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Windows Audio Mixer V+ I/O Driver User Manual

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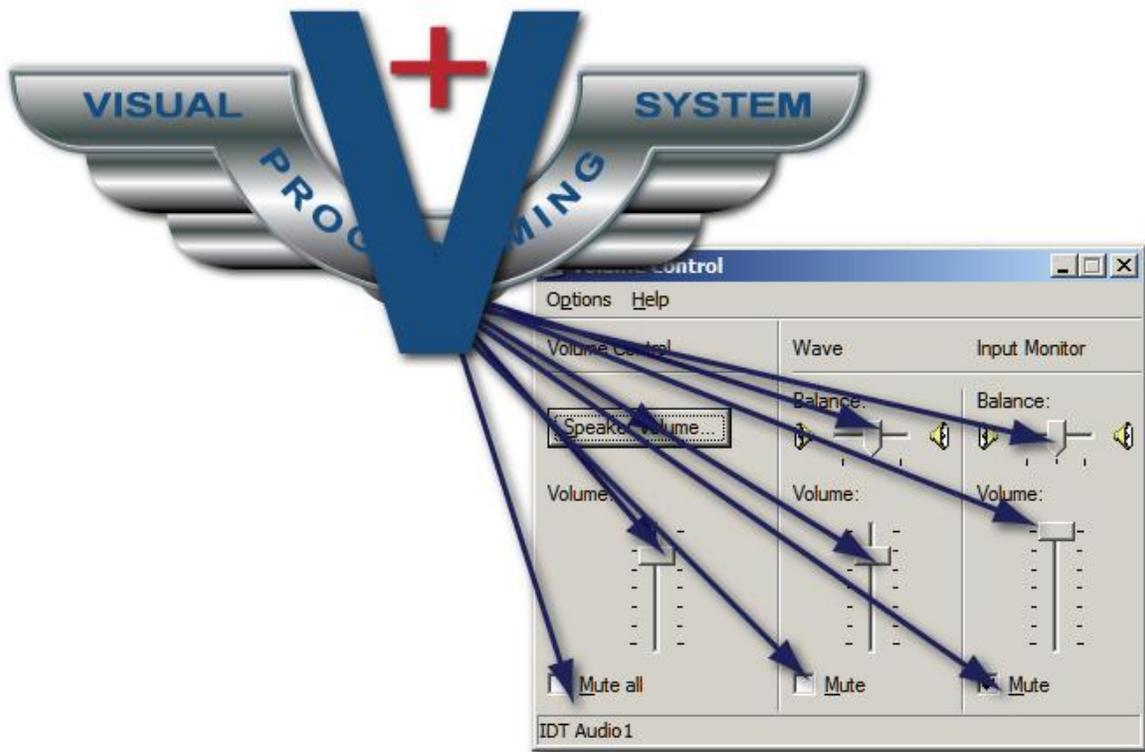
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Revision History

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Revision	Release Date	Description of Release or Change
1.0	2000-05-10	Initial Release
1.1	2001-05-21	Updated Title
1.2	2010-03-18	Reformatted to New Standard

1.1 Web References

For your convenience this document may contain references to web addresses. If you are reading this document on a computer using Microsoft Word or compatible software, clicking these references will point your browser to a location on the web. If you are reading a hard copy, these references will appear as blue text. See SimPhonics home page at www.simphonics.com for more information.



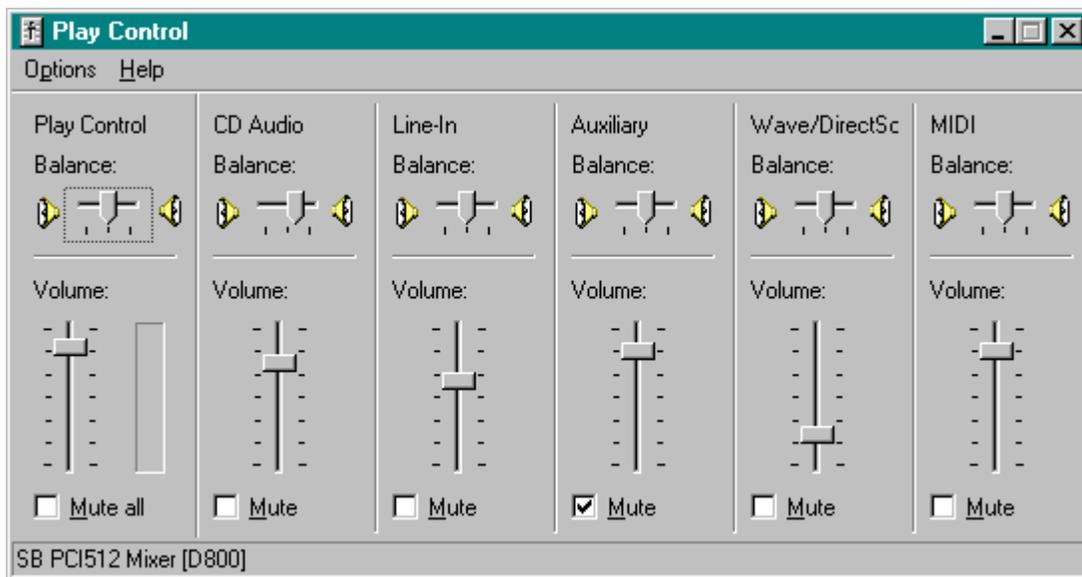
2 Install V+ First

In order to use this device you must first install V+, since V+ uses this device to control the mixer. Next, insert the media (CD or floppy) and execute the setup program. Normally this is "setup.exe" or "setupex.exe". Follow the onscreen instructions, and then remove the media when finished. For the latest information and updates, see www.simphonics.com.

3 Overview

The Windows Audio Mixer Driver is a V+ I/O device that enumerates all of the available controls from a Windows-compatible mixer. Every sound card driver should provide a mixer with mute and level controls for its particular hardware. This mixer is what you see when you open the Windows Volume Control Panel by double-clicking the yellow speaker icon in the lower-left corner of the Windows desktop. With this I/O device, you have all of the capabilities of the Windows Volume Control Panel available in V+. For example, V+ ports would be available to control all controls in the following window, if you machine had a SoundBlaster PCI-512 card installed. You can use V+ to control these controls. This is also a handy feature if you want to override all of the user settings in order to maintain the levels in a V+ design.

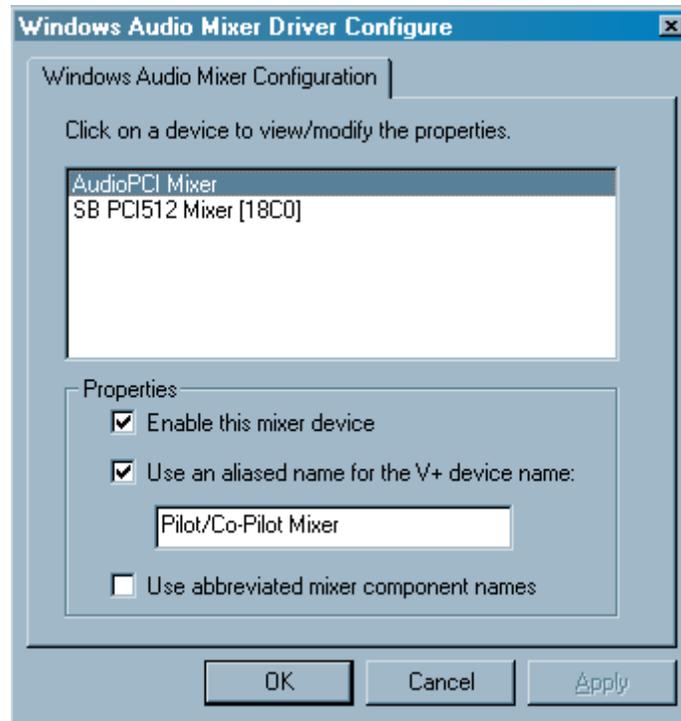
Figure 1, Playback Control



4 Device Configuration

The following sections of this manual describe how to configure the Windows Audio Mixer Driver in V+ and learn how it can be used in the V+ environment. The configuration of the Windows Audio Mixer Driver is mostly automatic whenever the driver is enabled in V+. When the driver is enabled, all sound cards in the system are enumerated and a V+ I/O device is created for each available mixer.

Figure 2, Configuring WAM



4.1 Configure Dialog Box Controls

The Windows Audio Mixer Driver Configure dialog box contains the following controls.

4.1.1 Enable this mixer device

This control Enables/disables the mixer for use with V+. In cases where there are more than one sound card driver in a system, it may be useful to disable one or more mixer devices that will not be used.

4.1.2 Use an aliased name for the V+ device name

This helps to easily identify the mixer device in the V+ design. When this option is used, enter a name in the edit box that best describes the mixer in your application; in the example above, we have aliased the "AudioPCI Mixer" to be "Pilot/Co-Pilot Mixer". The aliased name will show up in the V+ port list as the device's name.

4.1.2.1 More Uses for Alias

Another useful feature of using an alias is also shown in the example above. Notice that one of the mixer devices is named "SB PCI512 Mixer [18C0]". The name of the mixer device includes a resource number from the sound card driver. If this resource is ever changed, or if this same design is used on a similar machine with different resource settings, the design will only include the aliased name and will not cause name conflicts. You may however, need to reassign the alias in the device Configuration window to the correct sound card mixer.

4.1.3 Use abbreviated mixer component names

All Windows mixer drivers provide two names for each line and control of the mixer, a full name and a shortened name. V+ can use either name when building the port names that will be used in the V+ design. This option is provided for user preference and does not effect the way the I/O device operates.



4.2 Port Names

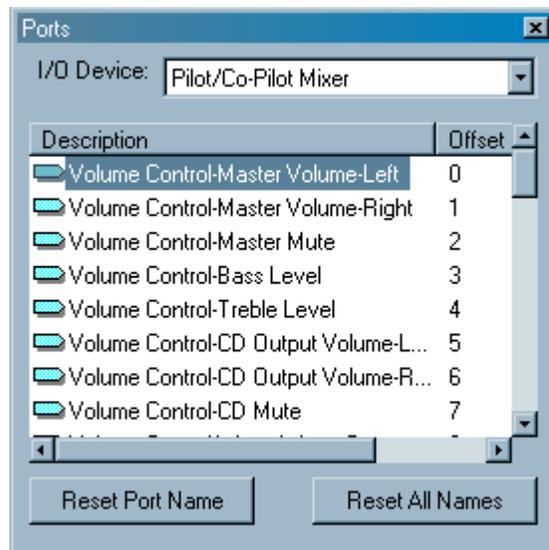
V+ port names for the Windows Audio Mixer Device are generated automatically by concatenating strings provided by the audio mixer driver. The format for the port name string is:

destination line [- source line] – control [- pan]

1. **destination line** is the part of the mixer to be controlled. Typically this is either the playback (what you hear) or recording (what will be recorded) part of the mixer
2. **source line** is an optional part of the string that describes a source of the playback or record audio. For instance, the microphone is a source line to the playback destination; it is also a source line to the recording destination.
3. **control** is the type of control for the destination/source line. This will typically be a volume/level control, mute control, or a selection control. Refer to the Controls in this manual for more information on how to use these types of controls.
4. **pan** is an optional part of the string for stereo controls. This will either be "Left" or "Right" to allow independent control over both sides of a stereo line. Typically, these controls are for volume/level controls.

The figure below shows an example of a set of ports for a typical mixer:

Figure 3, V+ Port Names



Notice how each port name is created by concatenating the parts of the mixer. Take for example "Volume Control-Master Volume-Left". The destination is "Volume Control" which for this mixer is the playback. There is no source line for this port. The control is "Master Volume" which tells us that it is a volume type control for the master volume level. The pan is "Left" meaning that this port only controls the left side of the master volume level.

4.3 Controls

There are three basic types of controls:

4.3.1 Switch

The switch control is a simple Boolean control that accepts zero/non-zero values from V+. Typically, these controls are used for mute switches and/or mic boost switches. The V+ nomenclature of a switch control will be something like:

“Volume Control-Master Mute”

This port would then accept a zero value meaning “un-muted” and a non-zero value meaning “muted”.

4.3.2 Level

The level, or fader, control is typically used for volume levels, treble/bass adjust, and input level control. These types of ports can accept an input range of 0.0 to 1.0, where 0.0 is scaled to the minimum value of the mixer control and 1.0 is scaled to the maximum value of the mixer control. The V+ nomenclature of a level control will be something like:

“Volume Control-Master Volume-Left”

This port would accept a value from 0.0 to 1.0, where 0.0 would be minimum (zero) volume for the Master Volume and 1.0 would be full scale volume. Also notice that this control may be stereo, meaning that independent control is given over the left and right sides of a stereo channel. To control the entire stereo volume it would be necessary to adjust the left and right sides of a volume control.

4.3.3 Selection

The selection control is actually a group of controls that select a source line to a destination. A typical example is the selection of the source line to the recording destination. A group of source lines are selectable to the recording destination but only one source line may be selected at any one time. The group of V+ ports that used for this selection are typically represented as:

Recording Control-Recording Input Source-CD
Recording Control-Recording Input Source-Microphone
Recording Control-Recording Input Source-Line
Recording Control-Recording Input Source-Aux

Each of these controls behaves like a switch control described above, they only respond to zero/non-zero input values. The difference is that only one of the controls will be activated. So if both “...Input Source-Microphone” and “...Input Source-Aux” are both set to a non-zero value, only the Aux source will be selected.

4.4 Mixer Behavior

All mixers behave differently depending on the hardware and software capabilities. If there is any question as to how a particular mixer is controlled through the V+ Windows Audio Mixer I/O Device, open the Volume Control Panel (double-click the yellow speaker icon in the lower right corner of the Windows desktop) and monitor the settings of the control panel while modifying port values in V+. This will give you a better idea of how the V+ ports correspond to the mixer controls.

