The CEDAR DNS3000

Dialogue noise suppressor

Version 1.0

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- pro audio with a smile

CEDAR DNS3000 dialogue noise suppressor

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Introducing the CEDAR DNS3000

In 2000, CEDAR Audio launched the DNS1000 dialogue noise suppressor. This was a stand-alone, desktop-format unit designed specifically for film production, dubbing, outside broadcast (remote) and studio noise suppression. It was ideal for replacing analogue units that had been in use for many years, and for use in situations where rapid setup and processing was required 'on the fly'. Two years later, we released the DNS2000, a rackmount version of the DNS technology designed specifically for use with Pro Tools, both on the Mac and PC.

Today, the DNS3000 offers the manual control of the DNS1000 and its successor, the DNS1500, the Pro Tools integration of the DNS2000, plus an internal system of scenes, memories, and (when slaved to timecode) snapshot automation with moving faders.

Quality, speed and simplicity are paramount considerations in the DNS range, and all three models offer the following:

■ Near zero latency

A group delay of less than 10 samples (typically less than 1/200th of a frame) so there is no loss of lip-sync when using DNS.

■ Flexibility

DNS will handle a wide range of noise suppression requirements.

■ Speed and ease of use

Each DNS offers a carefully designed user-interface that maximises speed of use.

■ Audio interfaces

24-bit digital audio interfaces conforming to AES/EBU and SPDIF standards.

■ Universal power supply

A DNS will work anywhere in the world.

■ Powerful processors

40-bit floating-point DSP processors ensure that each model will handle the most complex processing requirements.

Safety Instructions

Read these instructions and follow them.

■ Water and moisture

The DNS3000 must not be exposed to rain or moisture. Furthermore, if the unit is brought directly from a cold environment into a warm one, moisture may condense inside it. This, in itself, will not cause damage, but may cause electrical shorting. This could damage the unit, and even cause danger to life. ALWAYS allow a unit to reach ambient temperatures naturally before connecting the mains power.

■ Mounting and ventilation

The DNS3000 should be placed on a placed on a flat, stable surface. Do not subject it to strong sunlight, excessive dust, mechanical vibration or periodic shocks. It is not susceptible to heat build-up, but should be installed away from heat sources such as radiators, and audio devices such as amplifiers that produce large amounts of heat.

■ Power sources

The DNS3000 features a universal power supply that will work safely on any mains supply in the ranges 85V to 260V, 50Hz or 60Hz AC only. The unit should always be grounded (or 'earthed'), and power connectors should be routed so that they will not be walked on or pinched.

If the unit is not to be used for an extended period, unplug it from the wall. Pull the connector out by the plug, never by the cord itself.

■ Connections

Turn off the power to all equipment before making any connections.

■ Cleaning

Clean the DNS3000 only with a dry cloth. Never use abrasive pads or liquid cleaners such as alcohol or benzene.

■ Damage requiring service

The DNS3000 contains no user-serviceable parts and should on no account be opened or dismantled by unauthorised personnel. It should be returned to qualified service agents when it has been exposed to liquids, when it fails to function correctly, when it has been dropped, or when the case is damaged.

Getting Started

Unpacking

Unpack the DNS3000 carefully. Save the carton and all packing materials since you may need them to transport the unit in the future. In addition to the unit and the packaging, the carton should contain the following:

- mains connection lead
- software CD-ROM including this manual
- warranty registration card

Installation site

To maintain reliability and prolong operating life, observe the following environmental considerations:

- the nominal temperature should be maintained between 5° and 35° Celsius
- relative humidity should be in the range 30% to 80% non-condensing
- strong magnetic fields should not exist nearby.

Mains power inlet and switch

Mains power is provided using the standard IEC power cord supplied with the DNS3000.

Mains power is switched on and off using the switch on the rear panel. However, you may normally leave this switched on and use the power switch on the top panel to turn the DNS3000 on and off.

Connections

Audio

The DNS3000 offers two audio connection standards. It passes its signal to both outputs irrespective of the input used. The standards are:

Digital SPDIF format

You should connect the SPDIF output from your source to the SPDIF input of the DNS3000 using a single cable terminated with an RCA (or 'phono') plug. The SPDIF output of the DNS3000 should be connected to the SPDIF input of a recording device or external DAC.

Digital AES/EBU format

The AES/EBU format is used by professional digital audio devices. You should connect the AES/EBU output from your source to the AES/EBU input of the DNS3000 using a single cable terminated with an XLR plug. The AES/EBU output of the DNS3000 should be connected to the AES/EBU input of a recording device or external DAC.

Locking

The DNS3000 will automatically detect which input to use and will lock to any sample rate presented up to 96kHz. If the sample rate is not one of the standard sample rates, the filter table for the nearest standard will be used and scaled accordingly. The Bypass button will flash slowly to indicate an I/O error such as no lock.

There is no indication of which input has been selected. To avoid confusion, the unit should be used with only one input connected.

Ethernet

The Ethernet connection allows the DNS3000 to communicate with a remote system. Connect it to a suitable network using a standard Ethernet cable. See the System Pages for detailed network setup instructions.

LTC In

The DNS3000 recognises LTC timecode.

Front Panel Indicators and Controls

Softkeys, Rotary control & LCD Screen

Power On/Off Button

Channel Selector

Bypass Control

Process Controls
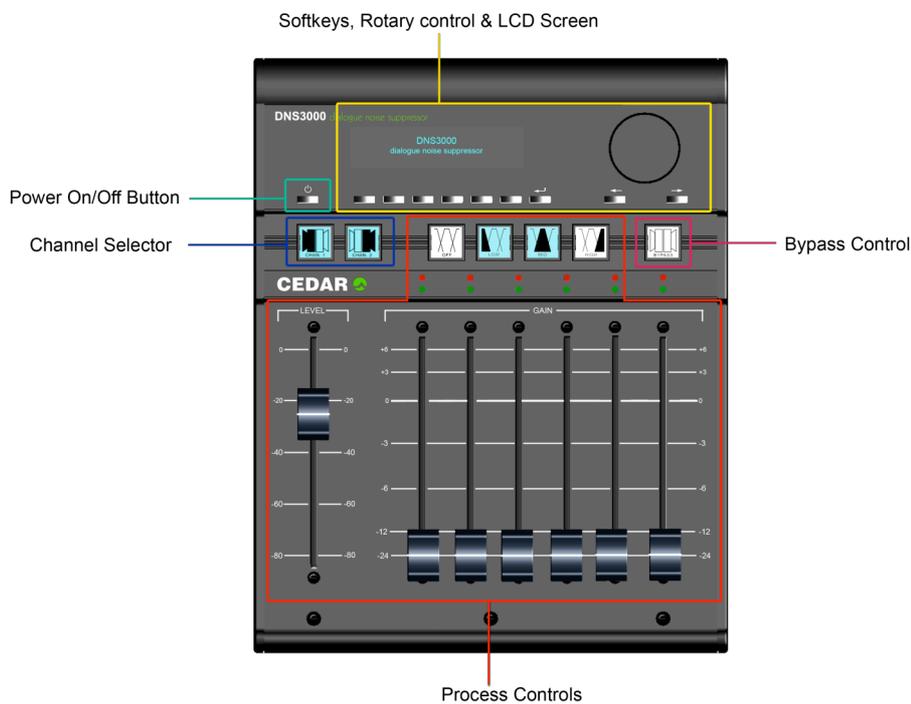
Power

■ Power on/off button

Press this to switch the DNS3000 on, and hold it to switch the unit off.

If you switch off using the rear panel switch without first powering down using the soft power button, you risk corrupting the internal memory of the unit.

Channel Selection

■ Channel Selectors

The channel selection buttons select which processing channel(s) is/are connected to the process controls.

- ■ When the CHAN1 button is lit, the process controls affect the processing on channel 1.
- ■ When the CHAN2 button is lit, the process controls affect the processing on channel 2.
- ■ You can apply the same settings to both channels by pressing CHAN1 and CHAN2 together (or in quick succession).

Process Controls

■ Process Off button

Switch processing on and off.

■ Range Selectors

The Range Selectors concentrate the unit's activity into the desired part of the audio spectrum.

■ Level control

The Level control tells the DNS3000 how much noise is present in the input signal.

■ Band Gain controls

The Band Gain controls determine the maximum amount of processing that the DNS3000 will apply in each band.

■ Activity LEDs

These offer a visual indication of the activity in each of the bands. When a green LED is lit, the signal is being attenuated in that band; when a red LED is lit, the signal is being boosted.

Screen & Softkeys

In addition to the Power on/off button, there are nine small buttons in the upper section of the panel. In general, those that are active at any given moment are illuminated, while those that are inactive are extinguished.

■ Soft buttons

Use to select menu items as displayed on the screen.

■ Close button [↵]

Takes you back to the previous screen (if there is one) and saves changes if applicable.

■ Previous and Next buttons [← and →]

Move between objects that may require selecting, scrolling or editing.

■ Spinwheel

Use to scroll through lists, edit characters and alter parameter values.

Hardware Bypass

■ Bypass

Passes the audio directly from the input to the output without processing.

This control affects both channels regardless of the status of the channel selection buttons.

Stand-alone operation

The DNS process divides a signal into a large number of well defined bands. Sophisticated digital filters analyse each of these bands and suppress the noise independently in each. The innovative design of this filter bank allows you to control the unit using relatively few front panel controls.

Channel Selectors

Your first job will be to select the channel that you wish to set up. You can select CHAN1 or CHAN2 individually, or link them by pressing both buttons in quick succession, whereupon the settings of the channel selected first are copied to that selected second. (You unlink the channels by pressing just one of the buttons.)

Range Selectors

Next, you should identify the frequency range or ranges in which the noise lies. You can press each of the Range Selector buttons individually, or combine them to choose any one of six possible processing ranges:

Low	20Hz - 400Hz
Mid	200Hz - 6kHz
High	4kHz - 18kHz
Low + Mid	20Hz - 6kHz
Mid + High	200Hz - 18kHz
Full Range	20Hz - 18kHz

To select Low + Mid or Mid + High, press the appropriate two buttons simultaneously or in quick succession. To select Full Range, press the Low and High buttons simultaneously or in quick succession.

Selecting a range concentrates all of the filters within the DNS3000's filter bank across that part of the audio spectrum.

Level control

Your next job will be to identify the noise level of the audio.

With the appropriate channel(s) and range(s) selected, pull all six Band Gain controls and the Level control down fully. Now increase the Level slowly. At first, you will hear very little happen but, at some point determined by the noise content of the recording, you will hear the noise disappear. You should attempt to find the point at which this occurs.

Placing the Band Gain controls in their lowest position ensures that maximum processing will occur as you increase the Level control, thus making identification of the noise easier.

Band Gain controls

Once you have chosen the range(s) and determined the Level, you control the action of the DNS3000's filter bank using the Band Gain controls.

The six faders represent six frequency bands distributed from lower frequencies (left) to higher frequencies (right) across the selected range.

You will use the Band Gain controls to control the amount of noise attenuation performed in each band, adjusting them to suppress as much noise as possible without introducing unwanted artefacts into the desired signal.

Noise suppression occurs in a given band when the fader is below the 0dB line. However, there are occasions when you might wish to boost the signal in a given band, and you can do this by moving the appropriate fader above the 0dB line.

Activity LEDs

The twelve Activity LEDs offer a visual indication of the activity in each of the six bands controlled by the Band Gain controls.

- Both LEDs off: Less than ±0.5dB activity
- Green LED lit: The signal is being attenuated
- Red LED lit: The signal is being boosted

The brightness of an LED offers an indication of the amount of attenuation or boost applied.

Each band controls numerous filters. Therefore, the Activity LEDs in a given band display the overall activity in that band, and are not necessarily indicative of the action of any single filter at that moment.

Bypass

You can route the input directly to the output by pressing the Bypass button. This allows you to switch off all processing, regardless of any other settings, either on the DNS3000 itself (including the in-built scenes and automation) or obtained by remote control. The signal latency is not affected by the Bypass state.

This control affects both channels regardless of the status of the channel selection buttons.

The Bypass button flashes slowly to indicate an I/O error such as no lock.

Case studies and tutorials

The following case studies describe just three of the ways in which you can use the DNS3000. You can apply the DNS3000 equally to recorded signals and to 'live' signals at the point of recording or transmission.

Case 1: Suppressing traffic noise

The DNS3000 can suppress background noises such as road traffic, aircraft, air conditioning, wind, rain, and many other common soundstage, location, and OB (remote) problems that contaminate audio. If your signal exhibits any of these, you can suppress them as follows.

First, identify the frequency range(s) in which the noise lies.

You should be able to do this by listening to the problem. However, if this proves difficult, you can use the following method. It is not important that you find the perfect settings at the first attempt. In particular, you will be able to refine your Level and Band Gain settings once you have found the correct range.

Begin as follows:

>   Select the correct channel(s)
>   Ensure that the DNS3000 is not in Bypass
>   Select Full Range

→   Set all six Band Gain controls to -24dB

→   Raise the Level control until the noise disappears

At this point you have determined an approximate setting for the Level. This is necessary for determining the Range but it is likely that you will refine this later in the procedure.

When the Level is close to the ideal setting, you should see the Activity LEDs flicker in response to the signal content.

Now continue as follows:

→   Raise the Band Gain controls to 0dB (no processing occurs)

→   Adjust the Band Gain controls to suppress the noise

You should always attempt to suppress the noise with the minimum of damage to the desired signal.

In all likelihood, you will find that the leftmost Band Gain controls are pulled down significantly, whereas the central and rightmost are close to 0dB. This tells you that the problem does not lie in the upper frequencies, so you should use the Range Selector to select Low+Mid. Then repeat the steps marked '→'.

If you now find that you are using all six faders in similar fashion, it is likely that the noise is distributed across the entire Low+Mid range. However, if the suppression is still heavily biased towards the left hand faders, you should now select the Low range alone and repeat the procedure.

If you select Low alone and cannot suppress the noise, it is probable that there is considerable noise energy in the Mid band, so you should return to using Low+Mid ranges.

For many problems such as traffic noise, the noise will lie primarily in the range 50Hz - 1.5kHz. In this case, Low+Mid will be the correct choice.

Second, optimise the Level control.

Listening carefully to the audio, refine the Level setting so that the noise is correctly identified without introducing audible artefacts. If this proves difficult, you can return the Band Gain controls to -24dB for this stage.

The DNS3000 takes a short period to 'settle' after moving the Level control (especially in the lower ranges) so you should not adjust it rapidly.

Third, refine the Band Gain controls for optimum suppression.

Set all six Band Gain controls to 0dB. Now increase and decrease the gain in each band separately while listening to the effect that each has on the noise. This will identify the bands that contain the majority of the noise. (Do not be alarmed if all six bands contain significant noise. This is not unusual.)

Let's assume that the greatest improvement occurs when you reduce the gain in bands 3 and 4. This suggests that the noise is concentrated in an approximate range of 200Hz to 1kHz. You should now find the optimum positions for all six faders. The greatest cuts will lie in bands 3 and 4, whereas bands 1, 2, 5 and 6 should remain as close to 0dB as possible to ensure that minimal signal damage occurs in the bands that do not contain much noise.

The final configuration may look like this:
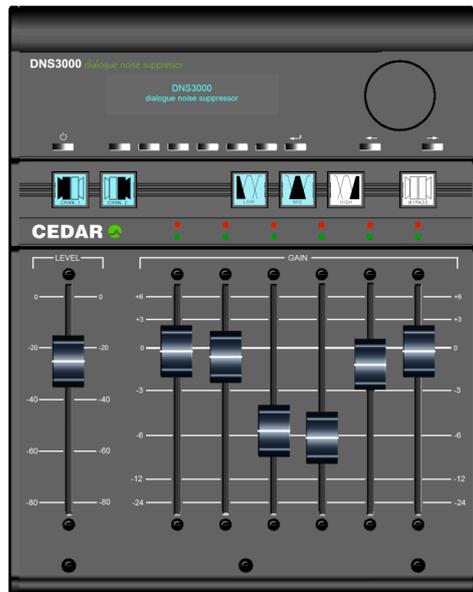
Case 2: Suppressing tape hiss

The DNS3000 can suppress the tape hiss that mars many older recordings. It will also improve the signal/noise ratio of dialogue tapes that have been poorly copied as well as those that are many generations old.

First, identify the frequency range(s) in which the noise lies.

You should follow the procedure laid down in case 1 to determine the range(s) in which the problem lies. For most instances of tape hiss, you will find that the Mid+High ranges are most appropriate. In a few cases you may find that the High range alone is most suitable. It is not as common to require suppression in the Low range because hiss is usually less prominent at lower frequencies, and it may also be masked by the genuine audio in the range.

Second, optimise the Level control.

To determine the correct Level, you should again follow the procedure described in case 1.

Third, refine the Band Gain controls for optimum suppression.

As in case 1, you should start with all six Band Gain controls at 0dB. You should then increase and decrease each control individually to find the bands that contribute most hiss to the signal. Because tape hiss often exhibits a 'white' profile at Mid and High frequencies, you may find that satisfactory results are achieved with the Band Gain controls set in a horizontal line.

However, hiss is generally less annoying at very high audio frequencies. Consequently, you may be able to reduce the amount of processing in the uppermost bands. This will help to ensure that any low amplitude signal components lying at high frequencies (which provide much of the 'air', 'ambience' or 'life' in a signal) are passed with little or no attenuation.

The final configuration may look like this:
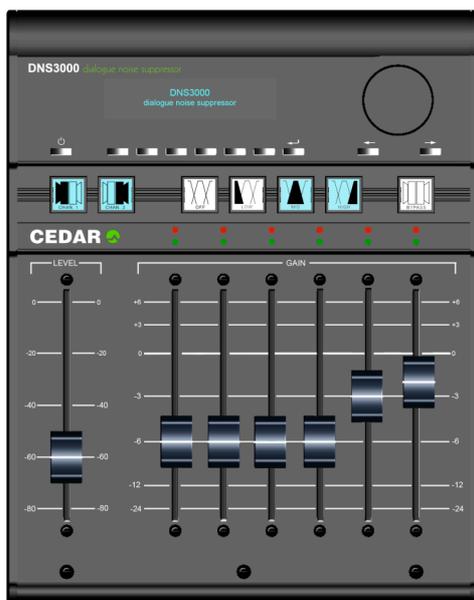
Case 3. Suppressing excessive reverberation

In many situations, the DNS3000 can suppress excessive reverberation. This can be useful in TV production when you need to match the audio from a large recording studio or soundstage to visual images set in a small room or other enclosed space. Suppressing reverberation can also be beneficial in increasing the intelligibility of poor dialogue recordings.

The method used to suppress reverberation is as follows:

First, set the range in which the reverberation lies.

In general, reverberant spaces include soft materials that absorb high frequencies more rapidly than middle and lower frequencies. Even bare rooms with hard walls include these materials: they are the actors. Consequently, you will find that Low+Mid is almost always the most appropriate combination of ranges for suppressing reverberation.

Second, set the Band Gain controls.

You should set all six Band Gain controls to -24dB. This will ensure that (provided the other controls are set correctly) the DNS3000 processes the 'tails' of the sound without adversely affecting the desired signal.

Third, optimise the Level control.

Starting at its minimum position (-80dB) increase the Level control slowly. At some point before full noise suppression becomes apparent, you will hear the tails of louder sounds become truncated. You can adjust the amount of truncation of the reverb using the Level control rather than the Band Gain controls.

The final configuration may look like this:
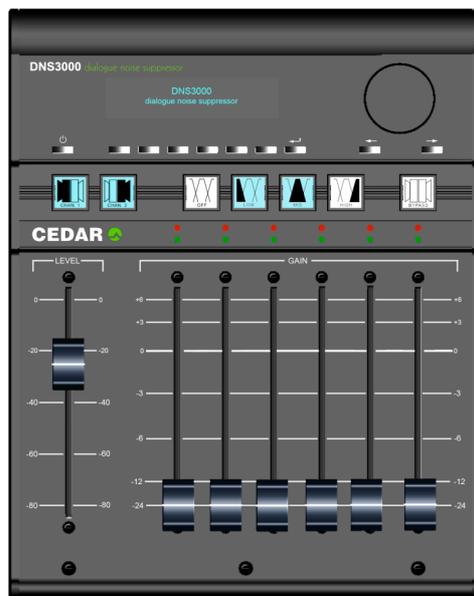
Advanced use

The following section of the manual describes how to set up the DNS3000 and how to use its advanced features, including its presets, snapshots and timecode facilities.

Front Page
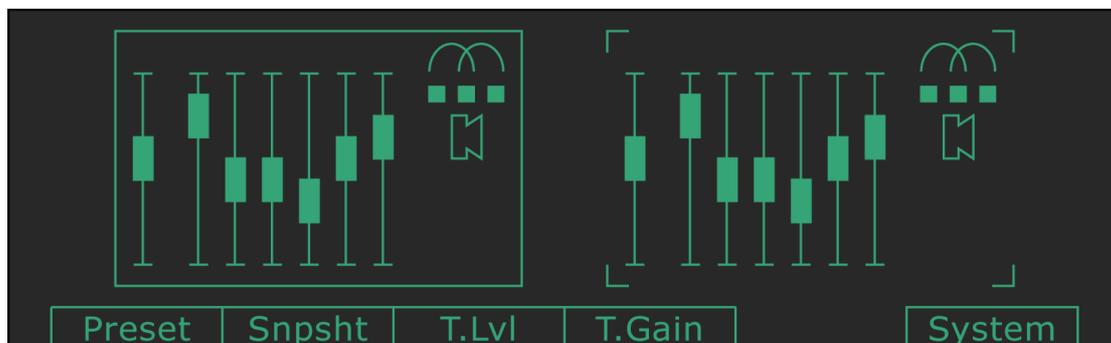
The front page shows the process settings for both channels, allowing you to see the complete setup without flipping between the channels using the CHAN1 and CHAN2 buttons.

The soft keys perform the following actions:

- Preset: opens the preset manager page.
- Snpsht: opens the snapshot manager page.
- T.Gain: toggles the 'touch' state of the gain control for the selected channel.
- T.Lvl: toggles the 'touch' state of the level controls for the selected channel.
- System: opens the system setup page.

When a parameter is 'touched' it ignores any settings that may be sent from a remote controller.

Remote Control

The legend 'RMT' appears in the top left corner of either channel when a remote controller is controlling that channel.

System pages

System Setup Page

```
System setup
────────────────────────────────────────

Firmware version: x.x




 Faders │ Panel │ TCP/IP │ T'code
```
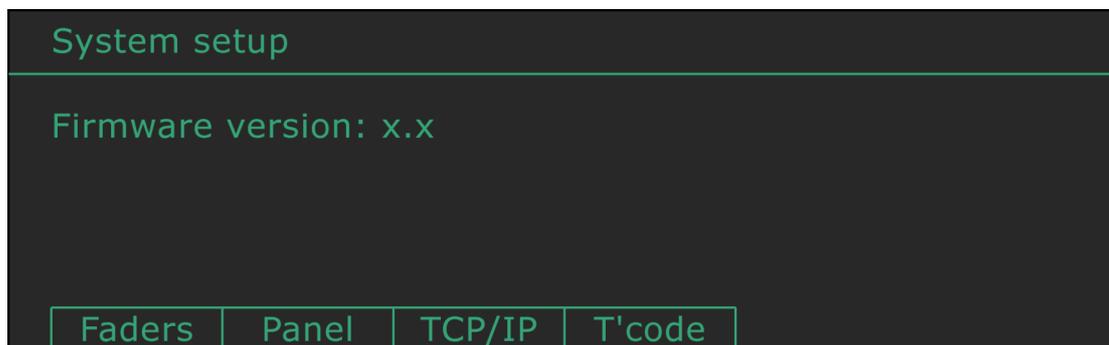
This page reports the firmware version and provides access to the various system setup pages.

Fader Calibration Page

```
Fader Calibration
────────────────────────────────────────


                         │ │ │ │ │ │ │


   --      --      --     ▮ ▮ ▮ ▮ ▮ ▮ ▮
 -24dB │  0db  │  +6dB              │ Cancel
```
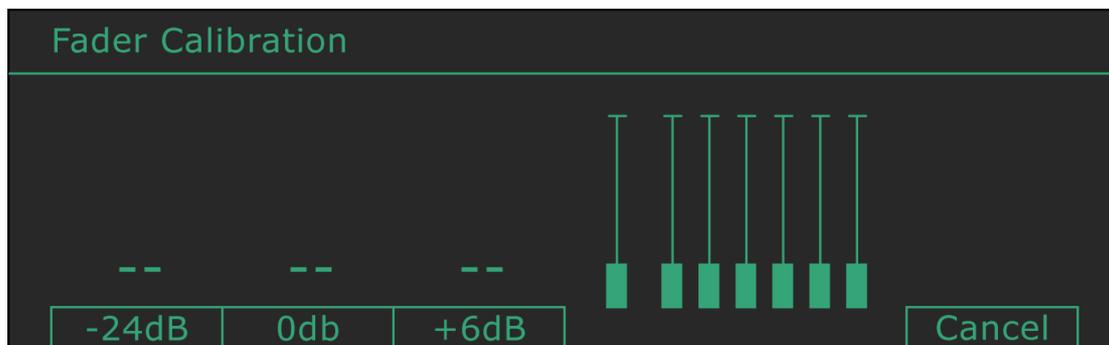
Fader calibration is necessary only after a firmware upgrade or after a faulty fader is replaced. The procedure is as follows:

- Move all the faders to the bottom of their travel and press '-24dB'.
- Move all the faders to the top of their travel and press '+6dB'.
- Move all the Gain faders to 0dB, and the Level fader to -20dB (i.e. in line with the others) and press '0dB'.
- The Close button should now be lit. Press this to save the calibration and to close the page.

Panel Brightness Page

```
  Panel Brightness
 ────────────────────────────────────────

   ->    Overall          3

         Soft Keys        1
         Buttons (bright) 9
         Buttons (dim)    0
                                  ┌────────┐
                                  │ Cancel │
                                  └────────┘
```
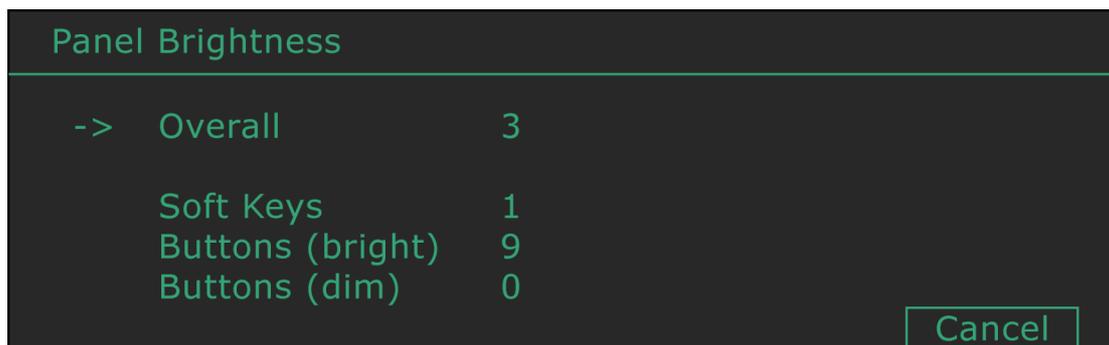
This allows you to adjust the brightness of the various panel elements and the screen.

Use the Next and Prev buttons to step through the list, and the spinwheel to adjust the values. Pressing Close saves the settings.

TCP/IP Setup page

```
  TCP/IP Setup
 ────────────────────────────────────────

   ->    Config:       Auto (DHCP)
         Address:      xxx.xxx.xxx.xxx
         Netmask:      xxx.xxx.xxx.xxx
         Gateway:      xxx.xxx.xxx.xxx

  ┌────────┐                      ┌────────┐
  │  Edit  │                      │ Cancel │
  └────────┘                      └────────┘
```

The network interface may be configured automatically if your network has a DHCP server, or manually. Toggle between these states by pressing EDIT when the Config menu item is indicated.

Auto (DHCP)

If automatic, the rest of the page shows the current settings for information only.

Manual

If manual, you may edit the network settings by scrolling to the wanted menu item and pressing Edit. You may then use the Prev and Next buttons and the spinwheel to edit values in the usual fashion.

Settings are saved when you close the page.

Switching DHCP on or off takes effect at the next system boot. Other changes in settings take effect when you close this page.

You may need to consult your network administrator for help in connecting the DNS3000 to your network. If required, the unit MAC address is printed on the rear of the unit. When connected and configured correctly, the DNS3000 responds to 'ping' packets.

Timecode Setup page

```
 Timecode Setup
 ─────────────────────────────────────────

  ->    Mode:        Auto


        Format:      xx fps



    ┌─────────┐                    ┌──────────┐
    │ Edit    │                    │ Cancel   │
    └─────────┘                    └──────────┘
```
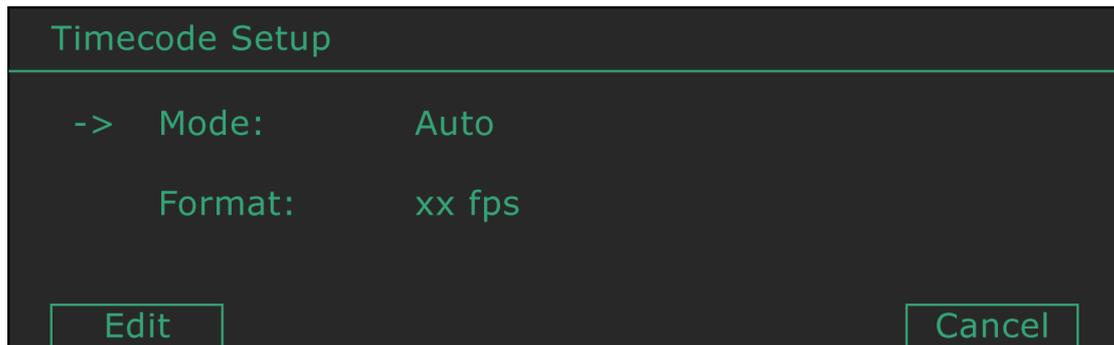
This page allows you to select automatic or manual selection of the timecode format. Toggle between the two states using the spinwheel when Mode is selected.

Auto

If automatic, the format field shows the current format for information only. The format can only be detected while the timecode input is active and playing.

Manual

Move to the Format menu item using the Prev and Next buttons and alter the value using the spinwheel. Available settings are: 24fps, 25fps, 30fps (non-drop), 30fps (drop frame).

Using Scenes

Presets

The system of presets provided by the DNS3000 allows you to store commonly-used process settings, and manually recall them to channel 1 and/or channel 2 as required. This is done using the Preset Manager page. When you create a preset, it records the settings (Level, Gain, Range & On/Off) of the channel indicated by the Channel Selector buttons. When you later recall the preset, it loads those settings into whichever channel(s) are indicated by the Channel Selector buttons at the time of recall.

Note that a preset does not store information about the channel from which it was created. Therefore, you can set up (say) channel 1, store it as a preset, and subsequently recall it to any of channel 1, channel 2 or both channels. Note that, since the preset system always stores/recalls settings from/to the selected channel(s), you cannot store or recall presets while there is no channel selected.

Snapshots

The system of snapshots provided by the DNS3000 allows you to automate the loading of process parameters against an external timecode source. This is done using the Snapshot Manager page.

When you create a snapshot, the settings (Level, Gain, Range & On/Off) for both audio channels are stored along with the current frame number. Those settings can then be automatically recalled whenever that frame number is subsequently encountered.

Note that a snapshot always stores the settings of both channels and that, upon recall, the settings are always restored to their respective channels. If a snapshot is recalled while the channels are linked, then they are automatically unlinked unless the recalled settings for both channels are identical.

Since a snapshot stores settings for both channels, it is not possible to create multiple snapshots at the same frame number. Creating a snapshot at the same frame number as an existing snapshot overwrites the old settings with the new.

Snapshot times are stored as a 'number of frames since midnight', but displayed in HH:MM:SS:FF format. If you change timecode format, the displayed times of any snapshots will change.

The BYPASS control is not stored in either presets or snapshots. If you want to create a preset or snapshot that does no processing, you must do so using the on/off button.

Preset Manager Page

```
 Preset Manager
 ─────────────────────────────────────────

 ->    [empty00]
       [empty00]
       [empty00]
       [empty00]

  Recall  │  Store  │  Delete │ Rename │  DelAll
```
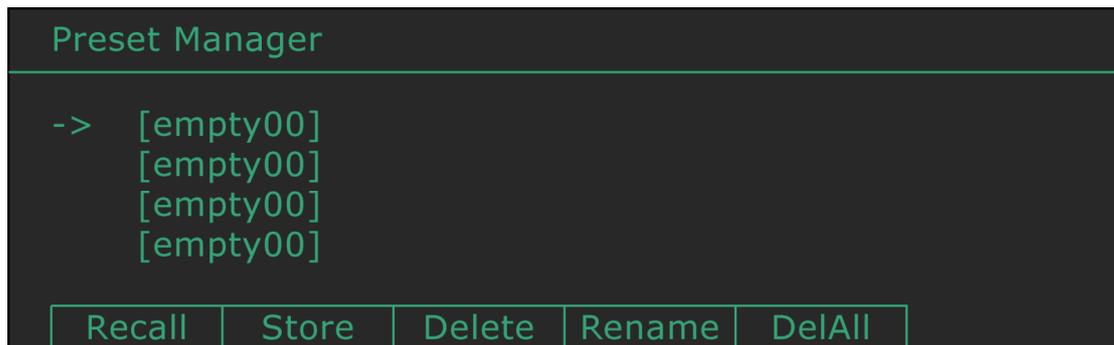
This provides access to 100 storage slots for presets.

- ■ Recall: recalls the selected preset.
- ■ Store: stores the current settings in the selected preset and opens the Name Editor
                   page
- ■ Delete: deletes the selected preset.
- ■ Rename: opens the Name Editor page for the selected preset.
- ■ Del All: deletes all presets. You will be asked to confirm this operation.

Name Editor Page

```
 Name Editor
 ─────────────────────────────────────────

       Edit:

       ┌─────────────────────────────┐
       │  Preset 00                   │
       │  _                           │
       └─────────────────────────────┘

  Delete  │  DelAll                        Cancel
```
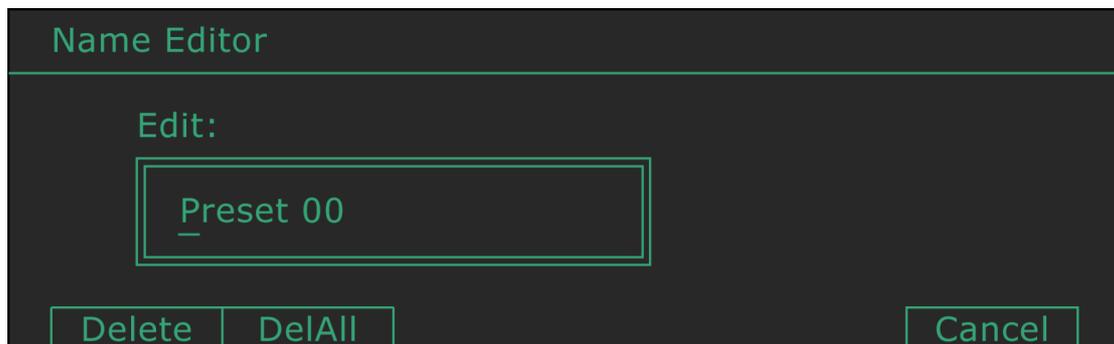
Use the Next and Prev buttons to step through the character positions within the name. If you press Next to move to an empty space, the previous character will be inserted by default.

Use the spinwheel to rotate through the standard character set, as desired.

- ■ Delete: deletes the current character.
- ■ DelAll: clears the existing preset name.
- ■ Cancel: cancels the naming operation.

Snapshot Manager Page

```
Snapshot Manager                    00:00:00:00 STOP
─────────────────────────────────────────────────────

 ->   00:00:00:00                                  0%




  Create  │  Copy  │  Move  │ Delete │   ...   │  Play
```
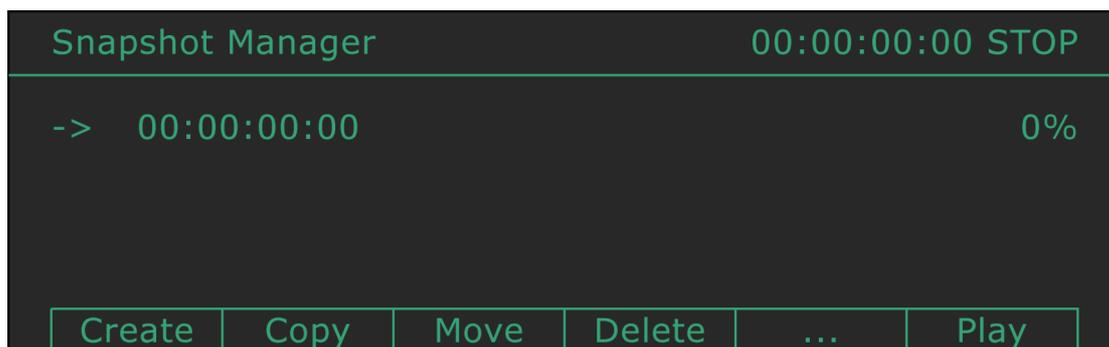
STOP and PLAY

There are two automation states: STOP and PLAY. The current state is displayed alongside the incoming timecode in the top right-hand corner of the display.

Switch between states using the soft button labelled either Play or Stop (as applicable). In PLAY mode, snapshots are automatically recalled against the incoming timecode, and some snapshot creation/deletion/editing functions (see below) are disabled.

There are two pages of commands within the Snapshot Manager:

Page 1

- Create: creates a new snapshot with the current settings at the current time.
- Copy: makes a copy of the selected snapshot at the current time.

            When you use the Copy function, a complete copy is taken and any subsequent edit of the copy affects only the copy, and not the original, and vice versa.

- Move: moves the selected snapshot to the current time.
- Delete: opens the Delete Snapshot page.
- ...   reveals page 2 of the Snapshot Manager, as below.
- Play/Stop: toggles between the PLAY and STOP states.

Page 2

- Recall: recalls the selected snapshot.
- Name: allows you to name the selected snapshot (see Name Editor page).
- Ctrls: updates the selected snapshot with the current process settings.
- Edit: recalls the selected snapshot, and opens the Snapshot Editor page.
- ...   reveals page 1 of the Snapshot Manager, as above.
- Play/Stop: toggles between the PLAY and STOP states.

The Prev and Next buttons and the spinwheel scroll the list in the obvious way. Pressing and holding Prev or Next takes you immediately to the beginning or end of the list, respectively.

By default, the timecode format is automatically detected. You can override this in the System/timecode page.

Delete Snapshot? page

```
 Delete Snapshot?
 ──────────────────────────────────────────

   Time: xx.xx.xx.xx
   Name:




   ┌──────┬────────┐                    ┌────────┐
   │ Yes  │ DelAll │                    │ Cancel │
   └──────┴────────┘                    └────────┘
```
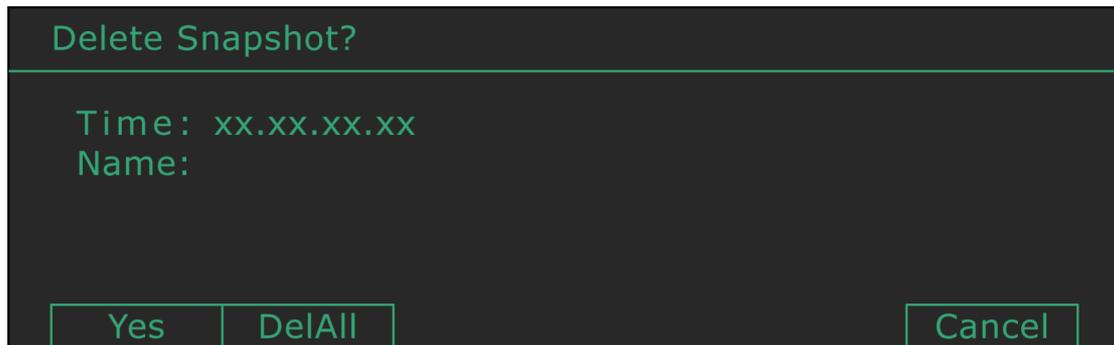
This page allows you to delete the selected snapshot or all snapshots. You will be asked to confirm this operation.

Snapshot Editor Page

```
 Snapshot Editor                        00:00:00:00 Stop
 ──────────────────────────────────────────────────────

   Time: 00:00:00:00


   Name:

   ┌────────┬────────┬────────┬────────┐
   │ Name   │ Time   │ Move   │ Ctrls  │
   └────────┴────────┴────────┴────────┘
```
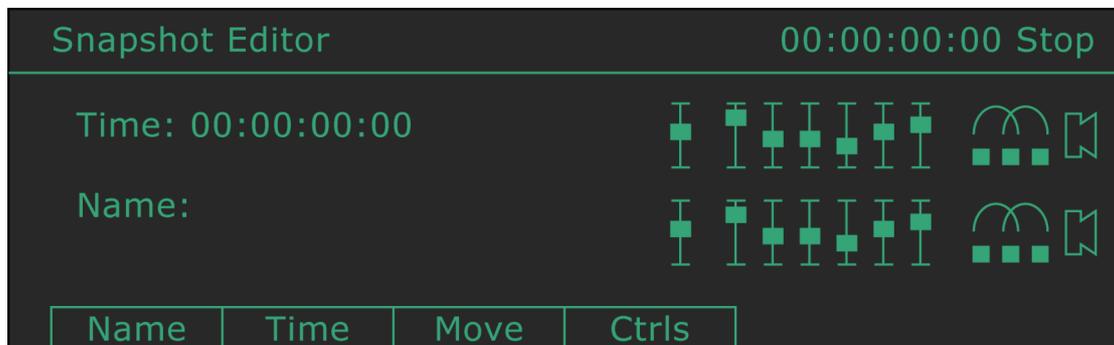
This page allows you to change the name and process settings of the selected snapshot, and the time at which it occurs.

- ■ Name: Allows you to edit the name of a snapshot
- ■ Time/Done: Allows you to edit the time of a snapshot
- ■ Move: Moves the snapshot to the current timecode, as shown in the top right-hand corner of the screen
- ■ Ctrls/Done: Allows you to update the process settings held in the snapshot to the current settings (as shown on-screen)

Changes to the Time and Ctrls of a snapshot do not take effect until you press 'Done'

Remote Control

The DNS3000 is supplied with remote control software (RCS) that allows you to control it from a Mac- or PC- based Pro Tools™ system. When used in this way, there is an Ethernet control connection between the DNS and its host. This does not carry audio; you must route the audio via the AES/EBU or SPDIF I/O in the usual way.

Once you have loaded the remote control software, you can control the DNS3000's operation from within Pro Tools, and automate the process settings of both channels.

System Requirements

The DNS3000 should be used with Pro Tools version 7 or later. Any Ethernet-equipped Macintosh running OS-X 10.4.x or later or PC running Windows XP SP2 and a suitable version of Pro Tools will support the RCS and processor unit.

Assumed knowledge

This manual assumes that you are fully conversant with your Mac/OS-X and/or PC/Windows system(s), and that you know how to operate your Pro Tools host system. It will refer to operations that are common to these products, but will not attempt to explain them.

Installing the DNS Software

Software Installation

The installer installs the Remote Control Software (RCS) which works with both the DNS2000 and DNS3000, the DNS3000 Network Scanner, the DNS3000 Settings Loader, the DNS2000 Firmware Upgrader, and this manual.

Mac/OSX

Insert the CD

Run the .mpkg file and follow the on-screen instructions.

PC/Windows

Insert the CD

Run the setup.exe file and follow the on-screen instructions.

If there are any existing DNS2000 plug-in settings on the system, these will become available to the new plug-in.

DNS3000 Network Scanner
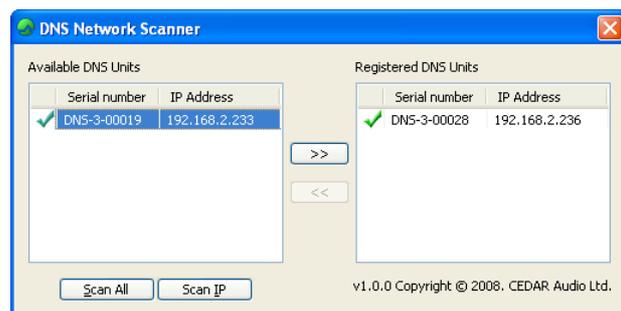
The Network Scanner must be run in order to allocate which DNS3000 units on an Ethernet network are available to a given instance of the RCS. Until it is run, the RCS will only be able to see DNS2000 units connected by USB. Allocating a unit to one PC/Mac does not prevent it being allocated to another, but is not recommended.

The Network Scanner may be run directly from the Device Selection list in the RCS (see below). Alternatively, you may run it directly from:

       Windows: **Start/All Programs/CEDAR Audio Ltd/Pro Tools/DNS**

       OSX: **Applications/CEDAR**

Scan All

Searches local networks and places any available units not already registered into the 'Available DNS Units' list. You may then make a unit available to this Mac/PC by selecting it and moving it to the 'Registered DNS Units' list – either by selecting a unit and using the >> button, or by double-clicking.

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Scan IP

Allows the user to enter the IP address of a DNS3000 not on a local network, or that is on such a large local network that 'Scan All' would take too long to find it. You may then make the unit available from this Mac/PC by selecting it and moving it to the 'Registered DNS Units' list – either by selecting it and using the >> button, or by double-clicking.

Unregistering a DNS3000

You may unregister a DNS3000 by pressing the << button. A DNS3000 cannot be unregistered while Pro Tools is running, because it may be in use.

DNS3000 Settings Loader

This application allows backing up and restoring of snapshot and presets. You may run it directly from:

        Windows: **Start/All Programs/CEDAR Audio Ltd/Pro Tools/DNS**

        OSX: **Applications/CEDAR**

Backing up

■ Select Backup settings.

■ Select the DNS3000 whose settings you wish to save. Click on Next.

■ Choose a destination folder and filename. Click on Next.

■ Choose whether you wish to save the unit's presets, snapshots, or both. Click on Next.

Once the operation is complete, the application will tell you that the DNS3000's settings have been backed up successfully.

Restoring

■ Select Restore settings.

■ Select the DNS3000 to which you wish to restore the settings. Click on Next.

■ Choose a source folder and filename. Click on Next.

■ Choose whether you wish to restore the unit's presets, snapshots, or both. Click on Next.

Once the operation is complete, the application will tell you that the DNS3000's settings have been restored successfully.

Using the RCS

Range Selectors   Audio I/O Status

Pro Tools Controls

Device Selection

Readouts

Activity Bargraphs

Level Control   Band Gain Controls
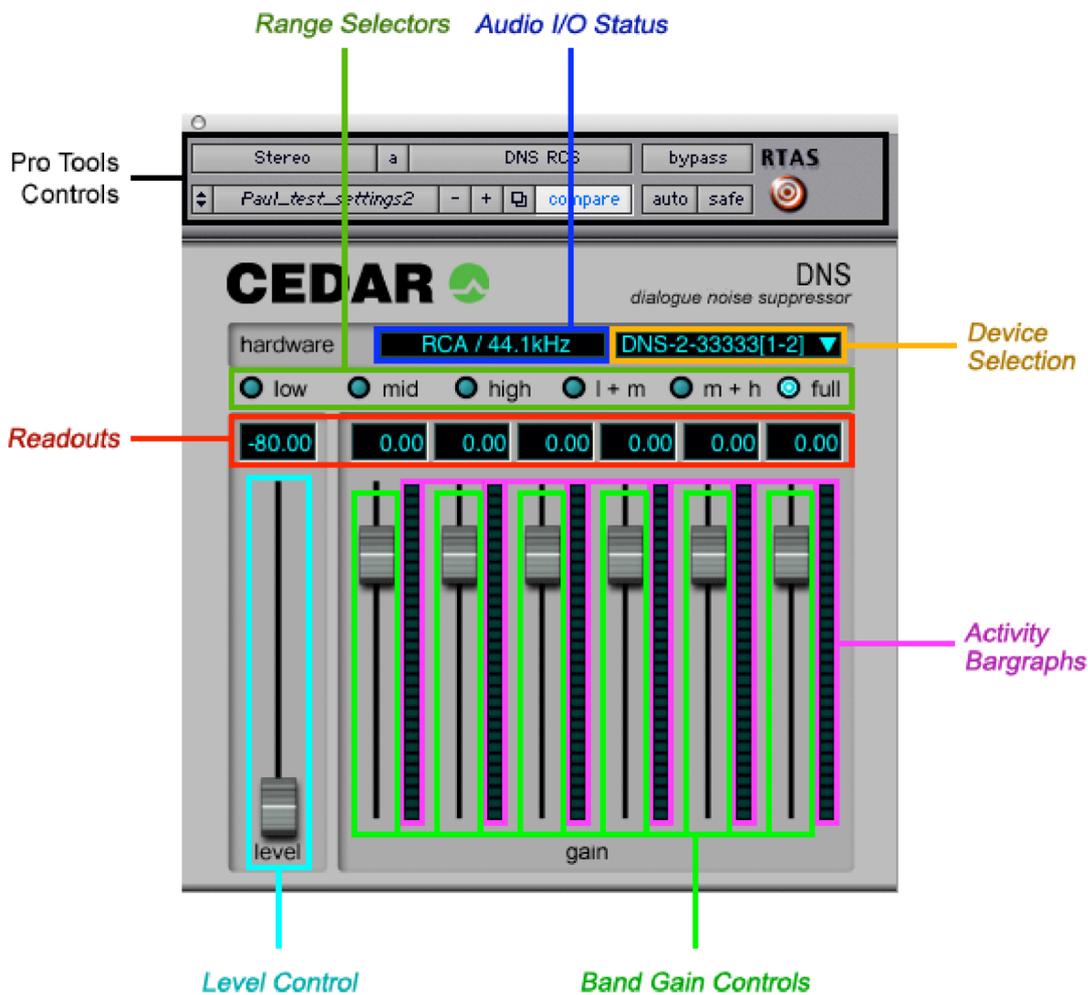
You must always remember that the Remote Control Software is precisely what it claims to be: Remote Control Software. It performs no audio processing. To process an audio stream you must route it via the DNS3000 itself using the AES/EBU or SPDIF I/O. You can do this, for example, by using an insert point within the Pro Tools mixer.

Device Selector

You can connect the DNS3000 to your Pro Tools system using an Ethernet cable, but until you link it to the Remote Control Software it will do nothing.

The drop-down list on the plug-in displays all the units (both DNS2000 and DNS3000 models) that are currently connected to the system and, in the case of the DNS3000, registered using the Network Scanner. The list allows you to select which will be controlled by this instance of the Remote Control Software.

The number(s) shown in brackets after the serial number in the Device Selection window indicate(s) which channel or channels of the DNS are controlled by this instance of the RCS.

Audio I/O Status

When a unit is selected and audio is detected at either input, the I/O status reports the sample rate and the audio input in use. The I/O status also reports certain warning and error conditions as follows:

- If no unit is selected, or if the selected unit is not accessible (perhaps because it has become disconnected from the network) the I/O status reads: **No unit connected**.
- If no audio is detected at either input of the selected unit, the I/O status reads: **No lock**.
- If the unit Bypass is active, the I/O status reads: **Global bypass on**.
- If the sample rate deviates significantly from one of the standard rates, the nominal sample rate and input selection are displayed in amber.

Activity Bargraphs

These offer a visual indication of the activity in each of the bands.

Generic Pro Tools Plug-in Controls

Bypass

This allows you to monitor the processed or unprocessed signals. It controls the DNS3000's process on/off button, NOT its Bypass button.

Other controls

The other controls provided within the Pro Tools header to the plug-in window have generic operation, and are described in the Pro Tools documentation.

Automation

The Band Gain settings, Level and Range Selectors appear in the Plug-In Automation screen, and - together with the Pro Tools Bypass control - may be automated in standard Pro Tools fashion.

To use the RCS in 'Touch' mode, the user must select touch mode on the DNS3000 as well as on Pro Tools, otherwise 'fighting' on the unit's faders can occur. The relevant faders will be shown in pink when touch mode is selected.

The hardware Bypass button cannot be controlled by Pro Tools and is not automatable. The RCS switches processing on/off using the Process Off button.

You cannot link or unlink channels when controlling the DNS3000 from Pro Tools. The link state is determined by whether you are using a single mono instance, two mono instances, or a stereo instance of the RCS.

RCS Tutorial

The following tutorial illustrates one way to use the unit. It may not be the way that you choose to operate it for all jobs, but it will get you started.

Selecting a DNS3000 Processor

You can launch the Remote Control Software on your Pro Tools system, but until you tell it which unit to use, it will do nothing. The drop-down list on the Remote Control Software displays all the available (and, if appropriate, registered) DNS units connected to your system. If there is a DNS serial number shown in the list, it is available for use on your system.

Choosing appropriate settings

You set up the process controls of the DNS3000 in the same way when using the RCS as you do when using its front panel:

Range Selector

With a DNS3000 unit correctly connected and recognised by the RCS, you should identify the frequency range or ranges in which the unwanted noise lies, and select any of six possible processing ranges by clicking on the appropriate buttons.

With practise, you will be able to identify the range by ear. Until then, you may prefer to use the methods described in the previous case studies.

Level Control

Your next job will be to identify the noise level of the audio. With the appropriate range selected, pull all six Band Gain controls and the Level control down fully. Now increase the Level slowly. At first, you will hear very little happen but, at some point determined by the noise content of the recording, you will hear the noise disappear. You should attempt to find the point at which this occurs.

When the Band Gain controls are fully down, maximum processing occurs as you increase the Level control, thus making identification of the noise easier.

Band Gain Controls

Once you have chosen the range and determined the Level, you control the action of the DNS3000's filter bank using the Band Gain controls.

The six faders represent six frequency bands distributed from lower frequencies (left) to higher frequencies (right) across the selected range.

You will use the Band Gain controls to control the amount of noise attenuation performed in each band, adjusting them to suppress as much noise as possible without introducing unwanted artefacts into the desired signal.

Noise suppression occurs in a given band when the fader is below 0dB. However, there are occasions when you might wish to boost the signal in a given band, and you can do this by moving the appropriate fader above 0dB.

Creating generic settings files

If you save a Settings file in the Pro Tools Librarian menu window with 'None' selected as the DNS hardware, you can reload this file when connected to a given DNS and the control parameters will be retrieved without changing the hardware selection. The DNSQuickStart file (shown selected below) is an example of such a file, and can be used to initialise the control settings of any DNS.

If a DNS is specified when you save a Settings file, your system will attempt to reconnect to it when you reload that file.

Contact Information

Headquarters:

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Email:	asia@cedaraudio.com

German Office:

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Email:	info@cedaraudio.de

Web:

English language:	www.cedaraudio.com
German language:	www.cedaraudio.de

Worldwide Dealer List:

For an up-to-date dealer list, please visit www.cedaraudio.com, and click on 'Contact Us' followed by 'Worldwide Dealer List'.

Technical Support

Should you experience difficulties with your CEDAR DNS3000, please contact your local dealer or CEDAR office. Alternatively, you may send an email to support@cedaraudio.com. In either case, please provide the following details:

■ Your hardware serial number and software version number. (See Getting Started and Connections).

■ A precise description of the problem.

Troubleshooting non-CEDAR components

This manual assumes that you are fully conversant with your Mac/OS-X and/or PC/Windows system(s), and that you know how to operate your Pro Tools host system.

If you encounter problems with your Macintosh®, MacOS-X®, your PC, Windows XP®, or Pro Tools®, please refer to the relevant manuals or contact the dealer that supplied these to you.

Unless appointed independently as authorised dealers for the following products, CEDAR Audio's dealers will not attempt to provide technical support for:

■ Macintosh computers

■ Mac OS-X

■ PCs of any description

■ Microsoft Windows XP

■ 3rd-party hardware and software, including Pro Tools

Firmware maintenance

Upgrading

The DNS3000 firmware can be upgraded over the Ethernet network. Please refer to the instructions received with the upgrade software.

Special boot options

Holding certain buttons as the unit is switched on triggers special boot behaviours as follows:

CHAN2

Disable DHCP and use the default IP address 192.168.0.1. This is useful if the Ethernet port is required for a reprogramming/upgrade operation, but the network in use does not have a DHCP server.

BYPASS

Boot into the bootloader. Do not boot the code proper.

BYPASS + HIGH + CHAN1

Make an internal backup of the firmware.

BYPASS + MID + CHAN1

Restore the firmware from the internal backup (if it exists).

BYPASS + LOW + CHAN1

Erase the firmware (but not the backup, if any exists).

Boot options which include BYPASS work only during a 'cold' reboot (i.e. switching on using the power switch on the back). When such an operation is complete the unit must be power-cycled using the power switch the back. The progress of any operations on the firmware is indicated by the Activity LEDs and operation is complete when only the right-most red Activity LED is left flashing.

Specifications and CE Certificates

General:

Power supply: 85–260VAC; 50–60Hz

Power consumption: 15W

Overall dimensions: 80 x 225 x 280mm

Weight: approx 3kg (net)

I/O type: Digital PCM

I/O resolution: 24 bits

Sample rate: 44.1, 48, 88.2, 96kHz

Data format: SPDIF or AES/EBU

Group delay (milliseconds):

	Bypass	**Processing**
44.1kHz	< 0.23ms	< 0.23ms
48kHz	< 0.21ms	< 0.21ms
88.2kHz	< 0.11ms	< 0.11ms
96kHz	< 0.10ms	< 0.10ms

EMC Regulations:

In order to comply fully with EMC regulations, the DNS3000 should be connected using metal-shelled connectors and good quality shielded cable suitable for digital audio.

Declaration of conformity:

Date of issue: 1 April 2008

Equipment: CEDAR DNS3000 dialogue noise suppressor

Manufacturer: CEDAR Audio Ltd

Address: 20 Home End, Fulbourn, Cambridge CB21 5BS, UK

This is to certify that the aforementioned equipment, when used in accordance with the instructions in this manual, fully conforms to the protection requirements of the following EC Council Directives: on the approximation of the laws of the member states relating to:

■ 89/336/EEC Electromagnetic Compatibility

Applicable standards: EN 50081-1:92

EN 50082-1:92

■ 73/23/EEC Low Voltage Equipment

Applicable standard: BSEN 60-065:1994

E&OE. The Company reserves the right to change specifications without notice.

Licence and Limited Warranty

1. DEFINITIONS

In this Licence and Limited Warranty the following words and phrases shall bear the following meanings:

'the Company' means CEDAR Audio Limited of 20 Home End, Fulbourn, Cambridge CB21 5BS, UK

'the System' means an instance of the DNS3000 sound-reprocessing system comprising hardware and software held on non-volatile memory ('firmware') developed by the Company and PC/Mac software developed by the Company and with respect to the software any updates or replacements thereof;

'this Document' means this Licence and Limited Warranty.

2. ISSUE AND USE OF THE SYSTEM

2.1 The terms and conditions of this Document are implicitly accepted by any person or body corporate who shall at any time use or have access to the System, and are effective from the date of supply of the System by CEDAR Audio Limited to its immediate customer.

2.2 The Company hereby grants to the Licensee and the Licensee agrees to accept a non-exclusive right to use the System.

3. PROPERTY AND CONFIDENTIALITY

3.1 The System contains confidential information of the Company and all copyright, trade marks, trade names, styles and logos and other intellectual property rights in the System including all documentation and manuals relating thereto are the exclusive property of the Company. The Licensee acknowledges that all such rights are the property of the Company and shall not question or dispute the ownership of any such rights nor use or adopt any trading name or style similar to that of the Company.

3.2 The Licensee shall not attempt to reverse engineer, modify, copy, merge or transcribe the whole or any part of the System or any information or documentation relating thereto.

3.3 The Licensee shall take all reasonable steps to protect the confidential information and intellectual property rights of the Company.

4. LIMITED WARRANTY AND POST-WARRANTY OBLIGATIONS

4.1 The Company warrants that the System will perform substantially in accordance with the appropriate section of its accompanying product manual for a period of one year from the date of supply to the Company's immediate customers.

4.2 The Company will make good at its own expense by repair or replacement any defect or failure that develops in the System within one year of supply to the Company's immediate customer.

4.3 The Company shall have no liability to remedy any defect, failure, error or malfunction that arises as a result of any improper use, operation or neglect of the System, or any attempt to repair or modify the System by any person other than the Company or a person appointed with the Company's prior written consent.

4.4 In the case of any defect or failure in the System occurring more than twelve months after its supply to the Company's immediate customer the Company will at its option and for a reasonable fee make good such defect or failure by repair or replacement (at the option of the Company) subject to the faulty equipment having first been returned to the Company. The Company will use reasonable efforts to return repaired or replacement items promptly, all shipping, handling and insurance costs including all customs fees, duties and taxes being for the account of the Licensee.

4.5 The above under takings 4.1 to 4.4 are accepted by the Licensee in lieu of any other legal remedy in respect of any defect or failure occurring during the said period and of any other obligations or warranties expressed or implied including but not limited to the implied warranties of saleability and fitness for a specific purpose.

4.6 The Licensee hereby acknowledges and accepts that nothing in this Document shall impose upon the Company any obligation to repair or replace any item after a time when it is no longer produced or offered for supply by the Company or which the Company certifies has been superseded by a later version or has become obsolete.

5. FORCE MAJEURE

The Company shall not be liable for any breach of its obligations here under resulting from causes beyond its reasonable control including, but not limited to, fires, strikes (of its own or other employees), insurrection or riots, embargoes, container shortages, wrecks or delays in transportation, inability to obtain supplies and raw materials, or requirements or regulations of any civil or military authority.

6. WAIVER

The waiver by either party of a breach of the provisions hereof by the other shall not be construed as a waiver of any succeeding breach of the same or other provisions, nor shall any delay or omission on the part of either party to exercise any right that it may have under this Licence operate as a waiver of any breach or default by the other party.

7. NOTICES

Any notices or instruction to be given hereunder shall be delivered or sent by first-class post or telecopier to the other party, and shall be deemed to have been served (if delivered) at the time of delivery or (if sent by post) upon the expiration of seven days after posting or (if sent by telecopier) upon the expiration of twelve hours after transmission.

8. ASSIGNMENT AND SUB-LICENSING

The Licensee may at his discretion assign the System and in doing so shall assign this Licence its rights and obligations to the purchaser who shall without reservation agree to be bound by this Licence. The original Licensee and any subsequent Licensees shall be bound by the obligations of this Licence in perpetuity.

9. LIMITATION OF LIABILITY

The Company's maximum liability under any claim including any claim in respect of infringement of the intellectual property rights of any third party shall be, at the option of the Company either:

(a) return of a sum calculated as the price received for the System by the Company from its immediate customer depreciated on a straight line basis over a one year write-off period; or

(b) repair or replacement of those components of the System that do not meet the warranties contained within this Document.

The foregoing states the entire liability of the Company to the Licensee.

10. CONSEQUENTIAL LOSS

Even if the Company has been advised of the possibility of such damages, and notwithstanding anything else contained herein the Company shall under no event be liable to the Licensee or to any other persons for loss of profits or contracts or damage (whether direct or consequential) arising in connection with the System or any modification, variation or enhancement thereof and including any documentation or data provided by the Company or for any other indirect or consequential loss.

11. ENTIRE AGREEMENT

The Company shall not be liable to the Licensee for any loss arising in connection with any representations, agreements, statements or undertakings made prior to the date of supply of the System to the Licensee.

12. TERMINATION

This Licence may be terminated forthwith by the Company if the Licensee commits any material breach of any terms of this Licence. Forthwith upon such termination the Company shall have immediate right of access to the System for the purpose of removing it.

13. SEVERABILITY

Notwithstanding that the whole or any part of any provision of this Document may prove to be illegal or unenforceable the other provisions of this Document and the remainder of the provision in question shall remain in full force and effect.

14. HEADINGS

The headings to the Clauses are for ease of reference only and shall not affect the interpretation or construction of this Document.

15. LAW

This Document shall be governed by and construed in accordance with English law and all disputes between the parties which cannot be resolved by negotiation shall be determined by arbitration in England in accordance with the Arbitration Act 1950 and 1979.

Serial Number:	
Inspected by:	
Date:	

Manufactured by:

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