



Release Notes for DINR Version v3.3.1

May 12, 2000

- DINR has been updated to add the following functionality:
 - support for Pro Tools v5.0.1
 - minor bug fixes

Release Notes for DINR Version v3.3

November 8, 1999

- DINR has been updated to add the following functionality:
 - support for Pro Tools v5.0

Release Notes for DINR Version v3.2.1

April 5, 1999

- DINR has been updated to add the following functionality:
 - support for Pro Tools v4.3.1
 - minor bug fixes

Release Notes for DINR Version v3.2

September 18, 1998

- DINR has been updated to add the following functionality:
 - support for Pro Tools|24 MIX and MIXplus systems
 - support for Pro Tools 4.3 and DSP Manager

Release Notes for DINR™ Version 3.1

June 22, 1998

- DINR version 3.1 has been updated to add the following functionality:
 - support for ProControl's EQ/Dynamics IN/EDIT functionality
 - clear and intuitive control name display and groupings on Mackie Design's HUI and

ProControl's LED displays

- AudioSuite Performance enhancements including Preview operation

Release Notes for DINR™ Version 3.0

March 2, 1998

- DINR version 3.0 adds the following functionality when used with Pro Tools 4.1.1:
 - BNR-A/S for AudioSuite compatibility (Power Mac-based systems only)
 - BNR-A/S includes two new features; Audition Noise & Artifact Removal
 - Channel Delay Display (TDM)
 - Master Bypass Automation (TDM)
 - DINR-SDII (Nubus Only) & On-Line Manual on CD as separate Install

Release Notes for DINR™ Version 2.2

March 10, 1997

- DINR version 2.2 has been updated to add the following functionality when used with Pro Tools 4.0:
 - Automation of Plug-In parameters
 - Mapped parameter control from an external MIDI controller
 - Access to the new Plug-In Settings librarian
 - Memory caching for improved DAE memory management (Power Mac-based systems only)

Release Notes for DINR™ Version 2.1

May 13, 1996

- Adds support for PCI-based Pro Tools Systems.

Release Notes for DINR™ v2.0

Includes:

DINR - TDM 2.0 page 1

DINR - SD II 1.11page 6

DINR - TDM 2.0 Contents:

- 1) About this version of DINR
- 2) Additions to the TDM Section of the DINR 2.0 User's Guide

- 3) Corrections to the TDM Section of the DINR 2.0 User's Guide
- 4) DSP Induced Delay in Mixing and Delay Compensation
- 5) General Operational Recommendations

1) About this version of DINR

This latest release introduces the new TDM-compatible version of Digidesign's Intelligent Noise Reduction™ (DINR), and includes both the Broadband Noise Reduction™ (BNR) module and the Hum Removal™ module for TDM. Both modules are based on their Sound Designer II counterparts.

Also included in this release is an update to the Sound Designer II version of the BNR module. In this update, the Response and Release control sliders have been reversed to operate in the same direction as those of the TDM version. Release and Response amounts now increase in value from left to right. No other changes have been made to DINR-SDII.

Your DINR User's Guide has been updated to provide complete installation and operating instructions for both versions of the DINR Plug-Ins.

2) Additions to the TDM Section of the DINR 2.0 User's Guide

- Keyboard Equivalents in the Hum Removal-TDM module

Up and Down Arrows

With the Hum Removal-TDM module, the up and down arrow keys can be used to increment/decrement the numeric values in a selected field. To directly enter a value, use the + and - keys, followed by the numeric values to indicate positive or negative values, respectively.

Escape Key

Pressing the Escape (esc) key cancels Learn mode with DINR-TDM.

- Monitor settings and BNR-TDM memory requirements

The Spectral Display of the BNR-TDM module is designed to be flicker free. As a result, displaying an increased number of colors (Apple Menu>Control Panels>Monitors) will increase the memory requirements of BNR-TDM when the BNR-TDM window is open. The amount of memory BNR-TDM consumes for its graphics is directly related to the color depth of the screen - hence running in thousands of colors will require an additional 70 kbytes, while running in millions of colors will require 220 kbytes. Running in 16 color mode requires 35 kbytes less than 256 color mode. This additional memory is only needed when the BNR-TDM window is open.

- Using Learn Mode with multiple Hum Removal-TDM modules

Only one Hum Removal-TDM module may be placed in Learn mode at a time. Learning the same hum-type noise on more than one track can be accomplished by placing Pro Tools in Loop Mode, isolating a section of the undesired hum (which must be larger than 0.5 seconds), making a selection and looping it during Playback. Separate Learn processes may then be performed on the original and subsequent Hum Removal modules during playback.

- Using First Audio Learn Mode with multiple BNR-TDM modules on the same track First Audio Learn Mode cannot be used on the second and subsequent BNR modules assigned to the same mixer channel. First Audio Learn mode is triggered by the start of playback and uses the first 16 milliseconds of audio to create the Noise Signature. Due to the processing delay inherent within BNR, second and subsequent modules using First Audio Learn mode would actually Learn silence if Learn is armed prior to playback. Alternative Learn methods for this scenario are as follows:

Method 1: Begin Playback before activating First Audio Learn

First Audio Learn mode can be performed during playback. Once playback has begun, the second and subsequent BNR modules can be opened and Learn performed. Playback must begin sufficiently early for the desired noise section to be used for Learn. Alternatively, Pro Tools can be put in Loop Mode, and the isolated noise section (which must be larger than 0.5 seconds) can be selected and looped during Playback. The second and subsequent BNR modules can then be opened and Learn performed.

Method 2: Use Last Audio Learn Mode

Using Last Audio Learn Mode in the later BNR modules provides another alternative. Refer to your DINR User's Guide for details on using Last Audio Learn Mode.

- Saved Parameter Settings

Saved parameter settings for DINR-SDII 1.11 are not compatible with DINR-TDM 2.0 and vice versa.

3) Corrections to the TDM Section of the DINR 2.0 User's Guide

- Maintaining Track Sync with TDM Plug-Ins

In the section "Maintaining Track Sync with TDM Plug-Ins" on page 19, Chapter B, the number of samples of delay which BNR imposes was incorrectly listed as 1539 samples. BNR actually introduces a delay of 1536 samples. The additional 3 samples of delay come from bussing the signal through the TDM mixer itself.

- Smoothing Slider in DINR-SDII

Page 7 of the manual incorrectly states that in the BNR module of DINR-TDM, the Smoothing slider's travel has been "reversed" from that used in the DINR SD-II version.

In fact, the operation of the Smoothing slider is identical in both versions.

4) DSP Induced Delay in Mixing and Delay Compensation

The DSP processes in all digital systems incur delays of varying amounts. These delays can vary from as short as several microseconds to as long as several milliseconds, depending on the type of processing being performed.

While some digital systems have a form of automatic delay compensation, most digital audio workstations, (including Pro Tools) and many high-end digital mixing consoles have manual delay compensation. In these systems, the user is responsible for compensating for delays by nudging tracks-either using their ears (comparing tracks in mono until "comb filtering" is eliminated), or by using a delay compensation chart to calculate the amount of offset.

DINR TDM-BNR performs its processing in near-real time. The following information about delay compensation is supplied so that exact synchronization can be maintained between tracks which contain DINR TDM-BNR processing, and those that have no processing.

There are three sources of delay in a TDM-based system, outlined below. Following these descriptions are some examples, followed by instructions for calculating the amount of track offset needed to compensate for mixing and Plug-In delay when using BNR.

- Inserts & Internal Sends>Returns

All inserts and internal sends/returns (i.e., to/from internal mix busses) add 3 samples of delay for each routing operation in a signal's path. Note that multiple inserts on a given track or auxiliary input will result in a cumulative delay. For example, 2 inserts on a given track will result in 6 samples of delay.

- DINR TDM-BNR Itself

The second source of delay is caused by the Plug-In itself, which is exactly 1,536 samples. DINR TDM-BNR exhibits the same processing delay in both bypassed and non-bypassed mode. This is to retain the delay-compensated track's synchronization when clicking in and out of bypass mode during auditioning.

- TDM Bouncing

Use of the Bounce Plug-In (i.e., using the File Menu "Bounce" command on a TDM-equipped system for a real-time bounce) adds no delay when bouncing because delay compensation is built-in to the Bounce Plug-In. Therefore, delay caused will be limited to use of Inserts, Sends, or individual Plug-Ins. In Pro Tools v3.2 and above, the Bounce

Plug-In will no longer require the use of a DSP Farm DSP chip, so this function will be more efficient in terms of DSP consumption.

Note: Bus-based bounces (i.e., bussing audio from one track to another track and recording the result) causes 7 samples of delay (with straight mixing and no Plug-Ins). Use of Plug-Ins in the bus-based bounce will add the sum of delays incurred from each Plug-In.

Example

A "bus-based" bounce with EQ and BNR on Inserts adds 1549 samples of delay:

```
TDM "bus-based" bounce 7 samples
Use of Insert 1 3 samples
EQ 0 samples
Use of Insert 2 3 samples
BNR 1536 samples
```

Total: 1549 samples

- Delay Compensation

Automatic delay compensation will be incorporated into future versions of Pro Tools, but until that time you may use the following methods to manually compensate.

- Addition of Bypassed Plug-Ins

The 3 sample insert/send delay limitation can be easily overcome by adding Plug-Ins (such as 1-band EQs) on channels with no inserts/sends that you wish to keep in precise sample-accurate phase coherency, and then bypassing those Plug-Ins. Since the bypassed Plug-In produces no processing delay, the bypassed insert will induce the same three samples of insert/send delay as an un-bypassed insert. Unfortunately, this is not the most efficient use of DSP resources.

- Nudging Regions

Presently, Pro Tools relies on the use of "nudging" to manually offset a given Region. In the case of DINR-BNR, each module induces a 1536 sample delay (plus 3 samples of bus delay) for a total of 1539 samples. There are 44.1 samples/ms @ 44.1 kHz, and 48 samples/ms @ 48 kHz. To convert a number of samples to a number of milliseconds, use the following equation:

$$\text{delay (samples) / Sample Rate (kHz)} = \text{delay (ms)}$$

For example, the 1539 sample delay of BNR, in ms, would be:

@ 48kHz

$1539/48 = 32$ ms (plus 3 samples).

@ 44.1kHz*

$1539/44.1 = 34$ ms (plus approximately 40 samples)

*Note: Unfortunately, the math dictates that there are actually 44.1 samples/ms @ 44.1 kHz. To deal with this fractional sample correctly, 9/10ths of the time Pro Tools will round down to 44 samples, and the remaining 1/10th will be round up to 45 samples/ms. This maintains the overall (average) sample/ms at the correct value of 44.1. No rounding is required at 48 kHz.

Pro Tools version 3.2 includes a Sample-Accurate Nudge Grid option, allowing precise nudging of regions in single sample increments. This feature allows for precise delay compensation. Pressing the plus or minus keys to compensate for large offset times is tedious, but by switching the grid from samples to milliseconds, the number of keystrokes necessary to offset a Region may be greatly reduced.

5) General Operational Recommendations

- Using Learn Mode in Stereo DINR-TDM Modules

Stereo modules of BNR and Hum Removal use only the left channel of audio for the learn process. This is only a problem if you have no noise on the left channel, and excessive noise on the right channel, or different hum frequencies on each channel. In these cases, two separate Plug-Ins are needed.

- Using Keyboard Shortcuts for the Learn Operation

Using the keyboard shortcuts, Control+L and Control+Option+L for accessing First Audio Learn Mode and Last Audio Learn Mode requires Pro Tools software version 3.2 or higher. When using DINR-TDM 2.0 with earlier versions of Pro Tools software, the Edit window must be active in order to use the Learn keyboard shortcut commands.

- Using Last Learn Mode in the BNR-TDM module

Displaying the near real-time spectrum in the BNR module requires increased DSP processing. This increased processing demand can result in distorted audio and erratic performance if the Plug-In is left in this mode for extended periods of time.

- Closing Sessions While Learn Mode is Operational

Closing or quitting sessions with the DINR Plug-Ins left in Learn Mode may lead to erratic performance. It is a good idea to close all Plug-In windows before closing a session or quitting Pro Tools.

- Incorrect Cursors

If the Esc key is pressed more than one time during playback while the cursor is over

the Plug-In window, the cursor will change to one of the Pro Tools cursors. If this occurs, you can continue to use the cursor as usual (it only appears different during playback and will revert to its proper form when playback stops). If you wish to get the arrow cursor back without stopping playback, simply drag the cursor off the Plug-In window then back over it.

- Using DINR-TDM With Sequencers

Most sequencers use key commands for various purposes within the sequencer application and therefore do not support DINR-TDM's key command layout.

In some sequencers, the Plug-In's name may not show up. In others the spectral graph does not update after a Learn has been performed and/or the numeric displays for Center Frequency (in Hum) and NR Amount (BNR) may have a strange highlight around them when a window redraw occurs.

Release Notes for DINR SDII v.1.11

DINR - SD II 1.11 Contents:

- 1) About this version of DINR
- 2) Audiomedia II and Audiomedia LC Users
- 3) Saved Parameter Settings
- 4) Sound Designer II Features not Available When Using DINR-SDII During Playback

1) About this version of DINR

This latest release introduces the new TDM-compatible version of Digidesign's Intelligent Noise Reduction™ (DINR), and includes both the Broadband Noise Reduction™ (BNR) module and the Hum Removal™ module for TDM. Both modules are based on their Sound Designer II counterparts.

Also included in this release is an update to the Sound Designer II version of the BNR module. In this update, the Response and Release control sliders have been reversed to operate in the same direction as those of the TDM version. Release and Response amounts now increase in value from left to right. No other changes have been made to DINR-SDII.

Your DINR User's Guide has been updated to provide complete installation and operating instructions for both versions of the DINR Plug-Ins.

2) Audiomedia II and Audiomedia LC Users

Because these cards have less memory for DSP than other Digidesign DSP cards, the Audiomedia II and Audiomedia LC cards use different DINR algorithms. Due to these differences, noise reduction settings that are created on the Audiomedia II or Audiomedia LC cards may sound slightly different when they are auditioned from other Digidesign audio cards. While the noise reduction settings created on Audiomedia II or Audiomedia LC cards will load without problems, some adjustments may be necessary after they have been loaded on systems using other DSP boards, such as Pro Tools or Session 8 cards. The Dual Harmonic Filter feature of the Hum Removal is not available with the Audiomedia II or Audiomedia LC.

3) Saved Parameter Settings

Saved parameter settings for DINR-SDII 1.11 are not compatible with DINR-TDM 2.0 and vice versa.

4) SDII Features not Available When Using DINR-SDII During Playback

In order for DINR-SDII to achieve such amazing results when it is used for playback, some Sound Designer II functions cannot be performed simultaneously. These functions are:

Real-time sample rate conversion - The sound file will be played at the sample rate of the Sound Tools/Pro Tools peripheral. For best results, use sample rates of 44.1 kHz or 48 kHz.

Playlist automation events - Region volumes, Fade-Ins/Outs will not be played when DINR's 'Playback' button is checked. To remedy this, save the playlist as a sound file to retain all automation information, then use DINR-SDII on that file.

Dithering - Dithering is not performed when DINR's 'Playback' button is checked. To remedy this, save the file/playlist with edits/fades as a separate sound file, then use DINR SD-II on that file.

On-line playback - like all of Sound Designer II's DSP functions, DINR will not operate when Sound Designer II is locked to time code. One possible remedy is to use DINR's Process command on the file, then play it back online.