Before attempting to connect or operate this product, please read these instructions completely.

The meter bridge shown in photo is one of the optional accessories.
**Warning:**
This equipment generates and uses radio frequency energy and if not installed and used properly, i.e., in strict accordance with the instruction manual, may cause harmful interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment.

We declare under our sole responsibility that the product to which this declaration relates is in conformity with the standards or other normative documents following the provisions of Directives EEC/73/23 and EEC/89/336.

Wir erklären in alleiniger Verantwortung, daß das Produkt, auf das sich diese Erklärung bezieht, mit der folgenden Normen oder normativen Dokumenten übereinstimmt. Gemäß den Bestimmungen der Richtlinie 73/23/EEC und 89/336/EEC.

Nous déclarons sous notre seule responsabilité que le produit auquel se réfère cette déclaration est conforme aux normes ou autres documents normatifs conformément aux dispositions de la directive 73/23/CEE et 89/336/CEE.

Nosotros declaramos bajo nuestra única responsabilidad que el producto a que hace referencia esta declaración está conforme con las normas u otros documentos normativos siguiendo las estipulaciones de la directiva CEE/73/23 y CEE/89/336.

Noi dichiariamo sotto nostra esclusiva responsabilità che il prodotto a cui si riferisce la presente dichiarazione risulta conforme ai seguenti standard o altri documenti normativi conformi alle disposizioni delle direttive CEE/73/23 e CEE/89/336.

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Vi erklærer os eneansvarlige for, at dette produkt, som denne deklaration omhandler, er i overensstemmelse med den følgende standard eller andre normative dokumenter i følge bestemmelserne i direktivene 73/23/EEC og 89/336/EEC.

Vi deklarerar härmed vårt fulla ansvaret för att den produkt till vilken denna deklaration hänvisar är i överensstämmelse med standarddokument, eller andra normativa dokument som framställs i Direktiv 73/23/EEC och 89/336/EEC.

Ilmoitamme yksinomaisella vastuullamme, että tuote, jota tämä ilmoitus koskee, noudattaa seuraavia standardeja tai muita ohjeellisia asiakirjoja, jotka noudattavat direktiivien 73/23/EEC la 89/336/EEC. sääädöksiä.

Vi erklærer oss alene ansvarlige for at produktet som denne erklæringen gjelder for, er i overensstemmelse med følgende normer eller andre normgivende dokumenter som følger bestemmelserne i direktivene 73/23/EEC og 89/336/EEC.
THIS APPARATUS MUST BE EARTHED.
To ensure safe operation the three-pin plug supplied must be inserted only into a standard three-pin power point which is effectively earthed through the normal household wiring. Extension cords used with the equipment must be three-core and be correctly wired to provide connection to earth. Wrongly wired extension cords are a major cause of fatalities. The fact that the equipment operates satisfactorily does not imply that the power point is earthed and that the installation is completely safe. For your safety, if in any doubt about the effective earthing of the power point, consult a qualified electrician.

FOR YOUR SAFETY PLEASE READ THE FOLLOWING TEXT CAREFULLY.
This appliance is supplied with a moulded three pin mains plug for your safety and convenience. A 5 amp fuse is fitted in this plug. Should the fuse need to be replaced please ensure that the replacement fuse has a rating of 5 amp and that it is approved by ASTA or BSI to BS1362.
Check for the ASTA mark or the BSI mark on the body of the fuse.
If the plug contains a removable fuse cover you must ensure that it is refitted when the fuse is replaced. If you lose the fuse cover the plug must not be used until a replacement cover is obtained. A replacement fuse cover can be purchased from your local Panasonic Dealer.

IF THE FITTED MOULDED PLUG IS UNSUITABLE FOR THE SOCKET OUTLET IN YOUR HOME THEN THE FUSE SHOULD BE REMOVED AND THE PLUG CUT OFF AND DISPOSED OF SAFELY. THERE IS A DANGER OF SEVERE ELECTRICAL SHOCK IF THE CUT OFF PLUG IS INSERTED INTO ANY 5 AMP SOCKET.
If a new plug is to be fitted please observe the wiring code as shown below. If in any doubt please consult a qualified electrician.
WARNING: This apparatus must be earthed.

IMPORTANT
The wires in this mains lead are coloured in accordance with the following code.
Green-and-yellow: Earth
Blue: Neutral
Brown: Live
As the colours of the wire in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows.
The wire which is coloured green-and-yellow must be connected to the terminal in the plug which is marked with the letter E or by the earth symbol or coloured green or green-and-yellow.
The wire which is coloured blue must be connected to the terminal in the plug which is marked with the letter N or coloured black.
The wire which is coloured brown must be connected to the terminal in the plug which is marked with the letter L or coloured red.

How to replace the fuse
Open the fuse compartment with a screwdriver and replace the fuse.

Caution:
Before attempting to connect or operate this product, please read the label on the rear panel.

The serial number of this product may be found on the rear of the unit.
You should note the serial number of this unit in the space provided and retain this book as a permanent record of your purchase to aid identification in the event of theft.

Model No. ______________________
Serial No. _______________________

WARNING:
TO PREVENT FIRE OR ELECTRIC SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.
Panasonic

RAMSA

Digital Mixer WR-DA7

Users’ Guide

Version 1.10
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## RAMSA

## Digital Mixer WR-DA7

### Users’ Guide

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Chapter 1
Introduction

1-1 A New Beginning

The Digital Mixer WR-DA7 sets a new standard for affordable automated digital audio mixing and production. The DA7 has a number of features built into it that until recently, were the privilege of only high-end production facilities. Every feature is either directly controlled or just a window away. As a DA7 user, you’ve made the decision to become part of the future.

Now that you’re here, please take some time to review the manual. Keep it near your DA7 and refer to it when you come across something you don’t understand. Digital mixers offer substantially more features than regular analog mixers, and there will be a period of time before you are as comfortable with the DA7 as you are with other mixers.

Like most people, you’ll want to play first and then look for those items in the manual that were unclear. But you should be aware that the DA7 has many advanced features that may not be immediately apparent to you, and if you don’t read the manual, you could be missing out on features that can save you time and effort in a session.

It will help your understanding of the DA7 to read this Users’ Guide from cover to cover, but we know you probably won’t. It would be beneficial to you, however, to at least read Chapters 1, 2, 3, 4 and Appendix D, which will help you get familiar with the basic operations.
Functionality

Let's take a moment to preview some of the main features and benefits of the DA7.

The Fader Layer controls permits you to mix and monitor the 32 inputs, the 6 aux sends and the 6 aux returns, the 8 buses, and the unique CUSTOM/MIDI layer. By not tying up input channels for outboard effects the 6 dedicated aux return faders provide extra inputs, for a total of 38 audio inputs.

The DA7 is digitally controlled which allows you to automate all your mixer functions, from mixing and MIDI parameters, to dynamics and effects. Multiple LEDs provide instantaneous display of channel/bus/aux assignments, as well as automation recording status.

The DA7 comes with internal memory to store fifty EQ libraries, fifty Dynamics libraries, fifty Channel libraries, plus fifty different scene memories. Using optional software, you can store these memories in a computer and save an unlimited number of these memories.

5.1 surround sound mixing is built into the DA7 with multiple methods of surround sound panning available on each channel.

Option cards expand the capabilities of the DA7. For example, the ability to synchronize to videotape, using the SMPTE interface option card, makes it easy to score or sweeten for film or television. There are other options that expand the capabilities of the DA7, including a Meter Bridge, Mixing Automation eXpansion software (MAX, for both Windows and Mac) and a Tandem card that connects two DA7’s together.

Audio Input/Output option interface cards can be mixed and matched for a particular project. You can have any type of audio option card installed and transfer from one format to another without the need of outboard devices. For instance, you could have an ADAT card and an AES/EBU card and transfer from your Digital Audio Workstation to your ADAT, or vice versa.

There are four audio Input/Output option cards available: ADAT, TDIF, AES/EBU - S/PDIF and an Analog card. Any audio card works in any slot.
Simplicity

The DA7 is simple to operate, so you will spend less time as an engineer and more time as an artist. Engineered for ease of use, the Human-Machine Interface (HMI) provides a variety of ways to access and assign the channel parameters for your sources. Every channel parameter is displayed on the 320 x 240 backlit LCD screen, providing a quick visual reference of every aspect of the mixer setup.

To view the status of the console on a larger screen, use the optional software package. This software allows you to create custom views of the DA7 and control the DA7 from your computer. It acts as a library program for backing up data from the DA7 libraries, and expands the capabilities of the automation system of the console. See your dealer for more details.

MIDI devices and MIDI remote control for peripheral gear can be controlled from the DA7.

The Future is Now

The DA7 is ready for computer-controlled digital mixing right out of the box. Connect it, and start recording. Everyone, from home musician to professional artists and producers, can now operate in the “Digital Domain” and create multi-track masterpieces using the DA7.
1-2 About This Manual

Document Notes
The first three chapters of the DA7 Users’ Guide provide an introduction to the system and basic information for the system.

Chapter 1, Introduction
• general information about the Users’ Guide and the system used to produce the document
• typical installation and usage scenarios for the DA7

Chapter 2, DA7 Tour
• Top Panel overview and a literal look at the Rear Panel connections setup
• illustrations that are referenced throughout the following chapters of the Users’ Guide

Chapter 3, Quick Start
• modules designed to familiarize you with a basic understanding of the features incorporated in the DA7 mixer

Chapters 4-16 each discuss a primary function of the DA7. The information follows a basic operational sequence. Some of the chapters will be divided into sections which discuss specific capabilities and/or functions of the chapter subject.

The sections in Chapter 17, Options describe various system configurations. The Appendices provide general information groups and detail the mixer’s technical specifications.

A Glossary providing definitions for information associated with the DA7 precedes the index for this document.
Symbols and Conventions Used in this Guide

The DA7 Users’ Guide uses the icons and conventions listed below. Whenever possible, the way something appears in the Users’ Guide is as it appears on the DA7.

- Numbers in a triangle indicate a sequential step in a process.
- Numbers in a circle indicate a list.
- Square bullets indicate alternative ways to perform similar tasks or actions.
- Round bullets indicate items or elements in a group.

GAIN SUB Text written in bold letters indicates the name of a knob, fader, button, or element on the Top Panel or the Rear Panel of the mixer. When panel labeling incorporates a background, the text will appear on a medium gray background.

[STEREO] Bold upper-case text contained in square brackets indicates the name of a window or a window area in the LCD.

(color) Color terms presented in italics and parentheses denotes the literal color of an LED button for a particular action or condition.

cursor In this document, cursor is used as both a noun and a verb. “Use the ARROW buttons to move the cursor”, or “Cursor to the OFF button”.

PRE PST Text presented on a black background or contained in a border indicates buttons or elements that perform a function and appear in the LCD.

This warning symbol alerts you to an action you may want to avoid or, at least, seriously contemplate before executing.

This tip symbol indicates an important fact, procedure, and/or other beneficial information for the mixer operation or performance.
The term “area” refers to a window region in the LCD of the **Display Bridge** of the mixer.

The term “section” refers to a region on either the Top Panel or the Rear Panel of the mixer.

The term “soft knob” refers to a knob control in a window area in the LCD.
1-3 Making the DA7 Work For You

Although the DA7 has some analog inputs, it should really be thought of as a digital mixer. Like most equipment, the DA7 comes set with factory defaults, some of which may or may not provide the kind of operational preferences you would like. Please refer to Appendix D, Default Settings for a complete listing of these presets. You can’t change the factory default presets, but when you have created mixer settings that you like, they can be saved by making a snapshot of the setup and recording it in SCENE MEMORY. See Chapter 15, Scene Memory for more information.

As with any new piece of equipment, it may take you a little time to figure it out. Here are a few things you WILL need to know about the DA7. Please take a few minutes now to read them. It could save you time in the long run.

BULK BACKUP

One of the first things to think about is saving data. If you’ve already started using the DA7 straight out of the box for a major recording session, all of the mixer data for your new million selling CD stored in the DA7 memory, BACK IT UP!

![MIDI>BULK Window](image)

The [MIDI>BULK] window can be accessed by pressing the MIDI button on the Top Panel. In the [MIDI>BULK] window, you’ll find the [BULK I/O DATA SELECT] area. All of the information recorded in the system can be sent en masse to a Mac or IBM compatible computer. See Chapter 11, MIDI, page 11-2, for setting up the serial port output to a personal computer. Some previous background knowledge of MIDI and a personal computer would be helpful here. There is software on the market that readily captures bulk dump information. If you have questions, either visit a local music retailer, or visit one of a number of Web sites on the Internet for information.
MASTER RESET

If you’ve already pushed as many buttons as possible after powering up the **DA7** to see what it could do, or if you have accidentally changed any of the factory presets and cannot figure out what you have done, you need to know about the master reset command.

To reset the **DA7**, turn the power off, and then simultaneously press and hold the METER and CHANNEL buttons in the MASTER DISPLAY section of the Top Panel. While pressing these two buttons, turn the power on. Hold the buttons down until the Channel window is displayed. Doing this will reset the **DA7** to the factory presets.

Also, there are a few windows on the LCD screen that you should acquaint yourself with, that contain most of the information you need to know about the current status of your mixer.

They are the [UTILITY>CONFIG], [SOLO/MON], [D-I/O>INPUT SET] and [MIDI>BULK] windows. Pressing the relevant Top Panel buttons for these features will display the windows in the LCD. Once you are in any window, you will find the window group selection buttons on the bottom of the screen. These buttons show all the windows within the window group. The window group you are in is indicated on the top line of the [taskbar]. See Chapter 2, page 2-20 for information on the LCD screen. Cursor to the bottom of the current window, choose a window selection button, and press the ENTER button to bring that window into the LCD. You can also access the selections by pressing the Top Panel button again to toggle through the selections.
CONFIGURATION

The [UTILITY>CONFIG] window can be accessed by pressing the UTILITY button on the Top Panel. This is where the [CONFIGURATION] selections are located. One of the features here is [AUTO CHANNEL SELECT]. When active, every time a fader is moved or a SELECT button is engaged, whatever window you are in will change to the [CHANNEL] window for that selected channel. If you are trying to set up parameters on different Channel Strips, it could get frustrating to have to go back and forth between windows. To render this feature inactive, make sure that the button is in the OFF mode. OFF is the factory preset.

Another [CONFIGURATION] selection is [AUTO DISPLAY CHANGE]. When ON, whenever a parameter adjustment is made from the Top Panel, the LCD will change to that parameter window. If you tweak an EQUALIZER, DYNAMICS/DELAY or PAN knob on the Top Panel, but want to stay in the [CHANNEL] window, for example, make sure that the [AUTO DISPLAY CHANGE] selection is OFF. OFF is the factory preset.

Other items in the [CONFIGURATION] area are the [DYN RANGE DBFS] and [MOTOR FADER] buttons, which are set to ON as part of the DA7’s system default.

For more information, see Chapter 16, Utility and Solo Monitor, page 16-9. Also, see Appendix D for a listing of all the factory default conditions.
MONITOR SETUP

To customize the monitor setup of the DA7, access the [SOLO/MON] window by pressing the SOLO MONITOR button on the Top Panel.

The [MON A] area function mutes the MONITOR A speakers 20dB. When selected, the MON button will appear in inverse video, and the speakers will remain dimmed until the MON button is deactivated. The MON function can be accessed from the Top Panel by pressing the MMC/CURSOR button and SOLO MONITOR button simultaneously.

SOLO is set to [IN PLACE] and [SOLO] in the factory default. This allows you to only SOLO one channel at a time, post-fader and post-pan. In a mix situation you may want the [SOLO MONITOR][POSITION] area set to [IN PLACE], which is post-fader and post-pan, and the [SOLO MONITOR][MODE] area set to [MIX], which allows multiple channels to be solo’d.

SOLO MUTE returns the monitor to normal, but leaves the selections of solo’d channels intact. When SOLO MUTE is cleared, monitoring returns to the previously selected SOLO channels.

The [SURROUND MONITOR] area mode selection is important too. When the [SURROUND MONITOR] is in the [AUX] mode, it will send the surround bus 1 and 2 signals through MONITOR A L/R, while aux sends 3 through 6 route the surround bus 3 through 6 signals. In the [MON] mode, the surround signal path uses the MONITOR A L/R, MONITOR B L/R, and MASTER L/R outputs. If the [MON] mode is active, when trying to listen to another source in the system that is not assigned to the [SURROUND MONITOR], you will find nothing coming out of the monitor speakers. The same condition could occur by selecting [Surr] for a channel in the [CHANNEL] window [ASSIGN] area.
For more information on these windows, see Chapter 16, Utility and Solo Monitor, page 16-2. To find out about the 5.1 surround sound monitor output, see page 16-3, and for more on the DA7's surround sound features, see Chapter 8, Pan/Assign, Surround, Bus Assign.

**D-I/O INTERFACING**

With all the different devices on the market these days, getting all that gear to speak to one another can be quite a challenge. The DA7 system wordclock is factory set to [INT 48K], with the option of setting it to [INT 44.1K] or to external. All digital devices attached to the DA7 must be set to the same wordclock sampling rate in order to operate properly. If the audio you are hearing does not sound right, first check to see if you are operating every device connected to the DA7 at the same sample rate.

Find the sample rate the devices all have in common and set the DA7 to that rate, be it 44.1, 48K or another acceptable sample rate frequency. To set the DA7's wordclock reference, press the D-I/O button on the Top Panel to display the [D-I/O>INPUT SET] window.

When using the DA7 as the master wordclock, there are two buttons in the [SOURCE SELECT] area for setting the sample frequency, [INT 44.1K] and [INT 48K]. Cursor to the sample frequency that is common to your devices and press the ENTER button on the Top Panel to engage the appropriate sample frequency.
Or, if you prefer to use an external wordclock reference as the master
wordclock, the external wordclock master must output a sample frequency
that is common to all devices. When you are referencing the DA7 to video,
you should be very careful to set the DA7 up properly.
For additional information about sample frequency and setting the clock rate
of the DA7, see Chapter 12, D-1/O, page 12-2.
The key to getting the most out of your DA7 is to learn it completely. We
strongly recommend that you read at least Chapter 2, DA7 Tour, Chapter 3,
Quick Start, Chapter 4, Cursor Control and become familiar with the
factory default presets in Appendix D.
Chapter 2
DA7 Tour

2-1 Overview

Your tour of the DA7 begins with a brief description of the Human-Machine Interface (HMI) design concept, and then an introduction to the elements, functions, and features of the DA7. You may ask, “what is a Human-Machine Interface (HMI)?”

The HMI is an ergonomic design concept incorporated into most products, including the DA7 mixer. Literally, it is how you (the human) and the mixer (the machine) communicate with each other. Using this concept, the DA7 was designed to give you easy access to the hardware and software features built into the mixer, so that you can quickly learn to use your new DA7 in an intuitive manner. The layout of these features and how you interact with the information they give you is described in detail in this manual. This is why we recommend that you keep this document nearby to use as a reference tool if you run into any problems.

Shortcuts, unique features and alternative paths of operation are provided to make using the DA7 faster. They are described throughout this manual, and pointed out in Chapter 3, Section 3-5. Please read this section carefully. It will make using the DA7 a more pleasurable experience.
Functions and features of the mixer are accessed via knobs, faders, and buttons on the Top Panel of the DA7. The LCD screen reflects any adjustments and/or selections you make on the Top Panel. The cursor controls and the JogDial are both used to navigate the current window displayed or to make adjustments to the data fields. The LED indicators for the Channel Strips reflect the channel assignments, and their colors indicate the current mode.

We know you will develop your own personal style of operation. Once you become familiar with the proper operation and functions of the DA7, your level of confidence and ability to operate this digital mixer will surpass anything you have previously done on a traditional analog console.
2-2 Top Panel

The illustrations on this page and the next depict the Top Panel of the DA7. The number assignments are reflected on the Top Panel cutaway view on page 2-4. Page 2-5, adjacent to the cutaway view, provides the explanation of the numbered sections of the Top Panel.

DA7 Top Panel
Illustrated Guide
Explanations of the numbered sections begins on the next page.

DA7 Top Panel
1. **Channel Strip** - input gain controls with channel control and status indicators. Also called a **Channel Fader Strip**.

2. **AUTOMATION/AUX** LED button - selects the display mode of the Channel Strip LED field indicators, and arms the **AUTOMATION** system.

3. **MASTER DISPLAY** section - the **METER** and **CHANNEL** buttons are direct buttons to the respective LCD screen windows. These should be considered "home base" for the LCD display.

4. **EQUALIZER** section - controls for setting the equalization parameters for a selected channel.

5. **PAN/ASSIGN/SURROUND, BUS ASSIGN** section - controls for setting the pan and bus assignments for a selected channel.

6. **DYNAMICS/DELAY** section - controls for setting the onboard dynamics processing parameters for a selected channel.

7. **AUX** section - controls for routing channels to outboard sources and for defining the signal path as either pre-fader or post-fader.

8. **Display Bridge** - contains the LCD screen, L/R meter display, and primary mixer display status indicators.


10. **MASTER L/R Fader Strip** - controls for L/R MASTER output.

11. **Fader Layer Controls** section - selects the current fader layer to be displayed.

12. **MONITOR** section - volume and selection controls for monitoring.

13. **SETUP** section - mixer function, or display control buttons.

14. **SCENE MEMORY** section - buttons for writing and reading the 50 mixer scene memories.

15. **LIBRARY** section - buttons for storing and recalling Channel, EQ and Dynamics libraries.

16. **Keypad** - alphanumeric keys for entering numbers or text.

17. **Cursor Control** section - buttons and controls for defining the cursor actions.

18. **Headset Control** section - the location of the headset connector and the level control of the **DA7** is immediately below the right front edge of the Top Panel.
There are sixteen Channel Fader Strips on the **DA7**. The functionality of each Channel Fader Strip is determined by which of the four Fader Layer controls selected: **INPUT 1-16**, **INPUT 17-32**, **AUX/BUS**, and a user **CUSTOM/MIDI** function.

The **MIC/LINE INPUT** knob varies the channel input gain volume and adjusts for either a mic or line-level input. Due to the high quality design of this circuit, there is no pad switch necessary; the input knob range sets the input level. This knob only affects the analog inputs 1-16.

The **PEAK/SIGNAL** LED indicates when an input signal is present (green), and when the input signal level is too high (red).

The LED field indicators reflect the auxiliary (AUX) routing assignments and automation parameters. The LED color signifies the **AUTOMATION/AUX** button selection, **AUX** (green), or **AUTOMATION** (red).

The **SOLO** LED button toggles on (red) or off. When on, the channel output will be routed to the **MONITOR A** speakers (overriding the **MONITOR A** input), and to the headphones.

The **FLIP** LED button flips the control of the Channel Fader Strip from one input layer to the other. The LED color indicates the current input selection and matches the Fader Layer control LED button colors, **INPUTS 1-16** (green) or **INPUTS 17-32** (red).
The **SELECT** LED button, when on (orange), identifies the channel as the current channel selected. Only one **Fader Strip** can be selected at a time (unless it’s in stereo or link mode).

For more detail, see **Chapter 5, Channel, Library, and Meter Windows**.

The **ON** LED button toggles on (red) and off. When on, the channel output is active.

There are two channel numbers for each strip, indicating the **INPUT** connections on the Rear Panel of the **DA7**.

The **AUX/BUS** label at the bottom of a **Channel Fader Strip** indicates its function when the **AUX/BUS Fader Layer** control is selected.

See **Chapter 6, Fader Layers and Channel Strips** for additional information.

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2 **AUTOMATION/AUX LED Button**

The **AUTOMATION/AUX LED button** toggles the display of the **Channel Fader Strips** LED field indicators. The LED color indicates the current selection.

See **Chapter 14, Automation** and **Chapter 10, AUX** for additional information.

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3 **MASTER DISPLAY Section**

[Diagram of the MASTER DISPLAY section]

The **MASTER DISPLAY Section** includes a **METER button** and a **CHANNEL button**. The **METER** button allows you to select different meters, and the **CHANNEL** button selects different channel displays. For a detailed view, see **Chapter 2, DA7 Tour**.
Pressing the **METER** button will display the [METER] window group on the LCD screen in the **Display Bridge**. Pressing the **METER** button again will cycle the three window selections: [METER INPUTS 1-32], [BUS/AUX], [SLOT].

Pressing the **CHANNEL** button will display the [CHANNEL] window group on the LCD screen in the **Display Bridge**. The window displayed will show the current mixer strip selected.

See **Chapter 5, Channel, Library, and Meter Windows** for additional information.

### 4 EQUALIZER Section

There are three parameter knobs and four frequency range LED buttons in the **EQUALIZER** section, which are used to change the EQ settings of the currently selected channel. The **EQ ON** LED button toggles the **EQUALIZER** on (green) and off. When the controls are active, adjustments can be made to the currently selected channel.

The three knobs are labeled **Q** (quality), **FREQ** (frequency), and **GAIN** (gain). The additional labeling of **L** (left), **SL** (surround left), and **SUB** (surround subwoofer) indicate the surround sound parameters that are controlled by the knobs when the [SURROUND] mixing area is activated. Surround sound capabilities are discussed in **Chapter 8**.

The four frequency band LED buttons can be selected one at a time, and turn on (orange) to show which band is operating. They are labeled **H** (high), **HM** (high-mid), **LM** (low-mid), and **L** (low).

Pressing the **GAIN** knob displays the [EQUALIZER] window on the LCD screen. Once the [EQUALIZER] is displayed in the LCD window, these buttons perform other shortcut functions.

The **EQUALIZER** section is detailed in **Chapter 7**.

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DA7 Users’ Guide

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Chapter 2

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2 DA7 Tour

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2 - 8
Pan and bus assignment, and surround sound parameters for the selected channel are set within this area. The pan control is always active for the L/R bus, so you do not need to activate the ON button to pan across the Master L/R out. However, if you wish to pan between odd/even buses, you must push the ON button. Assignment to the DIRECT output is not affected by the pan control.

The additional labeling of C (center) indicates the surround sound parameter that is controlled by the knob when the [SURROUND] mixing area is activated.

The L/R, the DIRECT, and the BUS ASSIGN LED buttons toggle on (green) and off. In addition to the eight bus selections, labeled 1 - 8, selections for L/R (master L/R) output and DIRECT output are available. The DIRECT output works in conjunction with the option cards installed in the DA7 Rear Panel, routing signals directly to the cards.

The DIRECT output is detailed in Chapter 12, D-I/O.

Pressing the PAN knob displays the [SURROUND] window on the LCD screen.

The PAN/ASSIGN/SURROUND, BUS ASSIGN section of the Top Panel is detailed in Chapter 8.
DYNAMICS and/or DELAY processing can be added to each of the DA7 Channels. Pressing the PARAMETER SELECT button cycles the current parameter selections, which are grouped in pairs. The top knob adjusts the top parameter selection in the pair, and the bottom knob adjusts the bottom parameter selection in the pair. The DYNAMICS ON LED button toggles the dynamics processing on (green) and off for the selected channel, and the DELAY ON LED button toggles the delay on (green) and off.

The additional labeling of R (right) and SR (surround right) indicates the surround sound parameters that are controlled by the knobs when the [SURROUND SOUND] mixing area is activated. The surround sound function is activated in the [SURROUND] window of the [SURROUND] window group.

See Chapter 8 for more information on surround sound.

Pressing the bottom knob displays the [DYNAMICS] window group on the LCD screen.

For more information on the DYNAMICS/DELAY section of the Top Panel, see Chapter 9.
This section of the Top Panel contains controls for routing selected channels from/to outboard sources. These six aux routes are independent of the channel input connectors on the Rear Panel of the DA7 and greatly expand the flexibility of the mixer. They can be used as six mono sends, or in stereo pairs (such as 1&2, 3&4, 5&6), and six mono returns, or stereo pairs. There are two digital aux routes, AUX 1/2, and four analog aux routes, AUX 3/4 and AUX 5/6. AUX 3/4 and AUX 5/6 are paired for convenience on the Rear Panel connectors. If you wish to use them as Mono channels, connect a standard audio “Y” cable (available at your dealer) to split the audio channels.

With a channel selected, press an AUX 1-6 LED button (green) to select which aux route you wish to assign for the channel. The LEVEL knob performs two functions. By pressing the knob, you will assign the channel to the selected aux route, and by turning the knob, you can adjust the individual channel output to the aux selection. The LED field of the Channel Fader Strips will reflect the aux assignments for the channels.

Aux routing is defaulted to a post-fader condition for the selected channel. Press the PRE LED button to select it (red) and change the aux routing function to a pre-fader condition.

Press the FADER CONTROL LED button to select it (red) and display the [FADER CONTROL] window group on the LCD screen. The window displayed will be determined by the current AUX 1-6 LED button selection. The channel fader status of the 32 input channels for the aux selected will be reflected in the [FADER CONTROL] window, and the Channel Faders will reset to their respective level positions for the aux selected.

The AUX/BUS designations at the bottom of the Channel Fader Strips identify the strip functions when the Fader Layer AUX/BUS LED button is pressed.

For more information on the AUX section of the Top Panel see Chapter 10.
The Display Bridge contains the information for the current status of the DA7 and the LCD screen. The various windows for the functions and features of the mixer are displayed on the LCD screen.

9 BUS Fader Strip

There are four BUS Fader Strips on the DA7. In conjunction with the Fader Layer controls, each strip directly controls the BUS outputs, or the AUX/BUS functions which are indicated on the bottom of the strip, or a user CUSTOM/MIDI function.
The **SOLO** LED button toggles on (red) or off. When on, the selected bus output will be routed to the **MONITOR A** speakers and headphones, overriding the previous input.

There are two bus numbers for each strip, indicating the **BUS ASSIGN** selections that can be controlled by the strip.

The **FLIP** LED button flips the **BUS Fader Strip** from controlling one bus to controlling the other bus for the strip. The LED color (red or green) indicates the current bus selection.

The **SELECT** LED button, when on (orange), identifies the bus strip as the current bus strip selected. Only one **BUS Fader Strip** can be selected at a time unless they are paired for **LINK** or **STEREO** operation.

The **ON** LED button toggles on (red) and off. When on, the bus output is active.

The **AUX/BUS** indication at the bottom of the **BUS Fader Strip** indicates the strip function when the **AUX/BUS Fader Layer** control is selected.

See **Chapter 6, Fader Layers and Channel Strips** for additional information.

### MASTER L/R Fader Strip

The **MASTER L/R Fader Strip** controls the **DA7** master L/R output. The **SELECT** LED button, when on (orange), identifies the strip as the current fader strip selection. The **ON** LED button toggles on (red) and off. When on, the master output is active.

See **Chapter 6, Fader Layers and Channel Strips** for additional information.
The Fader Layer controls significantly expand the flexibility of the DA7 mixer. The LED button selections define the current function for the fader strips.

LED buttons for the Fader Layer controls assist you in determining or checking the current channel and bus fader settings on the mixer.

INPUT 1-16, when selected (green), resets the fader strips to control channel inputs 1 through 16, and buses 1, 3, 5, and 7. When selected, the faders move to the positions reflecting the current settings for the layer, unless previously flipped. To reset a flipped Channel Fader Strip, press the FLIP button. To reset all the currently flipped Channel Fader Strips, press the INPUT 1-16 Fader Layer control button and hold it for two seconds. This will set all faders to the selected layer.

INPUT 17-32, when selected (red), resets the fader strips to control channel inputs 17 through 32, and buses 2, 4, 6, and 8. When selected, the faders move to the positions reflecting the current settings for the layer, unless previously flipped. To reset a flipped Channel Fader Strip, press the FLIP button. To reset all the currently flipped Channel Fader Strips, press the INPUT 17-32 Fader Layer control button and hold it for two seconds. This will set all faders to the selected layer.

AUX/BUS, when selected (orange), resets the fader strips to control the aux sends, aux returns, and bus outputs, while the faders move to the positions reflecting the current fader settings for the layer.

CUSTOM/MIDI is a user-definable Fader Layer control, where the functions are selectable.

See Chapter 11, MIDI for more information on the DA7 MIDI feature, and Chapter 6, Fader Layers and Channel Strips for additional information.
The DA7 provides controls for two monitor outputs and a talkback circuit. There are source selection LED buttons for the MONITOR A and MONITOR B outputs, and LEVEL knobs for both of the monitor outputs and the talkback circuit.

**MONITOR A Controls**

The MONITOR A selection LED buttons route the input selected (green) to the MONITOR A OUTPUT (CR) (Control Room) connections on the Rear Panel of the mixer and to the headphones. The selections are:

- **L/R** routes the MASTER L/R output to the monitors.
- **2TR A** routes the device that is connected to 2TR A IN on the Rear Panel to the monitors.
- **2TR B** routes the device that is connected to 2TR B IN on the Rear Panel to the monitors.
- **AUX** routes the AUX SEND outputs to the monitors. Press the AUX LED button to monitor the selections, beginning with AUX SEND 1/2, followed by AUX SEND 3/4, and AUX SEND 5/6. The MEMORY numeric readout on the Display Bridge will momentarily display the AUX SEND selections.

The MONO button, when on (red), sums the selected input and sends a monaural signal to the monitors. This will not affect the 2TR B output stereo signal.
MONITOR B Controls

The MONITOR B selection LED buttons route the input selected (green) to the MONITOR B OUTPUT (STUDIO) connections on the Rear Panel of the mixer. The selections are:

- **MONITOR A** routes the current MONITOR A selection to the studio monitors.

- **AUX** routes the AUX SEND outputs to the monitors. Press the AUX LED button to monitor the selections beginning with AUX SEND 1/2, followed by AUX SEND 3/4, and AUX SEND 5/6. The MEMORY numeric readout on the Display Bridge will momentarily display the AUX SEND selections.

TALKBACK

The TALKBACK ON button controls the talkback microphone installed in the Top Panel of the DA7. When on (orange), the MIC is active and the MONITOR A speakers will be dimmed. This can be either a “push-to-talk” momentary interrupt type button, or a “push on/push off” type button. This is selected in the [UTILITY] window. Talkback routing is selected in the [SOLO MONITOR] window. There is also a phone jack on the Rear Panel that allows for remote Talk back operation.

For additional information on the talkback, see Chapter 16, Utility and Solo monitor.

**SETUP Section**

These are direct-action buttons that will display the selected windows in the LCD screen of the Display Bridge. In addition, pressing one of these buttons then one of the 10 Keypad buttons, lets you directly recall the selected window of the window group. See page Appendix B-3, LCD Screen Displays for more information.
UTILITY Button
Pressing the UTILITY button will display the [UTILITY] window group on the LCD screen in the Display Bridge. The window displayed will be determined by the window selection buttons at the bottom of the window. Pressing the UTILITY button again will cycle the window selections: [OSC_BATT], [CONFIGuration], [USER CuSToM].
See Chapter 16, Utility and Solo Monitor for additional information.

MIDI Button
Pressing the MIDI button will display the [MIDI] window group on the LCD screen in the Display Bridge. Pressing the MIDI button again will cycle the window selections: [SETUP], [PProGram ASsiGN], [ConTRoL ASsiGN], [BULK], [REMOTE].
See Chapter 11, MIDI for additional information.

D-I/O Button
Pressing the D-I/O button will display the [D-I/O] (Digital Input/Output) window group on the LCD screen in the Display Bridge. Pressing the D-I/O button again will cycle the window selections: [INPUT SET], [TO SLOT], [DITHER].
See Chapter 12, D-I/O for additional information.

GROUP Button
Pressing the GROUP button will display the [GROUP] window selections on the LCD screen in the Display Bridge. Pressing the GROUP button again will cycle the window selections: [FADER GRouP], [MUTE GRouP], [LINK/STR].
See Chapter 13, Group for additional information.

AUTOMATION Button
Pressing the AUTOMATION button will display the [AUTOMATION] window group on the LCD screen in the Display Bridge. Pressing the AUTOMATION button again will cycle the window selections: [SETUP], [EXECUTE], [EVenT EDIT].
See Chapter 14, Automation for more information.

SOLO MONITOR Button
This button displays Solo Monitor mode, Talk back assignment, and Surround Monitor.
See Chapter 16, Utility and Solo Monitor for additional information.
**SCENE MEMORY Section**

**SCENE MEMORY** allows you to store and recall complete mixer setups and functions. There are fifty registers, numbered 01 through 50, available for storage of mixer settings. Memory 00 is reserved for Automation.

Press either the WRITE LED button or the READ LED button (orange) to select it and display the [Read/WriTe] window of the [SCENE MEMORY] window group on the LCD screen of the Display Bridge.

There are two windows in the group; [RD/WT], and [XFADE]. The [RD/WT] window is always the initial window displayed when either button is selected. To change to the [XFADE] window, use the ARROW buttons to navigate to the respective window selection button, and then press the ENTER button, or press either the WRITE or READ LED buttons a second time.

When the [RD/WT] window is displayed, the JogDial will scroll the [SCENE MEMORY] list area of the window. This allows you to quickly access a previously stored scene, locate an empty scene memory, or locate a scene memory to be overwritten. By pressing the ENTER button after a scene has been located, the mixer will immediately assume the setting for the stored scene.

The MEMORY readout display will flash the memory number that is selected until it is recalled. The selected memory will be displayed without flashing once it has been recalled.

While the [RD/WT] window is displayed, pressing the ENTER button will immediately overwrite the current scene memory with the settings that are on the mixer at the moment the ENTER button is pressed, unless the register is write-protected. See Chapter 15, Scene Memory for additional information.

**LIBRARY Section**
There are three mixer functions with associated libraries: \texttt{CHANNEL}, \texttt{EQUALIZER}, \texttt{DYNAMICS/DELAY}. The library feature allows you to store and recall individual function parameters to a separate library. There are fifty registers for each library, numbered 01 through 50.

The \texttt{RECALL} button opens the library window for the selected function. This means that if the \texttt{CHANNEL} window was displayed when you pressed the \texttt{RECALL} button, the \texttt{CHANNEL} library will be displayed. The same goes for the \texttt{EQUALIZER AND DYNAMICS/DELAY} libraries. Once selected, the parameter knob will allow you to scroll through the stored memories. After you have chosen a memory, press the \texttt{RECALL} button again and the selected memory will be recalled to the currently selected function. You will also automatically return to the main screen for the selected function.

While the library is displayed, pressing the \texttt{STORE} button will immediately store the current function settings to the current memory location, unless the memory location is write-protected.

See \texttt{Chapter 5, Library} for additional information.

\textbf{Keypad and Cursor Control Section}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{Keypad_and_Cursor_Control_Section.png}
\caption{Keypad and Cursor Control Section}
\end{figure}

Details on the Keypad, \texttt{UNDO/REDO} button, \texttt{MMC/CURSOR} button, \texttt{ARROW} buttons, \texttt{ENTER} button, \texttt{CURSOR MODE} button, and \texttt{JogDial} elements of the DA7 Top Panel are provided in \texttt{Chapter 4} of the manual.

\textbf{Headset Control Section}

A stereo headset connector and the headset volume control are located under the right front edge of the Top Panel of the DA7. The current \texttt{MONITOR A} selection is always routed to the headset connector.
### 2-3 Display Bridge

The **Display Bridge** for the **DA7** is your “window” to the mixer functions and features. There are seven elements comprising the **Display Bridge**: the LCD screen, the L/R meter display, the **MEMORY** numeric readout, the **CONSOLE LOCK** LED status indicator, the **CONTRAST** control knob, the **MULTI-CH VIEW** (multi-channel) LED button, the **SOLO** LED status indicator.

#### LCD Screen

Sample Window Display (CHANNEL window displayed)
The LCD screen is the 320x240 backlit liquid-crystal display (LCD) element of the Display Bridge. The screen displays the various windows that show the functions and status of the DA7. The windows contain areas and items that can be accessed with the cursor control or JogDial.

There are three general areas for the windows displayed on the LCD screen: the [taskbar] area, the [function] area, and the [windows selection buttons] area.

**Taskbar Area**

<table>
<thead>
<tr>
<th>Channel selection field</th>
<th>Window group name</th>
<th>Communication status indicator</th>
<th>Timecode field</th>
</tr>
</thead>
<tbody>
<tr>
<td>Channel type field</td>
<td>Current window name</td>
<td>SCENE MEMORY field</td>
<td></td>
</tr>
</tbody>
</table>

The [taskbar] area of a window contains information about the current window and the most recent mixer selections. Several of the items in the [taskbar] will remain unaffected when you change to another window, depending on the new window selection.

**Channel Selection Field**

This field shows the currently selected Channel, BUS, or MASTER L/R strip selection. When channels or buses are paired, the field will display both of their numbers. The field will change when you press a different SELECT LED button on the Top Panel.

**Channel Type Field**

This field shows the most recently selected channel type. The field will change when you press a SELECT LED button on the Top Panel.

**Window Group Name**

The current window group name is displayed in this field.

**Current Window Name**

The name of the current window is displayed in this field.

**Communication Status Indicator**

This area of the [taskbar] displays the current communication status as configured in the [MIDI>SETUP] window. The selections are either [TO PC], [S I/O], or [MIDI].
**Timecode Field**
This field displays the most recent time code value received by the mixer, as defined by the settings in the [AUTOMATION>EXECUTE] window.

**SCENE Field**
This field displays the most recently read SCENE MEMORY number and name.

**Function Area**
The [function] area of a window contains the various controls, buttons, settings, and values for the current window.

**Window Selection Buttons Area**
This area of a window contains the buttons for the windows that comprise the current window group. The button for the current window will be highlighted.

**L/R Meter Display**

This meter reflects the current MASTER L/R (left/right) output of the DA7, unless SOLO has been activated for a channel. If a SOLO LED button is selected on the mixer, the meter reflects the level of the solo’d channel(s) only.

In the [METER>SLOT] window, the [RESPONSE] area lets you select between [VU] (Volume Units) and [PPM] (Peak Program Meter). When [VU] is selected, the L/R Meter Display will show the mixer output in Volume Units, and when [PPM] is selected, the Meter reflects the mixer output as Peak Program Meter.
SOLO LED Status Indicator

Located below the L/R meter display, the SOLO LED status indicator will light and flash (red) when SOLO has been activated for any channel on the mixer.

MEMORY Numeric Readout

The two-digit numeric readout displays the most recently accessed SCENE MEMORY. Whenever an AUX monitoring selection button is activated for either MONITOR A or MONITOR B, the numeric display will momentarily display the AUX selections.

CONSOLE LOCK LED Status Indicator

When illuminated (red), the password protection for an area or function of the mixer is engaged, and selected mixer operations cannot be performed. See Section 16-3, Utility, Configuration (CONFIG) Window for more information.
**CONTRAST Control Knob**

This knob controls the contrast value of the LCD screen. Rotate the knob to adjust the contrast value of the LCD screen for optimum viewing and to suit the operating environment.

**MULTI-CH VIEW LED Button**

Press this LED button to activate the multi-channel viewing mode for the LCD screen. When on (red), the LCD screen will display the currently selected Channel Fader and one of the other sources that can be used to compare or copy information from the current selection.

See Chapter 5, Channel, Library, and Meter Windows for more information.
2-4 Rear Panel

Everything that goes in, out, and through the DA7 happens on the Rear Panel, with the exception of the headphone connector. The DA7 provides multiple ways for doing many things, so let your creativity be your guide.

The rear of the DA7 is configured in four rows. The top row contains analog INPUTS 1-16 (inputs 1-8 are balanced XLR connectors and inputs 9-16 are balanced TRS (tip-ring-sleeve) phone plug connectors). Row 2 contains analog INS 1-16 (inserts) with (TRS) phone plug connectors. Row 3 contains outputs for MASTER OUT, REC OUT analog, MONITORS A&B, and AUX returns and sends 1 through 6. The bottom row contains the METER BRIDGE connection, MIDI IN/OUT, SERIAL PORT (for direct connection to a PC or a Macintosh computer), WORD CLOCK IN/OUT, DIGITAL IN/OUT, and a REMOTE SW connector.

Power Switch
Turns the power on and off to the DA7.

AC Inlet
Plug the AC power cord here.

Signal Ground [SIGNAL GND]
Connect to a grounded source to stabilize the voltage levels of the connected devices, and to prevent hum and buzz created by ungrounded sources.
Rows 1 & 2 Connectors

Connectors in these two rows are numbered from right to left on the Rear Panel.

**INPUTS 1-8**

These inputs are designed for XLR connectors. The input range is from -60dB to +10dB, 5kΩ BAL. Use the MIC/LINE INPUT knobs on the Channel Strips for adjustment of the incoming level. From the [CHANNEL] window, the +48V phantom power can be individually turned on or off for each channel via the screen.

**INPUTS 9-16**

Use these inputs with a 1/4” TRS (tip-ring-sleeve) phone plug connector. Use the MIC/LINE INPUT knob to adjust the input level. The input range is from -60dB to +10dB, 5kΩ BAL. There is no +48V phantom power. Microphones used on these inputs must be externally powered if required.

**INSERTS 1-16**

These inserts are used for creating an effects loop. A 1/4” TRS phone plug, with a level of +4 dB, 10kΩ UNBAL, provides an output (tip) send to effects, or an input (ring) return from an outboard effects device.
**Row 3 Connectors**

**AUX SEND 1/2**
Use RCA connectors to attach a digital effects device or another S/PDIF device to the **AUX SEND 1/2** and **AUX RETURN 1/2** digital terminals. **AUX/BUS Fader Layer** faders control the **AUX 1/2 SEND** and **RETURN**. These connections are not analog signals.

**AUX SEND 3/4, 5/6**
These terminals are 1/4” TRS phone plug connectors, at a level of +4dB, 10kΩ UNBAL. They can be used for connecting outboard signal processing devices, or for a studio headphone feed, or as part of a multitrack output setup. The possibilities are limited only by your imagination. The **AUX/BUS Fader Layer** is the fader control for these connections. Detailed cable connections are shown in Appendix E, Cables and Connections.

**AUX RETURN 3/4, 5/6**
These terminals are 1/4” TRS phone plug connectors, at a level of +4dB, 10kΩ UNBAL. The **AUX/BUS Fader Layer** is the fader control for these feeds. See Appendix E, Cables and Connections for more information.

**2-Track B Input**
This is used to connect an analog source strictly for monitoring purposes, as it does not appear as an input to the mixer. Connect a 1/4” TRS phone plug to the output signal from a cassette deck, for example. The input signals are sent to the **2 TR B IN** LED button in the monitor section. The level is +4dB, 10kΩ BAL.

**Monitor A Out**
These terminals are 1/4” TRS dual phone plugs at a level of +4dB, 600Ω BAL, and connect the output of the **MONITOR A** source selection to an external amplifier (or powered speaker) for monitoring in the control room (CR).
Monitor B Out
These terminals are 1/4” TRS dual phono plugs at a level of +4dB, 600Ω BAL, and connect the output of the MONITOR B source selection to an external amplifier for monitoring in the studio.

[REC OUT] Record Output
Use 1/4” TRS phone plugs, at a level of +4dB, 10kΩ BAL, to output signals for recording.

Master Output
Female XLR connectors send the MASTER L/R analog program output to external speakers and/or a recording device of +4 dB, 600Ω BAL.

Row 4 Connectors

Remote SW [Switch]
Connect a momentary or press-to-talk remote switch with a 1/4” TS phone plug for Talk Back or automation record functions. Parameters are assignable in the [UTILITY>CONFIG] window.

Digital Input [AES/EBU] [S/PDIF]
An XLR connector inputs an audio signal from a DAT or other digital source. Assignments can be made from the [D-I/O>INPUT SET] window. This incoming source can be monitored by selecting the 2TR A LED button as the MONITOR A source selection, or, on Channel Faders 15 and 16, when 2TR A is assigned in the [D-I/O>INPUT SET] window. The signal can also be directly assigned to the MASTER L/R program output.

Digital Record Output [AES/EBU] [S/PDIF]
XLR connections of the MASTER L/R digital output are for use in recording by a digital device with AES/EBU digital input capabilities.
Format Select Switch
This switch is used to select the signal format of the Digital Record Output, either AES/EBU (RS-422/110Ω) or S/PDIF (0.5 V[p-p]/75Ω) physically. The status information included in the output signals is always “professional” regardless of the switch position.
For S/PDIF usage, an optional adapter is required (Part No. DA/ADPTF). You must make certain that the adapter connects pin #1 and #3 together.

Clock Terminating 75 Ω ON/OFF & Out / Thru Switch
Located next to the WORD CLOCK IN BNC connection, this switch should be set to 75 Ω OFF and Thru position if the DA7 is being used to pass the wordclock signal to other devices in the chain.

Set the switch to 75 Ω ON and OUT for terminating the wordclock, if the DA7 is slaved and located at the end of the wordclock chain. The 75 Ω ON and OUT position should also be selected when the DA7 is being used to slave other devices to the DA7’s wordclock. See Chapter 12, D-I/O for more information.

Clock Input
This is used to synchronize the DA7 to an external wordclock source. This allows the DA7’s internal clock to slave to another reference, such as a digital multi-track deck or other device. Use a BNC connector to attach an external wordclock source.

Clock Output
This is used to slave an external device, such as a digital multi-track machine, to the DA7 internal clock. It can also be used to relay an external wordclock that is being used to synchronize the DA7 to an external device. Using a BNC connector, other devices can synchronize to the DA7 wordclock.

Serial Terminating Switch
Set the switch to ON if the DA7 is the termination point of the RS-422/485 serial transmission path. The 110Ω switch turns this function OFF/ON.
Serial Port [RS-422/485]
Use this serial port to connect an IBM compatible computer that has an RS-422/485 port. Connect to the DA7 with a D-SUB 9-pin connector. Optional remote control software for your computer can be used to control the DA7, thus expanding the features and capabilities of the mixer.

Serial Port [TO PC]
Use this serial port to connect with a Macintosh computer. If the computer is IBM compatible, you may need a conversion cable that changes a Mini-DIN 8 pin (for TO PC) to a D-sub 9 pin (for RS-232C), available at your nearest dealer, shown in Appendix E, Cables and Connections. Optional remote control software for your computer can be used to control the DA7, thus expanding the features and capabilities of the mixer.

For TO PC, use only a Macintosh Printer Cable (cross type) to connect two DA7s each other, or between the DA7 and the serial port of a Macintosh computer. Using a straight type of modem cable may cause malfunctions in serial communications. For more details see Appendix E, Cables and Connections.

MIDI IN
This connector is used to receive signals from peripheral MIDI devices.

MIDI OUT
This connector is used to send signals to peripheral MIDI devices. The DA7 can be used as a MIDI controller. See Chapter 11, MIDI for details.

METER BRIDGE Connector
This is used to connect the optional Meter Bridge to the DA7. See Chapter 17, Options for more details.
There are three slots for the optional audio Input/Output cards, plus one dedicated slot for the SMPTE/V SYNC card. The space for the SMPTE/V SYNC card is located directly under the MASTER OUT XLR connectors. Audio option cards are next to the power switch. The audio option cards can be used in any of the audio slots, but for TANDEM operation, the TANDEM card MUST be used in Slot 3.

**Video Sync Input [V SYNC]**

This is used to connect a vertical synchronizing signal from a video device. See Chapter 17, Options for more about SMPTE/V SYNC.

**Digital I/O Slot 1 [CH17-24/SLOT 1]**

When an option card is inserted into Slot 1, the output of the connected device appears on Channel Faders 17 through 24, and is controlled by the Fader Layer Inputs 17-32.

**Digital I/O Slot 2 [CH25-32/SLOT 2]**

When an option card is inserted into Slot 2, the output of the connected device appears on Channel Faders 25 through 32, and is controlled by the Fader Layer Inputs 17-32.

**Digital I/O Slot 3 [CH9-16/SLOT 3]**

When an option card is inserted into Slot 3, the output of the connected device appears on Channel Faders 9 through 16, and is controlled by the Fader Layer Inputs 1-16. This connection TOGGLES the analog inputs 9-16 with whatever is connected to the option card in Slot 3.

For more information regarding optional slots, see Chapter 12, D-I/O and Chapter 17, Options.
Chapter 3
Quick Start

As with any mixer, the basics come first. Take it out of the box, plug it into a standard three-prong, 120v 60Hz electrical outlet, and turn it on. Once the novelty has passed of seeing all the colored lights and the faders going up and down when the buttons are pressed, your real fun can begin.

There are several basic functions that, once you become familiar with, will make the DA7 easy to use. This Quick Start Guide assumes that you have a basic knowledge of audio technology.

If you have already started pushing buttons, press the Fader Layer INPUT 1-16 LED button, turn off all the channels, and lower all the faders. Then, press the CHANNEL button to display the [CHANNEL] window. Or, if you wish to start fresh, reset the DA7 back to the factory presets by turning the unit off. Then hold down both the METER and CHANNEL buttons in the MASTER DISPLAY area. While holding these buttons down, turn the DA7 back on. Your mixer will restart automatically.

The “reset to default” procedure, in the tip above, will reset all the mixer functions and clear all the library and memory registers. This is an irrevocable procedure. You can protect your data by copying it to a backup using the [MIDI>BULK] procedure described in Section 11-4.
The following five modules will give you a fundamental understanding of the primary features of the DA7. This chapter does not cover all of the features of a particular example, since it is meant as an introduction. If you do not understand something, go to the chapter that is referenced for further information. MIDI and automation functions are not included in this chapter and will be addressed later in this Users' Guide.
3-1 Module A, Getting Sound Out

No Waiting . . . Join the 10 Step Program!

Look at the Rear Panel of the mixer. Everything that goes in and out of your DA7 comes through here. This Module describes the process for achieving sound output from the mixer.
Quick Start

Connect an input source – From the source to the Rear Panel of the DA7, connect an XLR connector to INPUT 1, or to a 1/4” TRS phone plug to INPUT 9.

Attach an output monitor – In a production environment, attach the amplifier input to the DA7 MONITOR A OUT and press the L/R selection button of the MONITOR A section. In a live mix situation, attach the amplifier input to the DA7 MASTER OUT.

Preset the MASTER L/R – Raise the MASTER L/R fader to zero. This fader sets the master output level.

Press the MASTER L/R ON LED button – This LED button turns the MASTER L/R channel strip on (red).

Press the Fader Layer INPUT 1-16 LED button – This will assign the Channel Faders to inputs 1-16.

Activate SELECT – Above each Channel Fader ON LED button is an LED button labeled SELECT. Pressing this will turn it on (orange). Once selected, it activates the area near the LCD display. Here, parameters can be assigned to the channel, such as EQ, dynamics, pan, or aux, if desired.

Press the L/R LED button in the PAN/ASSIGN section – This is where you assign an output path. Pressing the L/R LED button turns it on (green). This will assign the selected Channel Fader to the L/R outputs of the mixer. (Pan is always active on the L/R output of the DA7.)

Select Channel Fader 1 or 9, and then press the Channel Fader ON LED button to turn the channel on (red). Raise the Fader to zero.

Adjust the input gain – Turn the MIC/LINE INPUT knob on the Channel Strip to set the incoming signal type and level.

There is a shortcut to placing any Fader to zero level. Hold down the SELECT LED button for the Channel and simultaneously press the ON LED button. The Fader will move to zero level.
While sending a signal through the channel, look below the **MIC/LINE** knob, and you will find the **PEAK/SIGNAL LED.** This LED will light (green) when the signal is present and below clipping.

When the signal is near clipping, it will light (red), showing that you are either close to or at an overload condition (something you should not do in digital recording), and you should reduce the level using the **MIC/LINE** knob.

This is an important adjustment. Since this stage of gain is before the A/D converter, it is important to get the maximum signal (without overload) to the converter so that you will have the best possible signal to noise ratio. Too high of a signal will cause distortion, and too low of a signal will quite possibly introduce unwanted noise to your recording.

---

**With the Channel Fader and MASTER L/R Fader set at 0, while watching the **PEAK/SIGNAL LED** of the **Channel Strip**, turn the **MIC/LINE INPUT** knob to adjust the level to “peak”. Generally, “peak” is when the **PEAK/SIGNAL** LED flashes (red), which should be very rare!**

---

**Adjust the levels –** With a source connected to the mixer, audio levels can be adjusted via the **MIC/LINE INPUT** knob. This controls the channel input level.

- **Channel Fader.** This controls the channel output level to the selected bus or direct out.
- **MASTER L/R Fader.** This controls the **MASTER L/R** output level of the **DA7**.
- **MONITOR A LEVEL** knob. This adjusts the control room monitor volume without affecting the mixer output level.

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**The **[GAIN]** soft knob in the **[CHANNEL]** window provides additional level control for the selected channel. Cursor to the soft knob and rotate the **JogDial** to boost the audio level, when additional gain is needed. The **[GAIN]** soft knob range is -24dB to +12dB.**
3-2 Module B, Onboard Signal Processing

Each of the 32 input channels, the 8 buses and the MASTER L/R output of the DA7 has the option of inserting a 4-band Parametric Equalizer with various filter types. There is also a Dynamics Processor on these same channels that offers you a choice of GATE + COMPRESSOR or EXPANDER. There is also a 0 to 300 ms Delay Processor for each of the 32 input channels. AUX 1-6 Returns have a 2 band Parametric Equalizer.

![Top Panel Sections Diagram]

![Equalizer Window Diagram]

![Dynamics Window Diagram]
Equalizer

The **EQUALIZER** section contains controls for the adjustment of the frequency characteristics for the selected channel.

- **Select a channel** – Press the ON LED button (red) on a channel, and press the SELECT LED button (orange) for the channel.
- **Display the [EQUALIZER] window** – Press the GAIN knob, and the LCD screen will display the [EQUALIZER] window.
- **Press the EQ ON LED button** – This button toggles EQ on (green) and off for the selected channel.
- **Select a frequency band button** – Activate the H (high), HM (high-mid), LM (low-mid), or L (low) frequency band by pressing the respective LED button to turn it on (orange).
- **Adjust an EQ parameter** – Rotating the Q, FREQ, or GAIN knobs will give you enormous control over the timbre of the sound.

For a more detailed explanation of the Equalizer, refer to Chapter 7.

Dynamics/Delay

Each channel of the **DA7** can have unique dynamics and/or delay processing assigned to it.

- **Display the Dynamics window** – Press the SET knob and the LCD will display the [DYNAMICS] window.
- **Activate the DYNAMICS/Delay section** – Press the DYNAMICS ON LED button, which turns it on (green).

An alternate method for adjusting EQ is to use the ARROW buttons to move the cursor to the [EQUALIZER] window soft knob controls, and then use the JogDial to adjust the parameters.
Select a dynamics type – Cursor to either the COMP+GATE button or the EXPANDER button in the [FUNCTION] area of the [DYNAMICS] window, and press the ENTER button.

Either
Adjust the Compressor+Gate – The [COMP] area has software control for [THL] (threshold), [RATIO], [ATK] (attack), [RLS] (release), [GAIN], and [DLY] (delay). The [GATE] area gives you control over [THL], [ATK] and [RLS].

Or,
Adjust the Expander – This is similar in appearance to the [COMP] area, except [GAIN] is replaced by [RANGE].

Adjust the Delay – This area has two fields for adjustment. The first one allows you to change the Delay for the selected channel by 1 msec step. The other allows you to change the Delay for the selected channel by 1 sample step. You can also enter a number in either field using the numeric keypad.

See Chapter 9, Dynamics / Delay for more details.
3-3 Module C, Outboard Processing

The DA7 has the ability to route signals outside of the program buses for processing by outboard devices. Outboard effects devices, such as a reverb unit or an effects processor, can be attached to the DA7 in several ways. By using the aux sends and returns and the analog Inserts, you have tremendous flexibility for getting the signal where you need it. Let’s look at the Auxiliaries first.
Auxs (Auxiliaries)

The DA7 has six AUX sends and six AUX returns. AUX 1 & 2 are S/PDIF digital IN+OUT, while AUX 3 through 6 are analog.

While Aux feeds are generally used to send signals to outboard signal processing devices, they are also commonly used for headphone sub-mixes, Cue feeds for announcers in post production environments, etc. They can also be used to feed a tape machine when you need more buses. If you let creativity be your guide, you will find many uses for the aux send and returns. Later in this chapter we will show you examples of some unique uses of the Auxes.

These Auxes can be used as six mono sends or in stereo pairs (such as 1&2, 3&4, 5&6), and six mono returns or stereo pairs. These six returns can also be used as an additional six inputs to the mixer, bringing the total of inputs to 38. Additionally, these six returns have a 2-band Parametric EQ on each channel.

Aux selections and assignments are displayed in both the [CHANNEL] window and the appropriate [FADER CONTROL>AUX] window, as well as the LED field. However, the [CHANNEL] window will initially be displayed on the LCD when selecting and assigning aux functions.

See Chapter 10, AUX for additional information.

Working with the Aux Send and Return

⚠️ Connect the output – Connect the output of AUX 5/6 SEND on the Rear Panel of the DA7 to the inputs of the effects device.

⚠️ Connect the input – Connect the output of the effects device to AUX 5/6 RETURN on the Rear Panel of the DA7.

⚠️ Assign channels – Either in the appropriate [CHANNEL] windows or in the [FADER CONTROL] window, assign the channels that you want to send to [AUX 5/6] for processing.

⚠️ Adjust the aux send levels – Rotate the LEVEL ON/OFF knob for AUX SEND 5 and for AUX SEND 6 to set the channel levels for the aux sends.

⚠️ Press the AUX/BUS Fader Layer LED button (orange) – This will activate the Fader Layer for AUX RTN and AUX SND.

⚠️ Send the signal out – Press both the AUX SND 5 and AUX SND 6 Channel Strip ON buttons, and raise the faders to send the signal out to the effects processor.
Bring the signal in – To hear the effects processors’ signal, turn on the **AUX RTN 5** and **AUX RTN 6 Channel Strips**, assign them to an output, and raise the faders.

**How to send to an aux:**

- **Select a channel** – Press the **SELECT** LED button on the channel you want to assign to an aux send.

- **Assign the channel to an aux** – Press one of the 1-6 LED buttons in the **AUX** section to turn it on (green).

- **Press the LEVEL ON/OFF knob** – This toggles the selected channels’ aux assignment on or off. As seen in the [CHANNEL] window, the software button will appear as **OFF**, changing to **ON** when engaged. Pressing the **AUX** knob while in any other window will change the LCD to the [CHANNEL] window.

You can also view the aux assignments on the LED field of the selected channel. You will see a green LED in the appropriate locations, when the **AUTOMATION/AUX** LED button is toggled to **AUX**.

- **Adjust the aux level** – Rotating the **LEVEL ON/OFF** knob adjusts the channel level to the selected aux.

- **Press the PRE LED button to turn pre-fade on (red)** – This button toggles the assignment of the selected aux from the default **PST** (post-fader) to **PRE** (pre-fader), as seen in the [CHANNEL] window.

- **Press the FADER CONTROL LED button** – To see the aux assignment status of all 32 channels, press the **FADER CONTROL** LED button to turn it on (red), and the [FADER CONTROL>AUX] window group will be displayed. The faders can be used to adjust levels of the selected AUX Send.
Effects

Outboard effects devices, such as a reverb unit or an effects processor, can be attached to the DA7 in several ways. In conjunction with the aux sends and returns, one of the great features of the DA7 is the Fader Layer controls, which expands the use of the channel faders. By designing the mixer this way, channel faders are not tied up with effects returns. This also permits effects assignment to groups, not just to individual sources.

Let's look at both setups.

**Analog Inserts**

Inserts can be used to add processing to a specific channel. Use the analog INS (insert) jacks on the Rear Panel (channels 1-16) to add outboard processing directly into a Channel Strip. This puts the effect device into the signal path after the Mic pre-amp, and before anything else in the Channel Strip. Use a stereo cable that has a Y connector with two mono phono plugs (unless the effects device uses a stereo phono plug). For details on connector wiring see Appendix E, Cables and Connections.
How to Connect the Analog Inserts (1-16)

⚠️ Plug in the effects processor – Plug the send into the input of the effects device and plug the return into the output of the effects device.

⚠️ Raise the source fader on the DA7. Adjust the mix balance from the effects device. For further information see page Appendix E-2, Cables and Connections.

Digital Send and Return

⚠️ Connect the output – Using an XLR cable, connect the REC OUT of the DIGITAL IN/OUT on the Rear Panel of the DA7 to the recording device.

⚠️ Connect the input – Using an XLR cable, connect the output from the digital recording device to the 2TR A IN / INPUT 15, 16 DIGITAL IN/OUT of the DA7.

⚠️ Send the signal out – This output is the same as the MASTER L/R output.

⚠️ Listen to tape playback – Optionally, you may return 2 TR IN A as INPUT 15, 16 on the mixer. To do this, go to the [D-I/O>INPUT SET] window, and select 2 TR IN A to INPUT 15, 16.

Or,

⚠️ Connect the output – Connect the AUX 1/2 SEND to the input of a digital recorder, or to the input of a digital effects device.

⚠️ Connect the input – Connect the stereo outputs of the digital device to the AUX 1/2 RETURN.
Press the Fader Layer AUX/BUS LED button.

Send the signal out – Turn on the AUX SND 1 and AUX SND 2 Channel Strips by pressing their ON buttons (red), and raise the faders to send the signal to the digital device.

To listen to the return signal – Turn on the AUX RTN 1 and AUX RTN 2 Channel Strips, assign an output, and raise the faders to hear the return signal.

Additional TAPE Sends and Returns

The DA7 is a very flexible mixer because it has 8 buses available in either digital or analog (through the option slots). There are other ways to use the mixer in a creative manner. You can use the analog features of the DA7 for analog multi-tracking. Your creativity here can produce wonders. Here are a few examples:

Analog 2-Track Tape Sends and Returns

Connect the output – Connect the REC OUT (analog) 1/4” TRS outputs on the Rear Panel of the DA7 to the inputs of an analog recording device.

Connect the input – Take the outputs from the analog recording device and attach to either:

- INPUTS 9 and 10 (listen via the MASTER L/R OUTPUT)
- 2TR B IN (listen to the 2TR B source for MONITOR A)
- AUX RETURN 3/4 or 5/6 (listen via the AUX/BUS faders, or the AUX source for MONITOR A)

Repeat steps through under Analog 4-Track Sends and Returns which are listed on the following page.
Analog 4-Track Sends and Returns

Connect the output – Connect the stereo 1/4” TRS connectors (with mono Y connections) to the AUX SEND 3/4 and 5/6 outputs on the Rear Panel of the DA7. Connect the four mono connectors to inputs 1 through 4 of your 4-track tape machine.

Connect the input – Connect the output channels of the tape machine to AUX RETURN 3/4 and 5/6 on the Rear Panel of the DA7. They could be connected to four separate input channels.

Assign channel outputs – In the [CHANNEL] window for each channel, assign the desired aux outputs and levels.

Activate the AUX/BUS Fader Layer – Press the AUX/BUS Fader Layer LED button (orange).

Send the signal out – Turn on the AUX SEND 3,4,5 and 6 Channel Strips by pressing their ON buttons (red), and raise the faders to send the signal to your tape deck.

Record the source material on tape.

Listen to tape playback – Turn on the AUX RTN 3,4,5 and 6 Channel Strips, assign an output, and raise the faders to hear the tape output signal.
3-4 Module D, Monitoring

There are several ways to listen to sources on the DA7. This section describes the MONITOR A (CR) selections. The DA7’s operator/engineer will usually monitor from the control room (CR). We assume that an amplifier is already connected to the speakers.

⚠️ Connect the output – Connect the MONITOR A OUT to the amplifier.

⚠️ Select the output – Press the L/R LED button (green) in the MONITOR A section to route the MASTER L/R to MONITOR A.

⚠️ Adjust the MASTER L/R Fader Strip – Press the ON button for the MASTER L/R Fader Strip, and raise the fader to set the level.

⚠️ Adjust the gain – Turn the MONITOR A LEVEL knob clockwise to increase the volume.

⚠️ Select 2TR B in the MONITOR A selections – Plug a source, such as an analog tape deck, into the 2TR B IN (ANALOG) connectors on the Rear Panel. This bypasses the mix bus of the DA7 and routes the signal directly to the Control Room monitors.

⚠️ When using the optional meter bridge, the MONITOR A / MASTER L/R meter will not respond to a signal from 2TR B. This is because it is an analog signal, and the meter can only display a digital signal.

In conjunction with the digital send and return examples in the preceding Module C:

⚠️ Listen to the tape playback – Turn on the AUX RTN 1 and 2 Channel Strips, assign an output, and raise the faders to hear the tape signal.

⚠️ Select AUX in the MONITOR A selections – This permits monitoring of aux sends 1/2, 3/4, or 5/6. The selected auxes will appear in the MEMORY readout momentarily when the MONITOR A AUX LED button is pressed. Press the AUX button to cycle through them.

⚠️ Choose MONO from the MONITOR A selections – This will sum any of the sources selected in the MONITOR A area (except 2TR B). This is useful to check for out of phase signals. It will not affect the signal being output to the L/R bus.
3-5 Module E, Tips, Shortcuts and Warnings

If you read nothing else, this is the section of the manual you should read. It contains information about the DA7 that will make it easier to use and understand. These tips, shortcuts and warnings contain essential information.

There are several hidden functions in the DA7. Some items discussed here are not described elsewhere in this manual. We recommend you take a few minutes to look over these features, as well as review Appendix D, Default Settings. These settings are the ones the DA7 will return to if you reset the mixer. It is a good idea for you to review them so that you know what these settings are before you begin using the DA7 on an important project.

Tips

- **To reset the DA7 to factory default settings:**
  Simultaneously press the CHANNEL and METER buttons in the [MASTER DISPLAY] area. This will reset all the mixer functions and clear the libraries and memories. Please note that this is an irrevocable procedure. You can protect your mixer settings from being lost by using the [MIDI>BULK] procedure described in Chapter 11, MIDI to back up your data. See page 11-10 MIDI, BULK (Bulk Out) Window for more information.

- **To automatically set the fader of an individual channel to zero level:**
  Simultaneously press the SELECT LED button and the ON LED button of the channel strip, and the fader will move to the zero level position.

- **To automatically set the faders of BUS 1-8 and MASTER L/R to zero level:**
  Simultaneously press the SELECT LED button, the ON LED button of the MASTER L/R strip and the AUX/BUS LED button of the Fader Layer section and all of these faders will move to the zero level position.

- **To recalibrate the faders:**
  Press the INPUT 1-16 button and the CUSTOM/MIDI button simultaneously. The faders will immediately clear themselves of all settings, and will perform the recalibration. This will take several seconds. When this operation is finished, the faders will return to the positions they were in before the recalibration. It is a good idea to periodically recalibrate the faders. It can increase the accuracy and performance of the moving fader system in the DA7.
• **To restart the DA7:**
  Simultaneously press the **METER** button in the **[MASTER DISPLAY]** section and the **H(High)** LED button in the **[EQUALIZER]** section, if you need to restart the **DA7** without shutting down.

• **To clear flipped faders to a specific layer:**
  Press and hold the master fader layer button for the layer you want all the faders to switch to for two seconds. See page 6-2, **Fader Layers**, for more information.

• **To clear all solo'd channels:**
  When you have solo’d multiple channels, you may wish to clear them all at the same time. You may not be able to see all the channels you have solo’d at any one time because they may be on different fader layers, thus causing confusion as to what is or is not solo’d. In either case, simply press any solo button for two seconds and all the solos will clear. See page 16-2, **Utility, Solo Monitor (SOLO/MON) Window**, for more information.

• You should consider the **CHANNEL** button in the **[MASTER DISPLAY]** area of the top panel "Home Base" or the "safety" or "PANIC" button for the **DA7**'s LCD display. If you get lost or cannot find your way out of a particular screen, press this button to return the LCD screen to the **[CHANNEL]** window. This window shows you the current status of the main features of the mixer.

• The cursor appears in the screen as a "highlight selection" device, not a typical pointer or arrow. As you use the controls to navigate around the LCD screen, the various areas, buttons, fields, and lists in the windows will be selected by a border or highlight designating the current area or item.

• Remember that the knobs located in the EQ, PAN DYNAMICS and AUX area are buttons that have several functions. See the appropriate chapter for the functions of these buttons. See page 7-3, **EQUALIZER Section**, page 8-1, **PAN/BUS ASSIGN Controls**, page 9-3, **DYNAMICS/DELAY Section Controls**, and page 10-3, **AUX Section Controls**, respectively for more information.

• Setting Gain structure in a digital mixer is extremely important. The way to do this on the **DA7**, is to start with the signals coming into Inputs 1-16. Since these are the signals that will be passed through an A/D converter, you should try to get as high a level as possible without overloading the circuit. With the **Channel Fader** set at 0, while watching the **PEAK/SIGNAL** LED of the **Channel Strip**, turn the **MIC/LINE INPUT** knob to adjust the signal to gently "peak". You will
know you are there when the PEAK/SIGNAL LED flashes (red) which should be very rare. Another area where you can adjust for proper input gain is the [GAIN] soft knob in the [CHANNEL] window. This control provides an additional level of control for the selected channel. Cursor to the soft knob, and rotate the JogDial to boost the audio level when additional gain is needed. The [GAIN] soft knob range is -24dB to +12dB. Further Gain changes should be controlled by the fader levels of the channel. See more information described on page 5-3, Channel Window and page 6-3, Channel Strip.

If you are not familiar with a digital metering system that uses dBFS (decibels Full Scale), it may take you a little while to get used to the meter characteristics of the DA7. What dBFS means is that 0dB is at the top of the meter, and instead of showing a level above 0dB, it shows OL (OverLoad). In digital metering you should never go above the full scale 0dB level. Remember that the digital format is very unforgiving of overmodulation. Too high a level will create noise or even distortion to a recorded signal and you may not be able to correct it.

These meters can either be VU or PPM with no peak hold, momentary peak hold or infinity peak hold. Take a few minutes to try out all the possible settings in order to aquatint yourself with this type of metering before you use the DA7 on a project. If you are using the optional meter bridge, you should be aware of the CONSOLE LINK button. When activated, this feature allows the meter bridge to reflect the action of the FADER LAYER buttons. If you flip a fader, the meter will follow. If you wish to monitor manually, press the master fader layer button on the meter bridge to select which layer you will monitor. You should also be aware that you will not see the level of 2TR B displayed on the MONITOR A section of the meter bridge (extreme right hand side). This is because these meters can only measure a digital signal, and 2TR B is an analog signal.

For functions other than AUTOMATION, you must execute UNDO immediately after performing the memory-related action that you want undone. After you change to another register or change to another window display, you cannot execute the UNDO function. For AUTOMATION operations, UNDO can be executed at any time for the current event only. UNDO cannot be performed if either the [UNDO] BURST (clear buffer) or the [UNDO] BREAK buttons in the [AUTOMATION>SETUP] window have been executed. See page 14-2, AUTOMATION, SETUP Window, for more information.
If you want to view the **AUX SEND** status on the LED field while **AUTOMATION** is [ENABLE] and [MMC] is active, simultaneously press the **SHIFT** key of the **Keypad** and the **AUTOMATION/AUX LED** button. This will only change the LED display, and will not interrupt the **AUTOMATION** operation. See page 14-5, **AUTOMATION, EXECUTE** Window, for more information.

Dithering the output of the **DA7** to fewer than 24 bits is sometimes required. If the correct Dither adjustment is not applied to the signals output from the **DA7**, the sound quality of the audio will be affected. In normal operation, the digital audio signals output from the **DA7** are 24 bit word lengths. If the device connected to the **DA7** operates at fewer than 24 bits (such as a DAT machine), you will be unable to completely record the signal. Dithering permits you to connect two devices together that do not have matching bit rates (but have matching sample rates) by using a complex algorithm that reduces the word length. For example, you may wish to record to a DAT machine which only records 16 bit words. This problem can be solved by adjusting the word length output from the **DA7** by Dithering. The bit number output by the mixer should be set to match the device connected to the **DA7**. See page 12-14, **D-I/O, DITHER** Window, for more details.

Pressing the **FLIP** LED buttons is an easy way to access specific channels that are not in the current **Fader Layer** without flipping the entire mixer to a new layer. See **Chapter 6, Fader Layers and Channel Strips** for more information.

When you are in the **D-I/O** page, you may encounter a source field or button that is "crosshatched" and/or cannot be selected. This means that the source or slot is either improperly connected, or the attached external device is not presently turned on. See page 12-2, **D-I/O, INPUT SET** Window, for more information.

When producing material for use with a video production, reference the **DA7** to an incoming video signal. Do this during all stages of the production. You will need to know the video reference characteristics for the production, so that you can reference the **DA7** correctly. See page 14-5, **AUTOMATION, EXECUTE Window**, and page 10 of the Glossary for more details.

Data with an $\sim\infty$ (infinity) fader level and flat equalizer settings are stored to the scene library memory number 01 when the **DA7** is delivered. Data with 0 dB fader level is stored in the other memories of the library. See **Chapter 15, Scene Memory**, for more details.

Once the groups have been activated in the **[FADER GRP]** or **[MUTE**
GRP] windows, the window does not have to be displayed when you want to register a group. Use the fader group or mute group selection buttons in the [CHANNEL] window to register the channel to a group. See Chapter 13, Group, for more information.

- **To clear all grouped channels:**
  In the [FADER GROUP] and [MUTE GROUP] windows, pressing any one of the SELECT LED buttons in the group for two seconds will clear all channels assigned. See Chapter 13, Group, for more information.

- **When using a DTRS (Tascam) DA88, DA38 or DA98, check the settings of the dip switches located on the optional TDIF card. Improper operation can be avoided by correct selection of these switches. See page 17-6, TDIF Card, for more information.

- **It is also an excellent idea to check the default setting of areas that you will be using often. A good example of this is the SOLO MONITOR area. You can avoid being confused about the way the DA7 operates by looking over the default settings in Appendix D. Also, check the settings on the UTILITY, D-I/O and MIDI pages so you can set the DA7 defaults to the way you prefer to operate.

- **To monitor surround sound:**
  You should turn ON and assign the buses as surround sound in the [SURROUND SOUND] area of the [SOLO/MONITOR] window. See page 16-2, Utility and Solo/Monitor (SOLO/MON) Window, for more details.

- **To change the channel for [EQ] or [DYN/DLY] in the Automation:**
  Simultaneously press the SHIFT(#0) button and the SELECT LED button of the channel to change its parameters. See page 14-5, AUTOMATION, EXECUTE Window, for more information.

**Shortcuts**

- **Pressing the AUTOMATION/AUX button on the top panel of the DA7 to select automation acts as a shortcut to the RECORD button in the AUTOMATION EXECUTE screen. See page 14-5, Automation, Execute Window, for more information.

- **You can create a stereo or link channel pair by simultaneously pressing the appropriate channel SELECT LED buttons, when the [CHANNEL] window [LINK] area is ON. To cancel, simultaneously press the buttons a second time. Be very careful with the use of this feature, as you can create a LINKED pair (two Mono faders with two Mono EQ’s, Dynamics, etc.) or a true STEREO pair (two faders with the same operation and stereo EQ, Dynamics, etc.). See Chapter 13, Group for more information.**
When the [AUTO DISP CHANGE] selection in the [UTILITY>CONFIG] window is [ON], the DIRECT LED button in the PAN/ASSIGN/ SURROUND , BUS ASSIGN section of the Top Panel is a shortcut to the [TO SLOT] window. See page 12-10, D-I/O TO SLOT Window, for more information.

There is a shortcut to recall desired windows directly by pressing one of the SETUP buttons, then one of the buttons on the 10 KeyPad. See page Appendix B-3, LCD Screen Displays for more information.

**Warnings**

- You should make certain that the DA7 is properly ventilated on the sides and bottom. Otherwise, the DA7 could overheat and compromise it’s performance.

- When connecting recording devices to the DA7, such as a DAT, ADAT, DA88 or a similar device, pay attention to the fact that these devices ALL operate using a wordclock reference signal. It is therefore important that you make sure that they all referenced to the same clock signal. This is the reason that we have provided a WORDCLOCK IN and OUT connector on the rear panel. You can also select one of the option Slots to be the master wordclock, or the 2TR A source. This is a VERY important item in proper operation of any digital audio system. Please make sure that you set this function properly. Poor sound quality can result from improper wordclock operation. It can also affect the operation of the DA7. For example, the SOLO system may seem to malfunction by not selecting a particular channel or channels. This can be due to Clock related issues. See Chapter 17, Options for specific information regarding the connection requirements of these devices. Also see Chapter 12, D-I/O for setting the master wordclock source. If after reading this information you are unsure of the operation or setup of this function, please consult your dealer.

- It is imperative that the sampling frequency settings for the DA7 and all digital peripheral devices connected to the DA7 are set to the same sampling frequency. These devices cannot perform properly if the frequency settings do not match. The DA7 does not convert from one sample frequency to the other. See Chapter 12, D-I/O for more information.
When the [BATTERY] graph displays "LOW BATTERY", you should contact a Panasonic Service Center to replace the battery immediately. You should also back up the DA7 memory by performing a MIDI bulk back up routine from the [MIDI>BULK] window. Do not let the battery run out, or you may inadvertently lose the settings in the DA7 memory. See page 11-10, MIDI, BULK (Bulk Out) Window, and page 16-8, Utility, Oscillator/Battery (OSC/BATT) Window, for more details.
Chapter 4
Cursor Control

The Cursor Control section includes the Keypad, the Parameter/JogDial, and the UNDO/REDO, MMC/CURSOR, CURSOR MODE, ENTER, and ARROW buttons. Use these tools to control the cursor in the LCD screen of the Display Bridge, and to add information to areas in the windows that are displayed on the LCD screen.

The cursor appears in the screen as a “highlight selection” device, not a typical pointer or arrow. As you use the controls to navigate around the LCD screen, the various areas, buttons, fields, and lists in the windows will be selected by a border or highlight designating the current area or item.

Several of the buttons in this section perform special functions when MIDI control is active. Special labeling - text on a dark background - identifies the buttons that also perform MIDI Machine Control functions.

MIDI functions and operations are discussed in Chapter 11, MIDI.
Keypad

Each of the ten Keypad buttons have several assigned characters (depending on the area or field selected in a window that is displayed on the LCD screen). The buttons are either numeric, symbolic, or alphanumeric.

When a selected area or field in the current window accommodates only numeric entries, the buttons only input the assigned numerals.

When a selected area or field in the current window accommodates alphanumeric entries, press the buttons to cycle the assigned letter, numeral, or symbol selections for the button, and then press the ENTER button to select the desired character. The character selected will be displayed in the window, and data entry will advance to the next character position for the area or field.

The three library windows - [CH LIB], [EQ LIB], and [DYN LIB], the [SCENE MEMORY>RD/WT] window, the [MIDI>REMOTE] window, and the [AUTOMATION>SETUP] window - each contain a NAME button. When a NAME button is selected in a window, the [NAME EDITOR] window is added to the LCD screen display.
Use the cursor controls to navigate to the various character and symbol buttons in the [NAME EDITOR] window, and press the ENTER button to update the highlighted character position in the window data entry field. Rotate the JogDial to select the highlighted character position. Press the button in the [NAME EDITOR] window to accept the data entry and close the window. You can use up to ten characters for a name.

**JogDial**

The JogDial performs several functions, either directly or in conjunction with other controls on the DA7.

- The LCD display will show which mode you are in by a display of the function in the lower right hand corner. If you are in the MMC mode, it will show you the MMC [MMC] command being sent. If it is in the CURSOR mode, it will display the CURSOR [CURSOR]. If it is in the PARAMETER mode, the display will be blank.

- You can use the JogDial to rapidly navigate the cursor to the various buttons, areas, and fields in a window. Or, you can use it as a Parameter knob to change values entered in the selected field. To change the mode from JogDial to Parameter, simply press CURSOR MODE and it will toggle between these two functions.

- When the [SCENE MEMORY>RD/WT] window is initially displayed, the JogDial is assigned to the register list area of the window and can be used to scroll the list.

- When an element is selected in the [LIBRARY DATA] area of the [CH LIB], [EQ LIB], or [DYN LIB] windows, you can use the JogDial to scroll the register list.

- When the [list table] element is selected in the [AUTOMATION>SETUP] window or the [AUTOMATION>EVT EDIT] window, you can use the JogDial to scroll the items in the list.

- When the [list table] element is selected in the [MIDI>PRG ASGN], [MIDI>CTRL ASGN], or [MIDI>MIDI RMT] windows, you can use the JogDial to scroll the items in the list.
When the [fader] element of the [Channel] area of a window is selected, the JogDial can control the level setting of the [fader]. The Channel Fader will follow the JogDial level adjustments.

When a [knob] is selected in a window, you can use the JogDial to adjust the value of that [knob].

When a numeric field is selected in a window, you can use the JogDial to adjust the numeric value in that field.

The JogDial can be used to perform several functions while the [PAN/SURROUND>SURROUND] window is displayed.

See Chapter 8, Pan/Assign, Surround, Bus Assign for additional information.

**UNDO/REDO Button**

The UNDO/REDO functions are active when you store or recall data for SCENE MEMORY, LIBRARY, or AUTOMATION operations. The UNDO function of the DA7 cancels the most recent memory-related action and returns to the previous condition. The REDO function cancels the cancellation.

Press the UNDO/REDO button immediately after performing the memory-related operation to cancel the operation. Pressing the UNDO/REDO button again restores the operation condition that was undone.

For functions other than AUTOMATION, you must execute UNDO immediately after performing the memory-related action that you want undone. After you change to another register or change to another window display, you cannot execute the UNDO function.

For AUTOMATION operations, UNDO can be executed at any time for the current event only. UNDO cannot be performed if either one of the [UNDO] BUF CLR (clear buffer) or the [UNDO] DISABLE buttons in the [AUTOMATION>SETUP] window are executed.
MMC is an acronym for MIDI MACHINE CONTROL. Additional button labeling of text on a dark background identifies the buttons that perform the indicated functions when MIDI control is active.

Press the MMC/CURSOR button to switch the buttons from cursor control mode to the indicated MMC functions. Press the MMC/CURSOR button a second time to return the buttons to cursor control mode.

On the lower right of the screen, MMC or CURSOR appears.

See Chapter 11, MIDI for additional information.

See Chapter 14, Automation for additional information on MMC.

CURSOR MODE/REC Button

When MIDI control is not active, you can use the JogDial to rapidly navigate the cursor to the various buttons, areas, and fields in a window. Or, you can use it as a Parameter knob to change values entered in the selected field. To change the mode from JogDial to Parameter, press the CURSOR MODE button and it will toggle between these two functions.

When MIDI control is active, and the MMC/CURSOR has switched button functions, the CURSOR MODE button function is switched to the REC function. Pressing the button initiates recording on the associated MIDI device.
ENTER Button

Press the ENTER button to activate functions and/or toggle buttons selected in the windows displayed on the LCD screen.
When MMC is active press the ENTER button to have the JogDial switch to the PARAMETER mode. Press the ENTER a second time to return to MMC.

ARROW Buttons

When MIDI control is not active, the ARROW buttons control the cursor movement in the LCD screen. The buttons move the cursor in the direction of the associated arrows.

- Press the UP ARROW button to move the cursor up in the display. When the cursor is positioned at the top of a window, pressing the UP ARROW button will move the cursor to the bottom of the window.

- Press the RIGHT ARROW button to move the cursor to the right in the display. When the cursor is positioned on the extreme right of the window, pressing the RIGHT ARROW button will move the cursor to the extreme left of the window.

- Press the DOWN ARROW button to move the cursor down in the display. When the cursor is positioned at the bottom of a window, pressing the DOWN ARROW button will move the cursor to the top of the window.
Press the **LEFT ARROW** button to move the cursor to the left in the display. When the cursor is positioned on the extreme left of the window, pressing the **LEFT ARROW** button will move the cursor to the extreme right of the window.

When **MIDI** control is active and the **MMC/CURSOR** has switched button functions, the **ARROW** buttons are switched to the **MIDI** functions indicated.

- The **UP ARROW** button is switched to the **PLAY** function. Press the button to initiate playing of the active **MIDI** device.

- The **RIGHT ARROW** button is switched to the **FF** function. Press the button to initiate fast forward shuttling of the active **MIDI** device.

- The **DOWN ARROW** button is switched to the **STOP** function. Press the button to stop the playing of the active **MIDI** device.

- The **LEFT ARROW** button is switched to the **REW** function. Press the button to rewind the active **MIDI** device.

See Chapter 11, **MIDI** for additional information.
Chapter 5
Channel, Library, and Meter Windows

5-1 Overview

This chapter provides information on the MASTER DISPLAY section of the Top Panel and the primary LCD screen windows for the DA7. The MASTER DISPLAY section is “home base” when operating the mixer. Although you will be accessing and using the various features of the DA7, the windows that are accessed via the buttons in the MASTER DISPLAY section provide a ready-reference for the current settings of the mixer.

Section 5-2 Channel Window, details the elements of the [CHANNEL] window and the controls that are accessible directly from the window.

The CHANNEL button is the “safety” or “PANIC” button for the DA7. Press this button to return the LCD screen to the [CHANNEL] window from any other window that is currently displayed. This window reflects the current status of the primary features of the mixer.
Section 5-3 Library Windows, provides information on the library windows of the mixer. Using the [CH LIB] (channel library) window as the example, the common elements found in all of the library windows are detailed in this section.

Section 5-4 METER Group Windows, details the windows accessed via the METER button in the MASTER DISPLAY section of the Top Panel.

Section 5-5 Channel Window, Multi-Channel View, details the elements of the [CHANNEL] window in the multi-channel view.
5-2 Channel Window

The [CHANNEL] window is displayed on the LCD screen by pressing the [CHANNEL] button in the MASTER DISPLAY section of the Top Panel. When the [AUTO DISP CHANGE] selection in the [UTILITY>CONFIG] window is ON, you can also display the [CHANNEL] window by pressing one of the AUX section LED buttons, or adjusting the AUX section LEVEL ON/OFF knob.

When [AUTO CHANNEL SELECT] in the [UTILITY>CONFIG] window is ON, you can display the [CHANNEL] window by pressing the SELECT button, or the ON button, or adjusting the fader for any channel.

The [CHANNEL] window areas reflect the current status of the selected channel, and include indicators and controls for the primary functions of the DA7. By using the SELECT buttons on a Channel Strip, any channel can be selected. The number of the selected channels appears in the [taskbar] area in the LCD, and the window information will reflect the newly selected channel.

The following areas in the [CHANNEL] window can be changed to user-selected parameters using the cursor controls:

**Phantom Power [+48V] Area**

A button is displayed when a Channel Strip for inputs 1 through 8 is selected, and should be engaged when the source microphone requires phantom power. To turn power on, cursor to the OFF button, and press the ENTER button. The OFF button will toggle to ON.
Phase [PH] Area

The phase normal and the invert function switches the signal phase of the selected channel. Cursor to the NOR (normal) button, and press the ENTER button to invert the signal. The NOR button will toggle to INV (invert).

[GAIN] Area

By using the JogDial, gain or trim can be added to the selected channel. This should be considered as an additional gain stage. Cursor to the soft knob, and rotate the JogDial to either boost or cut the level of the selected source. The [GAIN] value is displayed in the field below the soft knob. The adjustable range is -24dB to 12dB.

[AUX SEND] Area ([AUX1] to [AUX6])

This area of the window is displayed when a channel with aux send capability is selected. Use the ARROW buttons and the JogDial to navigate to the various elements in the window area. The PRE (pre-fader) and POST (post-fader) buttons are toggled by pressing the ENTER button, after selecting them with the cursor. The ON and OFF buttons are also toggled by selecting them with the cursor and pressing the ENTER button.

An [AUX SEND] level soft knob can be adjusted by rotating the JogDial, after selecting it with the cursor. Rotate the JogDial clockwise to increase the gain or counter clockwise to decrease it. The level value is displayed in the field below the level soft knob. The level range is -∞ to +10db.

Alternatively, selections made with the Top Panel AUX section controls will update the [AUX SEND] window area.

When a selected channel is set for mono and a target aux is set for stereo, cursor to the soft knob, and turn the JogDial. A pan value appears in the data field from L16 - C - R16.

When a selected channel is set for stereo and a target aux is set for stereo, cursor to the soft knob, and turn the JogDial. A balance value appears in the data field from L16 - C - R16.
[INS] Area
The insertion mode allows you to send a signal to an external device when an audio option card is installed in SLOT 3 and the [INSERT] mode is selected for [SLOT 3] in the [D-I/O>TO SLOT] window. You can only use the AD/DA card or the AES/EBU card for this purpose. This signal is routed to an outboard device, and then it is returned to the DA7 via SLOT 3. You can return to AUX returns 1 through 6, buses 1 through 8, or MASTER L/R.

[LINK] Area
There are two buttons in the [LINK] area of the window, an ON button and a OFF button. Cursor to the OFF button, and press the ENTER button to toggle the OFF button to an ON button. This will preset the link function for the channel. The LINK button toggles to the STM (stereo) button, if desired. Activating link or stereo for an odd-numbered channel joins it with the channel to the right, while activating link or stereo for an even-numbered channel joins it with the channel to the left.

The link function joins adjacent channels to create a pair, while respecting the current individual channel settings (such as EQ and DYN), including fader and pan position. The stereo function joins adjacent channels to create a stereo pair, and overwrites the even-numbered channel settings with the current odd-numbered channel settings for phantom power, phase, gain, aux send, fader group, mute group, equalizer, dynamics, delay, channel on or off, and fader.

When OFF and LINK are displayed, simultaneously pressing both channel SELECT buttons, or toggling to ON will link the channels. When OFF and STM are displayed, simultaneously pressing both channel SELECT buttons, or toggling to ON will create a stereo pair. Simultaneously pressing the SELECT buttons, once the channels have been joined, will cancel the setting.

If the AUTOMATION/AUX button is set to AUTOMATION, you will not be able to create or cancel the channel pair.

When the channels are joined, either as a linked pair or a stereo pair, the Channel Faders will operate as a pair. Adjusting one of the faders will automatically adjust the other.

The channel area in the [taskbar] of the LCD screen windows will show both channel numbers.

In the fader link, you can change the fader position that is linked, while pressing the SELECT LED button of that channel.
The soft knob in the [PAN/BAL] area of the [CHANNEL] window controls the balance for the paired channels. When the stereo setting is switched off, the balance value returns to pan value, but the bus assignment status, if any, does not change.

**Gain Reduction Meter [GR] Area**

The [GR] meter is displayed when you select a channel that supports dynamics. See Chapter 9, Dynamics/Delay for more on gain reduction metering.

**[LEVEL] Area**

The level meter indicates the outgoing level of the selected channel to the MASTER L/R output. When in stereo mode, left and right level meters are displayed.

The range of the level meter is -50 to OL (overload).

Remember that the digital format is very unforgiving of overmodulation. Too high a level will create noise and distortion in the recording process.

**[FADR GRP] Area**

The [FADR GRP] (fader group) lets you tie a selected group of faders together. Operating one fader affects all the other channels in that group. To assign the current channel to a group, cursor to the 1, 2, 3, or 4 button, and press the ENTER button.

To activate a fader group, select the [GROUP>FADR GRP] window, cursor to the group number status line in the [FADR GRP] window, and press the ENTER button.

Once you have grouped several faders, move one and see how it controls the others. When a fader in the [FADR GRP] is selected, all other fader group conditions are canceled.

See Chapter 13, Group for additional information.
[MUTE GRP] Area

A mute group is similar to a fader group. When a fader is assigned to an already activated mute group, pressing the ON LED button of the current Channel Strip will affect the on and off status of all channels in that group.

To assign the current channel to a mute group, cursor to one of the mute group choices, 1, 2, 3, or 4, and press the ENTER button.

To activate a mute group, change to the [GROUP>MUTE GRP] window, cursor to the group number status line in the [MUTE GRP] window, and press the ENTER button.

See Chapter 13, Group for more information.

[EQUALIZER] Area

The [EQUALIZER] area is displayed when you select a channel that supports equalization. The equalizer graph reflects the equalizer characteristics that you have set in the four-band parametric EQ, accessed by pressing the [H], [HM], [LM], or [L] buttons in the EQUALIZER section, and turning the [Q], [FREQ], or [GAIN] knobs.

To activate the channel equalizer, cursor to the OFF button, and press the ENTER button. The OFF button will toggle to ON.

Alternatively, pressing the EQ ON LED button in the EQUALIZER section switches the equalizer for a selected channel off and on.

To view the [EQUALIZER] window, cursor to the equalizer graph displayed, and press the ENTER button. The LCD switches to the [EQUALIZER] window for the selected channel. Or, you can reach the [EQUALIZER] window by pressing the GAIN SUB knob in the EQ section on the Top Panel.

When the [AUTO DISP CHANGE] selection in the [UTILITY>CONFIG] window is ON, you can also display the [EQUALIZER] window by either pressing one of the LED buttons or by adjusting one of the knobs in the EQUALIZER section.

See Chapter 7 for more information on the EQUALIZER section.
[PAN/BAL] Area

Use this area to set the pan or balance characteristics of the current channel. A monophonic channel can be panned. The soft knob controls the pan characteristics for the channel. When a stereo channel is selected, you can adjust its balance. The pan value appears in the field with values of L16 - C - R16.

When a channel is assigned to the L/R output selection in either the PAN/ASSIGN, BUS ASSIGN section, or the [ASSIGN] area in the [CHANNEL] window, the pan controls are always active, regardless of the [PAN] or [ON] status in the [PAN/BAL] area of the [CHANNEL] window.

When a stereo channel (a channel set to STereo ON or [ASSIGN] ON) is selected, the [PAN/BAL] area consists of the ON or [ASSIGN] button, a [BAL] label, and one soft knob that controls the balance for the stereo pair.

To activate the [PAN/BAL] controls, cursor to the ON button, and press the ENTER button. The ON button toggles to ON. Alternatively, pressing the ON LED button (red) in the PAN/ASSIGN surround section toggles the pan on and on to the buses for a selected channel. The PAN does not affect Direct Out. Pan is always selected to the L/R bus regardless of the position of the ON LED (red).

The (gang) button appears only when you select a monophonic channel. To activate gang, cursor to the ON button, and press the ENTER button. The ON button toggles to ON.

When the ON button is activated, the adjacent channel soft knob and a gang type button ( for normal clockwise direction and for reverse direction) are added to the [PAN/BAL] window area.

To change the gang type, cursor to the or button, and press the ENTER button. The connective turn direction of the pan soft knobs for the ganged channels is now switched. When is visible, the JogDial performs a connective turn in the normal direction. When is visible, the JogDial performs a connective turn in the reverse direction.

If either soft knob is rotated to the end of its range under the ganged condition, it can not be rotated further in that direction.
Pan Adjustment for a Selected Channel
Adjust the pan for a selected channel by selecting the pan soft knob with
the cursor, and turning the JogDial. Or, turn the Pan knob in the
PAN/SURROUND area.

Pan Adjustment of an Adjacent Channel
When is active, the knob for the odd-numbered channels appears
on the left of the area, and the knob for the even-numbered channels
appears on the right.
Cursor to a soft knob, and turn the JogDial. A pan value appears in the
data field.

Stereo Balance Adjustment
Cursor to a balance soft knob, and turn the JogDial. When [STEREO] is
ON, the balance soft knob is visible.
See Chapter 8 for more information on Pan/Assign, Surround, Bus Assign.

[ASSIGN] Area

The bus assign off or on switching will send the selected channel to BUS 1-8, MASTER L/R, or DIRECT (DIRECT works exclusively with the D-I/O
card). To select a bus assignment, cursor to the 1, 2, 3, 4, 5, 6, 7, 8, 9,
button in the bus assign area, and press the ENTER button. The
selected bus assignment will toggle and become highlighted. Multiple bus
assignments can be selected for a channel.

To disable or enable the surround sound function, cursor to the SUR button,
and press the ENTER button. When the surround function is enabled,
assignment to buses 1 through 6 is automatically activated.

The channels set to stereo are assigned to buses in odd/even order. The
[ASSIGN] area will show the new assignment mode. When the channels are
set for stereo assign to 8, the odd-numbered channels are left and the even-
numbered channels are right.
The buttons in the [ASSIGN] area mimic the LED buttons in the PAN/ASSIGN section. For example, the [ASSIGN] area of the LCD has the same function as the 1 LED button in the BUS/ASSIGN section on the DA7 Top Panel. When the assignment is active, the relevant LED is on (green). When the assignment is off, the related LED goes off. If a selected channel is set for stereo, bus numbers are paired in the [ASSIGN] area of the window.

See Chapter 8 for more information on output assignments and surround sound functionality.

[DYN] Area

The [DYN] (dynamics) area is displayed for a channel with dynamics capabilities.

To turn dynamics on or off from the [CHANNEL] window, cursor to the ON or OFF button, and press the ENTER button.

The dynamics graph reflects the characteristics that are set in the DYNAMICS/DELAY section of the DA7.

To switch to the [DYNAMICS] window, cursor to the [DYN] graph, and press the ENTER button. The LCD will switch to the [DYNAMICS] window of a selected channel, or you can reach the [DYNAMICS] window by pressing the knob in the DYNAMICS/DELAY section. When the [AUTO DISP CHANGE] selection in the [UTILITY>CONFIG] window is ON, you can also display the [DYNAMICS] window by either pressing one of the LED buttons or by adjusting one of the knobs in the DYNAMICS/DELAY section.

See Chapter 9, Dynamics/Delay for additional information.
[DLY] Area

The [DLY] (delay) area soft knob and data fields are seen only when channels 1 through 32 are selected. Pressing the [DLY] area ON or OFF button will disable or enable delay for the selected channel. Use the JogDial to adjust the delay value for increased fine tuning. You can adjust either the msec area or the sample area. The range of the delay is from 0 to 300 msec.

You can input the values directly using the Keypad when the [10KEY SCENE RECALL] selection in the [UTILITY>CONFIG] window is OFF. The input values are scrolled from right to left in the data field. To fix the value, press the ENTER button, move the cursor, and change the screen. If the fixed value is out of the adjustable range, the operation is cancelled. The adjustable delay range is based on the related sampling frequency of either 48 kHz or 44.1 kHz.

When the [AUTO DISP CHANGE] selection in the [UTILITY>CONFIG] window is ON, you can also display the [DYNAMICS] window by either pressing one of the LED buttons or by adjusting one of the knobs in the DYNAMICS/DELAY section.

See Chapter 9, Dynamics/Delay for more information.

[CH] Area

There are two parts to the [CH] (channel) area. Cursor to the ON or OFF button, and press the ENTER button to switch the channel off or on. The fader level adjustment can be made by turning the JogDial, after selecting the fader element with the cursor, or by actually moving the Channel Fader to the desired level. The fader level value is displayed in the field.

The adjustable range for the fader is -∞ to +10dB.
5-3 Library Windows

The three libraries in the DA7 each contains fifty memories, the channel library, the equalizer library, and the dynamics library.

To access the Library windows, first press the function selection buttons on the TopPanel. Press the CHANNEL button in the MASTER DISPLAY section for the [CHANNEL] window. Press the GAIN knob in the EQUALIZER section for the [EQUALIZER] window or the SR knob in the Dynamics/Delay section for the [DYNAMICS] window.

Then press either the [RECALL] or [STORE] button in the library area. The selected library will appear in the window. You can also store and recall data in a library memory from these windows.

You can then select the LIBRARY number you want by pressing the button and scrolling through the selections.
If the [EQUALIZER] window is currently displayed on the LCD, pressing either the STORE or the RECALL button in the LIBRARY section of the Top Panel will display the [EQ LIB] window. Pressing either the STORE or RECALL button again will return the window to the [EQUALIZER].

If the [DYNAMICS] window is currently displayed on the LCD, pressing either the STORE or the RECALL button in the LIBRARY section of the Top Panel will display the [DYN LIB] window. Pressing either the STORE or RECALL button again will return the window to the [DYNAMICS].
Library Window Elements

List Area

This area indicates the numbers and titles of the fifty library memories for the current library window.

<table>
<thead>
<tr>
<th>TITLE</th>
<th>No Lib. Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>RECALL</td>
<td>05 DVNL libHome</td>
</tr>
<tr>
<td>STORE</td>
<td>06 DVNL libHome</td>
</tr>
<tr>
<td>CLEWR</td>
<td>07 DVNL libHome</td>
</tr>
<tr>
<td>NAME</td>
<td>08 DVNL libHome</td>
</tr>
<tr>
<td>PROTECT</td>
<td>10 DVNL libHome</td>
</tr>
</tbody>
</table>

List Area

**TITLE Button**

Use this button to store library settings without displaying the Name Editor. When **TITLE** is activated, a setting is stored with the name [NoTitle##A]. This setting can later be recalled and renamed by using the **NAME** button. Data is automatically stored to the currently selected library memory.

The MEMORY numeric readout on the Display Bridge blinks for three seconds, displaying the selected library memory number during the storage process.

**RECALL Button**

Use this button to recall a previously stored memory from the memory list. Cursor to the **RECALL** button in the library window, and press the ENTER button. The current memory settings will be recalled from the library listing.

You can also press the RECALL button in the LIBRARY section of the Top Panel to recall the current memory settings.

The MEMORY numeric readout on the Display Bridge blinks for three seconds, displaying the selected library memory number during the recall process.

**STORE Button**

Use this button to store the current window settings in the selected library memory. Cursor to the **STORE** button, and press the ENTER button. This function will overwrite any data that may have been in the memory. You can also press the STORE button in the LIBRARY section of the Top Panel to store the current window settings.
The MEMORY numeric readout on the Display Bridge blinks for three seconds, displaying the selected library memory number during the storage process.

**CLEAR** Button

This button clears the current memory settings. Cursor to the CLEAR button, and press the ENTER button to delete the contents of the selected memory.

**NAME** Button

This button opens the [NAME EDITOR] window where you can enter a name for the selected memory, using up to ten characters. Cursor to the NAME button, and press the ENTER button to display the [NAME EDITOR] window.

**PROTECT** Button

Activate the PROTECT button to prevent the accidental clearing of a selected library memory. Cursor to the PROTECT button, and press the ENTER button to activate the protection function. The button will become highlighted.

### Library Window Operations

#### Memory Name Function

When the [NAME] button in a library window is activated, the [NAME EDITOR] window is displayed on the LCD, overlaying the current library window.

![Name Editor Window](image)

Enter a name for the current memory selection, using the keyboard element of the [NAME EDITOR] window and/or the Keypad on the Top Panel. After the memory name has been entered in the name field of the window, select the OK button in the window, and press the ENTER button to assign that name to the memory. Selecting the Cancel button in the window cancels the name change.
Library Memory Selection

When an element in the [Library Data] area is selected with the cursor, you can rotate the JogDial to scroll the memory list. Position the desired memory in the current field of the list area. The desired memory will move to the current field of the list in the window.

Library Reference Function

Cursor to the [Reference] button in the [Library Data] area of the [CH LIB] window, and press the ENTER button to activate the reference function. The parameter settings stored in the current memory are displayed on the right side of the library window. You can view the selected memory data, and compare it to the selected channel data that remains displayed on the left side of the library window. With the cursor positioned on the [Reference] button, pressing the ENTER button deactivates the reference function and returns the library window to the previous display.

You cannot access or adjust any of the parameter settings indicated on the right side of the [CH LIB] window since the cursor cannot be moved into that area.

Data with an \(-\infty\) (infinity) fader level and flat equalizer characteristics is stored to the library memory number 01 when the DA7 is delivered. Data with 0 dB fader level is stored to the other memory numbers of the libraries. Library memory number 01 has a title of [INIT OFF 1], and the other library memories have a title of [INIT 0 dB*] (* is a library number). The default type is INPUT.
5-4 METER Group Windows

**[INPUT 1-32] Meter Window**

Pressing the [METER] button on the Top Panel displays the last window used from the [METER] group, ([INPUT 1-32], [BUS/AUX], or [SLOT]). Repeated presses of the [METER] button will display the windows in this order.

This window shows the meters for the 32 input channels and allows for level adjustments.

![INPUT 1-32 Meter Window](image)

**[INPUT 1-16], [INPUT 17-32] Areas**

These areas show the signal input levels of all 32 channels simultaneously.

**[PK Lvl] Area**

This data field, below the individual channel level meters, displays a numeric peak value when [PEAK HOLD] is ON.

**[RESPONSE] Area**

Select meter response of either PRE or POS. See Glossary for additional information.

**[POSITION] Area**

Cursor to the PRE button, and press the ENTER button to meter the point immediately after analog-to-digital conversion before processing an input signal. Cursor to the POS button, and press the ENTER button to meter the point immediately before the channel ON LED button. Cursor to the POST button, and press the ENTER button to meter the point after the Channel Fader.
[PEAK HOLD] Area

This area sets the peak hold \texttt{ON} or \texttt{OFF}. Cursor to the selection button, and press the \texttt{ENTER} button. Peak hold dots will appear on the meter. The current peak hold levels appear in the data fields of the [PK] area. When \texttt{ON}, hold time is 0.3 seconds. When \texttt{∞} (infinity) is selected, the peak hold indicator remains until overwritten by a new peak level or is turned \texttt{OFF}.

When the \texttt{SELECT} LED button of any channel is pressed, the [METER] window for the selected channel appears.

Cursor to the \texttt{ON} or the \texttt{OFF} button in the [RESPONSE] area, and press the \texttt{ENTER} button. The selected button will be highlighted. This setting is common to all of the input and output channel windows, the panel, and the Display Bridge. The setting from the factory when the DA7 is first turned on is \texttt{OFF}.

To cancel the peak hold function, cursor to the \texttt{ON} button, and press the \texttt{ENTER} button. The \texttt{ON} button will toggle to \texttt{OFF}. To reset the infinite hold, cursor to the \texttt{OFF} button, and press the \texttt{ENTER} button.

[BUS/AUX] Meter Window

This window has meters for [BUS], [AUX SEND], [AUX RETURN], and [MASTER], and permits meter operation modes adjustments for [RESPONSE], [POSITION], and [PEAK HOLD].

The [RESPONSE], [POSITION], and [PEAK HOLD] operations are the same as in the [INPUT 1-32] window. However, you can have inputs selected \texttt{PRE FOR} while the \texttt{BUS/AUX} meters are set to \texttt{POST FOR}.
[METER>SLOT] Window

This window has meters for [SLOT 1], [SLOT 2], and [SLOT 3], and sets meter operation modes adjustments for [RESPONSE], [POSITION], and [PEAK HOLD].

For additional technical specifications, refer to Appendix F, Technical Specifications.

The [RESPONSE], [POSITION], and [PEAK HOLD] operations are the same as in the [INPUT 1-32] window.
5-5 Channel Window, Multi-Channel View

In the Multi-Channel View window, which is selected by the Multi CH View button on the Display Bridge, the selected channel appears in a split screen. On the left side of the window you will see the selected channel, and on the right, you can choose a channel.

When a channel and its data are copied to another channel, all its attributes are transferred. Any conditions on the second channel will be overwritten, such as EQ, PAN, DYNAMICS/DELAY, AUX, and Channel On and Off.

The channel on the right side of the screen can be selected by moving the cursor to the field to the right of the field. Once highlighted, use the JogDial to scroll through the channel choices: Inputs 1-32, AUX SND 1-6, AUX RTN 1-6, BUS 1-8, or MASTER.

The Copy button copies the parameters from the selected channel to the reference channel.

The Multi-Channel View window has all the functionality of the regular [CHANNEL] window. Because of the condensed space, several names have been abbreviated to accommodate the space restrictions:

[FADR] Button
This button selects a Fader Group, and has the same function as the [FADR GRP] area in the [CHANNEL] window.
[MUTE] Button
This button selects a Mute Group, and has the same function as the [MUTE GRP] area in the [CHANNEL] window.

[LINK] Button
This button has the same function as the [STR] button in the [LINK] area in the [CHANNEL] window. Selecting it will turn stereo pairing ON or OFF.

There is an additional function of the Multi-Channel View button. If you are looking at either the EQ or DYNAMICS section of a selected channel on the LCD screen, you can only copy the selected EQ or DYNAMICS settings for that channel to another channel. This is useful if you do not wish to disturb the other settings of the selected channel.
Chapter 6
Fader Layers and
Channel Strips

6-1 Fader Layers

The Fader Layer section is where you select the current function you want to use for the Channel Strips. When you change layers, the DA7 updates the fader positions to reflect the current status of the channel levels for that layer. Any of the Channel Strips in that layer can now be edited.

The INPUT 1-16 LED button when selected (green) controls analog inputs 1 through 16, and buses 1, 3, 5, and 7. The INPUT 17-32 LED button when selected (red) controls inputs 17 through 32 (if there are audio option cards installed), and buses 2, 4, 6, and 8. The AUX/BUS layer controls aux sends 1 through 6, aux returns 1 through 6, and buses 1 through 8, and has an (orange) LED button. The CUSTOM/MIDI layer gives you a layer where all functions are selectable from the [UTILITY>USER CSTM] (user custom) window, and is also an (orange) LED button. One of these LED buttons blinks when selected, if the FADER is set to off in the [UTILITY>CONFIG] window.

For additional information on utility functions, see Chapter 16, Utility and Solo Monitor.
INPUT 1-16 LED Button
When you press this button on (green), the faders reset to control analog inputs 1 through 16, and buses 1, 3, 5, and 7, unless previously flipped. To reset a flipped Channel Fader Strip, press the FLIP button. To reset all the currently flipped Channel Fader Strips, press and hold the INPUT 1-16 LED button for two seconds.

INPUT 17-32 LED Button
When you press this button on (red), the faders reset to control inputs 17 through 32, and buses 2, 4, 6, and 8, unless previously flipped. To reset a flipped Channel Fader Strip, press the FLIP button. To reset all the currently flipped Channel Fader Strips, press and hold the INPUT 17-32 LED button for two seconds.
These channels are for additional inputs, and are not accessible unless you have installed at least one of the optional audio I/O cards.
For more information on adding additional inputs to the DA7, see Chapter 17, Options.

AUX/BUS LED Button
When you press this button on (orange), the faders reset to control the six aux sends, the six aux returns and the eight buses as the active layer. The aux or bus designations are located immediately below the fader on the Fader Strips.
For more information on the AUX section, see Chapter 10, AUX.

CUSTOM/MIDI LED Button
This is the fun layer. Press the CUSTOM/MIDI LED button and the faders will control 20 channels of audio or MIDI commands. An (orange) LED indicates when the CUSTOM/MIDI layer is active. The controls for programming the faders in this layer are in the [UTILITY>USER CSTM] (user custom) window.
For more information on the CUSTOM/MIDI layer, see Section 16-4 Utility, User Custom Window.
6-2 Channel Strip

Each Channel Strip has several tools that assign and control parameters for that channel.

**MIC/LINE INPUT Knob**

The MIC/LINE INPUT knobs, located at the top of each Channel Strip, adjust the channel input signal level. They only control analog inputs 1 through 16. When the Channel Strip is used in any fader layer except INPUT 1-16, the MIC/LINE INPUT knob has no effect, unless, when in the CUSTOM/MIDI Fader Layer, there are audio sources assigned to channels 1 through 16.

**PEAK/SIGNAL LED**

This LED indicates the channel input signal level (controlled by the MIC/LINE INPUT knob). The LED illuminates (green) when a signal is sensed. A (red) LED indicates that the input is close to clipping. Try to keep all signals below this point by adjusting the input gain via the MIC/LINE INPUT knob.
LED Status Indicators

These LEDs show whether AUX 1-6 or automation parameters (FADER, CH, EQ, PAN/SURR, LIBRARY, and SEL/MAN) are on. The LED status indicators can be toggled by pressing the AUTOMATION/AUX LED button. The LEDs will flash (red) when [AUTOMATION] is enabled in the [AUTOMATION>EXECUTE] window. When an automation event is currently recording, the affected LEDs will remain illuminated (red). The LEDs will flash (green) when an automation is currently playing. Automation function indicators will take priority over the AUX 1-6 indicators. When an automation event is not active, and the AUTOMATION/AUX button is toggled to AUX (green), the LEDs will illuminate (green) to indicate the current AUX assignments.

Automation features and additional information can be found in Chapter 14, Automation.

FADER or AUX 1 LED

The LED color indicates whether the selected channel is assigned to either AUX 1 or to FADER automation. When nothing is assigned, the LED is not lit.

CH or AUX 2 LED

The LED color indicates whether the selected channel is assigned to either AUX 2 or to CH (channel on/off) automation. When nothing is assigned, the LED is not lit.

EQ or AUX 3 LED

The LED color indicates whether the selected channel is assigned to either AUX 3 or to EQ (equalizer) automation. When nothing is assigned, the LED is not lit.

PAN/SURR or AUX 4 LED

The LED color indicates whether the selected channel is assigned to either AUX 4 or to PAN/ASSIGN automation. When nothing is assigned, the LED is not lit.
**LIBRARY or AUX 5 LED**

The LED color indicates whether the selected channel is assigned to either **AUX 5** or to **LIBRARY** automation. When nothing is assigned, the LED is not lit.

**SEL/MAN or AUX 6 LED**

The LED color indicates whether the selected channel is assigned to either **AUX 6** or to **SEL/MAN** (select/manual) automation. When nothing is assigned, the LED is not lit.

**SOLO LED Button**

Use the solo function to monitor a single channel or multiple channels via the **MONITOR A** outputs. When a **SOLO** LED button is on (red), the selected source is assigned to **MONITOR A** and all other signals are muted. When **SOLO** is selected, the **MONITOR A** source selection LED will turn off, indicating that **SOLO** is the source being monitored.

The **Display Bridge** **SOLO** LED turns on (red) and flashes, and the output level of the channel being solo’d will be displayed by the **L/R METER**.

The **[SOLO/MON SETUP]** window offers several solo configuration options. See Chapter 16, **Utility and Solo Monitor** for more information.

**FLIP LED Button**

The **FLIP** LED button on the **Channel Strip** shows whether that fader is controlling the input from **Fader Layer INPUT 1-16** or **Fader Layer INPUT 17-32**. When the **FLIP** LED is (green), inputs 1 through 16 are being controlled. When the **FLIP** LED is (red), inputs 17 through 32 are being controlled. You can use channels 1 through 8 and 25 through 32 at the same time. Simply raise all the **Channel Faders** and press the **FLIP** LED buttons for channels 9 through 16, which will turn the LEDs (red). Once they are (red), they will control channels 25 through 32.

When the **[FADER]** selection in the **[UTILITY>CONFIG]** window is **OFF**, pressing a **FLIP** button will update the respective **Channel Strip** to the appropriate settings for the **Fader Layer** selection, and the fader will reset. When the **[FADER]** selection is **ON**, the fader will not reset but the flip function can still be performed.
SELECT LED Button

When a SELECT LED button is pressed ON (orange) for a Channel Strip, it becomes the current channel in the LCD screen as displayed in the [taskbar]. Pressing once the SELECT LED button takes you to the [CHANNEL] window if you are in the [SOLO MONITOR], [D-I/O], [MIDI], or [UTILITY]. While [METER], [EQUALIZER], [PAN/ASSIGN/SURROUND] or [DYNAMICS/DYNAMICS] is displayed, pressing this twice takes you to the [CHANNEL] window.

This button also sets LINK or STEREO pairs if you press the adjacent buttons simultaneously. To release the pair, press the same buttons again simultaneously. A SELECT LED button blinks when pressed, if the selected channel has been preset to a LINK or STEREO pair.

ON LED Button

The ON LED button simply turns the Channel Strip on or off so that no signal goes to the assigned bus or buses. (Red) indicates that the channel is on, and no illumination means it is off.

Fader

The fader is used to adjust the output level of the Channel Strip during normal operation. Faders have a range of \(-\infty\) (infinity) to +10dB.

If you press the FADER CONTROL LED button in the AUX section, the faders for the selected AUX send channel levels will be displayed. Pressing this button also updates the LCD screen to display the [FADER CONTROL] window, which shows metering and numeric values in the data field of the selected channel (1 through 32).

If you press the FLIP LED button to execute automation playback, change Fader Layers, change scene memories, or remotely control the DA7, the fader’s position is automatically updated, unless [FADER] is turned off in the [UTILITY>CONFIG] window.

If you are a MIDI enthusiast, you will love using the faders to send MIDI control change data to other MIDI devices. Faders can also be controlled by an external MIDI sequencer.

See Chapter 11, MIDI for more information.
Chapter 7
Equalizer

7-1 Overview

This chapter provides information on the EQUALIZER section of the Top Panel and the [EQUALIZER] window group selections. A 4-band parametric equalizer is available for each of the 32 channels, each of the 8 buses, and MASTER L/R. A 2-band parametric equalizer is available for each of the six aux returns. There are no parametric equalizers provided for the six aux sends, which is not a problem because you can apply equalization to the channel prior to assigning an aux send. Each equalizer band has controls for Q factor, Frequency, and Gain.

The [EQUALIZER] window provides filter type selections for refining the specific equalization settings. In addition to the default filter type of [PEQ] (parametric equalizer) filtering, high pass, low pass, shelf high, and shelf low filter types are available. The [EQUALIZER] window also contains an [A/B] function area which allows you to compare two equalizer settings for the selected channel, and a [FLAT] or “clear” function.
Section 7-2 EQUALIZER Section details the controls and buttons accessible on the Top Panel of the DA7.

Section 7-3 EQUALIZER Window provides information on the various elements and areas of the [EQUALIZER] window.

Section 7-4 EQUALIZER Library Window covers the library memory functions that are available for storing and recalling equalizer settings. This library is accessible via the LIBRARY STORE/RECALL buttons.

Section 7-5 EQUALIZER Window, Multi-Channel View contains additional information that is unique to the multi-channel view for the [EQUALIZER] window.
7-2 EQUALIZER Section

The primary settings for the equalizer can be accessed on the Top Panel while the LCD screen continues to display the [CHANNEL] window. Although this [CHANNEL] window functionality is convenient when you are making general equalizer adjustments, to aid you in understanding the following information, please follow these steps to access and activate the controls in the EQUALIZER section:

1. Press the GAIN knob in the EQUALIZER section to display the [EQUALIZER] window. Or, cursor to the [EQUALIZER] area in the [CHANNEL] window, and press the ENTER button to display the [EQUALIZER] window. Or, when the [AUTO DISP CHANGE] selection in the [UTILITY>CONFIG] window is ON, press an LED button or adjust a knob in the EQUALIZER section to automatically display the [EQUALIZER] window.

2. Press a SELECT button to select the channel you want to adjust.

3. Turn the equalizer on by pressing the EQ ON LED button on the Top Panel, or cursor to the [EQ] area off button, and press the ENTER button.

4. Select a band to adjust by pressing one of the frequency band LED buttons, H, HM, LM, or L.

5. Adjust EQ parameters by turning the Q, FREQ, and GAIN knobs, or cursor to a soft knob, and adjust with the JogDial. The EQ characteristics are displayed on the graph in the [EQUALIZER] window, and are also displayed in the [EQUALIZER] area of the [CHANNEL] window.

![Equalizer Diagram](image)
There are three knobs and four frequency band LED buttons in the **EQUALIZER** section, which are used to modify the frequency characteristics of the selected channel. The **EQ ON** LED button toggles the equalizer on (green) and off. When on, frequency adjustments set with the controls are active on the selected channel.

The three knobs are labeled **Q** (quality), **FREQ** (frequency), and **GAIN** (gain). The additional labeling of **L** (left), **SL** (surround left), and **SUB** (surround bass) identify the surround sound parameters that are controlled by the knobs when the [SURROUND] window is displayed. There are also four LED buttons on the Top Panel with which you select the EQ band to adjust.

### EQUALIZER Section Elements

**GAIN or ** \( \text{SUB} \) ** Knob**

Pressing this knob, while in any window, will update the LCD to the [EQUALIZER] window. Once you select one of the four bands (H, HM, LM, L), turning the **GAIN** knob adjusts the gain of the selected frequency.

This knob is also a shortcut to the A/B compare function. By pressing this knob, once you have the [EQUALIZER] window displayed, it will toggle between the setting in the A/B memories. You can use this to compare two different EQ settings, and then send your preference to the channel or store it in a library.

This knob also works as a level adjustment in a surround sound mix. When the **REC VOL** button in the [MODE] area of the [PAN>SURROUND] window is activated, the **SUB** knob controls the level for the surround sound subwoofer output by adjusting the send level of the selected channel to the surround sound BUS 4.

**Q or ** \( \text{L} \) ** Knob**

Turning the **Q** knob adjusts the width of the frequency range for the currently selected band, centered on the selected frequency. A very narrow setting can be used to pin-point a troubling frequency by acting like a notch filter. A wide setting will adjust a large range of frequencies, as much as several octaves. This function can be used to clean up muddy audio, or to give a specific instrument more definition.
This knob is also a shortcut to the selection of filter types. When the \textbf{H} or \textbf{L} band of the \textit{EQUALIZER} is selected, pressing this knob cycles through the three filter types for these bands.

This knob also acts as a level adjustment in a surround sound mix. The \textbf{L} knob controls the level for the surround sound left output by adjusting the send level of the selected channel to the surround sound BUS 1.

\textbf{FREQ or }\textit{SL Knob}

The \textit{FREQ} knob sets the frequency point of the currently selected band. A vertical line will move across the graph as you rotate the knob, indicating where you are in the frequency spectrum.

This knob is also a shortcut to the \textit{FLAT} button. If you press this knob, it will clear any EQ setting in the current window.

This knob also makes level adjustments in a surround sound mix. The \textit{SL} knob controls the level for the surround sound rear left output by adjusting the send level of the selected channel to surround sound BUS 5.

\textbf{H, HM, LM, and L LED Buttons} \textit{, , , and }\textit{.}

There are four discrete parametric equalizer bands in the \textit{EQUALIZER} section. The LED buttons are labeled \textbf{H} (high), \textbf{HM} (high-mid), \textbf{LM} (low-mid), and \textbf{L} (low). The \textbf{H} and \textbf{HM} bands are adjustable from 500 Hz to 20 kHz, and the \textbf{LM} and \textbf{L} bands are adjustable from 20 Hz to 20 kHz.

Press the LED button for the respective band to select it (green). The Q, \textit{FREQ}, and \textit{GAIN} knobs can be used to adjust the selected parametric equalizer band. The selected EQ band is displayed in the \textbf{EQUALIZER} window in inverse video. Press a LED button for 2 seconds to reset all attributes of the band to a flat reference.

There are additional filter type selections in the \textbf{EQUALIZER} which augment or modify the selected equalizer band. See Section 7-3 \textit{EQUALIZER Window} for descriptions of these filter types.

\textbf{EQ ON LED Button}

Press this button to turn equalization on (green) or off for the selected channel.

For additional information on surround sound mixing, see Chapter 8, \textit{Pan/Assign, Surround, Bus Assign}.
7-3 EQUALIZER Window

The [EQUALIZER] window has several areas of functionality. Use the ARROW buttons or JogDial to access the parameters in the windows. The data fields, graph, and soft knob positions update in real time to show the adjustment results.

**[EQ]** Button

Using the ARROW buttons or JogDial, cursor to the [EQ] area, and press the ENTER button to switch the equalizer **ON**.

**FLAT** Button

If there are any adjustments in any of the EQ parameters, pressing the FLAT button will reset all of them to a flat reference (no equalizer attributes) for the selected channel.

**A/B** Button

The A/B function lets you compare two equalizer settings. Cursor to the A/B button, and press the ENTER button. The equalizer graph will update to the most recently established temporary equalizer settings, and the A/B button will turn to inversed video. Toggle the A/B button to return to the current equalizer settings.

The temporary equalizer settings are retained in library memory 00 until modified. The A/B function does not have to be activated, because it is always active and available.
Filter Types

The DA7 equalizer can be used in several modes, parametric, high and low pass filtering, and shelving. Cursor to one of the filter type buttons, and press the ENTER button.

PEQ Buttons
The [PEQ] filter type is the default setting.

HPF Filter Button
The [HPF] (high pass filter) cuts off low frequencies and lets high frequencies pass. The Q factor is not applicable here, since everything below the assigned frequency is cut off. In the [LOW] band the (gain) soft knob sets the filter on or off, and the (frequency) soft knob selects the point at which the roll-off starts (selectable between 20 Hz and 1.6 kHz).

LPF Filter Button
The [LPF] (low pass filter) cuts off high frequencies and lets low frequencies pass. The Q factor is not applicable here, since everything above the assigned frequency is cut off. In the [HIGH] band, the (gain) soft knob sets the filter on or off, and the (frequency) soft knob selects the point at which the roll-off starts (selectable between 1 kHz and 20 kHz).

SHL Filter Button
Selecting the [SHL] (shelf low) filter type treats the lowest band (L) of the EQ much like a bass volume control. Again the Q factor is not necessary here and is, therefore, not selectable. In the [LOW] band the (gain) soft knob sets the gain of the selected frequency, and the (frequency) soft knob selects the point at which the roll-off starts (selectable between 20 Hz and 1.6 kHz).

SHH Filter Button
Selecting the [SHH] (shelf high) filter type treats the highest band (H) of the EQ much like a treble volume control. There is no Q factor necessary here either. In the [HIGH] band, the (gain) soft knob sets the gain of the selected frequency, and the (frequency) soft knob selects the point at which the roll-off starts (selectable between 1 kHz and 20 kHz).
7-4 EQUALIZER Library Window

This window shows the [EQ LIB] (equalizer library) functions and status of a selected channel. You can edit, store, and recall presets from the EQ library. Pressing the LIBRARY RECALL or STORE buttons on the Top Panel displays the [EQ LIB] window.

**Library Window Elements**

**TITLE** Button

Use this button to store library settings without displaying the Name Editor. When TITLE is on, a setting is stored with the name [NoTitle##A]. This setting can later be recalled and renamed by using the NAME button.

**RECALL** Button

Selecting this button and pressing the ENTER button recalls one of the fifty stored memories, along with all of the EQ settings. With the JogDial in the [No. Lib Name] area, scroll through the memory lists and make a selection by pressing the RECALL button. The MEMORY numeric readout will flash for two seconds, indicating that a new preset is being loaded.
**STORE** Button

Activating this button stores the current EQ settings into one of the fifty memories. The [NAME EDITOR] window pops up, prompting you to name the new preset. After naming it, scroll to the OK button, and press the ENTER button. The MEMORY numeric readout will flash for two seconds, indicating that you have written to the memory. The library comes with all presets named INITIAL *

**CLEAR** Button

Activating this button initializes the current memory to the factory settings. When cursoring to this button, you should be asking yourself if you have “backed-up” your current memory.

**NAME** Button

Activating this button opens up the [NAME EDITOR] window, prompting you to name the new memory. After naming it, scroll to the OK button in the [NAME EDITOR] window, and press the ENTER button. The MEMORY numeric readout will flash for two seconds, indicating that you have written to that memory location.

**PROTECT** Button

Select this button, and press the ENTER button to protect the current memory from being cleared or over-written.

Library selections are made when the cursor is within the [Library Data] area by rotating the JogDial. Rotating it clockwise moves the cursor through the library numbers from low to high (1-50), while turning it counter-clockwise moves through the library from high to low (50-1).
7-5 EQUALIZER Window, Multi-Channel View

While an [EQUALIZER] window is displayed on the LCD screen, press the MULT CH button on the Display Bridge to change the display to the multi-channel view. This window shows the selected channel on the left side of the LCD and a reference channel on the right. Only the selected channel can be modified. However, you can copy entire settings either way.

Multi-channel View Window Elements

COPY Button
Activating this button copies the EQ parameters from the currently selected channel to the reference channel.

Ref. Field
The Ref. field displays the name of the channel being auditioned (INPUTS 1-32, AUX RTN 1-6, BUSES 1-8, and MASTER). When this field is active, use the JogDial to scroll through all of the input channels to select the EQ settings you want to use.
Chapter 8
Pan/Assign, Surround, Bus Assign

8-1 PAN/BUS ASSIGN Controls

This section explains access to the PAN and 5.1 surround sound controls, and the assignment of L/R, DIRECT, and BUS 1-8 for a selected channel. The ON LED button in this section only switches the pan on (red) or off for odd and even selected buses. It has no effect on DIRECT assignments. Pan is always active for the L/R outputs. Pressing the PAN knob displays the [PAN/SURROUND] window on the LCD. It also controls the level for the center output in surround sound mode, which goes out on surround sound BUS 3.
BUS ASSIGN Controls

Use the BUS ASSIGN section to assign a channel to an output. Once a channel is selected, select either MASTER L/R, DIRECT, or BUS 1, 2, 3, 4, 5, 6, 7, or 8 by pressing the corresponding LED button.

BUS LED Buttons

These buttons switch the indicated assignment on (green) or off to that bus for the selected channel. Press the LED button to turn it on from the Top Panel, or cursor to the [ASSIGN] area of the [CHANNEL] window, and press the ENTER button.

L/R LED Button

This button switches the selected channel on (flashing green) or off to the MASTER L/R OUTPUT of the DA7.

DIRECT LED Button

This button is a shortcut to display the [D-I/O > TO SLOT] window. Pressing this button a second time recalls the previous window.

See Chapter 12, D-I/O for additional information.
8-2 SURROUND Window

The parameters for surround sound are set in this window.

The computer age has made surround sound much easier to create. The phrase 5.1 is a little misleading since there are six discrete channel outputs by the DA7. These channels are Left Front, Center, Right Front, Left Surround, Right Surround, and Subwoofer. However, you will have to run the outputs from these six discrete channels into an external processor to create a true 5.1 mix because the .1 channel is usually derived by filtering the five main channels and taking a mix of the low frequencies of all of these channels to make the subwoofer signal. The DA7 gives you a discrete subwoofer channel so that special effects can be sent directly to this channel. Your outboard surround sound processor should be able to handle this with no problem.

Several of the better known surround sound formats are Dolby Pro Logic Surround, Dolby Digital(AC-3), and DTS (Digital Theater Systems).
**SURROUND Button**

The surround sound function can be turned on from both the [PAN/SURROUND>SURROUND] window or the assign switch on the [CHANNEL] window. Move the cursor to the SURROUND button, and press the ENTER button. The button appears as inverse video when engaged, and the data field below it changes from DISABLE to ENABLE.

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To monitor surround sound, turn ON and assign the buses as surround sound in the [SURROUND MONITOR] area of the [SOLO/MONITOR] window.

See page 16-3, [SURROUND MONITOR] area for more details.

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To control the [MASTER LEVEL] of the surround sound, rotate the Level ON/OFF knob in the AUX section, while the [SURROUND] window appears on the LCD.

See page 16-3, [SURROUND MONITOR] area for more details.

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**[LR:C] Field**

This field sets the ratio of the left or right output level versus the center output level. Select the [LR:C] field with the cursor, and use the JogDial to change the values from 0:10 to 10:0.

The value of 0:10 will create a “center emphasis” pan, whereas a value of 10:0 will have no “centering” effect.

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Surround Sound [MODES] Area

The DA7 has three modes for setting surround sound mixing: a live interaction mix using the DA7 surround sound knobs, a graphical mode using the JogDial and MASTER L/R fader, and a set of vector-based drawing tools to create a sound path. Only one mode per channel can be selected at a time.

Send Volume Mode

The SEND VOL button selects the surround operation send volume mode. Cursor to this button, and press the ENTER button.

In this mode you can operate the surround sound feature in the window and directly control each of the six output levels using the DA7 Top Panel surround sound knobs.

Operations in the SEND VOL (Send Volume) Mode

To operate the [SEND VOL], press the knob to display the [SURROUND] window. Select the SURROUND button to set each source to BUSES 1-6 to ON status (visible from the Top Panel). Adjust the image movement by operating each knob, either with the window soft knobs or the Top Panel knobs L, SL, SUB, CR, TR, and SR.
If you have enabled automation to [REC], the knob adjustment data set in the [SURROUND] window will be recorded in automation memory.

**JogDial and Master L/R Fader Mode**

Press the JogDial button to select JogDial & Master L/R fader operation mode. Operating the JogDial (left, center, right) and the MASTER L/R fader (front to rear), enables them to work together to move the sound point on a graph anywhere in the surround sound spectrum.

Adjust the [L/R:C] parameter in the window to set desired output balance.

Operations in the JogDial and Master L/R Fader Mode

Select the JogDial button in the [SURROUND] window. A dot showing the sound point will appear in the graph in the front center position, and the MASTER L/R fader will automatically move to the top position. The front or rear direction is adjusted by the MASTER L/R fader, with the fader up as front and fader down as rear. The left or right direction is adjusted with the JogDial. Turning clockwise is left and counter-clockwise is right.

In the MMC mode, press the ENTER button to switch the JogDial to the PARAMETER mode so you can adjust the left or right direction. Press a second time to return to the MMC.
**Pattern Mode**

Press the **PATTERN** button to select the pattern mode for surround sound placement. Three new areas – [PATTERN EDIT], [MOVE], and [AUTO MOVE] – become available.

This mode lets you draw vector paths that move over time. You can combine up to five shape elements when designing the sound path. You can make moves occur automatically by setting the [TIME] value in the [AUTO MOVE] area.

Adjust the [LR:C] parameter in the window, and set the desired output balance adjustable from 0:10 - 10:0.

![Surround Window (Pattern Mode)](image)

**[PATTERN EDIT] Area**

- **Straight Line Mode Button**
  
  With this button you can draw a straight line. Once selected, use the MASTER L/R fader and the JogDial to define a placement, and press ENTER. This control point marks the beginning of the path. Select the place for the next control point, and press the ENTER button to connect the points. Alternate pressings on the ENTER button lets you set the second control point or reselects the mode button.

- **Curved Line Mode Button**
  
  With this button you can draw a curved line. The curved line can be selected in 1/4 arc shapes. Up and down specifications can be changed by pressing the ENTER button and the CURSOR MODE button simultaneously. Again, alternate pressings on the ENTER button lets you set the second control point or reselects the mode button.
**Circle Mode Button**

This tool lets you draw a circle or an oval. The default direction is clockwise. To draw counter-clockwise, press the [SELECT] button in the [MOVE] area. This pattern cannot be combined with others. A dot flashes to indicate the surround screen graph starting point.

Adjust the starting point of the location by using the JogDial for left and right direction and the MASTER L/R fader for front and rear direction. Slowly pull down the MASTER L/R fader, while rotating the JogDial clockwise and holding down the ENTER button.

Once you are happy with the circle drawn on the graph, release and press the ENTER button to lock the pattern into memory. Confirm the beginning and end points of the pattern by rotating the JogDial, and watch it move around the shape.

**MOVE Button**

Once a pattern has been made, the MOVE function selects an entire pattern and moves it. It is not possible to move beyond the graph range.

The location source center position can be adjusted by using the JogDial for left or right direction and the MASTER L/R fader for front or rear direction. The pattern will show a dotted box around it when MOVE is selected. When the pattern has been moved to a preferred place on the graph, press the ENTER button again to set the new location.

To change a move, press the ENTER button again, and the pattern will once again move to a highlighted point on the graph. Repeat the preceding process for moving the pattern to a new location.

To delete the pattern, cursor to the DEL button, and press the ENTER button.

**EDIT Button**

This button lets you edit the currently selected control point.

Press the EDIT button. Select a control point by moving the cursor along the path with the JogDial. Stop at the point you want to adjust, and press the ENTER button. The selected control point blinks indicating that it is being edited. Adjust the control point by using the JogDial and the MASTER L/R fader, and press the ENTER button again. When complete, the blinking control point stops and returns to the dot indication. While in this mode, you can keep adjusting points by repeating this process. The graph will show the moving operation during the adjustment.


**Button**

Use this button to delete the most recent control point created in **Pattern** mode, which will delete the whole line.

**JogDial**

Adjust sound location by turning or rotating the **JogDial**.

**[MOVE] Area**

**Return** Button

When Return is on, appearing as inverse video, the cursor movement repeats from the starting point —> to the end point —> to the starting point —>. When Return is off, it simply moves the cursor from the starting point —> to the end point.

**Repeat** Button

This button moves the source location cursor from the starting point —> to the end point and the end point —> to the starting point when off. When on, it will repeat the movement continuously.

**Record** Button

When on, reverse will move the source location cursor in the opposite direction, from the end point —> to the starting point. When Reverse is off, the cursor moves in a normal or clockwise direction.

**[AUTO MOVE] Area**

Here you can program the duration of an automatic move of the source/ location. Use the **JogDial** to select a duration for the move from 0.0 sec to 30.0 sec. The function will begin when the **Start** button is pressed. This mode follows the same conditions as in the **[MOVE]** area. The cursor will move, in the time set, from the starting point to the end point (or, the end point to the starting point when in reverse).

Pressing **Start** a second time stops the movement. The knob-adjusted data will be recorded automatically when adjusting during automation **[REC MODE]**. This action can be reset repeatedly by going back into **[REC MODE]** and redoing the automation mix for the effect.
[TIME] Field
In the [AUTO MOVE] area you can set the automated move time. Cursor to the field, and rotate the JogDial to set a time value. The [TIME] field has a duration range of 0.0 sec to 30.0 sec.

[START]
This button starts and stops the automated move time. Press ENTER to toggle the setting.
In AUTO MOVE you can start up to 8 channels. A warning message appears on the LCD if you try to start the 9th channel.

BUS Outputs
Buses 1 through 6 can be toggled on and off by moving the cursor to a soft knob and pressing the ENTER button. The following chart shows the DA7 surround knobs and their correlating soft knobs.

- Left front . . . .[L/BUS 1] . . . .Q . . . . . . . . EQUALIZER section
- Right front . . . .[R/BUS 2] . . . .R . . . . . . . . DYNAMICS/DELAY section
- Center . . . . .[C/BUS 3] . . . .PAN . . . . . . . . PAN/ASSIGN section
- Sub . . . . . . . .[SB/BUS 4] . . .GAIN . . . . . . . . EQUALIZER section
- Left rear . . . . .[SL/BUS 5] . . .FREQ . . . . . . . . EQUALIZER section
- Right rear . . . .[SR/BUS 6] . . . .SR . . . . . . . . DYNAMICS/DELAY section

The bus assignment for any selected channel can be seen in the [ASSIGN] area of the [CHANNEL] window.

To monitor surround sound, turn ON and assign the buses as surround sound in the [SURROUND MONITOR] area of the [SOLO/MONITOR] window.
See Chapter 16, Utility and Solo Monitor for more details.

Please refer to Chapter 16, Utility and Solo Monitor, page 16-3 for the physical surround monitor connections.
[JOG SPEED] Area

These settings determine the speed range of the JogDial when moving a sound point on the graph, or during setup mode. Set the slow and fast before, after, or during any movement. The speed actions are slow (.5X normal speed) and fast (2X normal speed). These are only operational when either JOGSFOR or PATTERN modes are selected.

Output Level Meter

To view all of the bus output levels, display the [METER>BUS/AUX] window. The meter point reflects the bus output. The [RESPONSE] area selections in the [METER>BUS/AUX] window permit a response assignment of either BU or PP, which is interlocked with the setup in the [METER] window.
8-3 SURROUND Window, Multi-Channel View

In this view, you can display the current channel on the left of the window and another channel on the right. Parameters can only be adjusted on the currently selected channel. Also, the surround sound parameters can be copied only from the currently selected channel to the reference channel.

The [SURROUND] multi-channel view window has all the functionality of any multi-channel view window. For more details, refer to Section 5-5, CHANNEL Window, Multi-channel View.

The [SURROUND] window multi-channel view has almost all of the functionality of the regular [SURROUND] window, with the following button names modified to save window space:

[SURROUND] . . . . . . [SURR]
[SEND VOL] . . . . . . [SND]
[JOG&FDR] . . . . . . [J&F]
[PATTERN] . . . . . . [PTN]
[JOG SPEED] . . . . [SPEED]
[SLOW] . . . . . . . . . [S]
[HIGH] . . . . . . . . . [F]
The following functions are not available when the [SURROUND] multi-channel view window is displayed:

[RETURN]
[REPEAT]
[REVERSE]

Selection of Reference Channel
The [REFER] (reference) field displays the name of the channel being auditioned (inputs 1 through 32 and aux returns 1 through 6).
Chapter 9
Dynamics/Delay

9-1 Overview
The DA7 provides a built-in dynamics processor. Channels 1 through 32, buses 1 through 8, and MASTER L/R can all have either Compression + Gating, or Expansion. Delay attributes can also be added to Channels 1 through 32.

An internal fifty memory [DYNAMICS] library has been added so that you can create and archive custom presets and instantly recall them. You can also store and recall an unlimited number of them from a computer using MIDI library software.

DYNAMICS Window
Section 9-2 DYNAMICS/DELAY Section Controls explains how to use the DA7 Top Panel controls to edit parameters.
Section 9-3 DYNAMICS Window and Section 9-4 DYNAMICS Window, Multi-Channel View describe the software functions.
Section 9-5 DYNAMICS Library Window explains how to save and recall presets from the dynamics library.
9-2 DYNAMICS/DELAY Section Controls

You can discretely provide dynamics processing to a selected channel. The two knobs in the DYNAMICS/DELAY section of the Top Panel are labeled **R** and **SR**, which correspond to surround sound parameters, but are also used to adjust the various dynamics attributes as indicated.

**R Knob**

The **R** knob adjusts the [GATE] THL (threshold) and ATK (attack), as well as the [COMPRESSOR] THL (threshold), ATK (attack), and DLY (Delay) parameters. When the **SEND VOL** mode is selected in the [SURROUND] window, the knob adjusts the send level from a selected channel for the **R** (right) output to BUS 2.

**SR Knob**

The **SR** knob adjusts the [GATE] RLS (release), as well as the [COMPRESSOR] RATIO, RLS (release), and GAIN parameters. When the **SEND VOL** mode is selected in the [SURROUND] window, the knob adjusts the send level from a selected channel for the **SR** (surround right rear) output to BUS 6.
PARAMETER SELECT Button

Pressing the **PARAMETER SELECT** button changes the parameters to be adjusted by the **THL** and **RLS** knobs. Repeated pressing of this button cycles the four choices: threshold or ratio—>attack or release—>delay or gain—>threshold or release. The appropriate LED will light (orange) showing which set of parameters are in use: **THL** and **RATIO**, **ATK** and **RLS**, **DLY** and **GAIN**. No LED will light when the **THL** and the **RLS** are in **GATE** mode.

Additionally, when in **GATE** mode, the top knob toggles between **THL** (threshold) and **ATK** (attack).

**THL and RATIO LED**

When this LED is illuminated (orange), **THL** (threshold) and **RATIO** attributes for the **COMPRESSOR** can be adjusted. The **THL** knob adjusts the threshold level, and the **RATIO** knob adjusts the ratio level.

These parameters can also be adjusted in the **[DYNAMICS]** window by highlighting the selection soft knob, and turning the **JogDial** to change the level.

**ATK and RLS LED**

When this LED is illuminated (orange), **ATK** (attack) and **RLS** (release) attributes for the **COMPRESSOR** can be adjusted. The **ATK** knob adjusts the attack level, and the **RLS** knob adjusts the release level.

These parameters can also be adjusted in the **[DYNAMICS]** window by highlighting the selection soft knob, and turning the **JogDial** to change the level.

**DLY and GAIN LED**

When this LED is illuminated (orange), **DLY** for the channel and **GAIN** attributes for the **COMPRESSOR** can be adjusted. The **DLY** knob adjusts the delay time of the channel, and the **GAIN** knob adjusts the gain. You can adjust the Delay in either msec or samples. Simply select the field you wish to adjust on the **[CHANNEL]** window on the LCD. These parameters can also be adjusted in the **[DYNAMICS]** window by highlighting the selection soft knob, and turning the **JogDial** to change the level.
DYNAMICS ON LED Button

This LED button switches the dynamics for a selected channel on (green) or off. Press the DYNAMICS ON LED button to toggle between on and off.

DELAY ON LED Button

This LED button switches the delay for a selected channel on (green) or off. Press the DELAY ON LED button to toggle between on and off.
9-3 DYNAMICS Window

Press the knob in the DYNAMICS/DELAY section to display the DYNAMICS window. Or, cursor to the [DYN] area graph in the [CHANNEL] window, and press the ENTER button to display the DYNAMICS window. Or, when the [AUTO DISP CHANGE] selection in the [UTILITY>CONFIG] window is ON, pressing an LED button or adjusting a knob in the DYNAMICS section will automatically display the DYNAMICS window.

The DYNAMICS window reflects the current dynamics settings for the selected channel and contains the controls for adjusting the dynamics and delay attributes for the channel.

Dynamics has two modes, compressor + noise gate, or expander. You can also set the channel delay time from this window.

[DYNAMICS] Window Elements

[DYN] Button
Toggle this button to switch the dynamics ON or OFF for the currently selected channel.

[&-O] Button
This button permits you to compare two different dynamics settings. Toggle the [&-O] button, and the two settings can be compared.
[FUNCTION] Area

This area is where you choose either compressor + gate mode, or expander mode. Activate the DYN+GATE button to control the parameters for the compressor + gate. Activate the EXPANDER button to control the parameters for the expander.

[STEREO LINK] Area

The stereo link setting defines the relationship between channels in a stereo pair when making gain adjustments to the channels. Cursor to this area, and use the JogDial to scroll the stereo link selections in the data field. The stereo link options are:

- **OFF**
  When OFF is the stereo link selection, gain adjustments made to either channel in the stereo pair will be independently applied to the channels. This will cause the stereo imaging to shift in favor of the channel with the higher level.

- **LEFT**
  When LEFT is the stereo link selection, gain adjustments made to the left channel in the stereo pair will automatically be applied to the right channel. The stereo imaging will remain centered, regardless of the level.

- **RIGHT**
  When RIGHT is the stereo link selection, gain adjustments made to the right channel in the stereo pair will automatically be applied to the left channel. The stereo imaging will remain centered, regardless of the level.

- **BOTH**
  This is the default setting for the stereo link function. When BOTH is the stereo link selection, gain adjustments made to either channel in the stereo pair will automatically be applied to the second channel. The stereo imaging will remain centered, regardless of the level.

[POSITION] Area

The dynamics circuit can be patched in either before or after the EQ. Select the PRE EQ button, and press the ENTER button to put the dynamics ahead of the EQ. Select the POST EQ button, and press the ENTER button to put the dynamics after the EQ. Let experimentation be your friend here. Boosting EQ in front of dynamics can lead to some outrageous dynamic effects.
**[ZOOM] Button**

When the **ZOOM** button is on, it will appear as inverse video, and change the scale of the dynamics graph from OL to -100, to OL to -50. Any changes to the dynamics settings will appear in the graph area beneath the **ZOOM** button.

**[GAIN REDUCTION] Area**

When a selected signal is input in the **[COMP+GATE]** mode, gain reduction for that input signal is graphically displayed on the **[GR]** Meter. The amount of gain is referenced by twin arrows on either side of the gain bar scale, which slide up and down in relation to the amount of gain reduction. The reference is connected to the **[GAIN]** knob. Adjust the gain level with the **[GAIN]** knob. The scale will show gain reduction from +12dB to 0dB, the same as the range of the **[GAIN]** knob.

**[GATE] mode**

**[THL] Area**

Threshold sets the level at which the gate opens and closes. Signals below the threshold point will close the gate and prevent the signal from passing. Signals above the threshold point will pass through the gate. Values for the threshold are -80dB to -15dB.

**[ATTACK] Area**

The attack time is how long it takes for the gate to kick in after the signal has triggered it. A short attack of around 10 ms is a good starting point. Values for attack time are from 0 ms to 250 ms.
[RELEASE] Area
The release time is how long it takes for the gate to return to its default level after the signal falls below the threshold point. Too short of a release time causes the signal to return to the default gain too quickly and can cut off the decay of the signal. A long release time could cause the gate to let too much of the unwanted portion of the signal to pass. Values for release time are from 5 msec to 2 000 msec.

[COMPRESSOR] mode

[THL] Area
Threshold sets the level at which the compressor begins to reduce the signal by the pre-determined ratio. Signals below the threshold point will not be affected by the compressor. Signals above the threshold point will be reduced in volume by the ratio set. Values for the threshold are -40 dB to 0 dB.

[RATIO] Area
The ratio parameter sets the amount of compression (amount of output signal change compared to the amount of input signal change). A typically used 2:1 ratio would take a 10 dB change in input and cause a 5 dB change in output. Values for ratio are from 1:1 to $\infty$:1.

[ATTACK] Area
The attack time is how long it takes for the compressor to kick in after the signal has triggered it. A short attack of around 5 ms is a good starting point. Values for attack time are from 0 ms to 250 ms.

[RELEASE] Area
The release time is how long it takes for the compressor to return to its default level after the signal falls below the threshold point. Too short of a release time causes the signal to return to the default gain too quickly and can create audio spikes. A long release time could cause the compressor to work too hard and over-compress signals. Values for release time are from 5 msec to 2 000 msec.

[GAIN] Area
This option sets the output level gain for the compressor and is only available in compressor+gate mode. Values for gain are from 0 dB to 12 dB.
[EXPANDER] mode

[THL] Area
Threshold sets the level at which the expander begins to make the signal louder by the pre-determined ratio. Signals below the threshold point will not be affected by the expander. Signals above the threshold point will be raised in volume by the ratio set. Values for the threshold are -80 dB to -15 dB.

[RATIO] Area
The ratio parameter sets the amount of expansion (amount of output signal change compared to the amount of input signal change). Values for ratio are from 1:1 to ∞:1.

[ATTACK] Area
The attack time is how long it takes for the expander to kick in after the signal has triggered it. Values for attack time are from 0 ms to 250 ms.

[RELEASE] Area
Values for release time are from 5 ms to 2 000 ms.

[RANGE] Area
This parameter is only available in the expander mode. The gate parameter is usually on or off. However, you can set a range so the gate does not completely close and dynamically adjust the signal level coming through the gate. Values for range are from 0 dB to 40 dB.

DELAY Button
This button switches the delay **ON** or **OFF**.

[DELAY] Area Controls
The channel delay is inserted after the EQ and dynamics and before the fader in the audio path, thus delaying a signal. This function could be useful for fixing timing differences on different sources or intentionally off-setting the time of a track to create an effect.

Adjust the delay value from 0 msec / 0 sample to 300 msec / 14400 sample. DLY value [msec] = sample value divided by the number left by removing kHz from a sampling frequency. Example: When the sample value is 7200 and the sampling frequency is 48 kHz, the DLY value = 7200 divided by 48 = 150 msec.
Compressor Operations

Display the [DYNAMICS] window by pressing the D1 knob in the DYNAMICS/DELAY section. Or, cursor to the [DYN] area graph in the [CHANNEL] window, and press the ENTER button to display the [DYNAMICS] window. Or, when the [AUTO DISP CHANGE] selection in the [UTILITY>CONFIG] window is ON, pressing an LED button or adjusting a knob in the DYNAMICS section will automatically display the [DYNAMICS] window.

Press the SELECT button for the channel you want to edit. The [DYNAMICS] window updates to the selected channel.

Turn the dynamics on (green) by pressing the DYNAMICS ON LED button on the Top Panel, or the [ON] button in the [DYNAMICS] window.

Cursor to the button in the [FUNCTION] area, and press the ENTER button to engage the compressor. When the button is pressed, [COMPRESSOR] is disabled.

Cursor to the [STEREO LINK], and select a mode by using the JogDial when the channel is in stereo pair.

Select a parameter you want to adjust by moving the cursor through the window, or by using the PARAMETER SELECT button on the Top Panel.

Adjust the parameter by rotating the JogDial, or use the D1 knob for threshold, attack, and delay, and the D2 knob for ratio, release, and gain. The parameter title will then be indicated in reverse video. Use the JogDial and knobs to select the parameter independently. The adjusted parameter is graphically displayed on the screen.

When a signal is input, gain reduction for the input signal is indicated in the [GR] meter, and the reference point of the [GR] meter is highlighted. The reference is connected to the [GAIN] parameter. After adjusting the compressor, adjust the level so that the peak of the reduction is close to 0 dB on the [GR] meter in the [DYNAMICS] window.
Gate Operations

⚠ Set the status the same way you selected [DYNMICS] mode in the [DYNAMICS] window.

⚠ Cursor to [ATK], [THL] or [RELEASE] in the [GATE] area, and adjust the parameter using the JogDial. The adjusted parameter is graphically displayed on the screen. When a signal is input, gain reduction for the input signal is indicated in the [GR] meter.

Expander Operations

⚠ Cursor to the [EXPANDER] button in the [FUNCTION] area, and press the ENTER button to engage the expander.

⚠ When the [EXPANDER] button is pressed, the [DYNMICS] is disabled.

⚠ Select a parameter you want to adjust by operating the cursor on the screen or the PARAMETER SELECT button on the Top Panel.

⚠ Adjust the parameter by rotating the JogDial, or use the [THR] knob for threshold, attack, and delay, and the [RAT] knob for ratio, release, and range. The parameter title will be indicated in reverse video.

⚠ The adjusted parameter is graphically displayed on the screen. When a signal is input, gain reduction for the input signal is indicated in the [GR] meter, and the reference point of the [GR] meter is highlighted.

Delay Operations

⚠ Press the DELAY ON LED button (green) on the Top Panel or the DELAY ON button in the [DYNAMICS] window to activate the delay function.

⚠ Move the cursor on the screen, or press the PARAMETER SELECT button to select the [DLY] parameter.

⚠ Adjust the parameter by using the JogDial or the [DLY] knob. The parameter title will then be indicated in reverse video.
9-4 DYNAMICS Window, Multi-Channel View

This window shows the selected channel on the left side of the LCD and a reference channel on the right. Only the currently selected channel can be modified. However, you can copy entire settings to the reference channel.

This window is the same as the [DYNAMICS] window, except for the following items:

**COMP Button**

Pressing the COMP button updates this area to give you controls for compression settings only.

**GATE Button**

Pressing the GATE button updates this area to give you controls for gate settings only.

Settings in both windows update synchronously. Repeated pressings of the ENTER button on either one of these buttons will toggle the settings.

Several functions have abbreviated names in the multi-channel view to save window space:

- [COMP&GATE] · · · [CMP+GAT]
- [EXPANDER] · · · [EXPANDR]
- [MSEC] · · · [MS]
**Reference Field**

The **Reference** (reference) field displays the name of the channel being auditioned (**INPUTS 1-32, AUX RTN 1-6, BUSES 1-8, and MASTER**). When this field is active, use the JogDial to scroll through all of the input channels to select your dynamics settings.
9-5 DYNAMICS Library Window

Press the \[STORE / RECALL\] button in the LIBRARY area on the Top Panel to display the \[DYN LIB\] window. You may have to toggle through the other libraries to get to the correct window.

This window shows the \[DYN LIB\] (dynamics library) functions and the status of a selected channel which is still editable. You can also store and recall dynamics settings from the dynamics library.

This window has all of the controls that the \[DYNAMICS\] window has, with a few additions. They are:

**TITLE** Button

Use this button to store library settings without the Name Editor. When **TITLE** is on, a setting is stored with the name \[NoTitle##A\]. This setting can later be recalled, and renamed by using the **NAME** button.

**RECALL** Button

Select this button, and press the ENTER button to recall one of the fifty library memories containing dynamics settings. The MEMORY numeric readout will flash for two seconds, indicating that a new library memory is being loaded.
**Button**

Activating this button stores the current dynamics settings into one of the fifty library memories. The [NAME EDITOR] window pops up, prompting you to name the memory. After naming it, cursor to the button in the [NAME EDITOR] window, and press the ENTER button. The MEMORY numeric readout will flash for two seconds, indicating that you have written to the library memory. The library comes with all memories named INITIAL*.

**CLEAR**

Activating this button clears the current library memory and resets it to the factory settings. When accessing this button, you should be thinking “back-up.”

**SAVE**

Activating this button opens the [NAME EDITOR] window, prompting you to name the memory. After naming it, cursor to the button in the [NAME EDITOR] window, and press the ENTER button. The MEMORY numeric readout will flash for two seconds, indicating that you have written to the library memory.

**PROTECT**

Cursor to this button, and press the ENTER button to protect the current dynamics library memory from being cleared or overwritten.

Library memory selections can be made, when the cursor is within the [Library Data] area, by rotating the JogDial. Rotating it clockwise moves the cursor through the library numbers from low to high (1 through 50), while rotating the JogDial counter-clockwise moves the cursor through the library from high to low (50 through 1).
Chapter 10
AUX

10-1 Overview

The AUX section and [FADER CONTROL] windows give you access to the auxiliary functions on the DA7. Many adjustments can also be made from the [CHANNEL] window, where auxes can be assigned on or off, and be designated as pre-fader or as post-fader. The level of the selected aux can also be adjusted in the [CHANNEL] window.
When the **FADER CONTROL** LED button on the Top Panel is pressed (red), the selected aux channel [FADER CONTROL] windows will be displayed. These windows show the status and level of the selected aux send assignments to input channels 1 through 32. The faders will display the appropriate levels for the selected aux send for each channel.

![FADER CONTROL Window](image)

There are LED field status indicators for **AUX 1-6** on each **Channel Strip**. When on (green), the channel is routed to the aux send indicated, and there can be multiple assignments for the channel, displayed on the LED field above the faders.

![Channel Strip LED Field](image)

The **AUTOMATION/AUX** button on the Top Panel controls the LED field status indicators of the **Channel Strips**. When **AUTOMATION** is selected for this button (red), the LED field indicators reflect the automation parameter assignments for the channels. When **AUX** is selected for this button (green), the LED field indicators reflect the auxillary (AUX) routing assingments for the channels. Pressing the **AUTOMATION/AUX** button toggles the status indicators.
10-2 AUX Section Controls

The AUX section contains a LEVEL ON/OFF knob and LED buttons for AUXs 1-6, PRE (pre-fader), and FADER CONTROL.

[LEVEL] ON/OFF Knob

To assign an aux to a selected channel, press one of the AUX 1-6 LED buttons to select it (green), and then press the LEVEL ON/OFF knob to activate the aux assignment. OFF or ON status is shown in the [CHANNEL] window and in the respective [FADER CONTROL>AUX] window. The AUX LED field of the respective Channel Strip also reflects the aux assignment.

Turn the LEVEL ON/OFF knob to adjust the aux send level for the selected channel to the specified aux. The level is expressed in a numeric value in the associated window data field.

PRE LED Button

Press the PRE (pre-fader) LED button (red) to enable the pre-fader condition for the selected channel. This operation uses the signal before the fader and sends it to the selected aux output. When the PRE LED button is off, the DA7 defaults to POST (post fader) condition for the selected channel and uses the signal after the fader as the send to the selected aux output.
**FADER CONTROL LED Button**

When active (red), a window from the [FADER CONTROL] window group is displayed in the LCD. When the FADER CONTROL LED button is activated, the [AUX] window last used is displayed on the LCD.

When the FADER CONTROL LED button is off, parameter adjustments can be seen in the [CHANNEL] window.

When a [FADER CONTROL] window is displayed, press an AUX 1-6 LED button to display the respective [AUX] window in the LCD. Faders will react to display the selected aux send for each channel.

Level adjustments for the selected channel can be made with the Channel Fader when the FADER CONTROL LED button is on (red), or with the LEVEL ON/OFF knob in the AUX section.

**AUX 1-6 LED Buttons**

Press one of the AUX 1-6 LED buttons to select it (green). Once selected, assign the AUX to the current channel by pressing the LEVEL ON/OFF knob.

**AUX/BUS Fader Layer**

The AUX/BUS Fader Layer gives you fader control for aux sends 1 through 6 and aux returns 1 through 6. The AUX/BUS Channel Strip designations are labeled at the bottom of the strip. The first six faders are the output controls for the aux send mix from the DA7. You can adjust the following parameters for aux sends:

- [STEREO] [ON], [OFF], and [MONO].
- [MUTE GRP] [1], [2], [3], and [4]

Faders 7 through 12 are for aux returns 1 through 6. The parameters you can adjust for aux returns are the same as in aux sends, with the addition of:

- [GAIN]
- [FADR GRP] (fader group)
- [EQUALIZER]
- [ASSIGN]
10-3 FADER CONTROL Window

This window displays the aux send status of all the input channels. You can set pre-fader or post-fader selections and the aux send on or off status of each channel from this window. This window is displayed when the [FADER CONTROL] LED button is activated (red). The [FADER CONTROL>AUX] window displayed will change when you press any of the AUX 1-6 LED buttons, and the faders will follow.

[FADER CONTROL] Window, Elements

Post and Pre Buttons
The post-fader and pre-fader selection buttons toggle for the selected aux send. Cursor to the button in the window, and press the ENTER button to toggle the selections. They can also be seen (and activated) from the [CHANNEL] window.

On and Off Buttons
When the channel is selected, cursor to the current button in the window, and press the ENTER button. You can also press the LEVEL ON/OFF knob to toggle the aux send status.
[Level Meter] Display

Aux send level meters on the right of the individual channel areas display the aux send level for the selected channel. All 1 through 32 send levels can be monitored from the [FADER CONTROL] windows. Moving the fader for the selected channel will control the send output level of the respective aux send. Rotating the LEVEL ON/OFF knob will also adjust the selected level. If the [UTILITY>CONFIG] window [AUTO DISP CHANGE] item is set to [ON], the LCD display will change to the [CHANNEL] window when the LEVEL ON/OFF knob is rotated.
Press the MIDI button in the SETUP section of the Top Panel. A window from the [MIDI] window group will appear in the LCD. Each time you press the MIDI button, the [SETUP], [PRG ASGN], [CTRL ASGN], [BULK], and [MIDI RMT] windows are shown in sequence in the LCD. Appendix G details the technical information on MIDI communications.

11-1 MIDI, SETUP Window

The [MIDI>SETUP] window shows the configuration settings for MIDI operations.

The DA7 has ports for MIDI IN and MIDI OUT and serial ports for connection to a personal computer. Use the TO PC serial port or RS-422/485 connector to connect to a Mac or a Windows computer or RS422/485 device.
Receive Indicator

The window has receive indicators in the [taskbar]. A [MIDI] indicator blinks when data is received at the MIDI IN connection, an [RS] indicator blinks when data is received at the RS 422/485 terminal, and a [TO PC] indicator blinks when data is received at the TO PC terminal.

[SERIAL I/O SETUP] Area

<table>
<thead>
<tr>
<th>PORT SELECT</th>
<th>BAUD RATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>TO PC</td>
<td>31.25k</td>
</tr>
</tbody>
</table>

[PORT SELECT] Area

The DA7 has a TO PC connector port and an RS422/485 serial port on the Rear Panel. These ports are used for attaching a Mac O/S or Windows O/S computer platform to the DA7. Only one port can be used at a time. You must select either TO PC or RS in the [PORT SELECT] area of the window. The default setting is TO PC. The [MIDI SETUP] area reflects back to this selection (See [MIDI SETUP] on page 11-3). When using one of the serial ports you need to assign the TO PC to at least one column of the port settings in the [MIDI SETUP] area.

TO PC Button

This button selects TO PC on the Rear Panel for the serial I/O port. Cursor to the button, and press the ENTER button. The Mac HSKO 1Mhz clock is active for this selection.

RS Button

This button selects RS485 for the serial I/O port. Cursor to the button, and press ENTER.

[BAUD RATE] Area

This area offers baud rates for the serial I/O port. To set a baud rate, cursor to the [BAUD RATE] area, select either [31.25k], [9.6k], [19.2k], [38.4k], [62.5k] or [125k] using the JogDial, and press the ENTER button. The initial setting is [31.25k]. When [31.25k], [62.5k] or [125k] is selected, a clock is transmitted. Transmission of the 2Mhz clock turns the serial port off or on. For RS485, [31.25k] cannot be set; the initial setting for RS485 is [38.4k].
[MIDI SETUP] Area

Here, the direction of messages (serial data) coming from and going to MIDI IN, MIDI OUT, and TO PC is set. Select one of these four combinations to set the direction of data:

1. Status 1: When Gen. Rx is set to MIDI and Gen. Tx is set to MIDI, the DA7 cannot communicate with the personal computer. Data can be transmitted and received between the DA7 and a MIDI device. A message is input from the MIDI device to the MIDI IN terminal, while the DA7 outputs a message to the MIDI device from its MIDI OUT terminal.

2. Status 2: When Gen. Rx is set to MIDI and Gen. Tx is set to TO PC, the DA7 can receive messages from the MIDI device and transmit messages to the personal computer. The personal computer and the MIDI device can communicate with each other via the DA7.

3. Status 3: When Gen. Rx is set to TO PC and Gen. Tx is set to MIDI, the DA7 can receive messages from the personal computer and transmit messages to MIDI OUT.

4. Status 4: When Gen. Rx is set to TO PC and Gen. Tx is set to TO PC, the DA7 can communicate only with the personal computer.

**Gen. Rx Button**

Set the MIDI input port by pressing the ENTER button. Rotate the JogDial to set **Ch**. Cursor to **Port** on the Gen. Rx line, and press the ENTER button to display either **MIDI** or **ToPC**.

Cursor to **Ch** on the Gen. Rx line, and rotate the JogDial to display one of the channels, 1 through 16 and omni (OM) for the DA7. The DA7 is controlled by a message from the selected port, either [MIDI] or [ToPC].
Set the MIDI output port by pressing the ENTER button. Use the same [MIDI] CH with the Gen Rx, Cursor to PORT on the Gen Tx line, and perform the same step described in Gen Rx setting.

Cursor to CH on the Gen Tx line, and perform the same step described in Gen Rx setting. The DA7 sends a message to the selected port, either [MIDI] or [toPC].

To use the omni [OM] channel, set the [RAMSA NET] ON in the [UTILITY>CONFIG] window, and select a serial port in the [MIDI SETUP] window.

Activate the program change command by pressing the ENTER button to set pass-through of receiving, transmitting, and inputting signals on or off.

Activate the control change command by pressing the ENTER button to set pass-through of receiving, transmitting, and inputting signals on or off.

Activate this button by pressing the ENTER button to establish a non-registered parameter number (NRPN) type command.

This button sets the system exclusive command. Press the ENTER button to set pass-through of receiving, transmitting, and inputting signals on or off.

This button sets the commands, other than the program change, control change, parameter change, MTC, or real-time message commands. Press the ENTER button to set a pass-through on or off.

This button sets the MTC (MIDI timecode) input port. Activate a port to receive the MTC message that is used to synchronize the DA7 with other devices. Cursor to the [PORT] column, and press the ENTER button.
**RT MSG** Button
Set the real-time message input and output port by pressing the ENTER button. Activate a port to send and receive MIDI clock and other real-time messages.

Cursor to the **RT MSG** line, and press the ENTER button to display either MIDI or TO PC.

**MMC** Button
This button sets the MMC (MIDI machine control) output destination, either MIDI or TO PC. Cursor to the [PORT] column, and press the ENTER button to toggle the selections. Cursor to the [CH] column, and rotate the JogDial to select a MIDI channel to match the external MIDI device.

**Remote1** Button
Set the transmitting port of the MIDI Remote 1 by pressing the ENTER button. Rotate the JogDial to select the same MIDI channel that matches the external MIDI device.

**Remote2** Button
Set the transmitting port of the MIDI Remote 2 by pressing the ENTER button. Rotate the JogDial to select the same MIDI channel that matches the external MIDI device.

**RX** Button
Switch the settings of the DA7 on or off when receiving a command.

**TX** Button
Switch command transmission on or off when operating the DA7.

**THRU** Button
Switch pass-through of a MIDI input signal to an output on or off.
11-2 MIDI, PRG ASGN (Program Assign) Window

Assign scene memory numbers to the change table to be used by the DA7 in the [PROGRAM CHANGE TABLE] area. This is useful when you are exchanging existing scene memories for new ones.

To execute PRG CHG, as in calling up a mixed scene, check the PRG CHG settings on the [MIDI>SETUP] window again.

[PROGRAM CHANGE TABLE] Area

Select a program change table. Rotate the JogDial to select a program change number from 1 through 128. The initial setting is 1 through 50. [NO ASSIGN] is set to the scene memories of 51 through 128.
[SCENE LIST TABLE] Area

Rotate the JogDial to select a scene memory number.

[ASSIGN] Indicator

An arrow indicates a status. The scene memory is registered to the selected table by pressing the ENTER button. At that time, the arrow symbol is highlighted and shows the selection.

CLEAR ALL Button

Initialize the table. Cursor to the CLEAR ALL button, and press the ENTER button. This function returns all the data in the change table to the state of default.

Setting of Registration

Press the MIDI button in the SETUP section of the Top Panel to display the [MIDI>PRG ASGN] window on the LCD.

Cursor to the [PROGRAM CHANGE TABLE] area. Rotate the JogDial to move the cursor to the destination line.

Press the right ARROW button, to cursor to the [SCENE LIST] area.

Rotate the JogDial to cursor to the source line.

Press the ENTER button. The [ASSIGN] indicator located between the two tables is shown inversely for a moment. The selected line in the [PROGRAM CHANGE TABLE] changes, for example, from 51=NO ASSIGN to 51=0.8:SCENE NAME.

Refer to Appendix G, MIDI Implementation Chart for the control change table and the control change parameter list.
11-3 MIDI, CTRL ASGN (Control Assignment) Window

Change the DA7's input and output channel assignments, fader position, etc. with this window.

The [CONTROL CHANGE TABLE] consists of three columns: for item numbers, for parameters, and for channels. The control change table has item numbers 0 through 119, of which 6, 38, and 96 through 101 cannot be used. The data of the control change table can be stored in an external device as backup data by the MIDI bulk dump function.

To execute [CTRL CHS] in calling up a mixed scene, for example, check the [CTRL CHS] settings again on the [MIDI>SETUP] window.

[CONTROL CHANGE TABLE] Area

Select a control change table (in the current indication area). Rotate the JogDial to select a control change number from 0 through 5, 7 through 37, 39 through 95, or 102 through 119.
**PARAMETER** Button
Select a parameter to be registered in the [CONTROL CHANGE TABLE] by rotating the JogDial.

**CHANNEL** Button
Select a channel to be registered in the [CONTROL CHANGE TABLE] by rotating the JogDial.

[Assign [ ]] Element
This area indicates status. The parameter and channel are registered to the selected table by pressing the ENTER button. At that time, the [Assign [ ]] is highlighted and shows the selection. If a combination of the selected parameter and channel is not acceptable, the arrow is distorted, showing that the parameter and channel cannot be registered.

**CLEAR ALL** Button
Initialize the table. Cursor to the CLEAR ALL button, and press the ENTER button.

**Setting of Registration**

1. Press the MIDI button on the Top Panel to display the [MIDI>CTRL ASGN] window on the LCD.
2. Cursor to the [CONTROL CHANGE TABLE] area. Turn the JogDial to move the cursor to the line to be rewritten.
3. Press the up ARROW button to move the cursor to [PARAMETER] in the top part of the window. Rotate the JogDial to display the desired parameter.
4. Press the right ARROW button to move the cursor to the field below [CHANNEL] near the top of the window, and rotate the JogDial to display the desired channel.
5. Press the ENTER button. The [Assign [ ]] element is shown inversely for a moment. The selected item is written on the specified line.
11-4 MIDI, BULK (Bulk Out) Window

Data can be sent and received between two DA7s, or between the DA7 and a MIDI datafile, or a personal computer. [MIDI>BULK] may be used to save and read DA7 settings and library data from/to other devices as backup data, or to exchange data between two DA7s to create common settings and library data. It takes about 7 minutes to transmit all 720 kB of data through the TO PC port at a rate of 125 kbps.

[BULK I/O DATA SELECT] Area

- **CURRENT** Button
  Select setup data of the current device by pressing the ENTER button.

- **SCENE** Button
  Select a scene memory by pressing the ENTER button.

  [Scene memory number 01-SCENE NAME ]
  Select a scene memory number by rotating the JogDial. Choose ALL or 1-50. The initial setting is ALL.

- **CH LIB** Button
  Select a channel library by pressing the ENTER button.

  [Channel library number/title 21-CHLIB NAME ]
  Select a channel library number by rotating the JogDial. Choose ALL or 1-50. The initial setting is ALL.
**EQ LIB** Button
Select an EQ library by pressing the ENTER button.

**[EQ library number/title EQ-LIB NAME]**
Select an EQ library number by rotating the JogDial. Choose ALL or 1-50. The initial setting is ALL.

**DYN LIB** Button
Select a dynamics library by pressing the ENTER button.

**[Dynamics library number/title DV-LIB NAME]**
Select a dynamics library number by rotating the JogDial. Choose ALL or 1-50. The initial setting is ALL.

**AUTOMATION** Button
Select automation event data by pressing the ENTER button.

**[Automation event number/title AUTOMATION]**
Select an automation event number by rotating the JogDial. Choose ALL, 00 (name of current mix, factory preset new mix), or 1-4. The initial setting is ALL.

**MIDI REMOTE** Button
Select MIDI remote setup data by pressing the ENTER button.

**[Remote number/title MIDI REM]**
Select a MIDI remote number by rotating the JogDial. Choose ALL or 1-5. The initial setting is ALL.

**PRG CHG TBL** Button
Select a program change table by pressing the ENTER button.

**CTRL CHG TBL** Button
Select a control change table by pressing the ENTER button.

**SELECT ALL** Button
Select all data by pressing the ENTER button.
[Rx]

Switch bulk command reception **ON** or **OFF** by pressing the **ENTER** button. When this is OFF, the **DA7** ignores any of commands or data sent by external devices.

**REQUEST** Button

Begin bulk data reception from another **DA7** by pressing the **ENTER** button. If a MIDI device other than **DA7** is connected, you need to have the device start sending data.

**BULK OUT** Button

Begin bulk data transmission to an outside device by pressing the **ENTER** button.

Data being received or sent is shown every 10% during **REQUEST** or **BULK OUT** communication. To cancel communication cursor to the **Cancel** button and press the **ENTER** button.

**INTERVAL** Area

Set a data transmission interval to match the processing speed of the receiving device. Cursor to the soft knob, and rotate the **JogDial** to set the internal time within 0-300 ms (by 50 ms steps).

If the device has a small capacity receive memory buffer, set a short interval (for example, 100 ms). Intermittent transmission prevents the receive memory buffer from overflowing. Intervals can be set at 50-ms increments. A 0-ms interval is acceptable when two **DA7**s are connected together.

**Cancel** Button

To stop bulk data transmission or reception cursor to the **Cancel** button and press the **ENTER** button.

**Data selection**

Cursor to the button(s) to select the desired bulk data in the **BULK I/O DATA SELECT** area, and press the **ENTER** button. Multiple buttons can be selected. Selected button(s) are highlighted.

Pressing the **SELECT ALL** button selects all the buttons that appear in the area.
Setting of Bulk Command Reception

Switch the setting ON or OFF to receive a bulk data or bulk out transmission request from outside by pressing the ENTER button.

You can choose whether or not to ignore a request made by other devices. Cursor to [Rx], and press the ENTER button. Each time the button is pressed, ON and OFF toggles.

Data Transmission Request and Transmission

Press the REQUEST button to request transmission of selected data from another DA7, and load the data. To cancel the operation, cursor to the Cancel button and press the ENTER button. When the operation is completed, the indication of “during execution” disappears and the REQUEST button appears as inverse video.

Press the BULK OUT button to transmit selected data to a device.

To cancel the transmission, cursor to the Cancel button and press the ENTER button. When the transmission is completed, the indication of "during execution" disappears and the BULK OUT button appears as inverse video.

Receiving/Sending Data

Display the [MIDI>BULK] window.

Press the MIDI button to display the [BULK] window.

Cursor to the desired data type using the ARROW buttons, and press the ENTER button. The selected button is shown as inverse video.

Press the ARROW button to move the cursor to the right. Rotate the JogDial to display the desired data name, and press the ENTER button.

To receive or send data collectively, cursor to the SELECT ALL button, and press the ENTER button. This setting permits simultaneous sending or receiving of the nine kinds of data shown on the window.

To receive data from another DA7, cursor to the REQUEST button. To send data from the DA7, cursor to the BULK OUT button.

Press the ENTER button to receive or send data.

If the REQUEST button is pressed, the DA7 sends a request message for MIDI bulk dump to the device, which sends the requested data to the DA7. Then operate the device to send data, if any device other than another DA7 is connected.

Or,

If the BULK OUT button is pressed, the DA7 sends the data specified by the above operation to the device.
11-5 MIDI, REMOTE Windows

REMOTE Windows

These windows display and set MIDI remote operations for the external MIDI devices, and edit MIDI remote libraries. Set registration of the MIDI remote to the fader layers on the User Customize Window. Execute the MIDI remote by using the MIDI control change command.

For more information, see Section 16-4, Utility, User Custom (USER CSTM) Window.

[REMOTE] Window

[FADER SELECT] Area

Choose a page for remote by selecting either the 1-8 or 9-16 button, and pressing the ENTER button.
This button sets the edit mode.

This area displays a remote library title.

This button calls up the MIDI Remote Library window.

Use the [SOLO] switch to assign a control change message that is predetermined in an external MIDI device. Cursor to the operator button, and press the ENTER button to open the [REMOTE CONTROL EDIT] window for the edit of the message. You can enter the name for each operator in the [TITLE] field right under the operator button.

Use the [ON] switch to assign a control change message. Functions and operations are the same as the [SOLO] switch.

Use the [PAN] knob to assign a control change message. Functions and operations are the same as the [SOLO] switch.
[FADER]

Use the [FADER] to assign a control change message. Functions and operations are the same as the [SOLO] switch.

The following operators reflect the MIDI messages sent from the external devices, if the [MIDI REMOTE] is active and the channels are assigned in the [UTILITY>USER CSTM] window (See page 16-12) and the [CTRL CH] is selected in the [MIDI REMOTE] [Edit] window (See below).

- SOLO LED keys, ON LED keys and FADERs on the Top Panel
- SOLO, ON, PAN and FADER Areas on the LCD screen

[Edit] Window

[REMOTE COMMAND EDIT] Area

ON Button

Cursor to this button, and press the ENTER button to fix data and end the edit. The [REMOTE COMMAND EDIT] window will disappear and the [MIDI>RMT] window will return to the screen.

Cancel Button

Cursor to this button, and press the ENTER button to cancel the edited data. The screen will return to the [MIDI>RMT] window.
[TABLE SETUP] Area

Selecting a Table

After turning on the ENTER button in the [MIDI>RMT] window, cursor to a channel. Select the [SOLO] or [ON] button, a [PAN] soft knob, or a [FADER]. Press the ENTER button, and the pop up window [REMOTE COMMAND EDIT] [TABLE SETUP] will appear.

With the cursor highlighting [SW1], rotating the JogDial will scroll through the selections [SW1], [SW2], [SW3], [KNOB1], [KNOB2], [KNOB3], [FAADER1], [FAADER2], and [FAADER3]. The Step number of the table, which is located in the field immediately to the right, is displayed automatically.

Edit of Data Table

⚠️ Cursor to the [EDIT] button, and press the ENTER button. The [STEP SELECT] portion will appear.

⚠️ Cursor to the step number portion, and select the number with the JogDial. When the data table is for a Switch, the step number is fixed to 2. When the data table is Pan Knob or Fader, select a step number from 2, 32, 64, or 128. Even division is set for divided data tables. (With the number of 2, the center position of the Pan Knob or Fader divides the data area into two.) The initial value is 32 for the Knob and 128 for the Fader.

⚠️ Cursor to the data table portion, and select a step to be edited with the JogDial.

⚠️ Cursor to the Letter Box on the right side. Select data with the JogDial, and press the ENTER button. Switches have two steps, On and Off, and are indicated by 00H for On and 7FH for Off. The Pan knob has 32 steps from 00H to 1FH, and Fader has 128 steps from 00H to 7FH.

OK Button

Cursor to this button, and press the ENTER button to fix data and end the edit. The [STEP SELECT] portion will disappear.

Cancel Button

Cursor to this button, and press the ENTER button to cancel the edited data and end the edit. The [STEP SELECT] portion will disappear.
Operator Title Input

Cursor to the EDIT button, and press the ENTER button to set the edit mode. (Remote operation is not allowed in the edit mode.) Cursor to the [TITLE] of the relevant operator, and press the ENTER button. The Name Edit Window appears. Input the title.

See Section 5-3 Library Windows, for more information on the [Name Edit Window] for title input operations.

[COMMAND MODE] Area

From this area you can switch the modes between control change and free definition. Press the CTRL CH button to select the control change mode. Press the FREE DEF button to select the user definition mode.

CTRL CH Button

Indicate and set a control change number.

FREE DEF Button

Edit transmission data for the buttons, switches, knobs, and faders in the user definition mode.

[SW STS] Area

Switch the status of the buttons which are applied to the selected user definition mode.

When the selection is [SOLO] or [ON], two messages for each status, on and off, must be edited. When this is done, select ON or OFF in the [SW STS] area.

Data Row Input Part

Here you can input MIDI exclusive messages to transmit. This row appears if [FREE DEF] is selected.
Selecting [COMMAND MODE]

Cursor to the [COMMAND MODE] area. Select either [FREE DEF] or [CONTROL CHANGE]. Select the control change number with the JogDial. In FREE DEF the message can be edited.

Edit the Control Change

Cursor to the CTRL CHG button, and press the ENTER button. The [CTRL CHG NO] area appears.

Cursor to the [CTRL CHG NO] area, and rotate the JogDial to select the control change number from 000 – 119.

Edit of User Definition Data

The [SW STS] area works when using the JogDial. Switching the button ON or OFF sets transmission data rows separately with the objective operator ON and OFF.

For data row input parts, cursor to the data by one byte and select a value using the JogDial. At that time, the cursor can move to both the sector where the data exists and the next sector of the last data.

Selectable data is 00H – F8H, FAH – FFH, K, F, or E.

The K transmits the value the Knob indicates. The F transmits the value the Fader indicates, while E means End of message.

When you have finished editing the MIDI REMOTE information, cursor to the Midi button, and press the ENTER button. If you decide not to keep your changes, cursor to the OFF button, and press the ENTER button.
[Library Selection] **Window**

Set Registration of the MIDI remote to the panel in the [MIDI>SETUP] window.

Select a channel set for the MIDI remote, and press the SELECT LED button. The [MIDI>REMOTE] window will appear. [SOLO], [ON], and [FADER] directly operate each channel. For [PAN], select each channel by pressing the SELECT LED button, and rotate the [PAN] knob.

The [MIDI>REMOTE] window is displayed every eight channels. If you operate a channel which is not shown while the [MIDI>REMOTE] window is displayed, another window for the channel operations appears. The [FADER SELECT] area on the [MIDI>REMOTE] window can switch the window.

**LIBRARY** **Button**
Select a MIDI remote library.

**NAME** **Button**
Display the [NAME EDITOR] window.

**STORE** **Button**
Store a library.

**RECALL** **Button**
Call a library.

**PROTECT** **Button**
Indicate and set the protection status of a selected library.
Calling of [MIDI>RMT] Library

- Press the Library button on the window, and the library window will appear.
- Cursor to the scroll part, and rotate the JogDial to select a library.
- Cursor to the Recall button, and press the ENTER button.
- Recalling is performed. The library window closes, and the title of the called library appears on the Title Disp part on the [MIDI>REMOTE] window. Select a library from 1 through 5.

Registration of [MIDI>REMOTE] Library

- Cursor to the scroll selection field, and select a library for registration by using the JogDial.
- Cursor to the Store button, and press the ENTER button.
- The name edit window appears. Input the title of the selected library.
- Registration is performed. The title of the stored library appears in the Title Disp field. The library window closes, and the [MIDI>RMT] window appears.

See Section 5-2 Library Windows, for more information on the Name Edit Window for title input operations.

Edit of [MIDI>RMT] Library

- Cursor to the Edit button, and press the ENTER button. (Remote operations are not allowed in the edit mode.)
- Cursor to an operator you want to set, and press the ENTER button. The Edit Window appears.
- Select the [COMMAND MODE]. Then select either of the [CTRL CHR] and Free Def buttons in the [COMMAND MODE] field. (The initial setting is [CTRL CHR].) The edit area in the unselected mode is indicated in dither, and you can’t operate the area.
Chapter 12
D-I/O

Pressing the **D-I/O** (Digital Input/Output) button on the Top Panel displays the most recently accessed [D-I/O] window group selection. These windows give you control over the digital input and output features of the **DA7**. Pressing the **D-I/O** button cycles the windows in this group: [INPUT SET], [TO SLOT], and [DITHER].
This is where you set the sample rate frequency that the DA7 will operate at, as well as select the wordclock master source. You can also route the various digital input sources to the faders, and get a visual confirmation of which option cards are in which slots.

When a source field or button is “crosshatched” and/or cannot be selected, that means the source or slot is either improperly connected, or the attached external device is not presently turned on.

The settings selected in the [SOURCE SELECT] area adjust the sampling rate frequency, wordclock reference, and reference source for the mixer. Cursor to the selection button, and press the ENTER button to activate your selection.
[Fs] Field
The [Fs] (frequency sample) data field shows the current frequency selected, 44.1k or 48k or external wordclock.

**INT 44.1K** Button
When you select the internal sample frequency of 44.1k, this button will appear as inverse video in the window. The DA7 becomes the master wordclock source, and generates the sample frequency reference of 44.1kHz.

**INT 48K** Button
When you select the sample frequency of internal 48k, this button will appear as inverse video in the window. The DA7 becomes the master wordclock source, and generates the sample frequency reference of 48kHz.

Wordclock operations
The wordclock feature of the DA7 is an internal generator that provides a reference for the DA7 and a reference for the external devices connected to the DA7. You can set the internal wordclock to synchronize to either 44.1 or 48K, selectable from the [D-I/O>INPUT SET] window.

The DA7 has wordclock IN and OUT ports on the Rear Panel. Please note that wordclock is not Timecode. It is a timing reference for the digital audio signal. When the **INT IN** button is selected in the [D-I/O>INPUT SET] window, the DA7 works as a slave unit to an external clock device.

The wordclock IN port on the DA7 has a 75Ω termination on/off switch located on the Rear Panel next to the wordclock IN BNC connector. With this switch you can create a termination point for the wordclock input signal. Refer to the graphic diagram for the switch routing. Remember, the last device in the wordclock chain must be terminated.
When the DA7 is the last device in a wordclock chain, the termination switch must be on. In the [D-I/O>INPUT SET] window, cursor to the WORDCLOCK IN, and press the ENTER button.

When the DA7 is connected between devices, the wordclock termination switch must be off. A wordclock signal will pass through the mixer, relaying the signal to the next device in the chain. The WORDCLOCK IN button must be selected when the DA7 is relaying the wordclock reference.

The input and output wordclock signal specifications are provided in the Appendix F, Technical Specifications.

**WORDCLOCK IN** Button

Select this button when an external clock reference will be used to slave the DA7. Cursor to the button, and press the ENTER button. The button will appear as inverse video when engaged.
Video Sync Operations

When the DA7 is using the optional SMPTE/V SYNC card, it can receive a video input signal from an external device and use it to drive the internal wordclock. The video sync input port has a built-in 75Ω resistor for termination.

Button

A video sync signal into the SMPTE option card can be used as an incoming clock source to the DA7. The DA7 can then be slaved to a video controller for video production applications. When the button is selected, you can choose:

- [Fs] (sampling frequency) of 44.1KHz or 48KHz
- [REF] (reference) - 50Hz, 60Hz, or 59.94Hz
- [+-0.1%] - 0/UP/DOWN

When producing material for use with a video production, reference the DA7 to an incoming video signal. Do this during all stages of the production. You will need to know the video reference characteristics for the production, so that you can reference the DA7 correctly.

The V SYNC reference signal input specifications are:

- signal format: composite (NTSC or PAL)
- input level: 1Vp-p ±8mv (no load resistor)
- source impedance: 75Ω
As you are probably aware, video frame rates do not match up exactly with digital audio sample rates. In a video production environment, if these video frame rates and digital audio sample rates are not able to be locked together, this will introduce many problems when it comes time to edit the audio and video together.

To solve this problem, you may find that you need to "pull up" or "pull down" the wordclock of the DA7 to match the frame rate of a video signal. This subject is too involved to go into in great detail here. The DA7 has the ability to slave to external wordclock, as well as generate fixed pull ups or pull downs, so you will find that you will be able to resolve most situations that are common to the film, television and post-production industry.

In most situations, you will "pull down" the sample rate frequency from 44.1kHz to 44.056 kHz or 48 kHz to 47.952. However, in some situations, you may need to "pull up" the sample rate. This would result in a sample frequency rate change from 44.1 kHz to 44.144kHz or from 48kHz to 48.048kHz. These two solutions are the most common for film, television and post-production.

If you are not familiar with the terms and situations discussed in the previous paragraphs, it might be wise to do some further research. An excellent reference guide for this and other timecode issues is available from SPARS (the Society of Professional Audio Recording Studios). You can contact them at their web site at www.spars.com/spars.

The ability to adjust the wordclock of the DA7 audio is determined by the value entered in the [±0.1%] field of the [V SYNC] area of the [D-I/O>INPUT SET] window.

<table>
<thead>
<tr>
<th>Fs</th>
<th>UP/DOWN</th>
<th>Adjustment</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>44.1kHz</td>
<td>UP</td>
<td>+0.1%</td>
<td>44.144kHz</td>
</tr>
<tr>
<td>44.1kHz</td>
<td>DOWN</td>
<td>-0.1%</td>
<td>44.056kHz</td>
</tr>
<tr>
<td>48kHz</td>
<td>UP</td>
<td>+0.1%</td>
<td>48.084kHz</td>
</tr>
<tr>
<td>48kHz</td>
<td>DOWN</td>
<td>-0.1%</td>
<td>47.952kHz</td>
</tr>
</tbody>
</table>
[2 TR A] Areas

A status field shows whether or not there is a source connected to the 2 TR A input (UNLOCK when there isn’t; LOCK when there is). When in the LOCK mode, the 2TR A input signal can be selected as the master wordclock. Cursor to the 2TR IN A button, and press the ENTER button.

[SLOT] Area

[SLOT1] Fields
The left status field shows which option card is presently in the slot. The UNLOCK status field will change to LOCK when the input signal comes into the slot. When the status field shows LOCK, the signal into the slot can be selected as the master wordclock. Cursor to the desired slot button, and press the ENTER button.

[SLOT2] Fields
These fields operate the same as the [SLOT1] fields.

[SLOT3] Fields
These fields operate the same as the [SLOT1] fields.
[DIGITAL INPUT SELECT] Area

This area depicts the routing system for digital sources in the DA7. There are three boxes inside the [DIGITAL INPUT SELECT] area that are used for routing the audio signal.

[ANALOG IN 9-16]
This permits assignment of analog inputs 9 through 16 to the inputs 9 through 14 and 15/16. This is the default setting. To select these inputs to be digital, insert a card in Slot 3, and see instructions under [SLOT3] in this section.

For ANALOG IN 9-16, cursor to the square box to the right of the ANALOG IN 9-16 and 2TR IN A areas, and press the ENTER button to toggle the switch into either the up or down position. The up position allows the ANALOG IN 9-16 audio signals to travel through to INPUTS 9-16. Cursor to the next box on the right, and again press the ENTER button to toggle the switches up or down. In the up position, it completes the routing of Analog 9-16 to INPUTS 9-14, 15/16.

[2TR IN A]
The [2 TR A] inputs can be channeled to INPUTS 15/16, MASTER L/R, or routed directly to MONITOR A.

To route the 2TR IN A audio signals to INPUT 15/16, cursor to the square outlined box to the right of the 2TR IN A area, and press the ENTER button until the switch toggles into the down position. Cursor to the right, and toggle the next square outlined box to the up position. The audio signal from the 2TR A IN will appear on INPUT 15/16.

The square box near the bottom of the [DIGITAL INPUT SELECT] area, when toggled up, will route the 2TR A IN audio signal directly to the MASTER L/R output. When toggled to the down position, it disconnects the send to MASTER L/R.
Digital SLOT 3 can have its inputs routed directly to inputs 9 through 16, replacing the analog inputs. On the Top Panel of the DA7, inside the label strip for inputs 9 through 16, it also says SLOT 3. When there is an option card in SLOT 3, and you have selected the option on the DIGITAL INPUT SELECT area, these faders become inputs for that option card.

You can switch between the analog and digital inputs at any time, and as often as you wish without changing any connections to the DA7. This allows you to connect up to three digital multi-track machines for 24 digital inputs, and 16 analog sources at the same time. You would simply have to choose which set of inputs would be operational at any given time.

To send the SLOT 3 input to INPUTS 9-14 and 15/16, cursor to the box on the far right, and press the ENTER button to set the switches in the down position. This will route the SLOT 3 audio signals to INPUTS 9-14, 15/16. In order to make it easier for you to tell which set of inputs is selected, the FLIP LED buttons for the associated Channel Strips will turn (orange) when digital SLOT3 inputs are selected, and (green) when analog inputs are chosen.

There is a shortcut to toggle inputs for INPUT 9 - 14 and INPUT 15 - 16 between SLOT3 (digital) and ANALOG IN 1-16. While holding down the MMC/CURSOR button in the CURSOR CONTROL section, press the D-I/O button in the SETUP section.
12-2 D-I/O, TO SLOT Window

The [TO SLOT] window functions as a built in “patch bay” for the DA7. From the [TO SLOT] window, direct output assignments can be made to option cards. Eight discrete sources can be sent to each option card. The eight source choices can be from INPUT 1-32, AUX SND 1-6, BUS 1-8, MASTER L, or MASTER R. Buses 1-8 are the default settings.

Each SLOT name appears above the column for the respective slot. When a column is being addressed, the SLOT # appears as inverse video in the window, with the name of the option card underneath it.

[The DIRECT LED button in the PAN/ASSIGN/ SURROUND section of the Top Panel is a shortcut to the [TO SLOT] window.]

SELECT CHANNEL Status Indicator

This status indicator shows what Channel Strip is currently selected. The name of the channel appears in the data field to the right of the SELECT CHANNEL status indicator.

CLEAR Button

Select this to clear assignments and set to the default settings.
Cursor to the top of this area, and use the JogDial to scroll through the available inputs. The data field will change as the choices are scrolled. Repeat the process of assigning sources to the eight digital outs as needed. Or, you can cursor to one of the eight selection fields, and press the ENTER button, which will automatically assign the currently selected channel to that output.

Cursor to the top of this area, and use the JogDial to scroll through the available inputs. The data field will change as the choices are scrolled. Repeat the process of assigning sources to the eight digital outs as needed. Or, you can cursor to one of the eight selection fields, and press the ENTER button, which will automatically assign the currently selected channel to that output.
In **NORMAL** mode, [SLOT 3] is similar to [SLOT 1] and [SLOT 2].

The insertion mode allows you to send a signal to an external device (using either the ADAT, TDIF, AES or AD/DA cards). You would then route this signal to any outboard device, and return it to the **DA7** via **SLOT 3** (using either the ADAT, TDIF, AES or AD/DA cards). You can return to aux returns 1 through 6, buses 1 through 8, or **MASTER L/R**. See Chapter 17, Options for more details.
**TANDEM Mode**

The DA7 can slave another DA7 through the TANDEM option card.

**OFF and ON Buttons**

Enable the [TANDEM] connection by moving the cursor to the OFF button, and pressing the ENTER button. The OFF button will toggle to ON.

**CONNECT Data Field**

CONNECT indicates whether or not the [TANDEM] mode can be activated. This information appears inside the data field [OK], [DATA NG], or [SLOT NG].

**OFFSET DELAY Data Field**

The [OFFSET DELAY] between the DA7 and the slave mixer can be set from this data field. When the field is highlighted, you can set the value for the delay with the JogDial. Set this field to “2 sample” for the Master DA7, if another DA7 is connected as the slave mixer.

**AUTO Button**

When the AUTO button is selected, the DA7 sets the delay value automatically.

**TO PC and MIDI Button**

The communication port between the DA7s can be set to [TO PC] or to [MIDI].

See Chapter 17, Options for more details.
This window shows and sets the status of Dither to the digital output signal. In normal operation, the digital audio signals output from the DA7 and are 24 bit word lengths. If the device connected to the DA7 operates at fewer than 24 bits, the bit in the least significant digits will be dropped by the device on the receiving side, possibly resulting in unnatural sounds.

Simply put, Dither permits you to connect two devices together that do not have matching bit rates (but have matching sample rates) by using a complex algorithm that reduces the word length. For example, you may wish to record to a DAT machine which only records 16 bit words. This problem can be solved by adjusting the word length output from the DA7 by Dither. The bit number output by the mixer should be set to match the device connected to the DA7.

If the correct dither adjustment is not applied to the signals output from the DA7, the integrity of the audio will be diminished. The dither adjustment required is determined by the bit rate of the receiving device. Set the dither characteristic to match.
Cursor to the bit field, and change the value by rotating the JogDial, setting the bit rate to the same as the receiving device. The setting is adjustable in one bit increments from 23 to 16. If OFF, the DA7 will output 24 bits. Then cursor to the OFF button, and press the ENTER button to activate the setting. The OFF button will toggle to ON.

When the OFF button is displayed for an area in the [DITHER] window, the bit rate output is 24 bit. Failure to toggle the OFF button to ON will cause the default bit rate of 24 bit to be output for the signal, regardless of the bit rate setting for the area.
[REC OUT] Area

This sets dither for the digital REC OUT terminal.

**OFF** and **ON** Buttons
Determines the **OFF** and **ON** status of [REC OUT]. A dither setting of 16 thru 23 can be selected by rotating the JogDial, once that field is highlighted, until the desired dither value appears.

[AUX SEND 1/2] Area

This sets the dither value for AUX SND 1/2. A dither setting of 16 thru 23 can be selected by rotating the JogDial, once that field is highlighted, until the desired dither value appears.

[SLOT 1] Area

This sets the dither value for the eight channels of the SLOT 1 terminal.

**ALL** Button
Pressing the **ALL** button sets eight channels to the parameter set to channels 1/2. At the moment the **ALL** button is selected, the parameters set to channels 3 through 8 are replaced with the parameter set to channel 1/2. When **ALL** is selected, turning 1/2 on will turn on 3/4, 5/6 and 7/8 simultaneously.
This sets the dither value for the eight channels of the SLOT 2 terminal. The functions are the same as SLOT 1.

This sets the dither value for the eight channels of the SLOT 3 terminal. The functions are the same as SLOT 1.
13-1 Overview

The GROUP button is one of the display control buttons in the SETUP section of the Top Panel. Press the GROUP button to display the most recently selected window for the window group.

The [GROUP] window selections are [FADER GRP], [MUTE GRP], and [LINK/STR]. The [MUTE GRP] functions are split between two windows. One shows input selections and the other shows output selections.

Section 13-2 FADER GRP (Fader Group) Window details the elements and operations of the [FADER GRP] window.
Section 13-3 MUTE GRP (Mute Group) Windows details the elements and operations of the [MUTE GRP] windows.

Section 13-4 LINK/STR Window details the elements and operations of the [LINK/STR] window.
13-2 FADER GRP (Fader Group) Window

Use the [FADER GRP] window to select channels to a group so that multiple faders can be controlled by operating one of the faders in that group. Up to four groups can be defined.

Window Elements

Group Selection Marker

The group selection marker is a frame which spans the columns in the tables displayed in the window. The marker is positioned on [GRP 1] at the top of the [INPUT 1-16] table whenever the [FADER GRP] window is initially displayed. The marker delineates the current group selection.

Rotate the JogDial to shift the marker from group to group and from table to table. Rotate clockwise to shift the marker up, and rotate counterclockwise to shift the marker down. Continue to rotate clockwise when the marker reaches the bottom of the third table to jump the marker to the top of the first table in the window. Continue to rotate counterclockwise when the marker reaches the top of the first table to jump the marker to the bottom of the third table in the window.

Press the ENTER button to enable or disable the currently selected group. The group number of an enabled group is highlighted in reverse video.
Selection Cursor
Pressing the CURSOR MODE button displays the CURSOR in the lower right corner of the LCD screen. In this cursor mode, the JogDial performs as group selection that moves the cursor from group to group. The CURSOR disappears by pressing the CURSOR MODE button again. Rotating the JogDial moves the cursor from mark to mark in a selected group.
For grouping operations, switch the JogDial to the cursor mode and scroll to select the group. Then switch the JogDial to the none-cursor mode and scroll to select the marker in a group, and press the ENTER button.

Registration Marks
The status of a channel is indicated in the columns of the tables in the window: shows a registered channel, and shows an unregistered channel.
A channel cannot be registered to multiple groups. When a channel is assigned to a group, any previous assignment for it is cancelled automatically.

Creating a Fader Group
There are two methods for assigning a channel to a fader group while the [FADER GRP] window is displayed.
- Pressing a channel SELECT LED button on the Top Panel to select the channel (orange) will add the channel to the current fader group. If the group selection marker is not positioned within the table which includes the selected channel, the marker shifts to the relevant table automatically. A registration mark will be displayed in the [FADER GRP] window table, denoting the channel selection for the respective group.
- Pressing the ENTER button in the cursor mode while the cursor is positioned on the desired channel number will register the channel to the current fader group. A registration mark will be displayed denoting the channel selection for the current group.

Once the groups have been activated in the [FADER GRP] window, the window does not have to be displayed when you want to register a group. Use the fader group selection buttons in the [CHANNEL] window to register the channel to a group.

To cancel all the channels assigned to a group, press one of the SELECT buttons in the group for 2 seconds or more.
13-3 MUTE GRP (Mute Group) Windows

The [MUTE GRP] functions are split between two windows. One window depicts the input selections for the function, and the other depicts the output selections. There are “go to” buttons in each of the [MUTE GRP] windows, indicating the appropriate ARROW button that can be pressed to change the current [MUTE GRP] window displayed.

Use the [MUTE GRP] windows to register channels to a group in which multiple channel ON LED buttons can be controlled by operating just one of the buttons in the group. Up to four groups can be defined.

The group selection marker, the cursor, and the registration mark functions in the [MUTE GRP] windows operate as described in Section 13-2 FADER GRP (Fader Group) Window.
Creating a Mute Group

There are two methods for assigning a channel to a mute group while the [MUTE GRP] windows are displayed.

■ Pressing a channel SELECT LED button on the Top Panel to select the channel (orange) will add the channel to the current mute group. If the group selection marker is not positioned within the table which includes the selected channel, the marker shifts to the relevant table automatically. A registration mark will be displayed in the appropriate [MUTE GRP] window table, denoting the channel selection for the respective group.

■ Pressing the ENTER button in the cursor mode while the cursor is positioned on the desired channel number will register the channel to the current mute group. A registration mark will be displayed denoting the channel selection for the current group.

Once the groups have been activated in the [MUTE GRP] windows, the window does not have to be displayed when you want to register a group. Use the mute group selection buttons in the [CHANNEL] window to register the channel to a group.

To cancel all the channels assigned to a group, press one of the SELECT buttons in the group for two seconds or more.
13-4 LINK/STR Window

Use this window to designate the adjacent channel pairs that are to operate as a fader linked pair or stereo pair. Pairs can be set for inputs, aux returns, aux sends, and buses.

The channel pairs are established from left to right for the channel strips of the DA7, beginning with the lower-number, odd-numbered channel. You cannot establish a pair with channels 6 and 7, for example. Channel 6 can only be paired with channel 5.

The and buttons toggle in the [LINK/STR] window. When an existing button in the window is selected with the cursor, pressing the ENTER button activates the associated channel pair, and the button will be replaced by an button in the window.

When a channel pair has been activated in the [LINK/STR] window, the settings of the odd-numbered channel are copied to the even-numbered channel, and the balance value is set to the center.

You can also create a channel pair by simultaneously pressing the appropriate channel SELECT LED buttons, when the [CHANNEL] window [LINK] area is off. To cancel, simultaneously press the buttons a second time.
**LINK** button

The link function joins adjacent channels to create a pair while respecting the current individual settings, including fader position and value.

**STR** button

The stereo function joins adjacent channels to create a stereo pair, and overwrites the even-numbered channel settings with the current odd-numbered channel settings for phantom power, phase, gain, aux send, fader group, mute group, equalizer, dynamics, delay, channel on-off and fader.

In the fader link, you can change the fader position that is linked, while pressing the **SELECT LED** button of that channel.
Chapter 14
Automation

The automation function synchronizes the DA7 to a timing signal, and records and plays back mixes. You can set it to synchronize to a Timecode input from outside the DA7, such as MIDI Timecode, MIDI clock, and SMPTE.

The parameters for automation that can be controlled by the system are EQ parameters, dynamics can be turned on or off, channel on and off, fader changes, panning, surround sound, aux send, balance, scene memories can be recalled, as well as CH, EQ, and Dynamics Libraries.

The AUTOMATION button is one of the display control buttons in the SETUP section of the Top Panel. Press the AUTOMATION button to display the most recently selected window for the window group.

The [AUTOMATION] window group selections are [SETUP], [EXECUTE], and [EVT EDIT] (event edit).
14-1 AUTOMATION, SETUP Window

Use the [SETUP] window to set up the automation and to store or recall library automation events.

[MANUAL CHANNEL SELECT] Area

This area permits you to select [INPUT 1-32], [AUX RTN1-6], [AUX SND 1-6], [BUS 1-8], or [MASTER L/R] as manual channels. When selected as a manual channel, the selected fader is not recorded. These buttons can only be selected by highlighting them with the JogDial, and pressing the ENTER button.

Once you have selected a channel here, remember that it is no longer part of the recorded automation information for the current mix and will not record or playback any automation function.

SEL ALL Button
Choosing SEL ALL assigns all the channels to the safety of manual control.

CLR ALL Button
When CLR ALL is selected, all channels transmit and receive automation data.
Chapter 14

[MEMORY] Area

The [MEMORY] area is a library for the event list in the window. The DA7 allows you to select from four automation mixes that can be stored into the library.

**RECALL** Button
Recall the automation library.

**STORE** Button
Store the automation library.

**CLEAR** Button
Initialize the automation library.

**NAME** Button
Display the [NAME EDITOR] window for the automation library.

**UNDO** Button
Cancel the immediately preceding operation that changed the memory.

**NEW MIX** Button
Clear current automation mix.

[UNDO] Area

Turn the [UNDO] function on ENABLE or off DISABLE.

**BUF CLR** Button
Clear the UNDO buffer of any existing mix.
The time base for Automation can be selected here, as well as in the [AUTOMATION>EXECUTE] window. See page 14-8.
14-2 AUTOMATION, EXECUTE Window

Automation is principally controlled from the [AUTOMATION>EXECUTE] window. Recording and playback of automation are not possible unless the AUTOMATION button is set to ENABLE. Automation recording is “enabled” when the REC button is pressed, and recording begins when Timecode starts running. You can also "enable" the automation by pressing the AUX / AUTOMATION LED button on the front panel, located just below the MASTER DISPLAY area. Cursor to the [MMC] area [Play ] button, and press the ENTER button to start Timecode.

While in record mode, the [taskbar] flashes the words Automation and Recording.

[TIME CODE] Area

The current timecode information appears in this area. Hours, minutes, seconds and frames are displayed in 8 digits when [Internal], [MTC], or [SMPTE] is selected for time base. When the [MIDI CLK] is selected, the [TIME CODE] area displays measures, beats, and clocks while the far right of the [OFF SET] Area indicates the time signature. The initial time signature is 4/4. See setting [TIME BASE] on page 14-8 for additional information.

The [START SCENE] timecode appears and turns to inversed video for a half second when [START SCENE] is overwritten. In the same manner the locate point appears in the [TIME CODE] Area when one of the locator buttons is selected.
[OFFSET] Area

OFFSET 00 00 00 00

OFFSET Area

To offset the timecode, cursor to the [OFFSET] area, and use the JogDial to change the values in hours, minutes, seconds, and frames. This feature allows you to synchronize an automation mix with its own timecode to an external source (such as a video tape) that has a different timecode. Remember that these two timecodes should always be the same frame rate.

[CURRENT] Area

CURRENT
NEW MIX 30KB

CURRENT Area

This area shows the number of events used in the current automation mix. The DA7 has a 32,000 event capacity which is shared between the current memories, the undo buffer, and the four event memories, as seen in the [AUTOMATION>SETUP] window.

[MEMORY] Area

CURRENT
MEMORY
CURR 63% 100KB
UNDO 19% 30KB

MEMORY Area

This area displays the available percentage of memory and number of events available for use in a mix.

There is also a field that shows the [UNDO] buffer size as a percentage and as the number of events that have been used.

When running out of memory for AUTOMATION recording, a warning message appears. Press the [ENTER] button to stop recording.
[UNDO] Area

There is an [ENABLE] button, a [BUF CLR] button and an [UNDO] button. The [ENABLE] button allows you to set aside some of the automation memory to create an UNDO buffer. This will take away space from your mix memories. However, if you need more memory during your mix, you can increase the memory by disabling the UNDO function.

[BUF CLR] This button clears the information that is in the UNDO buffer. Use this button if you wish to clear the buffer without performing UNDO. This can be useful if you need more memory during a mix.

[UNDO] This button performs the actual UNDO function.

[AUTOMATION] Area

[AUTOMATION] Button

Press this button to [DISABLE] or [ENABLE] Automation for the system. You can also "enable" the automation system by pressing the AUX / AUTOMATION LED button on the front panel, located just below the MASTER DISPLAY area.

[REC] Button

When the [REC] button is enabled, it will flash on and off to indicate recording. You can also enter RECORD when in MMC mode by directly pressing REC on the front panel.

When automation is enabled, the remote switch automatically becomes active as a "punch-in" or "punch-out" control (remote Talk back is disabled). This is useful if you wish to use a footswitch to do "hands-free" automation control.
**START SCENE** Button

When selected, the **START SCENE** button will execute recording from the START SCENE which is stored as SCENE 00. If you do not store the START SCENE, the DA7 will begin recording of Automation from the first event. It is recommended that you begin all automated mixes by storing the beginning of the mix in the **START SCENE** memory.

**[TIME BASE] Area**

You can choose between [**INT**], [**MTC**], [**MIDI CLK**], and [**SMPTE**] Timecode to drive the system. The timecode area will display the input timecode as soon as it recognizes the time base status.

You can select:
- [**MTC**] MIDI Timecode
- [**SMPTE**] SMPTE timecode (valid only when the SMPTE option card is installed)
- [**MIDI CLK**] MIDI clock
- [**INT**] Internal timecode

Next to the [**TIME BASE**] selection field, there is a field for the display of the time code type. When using SMPTE or MTC, the DA7 will automatically sense the type of timecode and set the mixer accordingly. You cannot adjust this field.

It will display the frame rate of the timecode being used. The frame rates of timecode the DA7 can accept from SMPTE or MTC are:
- [**ND**], 30 frames per second using non-drop frame timecode
- [**DF**], 30 frames per second using drop frame timecode (this equals, 29.97 frames per second)
- [**25**], 25 frames per second
- [**24**], 24 frames per second
[MMC] Area

The [MMC] area provides controls for the automation system and for sending control commands to externally connected machines (via the MIDI port on the rear panel) that accept MMC (MIDI Machine Control) commands.

To operate this area it is practical to use the Keypad in the MMC mode. Set the Keypad to MMC mode by selecting the MMC/CURSOR button before operating.

[1-6] Buttons

Select these buttons to quickly access the desired locate points in an automated mix. See page 14-10, Create Locate Points and Recall Locate Points for more information.

[Play] Button

Select this button to Play the current automated mix (once the Internal Clock is selected and Automation and Record are enabled). The [Play] button also can be used to independently control any connected device that accepts MMC commands. When the MMC/CURSOR is in MMC mode, the up ARROW button on the Top Panel provides the same control.

[Rewind] Button

Select this button to Rewind the current automated mix (once the Internal Clock is selected and Automation and Record are enabled). The [Rewind] button also can be used to independently control any connected device that accepts MMC commands. When the MMC/CURSOR is in MMC mode, the left ARROW button on the Top Panel provides the same control.

[Fast Forward] Button

Select this button to Fast Forward the current automated mix (once the Internal Clock is selected and Automation and Record are enabled). The [Fast Forward] button also can be used to independently control any connected device that accepts MMC commands. When the MMC/CURSOR is in MMC mode, the right ARROW button on the Top Panel provides the same control.
**[Stop ²] Button**
Select this button to Stop the current automated mix (once the Internal Clock is selected and Automation and Record are enabled). The [Stop ²] button also can be used to independently control any connected device that accepts MMC commands. When the MMC/CURSOR is in MMC mode, the down ARROW button on the Top Panel provides the same control.

**[Replay ²] Button**
Select this button to return the DA7 automation (and any MMC slaved devices) to the position where the [Play ²] button was last pressed. It will immediately go into Play. When the MMC/CURSOR is in MMC mode, the #8 button on the Keypad provides the same control.

**[Loop ²] Button**
Select this button to create a Loop that will play continuously until stop is executed. The Start point of the Loop is set by the location of Locate #1 and the End point of the Loop is set by the location of Locate #2. When the MMC/CURSOR is in MMC mode, the #9 button on the Keypad activates the Loop function.

**Operation of MMC Transport Functions**
Pressing each of the buttons, [Play ²], [Rewind ²], [Fast Forward ²], [Stop ²], [Replay ²], and [Loop ²] transmits MMC commands for these functions, or controls the Internal Timecode.

**Create Locate Points**
To create a locate point, first move the timecode to where you need it by pressing [Play ²], [Rewind ²], [Fast Forward ²], and [Stop ²] buttons. Second, press the #7 (SET) button, the locator buttons on the LCD will flash to prompt you. Finally select one of locator buttons while the LCD is flashing. The timecode will be stored in the locator button selected. The [TIME CODE] area will flash in inverse video for two seconds to confirm your selection.

**Recall Locate Points**
To recall locate points, press one of the locator buttons, [²] - [⁵], that have a stored location point. When one of the locator buttons is pressed, [TIME CODE] Area displays the locate point and turns to inverse video for a half second. This MMC command will then locate the DA7’s automation and any connected MMC slave devices to the selected point.
Parameters that can be recorded by the automation are [FADER], [CH], [EG], [PAN/SURR], [AUX SND], [LIB], [SCENE], and [MISC]. The [SEL ALL] button chooses all the parameters, while the [CLR ALL] button removes the parameters from the recording sequence. When selected, the parameter will appear as inverse video.

There is a short cut to the selection of these parameters. When in MMC mode, press the [SHIFT (#0)] key and one of the [#1 - #9] buttons simultaneously for the shortcuts below:

1  FADER
2  PAN/SURR
3  LIBrary
4  CH ON
5  AUX SND
6  SCENE
7  EQ
8  NO FUNCTION
9  MISC

Under the MISC parameter area you can edit:
Dynamics on/off
Protect Channel
Beat Change
In this area, you can select two different modes of operation. There is also a selection for the fade time of the offset of the fader position. This fade time is how long it will take the fader to "dissolve" or "smooth out" the difference in level from where you have finished the fader move to where it was before the edit.

**ABSOLUTE Mode**

When this mode is selected, the fader will reflect exactly how you have corrected the level, without regard to the fader position before the edit. It could cause a level to jump at the edit points, if there is a vast difference of position of the fader.

**RELATIVE Mode**

This mode selects the fader to move in a relative manner versus the previous automation moves. In other words, the fader will move to 0dB, and will make changes in the levels you have automated in a + or - method. This plus or minus is based on the previous setting you made during the automation mix.

**FADE Time**

If you make a drastic change in level at the “punch-in” or “punch-out”, you can set the faders to move over a specific period of time, back to the level where the fader was set. This will help smooth out the mix. The fade time can be programmed into the automation sequence. A fade time from 0.0 sec to 30 sec can be set in 0.2 sec increments.
[AUTO PUNCH IN]

When engaged, [AUTO PUNCH IN] appears as inverse video. Once you select the channel and parameter you wish to adjust (if [AUTO PUNCH IN] is engaged and the automation is record ready), moving the fader or knob of a selected channel, while playing back a mix, will cause the DA7’s automation to go into record for that channel or channels.

To stop the DA7 from recording, or to “punch-out”, press the ARROW button on the MMC control. You can also “punch-out” by turning SELECT off for the channel you wish to stop updating.

Pressing the SHIFT (#0) button and the SELECT LED button of the channel simultaneously lets you select the channel for [EQUALIZER] or [DYNAMICS/DELAY].

If you want to view the AUX SEND status on the LED field while AUTOMATION is [ENABLE] and [MMC] is active, simultaneously press the SHIFT key of the Keypad and the AUTOMATION/AUX LED button. This will only change the LED display, and will not interrupt the AUTOMATION operation. See page 14-5, AUTOMATION, EXECUTE Window, for more information.

Pressing the AUTOMATION/AUX button on the top panel of the DA7 to select automation acts as a shortcut to the RECORD button in the AUTOMATION EXECUTE screen. See page 14-5, Automation, Execute Window, for more information.
14-3 AUTOMATION, EVT EDIT (Event Edit) Window

Use the [EVT EDIT] window to change parameters of events in the automation by changing them in an "off-line" method. In other words, you can make a simple change to an event (single or multiple channels) by entering in new data instead of doing another mix. A good example would be if you wish to change a fade. Simply select the fader or faders, and enter a new time in the data area. It will automatically update the mix.

[EDIT CHANNEL SELECT] Area

Channels can be edited individually for [INPUT 1-32], [AUX RTN 1-6], [AUX SND 1-6], [BUS 1-8], and [MASTER L/R]. To edit the channels collectively, cursor to [SEL ALL], and press the ENTER button. All of the edit parameters will then appear as inverse video. To disable all the parameters, cursor to the [CLR ALL] button, and press the ENTER button.

If you wish to edit individual channels, cursor to the channel (or channels) you wish to select, and press the ENTER button to select them.
[OFFLINE EDIT PARAMETER] Area

Select the parameters to be edited in this area of the window. The parameters are \text{FADER}, \text{CH}, \text{EQ}, \text{PAN/SURR}, \text{AUX SND}, \text{LIB}, \text{SCENE}, \text{and MISC}. Using the \text{MISC} button, you can edit parameters for Dynamics on/off, Protect Channel and Beat Change.

To edit all parameters, cursor to the \text{SEL ALL} button, and press the \text{ENTER} button. To remove all the parameters as a group, cursor to the \text{CLR ALL} button, and press the \text{ENTER} button. To edit individual parameters, cursor to the parameter (or parameters) you wish to edit, and press the \text{SELECT LED} button.

There is a unique way to search the event list. Since the event list has an entry for EVERY individual event, it can be very long for a particularly complicated mix. Every item is listed by the time of the event. However, if you decided to look through and change the EQ on for a particular channel, it would be tedious to have to go through all of the events to find what you were looking for.

So, we have provided a way to narrow down the search for the type of event you are looking for. While displaying the \text{[EVT EDIT]} window, turn off the parameters that you wish to ignore, and the list will only show the event types you want to see. It will not delete them from the list, and you can turn them back on at any time.

You can also select which \text{CHANNELS} are listed. This can be a helpful if you are only looking for the events listed for one particular channel. Cursor to the \text{[EDIT CHANNEL SELECT]} area, and select the channels you wish to view.
In order to select an event, you must first place the cursor in this area. You can then select an event to be edited from here. Rotate the JogDial through the events and select an entire event or a single event item.

To edit an individual event item from the list, use the left and right arrow keys to select the item you wish to edit. You can select from [TIME], [PARAMETER], [DATA], or [CH]. Once you have selected the item you wish to change, use the JogDial to enter the new data, and press the ENTER button to change the parameter. The entire Event list will immediately change to reflect the new data. You may now continue to edit events, or exit the window.

If the new data change is related to time, you may be momentarily confused by the new order of the list. You may have to scroll through the list again to re-orient yourself.

When you have finished editing the entire event list and wish to exit, press the AUTOMATION button again.

**[TIME]**

Edit timecode from this area in hours, minutes, seconds, and frames. Measures, beats and clocks are displayed in the [TIME] column when MIDI clock is selected. To edit the beat, set both clocks and beats to “01”. The [BEAT CHG 1-12] will appear in the [PARAMETER] column at the bottom of the event list (when scrolled to the end) and press the ENTER button. Select the beat you wish to change in the [DATA] column.

**[PARAMETER]**

The event parameters that can be edited appear here.
Rotating the **JogDial** displays these 41 parameters sequentially.

- EQ ON
- EQ LOW F
- EQ LOW Q
- EQ LOW G
- EQ LM F
- EQ LM Q
- EQ LM G
- EQ HM F
- EQ HM Q
- EQ HM G
- EQ HIGH F
- EQ HIGH Q
- EQ HIGH G
- CH ON
- FADER FADER
- FADER FADE
- DYN ON
- DLY ON
- PAN/BAL ON
- SEND AUX 1
- SEND AUX 2
- SEND AUX 3
- SEND AUX 4
- SEND AUX 5
- SEND AUX 6
- SURROUND L
- SURROUND R
- SURROUND C
- SURROUND SB
- SURROUND SL
- SURROUND SR
- CH LIB STR
- EQ LIB STR
- DYN LIB STR
- CH LIB RCL
- EQ LIB RCL
- DYN LIB RCL
- SCENE WRITE
- SCENE READ
- RECALL SAFE
[DATA]
Data for parameters can be set in numerical values with the JogDial and the ENTER button.

[CH]
Here the user can select the channels where editing is desired. Scroll to a channel number with the JogDial, and press the ENTER button.

[SHEET EDIT] Area

These edit functions give you the ability to insert, delete, and copy event data into the [TIME], [PARAMETER], [DATA], and [CH] number columns. Much like the cut and paste functions in word processing, a little scrolling and jogging will give you the ability to do some amazing changes to your mix.

**INS** Button
Insert data in the currently selected data field into the event list, and press the ENTER button.

**DEL** Button
Delete any data highlighted by the cursor, and press the ENTER button.

**CUT** Button
Remove any data by selecting **CUT** and pressing the ENTER button. Data is stored in the buffer memory until another event is cut or copied, and can be pasted to another field.

**COPY** Button
Copy any data to buffer memory by selecting **COPY** and pressing the ENTER button. The data will be copied into the buffer memory for subsequent pasting.

**PASTE** Button
With a parameter selected in the event field, press the ENTER button with this function selected to paste data into the event field.
14-4 AUTOMATION Operation

Preparations
Before starting Automation you need to prepare by connecting any external input signals for timecode reference, such as SMPTE, MTC, or MIDI CLK. Or, you select INT as the time reference. You also need to make sure that all of your audio sources are connected and operational.

⚠️ Connect the master timecode device to the DA7 such as MTC, SMPTE or MIDI CLK.

⚠️ Route the signals as necessary from inputs, equalizer and dynamics, and to outputs.

AUTOMATION SETUP

⚠️ Press the AUTOMATION button in the SETUP section of the Top Panel to display the [AUTOMATION SETUP] window. Depending on which screen you were on the last time you accessed this area, you may have to press the AUTOMATION button to cycle through the windows.

⚠️ If you wish specific channels to stay non-automated, cursor to the channels that you wish to operate manually during the play-back of Automation in the [MANUAL CHANNEL SELECT] area of the [AUTOMATION SETUP] window. Press the ENTER button to select them. The selected channels will appear as inverse video.

⚠️ To begin to store a new mix, cursor to the [NEW MIX] button in the [MEMORY] area, and press the ENTER button. This will save all of the current settings of the DA7 as SCENE MEMORY 00. This setting is where the DA7 will begin recording of the automation data.
[NEW MIX] operation will erase the data that is stored in the current memory, if any. This data is from your previous mix. If you do not want to erase this information, take the following steps prior to beginning the [NEW MIX] operation:

Cursor to one of the memories [No. 01 to 04] in the Automation SETUP [MEMORY], and select where you will store the data.

Cursor to the [STORE] button, and press the ENTER button. [NAME EDITOR] will appear.

Enter a new name, then cursor to the [OK] button in the [NAME EDITOR], and press the ENTER button.

The contents of the previous START SCENE and a mix located in the current memory will now be saved into the [No. 01 to 04] in the Automation SETUP [MEMORY] with a new name. Now you can proceed to the [NEW MIX] operation to store a new mix.

Cursor to the [TIME BASE] area, and select the timecode master device by rotating the JogDial, and pressing the ENTER button.

Play back the master timecode device. Confirm that the [TC] area on the top right of the LCD window indicates identical numbers to that of the master device.

When SMPTE or MTC format is used, confirm the [TIME BASE] area displaying ND, DF, 25 or 24.

If for some reason you receive an error message on the LCD screen (in the lower right hand corner) of the [AUTOMATION EXECUTE] window, check the connection and/or timecode settings of the master device. You should also confirm that your master timecode source is not in a “Free-run” mode, or that the time base of the master code source is not corrupted.

You can not go further with the operation of Automation while these errors exist.
AUTOMATION EXECUTE

⚠️ Press the AUTOMATION button in the SETUP section of the Top Panel to display the [AUTOMATION EXECUTE] window. You may have to press it again to cycle through the windows.

⚠️ Cursor to the [START SCENE], and press the ENTER button. You will see this area blinking if nothing has been registered for the start scene. Current status of fader positions, routings, Equalizer and Dynamics is stored for the start scene.

You can change the start scene during the recording of a MIX sequence. This can save you valuable mix memory space. Repeat above steps to register a new start scene if necessary.

⚠️ Cursor to the desired parameter button in the [EDIT PARAMETER] area, [FADER] button for instance, and press the ENTER button. Repeat to select each parameter you wish to record in Automation. When selected, the parameter button will appear as inverse video.

You can operate another way on the Top Panel if MMC / CURSOR is switched to MMC. Select desired parameters by pressing #1 to #7 and #9 of the Keypad corresponding directly to items in the [AUTOMATION EXECUTE] window while pressing the SHIFT button.

Cursor to the [SEL ALL] button, and press the ENTER button to select all parameters at once. This is convenient for starting a new mix.

Cursor to the [CLR ALL] button, and press the ENTER button to cancel all parameters at once.

⚠️ Cursor to the [ABSOLUTE] button in the [FADER EDIT MODE] area, and press the ENTER button.

⚠️ Cursor to the [AUTO PUNCH IN] button, and press the ENTER button to cancel the [AUTO PUNCH].

[AutoPunch In] should be considered as an "Advanced User" feature, so we recommend that you not attempt to use the [AutoPunch In] function until after you have experimented with it. If you operate it before you truly understand its function, you could accidentally do something that might result in serious consequences to your mix.
Cursor to the [ENABLE] button in the [AUTOMATION] area, and press the ENTER button.

Don't forget about the AUTOMATION/AUX button shortcut on the Top Panel to enable Automation. You may find it is a faster way to perform this function.

Cursor to the [REC] button in the [AUTOMATION] area, and press the ENTER button to start or stop recording.

If the MMC mode on the CURSOR/MMC button is active, don't forget about the [CURSOR MODE/REC] shortcut on the Top Panel to start or stop recording.

The remote switch on the Rear Panel of the DA7 can be used to “punch-in” or “punch-out” of a mix.

Press the SELECT LED buttons of the Channel Strips to be engaged into a MIX sequence. The engaged SELECT LED buttons (orange) and SEL/MAN (red) will light. Press it again to cancel. These buttons are operable during playing back or recording of a MIX sequence.

Now, you are ready to start automation recording of your mix.

Pressing the SHIFT (#0) button and SELECT LED button of the desired channel simultaneously enables you to change the channel for [EQUALIZER] or [DYNAMICS/DELAY].
Editing of AUTOMATION EXECUTION

You can edit a MIX if there is something that you wish to change.

⚠️ Stop the audio master device and switch off the SELECT LED buttons for channels you do NOT wish to update. Press the SELECT LED buttons to turn on the channels you wish to update.

⚠️ Cursor to the [REC] button in the [AUTOMATION] area, and press the ENTER button to start recording again.

⚠️ Start the audio master device from a point slightly in front of where you will begin the edit of your mix. This will give the master device time to stabilize, and the DA7 to reset the automation based on the new timecode location.

⚠️ If you have not already done so, press the SELECT LED buttons and make changes to the selected parameters.

Editing several channels at a time

You can operate in a more efficient way if you have several channels to edit. The following steps will allow you to concentrate on the operation of the selected relevant parameters.

⚠️ Stop the audio master device.

⚠️ Stop recording by using a remote switch plugged in to the Rear Panel, or press the [CURSOR MODE REC] button on the Top Panel while MMC is active.

⚠️ Press the SELECT LED buttons so that they are turned on for only the channel strips that you will edit.

Start the audio master device before the point where you will begin the edit.

Use the remote switch to "punch-in" and start recording when it has reached the edit point, or press the SELECT LED button to turn it on for the channel you want to edit, and then change the parameters of the selected channel.

Pressing the [CURSOR MODE REC] button on the Top Panel will trigger recording as well, if MMC is active and the selected channel(s) is armed by the SELECT LED button.
Editing with use of the [RELATIVE] button

After editing there may be a situation where you want to change something in your MIX, such as the level of vocal in a chorus, while saving the other fader moves you have made for that channel. This is where you would use the [RELATIVE] button in the [FADER EDIT] area.

⚠ Cursor to the [RELATIVE] button in the [FADER EDIT] area, and press the ENTER button.

⚠ Press only the SELECT LED button of the channel where you want to change the level from [ABSOLUTE] to [RELATIVE].

⚠ Cursor to the [REC] button in the [AUTOMATION] area, and press the ENTER button to start recording.

⚠ Start playing back the audio master device from a position slightly before the area you wish to update. The fader knob will move to the position of 0 dB.

⚠ Move the FADER up or down as much as you would like to boost or reduce the level. If you move the fader knob by 3 dB upward, it will be recorded and reproduced as a value that equals 3 dBs plus the original level recorded.

⚠ When you have finished updating the channel, cursor to the [REC] button, and press the ENTER button to stop recording.

⚠ You do not have to continue to record until the end of the MIX. The relative value of the fader level that was in place when the automation recording stops will be applied through the end of that MIX.
END of a MIX

⚠️ From your mixdown, store the audio portion of the final MIX data to an audio recording device such as DAT, CDR, etc.

⚠️ Store the data into the memory (No 01 to 04 of the DA7). This may be the easiest method, but since only four files are available the space is very limited.

⚠️ Save the MIX data to a computer or MIDI datafile for future use or editing.

Following are other ways to save the automation MIX.

• Send the bulk data via the TO PC terminal and store on HDD, FDD, or other media via a computer.

• Use the [MIDI<BULK OUT] window to send the bulk data via the MIDI OUT terminal to a MIDI datafile.

• Here is a real-time data recording method that is different from the other methods described above. Cursor to the [Tx] button of the [CTRL CHG] in the [MIDI<SETUP] window, and press the ENTER button. Set the MIDI filer to REC mode, and start the automation mix which you would like to save. Now, your mix will be saved as a real-time recording.
15-1 RD/WR (Read/Write) Window

The SCENE MEMORY section of the DA7 is accessed from the Top Panel by pressing either the READ or WRITE LED buttons. When either function is on, its button will illuminate (orange). Press either button to display the [SCENE MEMORY>RD/WR] window. Press either of these buttons again to display the [SCENE MEMORY>XFADE TIME] window.

Scene Memory records all parameters globally for the DA7. When a scene is recalled, the fader, fader group, mute group, EQ, and dynamics settings that were recorded to a specific Scene Memory file, will be recalled.
This window allows you to record to the Scene Memory. Scene Memory can be recorded globally for all 32 input channels, aux send and return, buses, and master.

**READ** | Button
---
Once you are in the [RD/WR] window, scroll the [No. Scene Name] field with the JogDial to select the desired file. With the cursor on the **READ** button, press the ENTER button to recall a memory.

**WRITE** | Button
---
To record a Scene Memory, select a Scene Name number. With the cursor on the **WRITE** button, press the ENTER button.

**NAME** | Button
---
In the [RD/WR] window, cursor to the **NAME** button, and press the ENTER button. The [NAME EDITOR] window will display over the [RD WR] window. Input a Scene Memory name in the [NAME EDITOR] window, and press the **OK** button in the window.

**PROTECT** | Button
---
The protect function sets a specified Scene Memory into a status where nothing can be recorded to it. This function can be used to protect all data already in a specific Scene Memory.

**FADER** | Button
---
When this parameter is selected, access to fader information is turned on.

**EQ** | Button
---
When this parameter is selected, access to EQ information is turned on.

**DYN** | Button
---
When this parameter is selected, access to dynamics information is turned on.

**FADER GRP** | Button
---
When this parameter is selected, access to fader group information is turned on.

**MUTE GRP** | Button
---
When this parameter is selected, access to mute group information is turned on.
**OTHERS** Button

When this parameter is selected, access to other global information is turned on.

**SEL ALL** Button

All of the parameters in the [READ PARAMETER] area are selected on or off. Selected parameters appear as inverse video.

**CLR ALL** Button

All parameter selections in the [READ PARAMETER] area are deactivated.

**[PROTECT CHANNEL SELECT] Area**

Here you can identify which, if any, Channel Strips will be protected: **INPUT 1-32, AUX RTN 1-6, AUX SND 1-6, BUS 1-8, or MASTER L/R**.

To protect a channel, move the cursor to a selected channel, and press the **ENTER** button. The selected channel will appear in inverse video when protected. Once you protect a channel, it will remain with all its settings even after you recall a Scene Memory.

**Recalling a Scene Memory**

When the [10 KEY SCENE RECALL] is on in the [UTILITY>CONFIG] window, Scene Memories 1-10 can be recalled using the **Keypad**. Input the number of the Scene Memory location to be recalled. The DA7 will automatically recall that configuration, setting channel on or off, fader levels, pan, balance, EQ, dynamics, fader group, and mute group assignments.

When the [10 KEY SCENE RECALL] is off, and the **READ** button is on, Scene Memory can not be selected using the **Keypad**. To select a memory for recall, scroll through the display and find the memory you want. By pressing the **ENTER** button, the numeric readout will flash the selected Scene Memory that you have recalled in the [MEMORY] display. The selected Scene Memory is recalled.

Dots on the display indicate that the parameter has not been operated since the current Scene Memory was recalled.

Dots go off at the point at which any parameter of the current memory is changed, or by selecting another Scene Memory.
Writing a Scene Memory

Writing a Scene Memory uses the same procedure as READ. Select a memory file number, move the cursor to the [WRITE] button, and press the ENTER button. The [MEMORY] display will flash for five seconds, indicating that the settings have been written to the selected Scene Memory.

Input of Scene Memory Title

Press the ENTER button, when the cursor is over the [NAME] button, and the [NAME EDITOR] window will appear over the [RD/WR] window. Alphanumeric characters can be input from the Keypad or the keyboard in the [NAME EDITOR] window.

Setting of Read Protection Channel

To activate read protection to a selected channel or all channels, cursor down to the [PROTECT CHANNEL SELECT] area in the window. If the button is selected and activated, nothing from the Scene Memory can be recalled into the system.

If you prefer to protect only a select group of channels, scroll through the channel numbers, and press the ENTER button on your choice.

In the [READ PARAMETER] area there are several parameters that can be programmed on or off selectively, or collectively.
15-2 XFADE TIME Window

XFade Time sets a programmable crossfade duration to be executed when a scene memory is changed.

[XFADE TIME CHANNEL SELECT] Area
This area lets you select crossfade time of INPUTS 1-32, AUX RTN 1-6, AUX SND 1-6, BUS 1-8, and MASTER L/R.

Selecting of XFade Channel
Cursor to any channel number button, and press the ENTER button.

SEL ALL Button
Here all of the channels in the [XFADE TIME CHANNEL SELECT] area are turned on, and all of the channel buttons appear as inverse video.

CLR ALL Button
Here all of the channels in the [XFADE TIME CHANNEL SELECT] area are turned off, and all of the channel buttons reset to default (off).

[XFADE TIME SET] Area
Activate the soft knob and adjust the crossfade time by turning the JogDial. This adjusts the crossfade time for all channels selected for the current SCENE MEMORY file. The crossfade time is adjustable from zero to three seconds.
Chapter 16
Utility and Solo Monitor

The UTILITY and the SOLO MONITOR buttons on the Top Panel of the DA7 access the following functions for the mixer. By pressing the [SOLO MONITOR] button, you can adjust the Talk Back, Surround Monitor and Solo Monitor. Pressing the UTILITY button displays the [UTILITY] window group in the LCD. This controls the Oscillator, Locking Functions, Function Configuration, and Fader Layer Customization.
16-1 Utility, Solo/Monitor (SOLO/MON) Window

The [SOLO/MONITOR] window provides controls for the monitoring functions of the DA7.

[TALK BACK ASSIGN] Area

Selects the areas that will hear the Talk Back signal assigned in this area. See Section 16-3, Utility, Configuration (CONFIG) Window for information on momentary and locking features of the Talk Back button. You may assign Talk Back to any or all of the following buttons:

- **SLATE Button**
  When you select this button, it will appear in inverse video. Talk Back will go out to the MASTER L/R and BUSES to be recorded on the tape tracks.

- **MON B Button**
  The MON B button routes the Talk Back to the MONITOR B (studio) outputs.

- **ALL AUX Button**
  When you select ALL AUX, all of the outgoing AUX channels will receive a signal from the Talk Back.
[MON A] Area

Engaging the [MON A] DIM button lowers the volume of the MONITOR A system by 20dB, regardless of Talk Back operations. To toggle the [MON A] DIM button while the button is not displayed on the LCD, from the TopPanel press and hold the MMC/CURSOR button, at the same time press the SOLO/MONITOR button.

If the [MON A] DIM button is off, the monitor volume will be lowered by 20dB whenever the TALKBACK button on the Top Panel is on. The monitor volume will be restored when the TALKBACK button is turned off.

[SURROUND MONITOR] Area

The surround monitor feature is toggled ON or OFF in this area of the window. The AUX button toggles with a MON button, which determines the assignment for the surround bus monitor outputs. Cursor to the MON button, and press the ENTER button to toggle to the MON button. The surround bus assignments are reflected in the table below, as determined by the current selection.

<table>
<thead>
<tr>
<th>Surround bus 1 (L)</th>
<th>Surround bus 2 (R)</th>
<th>Surround bus 3 (C)</th>
<th>Surround bus 4 (SW)</th>
<th>Surround bus 5 (SL)</th>
<th>Surround bus 6 (SR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MON A (L)</td>
<td>Mon A (R)</td>
<td>Aux send 3</td>
<td>Aux send 4</td>
<td>Aux send 5</td>
<td>Aux send 6</td>
</tr>
<tr>
<td>MON B (L)</td>
<td>Mon B (R)</td>
<td>Master L</td>
<td>Master R</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The outgoing [MASTER LEVEL] of the surround sound feature is also set in this area of the window. The soft knob controls the level for the surround sound monitoring system. The knob has a range of \(-\infty\) to +10dB. Cursor to the [MASTER LEVEL] soft knob, and rotate the JogDial to raise or lower the surround monitor output level. To control the [MASTER LEVEL] knob while that soft knob is not displayed on the LCD, from the TopPanel, rotate the Level ON/OFF knob in the AUX section, when the individual channel surround screen is displayed.

See Chapter 8, Pan/Assign, Surround, Bus Assign for further information.
There are four operational parameters for the [SOLO MONITOR]:

[POSITION] Area

SOLO can be assigned in these ways:

- **PFL** Button
  - When assigned to this button, the solo source monitoring is prefader. When enabled, the PFL button is displayed in inverse video.

- **AFL** Button
  - When assigned to this button, the solo source monitoring is postfader. Pan will have no effect. Raising and lowering the fader for a channel in the SOLO mode will change the level of the SOLO monitoring.

- **IN PLACE** Button
  - When assigned to this button, the solo source monitoring is postfader and post-pan. In this mode you will hear the signal as it appears in stereo mode and at the level it had been before you selected it.

[MODE] Area

Mode has two conditions that apply to SOLO monitoring:

- **SOLO** Button
  - Only one source at a time can be selected for SOLO monitoring.

- **MIX** Button
  - You have the option of selecting multiple SOLO channels simultaneously.

MUTE OFF or ON Buttons Area

In the [SOLO MONITOR] area the ON and OFF buttons toggle and enable or disable SOLO for the system.
[SOLO LEVEL] Area

The [SOLO LEVEL] can be controlled by the soft knob in the window. The current value appears in the field with a range of $-\infty$ dB - +10 dB. When you position the cursor on the soft knob, rotating the JogDial will raise or lower the output level.

[MONITOR CHANNEL SELECT] Area

An extension of the [SOLO MONITOR] functions, the [MONITOR CHANNEL SELECT] area, is divided into several sections for discrete assignment of SOLO to CHANNELS 1-32, AUX RTN 1-6, AUX SND 1-6, and BUS 1-8, individually for [SOLO] mode, or collectively in [MIX] mode. When a SOLO button is selected from the Top Panel, the respective buttons in the [MONITOR CHANNEL SELECT] area will appear as inverse video.

CLR ALL Button

Selecting the CLR ALL button terminates the assignments for the [MONITOR CHANNEL SELECT] area buttons.

When you have solo’d multiple channels, you may wish to clear them all at the same time. You may not be able to see all the channels you have solo’d at any one time because they may be on different fader layers, thus causing confusion as to what is or is not solo’d. In either case, simply press any lighted solo button for two seconds and all the solos will clear. See page 16-2, Utility, Solo Monitor (SOLO/MON) Window, for more information.

You should turn ON and assign the buses as surround sound in the [SURROUND SOUND] area of the [SOLO/MONITOR] window.
16-2 Utility, Oscillator/Battery (OSC/BATT) Window

There is an on board oscillator in the DA7. A reference [SINE WAVE] or [NOISE] generator can be assigned to the BUS, AUX, and L/R outputs of the mixer.

[ASSIGN] Area

The Oscillator can be assigned to any one or all of the [BUS 1-8], [AUX 1-6], and [L/R] outputs. Cursor to the output selection button, and press the ENTER button. The selected button will appear as inverse video.

When you enable the SEL ALL button, it will appear as inverse video and apply the Oscillator to all of the BUS, AUX, and L/R outputs.

The CLR ALL button performs the inverse function of SEL ALL. When it is selected, the Oscillator is no longer assigned to any of the outputs.
[LEVEL] Area

The [LEVEL] soft knob controls the output level. Move the cursor to the knob, and rotate the JogDial to change the level.

**ON** and **OFF** Buttons

Activating the **ON** or **OFF** buttons turns the Oscillator on or off for the system.

[source] Area

The tone output of the Oscillator is determined by selecting one of the eight frequency buttons in this area.

[NOISE] Area

Instead of tone, activating the **PINK** button will output Pink Noise to the output of the selected sources. When selected, the **PINK** button will appear as inverse video.
[BATTERY] Area

A bar graph is displayed in the [BATTERY] area of the [UTILITY>OSC/BATT] window. The bar graph depicts the current battery strength, ranging from [E] (empty) to [F] (full). When the battery runs out, all memory will be erased from the mixer when the AC power for the DA7 is turned off.

The message field is a text indicator of the battery status. If the battery needs to be replaced, the field will read LOW BATTERY. If the battery should run out, it will read BATTERY EMPTY until a new one is put in.

It would be a good idea to back up all important data stored in the DA7 prior to the battery running out.

To replace the battery, contact the PANASONIC Service Center nearest you.

When the [BATTERY] graph displays "LOW BATTERY", back up the DA7 memory by performing a bulk output routine from the [MIDI>BULK] window. Do not let the battery run out, or you may inadvertantly lose the DA7 memory.
16-3 Utility, Configuration (CONFIG) Window

Use the settings in this window to define the configuration of various features in the DA7. This area allows you to set up your own “personality” for the DA7, making it work the way you want it to.

[CONFIGURATION] Area

The selections in this area are toggled ON or OFF. Cursor to the currently displayed button for the selection, and press the ENTER button to toggle ON or OFF.

**AUTO DISP CHANGE**
When this selection is OFF, operating knobs on the Top Panel will not call up other windows in the LCD. When ON, operating Top Panel knobs will change the LCD to the window of the knob being adjusted.

**AUTO CHANNEL SELECT**
Any time this selection is activated, when a fader is moved or SELECT for any channel is pressed, the [CHANNEL] window for the selected channel will appear in the LCD.

**DYN RANGE dBFS**
When this selection is ON, the range of the characteristics graph in the [DYNAMICS] window is set to [dBFS], which is OL to -100dB. When OFF, the range is set to [dBu], which is +18 to -82 dB.
This selection determines whether the motorized faders are active or not. When this selection is off, automation will still play back and on the TopPanel a LED button in the FADER LAYER Selection section will blink if selected.

**TALK BACK SU LOCK**

This selection determines whether the TALK BACK button on the Top Panel is set to a momentary or locked position. In momentary, the button only operates when it is continually pressed. In locked mode, once pressed, the TALK BACK button will stay on until pressed again.

**IN/OUT POLARITY REV**

This button makes the DA7 match the polarity of the remote switch connected to DA7's Rear Panel. Cursor to this button, and press the ENTER button to activate, if a Closed type switch is normally used. The default setting to the button is inactive and matches a normally Open type switch.

**SYNC JUMPING**

When this selection is on, if the sync of the master wordclock becomes unlocked, a warning message is displayed.

**MONEY SCENE RECALL**

When this selection is on, pressing Keypad numbers sends a MIDI program change message and recalls a scene memory from 00-50 corresponding to the numbers entered.

**SAVE CONFIRMATION**

When this selection is on, a confirmation message is displayed when a library or scene memory is saved via the TITLE button.

**LOAD CONFIRMATION**

If this selection is on, a confirmation message is displayed when a library, scene memory, or automation data is recalled.

**RENAME FILE PROGRAM**

This selection is unassigned and is for future use and applications.
The [KEY LOCK AREA] lets you lock operational sections of the DA7, preventing anyone without the password from operating a section or sections of the mixer. The area diagram in the window shows areas that can be locked, which will appear in inverse video when locked.

In the [KEY LOCK AREA] you will find two fields.
[PASSWORD] Field

This is a 4-digit field where you enter the password for controlling access to the DA7. When the password is correct, both the [NEW PASSWORD] field and the lock section field can be operated.

[NEW PASSWORD] Field

When you enter the correct password in the [PASSWORD] field, a new 4-digit password can be entered in the field using the Keypad. Areas that can be locked by selecting the respective buttons are \[\text{Fader, Cursor Up, 10 Key (keypad), and Others}\]. Selecting the Others button locks the controls for the EQ, DYNAMICS/DELAY, PAN/ASSIGN, BUS ASSIGN, AUX, MONITOR (but not the LEVEL knobs), SCENE MEMORY, and LIBRARY sections of the Top Panel.

You retain control over the UTILITY, MIDI, D-I/O, GROUP, and AUTOMATION buttons and windows.

To activate the locking function, select which features are to be locked, cursor to the EXECUTE button, and press the ENTER button. The EXECUTE button will flash momentarily.

To disable locking features, select the CLEAR ALL button, and press the EXECUTE button.

Be careful not to forget your password.
16-4 Utility, User Custom (USER CSTM) Window

This window allows you to program which sources will be controlled by the 16 channels in the CUSTOM/MIDI Fader Layer.

The [FADER LAYER CUSTOMIZE ASSIGN TABLE] lets you assign sources to the channels. The [ASSIGN CH] (assign channel) selection can be any source: inputs 1 through 32, aux returns 1 through 6, buses 1 through 8, and aux sends 1 through 6. Cursor to the channel number that you want to change, and rotate the JogDial to select the desired source.

At the bottom of the channel assignment columns there is a [MIDI REMOTE] button. When selected, it changes to inverse video. When active, the columns will change from [ASSIGN CH] information to [MIDI CH#]. Each of these can be programmed to the desired MIDI channel selection and can be assigned to MIDI message in the [MIDI > MIDI RMT] window. When selected, MIDI messages are reflected to SOLO, ON, PAN and FADER functions of respective channels in the [MIDI > MIDI RMT] window.

Cursor to the EXECUTE button, and press the ENTER button to activate the selections for use as the CUSTOM/MIDI Fader Layer assignments.

For more information, see Chapter 11, MIDI.
Chapter 17
Options

The DA7 has three option card slots on the Rear Panel. SLOT 1 corresponds to Channel 17-24, SLOT 2 connects to Channel 25-32, and SLOT 3 can appear as Channel 9-16. Although SLOT 3 has multiple functions when SLOT 3 is being used to bring sources into the DA7, the FLIP LED buttons for those channels will change to (orange) to let you know you are using the option slot inputs. Routing of SLOT 3 is assigned in the [DIGITAL INPUT SELECT] area of the [D-I/O>INPUT SET] window.

A separate slot is provided for the SMPTE & V Sync option card, as described in Section 17-5.

Be sure to note the wordclock requirements for the option cards. See Section 12-1, D-I/O Input Set for additional information.
17-1 ADAT Digital I/O Card, WR-ADAT

You can use the ADAT card with the DA7 to connect an external ADAT recorder.

Connect the ADAT card to an ADAT recorder, with a pair of fiber cables, from the In and Out of the ADAT card to the Out and In of the ADAT recorder.

To send a signal to the ADAT recorder, the [DIGITAL INPUT SELECT] area of the [D-I/O>INPUT SET] window must be assigned to reflect the routing being used to feed the ADAT recorder. When the ADAT card is used in SLOT 3, it replaces analog inputs 9-16, and the FLIP buttons are illuminated (orange). Go to the [D-I/O>INPUT SET] window and toggle the path of the SLOT 3 card to the inputs of Channels 9-16.

**ADAT + DA7**

Use this diagram when setting up the DA7 with an ADAT recorder. This will provide the DA7 with a connection to 16 tracks of digital recording. To verify that the setup is properly connected, go to the [D-I/O>INPUT SET] window. On the lower left, where SLOT 1, SLOT 2, and SLOT 3 are indicated, the crosshatching will go away when a proper connection has been made.
Connections

With the power to the DA7 off, insert two optional ADAT cards into SLOT 1 and SLOT 2. Carefully screw these cards into their respective slots in the DA7 so they are properly grounded. Each ADAT machine is connected to an option card via two optical cables, one In and one Out. The 8-track ADAT signal in SLOT 1 is assigned to inputs 17-24, and the 8-track ADAT signal in SLOT 2 is assigned to inputs 25-32.

The output sources into the ADAT can be selected from the [D-I/O>SLOT OUT] window.

Refer to Chapter 12, D-I/O for additional information.

Wordclock Setup

The Word Clock master is the ADAT connected to SLOT 1, and the ID setting must be set to zero. From the [D-I/O>INPUT SET] window scroll to SLOT 1 and select it as the Word Clock master source. This will tell the DA7 that the device in SLOT 1 is the Word Clock master.

ADAT + BRC + DA7

This diagram shows how to connected an ADAT and a BRC Clock master to the DA7.

To verify that the setup is properly connected, go to the [D-I/O>INPUT SET] window. On the lower left, where SLOT 1, SLOT 2, and SLOT 3 are indicated, the crosshatching will go away when a proper connection has been made.
Connections
Insert two optional ADAT cards into SLOT 1 and SLOT 2. Carefully screw these cards into their respective slots in the DA7 so they are properly grounded. Each ADAT machine is connected to an option card via two optical cables, one In and one Out. The 8-track ADAT signal in SLOT 1 is assigned to inputs 17-24, and the 8-track ADAT signal in SLOT 2 is assigned to inputs 25-32.

The output sources into the ADAT can be selected from the [D-I/O>SLOT OUT] window.
Refer to Chapter 12, D-I/O for additional information.

Wordclock Setup
The Word Clock master for this example is an Alesis BRC and the ID setting must be set to zero. Both ADATs and the DA7 operate as slaves to the BRC. The wordclock signal from the "WC OUT" of the BRC connects to the WORD CLOCK IN of the DA7 Rear Panel. Set the terminate switch on the DA7 to on.

The DA7 clock must be set from the [D-I/O>INPUT SET] window by selecting [WCK IN].
17-2 TDIF (TASCAM Digital Audio Interface) Card, WR-TDIF

Use the TDIF card with the DA7 to connect an external digital tape recorder, such as the TASCAM DA-88.

DA88 + DA7

This diagram will help you set up a pair of DA88 DTRs with the DA7 using one of the DA88s as the Word Clock master.

You will need to follow these instructions carefully, otherwise your system may not function properly.
Connections
With the power to the DA7 off, insert a TDIF option card into both SLOT 1 and SLOT 2. Carefully screw these cards into their respective slots in the DA7 so they are properly grounded. The DA88 8-track signal from SLOT 1 is assigned to inputs 17-24. The DA88 8-track signal from the SLOT 2 card is assigned to inputs 25-32.

The output sources into the DA88 can be selected from the [D-I/O>SLOT OUT] window.

Refer to Chapter 12, D-I/O for additional information.

To verify that the setup is properly connected, go to the [D-I/O>INPUT SET] window. On the lower left, where SLOT 1, SLOT 2, and SLOT 3 are indicated, the crosshatching will go away when a proper connection has been made.

Wordclock Setup
The Word Clock master in this setup is the DA88 that is attached to SLOT 1 of the DA7. The other DA88 and the DA7 operate as slave units. Set up the master DA88 as ID zero, and set the DA7 to be the slave device. Select and activate the [WCK IN] button in the [D-I/O INPUT SET] window (see Chapter 12). The wordclock signal from the "WORD SYNC OUT" of the SY88 (which is an option card for the DA88) goes to the WORD CLOCK IN of the DA7 Rear Panel. Set the termination switch on the DA7 to On.

When using the TASCAM DA88 setup, the TDIF card has a pair of dip switches physically mounted on it. From the factory both switches are set to Off. This setting permits operation between the DA7 and the DA88. If you use either a DA38 or DA98, switch 1 must be set to On for proper operation.

Switch 2 has no specific function and should not be changed from its Off status. Changing it could create communication protocol problems and conflicts, and should be avoided.
AES/EBU (Audio Engineering Society/European Broadcasting Union) is a digital audio interface standard used in most modern professional equipment. S/PDIF (Sony/Philips Digital InterFace) is the standard interface used by many consumer-level components. This option card has four toggle switches, located on the card itself, to choose the output signal, either the AES/EBU (RS-422/110 Ω) or S/PDIF (0.5 V[p-p]/75 Ω). The status information contained in the output signals is always “professional” regardless of the switch position.

This AES/EBU & S/PDIF card can be used as an interface between digital equipment and the DA7. If you need to send audio signals to an external recorder, use a breakout cable with a connector which connects to the AES/EBU & S/PDIF card and eight male XLR connectors which make up the other end, or the tail. When doing this, make sure the four toggle switches on the option card are set to AES/EBU.

The [D-I/O>TO SLOT] window shows which card is connected to what SLOT, and allows you to program the DA7 to output up to eight different sources to the external recorder. Simultaneously, by using female XLR connectors (or turnarounds on the male XLR connectors) from the external device, the eight tracks of the recorder can be routed back as inputs to the DA7.

If attempting to connect a consumer level recorder to the DA7, the same procedure will work, but the breakout cable should have RCA connectors on the tail. When connecting with the RCA plugs, be sure to set the four switches on the option card to S/PDIF. See Chapter 12, D-I/O, and Chapter 2, DA7 Tour for additional information on connecting and using the three option card slots on the Rear Panel of the DA7. Cable information is shown in Appendix E, Cables and Connections.
17-4 AD/DA Card, WR-ADDA

The AD/DA card is an analog-to-digital/digital-to-analog converter. Use this card to input an external analog device to the DA7. Since the DA7 only has 16 analog inputs accessible from the Rear Panel, using the AD/DA card in the D-I/O slots permits routing additional sources into Channel INPUTS 17-25 and 26-32.

The AD/DA card has two DB-25 connectors, one for input signals and one for output signals. There are several possible scenarios for connecting external devices with the AD/DA card.

The [D-I/O>TO SLOT] window shows which card is connected to what SLOT, and allows you to program the DA7 to output up to eight different sources to the external recorder. Conversely, eight channels of the external device can be routed back as inputs to the DA7.

See Chapter 12, D-I/O, and Chapter 2, DA7 Tour for information on where D-I/O input signals from the slot cards come into the DA7.

If you are using a small external mixer, say for a drum submix, those eight channels could come back into the DA7 through a breakout cable. Or, the output from the AD/DA card can be used to send eight discrete signals to an analog recorder. See Appendix E, Cables and Connections for additional information.
17-5 SMPTE Card, WR-SMPT

The SMPTE (Society of Motion Picture and Television Engineers) & V Sync (Vertical Sync) option card lets external time code, usually from a video source, control the DA7’s Automation functions. When using the DA7 in a video post-production environment, the video master device will slave the DA7 to its time code, which can be preset in the [AUTOMATION>EXECUTE] and [AUTOMATION>SETUP] windows.

The SMPTE connection is made to the DA7 with a male XLR plug, while the V Sync signal connects to the Rear Panel with a BNC connector. The XLR is an UNBALANCED connection. When sending a balanced signal to the card, pins 1 & 3 of the incoming male XLR should be tied together. This is a -10 dB input.

The SMPTE time code that the DA7 accepts is longitudinal, or LTC. Although often generated by a video deck, SMPTE time code can be generated by a number of devices, non-video in nature. The V Sync signal allows the DA7 to synchronize to an incoming composite video signal by reading the video sync pulse.

![SMPTE & V Sync Card](image)

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When using timecode for AUTOMATION during TANDEM operations, 2 WR-SMPT cards must be used, one in each DA7.
**Connections**

Please take the following steps to install the SMPTE/V SYNC card. See illustration above.

1. Loosen the 4 screws, and then remove the blank panel of the SMPTE/V SYNC slot.
2. Bend one end of the accessory cable of the WR-SMPT card, so that the conductive surface becomes exposed as in the illustration.
3. Connect the bent end of the cable, as shown, to the DA7.
4. Connect the other end of the cable to the WR-SMPT, so that the conductive surface is in the up position, as shown.
5. After making sure that the conductive surface of the accessory cable is facing up, insert the card carefully and fasten the 4 removed screws.
17-6 TANDEM Card, WR-TNDM

The TANDEM card is for use only with SLOT 3 on the Rear Panel of the DA7. SLOT 3 has the options of [NORMAL], [INS], or [TANDEM] mode. When the TANDEM button is selected, the SLOT 3 column of the [D-I/O>TO SLOT] window changes to recognize which option card is in the slot. When you assign [TANDEM] on or off, a data field in the window will confirm connection. Another data field is used to program an [OFFSET DELAY] value to the slave DA7.

TANDEM Connection

This diagram shows how to connect two DA7s with four DA88s, with a DA88 operating as the Master Clock source.

Connections

Insert a TDIF option card into both SLOT 1 and SLOT 2. Carefully screw these cards into their respective slots in the DA7 so they are properly grounded. The DA88 8-track signal from SLOT 1 is assigned to inputs 17-24. The DA88 8-track signal from the SLOT 2 card is assigned to inputs 25-32.
Insert a TANDEM connection card into SLOT 3 of each of the DA7s. Connect using the customized table in the [D-I/O>TO SLOT] window by selecting TANDEM from the SLOT 3 column. Connect a serial cable between the two option cards. On the Master DA7, the MASTER/SLAVE switch on the TANDEM Connection I/O card should be set to MASTER, and on the Slave DA7 set to SLAVE. For details on the serial cable see Appendix E, Cables and Connections.

To know if the setup is properly connected, go to the [D-I/O>INPUT SET] window. On the lower left where SLOT 1, SLOT 2, and SLOT 3 are indicated, the crosshatching will go away when a proper connection has been made.

The output sources into the DA88 can be selected from the [D-I/O>TO SLOT] window.

Refer to Chapter 12, D-I/O for additional information.

Connect between the two DA7s and the Word Clock master DA88 (ID 0) using the MIDI IN and OUT ports on the Rear Panels of the DA7s.

**Wordclock Setup**

The Word Clock master is one of the DA88s and the ID must be set to zero. All other devices in the chain are slaved to that clock master. Use the wordclock signal from the “WORD SYNC OUT” of the SY88 option card on the DA88, and connect it to the WORD CLOCK IN of the Master DA7 Rear Panel. Set the terminate switch of the master DA7 to Off.

Connect the wordclock signal from the WORD CLOCK OUT of the Master DA7 Rear Panel to the WORD CLOCK IN of the Slave DA7 Rear Panel, and set the terminate switch of the Slave DA7 to on.

The Master and Slave DA7’s clock must be selected from the [D-I/O>INPUT SET] window by selecting the button.
TANDEM Connection + Remote Control Software (future development)

This diagram depicts the TANDEM Connection setup using an external computer.

Connections
Follow the steps for setup as outlined in the TANDEM Connection diagram. Connect between the TO PC ports of the two DA7s and the serial ports of the PC as illustrated. If the computer is an IBM compatible, you may need a conversion cable that changes a Mini-DIN 8 pin (for TO PC) to a D-sub 9 pin(for RS-232C), available at your nearest dealer. Connect between the DA7 master and the DA7 slave with MIDI cables by using MIDI IN and MIDI OUT ports as shown above.

The DA7s and the PC will communicate control signals and data between each other through this bus connection. The connection baud rate can be set up to 125kbps from the [MIDI>SETUP] window [PORT SELECT] area.

Wordclock Setup
The wordclock setup for this configuration is the same as the TANDEM Connection configuration.
The differences in operation from a single DA7 are:

1. On the TopPanel of the slave DA7, the buttons and the faders in the following channel strips are inoperative except the FLIP buttons. These channels are AUX SEND 1-6, BUS 1-8 and MASTER L/R. On the LCD screen of the slave DA7, the windows of CHANNEL, CHANNEL LIBRARY, EQ, EQ LIBRARY, DYNAMICS and DYNAMICS LIBRARY of these channels are not displayed.

2. MONITOR and TALKBACK do not function to the slave DA7.

3. For SOLO operation, the slave DA7 only allows you to select channels by pressing SOLO buttons. The POSITION, MODE, MUTE and SOLO LEVEL are controlled by the master DA7.

4. The OSCILLATOR function on the slave DA7 will not operate.

5. The [TALK BACK SW LOCK], [RMT SW POLARITY REV] and the [10 KEY SCENE RECALL] in the [UTILITY>CONFIG] window do not function on the slave DA7.

6. For AUTOMATION, only a few operations are available on the slave DA7. These are MANUAL SELECT in the [AUTOMATION >SETUP] window, all operation in the [AUTOMATION >EVT EDIT] window, START SCENE in the [AUTOMATION >EXECUTE] window. The EDIT PARAMETER is also operable except when selecting the SCENE button in the [AUTOMATION >EXECUTE] window.

7. The Dither control for the [REC OUT] and [AUX SEND 1/2] area of the [D-I/O>DITHER] window cannot be operated from the slave DA7.

8. Selecting a (meter) POSITION is inoperative in the [METER>BUS /AUX] window of the slave DA7.

9. The METER BRIDGE of the slave DA7 does not show MONITOR A levels.

10. The Read and Write functions of the [SCENE MEMORY>RD/WT] window cannot be controlled from the slave DA7.

The [PROTECT CHANNEL SELECT] and [XFADE CHANNEL SELECT] areas on the slave mixer allow control of the INPUT Channels and AUX Return. The AUX Send, BUS and MASTER L/R cannot be controlled by the slave. SEL ALL and CLR SEL can only be controlled from the master DA7.

The [FADE TIME] area of the [SCENE MEMORY>XFADE TIME] window can be controlled from both the slave and master DA7.
The buttons of [ON], [SELECT], [SOLO] and [FADER] that are placed in the INPUT 1-16, 17-32 and the AUX Return channels can be operated from the TopPanel of both the slave and master DA7. For the output channels of AUX Send, BUS and the MASTER L/R, these buttons and faders are inoperative from the TopPanel of the slave DA7.

TANDEM connection settings

Settings are required in the [MIDI>SETUP] window and the [D-I/O>TO SLOT] window for both the master and the slave DA7.

- Display the [MIDI>SETUP] window for both the master and the slave DA7.
- Select the TO PC button in the PORT SELECT area of the [MIDI>SETUP] window for both the master and the slave when using the TO PC port. For MIDI this selection is not required.
- Set the same BAUD RATE in the BAUD RATE area for both the master and the slave when using the TO PC port. For MIDI this selection is not required. For ToPC operation, set BAUD RATE to 125 k.
- Select the same MIDI channel for Gen. Rx and Gen. Tx in the MIDI SETUP area of the [MIDI>SETUP] window. Set the same channel for both the master and the slave.
- Display the TANDEM mode of the [D-I/O>TO SLOT] window for both the master and the slave DA7.
- Set the TANDEM area to ON (inversed video) in the SLOT 3 section.
- Set the OFFSET DELAY TIME area to AUTO.
- Select TO PC or MIDI in the PORT SELECT area.
17-7 METER BRIDGE

The METER BRIDGE option for the DA7 provides a visual representation of the [METER] input window. The METER BRIDGE will show the 16 Channel Meters (1-16 or 17-32), or AUX SNDS 1-6 and AUX RTNS 1-6. The BUS 1-8 and the MONITOR A L/R outputs are always displayed.

A Fader Layer selection LED pad is built into the METER BRIDGE and operates the same way as the Fader Layer section on the Top Panel of the DA7. The CONSOLE LINK LED button when selected (red), links the METER BRIDGE to follow the Top Panel Fader Layer selection.

See instructions packed with the METER BRIDGE for more information.
17-8 MAX, EXPANSION SOFTWARE

Expansion Software is a sophisticated software package engineered to automate your Panasonic WR-DA7 Digital Mixer in conjunction with a Macintosh or Windows computer.

Expansion Software provides time code-synchronized record and playback of all automatable mixer features, including automated moving faders, surround panning, channel on/off, aux send levels, EQ, dynamics, and routing.

Even though the mixer already has automation, using Expansion Software gives you easier and more precise mix editing. Mixes can be longer and can be saved to disk. You can even connect two mixers to a single Macintosh creating a larger digital console treated as a single, integrated automation system.

Expansion Software features multiple user-designable "Custom Views", a feature-packed Cue List, and easy to use Graphic Editing.
The Graphic Editing view displays the mix as curves on a time line. You can see multiple channels at the same time, and easily see what moves are coming up. You edit the mix by drawing fader curves.

What's more, you can freely change the way you view the mix, with the Custom View, Cue List, or Graphic window, even while the mix is playing. And you can have multiple mixes open at the same time, allowing you to instantly compare two different mixes. You can even freely copy from one mix and paste into another mix!

A clear indication of channel names, edit modes, grouping, and channel on/off status, combined with a large, easy to read time code display, make mixing fast and easy.

Expansion Software also adds up to 15 groups to your mixer called "SoftGroups". Any fader on the mixer can be turned into a SoftGroup Master, in addition to the mixer's groups. When two mixer's are connected, faders on one mixer can be a group master to faders on the other mixer.

Your mixer faders become a virtual Control Surface, to control and automate signal processors and digital audio workstations.

Expansion Software provides a clear graphic display of automated Surround Panning positions. It also allows panning of either individual channels or the grouped multiple channels.

Mixes reside in the computer's "RAM". You can save the mixes to a disk, either manually or automatically using the Auto Backup feature.

Expansion Software allows you to quickly create different mixes, listen to them, compare them, save them, retrieve and modify them.

Expansion Software also allows you to customize the software to your personal style of mixing. You can label each fader, re-arrange the order of the faders, turn certain features on and off, etc. This customization is saved as part of a Preference file. Multiple Preferences files are supported, so different engineers can each have their own preferences.
Appendix A
Setup Scenarios

The DA7 is a versatile mixer that can be used in many different production and performance environments. Use these as guidelines for integrating the DA7 into your own world.

The DA7 in a Live Environment

Diagram showing the setup of a live environment with a DA7 mixer connected to various devices such as microphones, drum sets, and amplifiers.
**AUDIO INPUT**
- Microphones ...................... INPUTS 1-3 (only 1 shown)
- Drum microphones ................. INPUTS 4-7
- Guitar microphone ................. INPUT 8
- Guitar line ........................ INPUT 9
- Bass guitar ........................ INPUT 10
- Keyboards (analog) ................. INPUTS 11-14
- Digital multi-track recorder (DMTR) . TDIF option card (slot #3)
- Cassette player ..................... INPUTS 15,16

**AUDIO OUTPUT**
- PA system ........................ MASTER LR OUT
- Stage monitors ..................... MONITOR B OUT

**AUXILIARY**
- Digital effects processor .......... AUX 1 S/PDIF SEND and RETURN
- Effect processor (analog) .......... SEND 3/4 and RETURN 3/4
- Effects insert (analog) .......... CHANNEL 1 INS
- Cassette tape recorder .......... REC OUT and 2TR B IN
The DA7 provides an incredible amount of flexibility in the studio environment. Multi-track recording is easily achieved with option cards and some basic understanding of the studio process. There are no black and white rules to follow. Let creativity be your guide.

**The DA7 in a Studio Environment**
AUDIO INPUT
• Microphones ................. INPUTS 1-4
• Bass guitar .................. INPUT 8
• Guitar ......................... INPUT 9
• Drum machine ................. INPUTS 13, 14
• Keyboard ...................... INPUTS 15, 16

INSERT
• Compressor/pre-amp ........ INS 1-16

AUXILIARY
• Digital reverb ................. AUX 1/2 SEND and RETURN
• EFX (Analog) ................. AUX 3/4, 5/6 SEND and RETURN
• Cassette tape recorder ......... REC OUT/2TR B IN
• DAT .......................... DIGITAL IN/OUT
• 3 Multi-track recorders ....... ADAT option cards in SLOTS 1, 2, and 3

AUDIO OUTPUT
• Control room monitors ....... MONITOR A OUT
• Studio monitors/headphones .. MONITOR B OUT
• Control room headphones .... HEADPHONE OUTPUT
Appendix B
LCD Screen Displays

This appendix is designed to provide a ready-reference of the windows displayed on the LCD screen.

Pages B-2 and B-3 reflect the window titles for the window groups and the Top Panel selection method of displaying the windows.

The remaining pages in this appendix reflect the windows for the window groups.

Refer to this appendix whenever you are unsure of how to access a particular window or window group.
Appendix B

**MASTER DISPLAY SECTION**

- Input 1-32 Window
- Bus/Aux Window
- Slot Window

**EQUALIZER SECTION**

- Equalizer Window
- Library Section
- Equalizer Library Window

**PAN/ASSIGN/SURROUND SECTION**

- Surround Window

**DYNAMICS/Delay SECTION**

- Dynamics Window
- Library Section
- Dynamics Library Window

**AUX SECTION**

- Aux 1 Window
Appendix B

MIDI, SETUP SECTION

D-I/O, SETUP SECTION

GROUP SETUP SECTION

AUTOMATION, SETUP SECTION

UTILITY/ SOLO MONITOR, SETUP SECTION

SCENE MEMORY SECTION

Numbers with # indicate that pressing these numbers of the 10 KeyPad recalls corresponding windows. For instance, pressing the UTILITY button then the # 2 key displays the [UTILITY > CONFIG] Window.
METER, MASTER DISPLAY SECTION

Input 1-32 Window

Bus/Aux Window

Slot Window

Return to First Window
CHANNEL, MASTER DISPLAY SECTION

- Channel Button
- Master Display Section
- Channel Window
- Library Section
- Channel Library Window
- Return to First Window

Channel Window
Channel Library Window
Channel Window, Multi Channel View
Channel Library Window, Multi Channel View
**EQUALIZER SECTION**

Press the knob

Equalizer Window → Library Section → Equalizer Library Window → Return to First Window

Equalizer Window

Equalizer Library Window

Equalizer Window, Multi-Channel View
**PAN/ASSIGN/SURROUND SECTION**

Press the knob

Pan/Assign/Surround Section

Surround Window (Send Vol)

Surround Window (Jog & Fader)

Surround Window (Pattern)

Surround Window, Multi-Channel View
DYNAMICS/DELAY SECTION

Press the knob

Dynamics Window → Library Section → Dynamics Library Window → Return to First Window

Dynamics/Delay Section

Dynamics Window (COMP + GATE)

Dynamics Library Window

Dynamics Window (EXPANDER)

Dynamics Window, Multi-Channel View (COMP)

Dynamics Window, Multi-Channel View (GATE)
When the FADER CONTROL ON LED button is on (green), press the respective AUX1-6 LED buttons to view other AUX windows.
Appendix B

MIDI, SETUP SECTION

MIDI Setup Window

Program Assign Window

Control Assign Window

Bulk Window

Remote Window

MIDI Remote Window (EDIT)

MIDI Remote Window (Library)
**D-I/O, SETUP SECTION**

- **D-I/O Button**
- **Setup Section**
  - **Input Set Window**
  - **To Slot Window**
  - **Dither Window**

**Input Set Window**

- **To Slot Window, Normal Mode**
- **To Slot Window, Insert Mode**
- **To Slot Window, Tandem Mode**
- **Dither Window**

*Appendix B*
GROUP SETUP SECTION

- Setup Section
- Fader Group Window
- Mute Group Window
- Link/STR Window

Return to First Window
Appendix B

AUTOMATION, SETUP SECTION

Setup Window → Execute Window → Event Edit Window → Return to First Window

Setup Window

 Execute Window

 Event Edit Window
UTILITY/ SOLO MONITOR, SETUP SECTION

Solo/Monitor Window

Oscillator/Battery Window

Configuration Window

User Custom Window

Solo/Monitor Window

Return to First Window

Utility Button
Solo Monitor Button
Setup Section

Oscillator/Battery Window
Configuration Window
User Custom Window

User Custom Window

Solo/Monitor Window

CONSULT THIS USER'S GUIDE
SCENE MEMORY SECTION

Write Button  Read Button
Scene Memory Section

Read/Write Window  XFade Window

Return to First Window

Read/Write Window  XFade Window
# Appendix C
## Abbreviations & Acronyms

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<td>AUTO DSP CHANGE</td>
<td>BUS ASGN</td>
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<td>AUX RTN</td>
<td></td>
<td></td>
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<tr>
<td>alternating current</td>
<td>balance</td>
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<td>bayonet nut connector</td>
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<td>clear</td>
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<td>auto store</td>
<td></td>
<td>compressor and gate</td>
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<td>configure</td>
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<td>auxiliary send</td>
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</tbody>
</table>
CR  control room
CTRL  control
CTRL ASGN  control assign
CTRL CHG  control change

D
D-I/O  digital input/output
DA7  Digital Mixer WR-DA7
DAT  digital audio tape
DATA TBL  data table
DEL  delete
DISP  display
DLY  delay
DMTR  digital master tape recorder
DYN  dynamics
DYN LIB  dynamic library

E
EFX  effects
EQ  equalizer
EQ ON  equalizer on
EQ LIB  equalizer library
EVT EDIT  event edit
EXPNDR  expander

F
FADR GRP  fader group
FDR  fader
FOOT SW  foot switch
FRQ  frequency
Fs  frequency sample
### Abbreviations & Acronyms

**G**
- GEN RX: MIDI general receive
- GEN TX: MIDI general transmit
- GNG: gang
- GR: gain reduction

**H**
- H: high
- HM: high-mid
- HMI: human machine interface
- HPF: high pass filter

**I**
- INS: insert

**J**
- JOG+FDR: jog and fader

**L**
- L: low
- L/R: left/right
- LCD: liquid crystal display
- LED: light emitting diode
- LM: low-mid
- LO: low
- LPF: low pass filter

**M**
- MASTER L/R: master left/right
- MEM: memory
- MIC: microphone
- MIDI: musical instrument digital interface
- MIDI PRG ASGN: MIDI program assign
- MIDI RMT: MIDI remote
### Abbreviations & Acronyms

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tr>
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<td>MIDI machine control</td>
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<tr>
<td>MON SETUP</td>
<td>monitor setup</td>
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<tr>
<td>MONO</td>
<td>monaural</td>
</tr>
<tr>
<td>MTC</td>
<td>MIDI timecode</td>
</tr>
<tr>
<td>MTR</td>
<td>meter</td>
</tr>
<tr>
<td>MULTI-CH</td>
<td>multi channel</td>
</tr>
<tr>
<td>MUTE GRP</td>
<td>mute group</td>
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<tr>
<td>OL PRTCT</td>
<td>overload protect</td>
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<tr>
<td>OSC/BATT</td>
<td>oscillator/battery</td>
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<td>OTHER CMD</td>
<td>other command</td>
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<tr>
<td>PA</td>
<td>public address</td>
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<tr>
<td>PAN/BAL</td>
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<tr>
<td>PAN/ASSIGN/SURR</td>
<td>pan assign surround</td>
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<tr>
<td>PEQ</td>
<td>parametric equalizer</td>
</tr>
<tr>
<td>PH</td>
<td>phase</td>
</tr>
<tr>
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<td>pink noise</td>
</tr>
<tr>
<td>PK LVL</td>
<td>peak level</td>
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<td>POST EQ</td>
<td>post-equalizer</td>
</tr>
<tr>
<td>PPM</td>
<td>peak program meter</td>
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<td>PRE FDR</td>
<td>pre-fader</td>
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<td>pre-equalizer</td>
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<td>PRG CHG</td>
<td>program change</td>
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<tr>
<td>PRG ASGN</td>
<td>program assign</td>
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<td>PST FDR</td>
<td>post-fader</td>
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<tr>
<td>PTN</td>
<td>pattern</td>
</tr>
<tr>
<td>Q</td>
<td>quality</td>
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Abbreviations & Acronyms

RD/WT  read/write
REC OUT record out
REC MODE record mode
REMOTE remote
RLS release
RT MSG realtime message
RTN return
RX receive

S I/O serial input/output
S/PDIF Sony/Phillips digital interface
S/N signal (to) noise
SCENE MEM scene memory
SEL/MAN select manual
SEL ALL select all
SEND VOL send volume
SHH shelf high
SHL shelf low
SIGNAL GND signal ground
SL surround left
SMPTE Society for Motion Picture and Television Engineers
SND send
SR surround right
STEREO LNK stereo link
STR stereo
SUB surround subwoofer
SUR surround
SW switch
SW STS switch status
SYSTEM EX system exclusive
## Abbreviations & Acronyms

<table>
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<td>Tascam digital interface format</td>
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<td>threshold</td>
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<td>TITLE DISP</td>
<td>title display</td>
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<td>to personal computer</td>
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<td>TX</td>
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<td>V Sync</td>
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<td>volume units</td>
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<td>wordclock in</td>
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## Default Settings

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<td><strong>COMP+ GATE</strong></td>
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## Appendix D

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### Appendix D

#### Default Settings

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#### BULK OUT

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| AUX SEND1/2 | ON/OFF | OFF |
|             |        |     |
| BIT         | 23     |     |

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## Default Settings

### MUTE GROUP
- **GROUP4**: ON/OFF, ON
- **GROUP1**: ON/OFF, ON
- **GROUP2**: ON/OFF, ON
- **GROUP3**: ON/OFF, ON
- **GROUP4**: ON/OFF, ON

### INPUT METER
- **RESPONSE**: VU
- **PEAK HOLD**: OFF
- **POSITION**: PST FDR

### BUS/AUX METER
- **POSITION**: PRE EQ

### AUTOMATION EXEC
- **OFFSET**: 0
- **AUTOMATION**: ENABLE/DISABLE, DISABLE
- **TIME BASE**: TIMEBASE, INT
- **FRAME**: --
- **MMC LOCATE POINT**: Point 1 to 6

### EDIT PARAMETER
- **FADER**: OFF
- **CH**: OFF
- **EQ**: OFF
- **PAN/SURR**: OFF
- **AUX SND**: OFF
- **AUX SND NO.**: ALL
- **LIB**: OFF
- **SCENE**: OFF
- **MISC**: OFF

### UNDO
- **ENABLE/DISABLE**: ENABLE

### FADER EDIT MODE
- **MODE**: ABSOLUTE

### AUTO PUNCH IN
- **OFF**: OFF

### AUTOMATION EVENT
- **EDIT CHANNEL SELECT**: Each CH
- **OFFLINE EDIT PARAMETER**: EQ, OFF
- **FADER**: OFF
- **PAN/SURR**: OFF
- **AUX SND**: OFF
- **AUX SND NO.**: ALL
- **LIB**: OFF
- **SCENE**: OFF
- **MISC**: OFF

### SELECT AUTOMATION MEMORY
- **1**

### AUTOMATION SETUP
- **MANUAL CHANNEL SELECT**: Off (all ch)
- **SELECT DATA**: 1

### READ/WRITE
- **SELECT SCENE MEMORY**: 1
- **READ PARAMETER**: FADER, ON
- **FDR GROUP**: ON
<table>
<thead>
<tr>
<th>Setting</th>
<th>Default Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUTE GROUP</td>
<td>ON</td>
</tr>
<tr>
<td>EQUALIZER</td>
<td>ON</td>
</tr>
<tr>
<td>DYNAMICS</td>
<td>ON</td>
</tr>
<tr>
<td>OTHERS</td>
<td>ON</td>
</tr>
<tr>
<td>PROTECT CHANNEL SELECT</td>
<td>OFF (all ch)</td>
</tr>
<tr>
<td>FADE CHANNEL SELECT</td>
<td>OFF (all ch)</td>
</tr>
<tr>
<td>FADE TIME</td>
<td>0</td>
</tr>
<tr>
<td>SURROUND MODE</td>
<td>SEND VOL</td>
</tr>
<tr>
<td>LR:Cкл</td>
<td>0:10</td>
</tr>
<tr>
<td>JOG SPEED</td>
<td>SLOW</td>
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<td>MOVE MODE</td>
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</tr>
<tr>
<td>AUTO MOVE TIME</td>
<td>10sec.</td>
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<tr>
<td>SEND LEVEL</td>
<td>L (BUS1) -</td>
</tr>
<tr>
<td></td>
<td>R (BUS2) -</td>
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<tr>
<td></td>
<td>C (BUS3) -</td>
</tr>
<tr>
<td></td>
<td>SB (BUS4) -</td>
</tr>
<tr>
<td></td>
<td>SL (BUS5) -</td>
</tr>
<tr>
<td></td>
<td>SR (BUS6) -</td>
</tr>
<tr>
<td>CURRENT POSITION</td>
<td>FR: C (center)</td>
</tr>
<tr>
<td></td>
<td>LR: C (center)</td>
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<tr>
<td>PANEL</td>
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<tr>
<td>AUTOMATION LED</td>
<td>AUX</td>
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<tr>
<td>FLIP</td>
<td>OFF (all fader)</td>
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<tr>
<td>LAYER</td>
<td>INPUT 1-16</td>
</tr>
<tr>
<td>MULTI CH VIEW</td>
<td>OFF</td>
</tr>
<tr>
<td>MONITOR A SOURCE</td>
<td>OFF</td>
</tr>
<tr>
<td>MONITOR A MONO</td>
<td>OFF</td>
</tr>
<tr>
<td>MONITOR B SOURCE</td>
<td>OFF</td>
</tr>
<tr>
<td>TALK BACK</td>
<td>OFF</td>
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<tr>
<td>MMC/CURSOR</td>
<td>CURSOR</td>
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<tr>
<td>GENERAL</td>
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<tr>
<td>CURRENT SCREEN</td>
<td>CHANNEL(S)</td>
</tr>
<tr>
<td>SELECT CHANNEL</td>
<td>INPUT 1</td>
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</tbody>
</table>
Appendix E
Cables & Connections

The information in this appendix provides recommended cables, and details cable pin wiring connections for use with the DA7 and the various option cards noted in Chapter 17, Options.

TO PC Cable

A Printer Cable illustrated below is recommended. This is used to connect two DA7s each other, or between the DA7 and the serial port of a Macintosh computer.

TO PC cable to connect with a Windows computer is shown below.

Note: Recommended Panasonic cables, described in this Appendix, are available only in the US market.
**Y Cable for AUX Sends and AUX Returns**

This is used to connect external analog devices with AUX SEND 3/4, 5/6 and AUX RETURN 3/4, 5/6 connectors on the DA7's Rear Panel.

**SMPTE Option Card**

This cable is used to supply the SMPTE timecode, often generated by a video deck, to the SMPTE Option Card installed in the DA7.
**TANDEM Option Card**

One of the Panasonic Premium Cables, part # DA/DB-DB (DB-25 to DB-25, Length 1 meter) is recommended.

See drawings below when you build a customized cable.

---

**Abbreviation:** I=Input, O=Output

---

### Pins and Names

<table>
<thead>
<tr>
<th>Name</th>
<th>Pin#</th>
<th>Sheilded</th>
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<th>Pin#</th>
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<tr>
<td>FG</td>
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<td></td>
<td>1</td>
</tr>
<tr>
<td>PWRFAILI</td>
<td>14</td>
<td></td>
<td></td>
<td>2</td>
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<tr>
<td>FG</td>
<td>17</td>
<td></td>
<td></td>
<td>17</td>
</tr>
<tr>
<td>CKO -</td>
<td>3</td>
<td></td>
<td></td>
<td>21</td>
</tr>
<tr>
<td>CKO+</td>
<td>15</td>
<td></td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>256O -</td>
<td>4</td>
<td></td>
<td></td>
<td>22</td>
</tr>
<tr>
<td>256O+</td>
<td>16</td>
<td></td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>CASO3+</td>
<td>5</td>
<td></td>
<td></td>
<td>23</td>
</tr>
<tr>
<td>CASO3 -</td>
<td>18</td>
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<td></td>
<td>11</td>
</tr>
<tr>
<td>CASO2+</td>
<td>6</td>
<td></td>
<td></td>
<td>24</td>
</tr>
<tr>
<td>CASO2 -</td>
<td>19</td>
<td></td>
<td></td>
<td>12</td>
</tr>
<tr>
<td>CASO1+</td>
<td>7</td>
<td></td>
<td></td>
<td>25</td>
</tr>
<tr>
<td>CASO1 -</td>
<td>20</td>
<td></td>
<td></td>
<td>13</td>
</tr>
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<td>18</td>
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<td>CASI3+</td>
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<td></td>
<td>5</td>
</tr>
<tr>
<td>CASI2 -</td>
<td>12</td>
<td></td>
<td></td>
<td>19</td>
</tr>
<tr>
<td>CASI2+</td>
<td>24</td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>CASI1 -</td>
<td>13</td>
<td></td>
<td></td>
<td>20</td>
</tr>
<tr>
<td>CASI1+</td>
<td>25</td>
<td></td>
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<td>7</td>
</tr>
<tr>
<td>FG</td>
<td>10</td>
<td></td>
<td></td>
<td>10</td>
</tr>
</tbody>
</table>

---

*UL2464, AWG#28, 13-Twisted Pair, Shielded Shorter than 10 m Fixing screw M 2.6 mm*
**AES/EBU S/PDIF Option Card**

Panasonic part # DA/DB-AES (DB-25 to 4 Male XLR/ 4 Female XLR, 110 Ω Length 3 meters) is recommended for connection with AES/EBU equipment.

For S/PDIF devices, you need a breakout cable with RCA connectors on the tail.

![Diagram of AES/EBU Cable](image1)

![Diagram of S/PDIF Cable](image2)
AD/DA Option Card

Panasonic part # DA/DB-XLRF (DB-25 to 8 Female XLR, Length 3 meters) and Panasonic part # DA/DB-XLRM (DB-25 to 8 Male XLR, Length 3 meters) are recommended.

Note: Make sure to use DB-25 that are less wider than 55.5 mm (2-3/16 inches) when building cables. Connections both CN2 and CN3 to the AD/DA card will not be able if connectors are wider than 55.5 mm.
TDIF Option Card

The recommended cable for use with this card is Panasonic part # DA/DB-TDIF (DB-25 to DB-25(TDIF), Length 3 meters).
Appendix F  
Technical Specifications

**General**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power requirement</td>
<td>USA AC 120v 60Hz General AC 220 ~ 240v 50Hz</td>
</tr>
<tr>
<td>Power consumption</td>
<td>105w (with options)</td>
</tr>
<tr>
<td>Frequency response</td>
<td>20Hz ~ 20kHz, + 1dB ~ -2dB</td>
</tr>
<tr>
<td>T.H.D. (total harmonic distortion)</td>
<td>Less than 0.1% (input = +10dB/1kHz, output = +4dB/RL 600Ω)</td>
</tr>
<tr>
<td>Equivalent input noise</td>
<td>-128dB (Rs= 150Ω)</td>
</tr>
<tr>
<td>Residual noise</td>
<td>-93dB typical</td>
</tr>
<tr>
<td>Maximum voltage gain</td>
<td>84dB: MIC/LINE(1-16) in ~ BUS out</td>
</tr>
<tr>
<td></td>
<td>84dB: MIC/LINE(1-16) in ~ MASTER out</td>
</tr>
<tr>
<td></td>
<td>84dB: MIC/LINE(1-16) in ~ AUX out</td>
</tr>
<tr>
<td>Common Mode Rejection Ratio</td>
<td>More than 80dB (1kHz)</td>
</tr>
<tr>
<td>Crosstalk</td>
<td>90dB typical (1kHz)</td>
</tr>
<tr>
<td>Dynamic Range (Fs = 48kHz, DIN audio filter)</td>
<td>113dB typical: DA converter (digital in ~ analog out)</td>
</tr>
<tr>
<td></td>
<td>112dB typical: AD converter (analog in ~ digital out)</td>
</tr>
<tr>
<td></td>
<td>110dB typical: AD+DA (analog in ~ analog out)</td>
</tr>
<tr>
<td>AD Converter</td>
<td>24 bit, 64 times oversampling (input 1-16)</td>
</tr>
<tr>
<td></td>
<td>20 bit, 64 times oversampling (aux returns 3 ~ 6)</td>
</tr>
<tr>
<td>DA Converter</td>
<td>24 bit, 64 times oversampling (MASTER, MONITOR A)</td>
</tr>
<tr>
<td></td>
<td>24 bit, 128 times oversampling (MONITOR B)</td>
</tr>
<tr>
<td></td>
<td>20 bit, 128 times oversampling (aux returns 3 ~ 6)</td>
</tr>
<tr>
<td>Internal signal processing</td>
<td>32 bit (Dynamic range 192dB)</td>
</tr>
<tr>
<td>Sampling Frequency (Fs)</td>
<td>Internal: 44.1kHz and 48kHz</td>
</tr>
<tr>
<td></td>
<td>External: 44.1kHz ± 6% and 48kHz ± 6%</td>
</tr>
<tr>
<td>Signal delay</td>
<td>Less than 2.5ms, MIC/LINE input to MASTER out</td>
</tr>
<tr>
<td>Dynamics</td>
<td></td>
</tr>
</tbody>
</table>
Appendix F

Compressor
- Threshold: -60dB ~ 0dB (1dB/step)
- Ratio: 1.0, 1.1, 1.3, 1.5, 1.7, 2.0, 2.5, 3.0, 3.5, 4.0, 5.0, 6.0, 8.0, 10, 20, ∞ (16 points)
- Attack time: 0ms ~ 250ms (1ms/step)
- Release time: 5ms ~ 2000ms (5ms/step)
- Gain: 0dB ~ +12dB (0.5dB/step)

Gate
- Threshold: -80dB ~ -15dB (1dB/step)
- Attack time: 0ms ~ 250ms (1ms/step)
- Release time: 5ms ~ 2000ms (5ms/step)

Expander
- Threshold: -80dB ~ -15dB (1dB/step)
- Ratio: 1.0, 2.0, 3.0, 4.0, 5.0, 6.0, ∞
- Attack time: 0ms ~ 250ms (1ms/step)
- Release time: 5ms ~ 2000ms (5ms/step)
- Range: 0dB ~ +40dB (0.5dB/step)

Equalizer
- LOW band PEQ (parametric equalizer) type: Q = 0.5 ~ 50 (41 steps)
  - F = 20Hz ~ 20kHz (1/12 oct step)
  - G = ± 15dB (0.5dB/step)
- LOW band SHL (shelving low) type: F = 20Hz ~ 1.6kHz (1/12 oct step)
  - G = ± 15dB (0.5dB/step)
- LOW band HPF (high-pass) type: F = 20Hz ~ 1.6kHz (1/12 oct step)
- LOW-MID band PEQ type: Q = 0.5 ~ 50 (41 steps)
  - F = 20Hz ~ 20kHz (1/12 oct step)
  - G = ± 15dB (0.5dB/step)
- HIGH-MID band PEQ type: Q = 0.5 ~ 50 (41 steps)
  - F = 500Hz ~ 20kHz (1/12 oct step)
  - G = ± 15dB (0.5dB/step)
- HIGH band PEQ type: Q = 0.5 ~ 50 (41 steps)
  - F = 500Hz ~ 20kHz (1/12 oct step)
  - G = ± 15dB (0.5dB/step)
- HIGH band SHH (shelving high) type: F = 1kHz ~ 20kHz (1/12 oct step)
  - G = ± 15dB (0.5dB/step)
- HIGH band LPF (low-pass) type: F = 1kHz ~ 20kHz (1/12 oct step)

Delay 0 ~ 14,400 samples/0 ~ 300ms (Fs = 48kHz), 0 ~ 326ms (Fs = 44.1kHz)
Phase normal/reverse (switchable)
Stereo meter Bar graph type LED, Left and Right, 20 points for each
  - VU or PPM (selectable)
  - Peak hold on/off, ∞
Fader 100mm motor fader (x21), +10db ~ -90dB ∞ dB
Display LCD, 320x240 dot, with backlight
Memory SCENE MEMORY(Snapshot) 50 registers
Appendix F

Analog Inputs (0dB = 0.775 Vrms, 0dBV = 1 Vrms)

<table>
<thead>
<tr>
<th>Input Type</th>
<th>Source Type</th>
<th>Impedance</th>
<th>Signal Level (Nominal-before clipping)</th>
<th>Connector Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>CH inputs 1-8 5kΩ</td>
<td>mics, 50kΩ ~ 600kΩ</td>
<td>lines, 600kΩ</td>
<td>-60dB ~ -46dB</td>
<td>XLR 3-31 (bal)</td>
</tr>
<tr>
<td>CH inputs 9-16 5kΩ</td>
<td>mics, 50kΩ ~ 600kΩ</td>
<td>lines, 600kΩ</td>
<td>+10dB ~ +24dB</td>
<td>XLR 3-31 (bal)</td>
</tr>
<tr>
<td>CH Insertion Returns 1 ~ 16 10kΩ</td>
<td>lines, 600kΩ</td>
<td></td>
<td>+4dB ~ +18dB</td>
<td>TRS phone jack (bal)</td>
</tr>
<tr>
<td>2TR B IN(analog) 10kΩ</td>
<td>lines, 600kΩ</td>
<td></td>
<td>+4dB ~ +18dB</td>
<td>TRS phone jack (unbal)</td>
</tr>
<tr>
<td>Aux returns 3 ~ 6 10kΩ</td>
<td>lines, 600kΩ</td>
<td></td>
<td>+4dB ~ +18dB</td>
<td>TRS phone jack (unbal)</td>
</tr>
</tbody>
</table>

Analog Outputs (0dB = 0.775 Vrms, 0dBV = 1 Vrms)

<table>
<thead>
<tr>
<th>Input Type</th>
<th>Output Type</th>
<th>Impedance</th>
<th>Adapted Load Impedance</th>
<th>Signal Level (Nominal-before clipping)</th>
<th>Connector Type</th>
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</thead>
<tbody>
<tr>
<td>MASTER out L/R</td>
<td>150Ω</td>
<td>lines 600Ω</td>
<td></td>
<td>+4dB ~ +18dB</td>
<td>XLR 3-32 (bal)</td>
</tr>
<tr>
<td>Aux sends 3 ~ 6</td>
<td>75Ω</td>
<td>lines 10kΩ</td>
<td></td>
<td>+4dB ~ +18dB</td>
<td>Phone jack (unbal)</td>
</tr>
<tr>
<td>INSERTION 1 ~ 16</td>
<td>10Ω</td>
<td>lines 10kΩ</td>
<td></td>
<td>+4dB ~ +18dB</td>
<td>Phone jack (unbal)</td>
</tr>
<tr>
<td>REC OUT L/R(analog)</td>
<td>150Ω</td>
<td>lines 10kΩ</td>
<td></td>
<td>+4dB ~ +18dB</td>
<td>TRS phone jack (bal)</td>
</tr>
<tr>
<td>MONITOR A out L/R</td>
<td>150Ω</td>
<td>lines 600Ω</td>
<td></td>
<td>+4dB ~ +18dB</td>
<td>TRS phone jack (bal)</td>
</tr>
<tr>
<td>MONITOR B out L/R</td>
<td>150Ω</td>
<td>lines 600Ω</td>
<td></td>
<td>+4dB ~ +18dB</td>
<td>TRS phone jack (bal)</td>
</tr>
<tr>
<td>Headphones</td>
<td>8Ω</td>
<td>phones 4Ω/8Ω</td>
<td></td>
<td>400mW/100mW</td>
<td>Stereo phone jack (unbal)</td>
</tr>
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</table>
Digital In and Out

2TR IN (INPUT 15,16)
in/out: In
format: IEC 958 Professional (AES/EBU) or Consumer (S/PDIF)
Level: RS-422 (AES/EBU) or 0.5v (pp)/75Ω (S/PDIF)
Connector: XLR 3-31

REC OUT
in/out: Out
format: IEC 958 Professional (AES/EBU) or Consumer (S/PDIF) switchable
Level: RS-422 (AES/EBU) or 0.5v (pp)/75Ω (S/PDIF)
Connector: XLR 3-32

AUX RETURN 1/2
in/out: In
format: IEC 958 Consumer (S/PDIF)
Level: 0.5v (pp)/75Ω
Connector: RCA pin jack

AUX SEND 1/2
in/out: Out
format: IEC 958 Consumer (S/PDIF)
Level: 0.5v (pp)/75Ω
Connector: RCA pin jack

WORD CLOCK IN
in/out: In
Level: TTL/75Ω switchable
Connector: BNC

WORD CLOCK OUT/THROUGH
in/out: Out
Level: TTL/75Ω, Pass-through (75Ω OFF) or termination (75Ω ON)
Connector: BNC

MIDI IN
in/out: In
Format: MIDI
Connector: DIN Connector 5P

MIDI OUT
in/out: Out
Format: MIDI
Connector: DIN Connector 5P
Technical Specifications

TO PC
  in/out: In and Out
  Connector: Mini-DIN Connector 8P

RS422/485
  in/out: In and Out
  Connector: D-sub 9P

FOOT SWITCH
  in/out: In
  Level: TTL level, Normally Open (Unlatch type)
  Connector: Phone jack

Optional Accessories

Meter Bridge
  Type: Bargraph LED, 26 channels, 15 points for each
  Format: RAMSA original Level NET II
  Power: DC 7V
  Connector: D-sub 15P

ADAT Interface card (8 in / 8 out)
  Type: ADAT (DIRECT OUT / BUS / AUX / MASTER, Input 9-32)
  in/out: In and Out
  Connector: Optical

TDIF Card (8 in / 8 out)
  Type: TDIF (DIRECT OUT / BUS / AUX / MASTER, Input 9-32)
  in/out: In and Out
  Format: TDIF-1
  Connector: D-sub 25P (in and out)

AES/EBU Card (8 in / 8 out)
  Type: AES/EBU/SPDIF
  Signal type: RS422
  Connector: D-sub 25P (in and out)
A-D/D-A Card (8 in / 8 out)
Input 1 ~ 8 (balanced)
Indicated impedance: 10kΩ
Nominal source impedance: 50Ω ~ 600Ω
Nominal input level: +4dB (1.23V)
Maximum input level before clipping: +18dB (6.15V)
Connector type: D-sub 25P

Output 1 ~ 8 (balanced)
Indicated impedance: 10kΩ
Nominal source impedance: 150Ω
Nominal input level: +4dB (1.23V)
Maximum input level before clipping: +18dB (6.15V)
Connector type: D-sub 25P

SMPTE/V SYNC Card
SMPTE IN
in/out: In
Format: SMPTE (LTC)
Signal type: nominal -10dBV / 10kΩ
Connector: XLR

V SYNC
in/out: In
Format: NTSC (B/W or color) / PAL
Signal type: 75Ω, termination
Connector: BNC

TANDEM Card (for running two DA7 mixers simultaneously)
Type: TANDEM connection
in/out: In and Out
Format: RAMSA SSA
Signal type: RS422
Connector: D-sub 25P
Appendix F

Dimensions

DA7 Users’ Guide
Appendix G
MIDI
Implementation Chart

This appendix is designed to provide MIDI related information.

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<th>Pages</th>
<th>Description</th>
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</thead>
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<td>G-2</td>
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<tr>
<td>G-3</td>
<td>MIDI Control Change Assign Table</td>
</tr>
<tr>
<td>G-4</td>
<td>MIDI Program Change Assign Table</td>
</tr>
<tr>
<td>G-5</td>
<td>MIDI Program Change</td>
</tr>
<tr>
<td>G-6</td>
<td>MIDI Control Change</td>
</tr>
<tr>
<td>G-7-11</td>
<td>NRPN (Parameter)</td>
</tr>
<tr>
<td>G-12-24</td>
<td>NRPN (Data)</td>
</tr>
<tr>
<td>G-25-35</td>
<td>MIDI System Exclusive</td>
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### MIDI Implementation Chart

<table>
<thead>
<tr>
<th>Function</th>
<th>Transmitted</th>
<th>Recognized</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Basic Channel</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Default</td>
<td>1 - 16</td>
<td>1 - 16</td>
<td>Memorized</td>
</tr>
<tr>
<td>Changed</td>
<td>1 - 16</td>
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Mode 3: OMNI OFF, POLI
Mode 4: OMNI OFF, MONO
o : Yes
x : No
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- **n**: MIDI Channel Number
- **cc**: Control Change Number
- **vv**: Defined as follows

**NRPN**

Parameter MSB (pm) when cc is 63H, Data MSB (dm) when cc is 06H, Parameter LSB (pl) when cc is 62H, and Data LSB (dl) when cc is 26H.

**Mode Control**

When cc is 7AH, vv data of 00H means Console Lock and vv data of 7FH means Console Unlock. For cc data, 7BH, 7CH, 7DH, 7EH, 7FH are Not Used.

**Initial Assignment of Control Change**

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**Appendix G**

DA7 Users’ Guide
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<td><strong>SURR MOVE MODE REPEAT</strong></td>
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<td><strong>SURR MOVE MODE REVERSE</strong></td>
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<tr>
<td><strong>SURR AUTO MOVE TIME</strong></td>
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<td><strong>SURR AUTO MOVE START</strong></td>
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<td><strong>SURR L</strong></td>
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<td><strong>SURR SL</strong></td>
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<td><strong>SURR SR</strong></td>
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<td><strong>SURR LR</strong></td>
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<td><strong>SURR FR</strong></td>
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## MIDI Control Change

### Assignable Parameter for Control Change [2/2]

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<td>EQ HIGH BAND FILTER TYPE</td>
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<td>DYN POSITION</td>
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<td>DYN GATE ATTACK</td>
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### NRPN (Parameter)

**Assignment of NRPN Parameter MSB (pm) [1/2]**

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<th>Parameter (pl)</th>
<th>Selectable Channel (pl)</th>
<th>Data (dm, dl)</th>
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<td>20H</td>
<td>PHANTOM</td>
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<td>22H</td>
<td>GAIN</td>
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<td>23H</td>
<td>INSERTION</td>
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<td>FADER GROUP</td>
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<td>26H</td>
<td>MUTE GROUP</td>
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<td>27H</td>
<td>PAN/BAL ON</td>
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<td>28H</td>
<td>PAN/BAL</td>
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<td>54H</td>
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<td>Surr LR/C</td>
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<td>Surr Move Mode Return</td>
<td>BUS 1-6 1-6 1-6 1-6 1-6 1-6</td>
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<td>5AH</td>
<td>Surr Move Mode Reverse</td>
<td>BUS 1-6 1-6 1-6 1-6 1-6 1-6</td>
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NRPN (Parameter)

Assignment of NRPN Parameter MSB (pm) [2/2]

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<th>pm</th>
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<th>Data (dm, dl)</th>
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<td>EQ ON</td>
<td>INPUT 1-32, AUX RTN 1-6</td>
<td>L/R 1-8 OFF/ON</td>
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<td>5CH</td>
<td>EQ LOW BAND FILTER TYPE</td>
<td>INPUT 1-32, AUX RTN 1-6</td>
<td>L/R 1-8 PEQ/LPF/SHL</td>
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<td>5DH</td>
<td>EQ HIGH BAND FILTER TYPE</td>
<td>INPUT 1-32, AUX RTN 1-6</td>
<td>L/R 1-8 PEQ/LPF/SHH</td>
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<tr>
<td>5EHI</td>
<td>EQ LOW BAND Q</td>
<td>INPUT 1-32, AUX RTN 1-6</td>
<td>L/R 1-8 0.5..50</td>
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<tr>
<td>5FHI</td>
<td>EQ LOW BAND F</td>
<td>INPUT 1-32, AUX RTN 1-6</td>
<td>L/R 1-8 PEQ/20, 20kHz LPF/SHL, 1.6kHz</td>
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<tr>
<td>60H</td>
<td>EQ LOW BAND G</td>
<td>INPUT 1-32, AUX RTN 1-6</td>
<td>L/R 1-8 PEQ,SHL:&lt;15.15dB LPF/SHL, 1.6kHz</td>
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<tr>
<td>61H</td>
<td>EQ L-MID BAND Q</td>
<td>INPUT 1-32, AUX RTN 1-6</td>
<td>L/R 1-8 0.5..50</td>
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<td>62H</td>
<td>EQ L-MID BAND F</td>
<td>INPUT 1-32, AUX RTN 1-6</td>
<td>L/R 1-8 20 to 20kHz</td>
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<tr>
<td>63H</td>
<td>EQ L-MID BAND G</td>
<td>INPUT 1-32, AUX RTN 1-6</td>
<td>L/R 1-8 –15..15dB</td>
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<td>64H</td>
<td>EQ H-MID BAND Q</td>
<td>INPUT 1-32, AUX RTN 1-6</td>
<td>L/R 1-8 0.5..50</td>
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<td>66H</td>
<td>EQ H-MID BAND F</td>
<td>INPUT 1-32, AUX RTN 1-6</td>
<td>L/R 1-8 500 to 20kHz</td>
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<td>67H</td>
<td>EQ HIGH BAND Q</td>
<td>INPUT 1-32, AUX RTN 1-6</td>
<td>L/R 1-8 –15..15dB</td>
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<td>68H</td>
<td>EQ HIGH BAND F</td>
<td>INPUT 1-32, AUX RTN 1-6</td>
<td>L/R 1-8 PEQ/50..20kHz LPF/SHL, 1kHz</td>
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<td>69H</td>
<td>EQ HIGH BAND G</td>
<td>INPUT 1-32, AUX RTN 1-6</td>
<td>L/R 1-8 PEQ,SHL:&lt;15.15dB LPF/SHL, 1kHz</td>
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<tr>
<td>6AHI</td>
<td>DYN ON,FUNCTION</td>
<td>INPUT 1-32, AUX RTN 1-6</td>
<td>L/R 1-8 OFF/COMP+GATE/EXP</td>
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<td>6BHI</td>
<td>DYN STEREO LINK</td>
<td>INPUT 1-32, AUX RTN 1-6</td>
<td>L/R 1-8 OFF/LEFT/RIGHT/EXP</td>
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<td>6CHI</td>
<td>DYN POSITION</td>
<td>INPUT 1-32, AUX RTN 1-6</td>
<td>L/R 1-8 POST EQ/PRE EQ</td>
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<tr>
<td>6DHI</td>
<td>DYN GATE THL</td>
<td>INPUT 1-32, AUX RTN 1-6</td>
<td>L/R 1-8 OFF,–80..–15dB</td>
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<td>6EHI</td>
<td>DYN GATE ATTACK</td>
<td>INPUT 1-32, AUX RTN 1-6</td>
<td>L/R 1-8 0.250ms</td>
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<tr>
<td>6FHI</td>
<td>DYN GATE RELEASE</td>
<td>INPUT 1-32, AUX RTN 1-6</td>
<td>L/R 1-8 5..2000ms</td>
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<td>70H</td>
<td>DYN COMP/EXP THL</td>
<td>INPUT 1-32, AUX RTN 1-6</td>
<td>L/R 1-8 COMP=–40..0dB EXP=–80..–15dB</td>
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<tr>
<td>71H</td>
<td>DYN COMP/EXP RATIO</td>
<td>INPUT 1-32, AUX RTN 1-6</td>
<td>L/R 1-8 COMP=1:1..infinity:1 EXP=1:infinity..1:1</td>
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<td>72H</td>
<td>DYN COMP/EXP ATTACK</td>
<td>INPUT 1-32, AUX RTN 1-6</td>
<td>L/R 1-8 0.250ms</td>
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<td>73H</td>
<td>DYN COMP/EXP RELEASE</td>
<td>INPUT 1-32, AUX RTN 1-6</td>
<td>L/R 1-8 5..2000ms</td>
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<tr>
<td>74H</td>
<td>DYN COMP/EXP GAIN/RANGE</td>
<td>INPUT 1-32, AUX RTN 1-6</td>
<td>L/R 1-8 COMP=0:12dB(GAIN) EXP=0..40dB(RANGE)</td>
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<td>SELECTED CH</td>
<td>INPUT 1-32, AUX RTN 1-6</td>
<td>L/R 1-8 –</td>
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<td>76H</td>
<td>AUTOMATION REC CH</td>
<td>INPUT 1-32, AUX RTN 1-6</td>
<td>L/R 1-8 OFF/ON</td>
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<td>77H</td>
<td>AUTOMATION MANUAL CH</td>
<td>INPUT 1-32, AUX RTN 1-6</td>
<td>L/R 1-8 OFF/ON</td>
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<td>78H</td>
<td>OSCILLATOR ASSIGN CH</td>
<td>INPUT 1-32, AUX RTN 1-6</td>
<td>L/R 1-8 OFF/ON</td>
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<td>79H</td>
<td>CH LIBRARY RECALL CH</td>
<td>INPUT 1-32, AUX RTN 1-6</td>
<td>L/R 1-8 –</td>
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Assignment of NRPN Parameter LSB (pl) for Selecting Channel

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<td>58H - 5DH</td>
<td>64H - 69H</td>
<td>70H - 77H</td>
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Appendix G

G MIDI Chart

DA7 Users’ Guide
## Assignment of NRPN Parameter LSB (pl) for System Current [1/3]

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NRPN (Parameter)

Assignment of NRPN Parameter LSB (pl) for System Current [2/3]

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## Assignment of NRPN Parameter LSB (pl) for System Current [3/3]

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## NRPN (Data)

### Assignment of Data Value for Control Change 3rd Byte and NRPN Data LSB (dl) [1/2]

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*Data MSB (dm) is 00H fixed.*
### Assignment of Data Value for Control Change 3rd Byte and NRPN Data LSB (dl) [2/2]

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* Data MSB (dm) is 00H fixed.
NRPN (Data)

Individual Assignment of Data Value for Control Change 3rd Byte and NRPN Data MSB, LSB (dm, dl)

GAIN

[GAIN] of Channel (INPUT 1-32, AUX RTN 1-6)

[G] of Equalizer

[GAIN] of Dynamics Compressor

[RANGE] of Dynamics Expander

<Expression>

Value = Code 0.5 - 40

Code = Value 2 +80

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NRPN : Data LSB = Code, Data MSB (dm, dl) is 00H fixed.
PAN/BAL

[LR] of PAN
[LR] of Balance
[LR] of Surround
[FR] of Surround

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NRPN (Data)

FADER

[FADER] of Channel
[L], [R], [C], [SB], [SL] and [SR] of Surround
[MASTER LEVEL] of Surround Monitor
[LEVEL] of Solo Monitor
[LEVEL] of Oscillator

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NRPN : Data LSB = Code, Data MSB (dm) is 00H fixed.

DELAY TIME

[DELAY TIME] of Channel

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0..14,400 [sample]

<Expression>
Control Change : Value = Code (80H, 80H)
NRPN : Value = dm (80H + dl, 80H)
Code = INT (Value / 80H)
dm = INT (Value / 80H), dl = Value – dm (80H)
LR:C
[LRC] of Surround

NRPN : Data LSB = Code, Data MSB (dm) is 00H fixed.

AUTO MOVE TIME
[AUTO MOVE TIME] of Surround

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NRPN : Data LSB = Code, Data MSB (dm) is 00H fixed.
NRPN (Data)

Q

[Q (Quality)] of Equalizer

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**Q**

NRPN (Data)

Q (Quality) of Equalizer

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NRPN : Data LSB = Code, Data MSB (dm) is 00H fixed.
### G MIDI Chart

**F**

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*NRPN : Data LSB = Code, MSB (dm) is 00H fixed.
### NRPN (Data)

**THL**

*[THL] of Dynamics*

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**Send Receive**

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NRPN : Data LSB = Code, Data MSB (dm) is 00H fixed.

**ATTACK**

*[ATTACK] of Dynamics*

<Range>

0.250 [ms]

<Expression>

Control Change : Value = Code + 2,
NRPN : Value = dm + 80H + dl, dm = INT (Value / 80H), dl = Value – dm – 80H
### RELEASE

**[RELEASE] of Dynamics**

**<Range>**

5..2000 [ms]

**<Expression>**

Control Change : Value = Code * 4 + 5 + 5, Code = INT ((Value – 5) / 4 / 5)

NRPN : Value = (dm * 80H + dl) * 5 + 5,

dm = INT ((Value – 5) / 5 / 80H), dl = (Value – 5) / 5 – dm * 80H

### RATIO

**[RATIO] of Dynamics**

#### <Table> of Compression RATIO

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**<Range>**

5..2000 [ms]

**<Expression>**


NRPN : Value = (dm * 80H + dl) * 5 + 5,

dm = INT ((Value – 5) / 5 / 80H), dl = (Value – 5) / 5 – dm * 80H

#### NRPN : Data LSB = Code, Data MSB (dm) is 00H fixed.

<table>
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#### NRPN : Data LSB = Code, Data MSB (dm) is 00H fixed.
NRPN (Data)

SOURCE

\([\text{SOURCE}]\) of Oscillator

\(<\text{Table}>\)

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\(\text{NRPN} : \text{Data LSB} = \text{Code, Data MSB} (dm) \text{ is } 00H \text{ fixed.}\)

WORD CLOCK SOURCE

\([\text{WORD CLOCK SOURCE}]\) of Digital Input

\(<\text{Table}>\)

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\(\text{NRPN} : \text{Data LSB} = \text{Code, Data MSB} (dm) \text{ is } 00H \text{ fixed.}\)

TANDEM DELAY TIME

\([\text{TANDEM DELAY TIME}]\) of Tandem Connection

\(<\text{Range}>\)

0...200 [sample]

\(<\text{Expression}>\)

Control Change : Value = Code \(\oplus\) 2,

\(\text{NRPN} : \text{Value} = dm \oplus 80H + dl, \quad \text{Code} = \text{INT}(\text{Value} / 2)\)

\(\text{dm} = \text{INT}(\text{Value} / 80H), \quad \text{dl} = \text{Value} - \text{dm} \oplus\)
BIT

[BIT] of Dither

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NRPN : Data LSB = Code, Data MSB (dm) is 00H fixed.

FADE TIME

[FADE TIME] of Scene Memory

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NRPN : Data LSB = Code, Data MSB (dm) is 00H fixed.
**NRPN (Data)**

**SCREEN ID**

[SCREEN ID] of LCD Screen Change

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MIDI System Exclusive

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**MIDI System Exclusive**

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<tr>
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<td>Return of Scene Memory Title</td>
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<td>Return of Automation Memory Title</td>
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<td>Return of Equalizer Library</td>
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<td>40H</td>
<td>Set Current Data</td>
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<td>41H</td>
<td>Set Status Parameter</td>
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<td>42H</td>
<td>Set Control Parameter</td>
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<td>CURRENT RETURN</td>
<td>40H</td>
<td>Return of Current Data</td>
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<td>MEMORY NO. RETURN</td>
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### Contents of Each Command

**STATUS REQUEST, PTN TABLE REQUEST, CURRENT REQUEST, MEMORY NO. REQUEST** (Polling Commands)

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<th>CMD</th>
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<th>Additional Information</th>
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### MIDI System Exclusive

**MEMORY REQUEST, TITLE REQUEST (Polling Commands)**

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**PARAMETER REQUEST - Request of Status Parameter (Polling Command)**

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#### Footer

**PARAMETER REQUEST - Request of Control Parameter (Polling Command)**

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#### Footer

**STATUS RETURN - Return of System Status (Selecting Command)**

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#### Data

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<tr>
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**STATUS RETURN - Return of Automation Status (Selecting Command)**

When INT, MTC or SMPTE is Selected

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<td>'0' '1'</td>
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<tr>
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<th>Time Base</th>
<th>MSB</th>
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<tbody>
<tr>
<td>'0' - '3'</td>
<td>'0' - 'F'</td>
<td>ASCII Code of Frame Number</td>
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0: 24frame/sec
1: 25frame/sec
2: 30frame/sec, Drop Frame
3: 30frame/sec, Non Drop Frame
4: MIDI Clock
When MIDI Clock is Selected

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<td>Sub CMD</td>
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<td>Automation Status</td>
<td>0/1</td>
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<tr>
<td>0: Stop, 1: Playing or Recording</td>
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<td>Meas</td>
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</tr>
<tr>
<td>MSB</td>
<td>'0' - 'F'</td>
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<tr>
<td>'0': Stop, 'F': Playing or Recording</td>
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</tr>
<tr>
<td>LSB</td>
<td>'0' - 'F'</td>
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<tr>
<td>Beat</td>
<td></td>
</tr>
<tr>
<td>MSB</td>
<td>'0' - 'F'</td>
</tr>
<tr>
<td></td>
<td></td>
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<tr>
<td>LSb</td>
<td>'0' - 'F'</td>
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<td>Clock</td>
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</tr>
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<td>MSB</td>
<td>'0' - 'F'</td>
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<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>LSb</td>
<td>'0' - 'F'</td>
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<td>Time Base</td>
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<td>0: 24frame/sec</td>
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<td>1: 25frame/sec</td>
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<tr>
<td>2: 30frame/sec, Drop Frame</td>
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<td>3: 30frame/sec, Non Drop Frame</td>
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PTN TABLE WRITE, PTN TABLE RETURN (Selecting Command)
Write Program Change Table, Return of Program Change Table
Need to Send 2 Blocks

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<td>LSB '0' - 'F'</td>
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<td>As Program</td>
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<td>Change No.2</td>
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<td>LSB '0' - 'F'</td>
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<td>Change No.N</td>
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Footer

2nd (Last) Block

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MIDI System Exclusive

Write Control Change Table, Return of Control Change Table

Need to Send 2 Blocks

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MEMORY RECALL, MEMORY STORE, MEMORY NO. RETURN (Selecting Command)

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<th>MSB</th>
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### MEMORY WRITE, MEMORY RETURN (Selecting Command)

- **Need to Send Several Blocks**

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<tr>
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<td>LSB</td>
</tr>
<tr>
<td>Data to be Written to Memory (Library)</td>
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### Intermediate and Last Blocks

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### TITLE WRITE, TITLE RETURN (Selecting Command)

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<td>End Memory (Library) No.</td>
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<td>LSB</td>
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<tr>
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<td>2nd</td>
</tr>
<tr>
<td></td>
<td>3rd</td>
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<td>4th</td>
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<tr>
<td></td>
<td>9th</td>
</tr>
<tr>
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<td>10th</td>
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</tbody>
</table>

| Title of 2nd Memory (Library) | 1st | 20H - 7FH | ASCII Code of 1st Character of Title |
| | 2nd | 20H - 7FH | ASCII Code of 2nd Character of Title |
| | 3rd | 20H - 7FH | ASCII Code of 3rd Character of Title |
| | 4th | 20H - 7FH | ASCII Code of 4th Character of Title |
| | 5th | 20H - 7FH | ASCII Code of 5th Character of Title |
| | 6th | 20H - 7FH | ASCII Code of 6th Character of Title |
| | 7th | 20H - 7FH | ASCII Code of 7th Character of Title |
| | 8th | 20H - 7FH | ASCII Code of 8th Character of Title |
| | 9th | 20H - 7FH | ASCII Code of 9th Character of Title |
| | 10th | 20H - 7FH | ASCII Code of 10th Character of Title |

#### Intermediate and Last Blocks

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MIDI System Exclusive

### International and Last Blocks

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<th>3rd</th>
<th>4th</th>
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<td>20H - 7FH</td>
<td>20H - 7FH</td>
<td>20H - 7FH</td>
<td>20H - 7FH</td>
<td>20H - 7FH</td>
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<td>20H - 7FH</td>
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#### CURRENT SET, CURRENT RETURN (Selecting Command)

### 1st Block

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A/D converter. An electronic device that converts analog signals into digital signals. D/A is the opposite, converting digital signals to analog.

AES/EBU. A specification using time division multiplex to send two channels of digital audio data via twisted pair and using XLR connectors.

analog. A continuously varying electrical signal. Direct transformation of sound or picture signal data into another form of electrical signal.

assign. To route or switch a signal to a particular or combination of signal paths.

attenuator. An electronic device used to reduce the value of an electronic signal. No attenuation results in maximum signal level. See fader and level.

audio. What people listen to; pertaining to audible sound, the broadcasting of sound, the reproduction of sound, and the sound portion of a production.

automation. Computerized methods replacing manual operations. Based on timecode, the DA7 automation system will memorize fader positions, switch individual channels off and on, adjust equalization or pan positions and change the auxiliary sends. The DA7 also allows you to record an entire mixing session and then edit the individual channel settings in multiple passes.

auxiliary send/auxiliary return/aux. The auxiliary send is used to feed signals from the output channels to external devices such as effects processors, amplifiers, or multi-track recording equipments. The auxiliary return is used to receive output channels from external devices. The DA7 has six input sends and six output sends. Aux sends and returns are usually only used with peripheral processors.
**balance/balanced.** Adjusting of various sound levels on an audio mixing board to give a pleasant consistent result.

**Balanced line.** A cable that uses a twisted pair for the signal and is wrapped with grounded shield. Balanced lines have superior noise immunity.

**Baud rate.** A measure of the number of bits per second transferred by a MIDI, a modem or a serial port. Two devices must be at the same baud rate to transfer data.

**Bandpass filter.** See filter.

**bit.** The smallest unit of computer data, represented by a zero or a one. Eight bits form a byte.

**BNC.** Bayonet Nut Connector or a coaxial cable that has BNCs attached to the ends.

**buffer.** A temporary storage area in a computer’s memory that holds information. In the DA7 the buffer holds the current mix settings. When a scene memory is recalled, the mix setting of the selected scene memory is written to the buffer. When a scene is stored, the mix settings in the buffer are written to the selected scene memory.

**bulk dump.** The MIDI function that allows the transfer of system specific data between MIDI capable devices, i.e. sample files and mixer settings. The data is transmitted as MIDI System Exclusive messages.

**bus.** A point in an electronic circuit where many connections are brought together. In the DA7, a bus carries signals from a number of inputs or return signals to a mixing amplifier and/or output connectors. See mixing bus and data bus.

**byte.** A unit of information, consisting of eight bits, that is used in computer processing.

**channel library.** An area in the DA7 memory used to access and store channel settings, stored as programs. The DA7 has user programs to store your channel settings.

**channel strip.** The a vertical strip of controls depicting an audio channel on the front panel of the DA7.
clipping. An audio circuit overloaded with a signal that is too large causing
the unwanted effect of distortion. Excessive gain caused by severe audio
distortion where the peaks of the audio signal will rise above the
capabilities of the amplifier circuit. When viewed on an oscilloscope,
audio peaks will appear clipped off.

clock. In digital equipment, clock refers to the timing pulses used internally
for timing and externally to synchronize the other equipment on the
system. In audio, low frequency clock pulses are used for gates and
triggers and for MIDI control.

Compressor. An automatic level control device which boosts low-level
signals and cuts high-level signals, streamlining level settings by reducing
the effective dynamic range. A device for reducing the dynamic range of
an audio signal without imparting distortion.

core. A large, desk-like audio mixer.

Control Change. A MIDI message that provides real-time control such as
Modulation, Volume and Pan.

D/A converter. An electronic device that converts digital signals into analog
signals.

data. Electronic information that is used by a computer when running a
program. Electronic data refers to files and databases, text documents,
images, and digitally-encoded audio and video.

data bus. A bundle of wires that is used for parallel transmission of digital
data. Also see bus and mixing bus.

dBu. A unit of measurement of an audio signal level in an electrical circuit.
This term is commonly used to describe signal levels in modern audio
systems.

decibel/Db. A unit used to measure sound intensity or volume level. 0 dBu
A reference voltage equal to 0.775 Vrms. 0 dBV A voltage reference equal
to 1.0 Vrms. 0 dBFS A reference level equal to “full scale” or maximum
voltage level before digital clipping in A/D and D/A audio converters.

delay. An electrical or mechanical means of delaying the audio signal a short
period of time. Most often used as the basis for special effects. Echo,
reverb, phasing, flanging, doubling, slap back and chorusing are some
effects that use time delay. Also see Dynamic Processor.
digital. Information that can be quantified and measured in discrete, exact values. The binary representation of audio information that can be stored, processed and copied.

dither. A process that allows high quality transfers between systems that have different digital word sizes. The use of dither greatly reduces distortion. Dither is a built in function of the DA7.

drop frame timecode. The method of timecode computation that accounts for the reality of there being only 29.97 frames of video per second. The .03 frame is visually insignificant, but mathematically very significant. A one hour video program will have 107,892 frames of video (29.97 frames per second x 60 seconds x 60 minutes). The drop frame time code method of accommodating reality was developed, where 2 frames are dropped from the numerical count for every minute in an hour, except for every 10th minute when no frames are dropped. See also non-drop frame timecode and timecode.

dry. A term used to describe unaltered audio with no processing. The opposite of wet. See Wet.

dynamic range. The ratio of the minimum signal to the maximum signal an audio system can handle without loss or distortion. It is expressed in decibels.

dynamic processor. A device used to correct or modify an audio signal. The DA7 allows the use of pre and post fader dynamic processors to be inserted in the audio path.

D/A converter. An electronic device that converts digital signals into analog signals. A/D is the opposite, converting analog signals to digital.

Edit. To change or modify. The DA7 has several editors to edit, store and recall setting, scenes, parameters, lists and names.

EMI Electrical Magnetic Interference. An unwanted signal caused by strong magnetic fields. Hum and buzz are the most common forms of this type of interference when audio signal cables are near power transformers or other high power equipment such as stage lights. Good quality, properly wired cables will reduce or eliminate EMI.

Equalizer or EQ. A device that is used to control or modify audio signals’ frequency response. The DA7 has separate 4 band parametric equalizers for each input. The gain, center frequency and Q are fully adjustable.
**Equalizer library.** Predefined commonly used equalizer settings that can be recalled. The DA7 allows the creation of custom settings that can be saved and recalled.

**equalization.** The adjustment of the frequency response of an audio signal. See Equalizer.

**EPROM Electrically Programable Read Only Memory.** A integrated circuit memory chip that can store the instructions or programs needed to operate digital equipment. The DA7 has two EPROM’s which store the operating system for the mixer. The information stored on EPROM’s is also known as firmware and eliminates the need for software stored on floppy or hard disks.

**expander.** A process that expands the dynamic range of an audio signal. The DA7 has a fully controllable internal expander on each input as part of the dynamics processor.

**fader.** The slide control for adjusting audio signal levels.

**filter.** A device to remove certain bands of frequencies. The three types of common filters are: a low pass filter -passes only low frequency signals, high pass -passes only high frequency signals, band pass filters -passes only a certain band frequency signals. See Equalizer.

**frequency.** The characteristic of sound or an audio signal that determines pitch, measured in Hertz (Hz). The DA7’s equalizer has controls that vary the center frequency of four separate filters.

**gain.** An increase in the level of audio signal, measured in decibels (Db) or volume units (vu). Gain controls on the DA7 are used to adjust signal levels for optimal performance.

**gate.** A method of suppressing audio signals below a predetermined level. Gates are used to suppress unwanted low level noise. The DA7 has a gate for every fader that allows signal processing.

**ground.** Also known as earth ground, is the electrical connections of equipment to the earth. By convention, earth ground is considered the 0 (zero) volt reference for electrical power. Equipment that does not have an earth ground is a potential source of dangerous electrical shock.
Ground loop. A type of interference in audio equipment that is grounded in more than one location, often through cables or connections, that can be the source of hum interference due to small currents that exists between the two pieces of equipment. Ground loop eliminator devices can prevent this type hum. All equipment should be grounded for safe operation.

Hertz (Hz). The unit of measure of frequency. 1 hertz equals one cycle per second. 1KHz equals 1000 cycles per second. (K in the metric system is short for Kilo or 1000.)

Highpass filter. See filter.

I/O. An abbreviation for Input/Output.

initialize. To reset or bring to to some predetermined condition.

K. The abbreviation of kilo in the metric system meaning 1000. See Hertz.

LED Light Emitting Diode. The DA7 uses various color LED’s as visual indicators in the buttons and the signal level meters for ease of use, long life and reliability.

level. A general term used to describe the audio signals strength, voltage, power or volume.

line level signal. The level of signal used by most audio equipment. Line level is -20db to +20db. In audio, it is known as a high-level signal.

loop. A sound that is played repeatedly. On the DA7, a software command that instructs a process to repeat.

Lowpass filter. See filter.

Low level signal. A signal that is less than -20dB is considered a low level signal. The output of microphones are generally low level. Generally, low level signals are more susceptible to hum and noise.

master. A device that controls all other devices. A master gain control controls the overall level of all the other controls under it.

metering. The DA7 metering is precise and easy to read. LED signal indicators for inputs, outputs, bus and special effects monitoring.

MIDI. Musical Instrument Digital Interface. The musical instrument standard that allows MIDI capable devices to communicate with each other. The DA7 can communicate with and control other MIDI devices.
**MIDI Timecode.** An addition to the MIDI Standard to allow the synchronization of audio equipment, such as the DA7, to MIDI equipped devices.

**Mix.** The combination of various audio signals. The DA7 provides an almost limitless number of ways to combine audio signals. Complex settings can be saved as “scenes” and recalled later.

**mixing bus.** An audio mixer where signals from different microphones and/or preamps are connected and where mixing is actually done. Also see bus and data bus.

**Mix scene.** The various settings of the mixer for different requirements during a production. The DA7 allows the saving and recalling of these settings in memory.

**modulation.** A method of varying the frequency or volume of an audio signal by applying a low frequency signal. Modulation can also be applied to controls, such as Pan, to create stereo or surround sound effects.

**Mono or monophonic.** A single source or channel of sound.

**MTC.** See MIDI Time Code.

**Noise Gate.** see Gate.

**non-drop frame timecode.** The method of timecode computation where there are 30 numerical frames per second of video. “There are 30 frames of video per second,” you say. Wrong. There are only 29.97 frames of video per second. In a mathematical hour there would be 108,000 frames (30 frames per second x 60 seconds x 60 minutes). So, a mathematical hour of video is 108 frames longer than an hour of reality video. See also drop frame time code and timecode.

**ohm.** A unit of electrical resistance for direct current or impedance for alternating current.

**output.** Signal connections that can be sent or connected to another device.

**oscillator.** A device that produces a continuous electrical wave or tone.

**pan/panning.** A method of positioning the sound in a stereo signal from any point between left and right. The DA7 allows pan control positioning for each input signal.
**PPM/Peak Program Meter** A peak oriented type of volt meter system designed to detect signal overloads easily. A PPM responds to input signals very quickly, several times faster than a Volt Unit meter.

**Peaking.** A broad band equalizer process used to increase or decrease a wide band of frequencies. The DA7 equalizer has 4 Q controls per input fader to adjust the frequencies affected from broad to narrow.

**Phase.** Signal connections. In-phase is a properly wired connections; signals can be mixed (added) to other signals. Out-of-phase is a connection that is reversed and causes cancelation of the signal to occur when mixed with other signals.

**Phantom power.** A method of sending power to certain microphones over standard balanced lines.

**Phone Jack.** A 1/4" connector used in audio. The DA7 uses two types. The Tip Sleeve (TS) for single signal connections and the Tip Ring Sleeve (TRS) for dual signal connections. The Tip Ring Sleeve connectors are normally used for stereo pairs, or balanced signals where there is a plus, minus, and ground.

**Phono Jack.** A connector used on consumer and semi-professional audio and video equipment originally known as the RCA jack. Also used for digital signals (S/PDIF).

**Pink Noise.** A specific type of random noise with an equal amount of energy per octave. White Noise is random noise with an equal amount of energy per frequency band.

**Post Fader.** A point in the signal path after a fader. The DA7 allows for both pre and post fader insertion. See Pre Fader.

**Pre Fader.** A point in the signal path before the fader. The DA7 allows for both pre and post fader insertion. See Post Fader.

**Program Change.** MIDI command sent to MIDI devices to change the patch or settings.

**Punch In/Out.** The DA7’s automation controls allow Punch In/Out recording.

**Q.** The “quality” of a filter. A low Q affects a broad band of frequencies, while a high Q affects a narrow band of frequencies. On the DA7, Q is one of the parameters that can be controlled with the 4 band parametric...
equalizer. See equalizer.

**Routing.** The designation of inputs, faders, buses, outputs and processes’ of the signal. See Signal Path.

**RS-422.** A protocol for communication that specifies which pins in a 9-pin cable connector are supposed to do what.

**Scene Memory.** The part of the DA7’s memory used to store scene settings.

**Serial port or interface.** See RS-422.

**Shelving.** An Equalization process usually used to cut or boost either high or low frequencies. The name comes from the response curve, which looks like a shelf.

**Signal.** An electrical representation of sound in audio equipment.

**Signal Path or Route.** The course a signal travels through audio equipment.

**Signal to Noise S/N.** A ratio of the threshold level of noise to the normal signal level. Digital systems generally have a higher Signal to Noise ratio.

**Snapshot.** See Mix scene.

**save.** The action necessary to save a copy of your current file on the Hard Disk for storage. Until you save, any work you do is liable to disappear without notice.

**serial port.** Data is transmitted through a serial port one bit at a time. Transmission can be in both directions, but not simultaneously.

**SMPTE.** Society of Motion Picture and Television Engineers. SMPTE also refers to the timecode recorded on audio or videotape for synchronization purposes.

**solo.** Monitoring a single channel.

**Surround sound.** A multichannel audio format.

**sync, synchronization.** The coordination of a soundtrack with its corresponding picture.

**System exclusive.** A MIDI data format specification used to send information between digital devices.
Talk Back. A DA7 feature that allows the person operating the mixer to talk to the studio from the control room.


timecode. An eight-digit number that identifies a specific frame in a tape. It is also an electronic timing signal, based on the 24-hour clock, that is recorded along the length of the tape and provides markers for locating specific program material. There are two types of timecode, non-drop frame and drop frame. Non-drop frame timecode is based on 30 frames of video per second. Drop frame timecode is based on 29.97 frames of video per second. For short amounts of time, this discrepancy is inconsequential. For longer periods of time, however, it is important. One hour of non-drop frame timecode will be 108 frames longer than one hour of real time. See also non-drop frame timecode and drop frame timecode.

undo. Cancels the last operation. You cannot undo a save.

VU meter Volume Units. A special type of volt meter designed and calibrated to follow perceived audio volume. 0 VU equals +4 dBi.

window. A rectangle frame of data on the display. It lets you “see” and work with programs, applications, or functions. Several windows can be open at one time.

write. To record data on a medium.

Wordclock. A reference syncronization pulse used in digital audio equipment to eliminate timing errors. The use of a dedicated wordclock line is more reliable. It is often used in more complex systems and multitrack recording to ensure proper syncronization.

XLR. A three pin audio connector.

zoom. Enlarging or reducing the size of an image or a display.
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