



HEAT™ Option Guide

Version 10

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Guide Part Number 9329-65109-00 REV A 11/11

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Chapter 1: Introduction

HEAT (Harmonically Enhanced Algorithm Technology) is a software option that adds “analog color” to Pro Tools®HD software with Avid HDX and Pro Tools|HD hardware.

HEAT is applied to all active audio tracks in your session, emulating magnetic recording tape combined with harmonic coloration commonly experienced with analog mixing consoles. Use HEAT to open up your mixes with warm, analog-modeled soft-saturated distortion.

System Requirements and Compatibility

To use HEAT, you need the following:

- An iLok USB Smart Key
- An iLok.com account for managing iLok licenses
- Pro Tools HD software with one of the following hardware configurations:
 - A qualified Avid HDX system
 - or –
 - A qualified Pro Tools|HD system
- DVD drive (if installing from disc)
- Internet access for software activation and registration purposes

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

For complete system requirements and a list of qualified computers, operating systems, hard drives, and third-party devices, visit:

www.avid.com/compatibility



HEAT is supported with Pro Tools HD 8.1 and higher with Pro Tools|HD hardware, or with Pro Tools HD 10.0.x and higher with Avid HDX hardware.

Registration

Your software purchase is automatically registered when you activate your iLok license (see “Authorizing Software” on page 3).

Registered users are eligible to receive software update and upgrade notices.

For information on technical support, visit www.avid.com.

Conventions Used in This Guide

All of our 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	Click with the right mouse button

The names of Commands, Options, and Settings that appear on-screen are in a different font.

The following symbols are used to highlight important information:



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



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



Shortcuts show you useful keyboard or mouse shortcuts.



Cross References point to related sections in this guide and other Pro Tools guides.

About www.avid.com

The Avid website (www.avid.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.

Product Registration Register your purchase online.

Support and Downloads Contact Avid Customer Success (technical support); download software updates and the latest online manuals; browse the Compatibility documents for system requirements; search the online Knowledge Base or join the worldwide Pro Tools community on the 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 Avid products; download demo software or learn about our Development Partners and their plug-ins, applications, and hardware.

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

Chapter 2: Installation and Authorization

Installing HEAT

To install HEAT:

- 1 Do one of the following:
 - Purchase and download the installer for your computer platform from the online Avid Store (www.avid.com). After downloading, make sure the installer is uncompressed (.dmg on Mac or .ZIP on Windows).
 - Use the HEAT Installer disc included with boxed versions of HEAT. Insert the disk into your computer.
 - Use the Pro Tools Installation disc that came with your version of Pro Tools. Insert the disc into your computer.
- 2 Locate and double-click the installer icon:
 - On Mac, Install HEAT.mpkg
 - or –
 - On Windows, HEAT Setup.exe
- 3 Follow the on-screen instructions.
- 4 When prompted, click Install.
- 5 Complete the installation, following the on-screen instructions.

Authorizing Software

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




iLok USB Smart Key

This key can hold hundreds of 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.

⚠ *An iLok USB Smart Key is not supplied with plug-ins or software options. You can use the iLok included with certain Pro Tools systems, or purchase one separately.*

Authorizing Downloaded Software


If you downloaded software from the Avid Store (<http://shop.avid.com>), you authorize it by downloading a license from iLok.com to an iLok.

 *For more information, visit the iLok website (www.iLok.com).*

Authorizing Boxed Versions of Software

If you purchased a boxed version of software, it comes with an Activation Code (on the included Activation Card).

To authorize software using an Activation Code:

- 1 If you do not have an iLok.com account, visit www.iLok.com and sign up for an account.
 - 2 Transfer the license for your software to your iLok.com account by doing the following:
 - Visit www.avid.com/activation.
 - and –
 - 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 more information, visit the iLok website (www.iLok.com).*
- 4 Launch Pro Tools.
 - 5 If you have any unauthorized software installed, you are prompted to authorize it. Follow the on-screen instructions to complete the authorization process.

Removing HEAT

If you need to remove HEAT from your Pro Tools system, follow the instructions below for your computer platform.

Mac OS X

To remove HEAT:

- 1 Locate the HEAT plug-in file on your Startup drive. Its location depends on the type of hardware you are using, as follows:
 - For Pro Tools|HD systems: Library /Application Support/Digidesign/Plug-Ins/HEAT.dpm
 - or –
 - For Avid HDX systems: Library/ Application Support/Avid/Audio/ Plug-Ins/HEAT.aaxplugin
- 2 Drag the HEAT.dpm or HEAT.aaxplugin file to the Trash.
- 3 Empty the Trash.

Windows

To remove HEAT:

- 1 Choose Start > Control Panel.
- 2 Under Programs and Features.
- 3 Select the HEAT option from the list of installed applications.
- 4 Click Uninstall.
- 5 Follow the on-screen instructions to remove HEAT.

Chapter 3: Using HEAT

When enabled, HEAT is applied to all active audio tracks in your session, emulating the effect of an analog mixing console. HEAT is supported with all mono, stereo, and surround formats. Use HEAT to open up your mixes with warm, analog-modeled soft-saturated distortion.

Enabling HEAT

When HEAT is enabled, it uses DSP resources on all active audio tracks. This is important to know because as you increase (or decrease) the number of audio tracks in the session, you also increase (or decrease) the amount of DSP resources required to keep HEAT hot. Note that HEAT does not use DSP resources on inactive audio tracks.

To enable (or disable) HEAT in a session, do one of the following:

- Select (or deselect) Options > Activate HEAT.
– or –
- Select (or deselect) the HEAT On/Off button in the Mix window in HEAT view.

You can also enable the Enable HEAT in New Sessions option in the Pro Tools Preferences to have HEAT automatically enabled for all new sessions.

To enable (or disable) HEAT for new sessions:

- 1 Choose Setup > Preferences.
- 2 Click the Processing tab.

- 3 In the DSP Management section, select (or deselect) the Enable HEAT in New Sessions option.

- 4 Click OK.

About HEAT Processing

HEAT provides global controls for Drive and Tone. These affect all audio tracks where HEAT is not bypassed.

Drive

The Drive control introduces non-linear processing that emulates magnetic recording tape combined with harmonic information commonly found in analog gear.

Turning the Drive control counter-clockwise emulates tape-based non-linear distortion. As with tape, increasing the Drive control level by turning it counter-clockwise increases harmonic content by adding higher frequency odd harmonics (starting with the 3rd and 5th harmonics). HEAT also emulates the recording and reproduction equalizers of tape decks that further modifies the harmonic content. As a result, when turning the Drive control counter-clockwise, HEAT fattens up the bottom and mid-range of the processed audio and smooths high-frequency transients as you increase the processing.

Turning the Drive control clockwise has a more aggressive effect, adding an even harmonic series commonly found in triode tube circuits to the odd harmonic series. This can give the effect of prized tube microphones and other tube based analog gear.

Note that the harmonic structure changes with signal level and the amount of processing being applied, just like it does with vacuum tubes in the analog world.

Tone

As with tape, there can be loss of high frequencies with respect to low frequencies if driven far enough, as the high frequencies start compressing sooner than the low frequencies. HEAT can compensate for these losses, adding more detail and some brightness too, depending on the program material and its level. Moving the Tone control away from its default position accentuates (clockwise) or de-accentuates (counter-clockwise) the amount of detail and brightness.

The effect of the Tone control is different, depending on the Drive control setting. The amount and character of the harmonic content is changed by this control, in a non-linear fashion, unlike what a tone control in an equalizer would do.

HEAT Processing

With HEAT processing, the peaks in the signal are being reduced while the low level harmonic content is increased, thus reducing the level of existing peaks. Think of it as a tube or tape doing soft clipping, “squashing” the peaks and causing analog compression over a wide dynamic range.

How Much Processing Should I Use?

HEAT processing is level and program dependent. Although a general setting usually works for many sources, some settings that work best for one source may not have the desired effect for another source. If you need a general purpose setting try adding two steps of the Drive control (in either direction).

Since your ears may not be used to the changes to the harmonic content that HEAT provides, you may need to spend a little time listening to the effect of HEAT processing on your program material to acclimate yourself. The human ear loves a little harmonic generation. Experiment with the settings to discover what sounds best to you.

Once you are used to how the program material sounds with some HEAT processing, disabling HEAT can highlight the subtle yet significant effect of HEAT on your program material.

The amount of processing can result in subtle changes or drastic changes depending on what the program is like, and how it was recorded. The difference between processing an analog or digital recording can be subtle or drastic. It may be easier to hear the effect of the processing in material that is more “open,” as opposed to material that is more dense. The amount of low frequency information added also affects how you hear the processing.

HEAT Controls

HEAT provides a simple set of master controls for the tuning the color of the effect, and a set of controls for each audio track in your session.

HEAT Master Controls

The HEAT Master controls let you adjust the amount and color of HEAT processing for all audio tracks. Take some time to experiment with different settings until you get the desired tone color for your mix.



HEAT Master controls

On/Off (HEAT) Enables (or disables) HEAT in your Pro Tools session.

Bypass (BYPASS) Bypasses HEAT processing without disabling it. Note that bypassing HEAT does *not* free up the DSP resources needed for HEAT.

Meter Displays the average amount of HEAT processing across all audio tracks.

Drive Adjusts the amount of Drive for HEAT, which emulates the distortion you get when overdriving an analog channel strip on a console. At the default 12 o'clock position, no HEAT processing is applied. Turn the knob counter-clockwise to add odd harmonics to the mix (a magnetic tape saturation-like effect). Turn the knob clockwise to add even harmonics to the odd harmonic series for the effect of simulating a triode tube circuit.

Tone Adjust the Tone (bass to treble) for HEAT. Turn the control to the right for a brighter sound and to the left for a darker sound.

Showing and Hiding HEAT Master Controls

HEAT Master controls can be viewed in the Mix window.

To show (or hide) HEAT Master controls:

- Click the Show/Hide HEAT View button in the lower right corner of the Mix window.



Show/Hide HEAT Master View button in the Mix window

HEAT Track Controls

HEAT track controls are available on all audio tracks. HEAT only affects audio tracks.



HEAT Track controls

Bypass (BYP) Bypasses HEAT processing for the individual audio track. Note that bypassing HEAT on individual tracks does *not* free up the DSP resources used by HEAT for that track.

Pre/Post Insert (PRE) Sets HEAT processing to be Pre or Post inserts on the individual track. HEAT processing is Pre Inserts when the PRE button is lit.

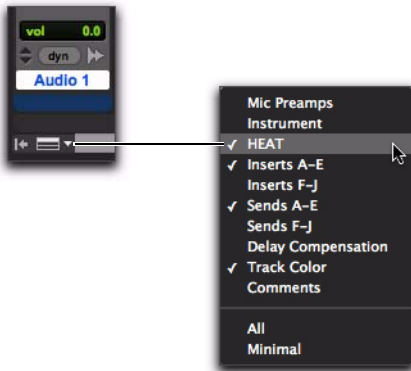
Meter Displays the amount of HEAT processing on the individual audio track. On multichannel tracks, the meter shows the average amount of HEAT applied to all channels of that track.

Showing and Hiding HEAT Track Controls

HEAT Track controls can be viewed in the Mix window.

To show (or hide) HEAT Track controls, do one of the following:

- Select (or deselect) View > Mix Window Views > HEAT.
 - or –
- Select (or deselect) HEAT in the Mix Window View selector.



Selecting HEAT in the Mix Window View selector

Master Bypass and Track Bypass Indicators

The Track Bypass button is color coded to indicate whether or not HEAT is explicitly (or implicitly) bypassed when Master Bypass is enabled. Explicitly bypassed tracks remain bypassed when disabling the Master Bypass.

When a track is explicitly bypassed, the BYP button is bright orange.



HEAT Track and Master controls

When the Master Bypass is enabled, it is bright orange and any explicitly bypassed track BYP buttons also remain bright orange. For any implicitly bypassed track, the BYP button changes to dark orange.



HEAT Track and Master controls

A Note About Other Track Types

HEAT only affects audio tracks. It is not applied to Instrument, Auxiliary Input, or Master tracks. If you are using virtual instrument plugins on an Instrument or Auxiliary Input track and want to apply HEAT, you can either bus record audio from that track to an audio track, or you can bus the output of the track to the input of an audio track and enable Input monitoring.

DSP and Voice Requirements

The amount of DSP resources used by HEAT is based on the number of voices used for audio tracks, the type of DSP hardware, and the session sample rate.

The following table lists the number of mono audio tracks per DSP chip that are available with HEAT processing enabled.

Available number of mono audio tracks per DSP chip

DSP Chip Type	44.1/ 48 kHz	88.2/ 96 kHz	172.4/ 192 kHz
HDX	86	42	19
HD Accel*	30	14	6
HD (non-Accel)	12	5	2

**The number of tracks available per chip is the same for both types of Accel chips (with SRAM and without RAM).*

Stereo tracks require twice the DSP of mono tracks, and surround formats require as much DSP per channel as the corresponding number of mono tracks (for example, a 5.1 track uses the same amount of DSP as 6 mono tracks).

Insufficient DSP Resources

It is possible that your system may have insufficient DSP resources to add more audio tracks to the session when HEAT is enabled (because there is not enough DSP available for HEAT on the new tracks). Should this occur, Pro Tools prompts you to do one of the following:

- Create the new tracks, but make them inactive. (Inactive audio tracks do not use any DSP resources.)
 - or –
- Disable HEAT and create the new tracks.

When opening a session that was saved with HEAT enabled, but your system does not have enough DSP to apply HEAT to all active audio tracks in the session, HEAT is automatically disabled. The session notes dialog will indicate that HEAT has been made inactive.

Once the session is open, you can manage which tracks you want to have active with HEAT enabled within the DSP limitations of your system. You can also expand your Avid HDX or Pro Tools|HD system with additional cards to increase the available DSP resources for HEAT.

In some cases, if the session you are opening has a lot of active DSP (TDM) plug-ins, the session may open with HEAT enabled, but make some of the session's DSP plug-ins inactive. This is because HEAT processing takes priority over DSP plug-in processing.

Voice Requirements


When enabling HEAT, extra voices are required to make HEAT active if HEAT is set to Pre insert on a track and the first plug-in on that track is an RTAS plug-in. If there are an insufficient number of voices available, HEAT cannot be activated.

If HEAT is already active, set to Post insert on a track, and an RTAS plug-in is the first plug-in on that track, HEAT will require extra voices to be changed to Pre insert. If there are an insufficient number of voices available, the Pre button will be inactive until you increase the number of voices (in the Playback Engine) or until more voices are made available (such as by making some audio tracks inactive).

Using HEAT with a Worksurface

(ICON and C|24 Only)

You can use the following features provided on ICON (D-Control and D-Command) and C|24 to control HEAT.

 For information about using HEAT with Avid Artist and Pro Series Control Surfaces, see the Pro Tools EUCON Guide.

D-Control and D-Command

With D-Control or D-Command, you can access HEAT Master Controls in the Custom Fader section, and HEAT channel controls directly from the channel strips.

Master Controls

HEAT Master Controls include On/Off, Bypass, Drive, and Tone.

To access HEAT Master Controls from D-Control or D-Command:

- Shift+Control+Press the Plug-Ins switch in the Custom Fader section.

HEAT creates a Custom Fader for HEAT and maps controls to the middle encoders as described below.

D-Control

D-Control provides HEAT Master Controls within a single Custom Fader (#8)

HEAT Master Controls on D-Control

Encoder	Parameter	Action
#3	HEAT (On/Off)	Rotate the encoder, or press encoder 3 BMP, to toggle
#4	MstByp (Master Bypass)	Rotate encoder, or press encoder 4 BMP, to toggle
#5	Drive	Rotate encoder
#6	Tone	Rotate encoder

D-Command (Custom Fader 7 and 8)

D-Command provides HEAT Master Controls in the encoder sections of two Custom Faders (7 and 8).

HEAT Master Controls on D-Command

Encoder	Parameter	Action
#1 (Fader 7)	HEAT (On/Off)	Press BMP to toggle, or rotate the encoder
#2 (Fader 7)	MstByp (Master Bypass)	Press BMP to toggle, or rotate the encoder
#1 (Fader 8)	Drive	Rotate encoder
#2 (Fader 8)	Tone	Rotate encoder

Channel HEAT Bypass and Pre/Post

When HEAT is enabled in a session, each channel strip provides HEAT Bypass and Pre/Post. You can access these channel settings directly from D-Control and D-Command channel strips. Channel HEAT controls follow Do To All and Do to All Selected modifiers.

To access HEAT in the channel strip:

- 1 Make sure HEAT is enabled in the session.
- 2 Shift+Control+Press the channel Inserts switch.

D-Control

On D-Control, encoders/BMP switches 5 and 6 map to HEAT Pre/Post and Bypass, respectively.

To toggle a channel between (HEAT) Pre or Post Inserts:

- Do either of the following:
 - Rotate encoder 5
 - or –
 - Press encoder 5 BMP switch.

To toggle a channel in or out of HEAT Bypass:

- Do either of the following:
 - Rotate encoder 6
 - or –
 - Press encoder 6 BMP switch.

D-Command

On D-Command, both channel encoders and their BMP switches map to HEAT Pre/Post (upper encoder row) and Bypass (lower encoder row).

To toggle a channel in or out of HEAT Bypass:

- Do either of the following:
 - Rotate the lower encoder.
 - or –
 - Press the lower encoder's BMP switch.

To toggle a channel between (HEAT) Pre or Post Inserts:

- Do either of the following:
 - Rotate the upper encoder.
 - or –
 - Press the upper encoder's BMP switch.



HEAT supports Flip mode for both its Master and Channel controls.

C|24

C|24 lets you adjust HEAT Master Controls from encoders 21–24, and HEAT channel controls in each channel strip.

Master Controls

To access HEAT Master Controls on C|24:

- Press the Soft Keys switch in the Channel Bar. To exit, press the Soft Keys switch again.

HEAT Master Controls are mapped to the encoder and encoder switches of channel strips 21–24, as shown in Table 1 on page 12.

Channel HEAT Bypass and Pre/Post

When HEAT is enabled in a session, each channel strip provides HEAT Bypass and Pre/Post. You can access these channel settings directly from C|24 channel strips. Channel HEAT controls follow Do To All and Do to All Selected modifiers.

To access HEAT channel controls:

- 1 Make sure HEAT is enabled in the current session.
- 2 In the channel strip, press and hold the channel Insert switch. To exit, press the same switch again.

To toggle a channel in or out of HEAT Bypass:

- Press the channel Bypass switch.

To toggle a channel between (HEAT) Pre or Post Inserts:

Rotate the channel encoder, or press the encoder switch, and choose Pre or Post.

Table 1. HEAT Master Controls on C|24

Encoder:	21	22	23	24
Parameter	HEAT (On/Off)	MstByp (Master Bypass)	Drive	Tone
Action	Press the Encoder switch to toggle	Press the Encoder switch to toggle	Rotate encoder	Rotate encoder



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