

Ask Dr. Don #1

## **Connecting SIA-Smaart to your Windows® PC and Setting the Record Level**

By Don Pearson

Welcome to Dr Don's column. In the next few months, I will be writing about various subjects relating to SIA Smaart and audio in general. If you have a subject that you would like to see in this space, please feel free to send in your requests to drdon@eaw.com. Comments and further discussions should also be directed to the support forum on this web site.

Throughout this article, I will be referring to Windows. Windows is a registered trademark of the Microsoft Corporation.

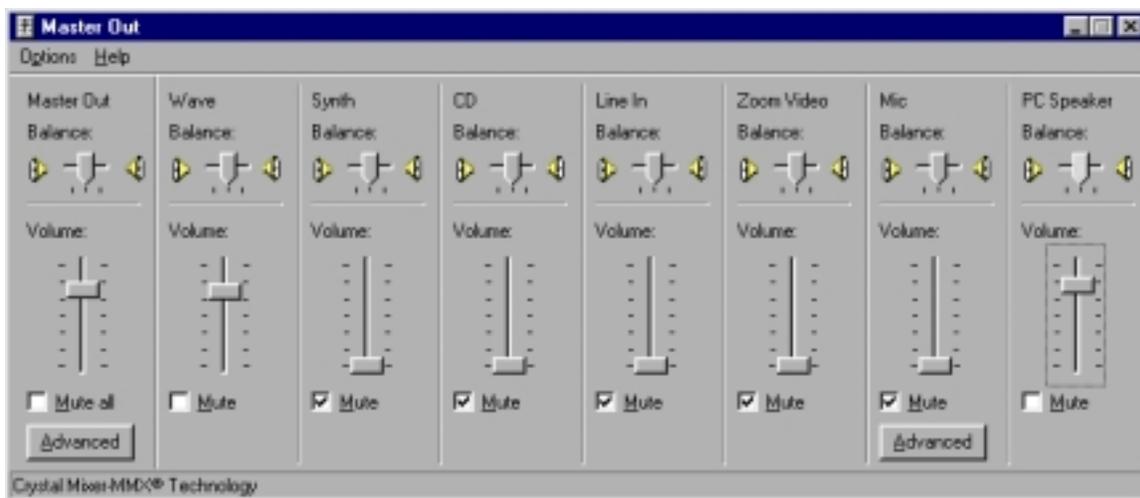
Since we are starting at the beginning of our new web site, I thought I would direct this first column to help with the use of the Windows recording volume control. As we give training sessions, this seems to be one of the "gotchas" that gets many new users. I realize that this is not part of Smaart but it nevertheless requires a complete understanding in order to get accurate measurements with Smaart. This is intended for users who are using the internal sound card in their computer.

### The Architecture:

When you plug into the 1/8-inch TRS sound in jack on your computer, you are connecting directly to a pair of electronic buffer amplifiers. You have no control of the signal at this point. These buffers can usually only accept a maximum level of -10, but some will only accept mic level of -40. It is very easy to overload this input. At this point, you have no way of determining whether the signal is hot enough or too hot. The next component in the signal path is the volume control slider in the Windows recording control panel. The signal then is available to applications. There is no standard as to whether the tip on the plug is the left or right input channel

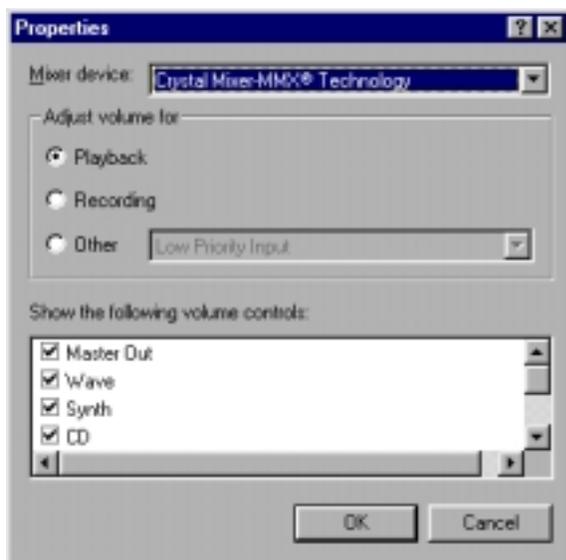
### The Controls:

If you are lucky, you will have a little speaker on your taskbar on the lower right side of your screen. If not, open the multimedia control panel (Start/Settings/Control Panel/ Multimedia). On the audio tab, make sure the "Show volume control on the taskbar" is checked. OK to accept the change. You should now see the speaker on the taskbar. If you single click, you will get the playback audio volume slider. If you double click, you get the playback volume control panel, with sliders for all the different playback functions. Here, you might want to mute everything so that whatever you plug into the input doesn't come out through the internal speakers. If you still do not have a little speaker on the taskbar, then the path to launch it from the Windows *Start* menu is Start>Programs>Accessories>Entertainment>Volume Control (may vary depending on your version of Windows).



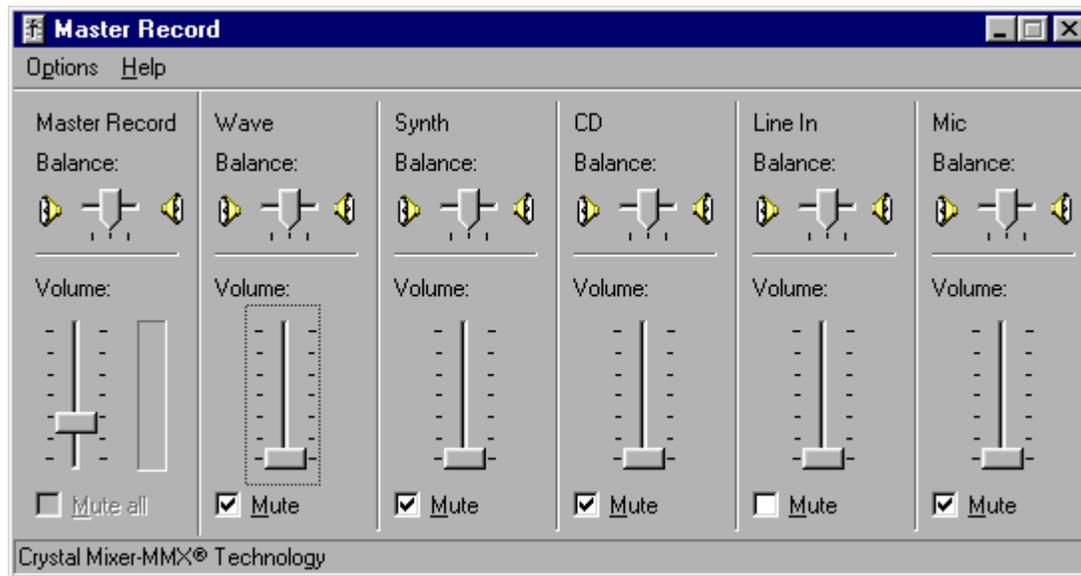
Playback Volume Control Panel (Your Panel May Look Different)

Notice that I said **“playback”** volume control panel. The recording volume control panel is buried even a little deeper. Once you have opened the first volume control panel, pull down “Options” then select “Properties”.



Volume Control Options Panels (Your Panel May Look Different)

Now you are in the **sound properties control panel**. Make sure that the mixer device selected is the one you are going to plug into. In most cases, it will be the default and no further action will be required. Next, select the “Recording” option. Make all the choices active (checked) in the “Show the following volume controls:” section. Click OK and you are finally in the “recording volume control panel”.



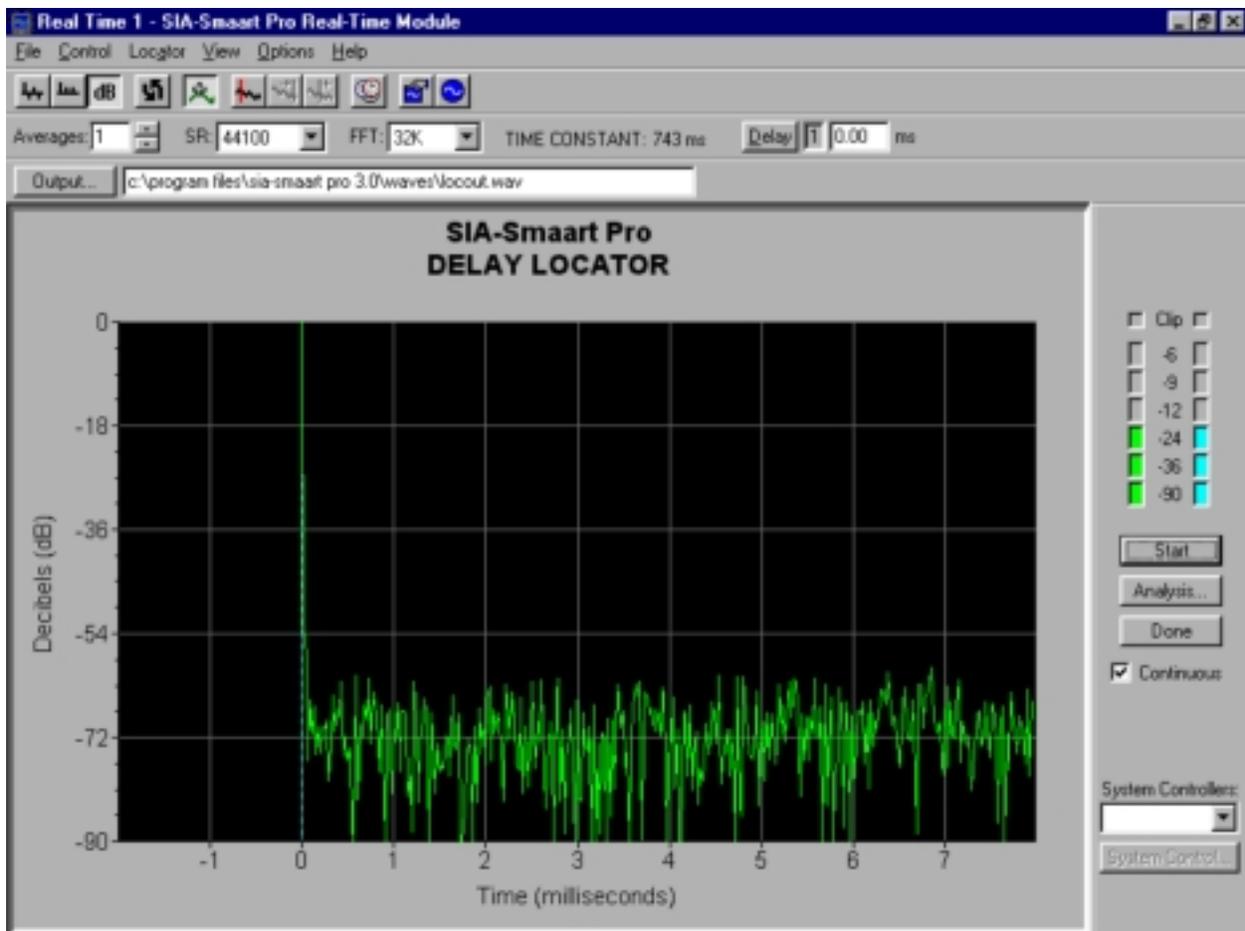
Master Record Volume Control Panel (Your Panel May Look Different)

Mute everything except the “line in” channel. Especially be sure to mute the internal mic so no mic signal can get into the measurement scheme. I also like to pull all the sliders to minimum. Make sure the balance control is centered.

#### Operation:

Launch the Smart Real Time module. Click the run button (or hit the “R” key for run). Connect a noise source to the sound inputs. You should see some LED activity on the Smart meters. Disconnect the channel that you believe is going to be the reference or source channel and be sure the blue meter (right) LED’s go away. If the green one (left) LED’s go away, then swap the connectors. The other channel will be the response channel from the microphone or other devices. If both channels operate with signal plugged into only the left or right input, then your sound card input is mono and will be unsuitable for use with Smart.

Apply signal to both channels at the level at which you are going to make measurements. Observe the meters on the Smart display. Peaks should be no greater than about  $-10$ . Call up the sound recorder control panel as described above. Adjust the levels to make sure the Smart meters are no greater than  $-10$ . Some computers have a meter in this panel that will also show the level. Be very, very, very careful with this level setting. It is possible to clip the input buffer and still turn down the signal so that it looks right on Smart. You would never know. Actually, Smart gives you a place to look. Run the delay locator in Smart (Click on the clock icon or hit an “L” to invoke the locator) Click start if it isn’t set to run automatically. Expand the horizontal scale. If you see any information at Zero time then you have clipping.



Smart Display Showing Information at Zero Time

How can there be anything at zero unless there is crosstalk due to input clipping? I like to leave the controls on the sound recorder control panel at near their minimum position. Some computers have a slider for the line-in and an additional one that is a master and some don't. My reasoning for keeping these levels low is that the Smaart meters will now reflect something closer to what the actual signal level might be. Go ahead, do not be shy, no one is watching, you cannot hurt anything. Turn up the level on your signal source, restart the locator in Smaart. Repeat until you do get some zero information. This will help you get a feel for the gain structure in your computer and how it relates to Smaart. Having this set properly, is key to getting accurate measurements. Give yourself plenty of headroom. Observe all the sliders in the sound recorder control panel.

On some computers, once you access the volume control panels, it will be necessary to quit Smaart and restart. It will be obvious if you need to do this, as there will be sporadic display modes.

Once you figure this out, you probably will not have to deal with it again