key while selecting. Once all desired files are selected, press the **Open** button.



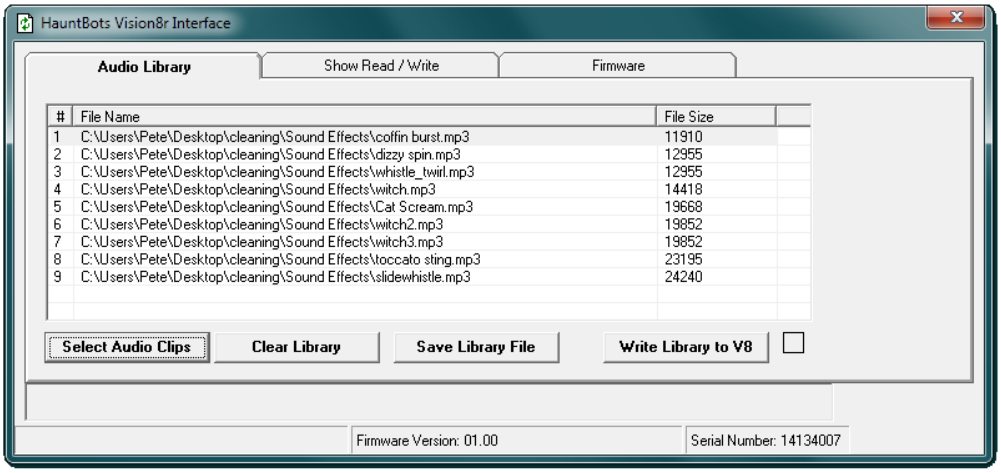
Alternately, it is possible to drag and drop audio files from your computer directly onto the Audio Library grid.

The selected files will appear in the grid. The # column will indicate the number assigned to the clip. The V8 interface software keeps track of memory usage and only allows you to select files that will fit into the unit's memory.

Transferring the audio clip library to the V8 can be done in one of two ways:

1) Via USB

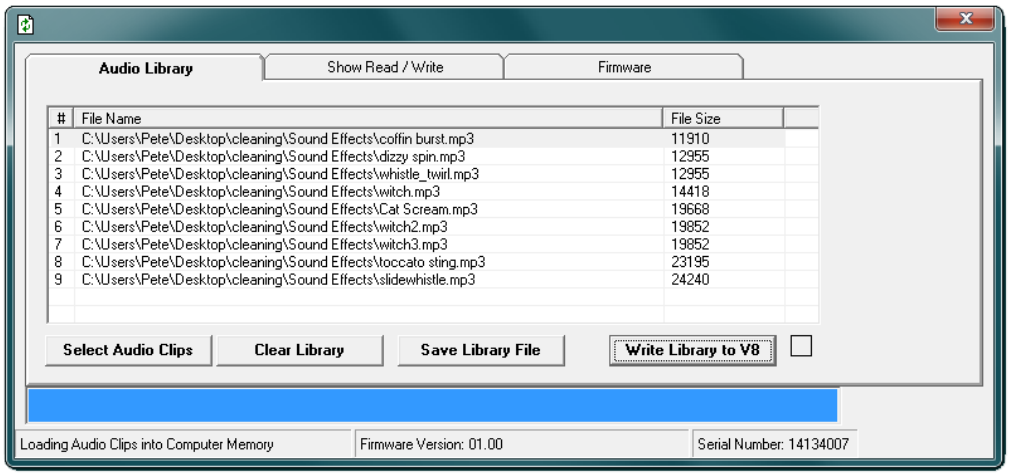
2) Via SD Card



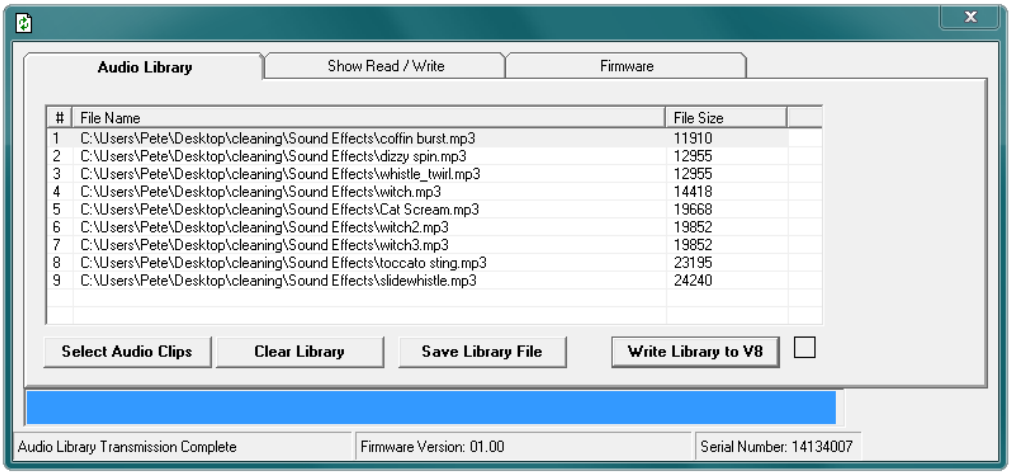
USB Audio Library Transfer

Click “**Send Clips to V8**”.

The computer will first open the individual audio clips and create the package.



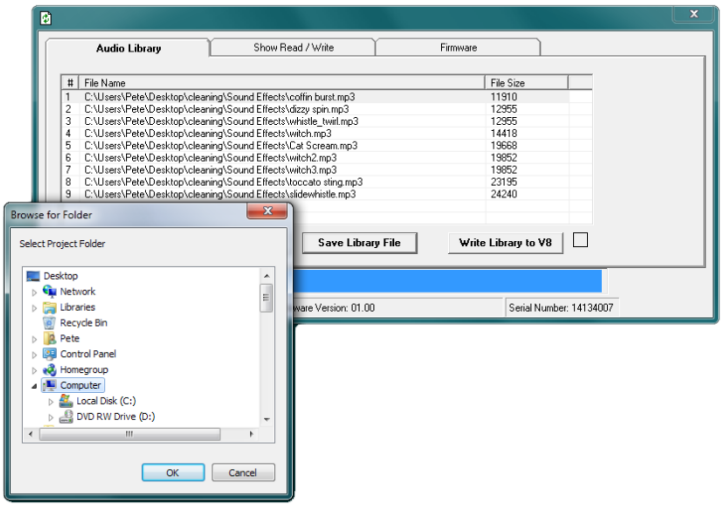
Then the clips will download to the V8.



Depending on the size of the library, this can take several minutes to complete.

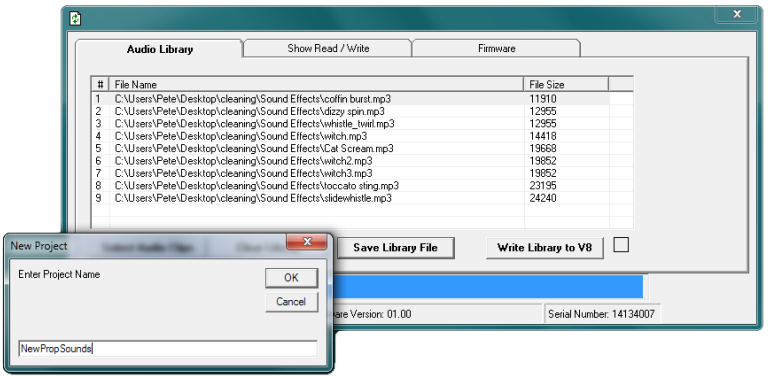
Save Audio Library to Computer

Click the Save Library File button.

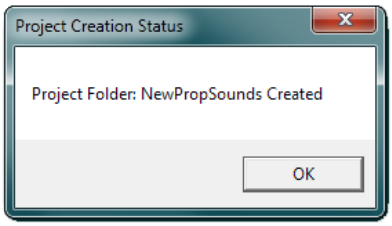


Browse for the folder on your computer where you wish to save the audio libraries.

Create a project name.

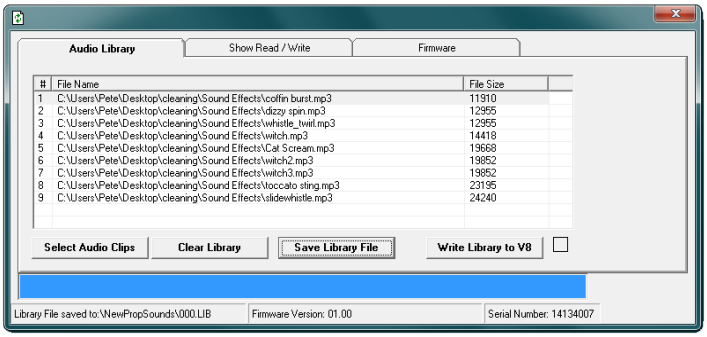


The Audio Library will be saved to a folder with the project name.



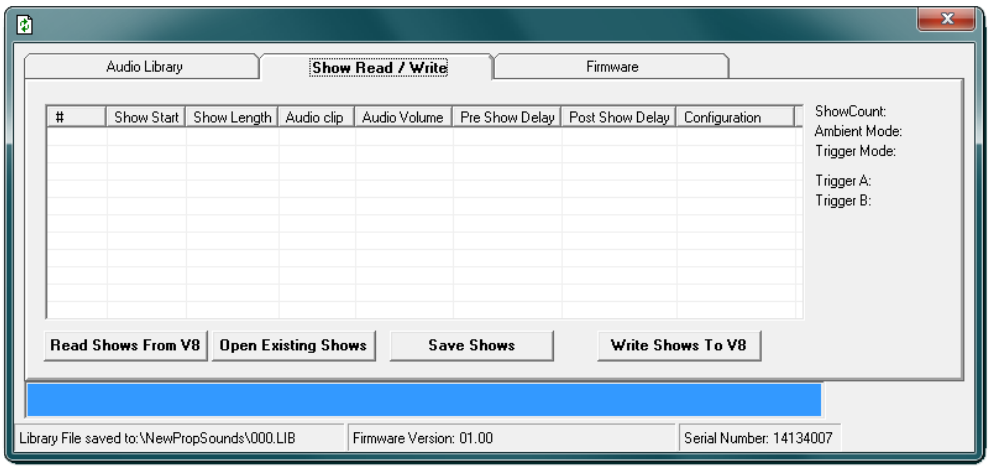
The status bar will display the path to the audio library.

This library file can be copied to an SD card for transfer to the V8.



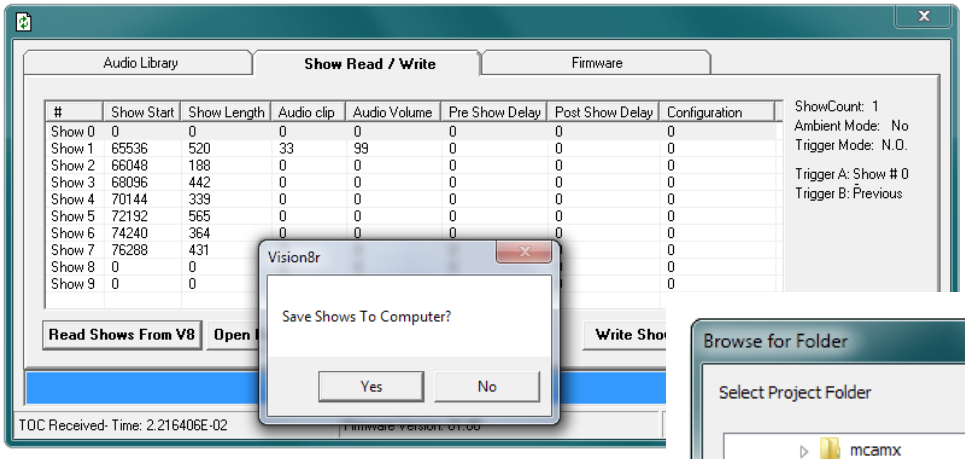
Read / Write shows

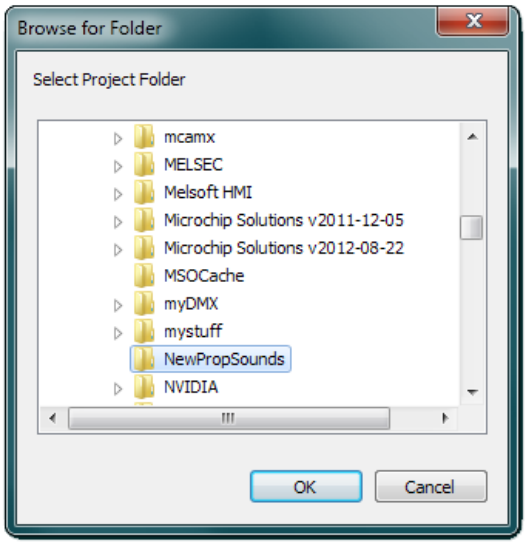
The **Show Read / Write** tab enables you to extract all shows from a V8 and save them to your computer. Shows saved in this manner can be re-opened and written to another V8.



Read Shows from V8

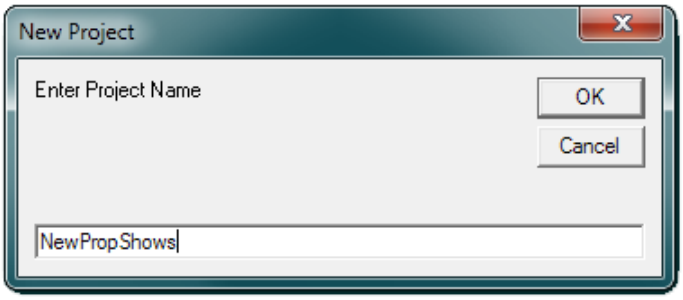
Press "**Read Shows From V8**". The V8 will transmit all show data to your computer. You will receive a prompt to "**Save Shows To Computer?".**



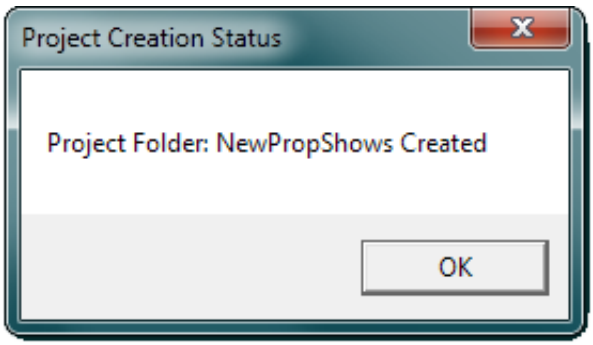


Press **"Yes"** and a Browse folder window will open. Select the folder where you wish to save your show data.

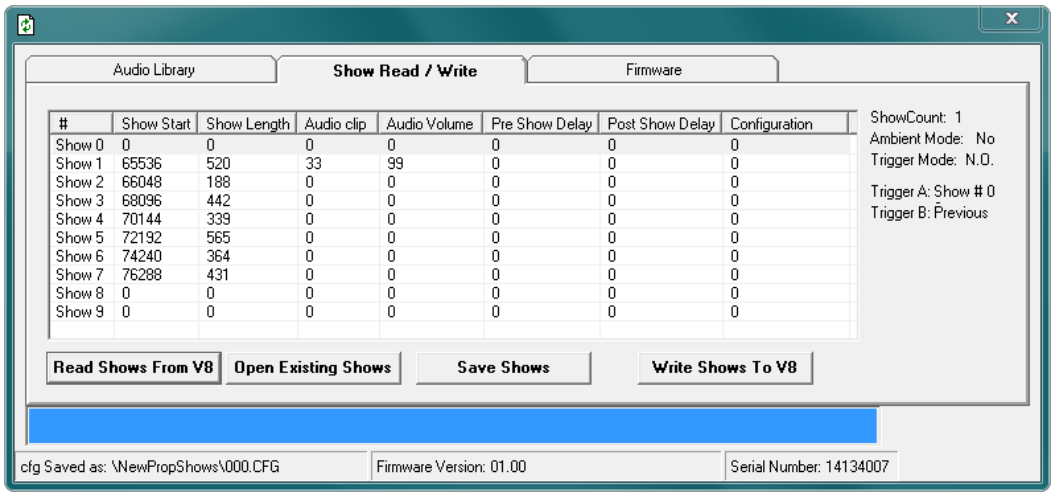
You will then be prompted to create a project name. This will create a new folder where all show data will be stored. Enter the desired project name and click **OK**.



The show files will be saved and a window confirming project creation will be displayed.

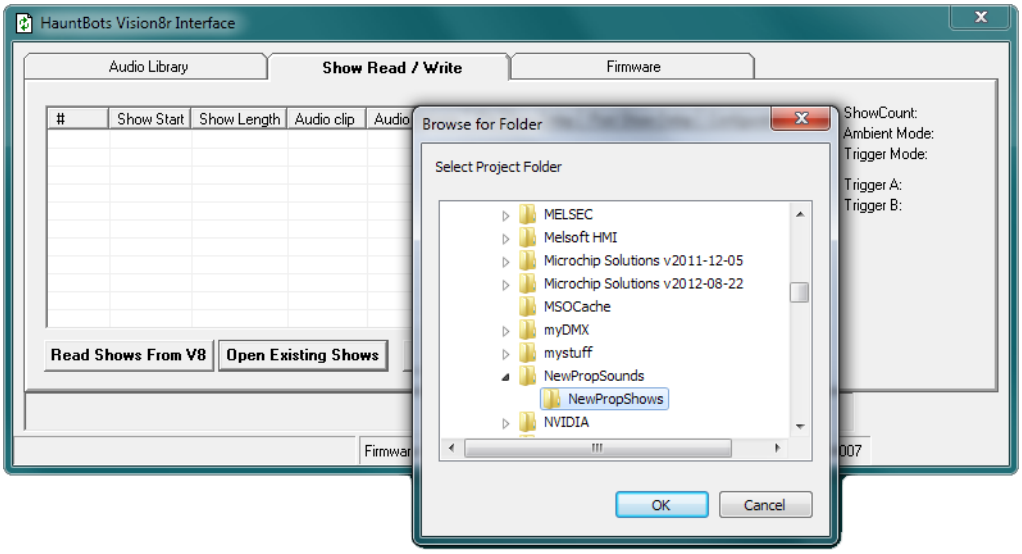


The status bar will display the path to the saved files.



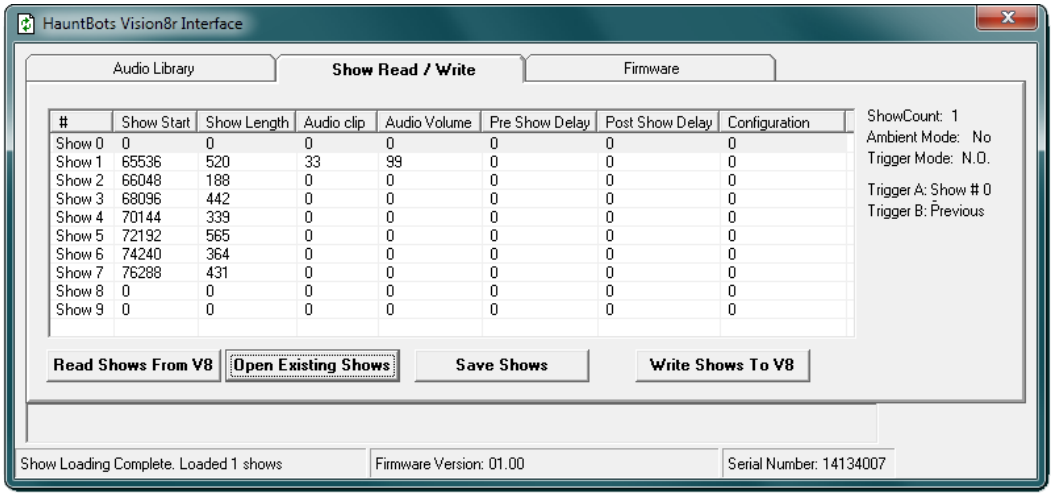
Open Saved Show Files

Press **Open Existing Shows** to open a previously created project folder.

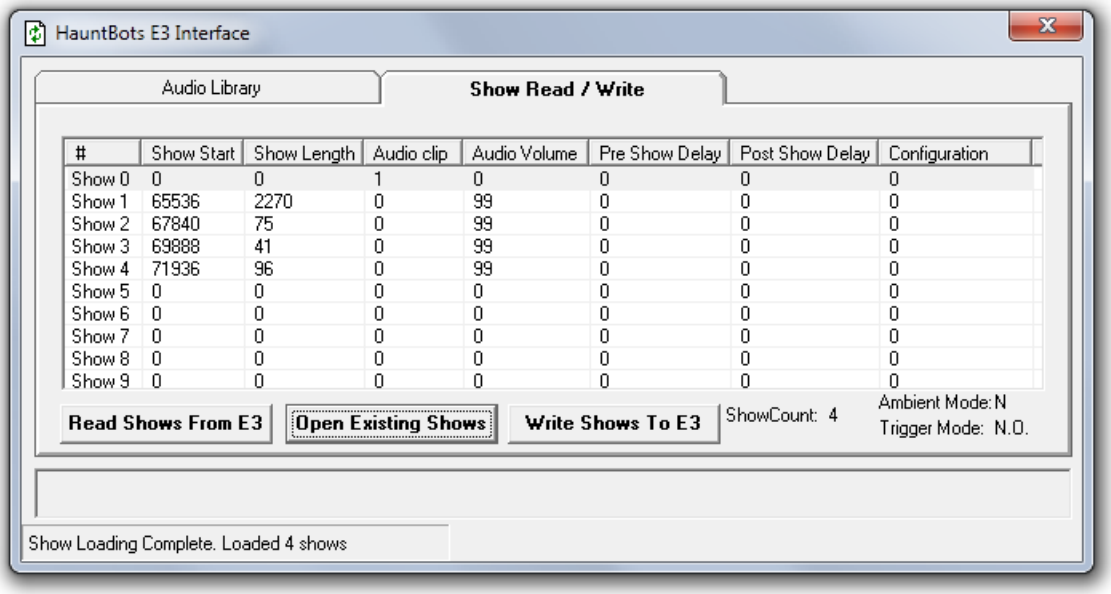


Select the desired project from the **Browse for Folde**r window and press **OK**.

All shows stored in the project folder will be loaded into the grid.



Write Shows to V8



To write the shows to a V8 via USB, load the desired project and press the **Write Shows To V8.**

Transfer files via SD

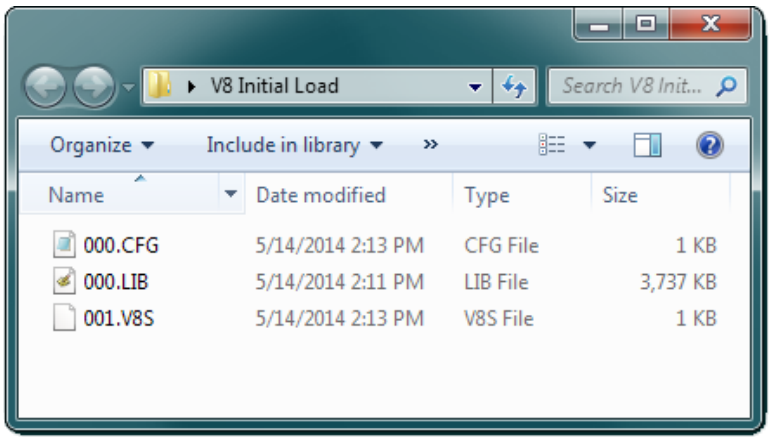
SD card must be formatted as FAT32

There are several files that should be copied to the SD card.

000.LIB is the audio library file

001.V8S through **009.V8S** are show files.

000.CFG is the configuration file.



Typically, you will want to copy all the files as a matching set.

The configuration file contains both the Show Count and the number of sound clips in the audio library.

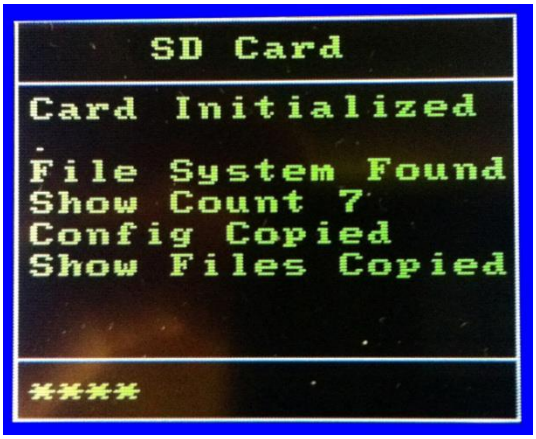
If the files are not copied as a set, there may be some operational issues.

Copy the desired show(s), configuration and audio files to an SD card

With the power off, insert the card into the side of the V8. The card is inserted with the contacts facing down.

Apply power to the V8.

The V8 will attempt to read the SD card and will report status as files are copied.



When the LCD shows "**Complete**", turn off the power and remove the SD card.