CompressorBank

The Complete Compressor

User Manual

McDOWELL SIGNAL PROCESSING, LLC

McDSP CompressorBank Plug-in Manual

McDSP
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from the entire McDSP development team.

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Getting Started with CompressorBank

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 and Native plug-ins are compatible with Pro Tools™ HD, Pro Tools™ LE and Pro Tools™ M-Powered systems as well as Audio Unit compatible DAWs including Logic, Digital Performer (DP) and Ableton Live. Additionally, a third party software application that supports the TDM, RTAS, or AudioSuite plug-in standard may be supported.

McDSP plug-ins support Mac OS 10.5.x (Leopard), 10.6.x (Snow Leopard), Windows XP, Vista, and Windows 7. Supported versions of Pro Tools ™ include 7.4.x and 8.x or greater. Supported versions of Audio Unit compatible DAWs including Logic, Digital Performer (DP) and Ableton Live must be versions that support the Mac OS 10.5x (Leopard) or 10.6x (Snow Leopard).

McDSP plug-ins require an iLok USB Smart Key for authorization.

Supported Plug-in Formats

McDSP plug-ins are available in TDM, RTAS, AudioSuite, and Audio Unit (AU) formats.

Hardware

McDSP plug-ins support any Avid (Digidesign) or approved third party hardware supported in Pro Tools™ 7.4.x and 8.x or greater, including HD and HD Accel hardware and interfaces, 002, 003, the Mbox product line, and M-Audio interfaces. McDSP plug-ins also support approved hardware for DAWs supporting Audio Units (AU) including Apogee, MOTU, and RME.

All McDSP HD plug-ins, except Synthesizer One, also support the Avid (Digidesign) VENUE D-SHOW systems.

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 Avid (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).*

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

Installing the CompressorBank Plug-in

Installation on Mac OS X

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

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

Installing the CompressorBank 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 CompressorBank 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 CompressorBank plug-in folder on the CDROM - the installer application is contained therein.
- Run the CompressorBank plug-in Installer application to install (copy) the CompressorBank 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 CompressorBank 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.

Installation on Windows XP and Vista

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

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

Installing the CompressorBank Plug-in and presets with the Installer:

The CompressorBank plug-in package purchased at your local dealer will be on CDROM and contain a Windows self extracting executable (.exe) similar to the online CompressorBank plug-in package prepared for Internet delivery. Both the boxed and online versions of the CompressorBank 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 CompressorBank 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 CompressorBank 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 CompressorBank plug-in installer, you will be prompted by the CompressorBank 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 CompressorBank plug-in folder on the CDROM - the installer application is contained therein.
- Run the CompressorBank plug-in Installer application to install the CompressorBank 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 CompressorBank 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.

Installation on VENUE D-SHOW systems

The CompressorBank plug-in Package for VENUE D-SHOW systems includes presets for the CompressorBank plug-in and the CompressorBank plug-in. The CompressorBank 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 CompressorBank 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 CompressorBank plug-in and its presets on your system. The authorization of the CompressorBank 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 CompressorBank Plug-in and presets on VENUE with the 'HD Disk':

The boxed CompressorBank 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 CompressorBank 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 CompressorBank 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 CompressorBank plug-in available on the left hand side.
- Select the CompressorBank plug-in and select 'INSTALL.'

- If a previous version of the CompressorBank 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.*

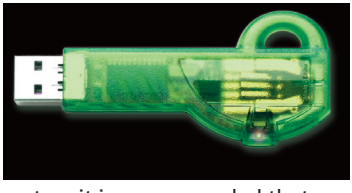
Creating a VENUE D-SHOW Installer CD-R from the online zip file:

If you do not have a boxed copy of CompressorBank 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 purchased, 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 the DAW host 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.

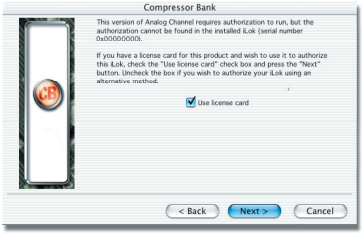
Note: Selecting the 'Quit' button at any time will not authorize the plug-in or allow it to be used for a trial period. If 'Quit' is selected, the plug-in will not be available in the DAW host insert menu.

- 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.

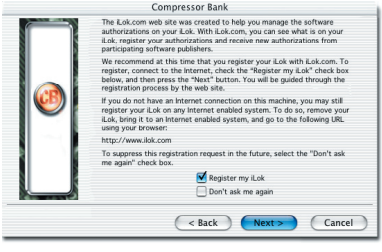
  Note: Although the Authorization Wizard may appear to allow authorization by challenge response, that method is currently NOT SUPPORTED McDSP plug-ins.



- 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. 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 DAW host 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 DAW host to complete authorization of your plug-in.

You will need:

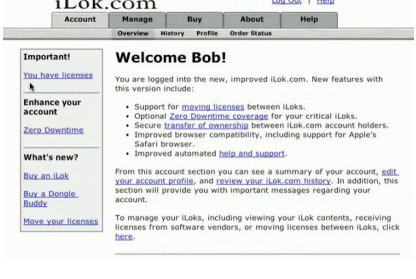
- A computer with an Internet connection. Either a Macintosh running OS 9.2 to OS 10.5 or a PC running Windows 98, ME, 2000, XP, or Vista
- An iLok USB Smart Key
- A valid iLok.com account. Visit www.iLok.com and set up a free account, if you have not already done so.

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, 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.

Pending licenses available for download:

Product	Company	Type	Deposited	Expiration
Analog Channel	McDSP	Demo	09/14/2004	03/14/2005
Chrome Tone	McDSP	License	09/14/2004	09/28/2004
Compressor Bank	McDSP	NFR	09/14/2004	09/14/2005
FilterBank	McDSP	License	09/14/2004	03/14/2005
MC2000	McDSP	Demo	09/14/2004	03/14/2005
Synthesizer One	McDSP	License	09/14/2004	09/28/2004

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.

Insert your iLoks and synchronize:

Before downloading licenses, you must insert one or more iLoks as needed and press the "Synchronize" button. Once your iLoks are synchronized with your account, you will be able to select the licenses to download and the target iLok to receive the licenses.

Note that the synchronization process may take some time. Please press the button only once, don't remove or insert your iLoks, and don't touch your browser until the process completes. A progress page should be displayed within a few seconds of pressing the button.

Synchronize

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

Step 1 - Select the pending licenses to download:

Product	Company	Type	Deposited	Expiration
Analog Channel	McDSP	Demo	09/14/2004	03/14/2005
Chrome Tone	McDSP	License	09/14/2004	09/28/2004
Compressor Bank	McDSP	NFR	09/14/2004	09/14/2005
FilterBank	McDSP	License	09/14/2004	03/14/2005
MC2000	McDSP	Demo	09/14/2004	03/14/2005
Synthesizer One	McDSP	License	09/14/2004	09/28/2004

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.

Step 2 - Select an iLok to receive the licenses:

Select which iLok should receive the licenses, then press the "Download Licenses" button.

Note that the download process may take some time. Please press the button only once, don't remove or insert your iLoks, and don't touch your browser until the process completes. A progress page should be displayed within a few seconds of pressing the button.

✓ Select an iLok
iLok1 (0x00011053)
Download Licenses

If the [illegible] not in the list above, insert the iLok now and click here.

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

iLok.com v2.0 Log Out | Help

Account | Manage | Buy | About | Help

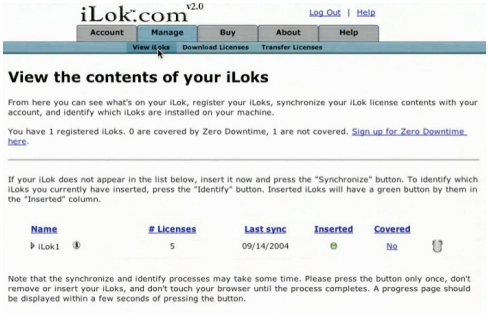
View iLoks | Download Licenses | Transfer Licenses

Download Licenses Complete

The selected licenses have been downloaded to "iLok1".

OK

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 log out and move the iLok Smart Key to your DAW host 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 your DAW host, and the McDSP plug-in and its presets are ready for use. Refer to your DAW User Manual for details on general plug-in operation.

Exiting a McDSP Plug-in

A McDSP plug-in is exited by closing the plug-in window, or de-instantiating the plug-in. Your DAW host sessions will save instantiated plug-in configurations and their settings. Refer to your DAW User Manual for details on general plug-in operation.

CompressorBank

Using the same design approach as our popular FilterBank plug-in, CompressorBank gives the user complete control of dynamic compression. Common controls such as Output (make-up gain), Threshold, Compression (Ratio), Attack, and Release are provided. Non-standard Knee and Bite controls allow the articulation of the compression characteristics. Multiple peak detection circuit types provide flexibility only previously achieved by owning different compression units. Side chain support, side chain or in-line pre-filtering, and a static/dynamic EQ section (post compression) round out the signal processing capabilities of an already very capable compressor.

Feature List:

- **Power and Flexibility:** CompressorBank is three plug-ins - the CB101, CB202, and CB303. CB101 provides compression and side chain processing, CB202 adds pre-filtering to the input or side chain signal, and CB303 adds both pre-filtering and static/dynamic EQ. See the Reference section for a complete listing of all CompressorBank configurations and their specifications.
- **Side Chain Support:** provided in all CompressorBank configurations. Side chain pre-filtering (high pass, low pass and band pass, and parametric) is also available. The pre-filter can also be placed in-line and applied to the compressed signal, and uses the same technology as in our FilterBank plug-in (including analog saturation modeling to prevent digital clipping).
- **Compression Curve Modeling:** In addition to the standard Threshold and Compression (Ratio) controls, the actual shape and response of the compression curve can be adjusted with the Knee and Bite (Bi-directional Intelligent Transient Enhancement) controls. Knee can soften the compression curve creating a smoother response, and/or add pumping/breathing compression effects. CompressorBank's unique and unprecedented Knee design allows the user to 'morph' between various compressor topologies such as the dbx 165, Neve 2254E/33609, and Teletronix LA2A*. Bite gives the compressor the ability to allow signal transients (rapidly changing signals – i.e. high frequency data) to pass uncompressed, while the overall compression response is unchanged. These controls allow the user to emulate responses of their favorite vintage gear.

- **Multiple Peak Detection Circuits:** Every compressor uses a model to detect and track signal peaks and then apply dynamic compression. Variations of basic models are available in CompressorBank: Type 1 - pure peak detection, Type 2 - pure peak detection combined with adaptive release times, and Auto - signal levels are automatically tracked.
- **Static/Dynamic EQ:** Using the same technology as in our FilterBank plug-in (including analog saturation modeling to prevent digital clipping), this parametric EQ section can be applied to the compressor output. The user can select a fixed amount of gain or a dynamic gain that tracks to the attack and release settings of the compressor. Possible effects include signal enhancement, noise reduction, and harmonic distortion.
- **Additional CompressorBank Features Include:**
  - Analog Saturation Modeling
  - Double Precision Processing
  - Ultra Low Latency

The Quick Start Tour: The CompressorBank Plug-in

Start the DAW host and instantiate the CompressorBank plug-in

- Launch your DAW host and open a session.
- Verify the Display-> Mix Window Shows->Inserts View option is checked.
- In one of the inserts of a stereo master fader, select the CompressorBank CB101 stereo configuration. Note CompressorBank will operate on master or regular audio tracks in mono and stereo versions.
- If the insert selection does not show CompressorBank plug-ins, verify that the CompressorBank plug-in has been installed correctly.
- For more information on starting your DAW host and working with plug-ins, see the Reference Guide provided by your prefered DAW.

CompressorBank CB101 Overview

The CompressorBank CB101 plug-in has the following features:

- Uniquely flexible compressor with Knee and Bite (Bi-directional Intelligent Transient Enhancement) controls
- Multiple Time-Constant (TC) circuit types
- Side chain input
- Side chain / input monitoring
- Metering of Input, Compression Gain, and Output

Compressor:

- Threshold
- Compression (Ratio)
- Knee
- BITE (Bi-directional Intelligent Transient Enhancement)

TC Circuit:

- Attack
- Release

TC Circuit Types:

- Type-1 - pure peak detection
- Type-2 - adaptive release
- Auto - automatic attack and release

Output:

- Output (make-up) gain
- Side chain (key) selector
- Input monitoring (listen)

Metering:

- Input
- Gain Reduction
- Output

CompressorBank CB202 Overview

The CompressorBank CB202 plug-in has the following features:

- All of the features of CB101
- Pre-Filter

Pre-Filter (CB202 & CB303)

- Pre-Filter In/Out
- Pre-Filter InLine
- Filter Type
- Frequency
- Q (bandwidth)
- Gain

CompressorBank CB303 Overview

The CompressorBank CB303 plug-in has the following features:

- All of the Features of CB101 & CB202
- Static/ Dynamic EQ

Static/Dynamic EQ: (CB303 only)

- EQ Mode (off, static, dynamic)
- Gain
- Q
- Frequency

Controls

Output

- **Output** - the amount of gain applied to the signal after the compressor algorithm. Commonly known as the 'make-up' gain.
- **Key** - monitor the selected key input (no compression will occur when this button is pressed)
- **Listen** - monitor the selected key input (no compression will occur when this button is pressed)

Compressor

- **Threshold** - the signal level at which the compressor begins to affect the signal
- **Comp (Ratio)** - the amount of signal level compression, as a ratio of input to output in decibels
- **Knee** - the compression response adjustment for making CompressorBank emulate different types of analog compressors
- **BITE** - the amount of transient (high frequency) signal that is less affected by the compressor

Time Constant Circuit

- **Attack** - the rate at which the compressor begins to response to signals whose levels are above the threshold
- **Release** - the rate at which the compressor begins to stop responding to signals once their level drops below the threshold
- **TC Circuit Types** - the different types of detection and tracking algorithms:
  - Type-1 - pure peak detection
  - Type-2 - adaptive release
  - Auto - automatic attack and release

Pre-Filter

- **Pre-Filter In/Out** - engages or bypasses the pre-filter.
- **Pre-Filter InLine** - places the pre-filter output in the direct signal path, so the pre-filtered signal is compressed and heard at the final output.
- **Filter Type** - High pass, Low pass, Band pass, and Parametric.
- **Frequency** - the frequency at which the EQ boost (or cut) or filtering is applied
- **Q** - the Q (1/bandwidth) of the parametric EQ or band pass filter, or the shape of the high or low pass filter(resonant or damped)
- **Gain** - the amount of boost or cut (for the parametric EQ only)

Static/Dynamic EQ

- **EQ Mode** - off, static, dynamic
- **Gain** - the amount of boost or cut
- **Q** - the Q (1/bandwidth) of the static or dynamic parametric EQ
- **Freq** - the frequency at which the EQ boost (or cut) is applied

Displays

Meters

CompressorBank has meters showing input levels, the amount of compression gain reduction, and output levels.

Peak LEDs are also provided with the input and output meters to indicate when signal clipping occurs.

General Information

To adjust any of the CompressorBank 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 CompressorBank plug-in including the Mackie HUI and Digidesign's ICON™, ProControl™ and Control 24.

Control Linking

There is no control linking capability in the CompressorBank at this time.

Automation

All CompressorBank controls are completely automatable. See your DAW User Manual for automating plug-ins section.

Presets: Using the Presets and Making Your Own

The CompressorBank presets are inspired by compressors such as the UREI 1176 LN, Teletronix LA2A, Neve 2254E/33609, Avalon Designs 2044, Empirical Labs EL8 Distressor, dbx 165, and Altec Lansing 9473A. A variety of other presets are named for their application ('vocal', 'drums', 'guitar').

Refer to your DAW User Manual for accessing and saving plug-in presets.

A Word on Preset Compatibility

Presets for the CB101, CB202, and CB303 configurations are interchangeable. For example, a preset created with a CB101 can be used in a CB202 and CB303 (mono and stereo). However, some of the controls in CB202 and CB303 are not available in CB101, just as some controls are not available in CB202 that are in CB303. If a preset has not affected any controls on the UI, it is because the controls that differed from the current ones on the CB configuration the user has switched to are not present in that CB configuration's UI.

For more information, see the section on Modeling Analog Compressors.

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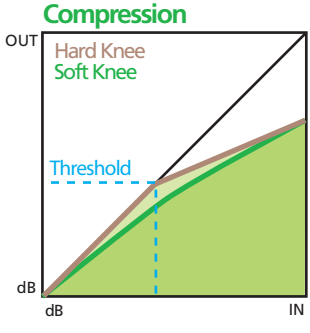
Using the CompressorBank Plug-in

The three plug-ins included with CompressorBank - the CB101, CB202, and CB303 - all have a variety of compression, EQ and filtering features described in the following sections.

Basics

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).

CompressorBank has additional controls like BITE (Bi-Directional Transient Enhancement), multiple time constant circuits, and a Knee control capable of emulating compression responses of many classic analog compressors.

A Closer Look

Output

All CompressorBank configurations come with an Output stage. When a signal is compressed, the maximum signal level is reduced. Compressors provide a 'make-up' gain to allow the signal level to be returned to its previous level (or other desirable level). The polarity, or phase, of the signal can be altered at this stage as well by enabling/disabling the 'Ø' LED.

The 'make-up' gain control is useful in amplifying low level signal levels, such as room ambience, while the compressor reduces signal peaks that would have otherwise been masking such sounds.

External Key Enable and Key Listen

The signal that drives the compressor is often called the 'compression key'. It is typically the input signal to the compressor that is processed and heard at the output. There are compressor applications where the input signal is compressed based on the changes in another separate signal, or side chain. An example of such an application would be dialog 'ducking', where the overall program - music, background sounds, etc. would be reduced in level when ever the speaker began talking/singing.

The External Key Enable control allows the user to select between the input ('internal key') or side chain input ('external key') as the compression key. When the External Key button is pressed, the external key is being used, else the internal key is being use.

The Key Listen control allows the user to monitor the input signal into the compressor, whether it is an internal or external key. This is useful in comparing the processed signal to the original. Note that if an external key is selected to drive the compressor, that signal will be heard at the compressor output should Key Listen be enabled. When the Key Listen butons is pressed, key listening is enabled.

Note that when Key Listen is enabled in CompressorBank configurations with a Pre-Filter section, the monitored signal is the output of the pre-filter.

Compressor

The compression section of CompressorBank is comprised of 4 controls - Threshold, Compression, Knee, and Bite (Bi-directional Intelligent Transient Enhancement).

- Threshold: the signal level above which the compressor is engaged. Audio below this level will not be compressed. Audio above this level will be compressed by the amount the signal is above the threshold level.
- Compression: the amount of compression, also known as the compression ratio. As audio exceeds the threshold level, it is compressed by an amount determined from this control. This is illustrated in the example below:
  Example:

Threshold =	-12 dB
Compression =	4.0 (4:1 compression ratio)
Signal Level =	0 dB

  The signal level is above the threshold by 12 dB. This amount is compressed at a ratio of 4:1, to 12 / 4 = 3 dB. The new compressed signal level is then -12 dB + 3 dB = -9 dB.

  When a stereo compression configuration is used, the maximum of the left and right input channels is used as the compressor input.

- Knee: the smoothing of the compression response immediately below and above the threshold level. The effect of the knee control is best understood by displaying the CompressorBank alternate expanded user interface.
  The Knee control has three ranges of values - undershoot range is -10 to 0, overshoot range for 0 to +10, and overshoot with compression 'tail'.
  The undershoot range creates a smoothed transition from unity gain (1:1 compression ratio) to the selected compression ratio. This effect emulates the trademarked 'over easy' compression curves of the dbx compressors. The overshoot range allows the compressor to 'miss', or 'overshoot' the desired compression ratio and ultimately recover to a linear compression curve. This effect creates pumping/breathing effects found in such compressors as the Neve 33609C. The overshoot and 'tail' range continues the overshoot response, and adds a compression 'tail'. This 'tail' reduces compression ratios for signals that greatly exceed the compression threshold. Such an effect gives compressed signals more 'presence' or 'top-end' as some strong signal transients are allowed to pass with less gain reduction from the compressor. Such characteristics are common in devices like the Teletronix LA2A and other 'opto-compressors'.

  It is important to note how these three variations of knee control transition smoothly from one to the other. New and unprecedented compression techniques are available only in CompressorBank. The user can choose different knee shapes, even changing compression paradigms (from a dbx 165 to a Neve 33609), in a single continuous control change.

- Bite: the Bi-directional Intelligent Transient Enhancement control gives the compressor…well…more 'bite'. As this control is increased, fast signal changes (transients) are allowed to pass through the compressor while the overall compression amount is the same. The transients of a compressed signal will become less compressed as more 'bite' is applied. This control is useful in emulating the response of analog compressors.

Attack and Release

Compressors use a circuit to track the signal changes over time as they exceed the threshold control level. Such circuits have time constants (attack and release) to articulate the response of the circuit to signal changes (hence the term 'time constant' circuit, or TC circuit). These circuits, in conjunction with the compressor controls, shape the overall sound of the compressor. CompressorBank is unique because it gives the user multiple variations on these circuits. The Time-Constant (TC) Circuit section of CompressorBank is comprised of 3 controls: Attack, Release, and TC Circuit Type.

- Attack: the rate at which the compressor responds to signals as they rise above the threshold. A fast attack can track, even sample-by-sample, the changes in the signal data. Note that such a fast setting can introduce unwanted 'gain cogging' (in analog or digital domains!) as the compressor response sounds erratic as it changes with every signal nuance.
- Release: the rate at which the compressor responds to signals as they fall back to and below the threshold level. A fast release can track, almost sample-by-sample, the changes in the signal data. Note that such a fast setting can introduce unwanted 'gain cogging' (in analog or digital domains!) as the compressor response sounds erratic as it changes with every signal nuance.
- TC Circuit Type: selects the TC circuit algorithm - Type-1: Pure Peak Detection, Type-2: Adaptive Release, and Auto: Automatic attack and release based on signal data. Note when the Auto TC circuit type is selected, the Attack and Release controls have no effect.

Time Constant Circuts

CompressorBank has two types of Time Constant (TC) circuit algorithms to emulate the TC circuit responses (and hence sound) of other compressors. There are two types of user controllable curves:

- Type-1: Pure Peak Detection - the release response is unaffected by new signals if those signal levels are below the current release level.

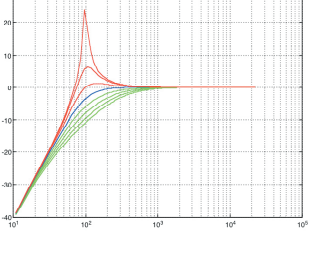
- Type-2: Adaptive Release - the release response is affected by new signal regardless of the signal level relative to the current release level.

Pre-Filter

The CompressorBank CB202 and CB303 configurations have an input pre-filter select the frequency range of the signal used to trigger the compressor. The pre-filter section is derived from the same technology in our FilterBank plug-in, including analog saturation modeling and 48-bit internal precision. Many high-end compressors make use of a fixed pre-filter section. CompressorBank gives the user total control over filter parameters:

- Pre-Filter In/Out: engages or bypasses the pre-filter.
- Pre-Filter InLine: places the pre-filter output in the direct signal path, so the pre-filtered signal is compressed and heard at the final output.
- Filter Type: selects the filter type used to pre-filter the input into the compressor. Available types are high pass, low pass, and band pass, as well as parametric.
- Frequency: controls the cut-off frequency of the pre-filter. For high and low pass filters, the signal level is -3 dB at the selected frequency. For the band pass filter, the signal level is 0 dB at the selected frequency.
- Q: controls the amount of overshoot/undershoot of the filter response in high and low pass filters, and the bandwidth of the band pass filter (Q = 1/bandwidth). For high and low pass filters, the 'critical' Q value at which no overshoot/undershoot occurs is 1.4, the default of the Q control. For 0.1 < Q < 1.4, the filter will overshoot. For 1.4 < Q < 5.0, the filter will undershoot.
- Gain: controls the amount of cut or boost when the parametric pre-filter type is selected. The Gain control range is +/- 12 dB. Note how the Q range when used with the parametric EQ is even greater than on our FilterBank plug-in!

The high pass filter to the right shows three different ranges of Q - overshoot (0.1 < Q < 1.4) is in red, undershoot (1.4 < Q < 5.0) in green, and critically damped (Q = 1.4) in blue. These same responses are attainable in the low pass filter of CompressorBank's pre-filter section as well. Effects such as resonant filtering, super bass, and a variety of cut/emphasis settings can be created.



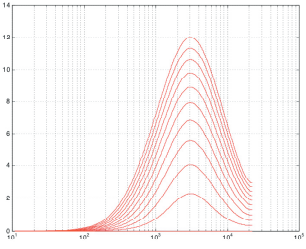
Note when monitoring the input signal to the compressor in CB202 and CB303 configurations, the passed signal is the output of the Pre-Filter. This is done so the user can listen to the signal feeding the compressor, which in the CB202 and CB303 configurations is the output of the pre-filter.

Static/Dynamic EQ

The CompressorBank CB303 configurations have a parametric EQ section for more control over the frequency response of the compressor. The parametric EQ section is derived from the same technology in our FilterBank plug-in, including analog saturation modeling and 48-bit internal precision. Additionally the gain of the CB303 parametric EQ can be fixed, or dynamically track to the amount of signal present in the compressor. This dynamic gain uses the same attack and release times as set in the compressor already, so the dynamic gain follows the amount of compression. The parametric section is placed at the output of the compressor (post-compression), and has gain, frequency, and Q controls.

- Gain: The gain control adjusts the amount of boost or cut applied to the signal.
- Freq: The frequency control adjusts the point in the frequency spectrum where the parametric band gain is applied. The signal amplitude at the frequency set by this control is equivalent to the amplitude set by the gain control.
- Q: The width of the parametric band, the bandwidth, is controlled by the Q control. Q = 1/bandwidth. Large values of Q correspond to narrow bandwidth, small values of Q correspond to wide bandwidth. CompressorBank Q ranges meets or exceeds most other parametric equalizer implementations (in fact we even exceed the upper Q range of FilterBank!). McDSP Q uses proprietary constant-Q technology to maintain an analog response through the entire frequency spectrum. Also note when the Q control is set to its lowest setting (0.1, i.e. 10 octave bandwidth), the equalizer response approaches that of a very smooth low or high shelf filter when the frequency control is set to extreme low and high frequency settings. This is a common characteristic in high-end parametric equalizers.

The applications of the dynamic EQ include de-essing, signal enhancement, and harmonic distortion. The figure on the right shows an example of the parametric EQ shape as it varies from flat to its full boost response. The next section of this manual, 'Modeling Analog Compressors with CompressorBank', illustrates some of these uses of dynamic equalization.



Modeling Analog Compressors with CompressorBank

CompressorBank models a wide variety of vintage and contemporary compressor implementations. This section highlights how CompressorBank is used to model some of these analog implementations. The user is additionally directed to various presets included in the CompressorBank plug-in package.

Each of the following sections contains graphs representing the responses of analog gear, as measured by the engineering staff at McDSP. Although the names of other compressor manufacturers are mentioned in this chapter, they are in no way affiliated with McDSP.

CompressorBank presets are inspired by compressors such as the Urei 1176 LN™, Teletronix LA2A™, dbx 165™, Neve 33609C™, Avalon Designs 2044™, Empirical Labs EL8 Distressor™, and Altec Lansing 9473A™.

To make and save your own presets, see the Reference Guide provided by your preferred DAW.

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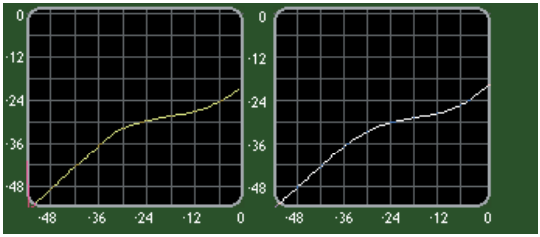
Teletronix LA2A™

Made first in Sunnyvale CA (not far from McDSP headquarters), this peak limiter has become one of the most sought after devices in music production. The LA2A, as well as other pure class A opto-compressors, are characterized by their soft knee and compression 'tail'. This gives the compression response more 'presence' in the mix as the amount of compression actually decreases when enough signal is driven into it to reach the 'tail'.

CompressorBank's Knee control range of +10 to +15 is designed specifically to emulate the LA2A and other contemporary opto-compressors. At a Knee of +10, the transition from 1:1 to X:1 compression is already very large. As the Knee control is increased to +15, the compression 'tail' is created.

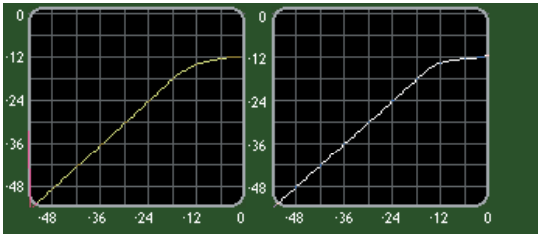


Teletronix LA2A (left) and CompressorBank (right)

The compression 'tail' is seen in Fig 4.4 between -12 dB and 0 dB. McDSP engineering also had the opportunity to evaluate an LA2A with the compressor/limiter switch modification, and the LA3A. These measurements, and the ones in the figure above were used to create the 'LA too, eh?' presets.

UREI 1176 LN™ (blackface)

The UREI 1176 LN (1176 for short) was one of the first classic compressors to offer user adjustable attack, release, and compression ratio controls. Alleged to be superior to later production models, the 'blackface' front panel version is the 1176 edition measured by McDSP engineering.



UREI 1176 LN blackface (left) and CompressorBank (right)

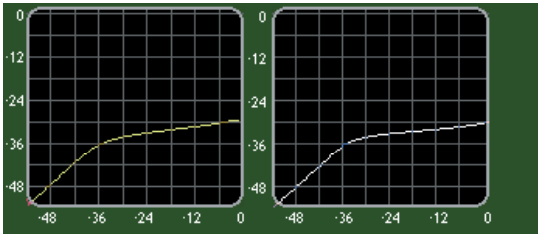
CompressorBank's Knee control range of 0 to +10 models the 1176 knee shape nicely. The possible compression ratios of 4, 8, 12, 20, and '44' have been measured and transformed into CompressorBank presets called 'blackface'.

The modeling of the 1176 also shows how the CompressorBank compression bands can be setup to have a compression ratio much greater than its apparent 10:1 maximum. By using the Knee control (0 to +10) and Compression control interactively, a flat compression curve can be created easily. These controls, combined with the fastest attack setting (0.03 msec, i.e. one sample) make for a great brick wall limiter.

Neve 2254E/33609™

Originally part of larger Neve consoles, the 2254E compressor/limiter was made into a two channel stand-alone unit called the 33609C. The 33609 unit was evaluated at McDSP. Measured compression and limiter curves showed how the 33609 has the potential to create classic pumping/breathing effects due to a subtle overshoot in the compression knee.

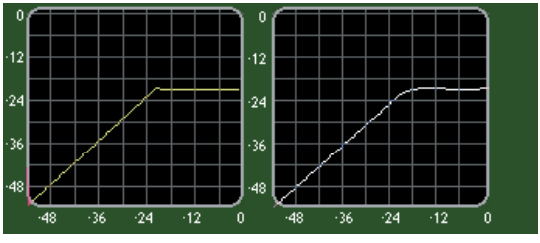
Using the Knee control (0 to +10 values), CompressorBank models this behavior very closely. In fact, this part of the CompressorBank knee curve was designed to specifically emulate the 33609 compression response.



Neve 33609 (left) and CompressorBank (right) at 6:1 compression

Note how the overshoot portion of CompressorBank's Knee control can create a knee size less than, equal to, or greater than the 33609. This is a good demonstration of the modeling accuracy and flexibility of the CompressorBank compression bands.

The 33609 limiter has a similar knee overshoot characteristic as its compressor. Use of the Knee control can setup the CompressorBank compression bands to function as a brick-wall limiter, as shown below in the emulation of the 33609.



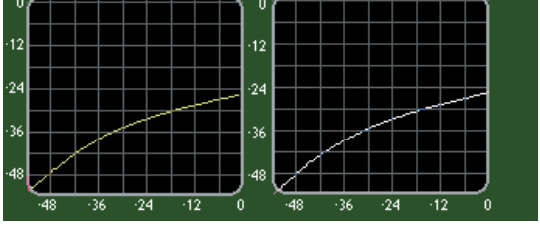
Neve 33609 Limiter (left) and CompressorBank (right) limiter emulation

Using CompressorBank's Knee control to create an overshoot realizes a compression curve with a nearly flat, or brick-wall response. The smooth transition (seen in Fig 4.2 between -24 dB and -18 dB) makes the limiting as transparent as possible. Again the flexibility of the CompressorBank compression bands provides another useful dynamic range control application.

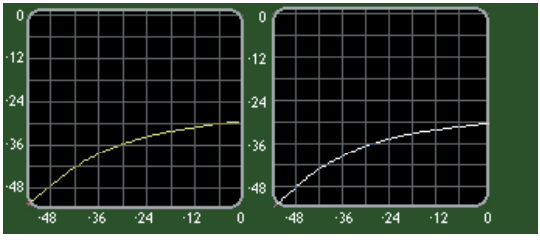
Presets in the CompressorBank plug-in package derived from these models are called 'British Comp' and 'British Limiter'.

dbx 165™

The dbx 165, like other dbx compressors, is known for its 'over easy' trademarked compression sound. Using CompressorBank's Knee control (-10 to 0) captures this characteristic very well.



dbx165 (left) and CompressorBank (right) at 4:1 compression



dbx165 (left) and CompressorBank (right) at 6:1 compression

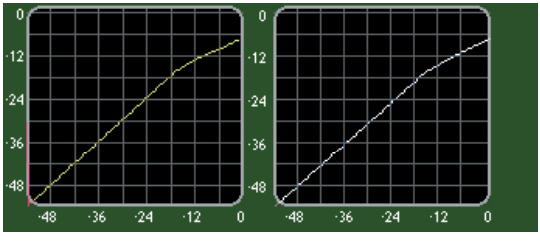
The transition from an un-compressed sound (1:1) to the selected compression ratio (4:1 and 6:1 above) is very gradual, to the point of obscuring the compressor threshold. Such a response allows the compressor to be transparent, even when applying a significant amount of compression.

Additional emulation of the dbx 165 is accomplished by using CompressorBank's Bite control. Instead of manipulating CompressorBank's Attack control, the Bite control was used instead to approximate the corresponding dbx 165 attack control. The Attack control can be set anywhere from 10 to 50 msec during such operation

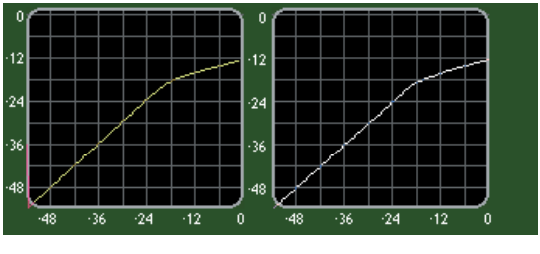
Presets in the CompressorBank plug-in package derived from these models are called 'Old Smoothie'.

Avalon Designs AD2044™

Avalon Designs specializes in contemporary implementations of high-end audio gear emulating the sounds of classics of earlier eras. The AD2044 is a Pure Class A Opto-Compressor. The AD2044 compressor is very smooth and nearly transparent with few characteristics imparted into the audio. The transition from 1:1 compression to X:1 compression is achieved by a medium knee and moderate attack and release settings.

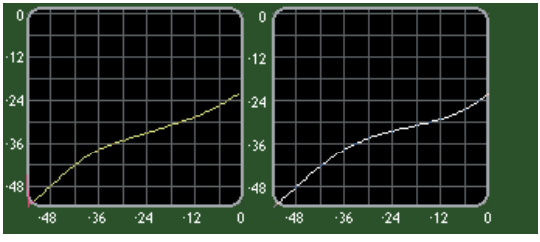


AD2044 (left) and CompressorBank (right) at 2:1 compression



AD2044 (left) and CompressorBank (right) at 5:1 compression

Lowering the threshold of the AD2044 reveals the same type of compressor 'tail' as found in the Teletronix LA2A.



AD2044 (left) and CompressorBank (right) w/ 'tail

CompressorBank plug-in presets derived from these models are titled 'Class A Opto xx'.

Other CompressorBank Presets

Several other presets have been included in your CompressorBank package. These settings were created to highlight the flexibility and utility of CompressorBank. Presets include effects such as signal enhancement, compression pumping, noise reduction, de-essing. Other application specific presets are given names such that their use is easily understood, such as 'vocal', 'dialog', 'drums', etc.

Applications

After reading all about the great features in CompressorBank and how they operate, isn't it about time we shared some tips about how to use it? Then read on oh user manual reader!

Vocals

Vocals generally present two common problems to the engineer - plosives and level control.

Plosives - sounds generated from consonants like 'p', 'k', 't', and 'm' to name a few - cause a great deal of signal level change in a dialog or vocal track. Using a high pass filter, like the one in CB202 or CB303, can filter out much of a plosive event. Put the pre-filter into high pass filter mode, place it in-line, use a frequency of about 100 Hz, and the default Q value - these settings will do a good job of reducing the abrupt level changes produced by plosives.

Level control is another matter all together. Often the dialog or vocal varies in level by too great an amount for it to 'sit' with the rest of the audio content of the production. Fortunately CompressorBank is able to respond in natural ways to dialog and vocal signals, so the compression 'effect' is not too much of, well, an 'effect'. Select a compression ratio between 2:1 and 3:, the Type 2 TC circuit mode, an attack time of about 2-4 msec, and a release time between 200 and 400 msec for a moderate compression. Keep the Knee and BITE controls at their default values. Reduce the threshold until you see about 6 to 9 dB of gain reduction in the orange meter between the input and output meters. Adjust the makeup gain to get a desired overall level that is appropriate for the production.

Drums

CompressorBank is great for getting the super compressed drum sound, or a more subtle effect.

Using a ratio between 6:1 and 8:1, select an attack time of 0.2 msec, a release time of 100 msec, the Type 2 TC circuit, and default values for Knee and BITE, reduce the threshold until about 15 to 18 dB of gain reduction is shown in the orange meter. Increasing the attack can bring the overall level of the drum kit up. Conversely, you can increase the BITE control from its default 'off' value to about 4.0 to 8.0 for a great 'thwack' sound. If the compression is too strong, reduce the attack to about 0.5 msec to 1 msec, and reduce the ratio to between 4:1 to 6:1.

Bass

Sometimes the luxury of digital gets us into trouble. Have you ever noticed your digital compressor puts some buzzing artifacts into your tracks? Well, back off the fast attack and release times dang it! But even when modest attack and release times are selected (attack greater than 5 msec, release greater than 250 msec), the buzzing can persist in bass heavy tracks like bass guitar.

Enter the pre-filter section again. Choose the low pass filter mode, a default Q of 0.7, and a frequency between 200 and 800 Hz. Now listen to that playback again. By filtering out the high frequencies from the key signal, the compressor is no longer tracking those signals, and hence no longer produces buzzing at the output.

Broaden this approach to program material. On a two track mix, try the same low pass filter prefilter setup, but choose a frequency between 2 and 8 kHz. Note the compressor response becomes smoother (even with the same attack and release times). A nice way to round out your mix.

Keys, Etc.

Many virtual instruments and even 'ancient' synths from the 1980's have somewhat pre-compressed sounds, making the need for a compressor less, than say, for a wild electric piano solo or two-fisted piano performance.

For those lucky engineers who work with two-fisted piano gorillas, modest, if not gentle compression is a good approach to maintaining desired signal levels. Try a BITE control value of 3.0 to 6.0 to let some transients through the compressor. A gentle ratio of 2:1 is a good idea, along with an attack of 1.0 to 5 msec, and a release between 200 and 500 msec. Lower the threshold until 3 to 6 dB of compression is occurring at the loudest sections of the track. At quiet parts, not compressing at all is fine. Try a Knee control value of -10.0 for a soft knee comp effect.

CompressorBank Plug-in Reference Guide

CompressorBank CB101, CB202 & CB303 Specifications

Parameter	Range	Function
OUTPUT	0 to +48 dB	Amount of make-up gain applied to master signal.
KEY	ENGAGED/ DISENGAGED	Selects the side chain signal to cause the Compressor to begin reducing signal dynamics range once it exceeds the selected threshold.
INPUT OR OUTPUT METERS	-60 to 0 dB	Output level of band. Meters below COMPRESSION GAIN METER, displayed in green and reading from left to right. Red LED's are lit to indicate output has clipped. Click LED to clear. Selected in the Master Section "METERS"
Compressor		
IN	ON/OFF	Compressor enable/disable. Red LED is lit when band is enabled.
THRESHOLD	-48 to 0 dB	Level at which the compression starts. Also indicated by orange triangle on OUTPUT METER.
COMPRESSION	10:1 to 1:1	Ratio of input to output levels for compressor. As input exceeds the THRESHOLD, it is compressed by an amount determined by this control.
KNEE	-10.0 to 15.0	The smoothing of the compression response immediately below and above the threshold level. -10 to 0 = undershoot 0 = hard knee 0 to 10 = overshoot 10 to 15 = overshoot with compressor 'tail'
BITE	1.0 to 50.0	Bi-Directional Intelligent Transient Enhancement. As this control is increased, fast signal changes (transients) are allowed to pass through the compressor while the overall compression remains the same.
ATTACK	0.25 to 25.0 msec	The rate at which the compressor responds to signals as they rise above the THRESHOLD.
RELEASE	25.0 to 2500.0 msec	The rate at which the compressor stops responding to signals as they fall below the THRESHOLD.
AUTO	ON/OFF	Automatic ATTACK and RELEASE. When AUTO mode is enabled, the ATTACK and RELEASE controls are disabled.
TYPE	Type-1, Type-2	Time Constant Circuit Type. Type-1 indicates the standard pure peak detection and Type-2 indicates a more advanced adaptive release based on multiple signal peaks.

Parameter	Range	Function
Pre-Filter (CB202 & CB303 only)		
PRE-FILTER IN/ OUT	-60 to 0 dB	Engages or bypasses the pre-filter.
INLINE	l overshoot. For 1.4 < Q < 5.0, the filter will undershoot	Places the pre-filter output in the direct signal path, so the pre-filtered signal is compressed and heard at the final output.
FILTER TYPE	High Pass Low Pass Band Pass Parametric	
FREQUENCY	20Hz to 20kHz	The center frequency of the filter.
Q	0.1 to 5.0	The width of the parametric EQ bell, 1 = One full Octave.
GAIN	-12 to + 12 dB	The amount of boost or cut in dB for each EQ band.
Static/Dynamic EQ: (CB303 only)		
FREQUENCY	20Hz to 20kHz	The center frequency of the EQ.
Q	0.1 to 5.0	The width of the parametric EQ bell, 1 = One full Octave.
GAIN	-12 to + 12 dB	The amount of boost or cut in dB for each EQ band.

DSP Delay

The delay incurred by any of the CompressorBank plug-in configurations is 3 (THREE) samples on HD systems. This is the absolute minimum number of delay samples a TDM plug-in can have. The McDSP plug-ins are designed in this manner to provide the user with the closest analog mixing console experience possible (analog inserts such as EQ and compression do not cause a processing delay when inserted into a track).

DSP Usage

Pro Tools™ HD and HD Accel DSP hardware

The TDM versions of the CompressorBank plug-in configurations use a varying amount of DSP resources for each CompressorBank configuration. The table below is a listing of these DSP usages. The DSP Allocator utility provided by Avid™ (Digidesign) may be used to display DSP resource allocation when Pro Tools™ is running.

Maximum Instantiation Counts at 48kHz

CONFIGURATION	# INSTANTIATIONS PER DSP ON HD SYSTEMS	# INSTANTIATIONS PER DSP ON HD ACCEL SYSTEMS
CB101 (MONO)	18	30
CB101 (STEREO)	14	24
CB202 (mono)	15	26
CB202 (stereo)	9	16
CB303 (mono)	10	18
CB303 (stereo)	5	10

Many of the CompressorBank 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 CompressorBank plug-in.

CompressorBank supports all higher sample rates (96 kHz and 192 kHz). However due to the DSP usage of some of the larger CompressorBank configurations, not all configurations are available at the higher sample rates. For 96 kHz operation the DSP usage is doubled (x 2), and for 192 kHz operation, the DSP usage is quadrupled (x 4).

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