4040 Retro Limiter

Original Vintage Style Designs

User Manual

McDOWELL SIGNAL PROCESSING, LLC

McDSP 4040 Retro Limiter Plug-In Manual

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Special Thanks to:

- Rob Barrett Jr., our #1 customer
- Customers who like innovation, not imitation.

from the entire McDSP development team.

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Getting Started with the 4040 Retro Limiter

Each McDSP plug-in is delivered inside an installer application, and uses the Interlok copy protection software to authorize each plug-in. This section describes how to install and authorize a McDSP plug-in. General system requirements are also described.

System Requirements

McDSP HD, Native, and LE plug-ins are compatible with Pro Tools™ HD, HD Accel TDM systems, as well as Pro Tools™ LE and Pro Tools™ M-Powered host based systems. McDSP plug-ins support Mac OS 10.4.x (Tiger), 10.5.x (Leopard), Windows XP and Vista and require Pro Tools 7.x, 8.x or greater. McDSP plug-ins require an iLok USB Smart Key.

Configurations

McDSP plug-ins are available in TDM, RTAS, and AudioSuite configurations. See individual products for specific available configuration sets.

Applications

Pro Tools™ 7.x, 8.x or higher is required for TDM, LE, and M-Powered systems. Additionally, a third party software application that supports the Digidesign TDM, RTAS, or AudioSuite plug-in standard may be supported. See http://www.digidesign.com/developers/plugin_info/ for more information.

McDSP plug-ins are compatible with the entire Pro Tools™ 7 and 8 product line.

Hardware

McDSP plug-ins support any Digidesign or approved third party hardware supported in Pro Tools™ 7.x and 8.x. This includes HD, HD Accel, 003, and Mbox host based systems. All McDSP HD plug-ins, except Synthesizer One, also support the Digidesign VENUE D-SHOW systems. See http://www.digidesign.com/compato/ for more specific information.

The McDSP Mac versions are compatible with both Intel and PowerPC based computers. The McDSP Windows versions require an Intel Pentium 4 or greater processor.*

** McDSP Windows test machines are chosen to follow the Digidesign recommended systems guide, which currently is the Dell Precision™ Workstation 670 with 2.79 GHz Xeon processor. All products are guaranteed to run on that system. Older Intel processors (i.e. Pentium III and predecessors) and AMD processors are not officially supported, although some users have had limited success with newer AMD processors (i.e. Dual Opteron 1.79 GHZ, Athlon 64 2.20 GHz, and Athlon 64 XP 3700). None of the McDSP Windows product line will work with Pro Tools™ 5.x. Also note the McDSP Windows product line does not support MIX, although RTAS versions will work if they exist and the rest of your system (i.e. Pro Tools™ version and processor) is compatible.*

Please visit mcdsp.com for the latest information about compatibility.

Installing the 4040 Retro Limiter Plug-In

Installation on Mac OS X

The 4040 Retro Limiter plug-in Package includes this manual, ReadMe and Release Notes, a folder of presets for the 4040 Retro Limiter plug-in, and the 4040 Retro Limiter plug-in. Two copies of the 4040 Retro Limiter Licensing Agreement are included - one in this pdf manual and a second as a separate text file. The 4040 Retro Limiter plug-in manual requires that Adobe Acrobat reader (or similar .pdf reader) is installed.

Both online and boxed version will come with a 4040 Retro Limiter installer that will automatically install the 4040 Retro Limiter plug-in and its presets on your system. The authorization of the 4040 Retro Limiter plug-in is still required after running the installer, and those steps are detailed in the following sections.

Installing the 4040 Retro Limiter plug-in and presets with the Installer:

The online version of the package has been prepared for Internet delivery, and is transmitted as a compressed file in zip format (.zip). In Mac OS X 10.4.x or 10.5.x, simply double click the *.zip file to unpack the installer. The boxed plug-in package purchased at your local dealer will be on CDROM. As with the online version, these 'physical' versions of the 4040 Retro Limiter plug-in package should be copied into a local folder on your system.

- Insert the McDSP 'HD Disk,' 'Native Disk,' or 'LE Disk' CDROM onto an available CDROM drive.
- Navigate to the 4040 Retro Limiter plug-in folder on the CDROM - the installer application is contained therein.
- Run the 4040 Retro Limiter plug-in Installer application to install (copy) the 4040 Retro Limiter plug-in, presets, and documentation to a local folder on your system. The plug-in will be placed in the 'Plug-Ins' folder, and the presets will be placed in the 'Plug-Ins Settings' folder.
- If a previous version of the 4040 Retro Limiter plug-in (or other HD, Native, or LE version) was already in the plug-ins folder, it will automatically be updated (or replaced) by the installer.

Re-installing the 4040 Retro Limiter plug-in presets manually:

In you wish to restore the factory default presets, it may be useful to know how to manually re-install only the presets.

- Go to the 'Plug-in Settings' folder:
- Root->Library->Application Support->Digidesign->Plug-in Settings
- If Pro Tools™ has not already done so for you, create a folder called '4040 Retro Limiter'.
- Place a copy of the folder from the 4040 Retro Limiter plug-in package called 'Presets' into the '4040 Retro Limiter' folder. The presets are now viewable (after restarting Pro Tools™) from the settings popup menu from the 4040 Retro Limiter plug-in.

Note it may be necessary to re-start Pro Tools™ in order for the newly added 'Presets' folder to be viewable from the Settings popup inside the 4040 Retro Limiter plug-in window toolbar.

Installation on Windows XP and Vista

The 4040 Retro Limiter plug-in Package includes this manual, ReadMe and Release Notes, a folder of presets for the 4040 Retro Limiter plug-in, and the 4040 Retro Limiter plug-in. Two copies of the 4040 Retro Limiter Licensing Agreement are included - one in this pdf manual and a second as a separate text file. The 4040 Retro Limiter manual requires that Adobe Acrobat reader (or similar .pdf reader) is installed.

Both online and boxed version will come with a 4040 Retro Limiter installer that will automatically install the 4040 Retro Limiter plug-in and its presets on your system. The authorization of the 4040 Retro Limiter plug-in is still required after running the installer, and those steps are detailed in the following sections.

Installing the 4040 Retro Limiter plug-in and presets with the Installer:

The 4040 Retro Limiter plug-in package purchased at your local dealer will be on CDROM and contain a Windows self extracting executable (.exe) similar to the online 4040 Retro Limiter plug-in package prepared for Internet delivery. Both the boxed and online versions the 4040 Retro Limiter plug-in executable file will automatically install the plug-in and its presets on your system. Double click the file to launch the installer which will install the 4040 Retro Limiter plug-in, presets, and documentation. At any time after installation, you may access the documentation from the Windows 'Start Menu' under the 'McDSP' group.

Authorization of the 4040 Retro Limiter plug-in is still required after running the installer, and those steps are detailed in the following sections. Note that after installing new versions of the PACE iLok drivers with the 4040 Retro Limiter plug-in installer, you will be prompted by the 4040 Retro Limiter plug-in installer to reboot your system. If you are not prompted by the installer, there is no need to reboot.

- Insert the McDSP 'HD Disk,' 'Native Disk,' or 'LE Disk' CDROM onto an available CDROM drive.
- Navigate to the 4040 Retro Limiter plug-in folder on the CDROM - the installer application is contained therein.
- Run the 4040 Retro Limiter plug-in Installer application to install the 4040 Retro Limiter plug-in, presets, and documentation to a local folder on your system. The plug-in will be placed in the 'Plug-Ins' folder, and the presets will be placed in the 'Plug-Ins Settings' folder.
- If a previous version of the 4040 Retro Limiter plug-in (or other HD, Native, or LE version) was already in the plug-ins folder, it will automatically be updated (or replaced) by the installer.

Re-installing the 4040 Retro Limiter plug-in presets manually:

In you wish to restore the factory default presets, it may be useful to know how to manually re-install only the presets.

- Go to the Plug-In Settings folder:
- C:\Program Files\Common Files\Digidesign\DAE\Plug-In Settings\
- If Pro Tools™ has not already done so for you, create a folder called '4040 Retro Limiter'.
- Place a copy of the folder from the 4040 Retro Limiter plug-in package called 'Presets' into the '4040 Retro Limiter' folder. The presets are now viewable (after restarting Pro Tools™) from the settings popup menu from the 4040 Retro Limiter plug-in.

Note it may be necessary to re-start Pro Tools™ in order for the newly added 'Presets' folder to be viewable from the Settings popup inside the 4040 Retro Limiter plug-in window toolbar.

Installation on VENUE D-SHOW systems

The 4040 Retro Limiter plug-in Package for VENUE D-SHOW systems includes presets for the 4040 Retro Limiter plug-in and the 4040 Retro Limiter plug-in. The 4040 Retro Limiter Licensing Agreement is displayed when installing the product on D-SHOW. The pdf manual can be obtained by running the Mac OS X or Windows XP/Vista version of the 4040 Retro Limiter Pro Tools plug-in installer on any available computer.

Both online and boxed versions will come with a VENUE compatible installer that will automatically install the 4040 Retro Limiter plug-in and its presets on your system. The authorization of the 4040 Retro Limiter plug-in is still required after running the installer, and those steps are detailed in the following sections.

Note that all McDSP HD plug-ins, except Synthesizer One support the Digidesign VENUE D-SHOW system.

Installing the 4040 Retro Limiter plug-in and presets on VENUE with the 'HD Disk':

The boxed 4040 Retro Limiter plug-in package purchased at your local dealer will contain a CDROM titled 'HD Disk' that is specially formatted to work with your VENUE console. The VENUE installers are also available online as a compressed zip file download, however you will have to take additional steps to create your own VENUE installer CD-R, see additional instructions below before proceeding with these instructions. Both the boxed and online versions of the 4040 Retro Limiter installer are the same and will install both the plug-in and its presets on your system.

Note that after installing new versions of the PACE iLok drivers with the 4040 Retro Limiter plug-in installer, you will need to reboot your system. You will not be prompted to reboot, and if you don't you may see an error message saying "TPkd driver required, and a reboot. Please reboot or reinstall the software.' If you see this message, simply reboot the console and try again.

- Insert the McDSP 'HD Disk' CDROM onto the CD drive. Note that neither the McDSP 'Native Disk' nor the 'LE Disk' contains VENUE compatible installers.
- Ensure your system is in 'CONFIG' mode, you cannot install plug-ins in 'SHOW' mode.
- Navigate to the 'OPTIONS' page and then select the 'PLUG-INS' tab.
- You should now see the 4040 Retro Limiter plug-in available on the left hand side.

- Select the 4040 Retro Limiter plug-in and select 'INSTALL.'
- If a previous version of the 4040 Retro Limiter plug-in was already installed, it will be updated by the installer.

Important note *for FilterBank HD and CompressorBank HD on VENUE D-SHOW consoles: The first time you instantiate either of these plug-ins, a dialog box will appear asking you to choose a user interface preference. Choose the Knobs interfaces, as some of the Slider interfaces are too large for the VENUE display.*

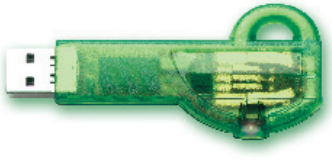
Creating a VENUE D-SHOW Installer CD-R from the online zip file:

If you do not have a boxed copy of 4040 Retro Limiter with the included 'HD Disk' CDROM, you can still obtain a copy of the VENUE compatible installers from the www.mcdsp.com website. Once you have located and downloaded the latest VENUE compatible installers from the McDSP website, you will have to take several additional steps to create a VENUE compatible Installer CD-R. For your convenience, all VENUE compatible products are located in the same downloadable zip file, so you will only have to create one CD-R to install all compatible McDSP products.

- Unzip the downloaded file and locate the folder named "TDM Plug-Ins" inside the unpacked folder.
- Using any CD-R burning application, burn this folder and its contents to an ISO format CD-R. It is recommended that you use a brand new CD-R for this, and do not rewrite an older CD-R.
- Once you have burned this folder to a CD-R, you should see it at the root level of the disk (i.e. "D:\TDM Plug-Ins"). Important: If the "TDM Plug-Ins" folder is not located at the root level of the CD-R or has been renamed, the VENUE console may not properly recognize the installer disk.
- At this point, you can follow the 'HD Disk' installation instructions above to complete the installation.

Authorizing your McDSP Plug-Ins

Authorizing with a pre-programmed iLok Smart Key



McDSP bundles such as the Emerald Pack come with a pre-programmed iLok Smart Key. Simply insert the iLok into any available USB port on your computer. The iLok's indicator light will illuminate when the iLok has a proper connection. The Plug-Ins included in the bundle require no further authorization steps. As with any iLok on your system it is recommended that your iLok be registered and synchronized with iLok.com

Authorizing with an iLok License Card

All McDSP Plug-Ins require that a valid authorization is present on your iLok USB Smart Key. McDSP Plug-ins that are purchased individually provide this authorization on a plastic License Card (about the size of a credit card), with a small punch-out iLok License Chip. After being separated from the License Card, this iLok License Chip is to be inserted into the 'key slot' of the iLok USB Smart Key in order to transfer the authorization from the License Card to the iLok USB Smart Key. Note that each License Card holds ONE Plug-In authorization. The following instructions detail this process

Important Note: The Authorization Wizard will prompt the user to register their iLok USB Smart Key at iLok.com. iLok.com is a service offered by PACE Anti-Piracy, Inc. and this step is recommended but NOT REQUIRED by McDSP to complete the authorization of the Plug-In. If you choose to register your iLok USB Smart Key at iLok.com, care must be taken to record your ilok.com account information (i.e. write down your User ID and Password in a safe place). If your iLok.com account information is lost, the iLok cannot be registered to another account and unfortunately there is nothing McDSP can do to help you. See iLok.com for more details about the benefits of using PACE's iLok.com service.

Note: Images in this section are for illustration only, the actual product and screens will be the name of the product you are authorizing.

Authorizing a McDSP Plug-In from a License Card with the Authorization Wizard:

The Authorization Wizard is used to install an authorization from a License Card to the iLok USB Smart Key. To use the Authorization Wizard for the Plug-In you purchase, perform the following steps:

- Insert your iLok USB Smart Key into an available USB port.
- On a Mac :Locate and launch the 'Authorizer' application found in the 'Authorize' folder in the Plug-In package for the McDSP Plug-In you purchased on the CD-ROM.
- On Windows XP or Vista, just launch Pro Tools™ to authorize the individual McDSP Plug-In you purchased.

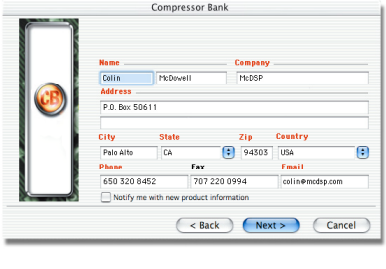
  Note: When authorizing the Plug-In on Windows XP or Vista with a new iLok USB Smart Key, you must insert the iLok USB Smart Key and complete the Windows 'Found New Hardware Wizard' before attempting to authorize the Plug-In.

- Select the 'Authorize' button to be guided through the Authorization Wizard.

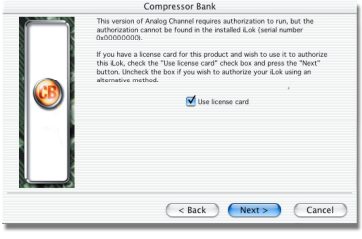
  Note: Selecting the 'Quit' button at any time will not authorize the Plug-In or allow it to be used for a trial period. If 'Quit' is selected, the Plug-In will not be available in the Pro Tools™ insert menu.

- McDSP Plug-Ins require that the user personalize their copy of the Plug-In. A dialog is displayed soliciting this information.

  Note that the product registration card enclosed with the Plug-In MUST ALSO be filled out as well and returned to McDSP via mail (or fax to 707-220-0994). This additional mail-in registration will entitle the user to future upgrades and advance information from McDSP.



- Once the Plug-In is personalized, click the 'Next' button to continue.
- Check the 'Use License Card' box and press the 'Next' button (figure 2.3).

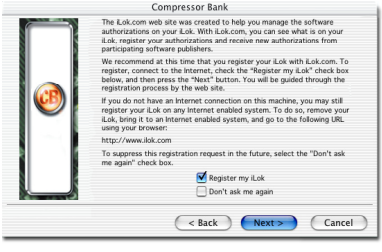


Note: Although the Authorization Wizard may appear to allow authorization by challenge/ response, that method is currently NOT SUPPORTED McDSP Plug-Ins.

- Separate the small punch-out iLok License Chip (the removable metal and plastic tab) from the License Card by pushing the cutout up and out with your thumb. Do not force your finger downward.

- The iLok License Chip may now be inserted into the 'key slot' of the iLok USB Smart Key (figure 2.6). If the iLok USB Smart Key does not appear to be present on the system, ensure the iLok USB Smart Key is connected to a valid USB port and that the green LED is lit inside the iLok USB Smart Key. To insert the License Chip into the iLok USB Smart Key, orient the iLok USB Smart Key's USB end to the left, and the loop end to the upper right. Insert the metal chip end of the iLok License Chip (the License Chip tab should have the metal chip side facing up towards you, not down). You should be able to visually verify that the License Chip makes contact with the iLok USB Smart Key metal card reader.

- The green LED in the iLok USB Smart Key will light when it is ready to receive and transmit data.
- Upon inserting the iLok License Chip, a message will be displayed indicating the authorization was installed successfully. Click 'Ok' in the message dialog.



- Once the authorization is installed on the iLok USB Smart Key, a dialog is displayed prompting the user to register their iLok USB Smart Key at the www.ilok.com website. The iLok.com website was created to allow users to manage the software authorizations on their iLok USB Smart Key. THIS STEP IS NOT REQUIRED TO COMPLETE THE AUTHORIZATION OF MCDSP SOFTWARE. The registration of the iLok USB Smart Key to an iLok.com account can be bypassed by clearing the checkbox. The user may also choose to not be asked to register again. While iLok.com is a great resource for the iLok USB Smart Key, your iLok USB Smart Key may only be linked to one iLok.com account. That is, an individual iLok USB Smart Key can only be registered to one account at a time--but a single account can have multiple iLok USB Smart Keys. If the iLok.com account information is lost, the iLok USB Smart Key cannot be registered to another account. However, an iLok USB Smart Key may be transferred between accounts if all the authorizations have been transferred off the iLok USB Smart Key. Register the iLok USB Smart Key to an iLok.com account only when you are ready to retain all the needed iLok.com account information (User ID and Password).
- A 'Finished' dialog is displayed showing what authorization method was used.
- Click 'Finish' to exit the Authorization Wizard.

Authorizing with iLok.com

Required for demo, upgrade, and replacement authorizations only

iLok.com can be accessed from any Macintosh or PC with an Internet connection. You can do this at home, a friend's, or at the office as long as there is an internet connection to access iLok.com--note that you don't have to use your ProTools system computer! You simply use this computer to connect to iLok.com and transfer authorizations to your iLok Smart Key. The iLok Smart Key can then be moved to your ProTools system to complete authorization of your Plug-In.

You will need:

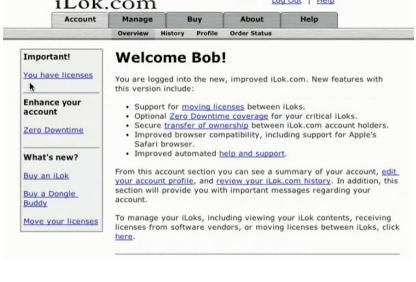
- A computer with an Internet connection. Either a Macintosh running OS 9.2 to OS 10.3 or a PC running Windows 98, ME, 2000, XP, or Vista
- An iLok USB Smart Key
- A valid iLok.com account. Visit www.iLok.com and set up a free account, if you have not already done so.

1) Download and install the required client software from iLok.com.

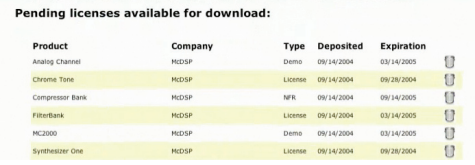
2) Download the desired McDSP Plug-In Installer from: http://www.mcdsp.com/support/updating.html

3) To receive an upgrade or replacement authorization, send email your iLok.com account information to: support@mcdsp.com
To receive a demo authorization, email your iLok.com account information to: authorize@mcdsp.com

Insert your iLok Smart Key into an available USB port and ensure that the indicator light is lit. Once your demo, upgrade, or replacement authorization is available for transfer, your iLok.com account will display the notice saying "You have licenses" on the upper left. Begin by selecting that link.

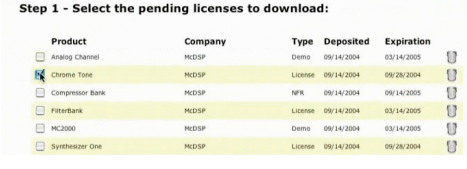


The next page will display the pending licenses available for download. This page will also display the name of the Plug-In, its manufacturer, the type of authorization (demo, Not For Resale, or License), the date the authorization was deposited, and the date when the authorization will no longer be available for download from the server.

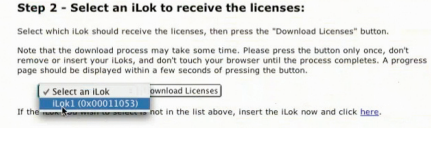


Before any transfer of authorizations can take place, you must synchonize your iLok Smart Key with iLok.com. This may take a moment to process depending on your internet connection.

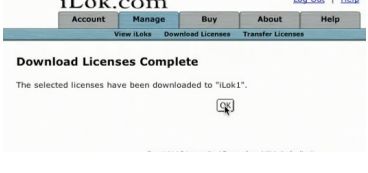
Once you have synchronized your iLok, you can select the authorization(s) you wish to transfer to your iLok.



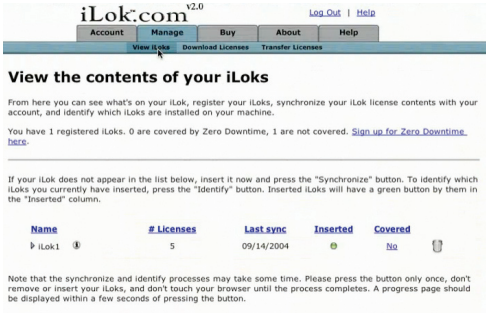
If you have multiple iLoks connected to your computer, it is important to select the correct iLok you wish the authorizations to be transferred to. Then click "Download Licenses" to begin the process. Again, this may take a moment depending on your internet connection.



When the transfer finishes you will be asked to confirm the completition of the transaction, thereby letting you know that the transfer was successful.



If you wish to go back into your account and visually confirm the transaction for yourself, select “View iLoks” Then select the iLok you had the authorizations transferred to.



That’s it! Dont forget to logout and move the iLok Smart Key to your ProTools System if you are using another computer for Internet access. Also, you may need to install a different version of the Plug-In if you are upgrading or replacing.

Transferring Authorizations with iLok.com

You may freely transfer any authorization within your iLok.com account between any of your registered iLok Smart Keys. If you wish to transfer an authorization out of your iLok.com account to a different user, it will require additional support from PACE Anti-Piracy, Inc and may be subject to a service fee or limited by manufacturer restrictions. Check the www.ilok.com website for updates and developments regarding iLok USB Smart Keys and the Pace Interlok Copy Protection system.

Registering your McDSP Plug-In

To register your McDSP Plug-In, fill out and return the product registration card enclosed with the boxed Plug-In package by mail or fax 707-220-0994. Registering your product entitles you to future upgrades and advance information from McDSP. Each individual product must be registered (even if you have multiple copies), and the product must be registered to an individual, not an entity. If you represent a company it is your company's responsibility to notify McDSP in writing if the individual who registered the Plug-In is no longer with the company. The Company must also be able to supply matching registration information to successfully transfer ownership of the Plug-In.

Using your McDSP Plug-Ins

Starting a McDSP Plug-In:

Follow the installation, authorization, and registration instructions above, Launch Pro Tools™, and the McDSP Plug-In and its presets are ready for use. Refer to the Digidesign™ Pro Tools™ Reference Guide for details on general Plug-In operation such as automation.

Exiting a McDSP Plug-In

A McDSP Plug-In is exited by clicking on the desktop or other window in the DAE application running the Plug-In, closing the Plug-In window, or de-instantiating the Plug-In. Pro Tools™ sessions will save instantiated Plug-In configurations and their settings. Refer to the Digidesign™ Pro Tools™ Reference Guide for details on general Plug-In operation.

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4040 Retro Limiter

The 4040 Retro Limiter plug-in, along with the rest of the McDSP Retro Pack plug-in product line, is an entirely new design based on more than a deacde of McDSP engineering experience. The Retro Pack plug-ins are highly stylized products (both visually and sonically), and through an elogant user interface, deliver a vintage gear experience.

The 4040 Retro Limiter combines a look-ahead brick wall limiter function with several subjective treatments to make the limiting action subtle, and yet vintage.

All Retro plug-ins use a McDSP designed output stage topology to eliminate digital clipping at any output level and produce a smoother distortion characteristic. This feature is in addition to the analog saturation modeling that has made McDSP famous over the last decade.

Features:

- Unique original algorithms
- Anti-Clip Output Stage Topology
- Analog Saturation modeling
- Double precision processing
- Low latency
- Mono and stereo versions

The Quick Start Tour: The 4040 Retro Limiter Plug-In

Start Pro Tools™ and Instantiate the 4040 Retro Limiter plug-In

- Launch Pro Tools™ and Open a Pro Tools™ Session.
- Verify the Display-> Mix Window Shows->Inserts View option is checked.
- In one of the inserts of a stereo master fader, select the 4040 Retro Limiter plug-in. Note the 4040 Retro Limiter plug-in will operate on master or regular audio tracks in mono or stereo versions.
- If the insert selection does not show the 4040 Retro Limiter plug-In, verify that the 4040 Retro Limiter plug-in has been installed correctly.
- For more information on starting Pro Tools™ and working with Plug-Ins, see Digidesign's™ Pro Tools™ Reference Guide

Retro Pack Overview

The McDSP Retro Pack plug-ins are designed for the ultimate vintage vibe, using new and original algorithms based on McDSP's decade of industry experience. Retro plug-ins are a line of 'classics' that can live up to their own name without emulating something else.

The 4040 Retro Limiter combines a look-ahead brick wall limiter function with several subjective treatments to make the limiting action subtle, and yet vintage.

4040-L
-10
-36
0
CEILING
18
12
24
6
30
0
36
GAIN
GR
IN
OUT
MDSP

Controls

Limiter

The 4040 Retro Limiter simple design relies on two basic controls to get maximal signal level with minimal distortion and a highly stylized vintage sound.

- **Ceiling** - the maximum signal level
- **Gain** - the amount of signal level boost, up to 36 dB

Displays

Meters

The 4040 Retro Limiter Noise Filter has meters showing input signal output signal levels.

General Information

To adjust any of the 4040 Retro Limiter controls the user can:

- Hold the <Command> key while dragging the slider for fine control, or
- Click on the text box to highlight and edit the numeric value to get precise control (if a value outside the valid range is input, the control will default to the nearest allowed value when enter is hit) and hit <Enter>, or
- Click on the text box to highlight the numeric value and then use the arrow keys to increase or decrease the numeric value, or
- Use the <Option> key to bring all the controls to their default values, or
- Use hardware controller surfaces supported by the 4040 Retro Limiter plug-in including the Mackie HUI and Digidesign's ICON™, ProControl™ and Control 24.

Control Linking

There is no control linking capability in the 4040 Retro Limiter at this time.

Automation

All 4040 Retro Limiter Noise Filter controls are completely automatable. See the Digidesign™ Pro Tools™ Reference Guide, Automating Plug-Ins section.

Presets: Using the Presets and Making Your Own

The 4040 Retro Limiter Noise Filter preset library demonstrates the wide range of applications the 4040 Retro Limiter can be used. No preset will suit every application, and they have been provided as a guide for the user, and will hopefully inspire new ideas and ways to use this sophisticated plug-in.

The presets can be accessed from the Pro Tools™ "Plug-In Librarian" and "Plug-In Settings" pop-up menus.

To make and save your own presets, see the "Plug-In Librarian Functions" section of Digidesign's DigiRack Plug-Ins Guide.

A Word on Preset Compatibility

Presets for the 4040 Retro Limiter configurations are interchangeable.

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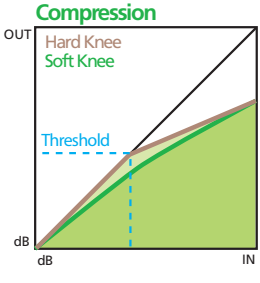
Using the 4040 Retro Limiter Plug-In

The 4040 Retro Limiter is a highly stylized limiter algorithm. The following sections cover basic operations of the 4040 Retro Limiter, provide a more in depth descript of some of the features of the 4040 Retro Limiter, and outline some applciations of the 4040 Retro Limiter plug-in.

Basics

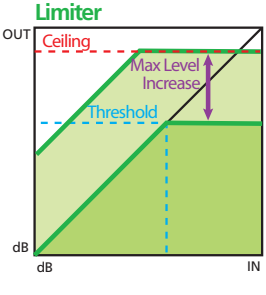
There are three types of EQs included in the 4040 Retro Limiter (high shelf, parametric, and low shelf), and two types of filters (high pass and low pass).

Compression



A compressor affects the signal once the signal level is above the selected threshold. A compressor is used to reduce the output level of signals once they rise above the threshold. A ratio control determines the amount of gain reduction, as a ratio of the input to output (in dB). The higher the ratio, the more gain reduction is applied to the signal as it continues to rise above the selected threshold. Gentle compression ratios are considered to be in the 2:1 to 4:1 range, while stronger ratios are 8:1 and higher. Attack and release times determine how fast the compressor begins to reduce signal levels (attack) and how fast the compressor recovers to a state where it is no longer affecting the input signal (release).

Limiter



A limiter operates very much like a compressor, applying gain reduction to the signal as it rises over the selected threshold. Limiters, however, can have the additional requirement of not allowing the output signal to exceed a selected maximum. The limiter output (or ceiling) control determines the maximum level of the output signal. The threshold determines where the limiter begins to operate on the input signal. A limiter will also attempt to maximize the output level by the difference between the output ceiling and the threshold. A common use of a limiter is making the incoming audio as loud as possible.

A Closer Look at the 4040 Retro Limiter Plug-In

Peak Control

The Anti-Clip output stage topology alone in each Retro Pack plug-in makes is work putting across the master buss. However a useful (and colorful!) limiter is another way to attain control over signal peaks. The 4040 Retro Limiter offers the capability of a limiter - no signal levels above the selected maximum while maximizing levels - in a simple two knob interface.

Make it Good (Not Loud)

While the tempation to make everything louder will never go away in audio production, the 4040 Retro Limiter has plenty of subjective tweaks to 'guide' the user to 'good levels' and not over do it.

Applications

Drums

As stated already, the 4040 Retro Limiter is a great device for peak limiting on indivdual tracks. Drums and other percussive instruments are a very common source of digital clipping in audi production, and a limiter like the 4040 Retro Limiter can do a great job of preventing such events from occuring.

Not Mastering

The 4040 Retro Limiter is likely better suited for individual instruments than for mastering applications. Vocals, drums, and other highly transient material can always benefit form a little bit of peak control, and here the 4040 Retro Limiter is a great tool.

The exceptionally low latency of the 4040 Retro Limiter allow it to be placed on a variety of mix elements without wasting dsp resources on delay compensation.

Yes Mastering!

Ok we lied. You can use the 4040 Retro Limiter on the master buss too. Note the 4040 Retro Limiter is a highly stylized algorithm that may not always suit two-track material - but to each their own!

4040 Retro Limiter Plug-In Reference Guide

4040 Retro Limiter Specifications

Parameter	Range	Function
LIMITER		
CEILING	-36 to 0 dB	Output signal level maximum
GAIN	0 to 36 dB	Input signal level boost

DSP Delay

The delay incurred by the 4040 Retro Limiter plug-in is 37 samples at a 48 kHz sample rate. It is approximately 0.775 msec. The 4040 Retro Limiter uses a small look ahead to minimize signal distortion while maximizing signal levels.

DSP Usage

HD and HD Accel DSP hardware

The TDM versions of the 4040 Retro Limiter Noise Filter plug-in configurations use a varying amount of DSP resources for each 4040 Retro Limiter Noise Filter configuration. The table below is a listing of these DSP usages. DSP usage is shown in the Pro Tools™ System Usage window.

Maximum Instantiation Counts at 48kHz

Configuration	4040 Retro Limiter Mono	4040 Retro Limiter Stereo
# INSTANTIATIONS PER DSP ON HD SYSTEMS	5	4
# INSTANTIATIONS PER DSP ON HD ACCEL SYSTEMS	10	8

Maximum Instantiation Counts at 96kHz

Configuration	4040 Retro Limiter Mono	4040 Retro Limiter Stereo
# INSTANTIATIONS PER DSP ON HD SYSTEMS	2	1
# INSTANTIATIONS PER DSP ON HD ACCEL SYSTEMS	4	3

All of the 4040 Retro Limiter Noise Filter plug-in configurations can operate on the same DSP, depending on the configuration's DSP requirements. See below for the percentages of a HD or HD Accel DSP used by a single instantiation of a 4040 Retro Limiter Noise Filter plug-in.

Percentage of DSP used by one instantiation at 48kHz

Configuration	4040 Retro Limiter Mono	4040 Retro Limiter Stereo
% OF DSP USED ON HD SYSTEMS	18%	23%
% OF DSP USED ON HD ACCEL SYSTEMS	9%	12%

Percentage of DSP used by one instantiation at 96kHz

Configuration	4040 Retro Limiter Mono	4040 Retro Limiter Stereo
% OF DSP USED ON HD SYSTEMS	44%	54%
% OF DSP USED ON HD ACCEL SYSTEMS	22%	27%

Using the data provided in the above chart, the 4040 Retro Limiter (stereo) and 4040 Retro Limiter (stereo) plug-in configurations can share the same DSP.

The 4040 Retro Limiter Noise Filter supports some higher sample rates (88.2 kHz and 96 kHz). For 88.2 kHz and 96 kHz operation the dsp usage is roughly doubled (2x).

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