

X-Form™ Plug-in

Version 7.2



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Digidesign X-Form pitch and time-stretching technology uses the iZotope Radius™ Algorithm. iZotope Radius™ 1.0
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Product features, specifications, system requirements, and availability are subject to change without notice.

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chapter 1

Introduction

The new X-Form™ plug-in for high quality time-compression/expansion and formant correct pitch shifting is an AudioSuite plug-in for Pro Tools|HD®, Pro Tools LE™, and Pro Tools M-Powered™ systems brought to you by Digidesign®.

X-Form provides the highest quality time compression and expansion algorithms for music production, sound design, and audio loop applications. Use it to manipulate audio loops for tempo matching and formant correct pitch shifting. X-Form is also ideal for post-production pull up and pull down conversions.

 For more information on using plug-ins in Pro Tools, see the *DigiRack Plug-ins Guide*.

X-Form Features

- ◆ Unparalleled high-quality time compression and expansion using iZotope's Radius time stretching engine
- ◆ Easy to read display fields for viewing audio region start and stop times for both processed and unprocessed files in multiple timebase formats
- ◆ Flexible algorithms for monophonic or polyphonic audio
- ◆ Poly (Faster) algorithm for faster previewing and processing
- ◆ Phase-coherent processing across multiple channels with multi-input mode processing
- ◆ High quality TCE processing from 12.50% to 800.00% of the original speed (or 4 times to 1/4 of the original duration)
- ◆ Pitch shifting from 3 octaves below to 3 octaves above the original pitch, with fine resolution in cents
- ◆ Supported on Pro Tools HD, Pro Tools LE, Pro Tools M-Powered, and Avid DNA systems

System Requirements

To use Digidesign plug-ins you need one of the following:

- ◆ An iLok USB Smart Key (an iLok.com account is also required for managing iLok licenses)
- ◆ A Digidesign-qualified Pro Tools|HD system, Pro Tools LE system, or Pro Tools M-Powered system
- ◆ A Digidesign-qualified Pro Tools system and a third-party software application that supports the Digidesign RTAS and AudioSuite plug-in standards
- ◆ A qualified Avid Xpress, Avid Xpress DV, or Avid DNA system (AudioSuite only)

For complete system requirements visit the Digidesign Web site (www.digidesign.com).

Compatibility Information

Digidesign can only assure compatibility and provide support for hardware and software it has tested and approved.

For a list of Digidesign-qualified computers, operating systems, hard drives, and third-party devices, refer to the Digidesign Web site (www.digidesign.com).

Register Your Plug-Ins

If you purchase a plug-in online from the Digi-Store (www.digidesign.com) using Internet Activation, you are automatically registered.

If you purchase a plug-in boxed version, check the enclosed Digidesign Registration Information Card for information about how to register online.

Registered users will receive periodic software update and upgrade notices.

Please refer to the Digidesign Web site (www.digidesign.com) or the Digidesign Registration Information Card for information on technical support.

Working with Plug-ins

Refer to the *DigiRack Plug-ins Guide* for information on working with plug-ins, including:

- Inserting plug-ins on tracks
- Using Clip indicators
- Navigating the Plug-in window
- Adjusting parameters
- Automating plug-ins
- Using the Librarian

Conventions Used in This Guide

All Digidesign guides use the following conventions to indicate menu choices and key commands:

Convention	Action
File > Save	Choose Save from the File menu
Control+N	Hold down the Control key and press the N key
Control-click	Hold down the Control key and click the mouse button
Right-click (Windows)	Click with the right mouse button

The following symbols are used to highlight important information:



User Tips are helpful hints for getting the most from your Pro Tools system.



Important Notices include information that could affect your Pro Tools session data or the performance of your Pro Tools system.



Shortcuts show you useful keyboard or mouse shortcuts.



Cross References point to related sections in the Pro Tools Guides.

About www.digidesign.com

The Digidesign Web site (www.digidesign.com) is your best online source for information to help you get the most out of your Pro Tools system. The following are just a few of the services and features available.

Registration Register your purchase online. See the enclosed registration form for details.

Support Contact Digidesign Technical Support or Customer Service; download software updates and the latest online manuals; browse the Compatibility documents for system requirements; search the online Answerbase or join the worldwide Pro Tools community on the Digidesign User Conference.

Training and Education Study on your own using courses available online or find out how you can learn in a classroom setting at a certified Pro Tools training center.

Products and Developers Learn about Digidesign products; download demo software or learn about our Development Partners and their plugins, applications, and hardware.

News and Events Get the latest news from Digidesign or sign up for a Pro Tools demo.

To learn more about these and other resources available from Digidesign, visit the Digidesign Web site (www.digidesign.com).

chapter 2

Installation

Installing the X-Form Plug-in

The installer for X-Form plug-in can be downloaded from the DigiStore (www.digidesign.com) or can be found on the plug-in installer disc (included with boxed versions of plug-ins). Installation steps are essentially the same, regardless of the bundle, package, or system you purchase.

Installation

To install the X-Form plug-in:

1 Download the installer for your computer platform from the Digidesign Web site (www.digidesign.com). After downloading, make sure the installer is uncompressed (.ZIP on Windows or .SIT on Macintosh).

– or –

Insert the Installer disc into your computer.

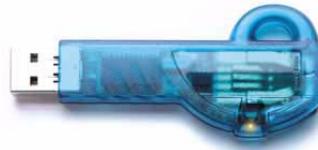
- 2** Double-click the X-Form Installer application.
- 3** Follow the on-screen instructions to complete the installation.
- 4** When installation is complete, click Finish (Windows) or Quit (Macintosh).

The X-Form Installer installs the X-Form plug-in in the following location:

- Program Files/Common Files/Digidesign/DAE/Plug-Ins folder (Windows)
- or –
- Library/Application Support/Digidesign/Plug-Ins folder (Macintosh).

Authorizing X-Form

X-Form is authorized using the iLok USB Smart Key (iLok), manufactured by PACE Anti-Piracy, Inc.



iLok USB Smart Key

The iLok is similar to a dongle, but unlike a dongle, it is designed to securely authorize multiple software applications from a variety of software developers.

This key can hold over 100 licenses for all of your iLok-enabled software. Once an iLok is authorized for a given piece of software, you can use the iLok to authorize that software on any computer.

 *The iLok USB Smart Key is not supplied with your plug-in or software option. You can use the one included with certain Pro Tools systems (such as Pro Tools|HD-series systems), or purchase one separately.*

If you purchased a plug-in online at the DigiStore (www.digidesign.com), authorize the plug-in by downloading licenses from iLok.com to an iLok.

 *See the iLok Usage Guide for details, or visit the iLok Web site (www.iLok.com).*

If you purchased a boxed version of a plug-in, authorize online with the Activation Code included with your purchase (see “Authorizing X-Form Using an Activation Code” on page 6).

Authorizing X-Form Using an Activation Code

To authorize X-Form using an Activation Code:

- 1 If you do not have an existing iLok.com account, visit www.iLok.com and sign up for an iLok.com account.
- 2 Transfer your X-Form license to your iLok.com account by doing the following:
 - Visit <http://secure.digidesign.com/> activation.
 - Input your Activation Code (listed on your Activation Card) and your iLok.com User ID. Your iLok.com User ID is the name you create for your iLok.com account.

3 Transfer the licenses from your iLok.com account to your iLok USB Smart Key by doing the following:

- Insert the iLok into an available USB port on your computer.
- Go to www.iLok.com and log in.
- Follow the on-screen instructions for transferring your licenses to your iLok.

 *For additional information about iLok technology and licenses, see the electronic PDF of the iLok Usage Guide.*

4 Launch Pro Tools.

5 If you have any installed unauthorized plug-ins or software options, you will be prompted to authorize them. Follow the on-screen instructions to complete the authorization process.

Removing X-Form

If you need to remove the X-Form plug-in from your system, follow the instructions below for your computer platform.

Windows

To remove the X-Form plug-in:

- 1 From the Start menu, choose Settings > Control Panel and double-click Add or Remove Programs.
- 2 Select the X-Form plug-in from the list of installed applications and click the Change/Remove button.
- 3 Follow the on-screen instructions to remove the plug-in.
- 4 When removal is complete, click OK to close the window.

Mac OS X

To remove the X-Form plug-in:

- 1** Locate and open the Plug-Ins folder on your Startup drive (Library/Application Support /Digidesign/Plug-Ins).
- 2** Drag the X-Form plug-in to the Trash, or to the Plug-Ins (Unused) folder.

chapter 3

X-Form Plug-in Parameters

X-Form

X-Form provides the highest quality time compression and expansion algorithms for music production, sound design, and audio loop applications. Use it to manipulate audio loops for tempo matching or to change vocal tracks for formant correct pitch shifting. The X-Form plug-in is useful in audio post-production for adjusting audio to specific time or SMPTE durations for synchronization purposes. X-Form is also ideal for post-production pull up and pull down conversions.

 *Normalizing a selection before using X-Form may produce better results.*

X-Form Displays and Controls



X-Form plug-in

The interface for X-Form is organized in four parts: Audio, Time, Transient, and Pitch.

Audio Use the controls in the Audio section to select the most appropriate time compression and expansion algorithm for the type of material you want to process and to attenuate the gain of the processed audio to avoid clipping.

Time Use the controls in the Time section to specify the amount of time compression or expansion you want to apply.

Transient Use the controls in the Transient section to adjust the transient detection parameters for high quality time compression or expansion.

Pitch Use the controls in the Pitch section to apply pitch shifting. Pitch shifting can be formant correct with either the Polyphonic or Monophonic algorithm.

Audio

The Audio section of X-Form provides controls for specifying the type of audio you want to process and gain attenuation of the processed signal to avoid clipping.



X-Form plug-in, Audio section

Type

The Audio Type determines the type of TCE and pitch shift algorithm for processing audio: Polyphonic, Monophonic, or Poly (Faster).

Polyphonic Use for processing complex sounds (such as a multipart musical selection).

⚠ *When previewing Polyphonic, Poly (Faster) is used for faster previewing. However, when you process the audio selection, the high-quality Polyphonic setting is used.*

Monophonic Use for processing monophonic sounds (such as a vocal melody).

Poly (Faster) Use for faster previewing and processing, but with slightly reduced audio quality.

Gain

The Gain control attenuates the input level to avoid clipping. Adjust the Gain control from 0.0 dB to -6.0 dB to avoid clipping in the processed signal.

Clip Indicator

The Clip indicator indicates clipping in the processed signal. When using time compression or pitch shifts above the original pitch, it is possible for clipping to occur. The Clip indicator lights when the processed signal is clipping. If the processed signal clips, undo the AudioSuite process and attenuate the input gain using the Gain control. Then, re-process the selection.

Level Indicator

The Level indicator displays the level of the output signal using a plasma LED, which uses the full range of plasma level metering colors.

Time

The Time section of X-Form provides controls for specifying the amount of time compression or expansion as well as the timebase used for calculating TCE. Adjust the Time control to change the target duration for the processed audio.



X-Form plug-in, Time section

Original Displays the Start and End times, and Length of the edit selection. Times are displayed in units of the timebase selected in the Units pop-up menu.

Processed Displays the target End time and Length of the processed signal. Times are displayed in units of the timebase selected in the Units pop-up menu. You can click the Processed End and Length fields to type the desired values. These values update automatically when adjusting the Time control.

Tempo Displays the Original Tempo and Processed Tempo in beats per minute (bpm). You can click the Original Tempo and Processed Tempo fields to type the desired values. The Processed Tempo value updates automatically when adjusting the Time control.

Unit Select the desired timebase for the Original and Processed time fields: Bars|Beats, Min:Sec, Time Code, Feet+Frames, or Samples.

⚠ *X-Form does not receive Bars|Beat and Feet+Frame information from Pro Tools 7.0 or 7.1. Consequently, Bars|Beats and Feet+Frames are displayed as “N/A.”*

Shift Displays the target time compression or expansion as a percentage of the original. Adjust the Time control or click the Shift field and type the desired value. Time can be shifted by as much as 12.50% to 800.00% of the original speed (or 8 times to 1/8 of the original duration) depending on which Range button is enabled (2x, 4x, or 8x). The default setting is 100%, or no time shift.

The Shift field only displays up to 2 decimal places, but lets you type in as many decimal places as you want (up to the IEEE standard). While the display rounds to 2 decimal places, the actual time shift is applied based on the number you typed. This is especially useful for post-production pull up and pull down factors (see “Post Production Pull Up and Pull Down Tasks” on page 13).

2x, 4x, and 8x Range Buttons

The 2x, 4x, and 8x Range buttons set the possible range for the Time Shift, Pitch Shift, and Formant Shift controls.

2x Lets you apply Time Shift, Pitch Shift, and Formant Shift from 50.00% to 200.00% (where 50.00% is 2 times the original duration and 200.00% is 1/2 of the original duration).

4x Lets you apply Time Shift, Pitch Shift, and Formant Shift from 25.00% to 400.00% (where 25.00% is 4 times the original duration and 400.00% is 1/4 of the original duration).

8x Lets you apply Time Shift, Pitch Shift, and Formant Shift from 12.50% to 800.00% (where 12.50% is 8 times the original duration and 800.00% is 1/8 of the original duration).

⚠ *When changing to a smaller Range setting (such as switching from 8x to 2x), the Time Shift and Pitch Shift settings are constrained to the limits of the new, smaller range. For example, with 8x enabled and Time Shift set to 500%, switching to 2x changes the Time Shift value to 200%.*

Transient

The Transient section provides controls for setting the sensitivity for transient detection and for adjusting the analysis window size.



X-Form plug-in, Transient section

Sensitivity Controls how X-Form determines and interprets transients from the original audio. Part of X-Form’s processing relies upon separating “transient” parts of the sample from

“non-transient” parts. Transient material tends to change its content quickly in time, as opposed to parts of the sound which are more sustained. Sensitivity is only available when Polyphonic is selected as the Audio Type.

For highly percussive material, lower the Sensitivity for better transient detection, especially with the Rhythmic audio setting. For less percussive material, a higher setting can yield better results. Experiment with this control, especially when shifting drums and percussive tracks, to achieve the best results.

Window Sets the analysis window size. You can adjust the Window from 10.0 milliseconds to 100.0 milliseconds. Adjust the Window control or click the Window field and type the desired value. Window is only available when Monophonic is selected as the Audio Type.

Try larger window sizes for low frequency sounds or sounds that do not have many transients. Try smaller window sizes for tuned drums and percussion. However, the default of 25 milliseconds should work well for most material.

Pitch

The Pitch section provides controls for pitch shifting the selected audio. Use the Pitch control to transpose the pitch from as much as -36.00 semitones (-3 octaves) to +36.00 semitones (+3 octaves), with fine resolution in cents, depend-

ing on which Range button is enabled (2x, 4x, or 8x). X-Form also lets you transpose the formant shape independently of the fundamental frequency.



X-Form plug-in, Pitch section

Transpose Displays the transposition amount in semitones. You can transpose pitch by as much as -36.00 semitones (-3 octaves) to +24.00 semitones (+3 octaves), with fine resolution in cents, depending on which Range button is enabled. Adjust the Pitch control or click the Transpose field and type the desired value. The default value is 0.00 semitones, or no pitch shift.

Shift Displays the pitch shift amount as a percentage. You can shift pitch by as much as 12.50% (-3 octaves) to 800.00% (+3 octaves) depending on which Range button is enabled (2x, 4x, or 8x). Adjust the Pitch control or click the Shift field and type the desired value. The default value is 100%, or no pitch shift.

Formant

Audio with a fundamental pitch has an overtone series, or set of higher harmonics. The strength of these higher harmonics creates a formant shape, which is apparent if viewed using a spectrum analyzer. The overtone series, or harmonics, have the same spacing related to the pitch and have the same general shape regardless of what the fundamental pitch is. It is this formant shape that gives the audio its overall characteristic sound or timbre. When pitch shifting audio, the formant shape is shifted with

the rest of the material, which can result in an unnatural sound. Keeping this shape constant is critical to formant correct pitch shifting and achieving a natural sounding result.

The Pitch section of X-Form lets you pitch shift the formants of the selected audio independently of the fundamental frequency. This is useful for achieving formant correct pitch shifting. It can also be used as an effect. For example, you can formant shift a male vocal up by five semitones and it will take on the characteristics of a female voice.

To enable or disable formant shifting:

- Click the In button. The In button lights when formant shifting is enabled.

The Formant field displays the amount of formant pitch shifting from -36.00 semitones (-3 octaves) to +36.00 semitones (+3 octaves), with fine resolution in cents. Adjust the Formant control or click the Formant field and type the desired value. The default value is 0.00 semitones, or no formant shift.

Post Production Pull Up and Pull Down Tasks

Table 4 on page 13 provides information on TCE settings for common post-production tasks. Type the corresponding TCE% (represented to 10 decimal places in Table 4) in the Time Shift field for the corresponding post-production task and the process the selected audio.

 Use the corresponding X-Form Plug-in Setting for the desired post-production task.

Table 4. Most commonly used TCE settings in Post workflows

Post workflow plug-in setting	TCE% (to 10 decimal places)	Frames
Pal to Film -4%.tfx	96.0%	25 to 24/30
PAL to NTSC -4.1%.tfx	95.9040959041%	25 to 23.976/29.97
Film to PAL +4.1667%.tfx	+104.1666666667%	24/30 to 25
Film to NTSC -0.1%.tfx	99.9000999001%	24/30 to 23.976/29.97
NTSC to Pal +4.2667%.tfx	+104.2708333333%	23.976/29.97 to 25
NTSC to Film +0.1%.tfx	+100.10%	23.976/29.97 to 24/30

AudioSuite Input Modes

X-Form supports the Pro Tools AudioSuite Input Mode selector for use on mono or multi-input processing.



AudioSuite Input mode selector

Mono Mode Processes each audio region as a mono file with no phase coherency maintained with any other simultaneously selected regions.

Multi-Input Mode Processes up to 48 input channels and maintains phase coherency within those selected channels.

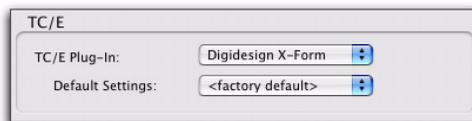
AudioSuite Preview

X-Form supports Pro Tools AudioSuite Preview and Bypass. For more information on using AudioSuite Preview and Bypass, see the DigiRack Plug-ins Guide.

⚠ *AudioSuite Preview and Bypass are unavailable with X-Form in Pro Tools 7.0 and 7.1.*

AudioSuite TCE Plug-in Preference

The X-Form plug-in's high quality time compression and expansion algorithms that can be used with the Pro Tools TCE Trim tool.



TCE Plug-in option in Processing Preferences page

⚠ *X-Form is not available with the TCE Trim tool in Pro Tools 7.0 and 7.1.*

⚠ *When using X-Form for the TCE Trim tool, the default 2x Range is used for an edit range of twice to half the duration of the original audio. If you select a Default Setting that uses either the 4x or 8x Range, the Time Shift and Pitch Shift setting are constrained to the 2x Range limit of 50% to 200%.*

📖 *Refer to the Pro Tools Reference Guide for more information about the TCE Trim tool.*

To select X-Form for use with the TCE Trim tool:

- 1 Choose Setup > Preferences.
- 2 Click the Processing tab.
- 3 From the TC/E Plug-in pop-up menu, select Digidesign X-Form.
- 4 Select the desired preset setting from the Default Settings pop-up menu.
- 5 Click OK.

Processing Audio

X-Form lets you change the time and pitch of selected audio independently or concurrently.



You can adjust both the Time Shift and Pitch Shift controls independently before processing.

To change the time of a selected audio region:

- 1 Select AudioSuite > Pitch Shift > X-Form.
- 2 Select the Audio Type appropriate to the type of material you are processing (Monophonic or Polyphonic).
- 3 If compressing the duration of the selection, attenuate the Gain control as necessary.
- 4 Adjust the Transient controls as desired.
- 5 Enable the desired Range button (2x, 4x, or 8x) to set the possible range for time change.
- 6 Adjust the Time Shift control to the desired amount of time change. Time change is measured in terms of the target duration using the selected timebase or as a percentage of the original speed.
- 7 Click Process.

To change the pitch of a selected audio region:

- 1 Select AudioSuite > Pitch Shift > X-Form.
- 2 Select the Audio Type appropriate to the type of material you are processing (Monophonic or Polyphonic).
- 3 If transposing the pitch of the selection up, attenuate the Gain control as necessary.
- 4 Adjust the Transient controls as desired.
- 5 Enable the desired Range button (2x, 4x, or 8x) to set the possible range for pitch change.
- 6 Adjust the Pitch Shift control to the desired amount of pitch change. Pitch change is measured in semitones (and cents) or as a percentage of the original pitch.
- 7 If desired, enable Formant and adjust the Formant control.
- 8 Click Process.

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