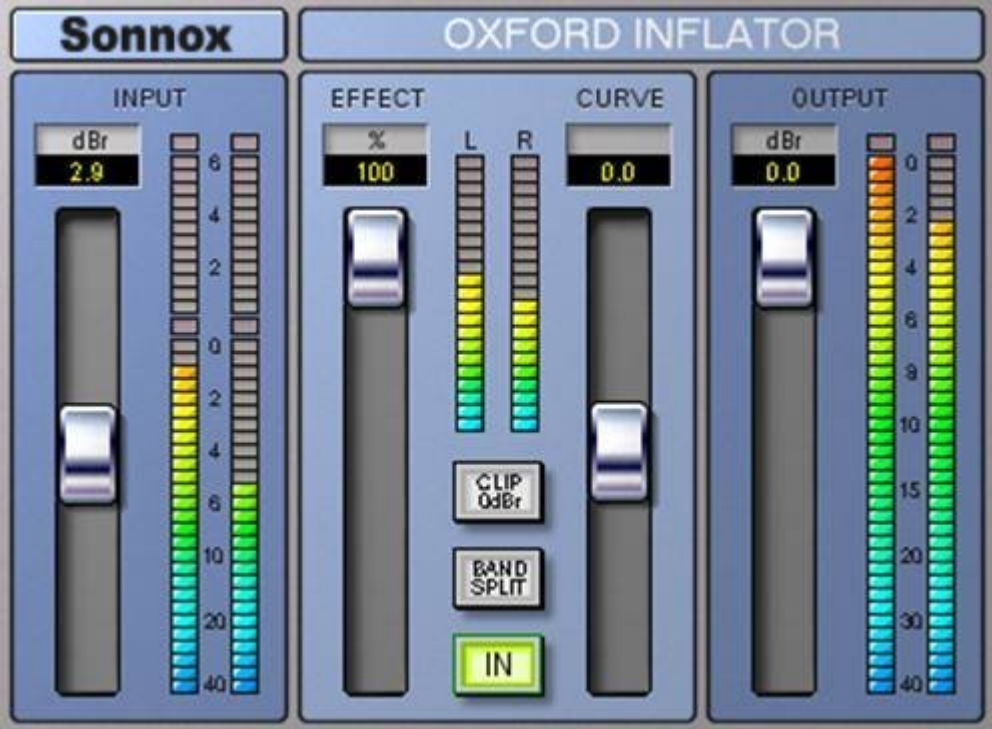




# Inflator Plug-in Manual



# Sonnox Inflator Plug-in Operation Manual

## 1. General description.

The Inflator plug-in is primarily designed to address the current preference to produce the maximum apparent loudness from popular music mixes. Many processes are already in use, which are variously reliant on compression and limiting to produce maximum modulation and engender an impression of excitement to the sound of the programme. The Inflator plug-in goes further than these methods and can increase the loudness of almost any programme material, regardless of the levels of prior compression or remaining dynamic range. It will even make full level white noise sound louder! The Inflator plug-in can also be used to create much of the warmth, character and dynamic excitement of analogue systems within the digital domain.

The Inflator process functions by changing the relative probability of the samples in the programme such that there is a greater predominance and likelihood of larger values than the original signal. Because the Inflator does not employ signal compression there is no 'pumping', dynamic level changes, loss of presence or flattening of percussive attacks. The full dynamic information of the music is largely preserved despite the increase in average modulation density.

In addition to loudness enhancement, the Inflator process can create a harmonic profile in the signal spectrum that not only increases the apparent dynamic impact of instruments and performances, but also provides 'warmth' to the programme, reminiscent of good tube systems. When used this way, the Inflator process even has the ability of good tube systems in producing great sounding programme when significantly overdriven and can therefore be used as an artistic enhancement tool on single performances within a mix.

## 2. Supported Platforms

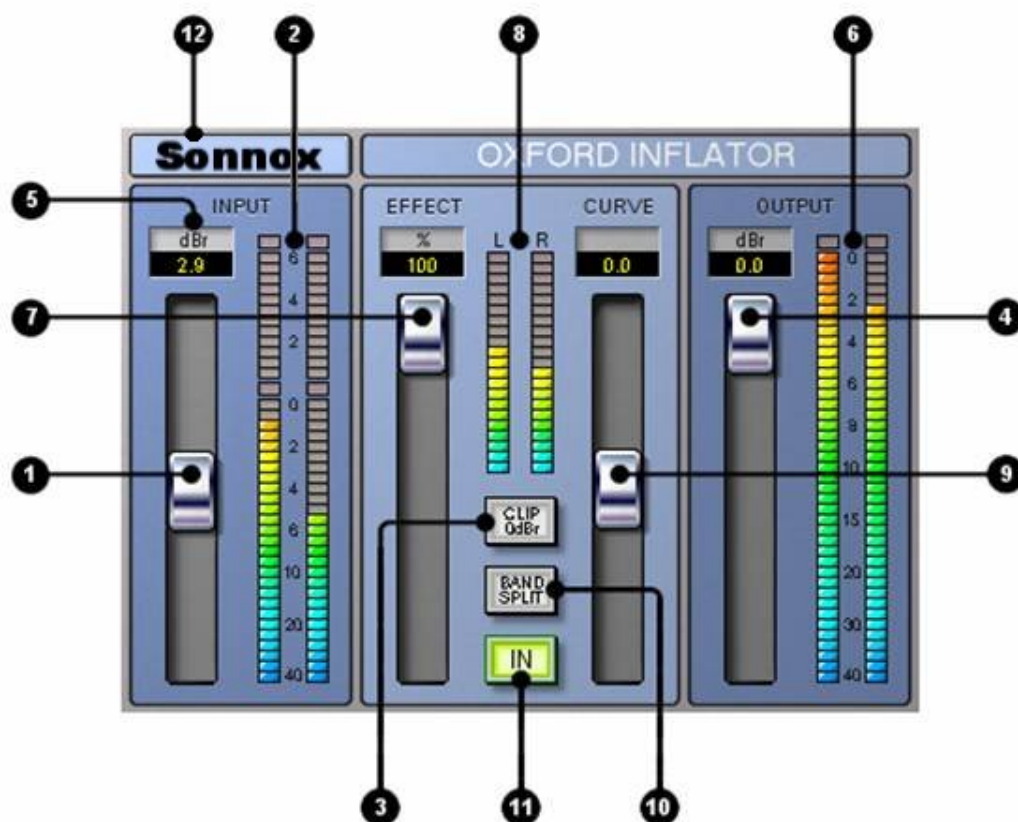
Digidesign Pro Tools (TDM and LE)  
TC PowerCore  
VST  
Audio Units

See supplement for platform specific data.

## 3. Revision History

- 1<sup>st</sup> April 2007 - Generic Sonnox version

#### 4. Description of controls.



##### 1. Input Level Control.

Sets the input level to the Inflator process. For full level input signals, maximum peak input is obtained with the slider set to 0dB. Further gain beyond is provided to allow lower level programme to be boosted to full modulation and allows the Inflator to be deliberately overdriven to produce distortion effects.

##### 2. Input Drive meters.

Display the peak input drive levels. With the **Clip 0dB** de-selected the meters show the level of overdrive applied to the Inflator process.

##### 3. Clip 0dB button.

When selected, internal processing levels are restricted to the equivalent of normal digital maximum. When de-selected internal processing may develop and process signals beyond the equivalent of digital maximum.

##### 4. Output Control.

Sets the output level to allow adjustment of the signal level after processing.

##### 5. Parameter Value displays.

Display the setting values at all time. Values can be entered directly by selecting the required display.

## 6. Output level meters.

Display the output peak modulation levels.

## 7. Effect Control.

Sets the amount of the overall Inflator effect that is applied to the programme from 0% to 100%.

## 8. Effect meters.

Indicate the degree of average signal modification in real time, depending on programme type and Inflator settings.

## 9. Curve Control.

Modifies the processing characteristics and sonic effect of the Inflator application.

## 10. Band split selector.

Selects processing on the direct full band signal or invokes a band splitting function that processes the signal separately in LF, MF and HF spectral regions. This button is only available on the Band Split plugins.

## 11. In selector.

Switches the Inflator process in and out for comparison purposes.

## 12. Options Button.

### ProTools

Displays an options dialog containing version information, and allowing the meter peak hold behaviour to be changed (between click to reset, hold for 2 seconds, and hold for 5 seconds).

### PowerCore

Displays a menu allowing an about box with version information to be displayed, 'No Latency' mode to be switched on or off, and the meter peak hold behaviour to be changed (between click to reset, hold for 2 seconds, and hold for 5 seconds).

## 7. Operation and modes.

### 7.1. Input Clipping.

The Inflator process develops internally (and can process) signal levels that are notionally greater than digital maximum. For instance, with the **Effect level** at maximum and the **Clip 0dB** off, signal peaks above notional digital maximum can be accommodated and much of their harmonic information can be included into the output signal, even though the peak output level will not rise above digital maximum. The presence of this extra signal range is displayed on the upper sections of the input level meter and represents a range of up to +6dB of useable overdrive before hard clipping occurs. The **Clip 0dB** function suppresses this extra range and restricts the Inflator process to the normal digital maximum range. Therefore it will be noted that with the **Clip 0dB** selected, the input level meter will not rise above the 0dB level however much input gain is used. Because the potential applications of the process are so varied, the user is encouraged to experiment with the **Clip 0dB** on and off to obtain the best results depending on intention. The following are some general guidelines:

Generally it is better to start by selecting **Clip 0dB on** (default) for most loudness enhancement purposes including direct mode (non-band split) since the control of peak levels, settings and sound character is more readily achieved when a maximum reference level is imposed on signals before the Inflator process.

In certain cases better results may be obtained by **de-selecting input limiting**. In particular the extra useable range can then be used to accommodate short term overshoot sounds produced by compression functions, where they are generated to enhance attack and presence. Since these peaks are mostly short duration, they can often be accommodated effectively in the overdrive ranges without excessive reduction of sound quality or loss of average modulation. Please note that in this case it is important to ensure that the peaks from prior compression are not clipped between plug-ins, by making sure that the output signal from the compressor does not quite hit peak levels **before** applying it to the Inflator plug-in.

When using Band split modes for loudness enhancement, using the Inflator with **Clip 0dB off** may produce a reduction in unwanted intermodulation side effects when pushing for absolute maximum loudness regardless of possible output clipping etc.

When using direct mode (without band splitting) for distortion generation the results will be quite different with or without input clipping and may produce useful artistic effects in either circumstance. The Inflator is able to soften clips that occur, either because of the Clip 0dB setting, or even those that happen before its own processing in prior plug-ins. Therefore overdriving the Inflator with the Clip 0dB function both on and off, or even applying the Inflator to the output of other plug-ins driven into overdrive can produce a vast range of artistic effects. To explore the full range of possibilities, the importance of experimentation cannot be over stressed.

## 7.2. Direct and Band splitting modes.

The Inflator application can run in either direct or band splitting modes.

In normal operation the whole frequency range of the programme is processed simultaneously. This is usually the best position to run the process under most conditions. One significant advantage of using this mode is that the output relative peak level will not get larger than peak level, however much Effect is applied. Therefore more overall enhancement is possible before clipping the output and louder more powerful results are possible. Also when used for distortion generation the relative phase of the distortion harmonics are better preserved when band splitting is not used, so accurate clip rounding is possible producing a much more pleasing effect.

The **band splitting** function is offered as an additional mode that may be useful under some specific conditions. When band splitting is selected the processing is split into three frequency bands to avoid intermodulation distortion between parts of the programme signal spectrum. This mode is occasionally advantageous when going for maximum loudness enhancement where there is a significant predominance of specific frequency ranges in the programme content. However it should be noted that, depending on programme and settings, operation in this mode produces output levels that are beyond the relative input peak level. This means that the signal is more likely to clip at the output, which may produce an increased harshness to the sound. If this becomes obtrusive, reducing the input or output levels to avoid clipping will obviously somewhat negate the purpose of the exercise.

## 7.3. Basic loudness enhancement procedure.

For basic loudness enhancement the procedure is to get the programme up to maximum normalised level at the input (0dB) in order to fully benefit from the Inflator process, apply the Inflator processing to get the desired effect and adjust the output level to maintain desired maximum modulation.

Start with the **Clip 0dB** function selected to limit the range of the Inflator to normal digital maximum.

Using the **input level control** and input meter, set the level such that the red **0db over indicator** flashes occasionally to indicate the presence of max peak sample values.

Set the **output level control** to maximum initially so that the input and output meters read similarly when the music is played.

Set the **curve control** initially to mid position (default) and set the **band split selector** to off.

Start with the **Effect level control** at 100% to obtain maximum increase in perceived volume without extra peak output level.

The object of the exercise is to get the input level as high as possible without excessive distortion or deterioration in the sound. The type of programme material and taste will determine the extent of the enhancement that can be achieved. If it is found that the programme material is not significantly degraded at normal peak input levels, further gain in loudness may be achieved by de-selecting **Clip 0dB** and pushing the input level into the Inflator overload region,

**It is important to note that output overloads are entirely avoided only when the Effect level control is set to maximum position (100%).** In general the best results are most likely to be obtained by operating the Inflator effect level at maximum and adjusting the input level and curve controls to produce the best sonic compromise.

Further user modifications to the Inflator process can be invoked to either gain greater loudness or different characteristics in sonic detail, as described below.

#### **7.4. Metering and overload indication.**

For most workstation applications the metering overload warning indicator is intended to correspond to digital maximum modulation. Different software host applications (and different versions of those applications) may present varying interpretations of what this actually represents numerically. Because the Inflator requires a very accurate and independent internal representation of numerical maximum, differences in overload indication may arise between the Inflator and host applications. However since the Inflator overload indication is set to respond to full level samples very precisely, it will produce legal programme if overloads are not being recorded on the plug-in GUI, even if overload indications are being triggered within the host mixer application.

Further user modifications to the Inflator process can be invoked to either gain greater loudness or different characteristics in sonic detail, as described below.

#### **7.5. Curve modification.**

The curve modification control subtly affects the characteristic of the Inflator process to affect both the perceived loudness and tonal character of the signal.

With the **curve control** set at minimum position (-50) the Inflator produces the most subtle changes to the sound. Overall loudness enhancement is minimal but significant harmonic content is added to produce a richer overall sonic character. When applied to composite mixes, the predominantly loud parts of the mix will apparently be accentuated over the background and reverberant parts of the programme, producing the effect of dynamic expansion (without a time constant). This setting is particularly useful when treating drums and percussion instruments, when the impression of dynamic presence needs to be enhanced, or the contribution to the mix needs to be 'tightened up' somewhat. This kind of setting is also useful when used on single instruments (such as acoustic guitars) where a softening of percussive aspects or 'highs' of the sound is needed without loss of apparent dynamic range.

Settings of the curve control between -50 and around zero have varying degrees of this behaviour and style of overall impression, but with increasing 'fatness' and volume as the curve control is advanced.

The **curve control** at mid position (default zero) produces a special behaviour, which in many respects may give the best results in most situations. The overall loudness of the signal is considerably enhanced whilst retaining good dynamic balance between loud and soft portions of the programme, with a minimum of intermodulation effect. The sonic character has a much enhanced warmth and harmonic detail, adding presence and texture to instruments, especially in the low frequency register.

The highs and peaks in the programme are softened in character without loss of apparent presence, attack or 'bite'. Occasional peak programme overloads are softened and become less intrusive and can therefore be tolerated more readily. With the curve control in this position the Inflator process produces a gentle and forgiving behaviour, which has many aspects in common with the character of good tube amplification systems, including a natural tolerance to overload conditions. For instance, when used in direct mode (band splitting de-selected) with Clip 0dB selected and Effect level set to 100%, even clipped programme signals can be rendered musical in nature. This can be used to produce artistic distortion effects on single instruments within a mix or produce dynamic 'breaking up' effects, much like that possible with tube amplifiers. Or it may be used just to obtain an overall tube-like character and warmth to the sound.

At positions between 0 and +50 the **curve control** provides increasing 'fatness' and volume enhancement at the partial expense of dynamic precision, producing the loudest and most exciting effects at +50. In this position the sound becomes most powerful with a harmonic profile reminiscent of systems under great stress and running to their very limits. The music will take on 'in your face' quality creating the maximum excitement, yet fine detail and subtleties within the mix will be retained. Despite rendering the signal significantly louder, the impression of considerable dynamic range is retained even though the output peak level range is largely unchanged. The low level and background parts of the mix will become enhanced and more audible and extreme LF contributions from instruments such as Bass parts will stand out more readily on smaller reproduction systems. Programme treated with this process will produce louder sounds on all reproduction equipment and in particular it will produce unsuspected volume and power from small domestic and portable systems.

## **7.6. Mixing with the Inflator.**

The inflator process can bring added benefit to the mixing process if the Inflator is active on the main output buss throughout the mixing session. In this case it is possible to use the valve-like harmonic characteristics and the extra overload area to greater advantage because these form part of the sound of the mix as it is built up. In some respects this process is reminiscent of analogue mixing where line-up operating levels may be breached by transients without actual signal clipping and the sonic character of the signal chain is to some degree dependent on balance and instrument contribution levels.

It is suggested that in this case the best initial settings are with the Inflator set to direct mode (i.e. not band split) with the curve set to the neutral mid position (0) with Clip de-selected. The input gain should be set somewhat above unity (+6dB) to allow the mixer to operate without clipping overshoots prior to the Inflator and the output should be set to max (0db) to provide full output modulation. These settings will establish a virtual operating level at -6dB within the mixing environment with a possible overload area provided by the Inflator process for short-term level peaks to be accommodated without clipping. The Inflator input and output meters can then be used as main output buss level reference monitors during the mix session.

## **7.7. Distortion generation.**

For distortion generation it is best to proceed initially with the Effect level set to maximum so that the nature of any distortion can be assessed. The idea is to increase the input level with the Inflator fully operational and the output control reduced somewhat to avoid output clipping, whilst listening to the results with various degrees of deliberate and significant signal overdrive. The Curve control and Clip 0dB selector will both affect the sound of the results depending on programme type being processed. However, the best results are most likely to be obtained with the curve control set to mid (0) position as this produces the least higher order harmonic levels and most resembles the dynamics behaviour of tube systems. In general it is best to avoid band-splitting mode if aiming for natural warmth and tube overdrive sounds. Input clipping will dramatically change the nature of the distortion in overdrive situations and the user is encouraged to experiment with the Clip 0dB selector both on and off and changing the order of plug-ins in the signal path.

## **8. Copyright and acknowledgements**

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# Platform Specific Supplement

## 1. Available Applications.

### Pro Tools

Mono and stereo AS and RTAS versions of the Inflator application are provided (LE and TDM).

The TDM product also includes two additional mono and stereo versions – Direct only and Band Split. The latter provides both Direct and Band Split modes (see below). The Direct version is provided for your convenience, and utilises less DSP resources by only featuring direct processing (the band split mode button is greyed out when this plug-in is in use).

### PowerCore

There are two separate plug-in types – Direct and Band Split. The latter provides both Direct and Band Split modes (see above). The Direct version is provided for your convenience, and utilises less DSP resources by only featuring direct processing (the band split mode button is greyed out when this plug-in is in use). Each of these two plug-in types automatically detects and adapts to either a Mono or Stereo configuration as appropriate to the track or tracks they are inserted into. Also included are mono-only versions to allow you to process just one side of a stereo track if you wish to.

For purposes of backward compatibility, replacement stereo-only and mono-only versions of each of these two types are also **available in their own installer** so that session snapshots created with the old inflator plugins can continue to work.

### VST Native

There is one plug-in type containing the full functionality. This one automatically detects and adapts to either a Mono or Stereo configuration as appropriate to the track or tracks they are inserted into.

### Audio Units

Mono and stereo versions of the Inflator application are provided.

## 2. System Requirements.

For latest System requirements, please see [www.sonnoxplugins.com](http://www.sonnoxplugins.com)

### Pro Tools

- Approved Digidesign CPU and configuration
- Pro Tools HD or Mix system (TDM version).
- Pro Tools LE system (LE version)
- iLok USB Key

### PowerCore

- Approved TC Powercore CPU and hardware configuration

- Macintosh version: OSX 10.4 (Tiger) or higher with a VST or Audio Units compliant host application (Nuendo, Cubase, Logic, AU Lab, Digital Performer, etc).
- Windows version: Windows XP with a VST compliant host application (eg Nuendo, Cubase, Ableton Live, etc)
- 800x600 minimum display
- A VST or Audio Unit compliant host application (e.g. Cubase / Logic / Nuendo / Spark / Digital Performer)
- One or more TC PowerCore devices (PowerCore PCI mkII, FireWire, Compact, Element, Unplugged, and soon PowerCore Express) with driver version 2.0 or higher.
- iLok USB key, loaded with the appropriate authorisations.

#### **VST Native**

- Windows XP with a VST compliant host application (eg Nuendo, Cubase, Ableton Live, etc)
- 800x600 minimum display
- iLok USB key, loaded with the appropriate authorisations.

#### **Audio Units**

- Approved Apple CPU and OS X 10.4 or higher.
- Audio Unit Host application.
- iLok USB key required.

### **3. Installation and Authorisation.**

#### **All versions**

You will need to authorize your software by transferring the asset for your product to your iLok before use.

CD purchases: you can do this by following the instructions on the inlay card supplied with your CD.

Online purchases: you can do this by following the instructions sent in your order confirmation email after purchase.

#### **3.1. Pro Tools (Macintosh)**

Double click the installer icon for your product to begin. Follow the onscreen prompts.

The installer will search for the 'DAE:Plugins' folder (OS9), or '/Library/Application Support/Digidesign/Plug-Ins' folder (OSX). If found, the plug-in will be installed to this location; otherwise, an error will be reported.

You will need your authorised iLok plugged into a free USB port on your machine at all times when using the plug-in.

### 3.2. Pro Tools (Windows)

Begin installation using the setup menu (CD purchases), or double click the installer icon for your product. Follow the onscreen prompts.

The installer will place your plugins into '`<X>:\Program Files\Common Files\Digidesign\DAE\Plug-Ins\`', where `<X>` is the drive containing your Windows directory.

You will need your authorised iLok plugged into a free USB port on your machine at all times when using the plug-in.

### 3.3. PowerCore (Macintosh)

Double click the .dmg installer file or icon for your product installation to begin. Follow the onscreen instructions.

When you install your plugins, they will be placed into the '`/Library/Audio/Plug-Ins/VST/PowerCore/Sony`' folder, and you have the option of registering them for use as Audio Units compatible plugins. The new mono-only versions will be installed into a sub-directory of the above path called "Mono". The new replacement backward-compatibility versions will be placed into a sub-directory of the above called "Backward-Compatibility".

**Please note:** In the past there have been unreliability problems with the process of wrapping Oxford plugins for Audio Units compatibility. To improve this situation, the downloaded installer .dmg volume now contains the latest "TCAU Patcher" installer supplied by TC Electronic. Use this if you wish to be sure that your plugins are wrapped correctly for Audio Units compatibility.

### 3.4. PowerCore (Windows)

If any older versions of the plugins are installed, move them to a safe storage location outside of the VSTPlug-ins directory so that hosts will not find them. If you do not do this, the loading of old sessions may fail to find the new plugins correctly and there may be conflicts that lead to crashes.

Double click the installer icon for your product to begin, and follow the onscreen instructions.

When the plugins are installed, the setup program will attempt to detect your shared 'VSTPlugins' directory. However, you may also select another location if desired. The default installation location is `...\VstPlugins\PowerCore\Sony` for all the new combined auto-mono-stereo versions, and `...\VstPlugins\PowerCore\Sony\Mono` for the new mono-only versions, and `...\VSTPlugins\PowerCore\Sony\Backward-Compatibility` for the new replacement versions of the old mono-only or stereo-only plugins (applies only to Oxford EQ and Oxford Inflator plugins.)

### 3.5. VST Native (Windows)

Double click the installer icon for your product to begin, and follow the onscreen instructions.

When the plugins are installed, the setup program will attempt to detect your shared 'VSTPlugins' directory. However, you may also select another location if desired. The default installation location is `...\VstPlugins\Native\Sony`.

### 3.6. Audio Units (Macintosh)

Double click the installer icon for your product to begin. Follow the onscreen prompts.

You will need your authorised iLok plugged into a free USB port on your machine at all times when using the plug-in.

## 4. Preset Manager (PowerCore and VST).

### 4.1. Onboard Presets Manager.



The Sonnox Oxford Inflator version for TC PowerCore and VST Native comes equipped with its own on-board Presets Manager, which is displayed at the top of the plug-in window, as if it were created by the host. The reasoning behind this is to allow increased portability of your Sonnox Oxford Inflator presets across all the host applications that support PowerCore or VST, while also providing a consistent and versatile interface. While most host platforms allow creation and loading of presets, these host-created preset files are not portable between different platforms. With the new presets manager for Oxford plugins, you can create a named preset on one platform and load it on a different platform.

On Windows XP, the default directory for the factory presets provided with the Sonnox Oxford Inflator is located at:

**C:\Program Files\Sony\Oxford Plugins\Presets\PowerCore\Oxford Inflator**

On Mac OS-X systems, the default directory for the factory presets provided with the Sonnox Oxford Inflator is located at:

**/Library/Application Support/Sony/Oxford Plug-Ins/Presets/PowerCore/Oxford Inflator**

...and the presets are also written to the user-domain equivalent (in case more than one user requires private presets) at:

**/Users/username/Library/Application Support/Sony/Oxford Plug-Ins/Presets/PowerCore/Oxford Inflator**

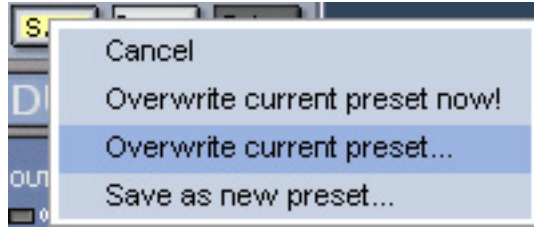
...see section below “Organising Presets for Multiple Users” for more information on this.

**For VST Native plugins, replace “PowerCore” in the above directory paths with “Native”.**

It is recommended that you create a sub-directory within this factory preset directory to store your own presets. You can do this when you save your first preset, or by using a window browser in WinXP. If you wish, you can re-organise the factory presets along with your own presets into any hierarchical directory structure that reflects the way you work. It is recommended that you adopt a convention to help you navigate more intuitively, such as giving directory names all upper case letters. Either way, when you click the “**Load**” button of the presets manager, you will be presented with an alphabetically-sorted hierarchical menu of the available presets that reflects the directory structure you have chosen, and you can navigate the menu to choose which one to load. Once a preset is loaded, its name will appear in the large text display window in the middle to remind you where the current settings originated.

The **Load Next** and **Load Prev** buttons, labelled as “+” and “-”, will step forwards or backwards through the hierarchy of presets, loading them. This allows quick comparisons, or quick stepping. Successive clicking of the load next button will step through every preset in every directory beneath the current directory (see “Browse” below for selecting the current directory.)

The “**Save**” button allows you to create a new preset from the current settings of the plug-in, and allows you to select where in the directory structure you wish to save it. The name of the preset is the same as the file name you give it. Clicking on the save button brings up a menu allowing you options either to overwrite the current preset now, overwrite the current preset with a query request, or create a new preset:

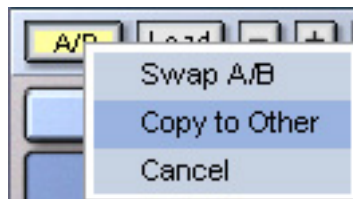


The “**Browse**” button allows you to set the current directory to look in for presets. By default this will be the factory presets directory, but you can temporarily change it to anywhere you want. The current directory is regarded as the top of the directory structure, so when “Load” is clicked, the menu presented will include every preset in every subdirectory beneath the current directory.

The “**Delete**” button allows you to delete a preset. By default, the factory presets are created as read only files, thereby preventing accidental deletions of factory presets.

The “**A/B**” button allows you to compare two sets of settings with a single click. Whenever this button is clicked, the current settings are saved into a backup store, and the contents of the backup store moved to the current settings. Initially, the backup store is loaded with the default state of the plug-in on start-up, so use of the A/B button will compare whatever plug-in settings you have created to the default settings, which will usually be equivalent to comparing the audio with and without the plug-in affecting the sound. However, if you switch to the default settings and change them, this is what the other settings will be swapped or compared against. Thus the A/B button allows you to quickly compare the audio with and with out the plug-in, or compare one setting against another.

The “**A/B**” button also has a menu beneath it that is accessed by clicking on the A/B button and holding the click for half a second. This submenu allows you to copy the current settings over into the backup store so that you can sync the two together before making some changes for careful comparison of sounds:



The displayed **Preset Name** is fully linked into the VST program name so that saving and restoring the project on the host platform will save and restore the preset name. When a project is restored, the preset manager will attempt to find the preset name given to it in the preset directories so that “+” and “-” will work from that point on.

By default, the displayed **Preset Name** will include a path down from the current directory so that you can tell which sub directory a preset comes from. You can turn this option off using the main plug-in menu option “Display Preset Path Names”. You may wish to do this, for example, if you have deeply nested directories of presets, and there is not enough room on the plugin’s display to fit both the path and the name.

The **Preset Name** displays a “\*” at the end if the settings have been altered in anyway over the original loaded settings.

## 4.2. Organising Presets with Multiple users.

If multiple users will be using the plugins installed on a single computer, then the best idea is to copy the factory presets into a place belonging to the individual user, and set the root directory of the presets manager to point to this new directory. This root directory will be saved uniquely for each user, so usage by other users will not disturb the preferences of an individual user. Personal presets can then be made in a subdirectory of the root directory. This way, each user has their own copy of the factory presets, and their own private presets.

## 5. Mono, Stereo and Mono->Stereo Versions (PowerCore).

The Sonnox Oxford Inflator version for TC PowerCore automatically detects whether Stereo or Mono operation is called for by requesting the number of input and output audio channels from the host. With one in one out, mono operation is selected. With two in two out, stereo operation is selected. With one in and two out, stereo operation is selected and the single input is automatically duplicated to both DSP channels.

The Oxford Inflator comes as 6 DLL's (Windows) or 6 Bundles (Mac). The two main ones to use are "**Oxford Inflator**" and "**Oxford Inflator Direct**". These will work in both Stereo and Mono mode. The other four are provided to maintain backward compatibility so that projects saved with the old mono-only or stereo-only versions will continue to work.

On Windows XP, the stereo-only and mono-only DLL's are contained in directory `...\VSTPlugins\PowerCore\Sony\Backward-Compatibility`, and the new stereo or mono versions are contained in `...\VSTPlugins\PowerCore\Sony` (the new location for Oxford plugins for PowerCore.)

## 6. Integrated Native-PowerCore Versions (VST-only)

The VST PowerCore plugins for Mac/Intel-Mac (and WinXP soon) have a major new feature – the Native DSP code is now included and integrated seamlessly.

### Project Portability, Upgrade-ability and Fail-Safe Working

This allows for a whole new set of freedoms when it comes to working with Powercore. For example:

Imagine working in your studio using a Powercore-accelerated system. Some of your Oxford Powercore plugins are in Powercore mode, and some in Native mode, to allow you to balance your resources. You save your project and copy it to your laptop (which has no Powercore hardware), and the project runs error free on your laptop because your Oxford Plugins automatically and quietly revert to native processing mode if they do not find any Powercore hardware. So you can continue to work on your mix as you travel on the train or bus or while on tour. When you return to your studio, you can copy your project back in, and your plugins will automatically revert back to Powercore, if they were originally set to Powercore mode. Effectively, this means your Powercore-accelerated system will run with less CPU burden than your non-powercore-accelerated one, but your project is completely portable between the two.

This allows an unprecedented level of portability when using Oxford Plugins. You no longer have to change the Oxford Powercore plugins to Native plugins or vice versa. You simply click on the switch and it is done, with the settings preserved.

Now imagine being a Native plugin user who is running out of CPU power. What you want is to use a hardware accelerator to free your CPU of some of its burden, but without the hardware accelerator

taking over your system and the way you work, without having to swap out Native plugins and replace them with Powercore versions. With the new combination Native-PowerCore plugins, this is exactly what you can do. You can work in Native mode until you run out of CPU. Then you can begin switching some of your plugins over to using hardware acceleration (with Powercore cards), and they will run in Powercore mode if the hardware is available, and in Native mode if not. If there is any problem with the hardware that would otherwise cause you to be unable to run the plugins, they simply revert to native mode. Thus the inbuilt native mode acts as a safe-guard against hardware failure, or as a safe-guard against running out of hardware resources.

Finally, forward thinking individuals can purchase or upgrade to the Powercore plugins as an insurance against running out of CPU, long before they even have any Powercore hardware. If or when the individual decides they need hardware acceleration, they can purchase it, and their old projects will continue to work on the new hardware.

## How it works.

The new Powercore plugins have some new menu options and indicators to allow you complete control over the way this new feature is handled.

**Firstly, on the top right of the plugin in the title bar, there is a new icon that shows the current processing mode that the plugin is actually using, either Powercore or VST Native, like this:**



**Clicking on this icon brings up a new menu**, one that allows you to set which mode you want the plugin to run in, your **desired mode** of operation: either “Use PowerCore hardware if it is available”, or “Use Native DSP”. If you select Native mode, this instance of this plugin will run in Native mode from this moment forward. If you select Powercore mode, this instance of this plugin will use powercore hardware if it is available, or it will automatically switch to native mode if there is no Powercore hardware available, or if there is a problem while loading onto Powercore (such as there are no more hardware resources left, or there is a problem with the fire-wire connection).

**Your desired mode of operation is saved with the project** so that when you load your project back in, the desired mode returns back to what it was, on a plugin by plugin basis. When you load presets using the on-board preset manager, this desired mode data in the preset is ignored, so your desired mode stays as you set it when trying out different presets. However, when you load presets with the host, or load a project, this mode is acted on so that a project load restores your plugins exactly as you left them.

When using a desired mode of “Use powercore if available”, it is quite normal for the icon to display “VST”, rather than “Powercore”. This shows the actual mode is currently Native mode, for one reason or another.

Switching between Native and Powercore mode can be done at any time, even while playing. However, since switching while playing will cause a temporary discontinuity in the sound, it is wiser to switch while stopped.

By default, the automatic switch over from Powercore to Native (for example because the plugin failed to find any powercore hardware) occurs without error messages being displayed. The menu that pops up when you click on the above icons also has an option that allows you to know about any messages that occur. This is useful, for example, if you are wondering why your plugins are reverting to Native mode when you are expecting them to stay in Powercore mode. In this mode, all error messages will be displayed except for the case where there is no hardware, or there are no powercore drivers (in which case it is obvious why the plugin is running in native mode.)

**Lastly, there is now a new preference** in the main menu under the Sonnox button that allows you to specify what your default desired mode is for this plugin type. If you prefer your plugin to come up in Native mode when you insert a new plugin, then set this option. If you prefer it to come up in powercore-if-available mode, then leave this preference not set.

## Native versus Powercore

Generally speaking **the Native version of the DSP is identical to the Powercore DSP** in terms of the algorithm and order of processing. However, in plugins involving dynamic gain changes such as the Oxford Dynamics, Oxford TransMod and Oxford Limiter, the gain calculations are done in the logarithmic domain. The Native DSP uses a true logarithm/anti-logarithm whereas, by necessity, the Powercore DSP versions have to use a very close approximation. This means that for the Dynamics, TransMod and Limiter, the sound of the Powercore DSP is not 100% exactly the same as the sound of the Native DSP. Neither one sounds better nor worse; it is just that if you try to cancel them out by putting one in anti-phase, they will not quite cancel all the way.

Native mode is best for recording since the inherent delay is smaller. For mixing, when the number of inserts can climb to being very large, this is when using hardware acceleration such as Powercore can really help to relieve the burden on the CPU so that you can still listen in real time.

When changing from one mode to another it is important that you are aware that the delay also changes, and this will upset the delay compensation that your host has arrived at. Although the plugin does re-export the new delay, and tell the host that the delay has changed, you may need to save your project and reload it in order for the host to set up the delay compensation correctly. Indeed, in Cubase/Nuendo, this has always been true for the Oxford Powercore Plugins regardless of this new feature. This is because the delay is dependent on the sample rate and block-size, and so cannot be determined correctly by the plugin until the plugin is fully loaded, by which time the host has already set up the delay compensation.

One final contrast is that some of the plugins have slight functionality differences when in Native mode. For example, the Limiter and Dynamics plugins have the option of not applying dither when in Native mode. This means that if your plugin is set to the “no dither” option and you switch to powercore mode, it will have to revert to using 24 bit dithering, because when using Powercore it is imperative that the signal is properly dithered to preserve sonic integrity.

Other examples of differences occur in the preferences menus. For example, when in Native mode, the “No Latency” option has no meaning, and is either greyed out or replaced with a preference that is Native specific such as “Enable 24 bit dithering”.

## Presets

With regards to presets, the installer installs the factory-supplied presets into two locations – firstly, as VST presets into the default place for the on-board presets manager to see (/library/Application Support/Sonnox/Oxford Plugins/Presets/Powercore), and secondly, as Audio Units presets into the default place for Logic to see (/library/Audio/Presets/Sonnox (AU Poco)). This allows you to use either of these mechanisms for loading factory presets.

**There is one important purposeful difference between loading a preset with the on-board preset manager, and using the host mechanism:** Loading with the on-board preset manager will leave the Native-Mode/PowerCore-Mode switch as is, where as loading with the Host mechanism will force the mode switch to be as stored in the host preset data. The reason for this is so that loading a project in any Host will return the project exactly as you left it, especially in terms of your Native/Powercore mode setting. However, when using the on-board preset manager, you will be able to step through many presets using +/-, without affecting your current mode.