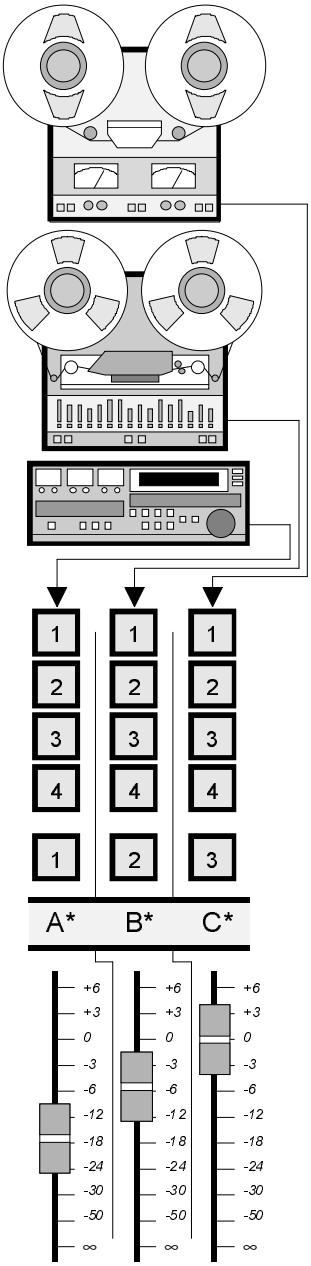
D/ESAM® 820

Digital Edit Suite Audio Mixer

Order Guide

April, 1995



Graham-Patten Systems, Inc.

D/ESAM® 820 Mixers
Award-winning Post Production Audio

D/ESAM® 820 mixers bring new power to Graham-Patten Systems award-winning *D/ESAM® 800* post production audio systems. It is the latest example of the GPS commitment to keep pace with the evolution of the industry and assure long product life.

Video Style Editing for Audio

The Program and Preset buses of your *D/ESAM® 820* system let you mix and edit audio exactly like you edit video. With E/SAM II protocol your edit controller takes command. Not just mixing, but full operation, source selection, even previewing, perform equally well under manual or computer serial control.

No More Patching

Acting both as a jackfield and router, the *D/ESAM® 820* virtual matrix gives operators new power. They can set up and store input and channel assignments plus output configurations for each machine without leaving their edit position. It is a powerful on-line feature and makes future system reconfiguration and expansion simple.

Digital or Analog – As and When You Please

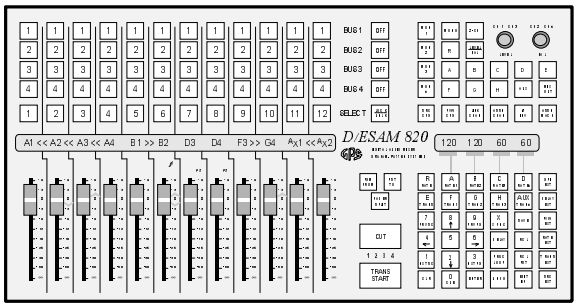
Graham-Patten Systems modular approach to audio inputs lets you buy what you need and only what you need. Purchase as few as 8 inputs or as many as 56, any 16 of which may be active at any one time. There are no restrictions on the combination; whether the inputs involved are analog or digital the results are always perfect.

Planning for growth? Purchase only the input modules required now and add more as you need them, choosing analog or digital at any time. Reconfiguration is never a problem; analog modules are easily replaced with digital modules as your facility evolves. There are digital input modules for 48 kHz sampling or with sample rate conversion capability to fit your new or existing equipment.

Will it fit?

D/ESAM® 820 system electronics takes just 3 rack units and may be placed in an area convenient to your record and playback equipment. Audio remains in the rack mounted electronics, never in the control panel.

The *D/ESAM® 820* control panel is designed for rack mounting as well. It requires just 5 RU plus a single additional rack unit each for your choice of any of several available options. The chosen metering panel and controls for optional advanced features may be located immediately adjacent to the operational panel or nearby as is most convenient to your style of operation.



D/ESAM® 820 Panel

Even More Memory

The exclusive Graham-Patten D/MEM extended memory feature is built right into the system. It is no longer an extra-cost option – it is included as a standard *D/ESAM® 820* mixer feature**.** As registers are saved, configurations and settings are stored exactly as they appear on the panel. That includes fader assignments and levels, settings for equalization and processing, output assignment, source and preview configurations, transition settings and much more. More than 600 registers are available and storage may be made unlimited with an optional Floppy Disk Drive.

Now an Even Greater Value

Graham-Patten Systems *D/ESAM® 800* mixers set the standard for post production audio editing. Their benchmark performance, reliability, and overall quality brought remarkable productivity to the industry worldwide. Now *D/ESAM® 820* systems move the standards higher still with more memory, internal 24 bit audio paths, improved audio fidelity and improved fader resolution.

Uniquely Yours

Use this Guide to configure the *D/ESAM® 820* mixer that's exactly right for your facility.

D/ESAM® 820 Mixer Order Guide

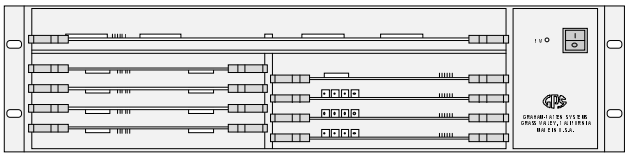
D/ESAM® 820 Audio Mixers

Each *D/ESAM® 820* system consist of two major elements: A control panel and rack mounted electronics with a 7.6 meter (25 foot) cable to link them. As you configure your own unique system you'll choose the number of analog and/or digital input modules to meet your needs and perhaps add options. Input modules are not included in the base system price. At least one is required; up to a total of seven may be used for a total of 56 audio channels, any 16 of which may be active at one time.

Control Panel

The *D/ESAM® 820* Control Panel is designed for standard 48.26 cm (19 inch) rack mounting. It is 5 rack units high and 20.2 cm (4-inches) deep. It contains the panel power supply, 12 assignable Penny & Giles™ faders, fader channel assignment display, operational, memory, and monitoring controls. The metering panel shown in most *D/ESAM® 820* mixer illustrations is not included as part of the basic system; one of several variations may be chosen to match operator preferences.

Electronics Chassis



D/ESAM® 820 Electronics Chassis

Each system includes a 3 rack unit electronics chassis for standard 48.26 cm (19 inch) rack installation. It is 33.02 cm (13 inches) deep; please allow at least an additional 5 cm (2 inches) for cabling. Inside are the power supply, output module and master processor module, including interface electronics. There are slots for up to seven audio input modules, analog or digital in any mixture. One or more of the input module slots may be used for Processing Loop Options. A 7.6 meter (25 foot) 25 conductor cable with 25-pin "D" connectors at each end links the electronics chassis and control panel. Custom lengths up to 60 meters (200 feet) may be ordered. Each system is supplied with a 1.5 meter (5 foot) audio output harness with a 32 pin high-density keyed connector at one end and the other end unterminated. Longer audio output harnesses may be used, however performance should be discussed with Graham-Patten Systems before ordering.

Power

D/ESAM® 820 systems have auto-ranging (85-264 VAC/47-440 Hz.) power supplies in the Electronics Chassis, the Display Panel. and some of the option panels. Power supply mains (AC) cords have IEC 320-C13 molded grounding connectors at the equipment end. Those supplied for North American use have a NEMA 5-15P molded grounding plug at the other end while those intended for use internationally (outside North America) have a CEE7 PVC plug. The international mains cord is CEE color coded (neutral=light blue, line=brown, ground=yellow/green).

Description	Product Number	
	North American AC Power Cord	International Mains Cord
D/ESAM 820 Digital Edit Suite Audio Mixer*	**820**	**820P**
Additional 25 conductor Control Cable (max. 60 meters/200 feet)	**817**	**817**

*The built-in Editor Interface using ESAM II Protocol, is compatible with any properly configured edit controller that sends the ESAM II commands. Please identify the make and model of your edit system in your purchase order.

D/ESAM® 820 Mixer Order Guide

Audio Input Modules

D/ESAM® 820 systems may be configured with any combination of analog or digital input modules, up to 7, for a maximum total of 56 inputs. These simply plug into the Electronics Frame at any time. At least one module must be present for the system to function. Each Input Module is supplied with a 1.5 meter (5 foot) audio harness with a 32 pin high-density keyed connector at one end and the other end unterminated. Additional audio input harness length may be ordered below. Input/Output accessory panels are also available for simplified installation.

Analog Modules each accept 8 discrete channels. Digital Modules each accept 4 AES/EBU dual channels. The basic Digital Audio Input Module is designed for 48 kHz (NTSC/PAL) AES/EBU synchronous digital audio. Digital Input Modules are also available with automatic sample rate conversion (24 kHz to 50 kHz, inclusive). When rate-converting inputs are used with 48 kHz synchronous signals the conversion process may be turned off. With rate-conversion activated, asynchronous signals may be used at any sampling rate within the specified range.

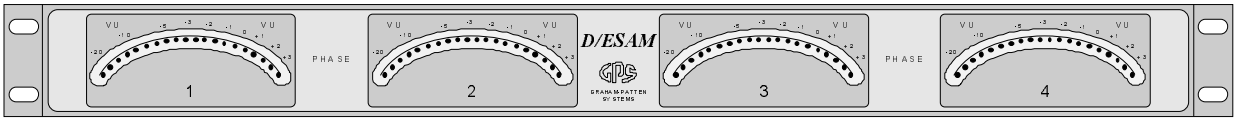
Description	Product Number
Analog Audio Input Module, 8 discrete channels, 20 bit	**848**
Digital Audio Input Module, 8 inputs, no sample rate conversion	**850**
Digital Audio Input Module, 4 inputs with sample rate conversion, 4 inputs without sample rate conversion	**854**
Digital Audio Input Module, 8 inputs with sample rate conversion	**858**
Additional Analog Audio Cable Length* (1 harness per module)	**818**
Additional Digital Audio Cable Length* (1 harness per module)	**819**

*Additional cable length above is for Audio Input **or** Audio Output harnesses. Please discuss performance impact of adding to output harness length with Graham-Patten Systems before ordering. Input/Output Accessory Panels may be used in place of Audio Harnesses, see Input/Output Accessory section which follows.

D/ESAM® 820 Options

Meter Panels

Each of the *D/ESAM® 820* meter panels are of modular design with 4 meters and two stereo out-of-phase indicators. The LED type is 1 rack unit high, 48.26 cm (19 inches) wide and 5 cm (2 inches) deep. Analog meter equipped panels (illustrated in the Stand Alone Meter Panel section of this order guide) are each 2 rack units high, 48.26 cm (19 inches) wide and 15.25 cm (6 inches) deep. An additional 5 cm (2 inches) should be allowed for cabling with either LED or analog meter equipped panels. LED meter panels are powered from the associated *D/ESAM® 820* control panel. Analog meter panels require AC/Mains connection. Analog meter panels are available with either of several scales as indicated in the order table.



LED Type D/ESAM® 820 Meter Panel

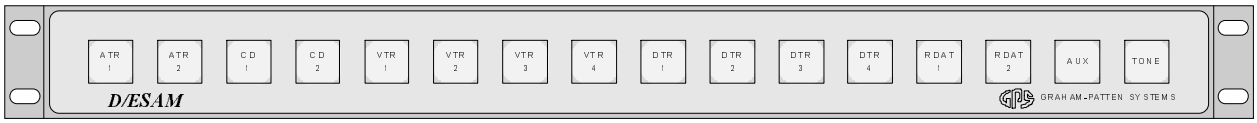
Each Meter Panel is supplied with a 1.8 meter (6 foot) cable for connection to the associated *D/ESAM® 820* Control Panel. Custom lengths may be ordered as indicated in the table which follows. Graham-Patten Systems meter panels are also available in internally powered standalone versions shown later in this Order Guide. For Meter Panel ordering information please see next page.

D/ESAM® *820* Mixer Order Guide

Description	Product Number	
LED VU Meter Panel	**806**	
	North American AC Power Cord	International Mains Cord
Analog VU Meter Panel	**807**	**807P**
Analog PPM Meter Panel – IEEE Scale	**808**	**808P**
Analog PPM Meter Panel – ABC East Coast Scale	**809**	**809P**
Analog PPM Meter Panel – BBC Scale	**810**	**810P**
Additional Cable Length (Contact factory)	**822**	**822**

Assignment Panel

The *D/ESAM*® *820* Assignment Panel allows quick mapping (re-assignment) of virtual machines to logical machines. It contains a single row of 16 buttons, each of which is dedicated to a virtual machine in the facility. Up to 3 Assignment Panels may be used with each *D/ESAM*® *820* mixer, allowing one button to be assigned to each of up to 48 virtual machines. Assignment panels are designed for 48.26 cm (19 inch) rack mounting. Each is 1 rack unit high and 5 cm (2 inches) deep. An additional 5 cm (2 inches) should be allowed for cabling.



D/ESAM® 820 Assignment Panel

Each Assignment Panel is supplied with a 1.5 meter (5 foot) cable for connection to the associated *D/ESAM*® 820 control panel. Custom lengths may be ordered as indicated below.

Description	Product Number
Assignment Panel (first panel per system)	**804**
Second / Additional Assignment Panel	**828**
Additional Assignment Panel Cable Length (1 per panel required)	**843**

Equalization

The addition of the *D/ESAM*® *820* Parametric Equalizer option allows you to assign EQ effects to any or all 16 active mix sources. Each channel of equalization includes 3 parametric filters, high cut, low cut, two notches (adjustable frequencies) and a channel selectable 6dB Boost. The Parametric Equalizer option includes 4 slave modules which are installed on the Master Processor Module in the Electronics Chassis plus a 1 rack unit high, 48.26 cm (19 inches) wide and 15.25 cm (6 inches) deep Control Panel. An additional 5 cm (2 inches) should be allowed for cabling. Each Parametric Equalizer Control Panel is supplied with a 1.5 meter (5 foot) cable for connection to the associated *D/ESAM*® 820 mixer control panel. Custom lengths up to 3 meters (10 feet) may be specified at the time of ordering.

D/ESAM® 820 Parametric Equalizer Control Panel

The Parametric Equalizer Control Panel is internally powered; please see the power discussion earlier in this Order Guide to select the equalizer option with the proper power cord for your facility.

D/ESAM® 820 Mixer Order Guide

Audio Delay

Audio signals whose associated video has been delayed by special effects devices or the inherent delays of digital recorders and switchers may be re-timed with the *D/ESAM® 820* Audio Delay option. The option is accessed by a single button on the main Control panel. It provides up to 17 frames total maximum delay per channel. It includes 4 slave modules installed on the Master Processor board in the Electronics Chassis. Audio Delay may be purchased as part of a Parametric Equalizer option or separately. No additional cabling is required.

Description	Product Number	
	North American AC Power Cord	International Mains Cord
16 Channel Parametric Equalization System	**805**	**805P**
16 Channel Parametric Equalization System with Audio Delay	**835**	**835P**
Audio Delay (without Parametric Equalization System)*	**834**	**834**
Audio Delay Upgrade Kit for field installation in systems with EQ installed	**841**	**841**
Audio Delay Upgrade Kit for field installation in systems without EQ installed	**842**	**842**
Additional Parametric Equalizer Control Panel Cable**	**821**	**821**

* Audio Delay Option does not require mains (AC) power, option 834 may be used with either Parametric Equalization System above.

** Cable is not required for the Audio Delay Option.

Processing Loop

The Processing Loop option allows individual audio channels to instantly be routed to an external processor then back into the *D/ESAM® 820* mixer without using an extra input position. This option is controlled directly from the Main Control Panel. It installs in one of the 7 mixer Input slots, reducing the number of available audio inputs by 8. *The Audio Delay option must be installed in the system before the Processing Loop can be used.* Up to 4 Processing Loop modules may be used per system, each providing four processing loop pathways (comprised of an input and output component). When the full potential complement of 4 Processing Loop modules is used, the *D/ESAM® 820* system can accept a maximum of 24 audio channels. No additional cabling is required.

Description	Product Number
Processing Loop Option	**836**

Floppy Disk Storage System

The powerful D/MEM memory capability of the *D/ESAM® 820* mixer is further enhanced through the addition of the floppy disk storage system which allows unlimited capture of system configurations on standard 3.5" disks. It includes disk drive, 1 preformatted floppy disk, power supply, mains (AC) cord, and 1.5 meter (5 feet) cable for connection to the associated mixer control panel. Additional cable may be ordered up to a maximum length of 3 meters (10 feet). Please see the *D/ESAM® 820* Electronics Chassis power discussion earlier in this Order Guide.

Description	Product Number	
	North American AC Power Cord	International Mains Cord
Floppy Disk Storage System	**861**	**861P**
Additional Floppy Disk Storage System Cable	**862**	**862**

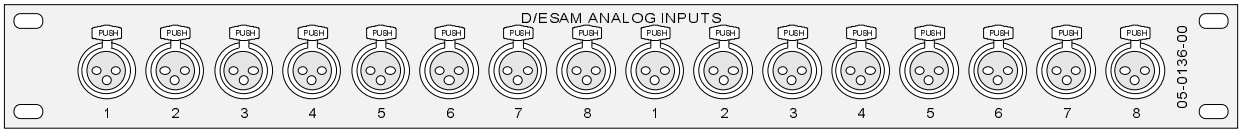
D/ESAM® 820 Mixer Order Guide

Input and Output Accessories

Input and Output Connector Panel options for *D/ESAM® 820* systems make clean installations quick and easy. Each of the 48.26 cm (19 inch) wide, 1 rack unit high connector panel options described below is supplied with a 0.6 meter (2 foot) harness which links the connector panel to the *D/ESAM® 820* Electronics Frame (these harnesses may **not** be extended to greater length).

Input Connector Panels

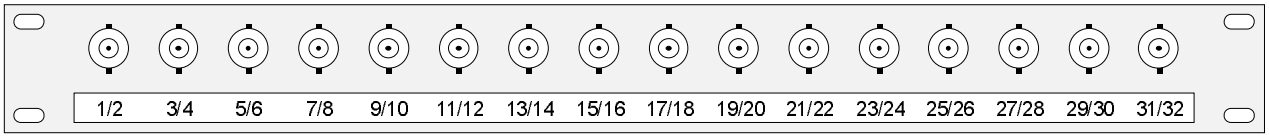
XLR type Input Connector Panels are available in versions suited to analog signals, digital signals, and mixtures of analog and digital signals. Each is similar in appearance to the Analog Input Connector Panel shown below.



Each XLR type Input Connector Panel has 16 female 3-pin XLR connectors. The analog version accommodates 16 channels. The digital version accommodates 16 AES/EBU digital audio *pairs*. A split analog/digital version, also with 16 XLR's, accepts up to 8 analog channels and 8 AES/EBU digital audio pairs (16 digital channels).

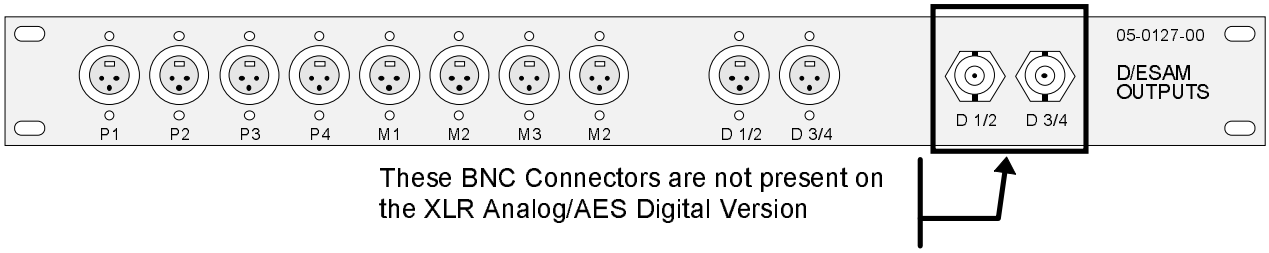
Facilities with a mixed analog/digital environment, using coaxial interconnection for digital signals may choose the XLR panels above, adding external converters (see Digital Audio Transmission Systems section of this Order Guide).

Those implementing a fully coax-based digital system will find the *D/ESAM® 820* BNC Input Connector Panel (below) makes a neat installation quick and simple. Transformers and all other components needed to convert the unbalanced 75 Ohm coax format to the balanced format used by *D/ESAM® 820* electronics are on a circuit board at the rear of the panel.



Output Connector Panels

All *D/ESAM® 820* outputs are conveniently brought to the Output Connector Panel shown below. Each of the 4 analog program channels and 4 analog monitoring channels are brought to their own 3-pin XLR connector. In the



XLR Analog/AES Digital version the 4 output channels are brought, as 2 AES/EBU pairs, to 3-pin XLR connectors. In the XLR Analog/DATS Digital version the 4 digital channels are brought to a pair of BNC connectors for simple coaxial connection. AES (XLR) connectors are present but are inactive.

D/ESAM® *820* Mixer Order Guide

Digital Audio Transmission Systems

DATS converters are used to convert audio in the AES/EBU (twisted pair) format to and from the DATS (BNC/coaxial cable) format. Each simply plugs into the 3-pin XLR input and output connectors on source and record devices. Source converters plug into the AES output of a device and convert the 110 Ohm balanced digital audio signal to 75 Ohms unbalanced for coaxial cable interconnection. Destination converters receive the coaxial cable and plug into a device input, converting the 75 Ohm unbalanced signal to 110 Ohms balanced.

Description	Product Number
Input Connector Panel - XLR Analog (16 channels)	**813**
Input Connector Panel - XLR Digital (16 AES/EBU Pairs, 32 channels)	**814**
Input Connector Panel - XLR Analog / Digital (8 Analog channels plus 8 AES/EBU pairs, total 16 digital channels)	**832**
Input Connector Panel - DATS Digital (16 AES/EBU Pairs, 32 channels, all connectors BNC)	**816**
Output Connector Panel - XLR Analog / AES/EBU Digital (XLR)	**812**
Output Connector Panel - XLR Analog / DATS Digital (BNC)	**815**
AES/EBU to DATS Source Converter, 110 Ohms	**895**
DATS to AES/EBU Destination Converter, 110 Ohms	**897**

Each Input or Output Connector Panel is supplied with a 0.6 meter (2 foot) harness which links the connector panel to the *D/ESAM® 820* Electronics Frame (these harnesses may **not** be extended to greater length).

Maintenance and Spares

The *D/ESAM® 820* Maintenance Kit includes 2 module extenders and a technical manual. Spares kits are separately available for the *D/ESAM® 820* Audio Mixer and the Parametric Equalizer option. Spare Module Kits include a minimum selection of modules recommended for critical applications where downtime must be kept to a minimum. For details about the current contents of each kit please contact Graham-Patten Systems.

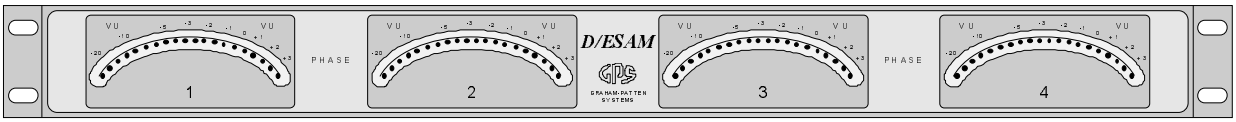
Description	Product Number
Maintenance Kit	**838**
Spare Modules Kit for *D/ESAM® 820* Audio Mixer	**831**
Spare Modules Kit for Parametric Equalizer Option	**829**

D/ESAM® 820 Mixer Order Guide

Additional Graham-Patten Systems Accessories and Upgrades

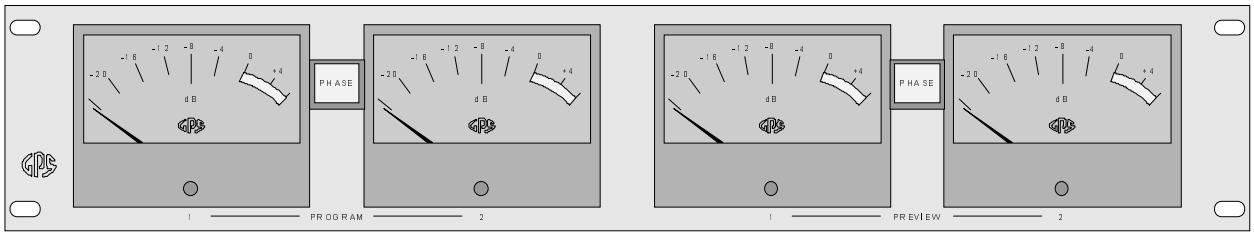
Stand Alone Meter Panels

Graham-Patten Systems stand alone meter panels are of modular design with 4 meters and two stereo out-of-phase indicators. The LED type is 1 rack unit high, 48.26 cm (19 inches) wide and 5 cm (2 inches) deep.

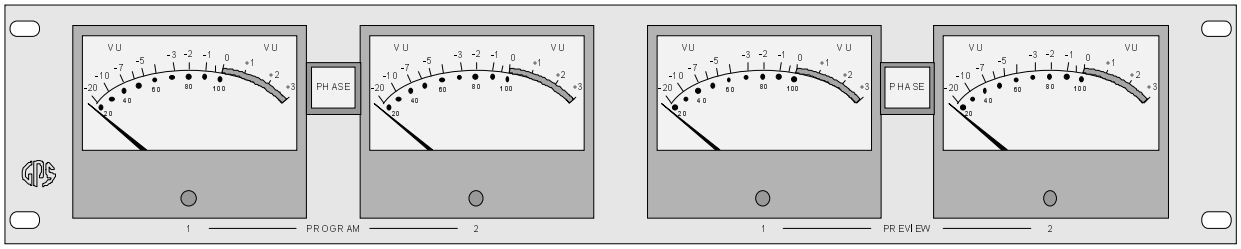


LED Type D/ESAM® Meter Panel

Analog meter equipped panels are each 2 rack units high, 48.26 cm (19 inches) wide and 15.25 cm (6 inches) deep.



Analog Type D/ESAM® Peak Program Meter Panel



Analog Type D/ESAM® VU Meter Panel

An additional 5 cm (2 inches) should be allowed for cabling with either LED or analog meter equipped panels. Analog meter panels are available with either of several scales as indicated in the order table below.

Graham-Patten Systems meter panels are internally powered. Power requirements and mains (AC) cords are discussed in the earlier Power section of this Order Guide.

Description	Product Number	
	North American AC Power Cord	International Mains Cord
LED VU Meter Panel	**823**	**N/A***
Analog VU Meter Panel	**824**	**824P**
Analog PPM Meter Panel – IEEE Scale	**825**	**825P**
Analog PPM Meter Panel – ABC East Coast Scale	**826**	**826P**
Analog PPM Meter Panel – ABC West Coast Scale	**837**	**837P**
Analog PPM Meter Panel – BBC Scale	**827**	**827P**

*The Stand Alone LED VU Meter Panel uses an externally mounted power supply which is available for 120 V/60 Hz operation only.

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Upgrades for *D/ESAM® 800* Audio Mixers

D/ESAM® 800 to *D/ESAM® 820* Audio Mixer Upgrade

This upgrade kit makes it possible for *D/ESAM® 800* systems users to enjoy the new features and performance enhancements built into *D/ESAM® **820*** Audio Mixers. Among them, 20 bit digital/18 bit analog audio output performance, expanded memory capacity, supporting more than 600 user registers plus 20 user configuration registers, all of which are non-volatile.

The kit includes a new and improved Master Processor Module with additional and higher speed digital signal processor chips; a new output module, and control panel software upgrade.

All existing *D/ESAM® **800*** options and accessories are fully compatible with the upgraded system.

Description	Product Number
D/ESAM® 800 to D/ESAM® 820 Audio Mixer Upgrade	**820U**

D/MEM Plus

The D/MEM Plus Upgrade increases the register capacity of *D/ESAM® 800* mixers from the maximum of 20 supported by the basic system to an internal capacity of more than 600 and allows off-line storage and recall of these registers. The upgrade option (for existing *D/ESAM® 800* systems only) includes expanded memory ICs installed on the Master Processor and an internally powered 1 rack unit 3.5 inch Floppy Disk Drive. It also includes a mains (AC) cord and a 1.5 meter (5 foot) cable for connection to the associated mixer control panel. Additional cable may be ordered up to a maximum length of 3 meters (10 feet). Please see the *D/ESAM® 820* Electronics Chassis power discussion at the beginning of this Order Guide.

Description	Product Number	
	North American AC Power Cord	International Mains Cord
D/MEM Plus Upgrade for D/ESAM® 800 mixers	**811**	**811P**
Additional D/MEM Plus Cable	**844**	**844**

Audio Delay Upgrades

The Audio Delay Upgrade Option allows audio signals to be re-timed to match video signals which have been delayed—typically due to special effects or default delays inherent in digital video tape recorders and digital switchers. This option provides up to 17 frames total maximum delay per channel. The upgrade kits below are for field installation in existing *D/ESAM® 800* or *D/ESAM® 820* mixers. Each kit contains 4 slave modules and software for installation on the Master Processor Module of the existing system.

Description	Product Number
Audio Delay Upgrade Kit for field installation in systems with EQ installed	**841**
Audio Delay Upgrade Kit for field installation in systems without EQ installed	**842**

For assistance in using this Order Guide, please contact Graham-Patten Systems, Inc., P.O. Box 1960, Grass Valley, California 95945 USA. Telephone +1 (916) 273-8412 FAX: +1 (916) 273-7458
Toll-free in the USA: 800-422-6662

Master System Form

Please complete this form in it's entirety, listing your company's information and the specifics of your D/ESAM System configuration.

- Please return this form to Graham-Patten Systems with your order.
- Please copy this form and return one form per system if you have ordered more than one D/ESAM System.
- For your convenience, you can fax this form to GPS, attention: Sales Administration, FAX +1(916) 273-7458
- If you have questions, please contact GPS Sales Administration, Phone: +1(916) 273-8412 or Toll-free in the U.S.A: 800-422-6662

Customer Information

Customer Name: _____

Mailing Address: _____

_____

_____

Shipping Address: _____

_____

Phone: _____

FAX : _____

Contact: _____

Edit Controller Information

Please contact your editing system manufacturer to confirm that your system has the most advanced features of the ESAM II protocol.

Edit Controller : Manufacturer: _____ Model: _____

System Reference Levels

Your system will be configured for a house reference level of +4 dBu, high impedance, unless otherwise noted below:

House Reference Level: (If Analog: +4 dBu, +8 dBu, Other) _____

Input Termination: (600Ω, 150Ω, Hi-Z, Other) _____

Note: 0 dBu = 0.775 V rms

ASSIGNMENT PANEL KEYCAPS

Complete this form *only* if you have ordered as Assignment Panel

- Instructions -

Each Assignment Panel contains 16 buttons. Each button can have two lines of text, five characters per line. A standard set of legends (as shown below) will be sent to you unless otherwise specified. If you wish to have *custom* legends prepared, please complete the chart below.

Note:
Keycap legends are not permanent and can easily be changed in the field.

Assignment Panel Keycaps

Standard Legend Set

VTR 1	VTR 2	VTR 3	VTR 4	DTR 1	DTR 2	DTR 3	DTR 4	RDAT 1	RDAT 2	CD 1	CD 2	ATR 1	ATR 2	AUX	TONE

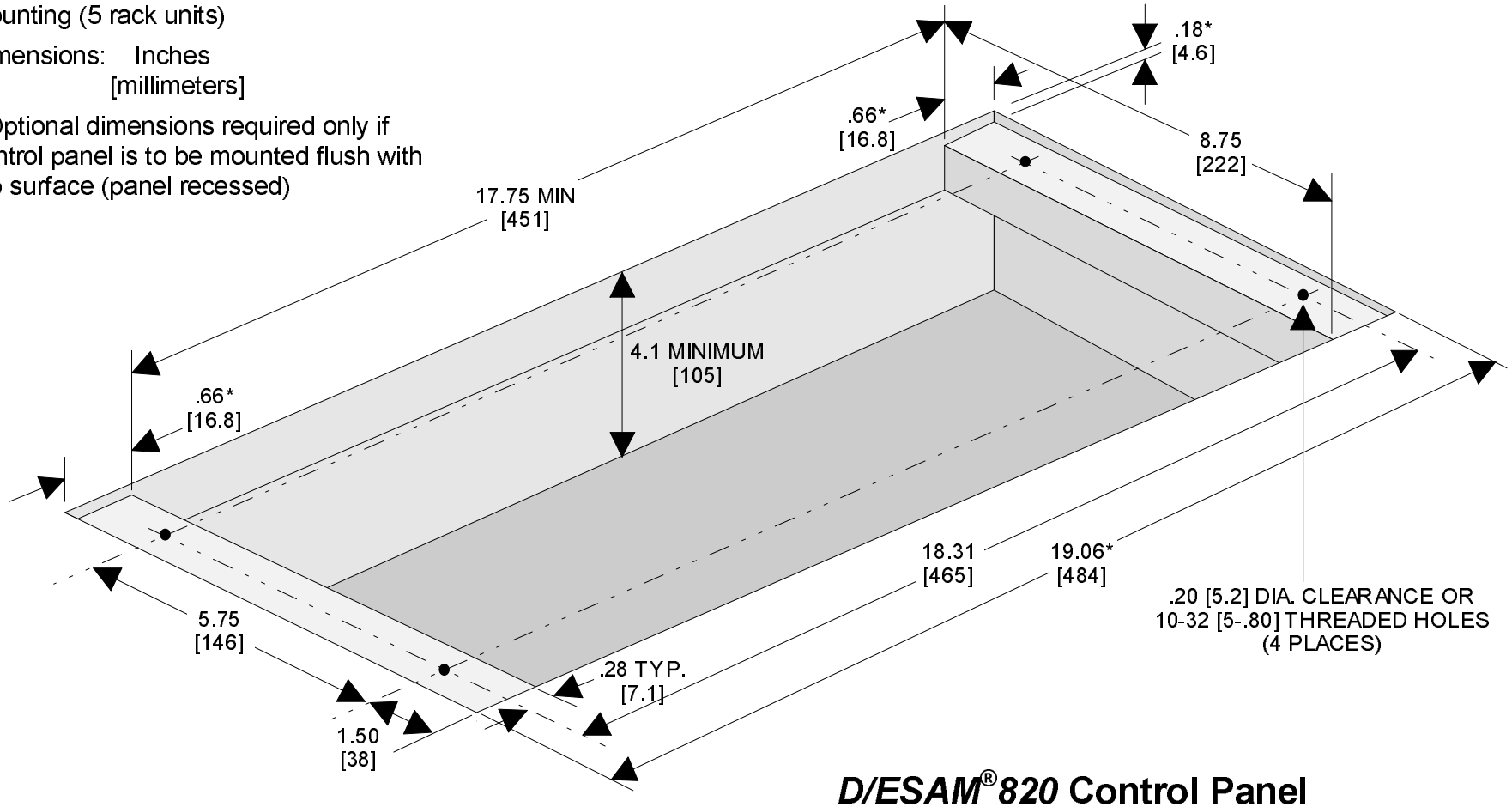
Custom Legend Set **(Please Print Clearly)**

A typical *D/ESAM*® *820* system is packaged in two cartons:
Size (each carton): 24” by 24” by 18” (61cm by 61cm by 46cm)
Shipment Weight: Depending on accessories: 80-100lbs (43-54Kg)

Notes:
Panel is designed for standard (EIA) rack mounting (5 rack units)

Dimensions: Inches
[millimeters]

* Optional dimensions required only if control panel is to be mounted flush with top surface (panel recessed)

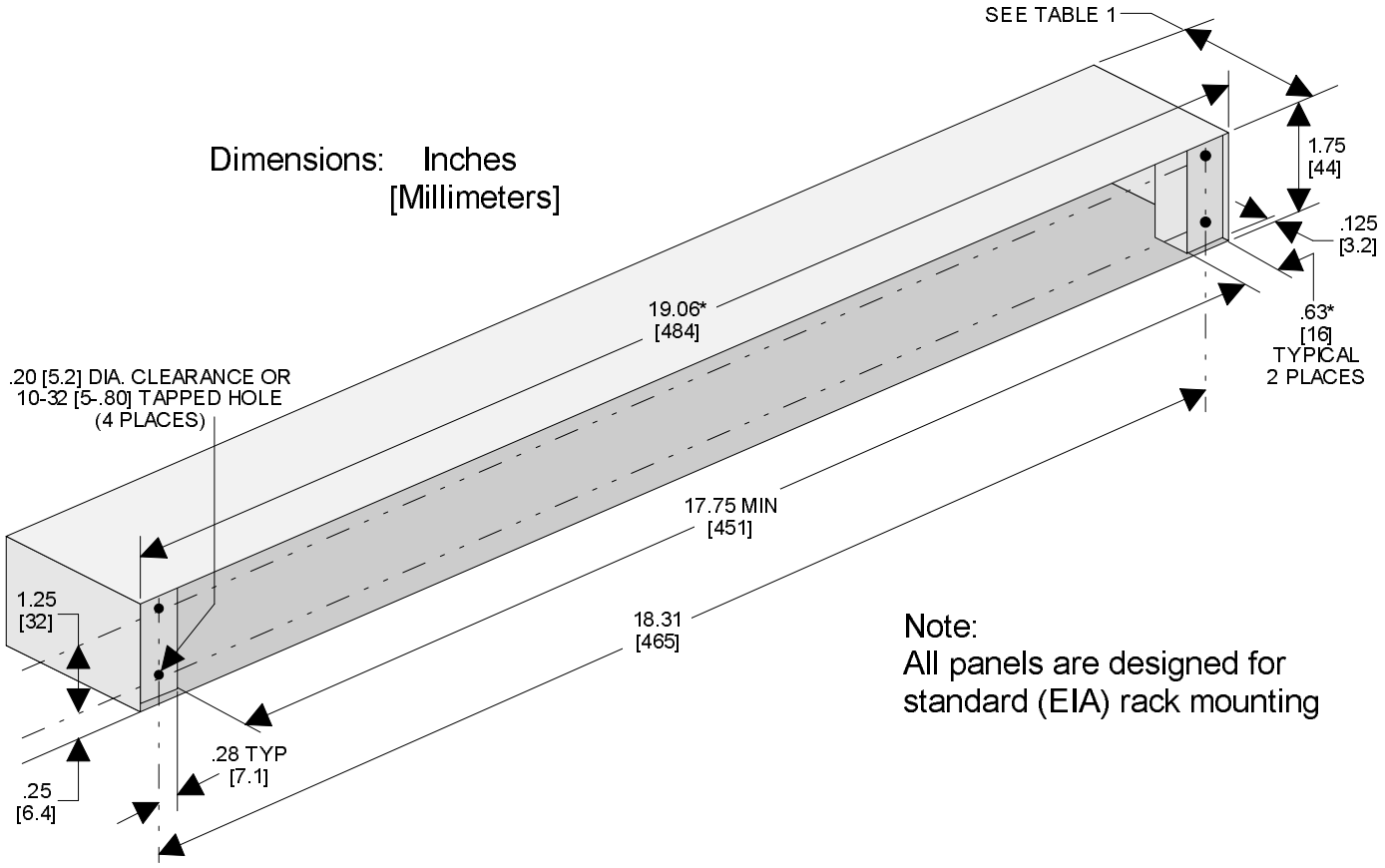


D/ESAM®*820* Control Panel
Table cutout and mounting Information

TABLE 1

PANEL	PANEL DEPTH (1)	DEPTH W/CABLES (2)
ASSIGNMENT	2.25 [57]	4.75 [121]
LED METER	2.25 [57]	4.75 [121]
EQUALIZER	5.70 [145]	8.20 [209]

(1) Minimum distance needed behind panel
(2) Added 2.5" (64MM) for cables in selected areas



Note:
All panels are designed for standard (EIA) rack mounting

D/ESAM®820 Accessory Panels
Table cutout and mounting Information

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