

DRAWMER™

USER'S GUIDE



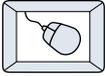
ADX 100™

*Frequency Conscious Gating, Compression,
Limiting, and Expansion*

Plug-in for Mackie Digital Mixers

MACKIE®
Digital Systems™

Iconography



This icon identifies a description of how to perform an action with the mouse.



This icon identifies a description of how to perform an action from the console.



This icon will lead you to some further explanations of features and practical tips.



This icon marks information which is very important, so please make sure you have a read.

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Note: Any future revisions of this guide will be available for viewing and downloading from our website: www.mackie.com.

Introduction

Thank you for purchasing the Drawmer ADX-100 plug-in. It is one of the exciting new family of 24-bit plug-ins for the D8B, specifically designed for the new Mackie Universal Effects (UFX) card.

The ADX-100 plug-in utilizes 24-bit digital processing power to create a multitude of classic Drawmer dynamic effects for the D8B, the first mixing console in the world to incorporate Drawmer dynamics.

About Drawmer Advanced Dynamics

The name Drawmer is synonymous with professional signal processing in recording studio, broadcast, and live sound reinforcement environments. The company, which is based in Yorkshire, England was founded by Ivor Drawmer in 1981. With twenty years of experience designing dynamics processors, Ivor Drawmer's products are world renowned among mastering engineers and anyone with an appetite for high-quality noise gates and compressors.

About the D8B UFX Card

The UFX card provides robust processing power for computation-heavy plug-ins. The UFX card is a 4-in/4-out architecture, which means it can support four mono, two mono and one stereo, or two stereo sends simultaneously. Up to four UFX cards can be installed in the D8B, allowing up to sixteen simultaneous single-channel effects, eight stereo plug-ins, or combinations thereof.



Note: It is recommended that you increase the D8B's memory if you install more than one UFX card. Memory upgrade instructions are supplied with each card.

About the Drawmer ADX-100 Plug-in

The ADX-100 includes Drawmer's industry-standard frequency conscious gating, expander, and compressor/limiter. Use the plug-in during tracking and it may very likely be the only effect you will use regularly between the microphone and the recording medium. This advanced dynamics processor will particularly appeal to engineers recording highly dynamic instruments such as a real drum kit. The ADX-100 is a stereo in/stereo out plug-in. Gate triggering can utilize either mono or stereo outputs. The ADX-100 can be easily inserted before the D8B's master outs for stereo program mastering.

The ADX-100 plug-in will make the D8B an even more powerful modern music production tool.



Let's Get Started

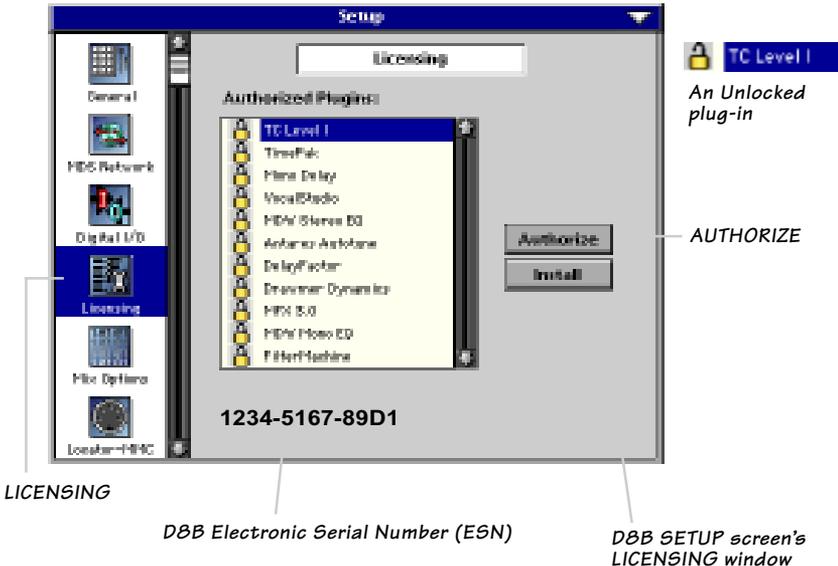
Requirements

- One or more Mackie UFX cards
- Mackie Real Time OS 3.0 Software
- Plug-in Software

We will assume you have successfully installed a Mackie UFX card and Mackie Real Time OS 3.0 software upgrade. If you have encountered problems with the installation of hardware or software please see their associated user guides or contact Mackie support (www.mackie.com).

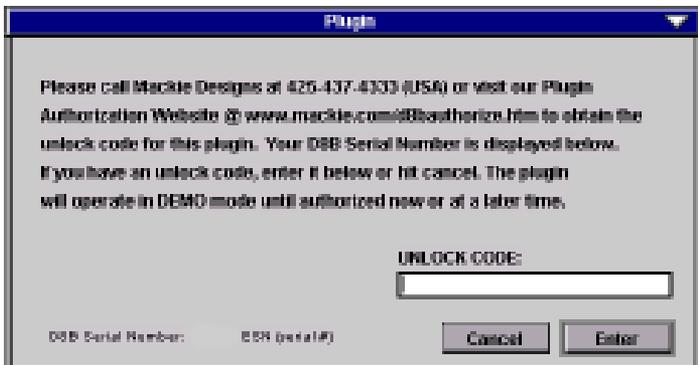
Authorizing the Plug-in

If you have D8B v 3.0 b206 or greater, the plug-in is already installed on the D8B hard drive, however an authorized unlock code must be entered to unlock the plug-in for normal operation.



Unlock Procedure

1. Locate your D8B's Electronic Serial Number (ESN). This is displayed at the bottom of the Licensing window which is accessed from the Setup screen. The 12-digit ESN is made from numbers 0–9 and letters A–F. It is unique to the D8B processor, and is not the serial number label on the rear of the control surface or CPU chassis.
2. You will also need your plug-in's serial number which is printed on the floppy disk label.
3. To obtain the unlock code, have the ESN and plug-in serial number ready. Then you have two options:
 - Log on to the Mackie plug-in authorization web page: (<http://www.mackie.com/d8bauthorize.htm>)
 - or
 - Telephone Mackie Tech Support at 800-258-6883.
4. When you have obtained an unlock code, open the D8B Setup window, and click **Licensing**.
5. With your plug-in highlighted in the Licensing window, click **Authorize**, and enter your unlock code in the UNLOCK CODE box. Click **Enter**, and enjoy your newly expanded console.



Configuring the Plug-in

After booting the D8B, you must assign the plug-in to a UFX card. See “FX Routing” on page 26 for more details.

Assign the Plug-in to a UFX card



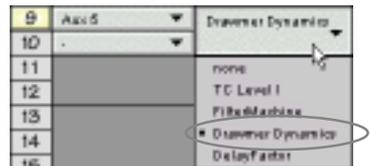
1. Click the Plugins menu and select **Plugins**, (or `Ctrl+P` on the keyboard).



2. In the Plugin Configuration window, locate the card slot that contains the UFX card you wish to assign to.
3. In the MODE column, click the Mono/Stereo toggle button and set it to **STEREO**.

SLOT	INPUT	PLUGIN	MODE
1	Aux 1	MFX 2.0	
2	-		
3			
4			
5	Aux 2	MFX 2.0	
6	-		MON
7			
8			
9	Aux 5	Drawmer Dynamics	STEREO
10	-		
11		none	MON
12		none	
13		none	STEREO
14		none	
15		none	MON
16		none	

4. In the PLUGIN column, select **Drawmer Dynamics** from the drop-down menu.



Note: A plug-in can also be loaded from the Setup section on the console.

Assign an Input Source to the plug-in



- Click the plug-in's INPUT menu button to select an input source. In the example below, we have chosen the **Aux 5** Bus as the input to the plug-in installed in slot 5.

When a plug-in is fed from an aux bus, its output appears on the FX Return channels (faders in the EFFECTS bank). The return channel is determined by the slot number and whether the effect output is mono or stereo. For example, a reverb with a mono input and stereo output that is installed in Slot 5 has its outputs on FX 5 and FX 6.

Note: The default state for all FX channels is MUTE. You won't hear the effect until you unmute its FX return channel(s).



A plug-in can also receive its input from a channel pre- or post-DSP insert or the main stereo left and right Bus insert. When a plug-in is inserted “in line” in this manner, its output is routed directly back into the channel. See “FX Routing” on page 26 for more details, especially in regards to stereo routing.

Removing the Plug-in



- Select **none** from the associated Plugin drop-down assignment menu.
- Click **OK** in the Alert dialog box.



Note: A plug-in can also be deleted from the Setup section on the console.

Using the ADX-100 plug-in

Front Panel Overview

The ADX-100 has four main sections:

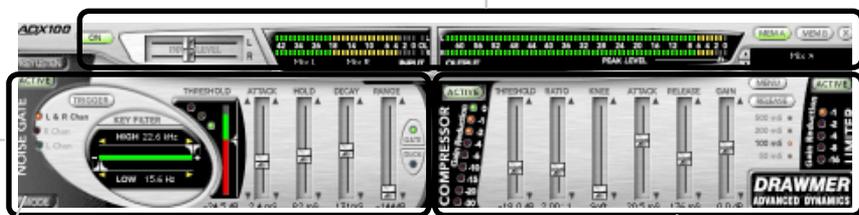
Global Controls (see page 11)

Noise Gate (see page 13)

Expander (see page 17)

Compressor/Limiter (see page 19)

Global Controls



Toggle Display

Noise Gate

Compressor/
Limiter

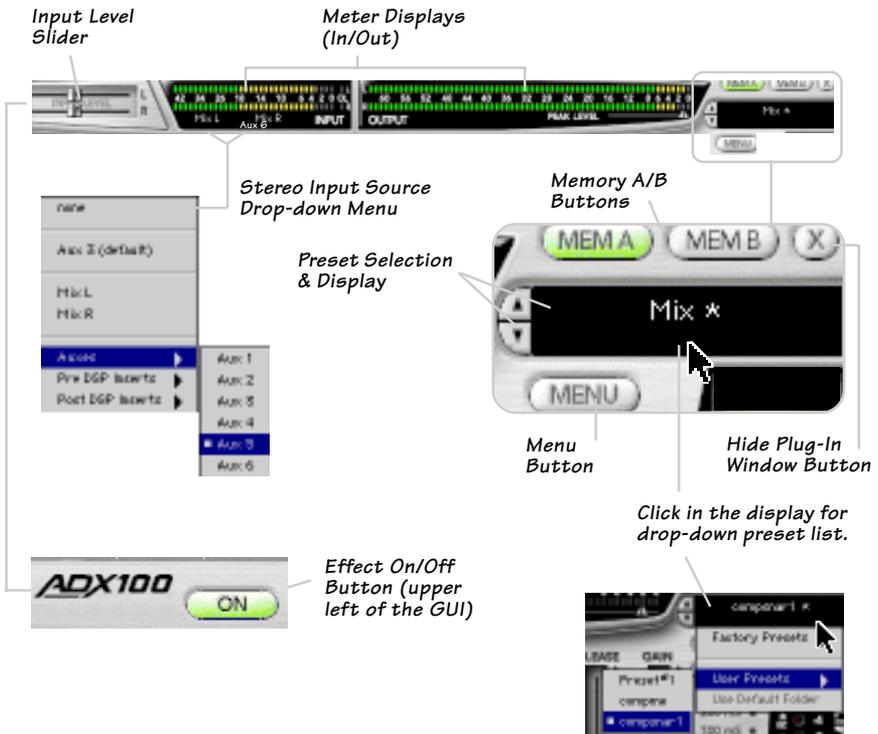


Expander

Global Controls

These controls at the top of the GUI include:

- Input level sliders
- Input/output meters
- Left and right (stereo) input source drop-down menu
- Memory A and B select buttons
- Preset select/display
- Menu button



Note: The Input Source can be set from either the plug-in GUI or the Patch Configuration Window.

Input Level Sliders

The input level sliders range from -13.75 dB to $+18$ dB.

Input Select

Assign the ADX-100's stereo inputs and outputs from any of the DB8's pre or post inserts, or auxiliary send buses.

Menu Button

The pull-down menu button enables familiar D8B functions such as undo, redo, load, save, reset, cut, copy, and paste.



Input and Output Meters

The Input Meters show the signal level after the input level controls, so the OL indicator always warns of an actual overload. The OL indicator remains on for 1 second following an input overload. The Output Meters show the **ADX-100's** output levels. The level is controlled by the setting of the gain slider in the compressor section.

Minimize Button

The small 'x' button at the top right will hide the plug-in window, while the plug-in still remains loaded and active.

Preset Selection and Display

Toggle the up/down arrows to select from your own saved user presets. You can also click directly in the display for the preset drop-down list.

On/Off Button

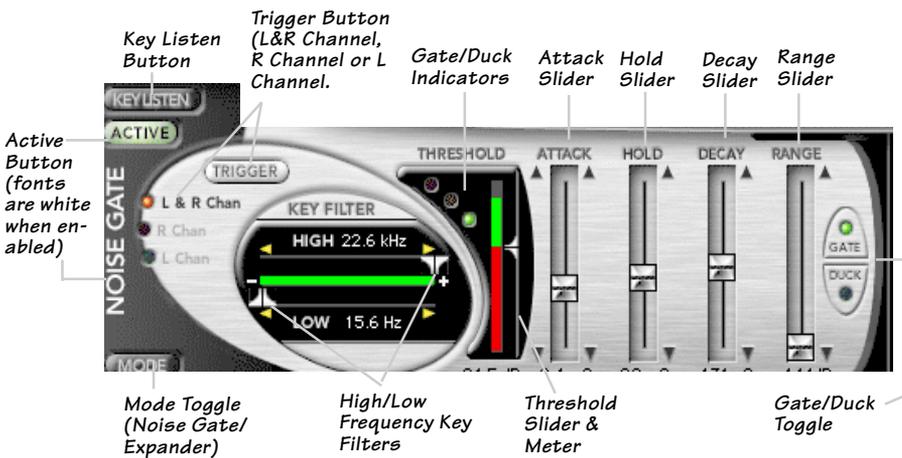
Globally enables or disables the ADX-100. Signals pass through the disabled ADX-100 dry and at unity gain.

Memory A/B

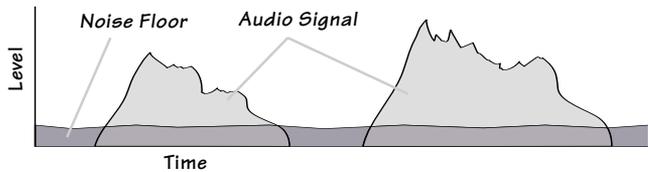
Memory A and Memory B are two separate storage banks that let you temporarily store variations of settings. This is handy for quickly referencing and comparing sounds while you are creating edits.

Noise Gate

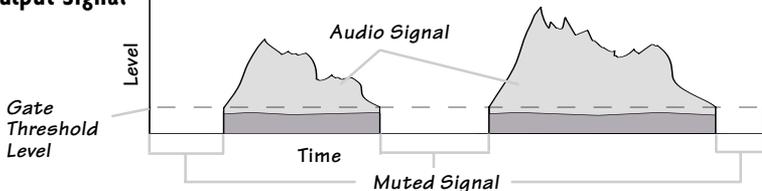
The ADX-100 Noise Gate with variable threshold level is extremely effective in reducing background hiss and noise during portions of a program with no signal. The ADX-100 also has unique High-Pass/Low-Pass key filters, comprehensive envelope control, and ultra-fast attack time. The gate works by muting the corresponding channel when no signal is present, or when the signal level falls below the gate threshold detection level. Normally the gate level will be set below the lowest program level so that it will pass all program material.



Input Signal



Output Signal



Trigger Button

This toggles the trigger source between left and right channels, right channel only, and left channel only.



Use Right or Left Channel as external key source input. An external audio source may be used to

control the gate action making it possible to gate one sound according to the dynamics of another independent signal.



Key Listen (Noise Gate/Expander)

When this switch is set to Key Listen, the effect of the key filters on the program material is heard at the output. In normal operation (Key Listen Off), the filters only affect the way the Noise Gate responds to the incoming program material—they do not have a direct effect on the output signal e.g. try getting a long sustained 'strings' sound with a highhat signal...

Active Button

The Active button enables the Noise Gate. The Active button (when off) routes the input signal past the noise gate module without processing.

Key Filter (Noise Gate/Expander)

The Low-Frequency filter is variable from 15.6Hz to 22.6kHz and works by severely attenuating frequencies below the cut-off frequency selected.

The High-Frequency filter is variable from 15.6Hz to 22.6kHz. This filter attenuates the frequencies above the selected cut-off value. When both filters are set, the range between the two settings is allowed to pass as through a band-pass filter.



Note: Any side-chain filtering which implements high-frequency attenuation will also cause a slight delay in the time the gate takes to trigger. Under most circumstances this will be quite imperceptible, but when transient sounds are being processed with the high-frequency control set to a very low value, some degradation of the attack transient may become apparent. For this reason, always set the high-frequency control to the highest possible value practicable when processing percussive sounds.

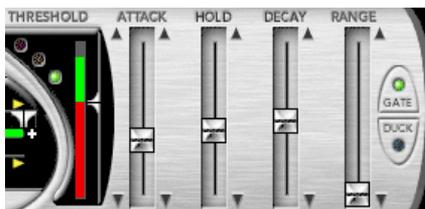
Gate/Duck Indicators

These three LEDs indicate the action of the Gate and Duck processors. When Gate is selected, the green LED is lit when the Gate is open. When the signal falls 3 dB below the Threshold, the green LED turns off and the yellow LED turns on. When the signal level falls 40 dB below the Threshold, the yellow LED turns off and the red LED turns on, indicating the signal is fully gated.

When Duck is selected, the red and green LEDs work in reverse. When the signal is above the Threshold, the red LED is on. When the signal falls 3 dB below the Threshold, the red LED turns off and the yellow LED turns on. When the signal level falls 40 dB below the Threshold, the green LED turns on, indicating the signal is unaffected by the Ducker.

Threshold

This sets the level below which gating starts to take place and may be set in the range -63.5 dB to 0 dB. For normal noise removal applications, it is normal to set the Threshold as low as possible without spurious triggering occurring, so that none of the desired signal is lost.



Attack

This control determines how quickly the gate opens, and is variable from 20 μ s to 1.1 seconds. The fastest Attack time ensures that the gate does not clip the leading edge of extremely fast transients. **Tip:** Sometimes when gating loud low-frequency signals, a small pop is heard when the gate opens. This can be remedied by setting the Attack to 0.5 or 0.6 ms.

Hold

This determines the amount of time the gate is held open after the signal falls below the Threshold. It is variable from 5.0 ms to 4.74 seconds. This helps to prevent spurious re-triggering when using fast attack times, but is also instrumental in creating the classic gated reverb sound often applied to drums.

Decay

Determines the rate at which the gate closes, once the signal has fallen below the Threshold and the Hold time has expired. Variable from 5 ms to 5.032 seconds.

Range

This sets the amount of attenuation applied to the input signal when the gate is closed, variable from 0 dB to -144 dB. This enables the gate to be used to remove unwanted signals entirely, or simply to attenuate unwanted signals which are too loud.

Tip: When first attempting a gating implementation, the most typically used parameters are threshold and range, which offer the most interplay.

Gate/Duck

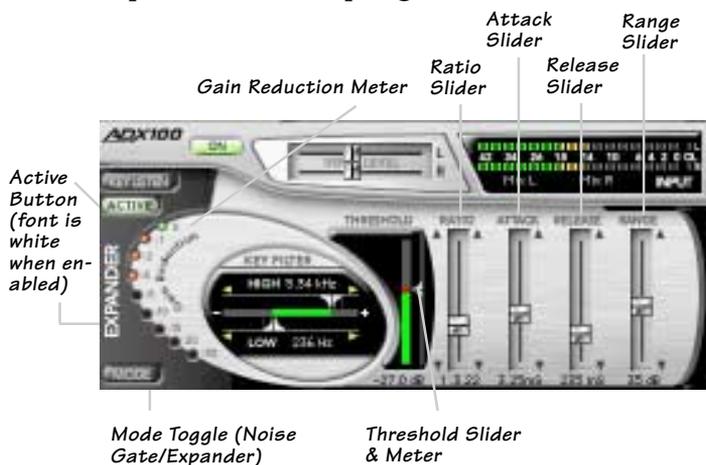
Switches from normal Gating to Ducking. Probably the most common form of Ducking is that used by radio announcers, whereby the volume of the music being played is dropped, enabling them to speak over it. Ducking a stereo track with a mono voiceover will require two ADK-100 modules (one per track), with both L/R triggered by the voiceover audio channel.

Mode Button

Switches between Noise Gate and Expander displays.

Expander

One of the problems in using compression is that maximum system gain occurs during extremely quiet passages or during pauses, resulting in an increase in background noise, the degree of which depends on the amount of compression being used. The accepted way of dealing with this problem is to include a separate expander section in the compressor. This expander section has its own threshold control so that a low-level gating action may be applied to keep pauses clean. But the problem with simple expanders is that, even when properly set up, they may unwittingly process low-level sounds, as they have no means of identifying them from noise. On a vocal track, for example, this can lead to the starts or endings of words being accidentally removed, especially if the singer has a wide dynamic range. The ADX-100 Expander has separate attack and release parameters to help negate this unwanted effect.



Active Button

The Active button enables the Expander. The Active button (when off) routes the input signal to the output with no processing.

Threshold

This control sets the level below which expansion starts to take place and may be set in the range -63.5 dB to 0.0 dB.



Ratio

When expansion takes place, the Ratio determines the amount of expansion to be used. The ratio slider sets the expansion ratio from 1:1 to 1:123

Range

Sets the amount of attenuation applied to the input signal when the expander is triggered, variable from 0 dB to -63 dB. This can be used to prevent excessive expander activity and improve transparency.

Attack

The Attack time sets the rate at which the expander will respond to input signals that exceed the threshold level. This may be set in the range 0.10 ms to 100 ms.

Release

Release time is variable and may be set from 20 ms to 997 ms. Percussive material with little or no reverb is generally treated using a faster release setting, whereas material with slow decays or a significant amount of added reverberation will usually respond better to a longer release setting.

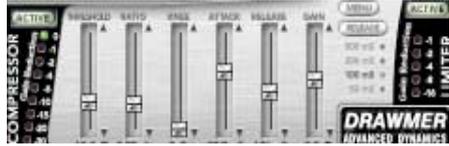
Mode Button

Switches between Noise Gate and Expander displays.

Compressor/Limiter

Compressor

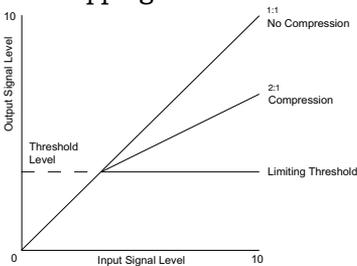
A compressor is traditionally used to fit a large signal into a small space, especially in a situation where the dynamic range of the original audio signal is larger than the electronic reproduction equipment will accept (broadcast engineers appreciate this very much). Compression might also be thought of as being one of the most important tools used in both recording and mixing.



Automatic gain makeup is active at all times. This adjusts the compressor output level to compensate for the amount of gain reduction. This reduces the need to readjust the compressor gain after changing ratio, threshold, or knee settings.

Limiter

Limiting is basically extreme compression. The limiter is set to affect only signals above a certain level. This is particularly useful for limiting peaks that would otherwise send the signal beyond the capacity of the equipment being used. Limiting has become very popular when using a digital recorder because peaking a digital signal sounds like a car wreck. When used in this fashion, thresholds are set at around -2 db to prevent the signal from clipping.

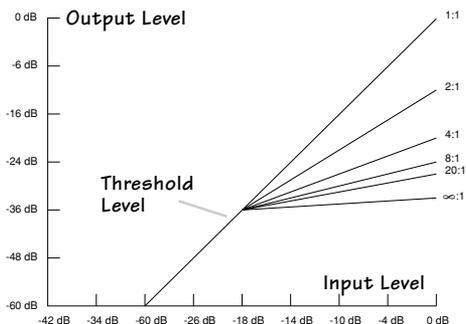


Active Button

The compressor and limiter have their own Active buttons. The compressor Active button (when off) routes the input signal directly to the limiter, with no processing or gain.

Threshold

This control sets the level above which compression starts to take place and may be set in the range -63.5 dB to 0.0 dB.



Ratio

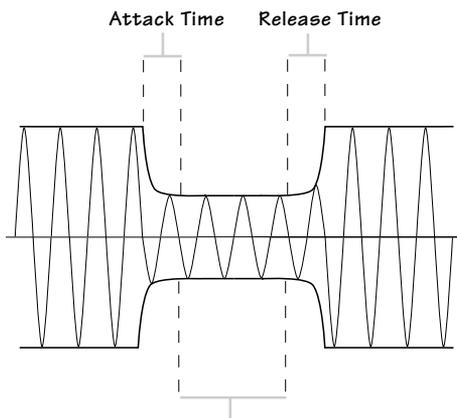
When compression takes place, the Ratio determines the amount of compression to be used. The ratio slider sets the compression ratio from 1:1 to 20.3:1.

Knee

The Knee parameter is variable between Hard and Soft Knee operation. In general, the Soft Knee mode provides the least obtrusive gain control and is often the preferred setting when treating finished mixes.

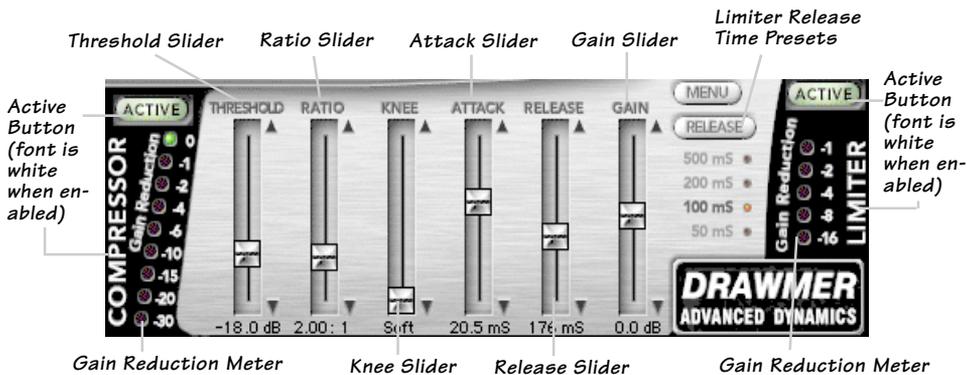
Attack

The Attack time sets the rate at which the compressor will respond to input signals that exceed the threshold level. This may be set in the range 0 to 100 ms.



Release

Sets the rate at which the system gain returns to normal after the input signal level has fallen below the threshold. Release time is variable and may be set from 33 ms to 3.66 s.



Gain

When compressing, the input signal is attenuated as a normal consequence of the gain reduction action of the compressor responding to the signal dynamics. As a result, gain is usually added to the compressor output to bring the signal level back up to program level. The ADX100 uses automatic gain makeup, which is applied in response to Threshold, Ratio, and Knee settings. If input signals are at -6 dB, then the output volume stays the same as the ratio is increased. Input signals that fall below -6 dB will increase in volume when the ratio is increased. It should only be necessary to make fine adjustments to control gain activity. The Gain control has a range from $+15.7$ dB to -16 dB.

Limiter Release

This button toggles between preset release times for the Limiter. Release presets are 500, 200, 100 and 50 ms.

Peak Level

This small slider sets the level at which the Limiter will engage corresponding with the output meter directly above. Peak Level is adjustable from -0.0 dBFS to -15.88 dBFS.



Gain Reduction Meter

The compressor and limiter each have a Gain Reduction Meter, which indicates the amount of attenuation applied by the compressor and limiter. The higher the signal is above the threshold, the greater the gain reduction.

Saving, Loading and Resetting a Preset

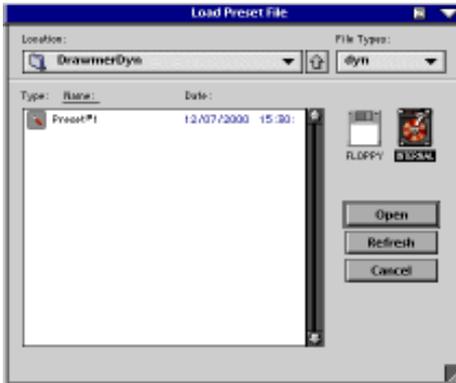
ADX-100 settings can be saved and recalled from the hard drive. You can save and load files from either Memory A or Memory B.



To Save a Preset:



1. Click and hold on the **MENU** button.
2. Select **Save User Preset** to overwrite the file currently opened.
3. Select **Save User Preset As** to save to a new file name. The Save Preset File As dialog box appears.
4. A default name for the preset is automatically displayed, such as Preset#1. If you want to rename it, simply type in the name you want, using up to 32 characters.



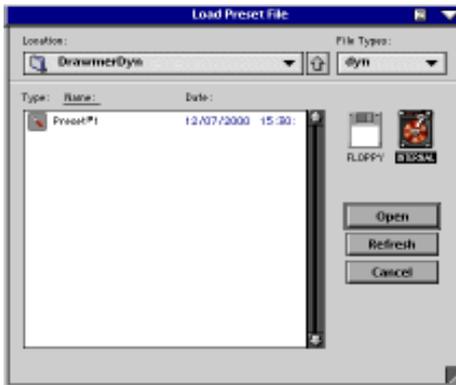
A new sub folder can be easily created to help organize custom patches.

5. Select **INTERNAL** (default hard drive) or **FLOPPY**.
6. Click **Save** to complete the operation.

To Load a Preset:



1. Click **MEM A** or **MEM B** to choose the memory location from which to load the file.
2. Click and hold the **MENU** button.
3. Select **Load Drawmer Dynamics** to open a file. The Load Preset File dialog box appears.
4. Click **INTERNAL** if the file is on



the internal drive, or click **FLOPPY** if the file is on a floppy disk.

5. Select the preset you want to load.
6. Click **Open** load the selected preset.



You can also load a patch from the Preset Display.

To Reset The Preset:

Reset will reload the previous patch.



1. Click and hold on the **MENU** button.
2. Select **Reset Drawmer Dynamics**.



To Cut Preset Settings:



1. Click and hold on the **MENU** button.
2. Select **Cut DrawmerDyn**.

The current settings are temporarily stored in the clipboard memory in case you want to paste them to a new preset. The plug-in also reverts to its default state (it is reset).

To Copy Preset Settings:



1. Click and hold on the **MENU** button.
2. Select **Copy**.

The current settings are temporarily stored in the clipboard memory in case you want to paste them to a new patch.

To Paste Preset Settings:



1. Click and hold on the **MENU** button.
2. Select **Paste DrawmerDyn**.

The current settings are replaced with the setting in the clipboard memory.

Automation and Snapshot Control

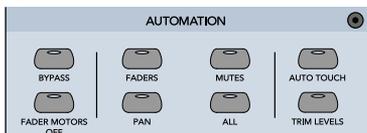
Dynamic Real Time

To write automation on a loaded plug-in:

On The Console



1. Engage AUTO TOUCH.
2. Engage ALL, disengage BYPASS, and send timecode to the console – the POSITION readout will change to show TC is being received.
3. Move a parameter or recall a patch (user or factory preset).



Subsequent edits to any recorded automation moves may be performed in the Mix Editor. Enable the channel view by clicking the Channel View button, then choose the plug-in you wish to view from the page drop-down menu. This will display a list of available channel and plug-in automation tracks on a parameter basis.



Note: Parameters can be controlled from either the GUI plug-in graphic parameters (using a mouse to modify the parameters) or via the VFD V-Pots and SELECT buttons (with the plug-in parameters called up on the VFD readout).

Dynamic Off-line

To write a snapshot on a loaded plug-in:



- Use the Event Automation Track, available under the Window Menu as 'Event Track', to load plug-in user (previously stored) or factory preset patches, at a specific time during automation playback.



General Note:

Plug-in settings are recalled as part of a console Snapshot, but may also be recalled as Presets (patches). If you are recalling snapshots and presets, be aware that one may override the other.

FX Routing

The Plug-in Configuration Window

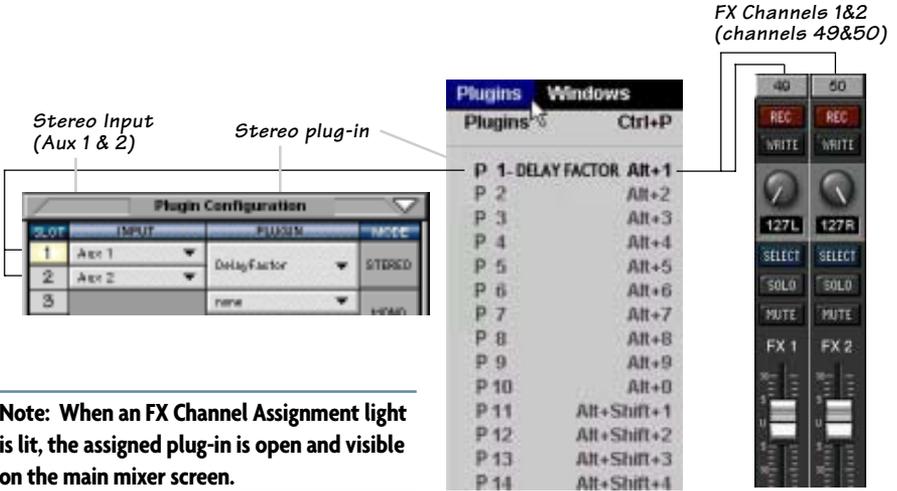
The diagram shows a window titled "Plug-in Configuration" with a table of slots. Callouts point to various UI elements:

- Plug-in display toggle**: A small arrow icon in the top right corner of the window.
- Card Slot Column**: Points to the "SLOT" column header.
- Input Source Assignment Column**: Points to the "INPUT" column header.
- Plug-in Assignment Column**: Points to the "PLUGIN" column header.
- Close Window**: Points to the small arrow icon in the top right corner of the window.
- Stereo/Mono Mode Column**: Points to the "MODE" column header.
- Input Channel Assignment Drop-down Menu Button**: Points to a drop-down arrow in the "INPUT" column for slot 1.
- Card A**: Points to slot 3.
- Card B**: Points to slot 6.
- Card C**: Points to slot 9.
- Card D (no card installed)**: Points to slot 13.
- Stereo/Mono Toggle Button**: Points to a drop-down arrow in the "MODE" column for slot 1.

SLOT	INPUT	PLUGIN	MODE
1	Asst 1	DelayFactor	STEREO
2	Asst 2		
3		none	MONO
4		none	
5			
6		none	R/A
7			
8			
9		none	STEREO
10		none	
11		none	MONO
12		none	
13	Card D Empty		
14			
15			
16			

Stereo Plug-in Routing

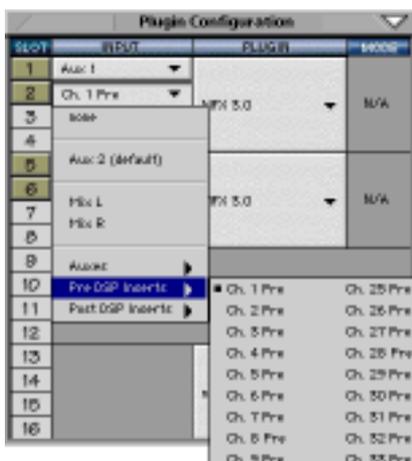
If the plug-in has a stereo input as well as stereo output, typically it will be fed from two Aux buses and returned to a pair of FX return channels. In the diagram below, Aux 1 and Aux 2 feed the plug-in in stereo, and its output is returned to FX 1 and FX 2. If the plug-in has a stereo input, it is permissible to send the same aux bus to both inputs.



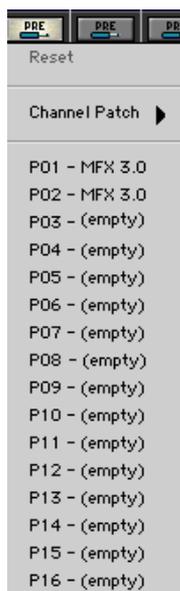
Inserting a Plug-in into a Channel

A pre- or post-DSP channel insert can also be used as the input source for a plug-in. When a channel insert point is selected, the plug-in output returns to the channel. The FX return path is disconnected, although the plug-in output is still displayed on the FX return channel meter.

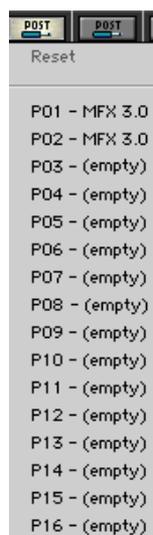
A plug-in channel insert assignment can be made from the Plugin Configuration window, or from a drop-down menu from the mixer screen.



Plugin Configuration Window



Pre-DSP Drop-down



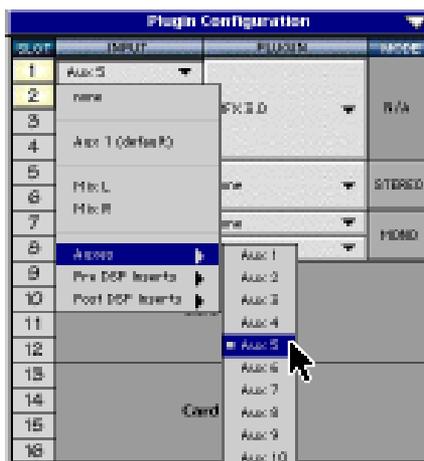
Post-DSP Drop-down

This assignment can also be made from the control surface and VFD by holding in the desired channel's SELECT button for two seconds, then paging over to Plug Pre or Plug Post, selecting the input source, then selecting the desired plug-in slot from the follow-on menu.

Using an Aux Send with a Plug-in



- Click on the associated INPUT menu button and select an aux input source. In the example below, we have chosen the **Aux 5** Bus.



Send the Input Signal to the Aux Bus



- Send a signal to a D8B mixer input channel (MIC/LINE or TAPE IN).



- Assign the input channel V-Pot/GUI Control Pot to an aux Send. We have chosen **AUX 5** according to the example above.

- Use the **AUX 5** control to adjust the input level to the plug-in.



GUI Control Pot Assigned to AUX 5



Remember to select an aux send before using the V-pot or GUI Control Pot on the mixer input channel (MIC/LINE or TAPE IN).

You will see the plug-in's input meter become active as you raise the mixer input channel's Aux send.

Set the plug-in input/output signal levels as you would with any effect, so the meter reaches its upper-most range every so often (always trust your ears first). This can be accomplished from the console or GUI.

Pre-Fader and Post-Fader Auxiliary Sends

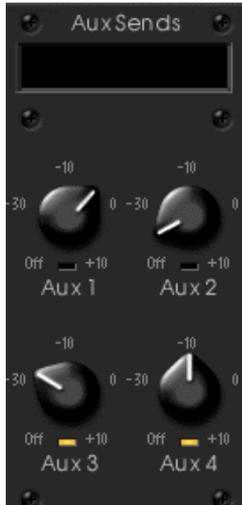
Normally, effect sends are post-fader, so the signal sent to the effect follows the program level in the mix. Occasionally you may wish to feed an effect from a pre-fader source so that the signal level from the aux control is independent of the channel fader position. Aux sends are selectable pre- or post-fader globally (all Aux 1's for instance) from the Mix Options screen in the Setup window, or individually on a channel-by-channel basis either from the channel strip or the Fat Channel.



In the channel strip, Alt-click the Aux Send level indicator to toggle between pre- and post-fader operation. Post-fader is indicated by a red bar, pre-fader is indicated by a yellow bar.



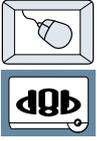
Channel Strip



Fat Channel

In the Fat Channel, clicking on the small indicators below the Aux knobs toggles between pre- and post-fader operation. Yellow indicates pre-fader, post-fader is indicated by the background color.

The FX Return Channel



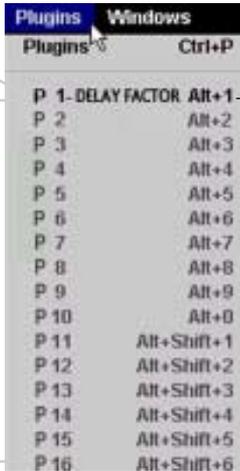
- Switch the D8B Bank Select to **EFFECTS (49-72)** and bring up faders one and two (channels 49 and 50). You will also see meter activity associated with these channels.

EFFECTS



FX Channels 1&2 (channels 49&50)

Stereo plug-in



The Plug button toggles between Windows menu buttons and FX buttons (lower left on the D8B mixer screen).

Plug-ins button opens the Patch Configuration window (or Ctrl-P on the keyboard)



Here the Delay Factor plug-in is selected for display.



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