

# Introduction

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## Overview

This guide provides operating instructions for the Graham-Patten Systems (GPS) D/ESAM® Model 820 mixer. The following chapters are included:

- Chapter 1, “**Introduction**,” describes the guide, lists terms and conventions, and outlines important system safeguards.
- Chapter 2, “**System Theory**,” describes the important system concepts of Physical, Logical and Virtual machines.
- Chapter 3, “**Operations**,” provides operating instructions for all standard D/ESAM 820 features and functions.
- Chapter 4, “**Options**,” provides detailed installation and operating instructions for a variety of D/ESAM 820 options.
- Chapter 5, “**Installation**,” provides detailed installation instructions for the D/ESAM 820 mixer. Comprehensive Maintenance Terminal procedures are also included.
- Chapter 6, “**Interfaces**,” provides a *basic* feature list for most major computer editing systems, along with lists of ESAM II capabilities.
- Chapter 7, “**Alignment**,” provides a variety of comprehensive system hardware alignment procedures.
- Appendix A, “**Error Messages**,” includes tables that provide lists of system error messages.

A comprehensive index is also included for your reference.

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# What is the D/ESAM 820

The Graham-Patten Systems D/ESAM Model 820 is a four channel digital audio mixer designed for video editing. It is well-suited for all post-production applications which use a combination of digital and analog audio sources.

A complete range of advanced audio capabilities are provided in the D/ESAM 820:

- **Input flexibility:** Using 20 bit digital input processing, the system accommodates up to 56 physical inputs in seven groups of eight inputs each. Because internal audio processing is fully digital, the input format can be analog, digital or a combination of both.
- **Output flexibility:** Ten outputs are standard: four *analog* program outputs, two dual-channel *digital* Program outputs, four analog Monitor outputs. Output processing is 20 bit digital, 18 bit analog.
- **Mixing power:** Up to 16 audio signals can be actively mixed at one time, using any combination of analog and digital sources.
- **Preview Switcher:** A 4-channel Preview Switcher is standard, simulating the EE switching of a record machine. The “R” machine on the Preview Bus can also be switched between pre-effects and post-effects modes.
- **Monitoring power:** Any input (or combination of inputs) can be monitored in two-channel, four-channel or monophonic configurations. Monitor outputs have 6dB gain.
- **Input programming:** Any input track can be assigned to any combination of the four output buses. This allows complete flexibility for assigning inputs, swapping inputs and mixing a single input to multiple output buses.
- **Memory control:** A memory system called “D/MEM” allows the operator to store and recall panel “snapshots” in an array of internal storage registers. Over 600 memory registers are standard, including 20 configuration registers and a variety of comprehensive register management tools. All registers are stored in static RAM with battery backup on board.
- **Machine assignment control:** Source machines can be assigned a “logical” name, such as A, B, R or AUX. This provides a simple and familiar interface similar to ones used by editing systems. Logical names can be reassigned easily.
- **Channel assignment control:** Audio sources are not “hard-wired” to specific faders. An individual input or an entire logical machine can be assigned to a specific fader.
- **Edit control:** D/ESAM’s interface with computer editing systems is the mixer’s most important feature. Full four-channel control of sources, transitions, rates, fader levels and preview are provided through Graham-Patten ESAM II protocol.

The D/ESAM concept is further enhanced by the ability to configure “**Virtual Machines.**” This feature allows you to combine analog and digital inputs and thus “design” input sources with unprecedented flexibility.

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# Documentation Conventions

The following documentation conventions are used throughout this guide:

- Buttons, knobs and connectors on the Control Panel, Assignment Panel, EQ Panel and Chassis are indicated in bold-faced **CAPITAL** letters. For example:

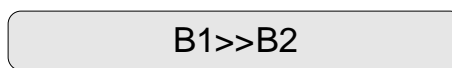
Press **TRANS START** to initiate a transition from ...

- Individual sections of the Control Panels are indicated in plain-faced CAPITAL letters. For example:

The **KEYPAD SECTION** is used to enter ...

- Control Panel displays are shown in a box similar to that used on the panel itself. For example:

The display changes to read:



B1>>B2

to indicate that input B1 ...



- Whenever the status icon appears in a heading, it indicates that information for that topic is available on the status display screens.
- Primary sections in this guide are listed in large bold characters with a single line above:

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## Primary Topic

- Secondary sections, subsections within primary sections, are indented and listed in large bold characters:

## Secondary Topic

- Tertiary sections, subsections within secondary sections, are also indented and listed in bold italic characters:

## *Tertiary Topic*

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# Documentation Terms

The following documentation terms are used throughout this guide:

- “**Editor**,” “**Operator**,” and “**User**” refer to the person using the D/ESAM 820 system.
- “**Editing System**” and “**Edit Controller**” refer to the computer-controlled device which remotely controls VTRs, DTRs, ATRs, switchers and mixers for editing.
- “**D/ESAM 820 mixer**,” “**Mixer**,” and “**820**” all refer to the Graham-Patten Systems Model 820 Digital Edit Suite Audio Mixer.
- “**Source**” refers to a single, dual or multi-track video or audio tape machine, analog or digital, which provides *playback* audio material.
- “**Track**” refers to a specific record or playback path from an ATR or VTR.
- “**Input**” refers to a physical input to the D/ESAM chassis. An analog input is a *single* mono track from an *analog* audio source, a digital input represents *two* tracks (left and right) from a *digital* audio source.
- “**Bus**” refers to a specific horizontal row of buttons (above the input faders) on the mixer, on which you can select various inputs. There are three *physical* buses on D/ESAM, each representing four tracks. In total there are 12 separate buses:
  - **Program** buses 1, 2, 3 and 4
  - **Preset** buses 1, 2, 3 and 4
  - **Preview** buses 1, 2, 3 and 4
- “**Fader Channel**” refers to the combination of a *single* input fader and all associated controls above it, including the alpha-numeric and LED displays, the **SELECT** button and the four bus-row buttons. Note that one channel can control single or *multiple* tracks on the mixer.
- “**Monitor Channel**” refers to one of four monitor speakers through which a Preview bus or buses is listened to.
- “**Output**” refers to a physical D/ESAM audio output. There are 10 outputs:
  - four **Analog Program** outputs
  - two dual-channel **Digital Program** outputs
  - four analog **Preview** outputs
- The following abbreviations are used throughout this guide:
  - **ATR** = Audio Tape Recorder
  - **DTR** = Digital Tape Recorder
  - **GPI** = General Purpose Interface
  - **GPS** = Graham-Patten Systems
  - **PGM** = Program
  - **PST** = Preset
  - **PVW** = Preview Switcher
  - **VTR** = Video Tape Recorder

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# Display Modes

The D/ESAM 820 offers two different display modes to indicate crosspoint selections in the Program/Preset rows:

- **Display Mode 1** is the default condition, in which all program and preset selections are *always* viewed, with the normal button color scheme in effect (see the **D/ESAM Color Scheme** tables below).
- **Display Mode 2** is a special mode in which *only the tallied bus* is displayed, except during transitions.

The actual crosspoint selection process remains the same in both display modes. All descriptions and illustrations throughout this manual assume that display mode 1 is selected. Refer to the “**Options Menu**” section for instructions on selecting the Program/Preset display mode.

# Use of Color







D/ESAM 820 uses a system of bi-colored LEDs on many control panel buttons to provide visual indications of the current bus and “tally.” A colored button indicates specific selections on Program and Preset, on the **MIX OUT** button and during Source and Preview Configuration modes. The table below lists the D/ESAM 820’s color scheme:

*D/ESAM Color Scheme*

Button Color	Description
BRIGHT RED	Indicates a Program Bus selection when the Program Bus is tallied. Also represents source selections during Source Configuration mode.
DIM RED	Indicates a Program selection when Preset is tallied.
BRIGHT GREEN	Indicates a Preset Bus selection when the Preset Bus is tallied. Also represents preview selections during Preview Configuration mode.
DIM GREEN	Indicates a Preset selection when Program is tallied.
YELLOW	Indicates a simultaneous Preset and Program bus selection when either Program or Preset Bus is tallied.
NONE	Indicates the channel is off or “silent.”

Because this manual is printed in black and white, the following table lists the patterns used in *some* charts and figures to represent colors.

*Gray Scale Patterns Representing D/ESAM Colors*

Color	Pattern
BRIGHT RED	
DIM RED	
BRIGHT GREEN	
DIM GREEN	
YELLOW	
OFF	

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# Important Safeguards and Notices

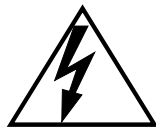
This section provides important safety guidelines for both the Operator and Service Personnel. Specific warnings and cautions are found throughout the guide where they apply, but may not appear here. Please read and follow the important safety information, noting especially those instructions related to risk of fire, electric shock or injury to persons.

## WARNING

Any instructions in this guide that require opening the equipment cover are for use by **qualified service personnel only**. To reduce the risk of electric shock, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.

## Symbols and Their Meaning

In this guide, the following symbols are used:



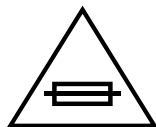
The lightning flash with arrowhead symbol, within an equilateral triangle, alerts the user to the presence of “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle alerts the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.



This symbol represents a protective grounding terminal. Such a terminal must be connected to earth ground prior to making any other connections to the equipment.



The fuse symbol indicates that the fuse referenced in text must be replaced with one having the ratings indicated.

## Warnings

Please observe the following important warnings:

- Heed all warnings on the unit and in the operating instructions.
- Do not use this product in or near water. Disconnect AC power before installing any options.
- This product is grounded through the power cord grounding conductor. To avoid electric shock, plug the power cord into a properly wired receptacle before connecting the product inputs or outputs.
- Route power cords and other cables so that they are not likely to be damaged. Disconnect power before cleaning. Do not use liquid or aerosol cleaners; use only a damp cloth.
- Dangerous voltages exist at several points in this product. To avoid personal injury, do not touch exposed connections and components while power is on.
- Do not wear hand jewelry or watches when troubleshooting high current circuits, such as the power supplies. During installation, do not use the door handles or front panels to lift the equipment as they may open abruptly and injure you.
- To avoid fire hazard, use only the specified correct type, voltage and current rating as referenced in the appropriate parts list for this product. Always refer fuse replacement to qualified service personnel.
- Have qualified personnel perform safety checks after any service.

## Cautions

Please observe the following important cautions:

- When installing this equipment, do not attach the power cord to building surfaces. To prevent damage when replacing fuses, locate and correct the trouble that caused the fuse to blow before applying power.
- Verify that all power supply lights are off before removing power supply or servicing equipment.
- Use only specified replacement parts. Follow static precautions at all times when handling this equipment.
- Leave the back of the frame clear for air exhaust cooling and to allow room for cabling. Slots and openings in the cabinet are provided for ventilation. Do not block them.
- The front door is part of the fire enclosure and should be kept closed during normal operation.

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## Company Address and Phone Numbers

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## Related Publications

Use the following references for additional D/ESAM 820 information:

- For an icon-based review of system operations, refer to the *D/ESAM 820 Quick Reference Guide*.
- If you would like to become more familiar with Graham-Patten's Serial II protocol, refer to the *ESAM II Control Protocol* document.
- For complete details on Graham-Patten's D/ESAM IV protocol, refer to the *D/ESAM IV Audio Mixer Protocol* document.

Contact **GPS Customer Service** for details on obtaining the documents listed above.