INSP:DEC

Surround Customizer

VST* plug-in for Windows

v1.0

User's Manual

Version 2009|A

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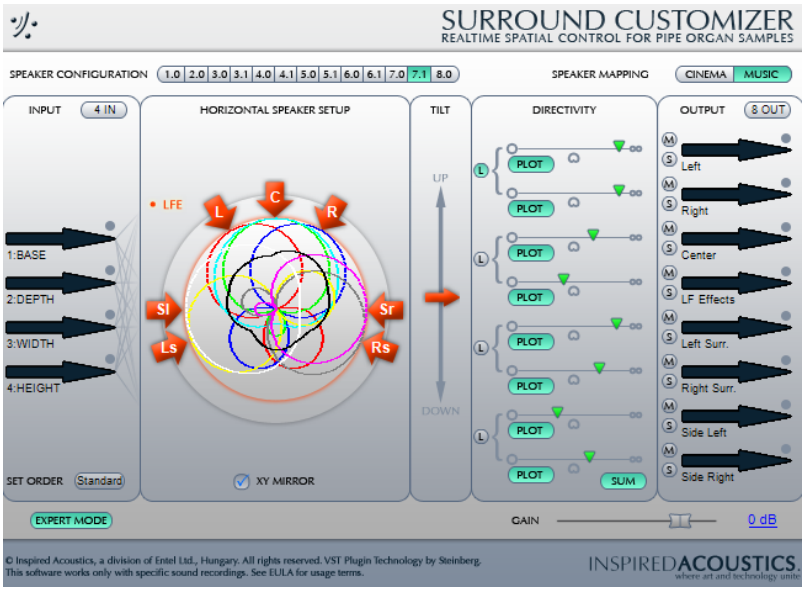
1 INSP:DEC Surround Customizer at a glance

INSP:DEC Surround Customizer is a plug-in software that allows you to **configure spatial properties of audio content in real-time**. It works together with Inspired Acoustics' virtual instrument products for example allowing you to configure surround audio outputs from just a few 'vector input channels', in real-time.



2 Versions and formats

INSP:DEC Surround Customizer is a plug-in software, therefore it **requires a host** to operate. A host is an audio software that enables the operation of the plug-in, feeds its input with audio signal and receives the processed audio signal from the plug-in's outputs (and sends them to your speakers for example).

2.1 32-bit – 64 bit terminology

In order to avoid confusion regarding 32-bit and 64-bit systems, the table below summarizes the terminology used in this manual. The newest 64-bit systems are very useful, because they are capable of accessing more than 4 GB of RAM (the theoretical maximum amount imposed by 32-bit systems, regardless of how much RAM is loaded into any given 32-bit computer operating system), and they support double precision processing natively, thus allowing more accurate results. When using large sample libraries or applications (such as convolution reverberation) that require high RAM demand, it is useful to operate in a 64-bit system mode.

Terminology (primarily for PC-based systems at this time of writing)	**32-bit means**	**64-bit means**
Hardware	A PC-based system equipped with an x86 type CPU. These systems cannot run 64-bit applications as their internal hardware and software structures are only 32-bit based.	Systems equipped with a 64-bit CPU, such as an Intel* Core i7 processor. This system can either use a 32-bit or a 64-bit operating system. When using a 64-bit operating system, it can run both 64-bit and 32-bit applications.
Operating system	e.g. Windows 7/Vista/XP (32-bit).	e.g. Windows 7/Vista 64-bit Edition or Windows XP x64 Edition.
Device Drivers	A 32-bit device driver that allows the operating system to communicate with devices, such as a sound card.	A 64-bit device driver for a 64-bit operating system for the same purpose.
Host (DAW[1]) software	Software that is designed to operate in a 32-bit environment. 64-bit systems may also run 32-bit hosts.	A 64-bit host software (requires a 64-bit operating system). Capable of addressing more than 4 GB RAM in the computer.
Plug-in	A plug-in with an internal 32-bit architecture. It can only be run in 64-bit hosts if additional plug-in	A plug-in that can be only run in a 64-bit host. Capable of working natively on modern computers

[1] Digital Audio Workstation software, such as Steinberg* Nuendo*, Cakewalk* Sonar*, AVID* ProTools*, etc.

	'bridging software' is supplied with the host.	without the need of 'bridging'.
Internal Plug-in processing	A plug-in that uses 32-bit floating point numbers during audio processing (maximum theoretical dynamic range ~ 200 dB).	A plug-in that uses 64-bit (double precision) numbers during audio processing (maximum theoretical dynamic range ~ 400 dB).

2.2 Plug-in format

Both 32-bit and 64-bit digital audio host software are supported under Windows / PC platform. 32-bit and 64-bit version of the plug-in uses different files but share several setting parameters such as the channel setup.

Currently the plug-in format is VST (which stands for "Virtual Studio Technology); specification version 2.4 was used in this plug-in allowing you to be compatible with a broad range of audio host software.

Please note: The current VST plug-in is not supported for Macintosh computers at this moment.

3 Hardware, software and audio requirements

3.1 Hardware and software requirements

The current VST plug-in works with both 32-bit CPUs and 64-bit CPUs, Intel* or AMD* branded. Intel* Itanium and PowerPC (Mac) platforms are not supported. The plug-in supports multi-core systems.

While the plug-in utilizes only a low percentage of computer resources, for flawless operation please refer to your audio software host's hardware requirements. Your computer's audio host software and hardware already must be able to run flawlessly on your desired operating system and support the plug-in format and platform in order to operate this product.

Any digital audio workstation (DAW) that is capable of hosting the plug-in format and platform (see Section 2.2) is able to operate the plug-in.

3.2 Audio format requirements

The plug-in operates as intended if and only if it receives the signals in the correct electrical format with which it was designed to work. The plug-in accepts 3 or 4 channels as its input and these channels must be encoded especially to work with this plug-in. The order of channels – although freely adjustable in the plug-in – is essential to make it operate correctly. You may try the plug-in with other audio input as well but there is no guarantee that you will hear a meaningful or desired result.

To obtain a meaningful and desired result, the plug-in must be used in conjunction with Inspired Acoustics' designated pipe organ sample products. The documentation of each of these Inspired Acoustics sample library products clearly states whether it supports using this plug-in.

4 Installation Guide

4.1 VST format (Windows, 32-bit or 64-bit)

The plug-in is contained in a single file having a DLL extension. The individual 32-bit and the 64-bit release have their own DLL file. Installation is a two-step manual process:

1) **Locate the 32-bit or 64-bit DLL file and copy into your desired VST folder.**

In case you are using the plug-in with Steinberg* Cubase or Nuendo, the default VST directory may be

```
c:\Program Files\Steinberg\Vstplug-ins\
```

In case you are using the plug-in with the Hauptwerk Virtual Pipe Organ you may want to place the 64-bit DLL file as the default setting

```
c:\Program Files\Hauptwerk Virtual Pipe Organ VSTi Plug-In\
```

folder or to the folder where Hauptwerk's VSTi version is installed. Otherwise just use your default VST Plug-ins' folder and your audio host will recognize the plug-in. If you do not have a VST folder, you can create one with any desired name.

To finish the installation:

2) **Start your audio host and set it up to scan the VST plug-in's folder you previously specified.**

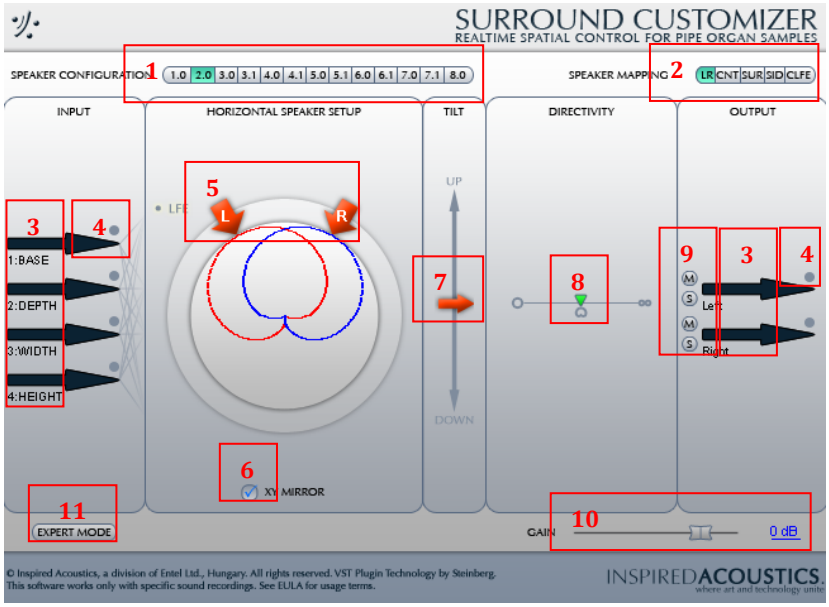
This setting is different for every host, so please refer to your host's manual to find out how exactly to do this.

5 Features and overview

The Surround Customizer a true surround plug-in, capable of outputting 8 channels simultaneously per instance. Instances of the plug-in using the same audio inputs but different inner parameters can run simultaneously on your system if your audio host supports that.

The plug-in requires 3 or 4 channels of 'vector' inputs that have a special relationship in between them. When 3 inputs are fed to the plug-in, customization in 2-D (2 dimensions) in the horizontal plane is possible. When 4 channels are fed into the plug-in, customization in full 3-D is possible.

5.1 Controls



1 **Speaker configuration preset buttons**
These allow you set your output configuration with a single click. Buttons that are allowed by the Output channels (see 11, expert mode) are enabled, buttons that require more channels than that are disabled.

2 **Speaker mapping preset buttons**
These buttons allow you to set a few standard speaker arrangements in the speaker configuration (e.g. 7.1) that you are currently using.

3 **Meters**
Input and output meters show the level of incoming and outgoing sound for your convenience.

3 4

10

4 Input clip meter
This small grey circle will show if there is clipping in the sound. Click it to reset to original state.

5 Horizontal speaker setup view
By dragging the orange-colored arrows you can configure 'virtual microphone' angles. These angles describe directions your virtual sound system uses to capture and reproduce the sound. Colored line graphs show the horizontal directivity of the microphones inside the grey circle.

6 XY mirror
This switch is used to link together the orange arrows in the horizontal speaker setup view so that you can drag them together symmetrically. If you disable this switch you can individually drag the arrows and configure the virtual microphone angles independently.

7 Tilt arrow
The tilt arrow allows you to look upwards or downwards virtually. This feature works as intended when 4 input channels are present.

8 Directivity control
This control allows you to set the directivity of your virtual microphones either together the same way (default mode) or individually (expert mode). Drag the small green arrow to operate this control. To the left is the omnidirectional setting and to the right is the figure-of-eight. The middle of this slider corresponds to the cardioid directivity pattern. The control is continuous and the plot to the left will show the actual directivities.

Omnidirectional pick-up pattern: hears all sounds equally from all directions.
Cardioid pick-up pattern: hears mostly from front, less at sides and none rearward.
Figure-of-eight pick-up pattern: hears front and to the rear, but not from side.

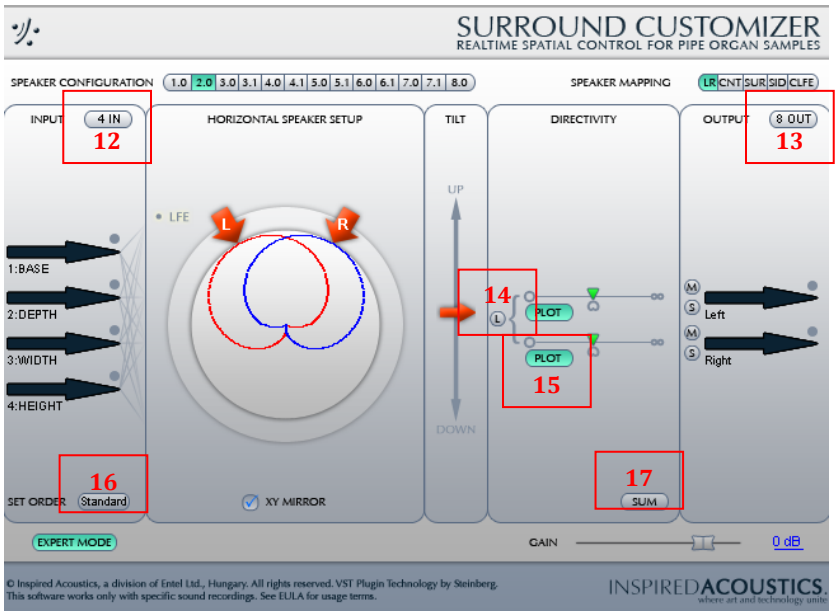
9 Mute and Solo buttons
The M (Mute) and Solo (S) buttons allow you to listen to only one channel at a time or mute different or multiple channels of your choice temporarily. This is very useful when you set up your sound system for example.

10 Gain control
With this slider you can modify the output gain of the plug-in. You can reduce the volume or increase it up to +12 dB.
Caution: When using high levels of gain, be sure not to overload the signal for downstream signal sources.

11 Expert mode
By pressing this button you allow entering the plug-in the 'expert mode' presenting you more control on various parameters.

Tip Hold the CTRL key when you left click with your mouse on a control and it will reset to its default state.

5.2 Expert mode



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12 Input channel number selector

In Expert Mode you can limit the number of input channels the plug-in accepts. This is useful for allowing some hosts to operate the plug-in without any problem. After changing this parameter you will need to restart the plug-in (not just close the interface but unload and reload the plug-in).

13 Output channel number selector

In Expert Mode you can limit the number of output channels the plug-in produces. This setting affects the Speaker Configuration preset buttons: for example if you set the plug-in to allow only 4 channels of output, buttons from 1.0 to 4.0 will be enabled. This is useful for allowing some hosts to operate the plug-in without any problem. After changing this parameter you will need to restart the plug-in (not just close the interface but unload and reload the plug-in).

14 Link button

The small L marked button links two channels' directivity control and make them move together whichever you move. This may be useful in conveniently configuring front and rear channels with different but symmetrical parameters.

15 Plot button

This button when enabled allows the horizontal speaker setup to plot the actual directivity. Since plotting the directivity takes up some additional CPU time you can disable plotting so the plug-in will have a smaller resource footprint.

16 Order selector button
This button allows you the reorder the input channels in case your audio signal has differently ordered channels than Inspired Acoustics products use.

17 Sum button
When enabled this button allows you to plot the overall characteristics of the whole system; by means of all individual characteristics summed.

5.3 Inserting and routing the plug-in

This section will show how to insert and route the plug-in by some examples.

1) **Make sure you insert your sound source**, e.g. an audio file or a virtual instrument in your audio host software and set it to output 3 or 4 channels.

Tip In case you are using Inspired Acoustics' pipe organ sample products in conjunction with this plug-in, make sure you set up (e.g. the software Hauptwerk*) so that it will output 3 or 4 channels of audio. A separate detailed guide on how to do this is available at the Inspired Acoustics website and Knowledge Base.

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2) **Route the audio channels to the plug-in's input.** Make sure you route the appropriate channel to the appropriate input. In case you need more flexibility use the plug-in's Expert Mode to redefine the meaning of the channels inside the plug-in.
3) **Set the output channels** (e.g. 8) **and channel configuration** (e.g. 7.1) of the plug-in.

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