

GRAHAM-PATTEN

D/ESAM 8000

Operations Guide



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This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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Introduction

Overview

This guide provides an introduction to the operations of your new D/ESAM 8000 audio mixer. You will be up and running very quickly if you follow the steps outlined in this guide. Several sections have step-by-step examples after the general discussion of the operation or feature.

The following information is covered in this Operations Guide:

Define Virtual Machines

A virtual machine provides the unique ability to group physical inputs and maintain this grouping throughout the system via a name and/or number.

Assign Virtual Machines to Logical Machines

Edit systems use the traditional Logical Machine method of identifying sources. The 12 logical machines (R, A, B, C, etc.) on the D/ESAM 8000 can be reassigned at any time to a different virtual machine. In this way, the edit system's logical machine sources are not limited.

Assign Logical Machines to Faders

Once Virtual Machines have been defined and they have been assigned to a Logical Machine, this step places the logical machine on physical faders.

Configure Bus Assignment

This section covers how to assign a source on the program and/or preview bus and allows the re-routing of source audio for recording and/or monitoring.

Manual Crossfades

One or more faders can be utilized to manually control Crossfades on the D/ESAM 8000 mixer.

Monitoring Setup

The monitoring section of the D/ESAM 8000 is explained and diagramed. The Monitor Matrix allows the re-routing of monitor inputs to the speaker outputs and adjusting the level to provide a monitor sub-mix.

Enhanced Monitoring Features

This section discusses the D/ESAM 8000 Enhanced monitoring features. Auxiliary Monitoring, Monitor Memory and Pre Fader Listen.

Hot Config.

The new Hot Config feature greatly simplifies changing the source configuration. This is especially helpful when using an edit controller.

Bus Mapping

The Bus Mapping section of the D/ESAM 8000 is explained and diagramed. Bus Mapping allows editing systems that can only control 4 buses to now control all 8 of the D/ESAM 8000 buses.

Edit Interface Configuration

The D/ESAM 8000 is fully controllable by a number of edit systems and gives options on the level of control desired.

GPI Fader Starts

Information and configuration on the use of Fader Starts and the GPI port.

Save Your Configuration

Once the setup is complete, it must be saved in order to return later.

Floppy Disk Storage

Memory registers and virtual machines can be saved and recalled from a floppy disk from the D/ESAM 8000 control panel.

EQ Settings

Steps and information on using the D/ESAM 8000's multi-band EQ.

Delay

Steps and information on using the 3 types of Digital Delay.

Dynamics

The new optional dynamics board offers a great many parameters for adjustment.

System

This is an overview of the D/ESAM 8000 system. The D/ESAM 8000 consists of three units: the CPU controller, the Vadis audio chassis and the mixer control panel. The input/output configuration will vary, since the D/ESAM 8000 offers many choices.

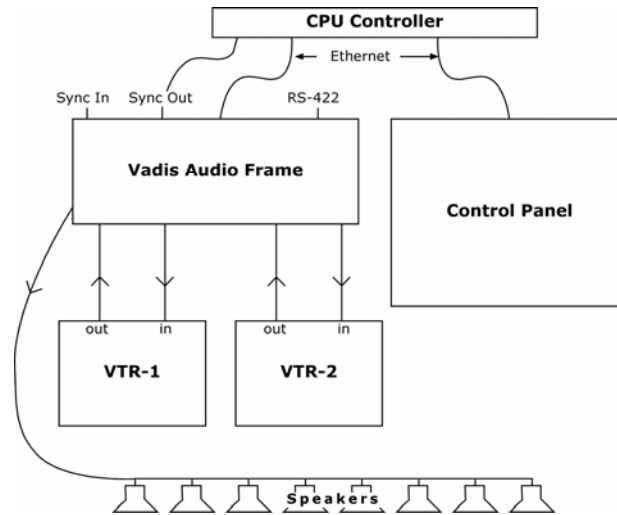


Figure 1 - D/ESAM System

Manual Conventions

The following conventions are used in this manual:



= a physical button on the control panel.



= a button on the touch sensitive LCD screen.

Define Virtual Machines

Before beginning to use the D/ESAM 8000, physical inputs must be assigned to a virtual machine. This virtual machine is then used throughout the D/ESAM 8000 as a way to group the physical inputs.

This is done from the controller chassis. This cannot be done from the D/ESAM 8000 control panel. It is necessary to know which physical inputs are associated with which in-house machine (VT-21, Dbeta1, etc.).

Note: *The engineering staff configures each system with a set of default virtual machines with assigned inputs. This section only needs to be done if the addition or renaming of virtual machines is required.*

You will need to have a Monitor, Mouse and Keyboard connected to the CPU. See PC operation and shut down for connections.

Follow the steps below to configure a virtual machine:

1. If the D/ESAM 8000 program is not already running on the controller chassis, launch the D/ESAM 8000 application. There is a shortcut to this application on the desktop of the CPU controller chassis.
2. From the top menu choices, click on MAINTENANCE and select "Virtual Machines" from the pull-down menu.
3. Double-click on the virtual machine name to be set up.
4. Click in the box labeled NAME and enter the name as desired.

NOTE: *Virtual machine names are limited to 8 characters. This is to ensure visibility on the Home View screen.*

5. Enter the desired tracks for this virtual machine. These tracks correspond to the physical inputs connected to the back of the Vadis audio frame. Use the number zero (0) for empty tracks.
6. Press OK to accept the changes and return to the Virtual Machine List.

Or press CANCEL to ignore the changes and return to the Virtual Machine List.
7. To continue configuring more virtual machines, repeat steps 3 to 6 above.
8. When finished configuring virtual machines, click CLOSE to close the Virtual Machine List window.

Assign Virtual Machines to Logical Machines

Now that virtual machines have been created, the next step is to assign them to logical machines.

Logical machines are the D/ESAM 8000's way of keeping track of groups of physical inputs (virtual machines). The D/ESAM 8000 allows the assignment of 12 logical machines. However, if there are more than 12 virtual machines virtual machines can be easily assigned to a logical machine. The configurations can be saved in order to recall them at any time.

Follow the steps below to assign a virtual machine to a logical machine:



1. Press the **ASSN MACH** button in the Edit Interface/Config section of the control panel. A prompt appears on the LCD screen to "Press a Logical Machine button."
2. Press the desired button in the Rate/Trans section of the control panel corresponding to the logical machine to be assigned.



Example:

3. An overlay appears on the LCD screen listing all of the virtual machines. Use the knob to the right of the arrow on the LCD screen to scroll the list up or down and select the desired virtual machine.

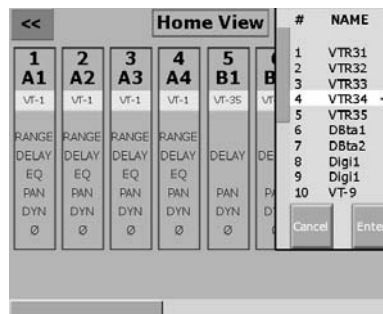


Figure 2 – Assign Machine LCD Menu

4. To assign other virtual machines to logical machines, repeat steps 2-3 above.




5. Press **Enter** on the LCD screen or press **ENTER** on the control panel to save the choice(s).





Assign Logical Machines to Faders (Assign Channels)

In order to actually hear a logical machine, it must be assigned to a fader or group of faders. On the D/ESAM 8000, there is complete flexibility to bring each channel of a source to an individual fader, group them all on a single fader or assign stereo pairs to a single fader. The configuration can be changed at any time.

Follow the steps below to assign a logical machine to faders:

1. Press the  button in the Edit Interface/Config section of the control panel. A prompt appears on the LCD screen to "Press a Logical Machine button."
2. Press the desired logical machine button in the Rate/Trans section of the control panel.

Or press the  or  button on the control panel to assign the From or To source.

3. Press the desired fader select button(s) on the control panel in order to assign this logical machine or From/To source. These buttons are located above the faders.

Note: *If only one fader select button is selected, all tracks of the logical machine will be grouped on a single fader. If this is not the desired selection, press UNDO and start over.*

4. **OPTIONAL:** Press the desired track number to start the assignment.

5. Press  to save the changes.



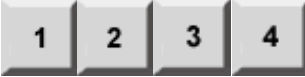


Or to cancel the assignment *without* saving the changes,

press  .

Assign Logical Machines to Faders - Examples





Stereo Faders

Follow the steps below to assign all 8 channels of Logical Machine A to faders 1-4 using the Stereo Faders assign feature.

1. Press the  button in the Edit Interface/Config section.
2. Press the logical machine button  in the Rate/Trans section.
3. Press fader select buttons .
4. Press the  button.
5. Press  to save the stereo fader assignment.




Grouped Faders


Follow the steps below to assign all 8 channels of Logical Machine A to fader 1 using the Grouped Faders assign feature.


1. Press the  button in the Edit Interface/Config section.
2. Press the logical machine button  in the Rate/Trans section.
3. Press fader select button .
4. Press  to save the grouped fader assignment.

Single Channel

Follow the steps below to assign only channel 3 of Logical Machine A to fader 2 using the Single Channel assign feature.

1. Press the  button in the Edit Interface/Config section.
2. Press logical machine button  in the Rate/Trans section.
3. Press the  button in the Menu Selection/DMEM section.

4. Press fader select button .


5. Press  to save the single channel assignment.


Channels to Unity


The "Unity" function is used to set one or more channels to unity level mode. When channels are set in this way, the following actions occur:

1. The channel's electrical levels are set to unity and the yellow unity light will be on.
2. Effects such as EQ and Dynamics will be removed from the selected channels audio path.

The unity function is also useful for digital cloning, that is making an identical copy of a tape. Use the following steps to set channels to unity:

1. Press the fader select buttons  that are required to be set to unity. The channel function menu appears on the Status LCD screen. The selected channels are outlined on the display.

2. Press  on the LCD touch screen. The word 'Unity' appears on the LCD below the associated channel(s) selected.

3. Press  on the LCD touch screen to accept.


4. To remove **UNITY** from selected channels repeat steps 1 through 3.


Auto Channels - From

To simplify the process of single and multiple-event auto-assembly, the D/ESAM 8000 mixer allows the assignment of "FROM" and "TO" channels. Once assigned, these channels act as placeholders for logical machines.


During a session, when the editing system asks for FROM and TO sources, the D/ESAM mixer dynamically assigns the requested sources and tracks on an event-by-event basis. This feature saves the operator from having to manually reassign each new source.

Follow the steps below to assign the FROM source to faders 1-4 using the Auto Channels assign feature.

1. Press the  button in the Edit Interface/Config section.


2. Press the  button next to the Rate/Trans section.


3. Press fader select buttons  .

4. Press  to save the assignment.


Auto Channels - To

Follow the steps below to assign the To source to faders 5-8 using the Auto Channels assign feature.

1. Press the  button in the Edit Interface/Config section.

2. Press the  button next to the Rate/Trans section.

3. Press fader select buttons  .

4. Press  to save the assignment.

Configure Bus Assignment



The D/ESAM 8000 operates with a familiar video switcher-style interface whereby sources are placed on Program and/or Preset buses. When a transition is initiated, either manually with the Trans Start button on the control panel or via an edit controller, the D/ESAM 8000 will transition from the source on the Program bus to the source on the Preview bus.

Bus assignment is the way to take channel 2 of a source and have it go out to channel 1 of the master, for example. The D/ESAM 8000 offers an easy method for adjusting the output bus assignment of logical machines.

Manual Operation

In manual operation, the desired output bus button (labeled 1-8 vertically above the faders) can be pressed and the faders can be adjusted to the desired level to configure the source.

Follow the steps below to manually configure the output bus assignment:

1. Press  or  or both buttons on the control panel to select which output bus is being configured.
2. Toggle on or off the output bus buttons for the desired source. These are labeled 1-8 vertically above the faders.


Additionally, the output level can be set by adjusting the faders for the desired source.

Editor Control

Under editor control, whenever a source is selected on the editor, the default output bus assignment will be selected on the mixer. If this is not the desired effect, then the bus assignment must be configured.

Follow the steps below to configure the output bus assignment for use with an edit controller:

1. If the current configuration for a desired source needs to be viewed, select it on the edit controller.

2. Press  to enable configuration mode.
3. The D/ESAM 8000 allows each source to be uniquely configured on the source and preview buses. Most users configure both buses identically. **Both** is selected by default. If source and preview must be configured separately, select the buses to be configured by pressing





Press the desired button in the Rate/Trans section of the control panel corresponding to the logical machine to be configured.

Example: 

The D/ESAM 8000 places the current configuration for the selected machine on faders 11-18. If the selected machine is only a 4 channel machine, the faders 15-18 will be used, and so on.

4. Toggle on or off the output bus buttons for the desired source. These are labeled 1-8 vertically above the faders.



5. Press  on the LCD screen or press  on the control panel to save the configuration.




Or to cancel Config *without* saving the changes,

press  .

Manual Crossfades



One or more faders can be used to manually control Crossfades on the D/ESAM 8000 mixer. This allows the faders to control output bus level and to transition from the program to preset bus. Crossfade channels can be assigned to faders using all the functionality of assigning any source to faders, including Stereo Faders.

Follow the steps below to assign Crossfade channels to faders:

1. Press the  button in the Edit Interface/Config section of the control panel.
A prompt appears on the LCD screen to "Press a Logical Machine button."
2. Press the  button in the Menu Selection/DMEM section of the control panel.
3. Press the desired fader select button(s)  on the control panel to which you wish to assign crossfade capability. These buttons are located above the faders.

Note: *If only one fader select button is selected, all crossfade channels will be grouped on a single fader. If this is not the desired selection, press UNDO and start over.*

Optional: Press the desired track number to start the assignment. This allows Manual Crossfade capability for only output channels 3 and 4, and leaves the others for editor control, for example.

Press  on the LCD screen or press  on the control panel to save the changes.

Or to cancel the assignment *without* saving the changes,


press  .

Note: *After assigning Crossfade Channels to faders, once a transition begins using those faders, the channel strip in the Home View for the corresponding faders will display a triangle at the bottom to show which way the fader needs to be moved to complete the transition.*

Preview Section

The PREVIEW SECTION works with the MONITOR SECTION to allow source selection for monitoring and metering. Preview selections, including tone, supply signals to the MONITOR and METER sections of the D/ESAM 8000. When preview sources are selected, the logical machine letter is chosen that represents a virtual machine and all inputs assigned to that machine. Single and multiple sources from any combination of logical machines can be previewed.



To preview a single source, press the desired source button  in the Preview Selection area on the D/ESAM 8000 panel. The button will light. Pressing a new source cancels the previous source. Moving a fader adjusts the source level to Program, Preset and Preview.


To preview multiple sources, press and hold the first source button and then select additional sources while continuing to hold the first source button.



All logical machines being monitored will have their associated button lit.


TONE



Press  to turn off all mixer crosspoints and place tone on all output buses. When pressed again the mixer returns to its previous state.

MIX OUT



Press  to monitor the Program output of the mixer. The MIX OUT button turns RED.




MONITOR PFL

The D/ESAM 8000 offers you the option of monitoring any source on the preview bus pre-fader adjustment, and even if that source is not assigned to faders. Note that the Recorder is always PFL (Pre-Fade Listen) on the preview bus.

Follow the steps below to use PFL monitoring:



1. Confirm that the  button is not illuminated.

2. Select any source  or  recorder in the Preview Selection area of the control panel.
3. Press  in the Preview Selection area to hear that source pre-fader.

Monitor Section

The Monitor Section works with the Preview Section and the LCD display to provide a full eight channel monitor matrix.

Within the Monitor Section, the D/ESAM 8000 allows the preview and monitoring of individual machines, a combination of machines or the program output of the mixer.

Main monitor levels are adjusted by turning the Monitor Level knob located just above the disk drive on the D/ESAM 8000 control panel. When the LED next to the Monitor Level control is lit green the monitor

level is at unity. To quickly set the monitor level to unity hit the button on, then off.




Monitor Button Functions

To enable or disable a monitor channel, press the corresponding monitor channel button individually or in combination as desired. Each monitor button lights when the selected channel is active. Monitor levels are displayed on the Monitor LCD.

Example: 


Mute All

Press the  button to mute all of the monitor levels.

Dim All

Press the  button to lower the monitor levels by 20dB.

Solo


Press the  button, then the corresponding monitor channel or channels that are to be monitored. This allows the capability of toggling between selected monitoring channels and full monitoring.

Monitor External

In monitor external mode, the Monitor Matrix and output level knob are disabled. Additionally, the matrix is locked in a default routing with bus 1 to output 1, bus 2 to output 2, etc.


To enable the Monitor External mode of operation do the following:



Press the  button in the monitor section of the upper control panel.


Mon Memory

This function allows the user to select pre-defined monitor output

configurations, or in conjunction with the  button, to create and save new configurations.


Pre-defined Configurations



Press the  button and then select one of the following predefined configurations:


Mono Mode



Select  on the LCD touch screen. It will toggle to ON. Channels 1-8 are now placed on monitor output 1 and monitor output 2.


2 CH Mode



Select  on the LCD touch screen. It will toggle ON. Channels 1, 3, 5 and 7 are placed on monitor output 1. Channels 2, 4, 6 and 8 are placed on monitor output 2.


4 CH Mode



Select  on the LCD touch screen. It will toggle ON. Channels 1 and 5 are placed on monitor output 1. Channels 2 and 6 are placed on monitor output 2. Channels 3 and 7 are placed on monitor output 3. Channels 4 and 8 are placed on monitor output 4.

8 CH Mode



Select  on the LCD touch screen. It will toggle ON. Channel 1 will be placed on monitor output 1, channel 2 will be placed on monitor output 2, Channel 3 to output 3, and so on.

To create and save new monitor output configurations, see the Monitor Memory section under Enhanced Monitoring Features in this manual.


Monitor Matrix

When monitor matrix mode is active, faders 11-18 are used to display the monitor outputs as follows:

Fader 11 = Monitor Output 1
 Fader 12 = Monitor Output 2
 Fader 13 = Monitor Output 3
 Fader 14 = Monitor Output 4
 Fader 15 = Monitor Output 5
 Fader 16 = Monitor Output 6
 Fader 17 = Monitor Output 7
 Fader 18 = Monitor Output 8

To set up the Monitor Sub-Mix mode of operation do the following:



1. Press the  button in the monitor section of the upper control panel to enable Monitor Mix mode.

To adjust the individual monitor channel levels, continue with step 2.

Or to leave monitor levels at their default setting and to make adjustments to the output bus mapping, skip to step 3.

2. To adjust the monitor output levels, first check the state of the output bus buttons (labeled 1-8 vertically above the fader).

There are 3 color states for these lamps:


- **Red** – output levels can be freely adjusted.
- **Green** – the output level is locked for that channel.
- **Off** – the monitor output is turned off.

Once the lamp is red, simply move the fader.

3. To adjust the routing of the monitor output bus, simply toggle on or off the desired output bus buttons corresponding to the monitor

channel you wish to control. Remember the color states above:
Red = adjustable, **Green** = locked, **Off** = off.


4. To exit Monitor Sub-mix mode and temporarily save the changes,

press . These settings will be here the next time the Monitor Mix mode is entered.

Or to exit Monitor Sub-mix mode *without* saving the changes,

press .

Mon Level

Pressing the  button brings up the monitor level display, which is separated into two sections.


Main Monitor

The MAIN section shows the monitor output levels. All highlighted channels are controlled by turning the Monitor Level knob. The level is shown on the Monitor Level display.

Auxiliary Monitor

The D/ESAM 8000 allows control of one set of output buses from the Main Monitor control knob and a second set of output buses from an Auxiliary Monitor control knob. This means, for example, one set of outputs can go to the room monitors and the other set can go to the announce booth and have separate control over both levels.

Follow the steps below to assign and adjust the Auxiliary output monitors:

1. Press  in the monitor section of the control panel.
2. In the bottom half, or Aux monitor section, of the LCD screen, press the number of the output bus desired to assign to Auxiliary monitor output level control. The button will change color to indicate that it has been changed from Main monitor control to Aux monitor control.
3. Adjust the soft knob on the right side of the LCD screen (indicated by the arrow) to turn up or down the Auxiliary monitor output.

If an output bus must be re-assigned to the main output level control, press the number of that bus in the upper half, or Main Monitor section, of the LCD screen.

To set all channels back to the Main Monitor level control, select the




button on the LCD touch screen.


Monitor Memory


Monitor matrix settings can be titled, saved and recalled or factory presets can be recalled. This greatly speeds up the use of the monitor matrix for complicated mixes such as with Dolby Surround or other user configured monitoring situations.


Save New

Follow the steps below to save a new monitor memory register:


1. Press  in the monitor section of the upper part of the control panel.
2. Setup the monitor matrix as desired. For more information on using the monitor matrix, please consult the Monitor Matrix section on page 19.

3. Press  in the monitor section of the upper part of the control panel.

4. Press  in right-hand LCD touch screen.
5. Using the keyboard on the LCD screen, type the new name for the monitor matrix settings you wish to save.


6. Press  to save the monitor matrix settings

Or

To clear the title and start again, press  .


Or





To cancel the operation, press  to return to the monitor memory screen.

Save (overwrite)

Follow the steps below to overwrite an existing monitor memory register:

1. Press  in the monitor section of the upper part of the control panel.
2. Setup the monitor matrix as desired. For more information on using the monitor matrix, please consult the Monitor Matrix section on page 19.

3. Press  in the monitor section of the upper part of the control panel.

4. Press  on the LCD touch screen.

5. Using the keyboard on the LCD screen, type the name of the monitor memory register that should be overwritten.

6. Press  on the LCD touch screen.


That monitor memory register has now been overwritten with the new settings. The LCD screen returns to the Home View.

Delete


To delete existing monitor memory registers, see the Delete User, Configuration and Monitor Memory Registers from Panel Memory section of this manual.


Recall

Follow the steps below to recall an existing monitor memory register:

1. Press  in the monitor section of the upper part of the control panel.
2. Press the name of one of the preset monitor memory registers

Or

3. Press  at the bottom of the right-hand LCD touch screen.





This displays the current list of monitor memory registers that have been saved. It may be necessary to press  until the register appears that is to be recalled.


4. Press the name of the register to be recalled.

Monitor PFL

The D/ESAM 8000 offers you the option of monitoring any source on the preview bus pre-fader adjustment, and even if that source is not assigned to faders. Note that the Recorder is always PFL (Pre-Fade Listen) on the preview bus.

Follow the steps below to use PFL monitoring:

4. Confirm that the  button is not illuminated.
5. Select any source  or  recorder in the Preview Selection area of the control panel.
6. Press  in the Preview Selection area to hear that source pre-fader.

Repeat step 2 after pressing  to hear a different source. Select multiple sources by pressing multiple buttons in the Preview Selection area.

Video/Audio Reference

The D/ESAM 8000 will lock to the following video or audio references:

Video references






NTSC, PAL, HD 60 Field, HD 59.94 Field, HD 48 Field, HD 48/1.001, HD 25 Frame Progressive, HD 24 Frame Progressive and HD 24/1.001 Progressive

Audio References


AES3 48 KHz


Note: When locking to AES3 reference, the LOCK/UNLK light will blink (if no Video Reference is present) indicating that there is no video synchronizing reference.


To change the Video Reference, perform the following steps:

1. Press  on the LCD touch screen.
2. Press  on the LCD touch screen.
3. Press  on the LCD touch screen.
4. To select the appropriate reference, turn the knob to the right of Reference Selection on the LCD.
5. Press  on the LCD touch screen or  on the control panel.



To change from Video Reference to AES, perform the following steps:

1. Press  on the LCD touch screen.

2. Press  on the LCD touch screen.

3. Press  on the LCD touch screen.

4. Turn the knob to the right of External Selection to read AES Input.


5. Press  on the LCD touch screen or  on the control panel.


Hot Config


The new Hot Config feature greatly simplifies changing the source configuration. This is especially helpful when using an edit controller.

Follow the steps below to use Hot Config:

1. Select the source to be configured on the edit controller.
2. Change the configuration on the program and/or preset bus of the D/ESAM 8000 as needed.

Note that as soon as you change the configuration from the current, stored settings the  button lights dimly.

3. Press  to accept the source configuration changes.

If the configuration settings are not to be made permanent, do not press the  button (the button will turn off after a brief period).

Bus Mapping

Bus Mapping is an optional setting in the Desam8000.ini file that allows a specific edit system bus command to control other mixing buses. The typical use of this feature is to allow an edit system that can only control four buses to control all eight channels of the D/ESAM 8000 (i.e. a bus 1 edit system command could control both bus 1 and bus 5 of the mixer, a bus 2 edit system command could control both bus 2 and bus 6 of the mixer, and so on).

Enabling Bus Mapping

In order for the Bus Mapping to operate, the Desam8000.ini file must be enabled for Bus Mapping. To configure the Desam8000.ini file perform the following:




1. Connect a monitor, mouse, and keyboard to the D/ESAM 8000 CPU.
2. Shut down the Desam8000 application while leaving the Vadis application running.
3. Using Windows NT Explorer (located under Programs) go into the Desam8000 directory.
4. Locate the Desam8000.ini file and double click it with the mouse. The ini file should be displayed in Notepad.
5. Scroll down until the bottom of the file. At the bottom add a "[BusMap]" section.
6. Next add the necessary bus mapping under the [BusMap] section. For each incoming bus command from the edit system a "Busx=y,y" is added where x equals the incoming bus command and y equals the mixer buses to be controlled. For example "Bus1=1,4" means that an incoming bus 1 command from the edit system would control buses 1 and 4 of the mixer. *See the example below.*
7. Once all the changes have been added to the Desam8000.ini file, save and exit Notepad.
8. Exit Windows NT Explorer and re-start the Desam8000 application.

The following shows how the Desam8000.ini file should be edited for enabling Bus Mapping for eight channel control from a four channel edit system:

```
[BusMap]
Bus1=1,5
Bus2=2,6
Bus3=3,7
Bus4=4,8
```

Bus Map Button

The Bus Mapping enable/disable has its own individual control button located on the Edit I/F menu on the Status LCD. To access this menu perform the following:

1. Press the  button on the Status LCD.
2. From the Main Menu screen press the  button.
3. On the Edit I/F Menu the  button is located in the center of the menu screen.


The Bus Map button can be turned off or on to disable or enable Bus Mapping operations. This allows the operator the ability to disable the Bus Mapping when it is not required.

Note that the Bus Map button will not be present on the Edit I/F menu if Bus Mapping function has not been enabled from the Desam8000.ini file. Refer to **Enabling Bus Mapping** section on the previous page for further details.

Edit Interface Configuration

The D/ESAM 8000 is configured from the factory for either ESAM II or D/ESAM IV protocol, selected by the edit controller. One button is all that is required for Editor Control. However, if individual, breakaway control is desired over sources, previews, transitions and rates, the D/ESAM 8000 offers that, too.

Follow the step below to enable Editor Control:

1. Press the  button in the Edit Interface/Config section of the control panel.

This button along with the other 4 edit interface breakaway buttons will illuminate. To disable editor control of the D/ESAM 8000, repeat the step.

Follow the step below to enable or disable editor control over Sources, Preview Monitoring, Rates and/or Transitions:

1. Press any of the edit interface breakaway buttons in the Edit Interface/Config section of the control panel:



The corresponding button will illuminate to show it is being controlled by the editor or off to show it will not be controlled.

GPI Fader Starts

This section describes the connection, set-up, and operation of GPI Fader Starts. Fader Start allows a fader to trigger a GPI which can be used to start or stop an external device (CD player, tape machine, etc.). Utilizing the 8 data lines on the CPU's parallel port, a Logical machine (A – R) can trigger a Fader Start GPI. Each Fader Start GPI data line can be configured to a Logical machine so that a specific Logical machine always triggers a specific GPI data line.

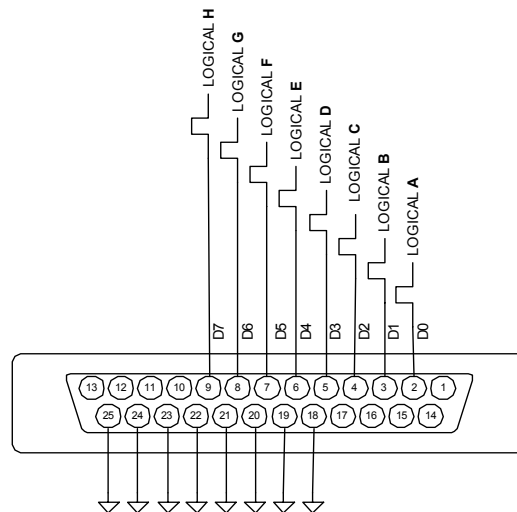
GPI Fader Start Specifications:

- 0 - +5V GPI, 0V = OFF, +5V = ON
- < 5mA per pin drive capability (parallel port specification)
- Definable Fader ON/OFF position via INI file
- GPI data lines can be configured to a Logical Machine via INI file
- Feature can be enabled or disabled via INI file

GPI Connection

The GPI Fader Starts use the D/ESAM 8000's CPU parallel port data I/O pins as their physical connections. Each data line (0-7) corresponds to a Logical machine.

The following diagram shows the default Logical machine association to the parallel port data pins.



Enabling GPI Fader Starts

In order for the GPI Fader Starts to operate, the Desam8000.ini file must be enabled for Fader Starts. To configure the Desam8000.ini file perform the following:

1. Connect a monitor, mouse, and keyboard to the D/ESAM 8000 CPU.
2. Shut down the Desam8000 application while leaving the Vadis application running.
3. Using Windows NT Explorer (located under Programs) go into the Desam8000 directory.
4. Locate the Desam8000.ini file and double click it with the mouse. The ini file should be displayed in Notepad.
5. Scroll down until the [GPI] key is found. At the end of the [GPI] section enter the "FaderStartGPI=1".
6. Once these changes have been added to the Desam8000.ini file save and exit Notepad.
7. Exit Windows NT Explorer and re-start the Desam8000 application.

The following shows how the Desam8000.ini file should be edited for enabling Fader Starts:

```
[Gpi]
Task1_StartCond=1
Task1_Type =0
Task1_Cmd =03019e
Task1_Para =96
```

```
Task6_StartCond=0
Task6_Type =0
Task6_Cmd =0301aa
Task6_Para =00
```

FaderStartGPI=1 ; Enables Fader Start GPI

Configuring GPI Fader Starts

The GPI Fader Start can have an on/off trigger point set for the faders along with what GPI data line is assigned to what logical machine. Setting the Fader Start Value

The physical fader position that causes the GPI data line to toggle on or off can be set in the Desam8000.ini file. Enter "FaderStartValue=XX" under the FaderStartGPI=1 line where XX can be any number from 0 to 1023. Note that the bottom of the fader travel is 0 and the top of the fader travel is 1023. The default fader start value is 5.

The following example shows the FaderStartValue set to 10.

```
FaderStartGPI=1           ; Enables Fader Start GPI
FaderStartValue=10      ; GPI data line will toggle on/off when the fader
                          ; position reaches 10
```

Set the GPI data line to a Logical Machine

Each of the 8 GPI data lines (0 – 7) has the capability to be controlled by a particular Logical machine. The default settings are:

```
GPI data line 0 (pin 2) = Logical Machine A
GPI data line 1 (pin 3) = Logical Machine B
GPI data line 2 (pin 4) = Logical Machine C
GPI data line 3 (pin 5) = Logical Machine D
GPI data line 4 (pin 6) = Logical Machine E
GPI data line 5 (pin 7) = Logical Machine F
GPI data line 6 (pin 8) = Logical Machine G
GPI data line 7 (pin 9) = Logical Machine H
```

To set a GPI data line to a particular Logical machine enter "FaderStart_GPIdata_X=XX" where X is a data line number 0 –7 and XX is a Logical Machine R – AUX2.

The following example shows how GPI data line 6 and 7 are set to be controlled by Logical machines AUX1 and AUX2 respectively:

```
FaderStartGPI=1           ; Enables Fader Start GPI
FaderStartValue=10      ; Fader will trigger on/off when the fader position
                          ; reaches 10
```

```
FaderStart_GPIdata_6=AUX1 ; Set GPI data line 6 to be controlled by
AUX1
FaderStart_GPIdata_7=AUX2 ; Set GPI data line 7 to be controlled by
AUX2
```

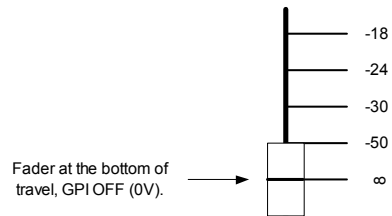
GPI Fader Starts Operations

The operation of the GPI Fader Start is simple. When a Logical machine that is set to control a GPI Fader Start data line is assigned to a control panel fader, the physical position of the fader will trigger the GPI data line on or off.

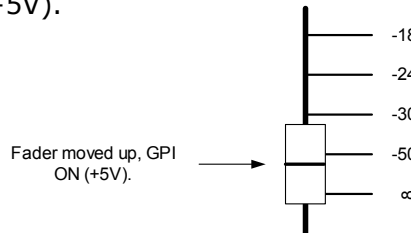
A GPI Fader Start fader can be a single channel (always uses track #1), a Stereo ½ pair, or a Grouped Logical machine.

Fader

When the fader is at the bottom of its travel the GPI is off (0V).



When the fader is moved up from the bottom of its travel it will trigger the GPI on (+5V).



Details to consider when using Fader Start:



- A Fader Start trigger fader can be a single channel (track #1), a Stereo pair (track ½), or a Grouped logical machine.
- The Fader Start trigger position can be set in the Desam8000.ini file. Refer to the **Enabling GPI Fader Starts** section in this manual for further details.
- Fader Start is not stored in DMEM registers. If a register is recalled that moves a Fader Start fader that was previously off, the Fader Start will remain off until its fader is physically moved.

Edit I/F

The GPI Fader Start operation can be enabled/disabled locally by the operator using the Edit I/F controls. There are two modes of operation using the Edit I/F:

The EDIT I/F button located on the Control Panel is the overall method for enabling and disabling all remote control operation including the Fader Starts. When this button is off the GPI Fader Starts will not operate. When the EDIT I/F button is on GPI Fader Starts enabled for operations depending upon the state of its individual control button.

The GPI Fader Starts has its own individual control button located on the Edit I/F menu on the Status LCD. To access this menu perform the following:

1. Press the  button on the Status LCD.
2. From the Main Menu screen press the  button.
3. On the Edit I/F Menu the Fader GPI button is located in the center of the menu screen.

The Fader GPI button can be turned off or on to disable or enable Fader Start operations. This allows the operator the ability to disable the Fader Start operations when it is not required.

Note that the Fader GPI button will not be present on the Edit I/F menu if Fader Start functionality has not been enabled from the Desam8000.ini file. Refer to **Enabling GPI Fader Starts Functionality** section in this manual for further details.

Save / Recall Registers

The D/ESAM 8000 is configured to automatically save the last configuration. This way, when it is necessary to reboot, it will return to the last settings.

The D/ESAM 8000 also offers over 8000 registers to save custom mixer setups. These registers are divided into 2 categories: configuration and panel memory (D/MEM). The difference is that the configuration registers save more information than the D/MEM registers.




The following table lists the data categories that are stored and recalled to the panel for both D/MEM and configuration registers:

Register Data Categories ¹	D/MEM Reg.	Config Reg.
Channel assignments	✓	✓
Edit interface enables		✓
EQ settings	✓	✓
Dynamics settings	✓	✓
Fader range	✓	✓
LCD Background		✓
LCD Brightness		✓
Link status	✓	✓
Lock status	✓	✓
Logical Machine assignments		✓
Mix Out mode	✓	✓
Monitor Levels		✓
Monitor Modes		✓
Monitor Sub-Mix		✓
Panel LED Brightness		✓
Preset crosspoints	✓	✓
Preset faders	✓	✓
Preview crosspoints	✓	✓
Program crosspoints	✓	✓
Program faders	✓	✓
Source/Preview Configuration	✓	✓
Transition bus enables	✓	✓
Transition rates	✓	✓



¹Some features may not be implemented yet.

Table 1 - Register Data Categories




Follow the steps below to save a configuration register:

1. Press  button in the Menu Selection/DMEM section of the control panel.
2. Press  to denote that this to be a configuration register.
3. Press the desired register number.
4. Press  to save the configuration.



Follow the steps below to save a D/MEM register:

1. Press  button in the Menu Selection/DMEM section of the control panel.
2. Press the desired register number. *Remember not to press the zero button or a configuration register will be overwritten.*
3. Press  to save the DMEM.

Follow the steps below to recall a configuration register:

1. Press  button in the Menu Selection/DMEM section of the control panel.
2. Press  to denote that this to be a configuration register.
3. Press the desired register number.
4. Press  to recall the configuration.

Follow the steps below to recall a D/MEM register:

1. Press  button in the Menu Selection/DMEM section of the control panel.
2. Press the desired register number. *Remember not to press the zero button or a configuration register will be recalled.*
3. Press  to recall the DMEM.

Floppy Disk Storage


Memory registers and virtual machines can be saved to floppy disk and recalled right from the D/ESAM 8000 control panel. These registers are saved in separate groups:

- User Registers
- Configuration Registers
- Monitor Memory Registers
- Virtual Machine Table

The following operations assume that a DOS formatted floppy disk is in the disk drive of the control panel. If the disk needs to be formatted and/or erased, this can be accomplished in the *Disk Menu*.

Save or Recall User, Configuration and Monitor Memory Registers

Follow the steps below to Save or Recall User, Configuration and Monitor Memory registers:

1. Press  in the right-hand LCD touch screen.

2. Press .

3. Press  or .

4. Select the type of register to be saved or recalled:


User Reg (panel snapshots)


Config Reg (panel configuration snapshots)

Monitor Reg (monitor memories)


5. Select the desired register from the scroll list displayed on the right side of the screen.

Or

To select all of the registers, press .

6. Press  to save or recall the register(s) listed in the scroll window.

Or



To cancel the operation, press .

Delete User, Configuration and Monitor Memory Registers from Panel Memory

Follow the steps below to delete user, configuration and monitor memory registers:



NOTE: *The following steps will delete memory registers from the local memory **NOT** from floppy disk. It is suggested that the registers should be saved to floppy before attempting this operation (see above).*

To delete registers from the floppy disk, either erase the entire disk using the Disk Menu, Erase Disk operation or place the floppy disk in a PC and delete the files individually.


1. Press  in the right-hand LCD touch screen.
2. Press .
3. Select the type of register to be deleted:
 - User Reg** (panel snapshots)
 - Config Reg** (panel configuration snapshots)
 - Monitor Reg** (monitor memories)
4. Select the desired register from the scroll list displayed on the right side of the screen.

Or

To select all of the registers, press .


5. Press  to delete the register(s) listed in the scroll window.
6. Press  to confirm the Delete operation.

Or

To cancel the operation, press .

Save or Recall Virtual Machine Table

Follow the steps below to Save or Recall the virtual machine table:


1. Press  in the right-hand LCD touch screen.

2. Press .

3. Press either  or .

4. Press **Enter** to confirm the Save or Recall operation.

Or

To cancel the operation, press .


EQ Settings

The D/ESAM 8000 offers a fully featured parametric equalizer. Control is available over both low and high bands as well as 4 mid bands. Since adjustment of the EQ on the D/ESAM 8000 is pre-fader control, adjustment can be made of the pre-EQ gain to compensate for any additional gain that results from applying EQ.

Follow the steps below to adjust the EQ settings:

1. Press the desired fader select button(s) on the control panel to apply EQ. These buttons are located above the faders.




2. Press  on the LCD screen.

The EQ Adjust Menu appears in the right-hand LCD screen.



3. Press  on the LCD screen to toggle the EQ feature on.

The selected faders are outlined in yellow to indicate that EQ will be applied to these faders. This same button is used to turn EQ off in order to compare the new settings with the original, un-EQ'd source.

4. Select the EQ band to adjust by touching the  button on the LCD screen.



Or turn the bottom soft knob to the right of the LCD screen to select the EQ band.

The following is a list of EQ bands and available controls:

EQ Setting	EQ Band						
	Low	Mid1	Mid2	Mid3	Mid4	High	Gain
Gain	✓	✓	✓	✓	✓	✓	✓
Frequency	✓	✓	✓	✓	✓	✓	
Q		✓	✓	✓	✓		

Table 2 – EQ Settings

5. Turn the soft knob to the right of the LCD screen to adjust the corresponding EQ setting or to choose another band for the selected faders.

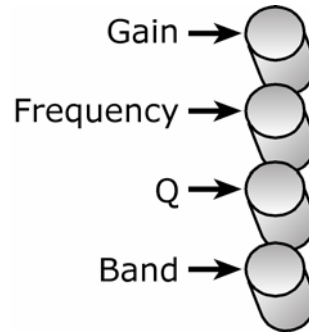








Figure 1 – EQ Control Knobs

6. Press  on the LCD screen or press  on the control panel to save the EQ settings.
7. To set a band to flat EQ settings, press the  button on the LCD screen. This will only affect the band currently being adjusted.
8. To reset all of the EQ parameters for all bands, press the  button in the upper left corner on the LCD screen.
9. Or to cancel the assignment *without* saving the changes, press  on the LCD screen or press  on the control panel.

DELAY

The **D/ESAM 8000 Digital Delay** allows retiming of audio signals to video signals which have been delayed — typically, due to special effects devices or normal delays inherent in digital video tape recorders and digital switchers. The D/ESAM 8000 offers three different types of delay that can be added to the audio path:

- **Virtual Machine Delay**

This type of delay attaches a *default* delay value to a virtual machine. The value is entered via the CPU, and is designed for *permanent* situations in which the delay value never (or rarely) changes. For example, a digital video tape recorder that includes a constant one-frame delay (due to a video frame buffer), would be an excellent machine on which to set a one-frame virtual machine delay. Thus, every time the virtual machine is placed on the D/ESAM 8000 panel, the default delay is automatically assigned.

- **Logical Machine Delay**

This type of delay is assigned to a logical machine via the D/ESAM 8000 control panel, on an “as-needed” basis. For example, logical machines A, B, and C can each have their own individual delay values, which move with the logical machine as it is assigned to different virtual machines. (If a VTR needs to be routed through an effects device for one edit, and removed from the path for the next. The editor can quickly assign and subsequently remove the logical machine delay.)

- **Output Delay**

Output delay is an *overall* delay value placed on the output of the entire mixer, thus affecting *all active signals* on the D/ESAM 8000 panel. Similar to logical machine delay, the “global” output delay value can be entered and removed “as-needed.” Output delay is typically used to compensate for digital video switchers that have a default system delay.

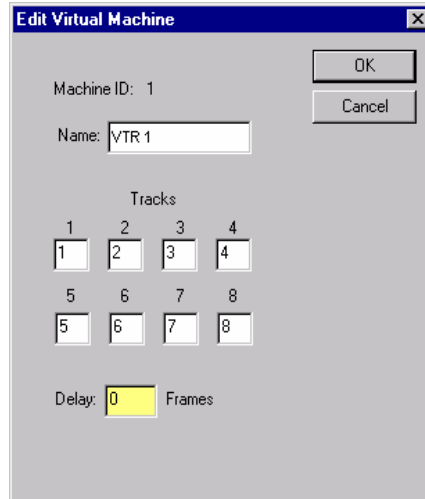
Delay Operation

This section provides instructions for using Delay. The following topics are discussed:

- **Virtual Machine Delay** (refer to the “**Virtual Machine Delay Setup**” section)
- **Output Delay** (refer to the “**Output Delay**” section)
- **Logical Machine Delay** (refer to the “**Logical Machine Delay**” section)
- **Delay Limitation** (refer to the “**Delay Limitations**” section)

Virtual Machine Delay Setup

Setting default virtual machine delay values is accomplished with the CPU, using the **Virtual Machine Menu**, as shown below. Although this procedure is primarily a maintenance function, it is included in this chapter for reference.



Virtual Machine View

Use the following steps to set virtual machine delay values:

1. If no monitor, mouse, and keyboard are connected to the D/ESAM 8000 CPU, shut down the D/ESAM 8000. *See the *PC Shut Down* section of this manual.
2. Re-start the system.
3. On the D/ESAM 8000 application menu bar select **Maintenance** and then **Virtual Machines**.
4. The Virtual machine table shown above will open. Double click the virtual machine that delay is to be applied to.
5. All virtual machine delay values as a default *should* be 0.0.
6. Enter the desired delay value, in "frames" and "tenths-of-frames." The valid range is from 0.0 to 7.0 frames. This delay will be applied to the Virtual Machines inputs at all times.
7. Press OK when delay has been entered.
8. To enter default delays for additional virtual machines, repeat the procedure starting at step 3 above.



Remember the following points regarding virtual machine delay:

- During mixer operation, virtual machine delay values can be viewed by selecting the assigned Virtual machine from the touch screen. This will bring up the Virtual Machine table view for that virtual machine. This view will show what inputs are associated with this Virtual machine and any delay assigned to it.


Output Delay

Output Delay is an *overall* delay placed on the output of the entire mixer, affecting *all active signals*. Output delay can be entered and removed as-needed, but can *not* be placed on the "R" machine.

Use the following steps to enter (or change) the output delay value:

1. Press  button on the control panel. The **DELAY** button lights and the display automatically switches to the **Delay Menu**.
2. To enter a *new* output delay, turn the knob next to the box labeled output delay or from the key pad type the value of delay to add. The valid range is from 0.0 to 9.9 frames
3. When data entry is complete, press  to confirm the new output delay value. The system returns to the previous view.


Remember the following important points regarding output delay:

- To clear the output delay only, adjust the value to 0.0 from the key pad or by adjusting the associated knob.
- The Output Delay value is automatically stored in D/MEM registers in the normal manner.
- Pressing **FX OFF** button does *not* affect output delay.
- Output delay can *not* be assigned to the "R" machine.
- To view output Delay values hit the  button.


Logical Machine Delay

Logical Machine Delay is a value assigned to "individual" logical machines via the control panel, on an "as-needed" basis. For example, logical machines A, B, and C can *each* have its own individual delays. Use the following steps to enter (or change) logical machine delay:



1. Press  on the control panel. The **DELAY** button lights, and the display switches to the **Delay Menu**.
2. Select which logical machine that delay is to be applied to from the key pad. The box associated with Logical Machine Delay will then become high lighted.
3. Using the knob next to the highlighted box or by entering from the key pad apply the appropriate frames of delay needed. The valid range is from 0.0 to 9.9 frames
4. When entry is done for the first machine, there are two options:




- Press  to confirm the new delay value for the *selected* machine, and exit the dialogue completely, or
- Press the letter of the *next* logical machine to which delay is to be applied, and repeat from step 2. When a new machine is selected, values for the *previous* machine are stored. In this "batch" mode, continue to select machines and assign delays,



and when finished, press  to confirm the most recent entry.




5. When  is pressed, the **DELAY** label appears on the LCD under all assigned machines with delay applied.


Remember the following points regarding logical machine delay:

- To clear a logical machine delay value *individually*, use the procedure outlined above and enter 0.0 as the value.
- Logical Machine Delay values are automatically stored in D/MEM registers in the normal manner.



- Pressing  button enables and disables logical machine delay along with equalization and dynamics.
- Logical machine delay *can* be assigned to the "R" machine.
- An assigned logical machine delay value moves with the logical machine, as it is assigned to different virtual machines.



- To view Logical Machine Delay hit the  Button and select appropriate Logical Machine.

Delay Limitations

- Total Delay can not exceed 17.0 frames.
- The “total” delay equals the sum of a machine’s logical, virtual, and output delay values.
- Output Delay has priority over Logical Machine Delay when it comes to available delay.
- When selecting a Virtual machine from the touch screen, the delay value shown is only delay assigned to the Virtual machine. This does not show Output or Logical Machine delay.

Dynamics (Option)


The new optional dynamics board offers a great many parameters for adjustment. Dynamics features include:

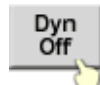
- Compressor
- Expander
- Limiter
- Sidechain
- Miscellaneous Functions
- Link

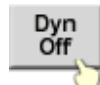
Follow the steps below to apply and adjust the Dynamic settings:

1. Press the desired fader select button(s) on the control panel. These buttons are located above the faders. The selected faders are outlined in yellow to indicate that dynamics will be applied to these faders.



2. Press  on the LCD screen. The display will change to the Dyn Adjust View.



3. Press  on the LCD screen to toggle the dynamics feature on.

- This same button is used to turn Dynamics OFF in order to compare the new settings with the original source signal.



4. Select Dynamics function, Compressor, Expander, Limiter or Sidechain to adjust by turning the soft knob to the right and in the lower right hand corner of the touch screen. This can also be done



by touching the Group button  in the lower right hand corner of the touch screen.

5. Turn the soft knobs to the right of the touch screen to make the appropriate adjustments.



6. Once these adjustments have been made, press the  on the LCD screen or  on the control panel to save the Dynamic Settings.

7. To reset all of the Dynamic parameters for all bands, press the



button in the upper left corner of the LCD screen.

8. To cancel the assignment without saving any changes, press



on the LCD screen or press



on the control panel.

A comprehensive description of each of the Dynamic functions is listed below.

Compressor

The compressor reduces the dynamics of the signals above a defined threshold. With a finite ratio the behavior of a limiter can be reached. The compressor has the following parameters:

Threshold

This parameter defines the point above which the compressor becomes active. The range of the compressor extends from the threshold to 0 dB full scale. The threshold can be adjusted from -40 dB to -12 dB.

Ratio

The ratio of the compressor defines the steepness of the compressor's characteristic. A value of 1:1 deactivates the compressor, a value of 1:INF converts the compressor to a limiter.

The overall gain of the dynamic processor will always be calculated in such a way that at an input level of 0 dB full scale a gain of 0dB is reached. In other words, the characteristics of the compressor/expander always reach the upper right corner of the characteristics diagram. This may result in a high amplification at high ratios and a low threshold. Therefore, lower the level in the output section a little and use the limiter to avoid clipping at the output. The headroom of the dynamic processor avoids internal overload.

Attack

The attack time parameter defines how fast the compressor decreases the gain at a rising sidechain level. The time given is the time constant of the RC filter, that slows down gain adjustments. Possible values for the attack time are between 0.3 ms and 100 ms.

Release

The release time parameter defines how fast the compressor increases the gain at a falling sidechain level. The time given is the time constant of the RC element that slows down the gain adjustment. Possible values are between 20 ms and 7 seconds.

Expander

The expander is used to enhance the dynamics of the audio signal in the lower level areas. With an infinite ratio, the expander may be used as a noise gate, which will not transmit signals below a defined level and will therefore suppress noise.

The expander has the following parameters:

Threshold

The threshold parameter defines the maximum input level in the sidechain up to which the expander is active. The expander does not process levels above this value. The expander threshold can be adjusted between -90 dB and -2 dB.

Ratio

The ratio defines the steepness of the expander's characteristic. Possible values range from 1:1, where the expander is not active, up to INF:1, leading to a simple noise gate behavior.

Range

The range parameter defines the maximum level reduction created by the expander.

Attack

The attack time defines how fast the expander decreases the gain at a rising sidechain level. The mentioned timeframe is the time constant of the RC filter, which slows down the gain adjustment.

The values for the attack time range from 0.3 ms to 100 ms.

Release

The release time defines how fast the expander increases the gain, at a falling sidechain level. The mentioned timeframe is the time constant of the RC filter, which slows down the gain adjustment.

The values for the release time range from 20 ms up to 7 seconds.

Limiter

Following the compressor/expander is an output section that includes a limiter. This features the following parameters:

Threshold

The threshold of the limiter can be adjusted between 0 dB and -12 dB. Below this threshold the limiter remains inactive.

Attack

The attack time defines how fast the limiter decreases the gain at a rising sidechain level. The time given is the time constant of the RC filter, which slows down the gain adjustment. Possible values for the attack time of the limiter are between 0.03 ms and 10 ms. The lower

the attack time is set, the better the limiter can limit signal peaks and avoid "overshoots".

Release

The release time defines how fast the limiter increases the gain when the signal level decreases. The time given is the time constant of the RC filter, that slows down the gain adjustment. Possible values are between 20 ms and 7 seconds.

Sidechain

The sidechain, also known as signal path, leads to the level evaluation of the dynamic processor and causes changes in the gain of the audio signal. The routing of the sidechain can be done independently from the routing of the signal input, so that the dynamic processor can be triggered by a signal other than the one currently being processed.

The sidechain has the following parameters:

Sidechain Level

Sidechain levels allow you to pad the trigger signal independent of the audio path. Possible values are 0 dB up to -60 dB or off. Starting with 0.5 dB steps in the upper range, the steps increase with higher attenuations.

Crest

This parameter has an influence on the evaluation of the signals in the sidechain. The sidechain can use peak analysis and a RMS evaluation (average of energy). The crest parameter defines which type of analysis affects the level adjustment. The RMS average is by its nature always lower than the peak value. Therefore, by the crest factor, a dB value can be added to the RMS value. The maximum of peak value and RMS plus crest will be used to compare with the thresholds. The following values are possible:

Peak: only the peak value is used

Increase the RMS value by 6, 9, 12, 15, 18 or 24 dB

RMS: only the RMS value is used

Lowcut

This highpass filter is used to eliminate low frequency signals out of the sidechain. The actual signal path contains no lowcut filter.

The following corner frequencies may be chosen: Off, 10 Hz, 20 Hz, 30 Hz, 50 Hz, 70Hz or 100 Hz.

Miscellaneous Functions

Output level

With this level adjustment the output signal of the compressor/expander can be lowered. This is necessary when using high ratios of the compressor. The level adjustment is placed before the limiter in the signal chain, so that unwanted activity of the limiter may be decreased. Possible values are between 0 dB and -60 dB.

Delay

The delay of the input section is used to give the level evaluation in the sidechain some lead, so that peaks in the signal level cause a level decrease, before the audio signal reaches the level adjustment section. This avoids "Overshoots" based on the finite response time of the compressor/limiter. The delay can be adjusted in three steps: 0 milliseconds, 1 millisecond and 100 milliseconds.

Link

The dynamics processing channels may be operated in Mono or Stereo mode. The stereo mode is called "Dynamics Link". When link is enabled, the dynamics control signal is derived from a mix of the two audio channels being processed. The control signal is used to modulate the gain of both channels being processed. For example, if the compressor is engaged, a sharp rise in loudness on the left channel will reduce the gain on both the left channel and the right channel identically.

With link disabled (mono mode) the channels operate independently (i.e. the audio of the left channel can not effect a gain change to the right and visa versa).

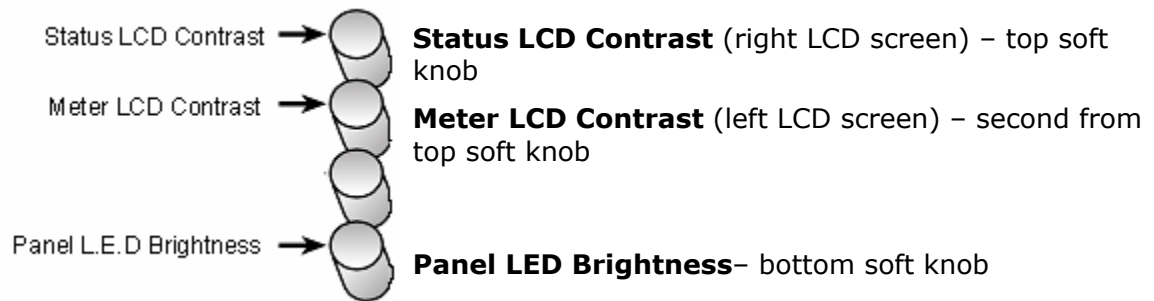
LCD Screen and Panel LED Adjustments

The D/ESAM 8000 software provides easy adjustment over the LCD contrast for both the meter screen on the left and the status screen on the right. In addition, there is control over the panel LED brightness and the LCD screens have a screen saver to prevent burn-in.

Follow the steps below to adjust the LCD contrast or LED brightness:



1. Press and hold the button on the control panel.
2. Adjust one of the following soft knobs to the right of the LCD screens depending on which function is to be adjusted:



3. A prompt appears on the LCD screen, press in order to save this new setting.

Or

To go back to the original setting, press .

Touch Screen Alignment

If it is getting harder to select functions from the touch screen, a touch screen alignment may be necessary.

To perform a touch screen alignment, first select from the touch screen, then and then . Follow the instructions on the screen for adjustment.

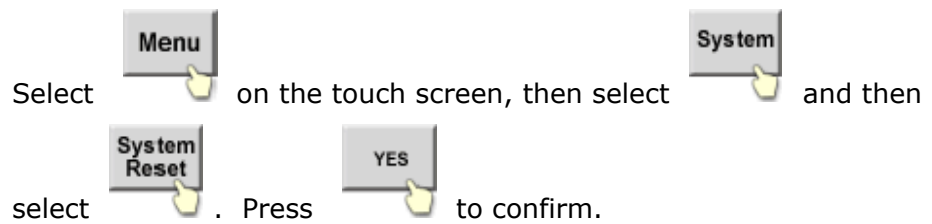
PC Operation & Shutdown

Warning: It is strongly advised that no additional software be loaded on the PC (games, screen savers, etc). This could cause erratic operation or lock up of the computer.

System Reset

The D/ESAM 8000 can be reset from the LCD touch screen. When doing a system reset, all data will be flushed from the DSP's and the panel will be cleared of all assignments. This reset has no effect on the user and configuration memory registers.

To perform a system reset:






This will shut down the PC and reboot the system. This should take approximately 2 minutes.

Shutdown

The PC Shutdown operation will perform a shutdown on the mixer's CPU. It is highly recommend that the user use the shutdown operation to shut down the CPU before removing power from the mixer.

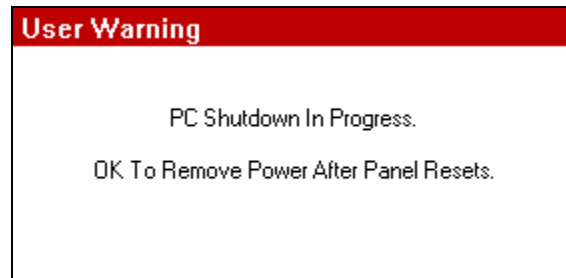
NOTE: Removing power from the mixer while the CPU is still operating can cause hard disk failures.

PC Shutdown Operations are as follows:

1. From the Status Screen LCD press the  soft-button.
2. From the Main Menu screen press the .
3. From the System Menu press the .



4. When the confirmation window appears, press to confirm.
5. The mixer will display the following screen as it begins the power shut down procedure.



6. Once the Control Panel has reset the mixer can be safely powered down.

Note that the PC Shutdown operation does not delete the current mixer set-up.

Connecting Monitor, Mouse and Keyboard

It is not necessary for a monitor, mouse and keyboard to be connected to the D/ESAM 8000 CPU during normal operation. Some functions however, such as defining virtual machines and applying virtual machine delay, will need this hardware connected.

When connecting a monitor, mouse and keyboard to the system perform a system shut down as described in this section. Connect the monitor to the standard VGA port on the CPU. Connect the mouse and keyboard to the PS/2 connectors for the associated hardware. Restart the system.

D/ESAM 8000 Specifications

ACCURACY

Internal Audio Data Transfers	24 Bit Precision
Internal Calculations	56 Bit Precision

AUDIO OUTPUTS

Program	8 Output Buses
Monitor	8 Output Buses

DIGITAL PROGRAM/MONITOR OUTPUTS

Number of outputs per card	16 Channels (8 AES Pairs)
AES Format	AES/EBU or SPDIF (24 bits resolution)
Output Impedance	110 Ω / 75 Ω transformer coupled
Output Connectors	15 Pin Sub-D Male, 2 each.

ANALOG PROGRAM/MONITOR OUTPUTS

Number of outputs per card	8 Outputs
Connectors	15 Pin Sub-D Male (2 each)
Coupling	DC - Active Balanced
Source Impedance	50 Ω
Level	+23dBu max. into 600 Ω or greater
Level Deviation	>0.2dB
THD+N @ -20 dBFS	>100dB @ 20-20KHz
THD+N @ 0 dBFS	>90dB @ 20-20KHz
Dynamic Range	>102dB
Frequency Response	<+0/-0.2dB typ. @ 20-20KHz, -1dBFS, RL = 600 Ω
Crosstalk	>100dB @ 20-20KHz
Unbalance of output voltage	>54dB

AUDIO INPUTS

Number of channels	Up to 13 input cards either analog, digital or SDI mixed. Mix up to 96 input channels at once Optional input modules available in groups of 8 or 16 (8 AES pairs) input channels
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DIGITAL AUDIO INPUTS

No. of channels	16 inputs per module, (8 AES Pairs)
Format	AES/EBU or SPDIF (24 Bits)
Input Impedance	110 Ω / 75 Ω transformer coupled
Sampling Frequency	30KHz to 50KHz with Sample Rate Converter
Input Connectors	15 Pin Sub-D Female, 2 each.

ANALOG AUDIO INPUTS

No. of channels	8 differential inputs per module
Connectors	15 Pin Sub-D Female, 2 each
Impedance	Bridging (>18k Ω)
THD+N @ +4 dB	>-100dB @ 20-20KHz, -20dBFS
THD+N @ +24 dB	>-90dB @ 20-20KHz, -1dBFS
Dynamic Range	>102 dB
Frequency Response	\pm 0.1dB 20-20KHz
CMRR	>70dB 20-20KHz
Crosstalk @ 0 dBFS	>100dB @ 20-20KHz

SDI AUDIO INPUTS

No. of channels	8 channels, 2 modes
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Input mode selection	2 x 4 Mode: 4 audio channels from group 1 from each of the 2 Video input BNC's 1 x 8 Mode: 8 channels from the Video 1 BNC input, 4 from group 1 and 4 from group 2
Connectors	BNC 75Ω (2 each)
Data format	270 Mbit serial digital video, SMPTE 259M
Video	D1, 525 or 625 line with audio, SMPTE 272M
Resolution	24 bit (unless limited by source)

EQUALIZER

Input Channels	24 Standard (32 with Dynamics option)
High frequency shelving filter	
Frequency range	1KHz to 16KHz
Gain range	± 15dB adjustable in 0.5dB steps
Mid bands 1 thru 4	
Frequency range	40Hz to 20KHz
Gain range	± 15dB adjustable in 0.5dB steps
Q	0.2 to 3 adjustable in 0.1 Q increments
Low frequency shelving filter	
Frequency range	40Hz to 1KHz
Gain range	± 15dB adjustable in 0.5dB steps
Band Gain Adjustment	
Gain range	0 to -124dB, 0.5dB steps from 0 to -32dB, 1dB steps to -124dB

AUDIO DELAY

Input Channels	64 Standard
Output Delay	9.9 Frames NTSC or PAL
Logical Machine Delay	9.9 Frames NTSC or PAL
Virtual Machine Delay	7.0 Frames NTSC or PAL
Total Maximum Delay Per Channel	17 Frames (682ms max)
Number of Channels	64 Mixing Channels

DYNAMICS PROCESSOR (optional)

Input Channels	24 Standard (adds 8 more channels of EQ as well)
Compressor	
Threshold level	-12 dB to -40 dB, 0.5db steps to -30dB, 1dB steps below
Reference level	0 dB to -40 dB, 0.5db steps to -30dB, 1dB steps below
Ratio	Off, 1.12:1 to ∞:1
Attack time	0.3 msec to 10 msec
Release time	0.02 sec to 7 sec
Expander	
Threshold level	-12.5 dB to -90 dB, 0.5db steps to -30dB, 1dB steps below
Range	0 dB to -40 dB, 0.5db steps to -30dB, 1dB steps below
Ratio	Off, 1:12.1 to 1: ∞
Attack time	0.3 msec to 10 msec
Release time	0.02 sec to 7 sec
Limiter	
Threshold level	0 dB to -12 dB, 0.5dB steps
Attack time	0.3 msec to 10 msec
Release time	0.02 sec to 7 sec
Side Chain	
Level	0 dB to -60 dB, 0.5db steps to -30dB, 1dB steps below
Crest factor	RMS, RMS + 6dB, 9dB, 12dB, 15dB, 18 dB and 24dB, Peak

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Low frequency cut	Off, 10Hz, 14Hz, 20Hz, 30Hz, 50Hz, 70Hz and 100Hz
Miscellaneous	
Output gain adjust	0dB to -60dB, 0.5db steps to -30dB, 1dB steps below
Delay	Off, 1ms and 2ms

SIGNAL DELAY

Digital IN to Digital OUT	252 uS \pm 20 μ S (basic system delay)
Digital IN to Digital OUT W/SRC	Add 1.821mS
Analog OUT	Add 409 μ S
Analog IN	Add 620 μ S
Equalizer	Add 115 μ S to any channel with equalizer flat (\pm 20 μ S)

OSCILLATOR (Built in)

Tone Generators	8 Total
2 Factory set TONE Machines	Tone1: 1KHz @ -20dBFS all 8 channels (factory default) Tone8: Multiple Frequencies @ -20dBFS. Channels 1 thru 8 set at 1, 1.25, 1.6, 2.0, 2.5, 3.15, 4 and 5KHz respectively. (May set any level or frequency on all 8 generators through computer setup)

TIMING INPUT

Video	1 BNC Input
Format	NTSC, PAL, HD 60 Field, HD 59.94 Field, HD 48 Field, HD 48/1.001 HD 25 Frame Progressive, HD 24 Frame Progressive, HD 24/1.001 Progressive
Audio	1 XLR Input
Format	AES3 48KHz

SAMPLE RATE

Locked to TV field or AES Input connector	48KHz
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LEVEL CONTROLS

Input Fader Range	+6dB to - ∞ (0.5db steps +6dB to -22dB, 1dB steps below -23dB)
Monitor Level Range	+6dB to - ∞ (0.5db steps +6dB to -22dB, 1dB steps below -23dB)

TRANSITIONS

Rates	0 - 999 Frames
Accuracy	Field Accurate (Field Selectable)

INTERFACES

Serial	9-pin D sub-min (RS-422)
Editor Protocol	ESAM II and D/ESAM IV
General Purpose (GPI)	25 pin D sub-min (on provided 1RU computer)
GPI Functions	Programmable (Tran Start, Cut, and Mix are the factory default settings)

MEMORY REGISTERS

Standard	9999 D/MEM Registers saved on either hard drive or disk drive
User Configuration	9999 Registers saved on either hard drive or disk drive
Disk Drive	Floppy disk = 1.44MB, DOS format

METERS

Type	8 VU, IEEE PPM, Full Scale AES and AES Meter (user switchable)
Location	LCD Display on Control Panel
Range	-20dB to +3dB (VU); -20 dB to +4 dB (PPM) 0 to -70 (Full Scale AES); +12 to -32 (AES Meter)

POWER

Voltage Requirements	100-240 VAC
Frequency	47-63 Hz
Power Consumption	
Control Panel	44 Watts Maximum
1 RU Computer	48 Watts Maximum
Vadis Frame	169 Watts Maximum (based on maximum number of highest wattage input cards)

OPERATING TEMPERATURE

Normal	10 - 40 °C
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DIMENSIONS

Control Panel with integrated electronics	22.5" (57.15 cm) Wide x 22.25" (56.52 cm) Deep* Unit is 9" (22.86cm) High at rear and 1" (2.54 cm) High at front
Computer	19" (48.26 cm) 1 RU Rack Mount. 1.725" (4.38 cm) High and 20.5" (52.07 cm) Deep*
Vadis 880 Frame	19" (48.26 cm) 4 RU Rack Mount. 6.9" (17.6 cm) High and 21.1" (53.6 cm) Deep (Chassis only)

0dBFS = digital clipping.

0dBu = 0.775V rms

* Allow extra 2" for cabling from back.

Specifications are subject to change without notice.

Contact Information

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8000 Web Center <http://www.gpsys.com/products/DESAM-8000.htm>