

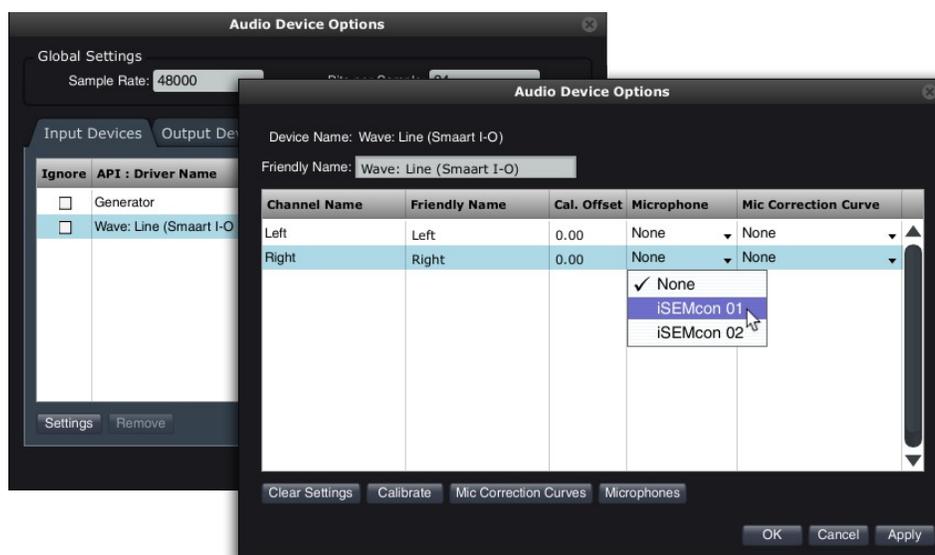
## Using Smart 7.3.2 with a gain-reporting input device

Beginning in version 7.3.2, Smart acoustic measurement and analysis software will include support for gain-reporting input devices. The first interface device to utilize this feature is the Smart I-O. Note that the Smart I-O must be connected to the computer and its control program must be running in order to see the extended functionality discussed below in Smart.

There are two basic advantages to using an input device that can report its gain settings to Smart. One advantage is that it becomes possible to change your signal gains after calibrating to sound pressure level (SPL), without disturbing SPL or calibrated spectral measurements. The other is that when the electrical sensitivity of the analog input is precisely known, if the sensitivity of the microphone being used is also known then calibrated measurements can be performed without requiring a sound level calibrator.

Note that in Smart version 7.3.2, gain settings reported by the input device are not used in two-channel measurements. Gain changes on the Smart I-O affect transfer function and impulse response measurements the same way gain changes on any other input device would.

When Smart detects that a gain-reporting input device is present on start-up, it enables some options for that device that are normally turned off. The user interface features associated with these options appear in two places. When you open the Audio Device options dialog in Smart 7 and double-click the Smart I-O on the Input devices tab, note that the Microphones column of the channel table in the device properties page is active and the Microphones button below the table on the lower right is enabled (both are disabled for non-gain-reporting input devices).



If you know the sensitivity of your measurement microphone you can click the Microphone button and add it to the list of available microphones by typing in the 1kHz sensitivity in millivolts per pascal and assigning it a name. Smaart will then calculate the required calibration offset for SPL when you assign the microphone to an input. To assign a microphone to an input channel on a gain-reporting input device, just click in Microphones column of the input channels table on the properties page for the input device and select the microphone you want to assign from the drop-list.



The other way to add a microphone is to use a sound level calibrator and calibrate for SPL as you normally would, then click the Save Mic button in the Amplitude Calibration dialog. In this case, all you have to do is name the microphone. Smaart will have calculated its sensitivity at the calibrator frequency based on the gain of the preamp and the reference level you supplied for the sound level calibrator during calibration. Again, this option is only available when the sensitivity of the input channel being calibrated is known to Smaart. In the case of the Smaart I-O, all of the above requires the control applet for the I-O to be running, as Smaart gets its information about the state of the device from the control program.