

YAMAHA

DMC1000

**Digital Mixing Console
V3.0 Operating System
Operating Manual**

Operating Precautions & Notes

Please read through the following information before operating the DMC1000.

Safety Information

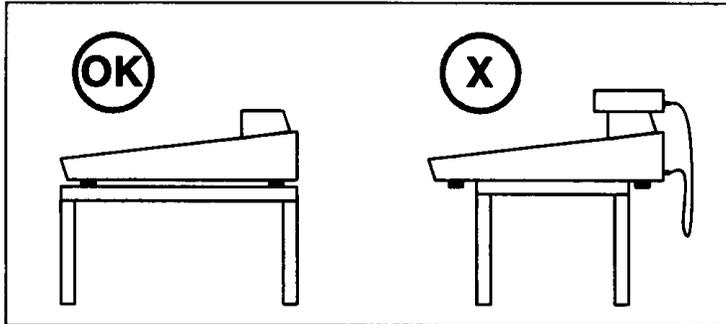
- Make sure the DMC1000 power cord is not located in a position where it is likely to be walked on and/or pinched by other equipment placed near to it.
- Make sure that the DMC1000 is grounded (earthed) correctly. For a 3-core power cable make sure that the AC receptacle's earth terminal is actually grounded (earthed). For a 2-core power cable connect the DMC1000 GND terminal to an AC receptacle earth point.
- Do not expose the DMC1000 to extremes of humidity.
- Do not place the DMC1000 near water.
- Do not place the DMC1000 in areas subject to extremely low temperatures.
- Do not place the DMC1000 in locations subject to excessive dust.
- Do not place the DMC1000 in an area subject to vibration.
- Do not expose the DMC1000 to severe shocks.
- Do not place the DMC1000 in direct sunlight, close to heating units, or in areas subject to high temperatures.
- The ambient temperature where the DMC1000 is operated should be between 0°C and 35°C (32°F and 95°F).

Warnings

- The DMC1000 should be connected to an AC receptacle of the type described in this *Operating Manual* or as marked on the DMC1000.
- To reduce the risk of electric shock, do not remove the cover of the DMC1000.
- To reduce the risk of fire or electric shock, do not expose the DMC1000 to rain or moisture.
- In an extremely humid environment, condensation may form on the inside and outside of the DMC1000. If condensation does occur, leave the DMC1000 powered on, but do not use it until the condensation has cleared.
- The DMC1000 contains no user serviceable parts. Refer all servicing to qualified personnel.
- The DMC1000 uses digital circuits that operate at high frequencies. When used close to TV and radio equipment, reception may be affected. If this is the case, simply relocate the DMC1000, or the affected equipment to a different location.
- If any of the following should occur, the DMC1000 should be serviced by qualified personnel:
 - The DMC1000 power cord or plug becomes damaged in any way.
 - Metal objects or liquids get inside the DMC1000.
 - The DMC1000 is exposed to rain.
 - The DMC1000 is dropped and/or the enclosure is damaged.
 - The DMC1000 does not operate normally or a marked change in performance is noticed.

Installation

Do not obstruct the ventilation slots in the top and bottom panels by placing objects on top of the DMC1000 or by siting the DMC1000 so that the bottom panel is in direct contact with the supporting surface.



Disk Drive

The DMC1000 is shipped with a dummy disk in the floppy disk drive to prevent head damage during transit. Make sure that this dummy disk is removed before attempting to use the floppy disk functions. If the DMC1000 is to be transported again, insert the dummy disk into the disk drive.

Memory Backup Battery

The DMC1000 uses a long-life battery to backup its internal RAM memory (operating system, setup data, internal scene memories, etc.). The battery should last for about 5 years, and its voltage can be checked on the [RAM Card] LCD function under "INT". If the voltage reading falls below 2.5 Volt, the battery should be replaced by your Yamaha dealer. Do not attempt to replace the battery yourself.

Connector Contacts

It is recommended that the DMC1000 rear panel connector terminals be cleaned about once every six months to ensure good electrical conductivity. Use a quality electrical contact cleaning product (switch cleaner).

Cleaning the DMC1000

If the DMC1000 should require cleaning use a soft, lightly moistened cloth. Stubborn marks can be removed using a mild detergent. Do not use abrasive cleaners or solvent based cleaning fluids such as alcohol and benzene.

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Items Supplied with the DMC1000

- DDK crossed 25-pin D-sub cable.
- JAE straight 25-pin D-sub cable.
- YDC 8-pin DIN cable.
- Operating system disk.
- Blank 3.5 inch floppy disk.
- Dummy disk (head protector).
- MDC64 RAM card.

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Introduction

Welcome to the DMC1000

Thank you for purchasing a DMC1000 Digital Mixing Console. The DMC1000 is the first affordable all-digital mixing console with total automation. In fact, it is the only mixing console that offers total, that is, 100% mix automation.

What is the DMC1000?

If you think of a flexible, 8-input, 8-bus, 8-monitor, 3-stereo return mixing console, add 28-bit digital audio processing throughout, and total (100%) mix automation, you will have a fair idea of the DMC1000 concept – the Features list below will tell you the rest.

Features

- Smooth, accurate 100 mm motorized faders with channel touch select function.
- 4-band fully-parametric EQ with a choice of eight filter types for each band.
- Channels can be linked for multiple parameter control using one channel.
- Faders can be grouped for multiple fader control using one fader.
- Adjacent channels can be used as stereo pairs.
- MS decode function for stereo pair channels.
- Up to 96 mix scenes (*snap shots*) can be used in one mix session.
- Total (100%) mix automation of all parameters (not just faders and mutes).
- Two SPX1000 quality digital multi-effects processors built-in.
- 64 RAM card scene memories.
- All data can be saved to 3.5 inch floppy disk for backup, archive, and future use.
- Input and output level monitoring via 22 LED bargraphs with peak hold function.
- Comprehensive analog and digital input and output connections.
- Yamaha Y1/Y2, SDIF2, and M format digital audio can be interfaced without conversion.
- Two or more DMC1000s can be cascaded to provide more channels.
- Automation synchronization to SMPTE (24, 25, 30, 30D fps) and MTC.
- Compatibility with industry standard video edit controllers using ESAM II protocol.
- Remote control via MIDI computer or MIDI sequencer using Controllers and Program Change messages.

Applications

- Any audio mixing application that demands the ultimate in high-quality audio processing.
- Classical and popular music mixing, theater and broadcast, 16- and 20-bit CD mastering, audio/video, and even sound reinforcement.
- See “System Examples” on page 140 for some *real-life* working applications.

Notes about This Manual

This manual is organized into sections that relate to the various sections of the DMC1000, for example, “Input Channel”, “Effects”, “Automation”, etc. So if you want to know something about the Stereo channel’s Balance function, look in the “Stereo Channel” section. Likewise, if you want to know something about the RAM card scene memories, look in the “Scene Memory” section.

The names of LCD functions that appear on the bottom line of the LCD are quoted in square brackets. For example, [I.Format]. If you want to know something about an LCD function, look it up in the index.

If you input a signal, but can’t output it, meter it, or monitor it; get completely stuck; or are just plain inquisitive, have a look at the Block Diagram at the end of this manual. It’s not too complicated, and like all mixing consoles – signals go in at one end and out the other.

The upper and lower limits of some parameter ranges are affected by the selected sampling frequency, so some parameter ranges stated in this manual maybe different to those on the DMC1000. This manual was written at 44.1 kHz.

DMC1000 Terminology

The DMC1000 has eight Input channels, eight Monitor channels (tape returns), and three Stereo channels (effects/auxiliary returns). Stereo channels A and B can be used as effect return channels for the internal effects or as normal stereo inputs.

2TR monitor inputs are provided for 2-track master monitoring and playback. The 2TR monitor signal can be routed through to Input channels 7 and 8.

Direct digital outputs are available from all Input channels, Monitor channels, and Stereo channels. Digital insert points are available on all Input channels, Monitor channels, Stereo channels, and the Stereo output.

Outputs consist of eight Bus outputs (group outs/multitrack sends), the Stereo output (2-track master feed), and three auxiliary sends (Aux 1 & 2 mono, Aux 3 stereo). The stereo Aux 3 send could be used as two sends by panning channels either hard left or hard right. Aux sends 1 and 2 also feed the internal effects.

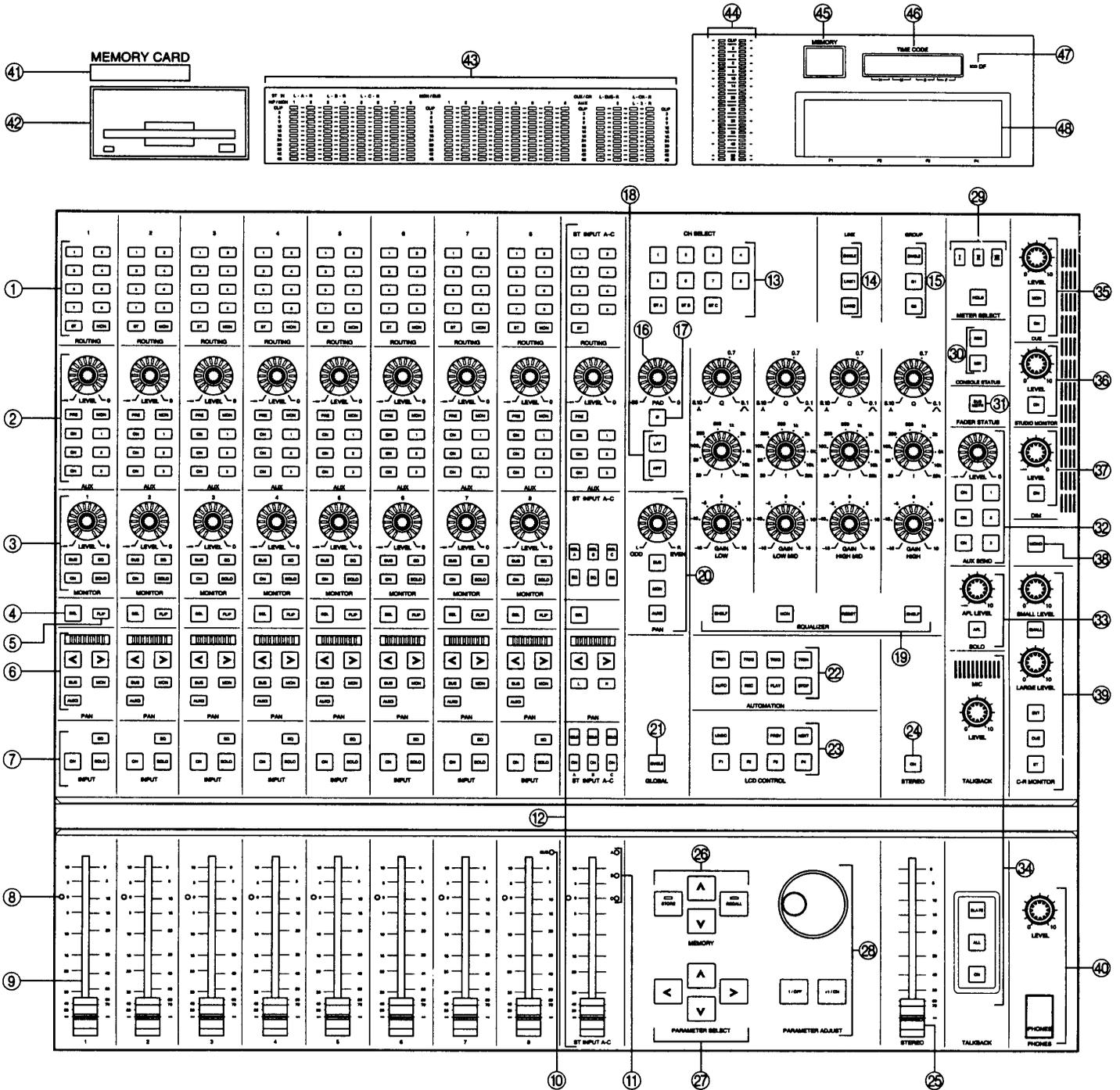
Monitor outputs can be split roughly into two groups: C-R/Phones/Small/Large, and Studio/Cue. The Studio and Cue output’s source can be the C-R monitor signal, although not affected by solo and dim, or an Aux bus (CUE).

DIO (Digital I/O) connections carry the respective Input or Monitor channel inputs and the 8 Bus outputs. When connecting to a DRU8, for example, only one connection is required.

There are two types of mix automation: *scene memories* for mix snapshots and *automation* for continuous (dynamic) control. Both types can be used together or independently and can be synchronized internally or to external timecode (SMPTE or MTC).

Chapter 1: Touring the DMC1000

The Console



① Channel ROUTING section

[1], [2], [3], [4], [5], [6], [7], [8], [ST] keys

These keys are used to route the Input channel and Monitor channel to the Bus and Stereo buses. When the [MON] key is off, Input channels are routed. When the [MON] key is on, Monitor channels are routed.

[MON] key

This key determines whether the above ROUTING keys route the Input channel or Monitor channel to the Bus and Stereo buses. When the [MON] key is off, Input channels are routed. When the [MON] key is on, Monitor channels are routed. When the [MON] key is on, a channel is effectively in Mix mode. That is, the INPUT [ON], [EQ], [SOLO] keys, and fader control the Monitor channel signal, not the Input channel signal.

When Mix mode is set using the CONSOLE STATUS [MIX] key, all [MON] keys are turned on. If all [MON] keys are turned on, Mix mode is selected automatically.

② Channel AUX section

[1], [2], [3] keys

These keys select the auxiliary send to be affected by the LEVEL control, [PRE] key, and [MON] key.

[ON] keys

These keys turn the corresponding auxiliary send on and off.

LEVEL control

This control adjusts the level of currently selected auxiliary send.

[PRE] key

This key selects whether the currently selected auxiliary send is pre fader or post fader.

[MON] key

When this key is on, the AUX controls work for the Monitor channel.

③ Channel MONITOR section

In Rec mode, these controls affect the Monitor channel signal. In Mix mode, when a channel's ROUTING [MON] key is on, or when the [FLIP] key is on, they affect the Input channel signal.

[ON] key

This key is used to turn a Monitor channel on and off, that is, to mute it.

[EQ] key

This key is used to turn a Monitor channel's EQ on and off, in other words, EQ bypass.

[SOLO] key

This key is used to solo a Monitor channel. When a [SOLO] key is pressed, the respective channel is selected automatically.

[BUS] key

This key is used to select the corresponding Bus output as the Monitor channel signal source. In Mix mode, a Bus output cannot be monitored if the corresponding Monitor channel is routed to that particular Bus output. This prevents a signal loop situation.

LEVEL control

This control adjusts the level of the Monitor channel.

④ Channel [SEL] key

These keys select the channel to be controlled by the EQUALIZER controls, PAD control, [Ø] key, [LPF] and [HPF] keys, and rotary PAN control.

⑤ Channel [FLIP] key

This key flips the INPUT [ON], [EQ], [SOLO] keys and fader to work with the Monitor channel signal. The Input channel signal is then controlled by the MONITOR [ON], [EQ], [SOLO] keys and LEVEL control.

These controls are effectively flipped when Mix mode is selected or a channels's ROUTING [MON] key is on. See "Rec & Mix Modes" on page 28.

⑥ Channel PAN section**[BUS], [MON], [AUX3] keys**

These keys are used to select the signal that is to be panned by the PAN [<] and [>] keys: [BUS] for Input channel, [MON] for Monitor channel, and [AUX3] for the Input or Monitor channel selected using the AUX [MON] key. If the channel is the currently selected channel, these keys work in parallel with the main PAN [BUS], [MON], and [AUX3] keys.

[<] & [>] keys

These keys are used to pan the channel signal selected using the above keys: [<] to pan to the left and [>] to pan to the right. Pressing both keys simultaneously will set the pan to center. If the channel is the currently selected channel, these keys work in parallel with the rotary PAN control.

⑦ Channel INPUT section

In Rec mode, these controls affect the Input channel signal. In Mix mode, when a channel's ROUTING [MON] key is on, or when the [FLIP] key is on, they affect the Monitor channel signal.

[ON] key

This key is used to turn an Input channel on and off, that is, to mute it.

[EQ] key

This key is used to turn a Input channel's EQ on and off, in other words, EQ bypass.

[SOLO] key

This key is used to solo an Input channel. When a [SOLO] key is pressed, the respective channel is selected automatically.

⑧ 0 LED

This LED indicator lights up when a fader is set to its unity gain position (0).

⑨ Channel Fader

The channel fader adjusts the level of the Input channel signal or Monitor channel signal, depending on which is selected, that is fed to the assigned buses, that is, the Stereo bus, Bus buses, and Aux buses for post-fader sends. The black print legend on the left-hand side of the faders should be used.

When the FADER STATUS [BUS MSTR] key is on, these faders control the Bus output levels and the BUS LED (top right of channel fader 8) lights up. The red print legend on the right-hand side of the faders should be used.

If a [FLIP] key is pressed, the fader and MONITOR LEVEL control effectively swap jobs.

⑩ **BUS LED**

This LED lights up when the FADER STATUS [BUS MSTR] key is on, and indicates that the channel faders are controlling the Bus outputs.

⑪ **A, B, C LEDs**

These LEDs indicate which Stereo channel is currently selected.

⑫ **ST INPUT A-C**

Apart from the absence of any Monitor channel related controls, the controls on the ST INPUT A-C channel effectively work the same as those on the other channels. The minor differences are explained below.

[SEL A], [SEL B], [SEL C] keys

These keys are used to select the Stereo channel to be controlled by the ST INPUT A-C channel controls. The currently selected Stereo channel is indicated by the A, B, C LEDs located at the top right of the ST INPUT A-C channel's fader.

When the [GLOBAL] key is on, the corresponding auxiliary controls are also selected when a SEL key is pressed.

PAN [L] & [R] keys

These keys are used to select the left or right signal of a Stereo channel for panning. Because these are stereo channels, there are in fact six signals that can be panned: a left and right signal for each Stereo channel. Initially, the left and right signals are panned hard left and hard right respectively.

⑬ **CH SELECT keys**

These keys are used to select channels. When the EQUALIZER [MON] key is off they select Input channels, when it is on they select Monitor channels. If, however, the [LINK1], [LINK2], or [G1], [G2] key is lit, they work in conjunction with the Link or Group function respectively.

⑭ **LINK keys**

These keys are used in conjunction with the channel Link function. See "Linking Channels" on page 86.

⑮ **GROUP keys**

These keys are used in conjunction with the fader Group function. See "Grouping Faders" on page 84.

⑯ **Rotary PAD control**

This control sets the pad level for the currently selected channel.

⑰ **[Ø] key**

This key reverses the signal phase of the currently selected channel: light on for phase reverse, light off for phase normal.

⑱ **[LPF] & [HPF] keys**

These keys switch the LP and HP filters of the currently selected channel on and off. The roll-off frequency for both filters is set using the [Equaliz.] LCD function.

⑲ **EQUALIZER section**

Q Controls

These controls adjust the Q of the respective EQ band.

f controls

These controls adjust the frequency of the respective EQ band.

GAIN controls

These controls adjust the boost and cut of the respective EQ band.

[SHELF] keys

These keys select the type of EQ filters for the LOW and HIGH EQ bands.

[RESET] key

This key is used to reset the EQUALIZER GAIN controls to 0 (center position).

[MON] key

This key selects whether Input channels or Monitor channels are controlled by the EQUALIZER controls, PAD control, [Ø] key, and the [LPF] and [HPF] keys.

⑳ **PAN section**

[BUS], [MON], [AUX3] keys

These keys are used to select the signal that is to be affected by the PAN control: [BUS] for Input channel, [MON] for Monitor channel, and [AUX3] for the Input or Monitor channel selected using the AUX [MON] key. These keys work in parallel with the PAN keys on currently selected channel.

PAN control

This control is used to pan the signal selected using the PAN [BUS], [MON], and [AUX3] keys of the currently selected channel. This control works in parallel with the PAN [<] and [>] keys on the currently selected channel.

㉑ **[GLOBAL] key**

When this key is on, the following keys can be selected globally. AUX [1], [2], [3], [MON]; PAN [BUS], [MON], [AUX3]; [FLIP]. In addition, when a Stereo channel is selected using the ST INPUT SEL keys the corresponding auxiliary controls are also selected.

㉒ **AUTOMATION keys**

[TRK] keys

These keys are used to turn automation track playback on and off. In Record Ready mode these keys can be used to select the recording track. During recording, the [TRK] key of the recording track flashes quickly. During playback, the [TRK] keys of recorded tracks flash slowly. The [TRK] keys of tracks selected for playback that contain no data will remain lit during recording and playback.

[AUTO] key

This key is used to select the following LCD functions: Automation → [REC Prm] → Fader Edit → [Edit Sw] → [At.MemEd] → [At.CntEd] → [AutoCopy] → [S/R Prm.] → [TimeCode] → [Disk].

If you double click on the [AUTO] key, the Automation LCD function will appear.

[REC] key

Press once to engage Record Ready mode. Press twice to engage Auto Record mode.

Note: If external timecode is selected, and the correct external timecode is received for more than 1 second in Record Ready mode, recording will start automatically.

[PLAY] key

This key is used to start automation playback and start recording in Record Ready mode. If external timecode is selected, playback and recording in Record Ready mode will start automatically when the correct external timecode is received for more than 1 second.

[STOP] key

This key is used to stop automation playback and recording. If external timecode is selected, playback and recording will stop automatically when the external timecode stops.

②③ LCD CONTROL keys**[UNDO] key**

This key selects the last selected LCD function.

[PREV] & [NEXT] keys

These keys are used to scroll through the LCD functions four at a time. If you double click on the [NEXT] key, the [Function] LCD function will appear. If you double click on the [PREV] key, the first LCD function in the [Function] menu will appear.

[F1], [F2], [F3], [F4] keys

These keys are used to select LCD functions. Sometimes they are used in conjunction with an LCD function, for example, [F4] key to exit.

②④ STEREO [ON] key

This key turns off the Stereo outputs.

②⑤ STEREO fader

This fader adjusts the level of the Stereo outputs.

②⑥ MEMORY keys**[^] and [v] keys**

These keys are used to select scene memories.

[STORE] key

This key is used to store scene memories.

[RECALL] key

This key is used to recall scene memories.

②⑦ **PARAMETER SELECT keys**

These keys are used to select parameters on the LCD functions.

②⑧ **PARAMETER ADJUST controls**

[-1/OFF] key

This key is used to decrement a parameter value by one, turn a parameter off, or to say no to an Are You Sure ? message.

[+1/ON] key

This key is used to increment a parameter value by one, turn a parameter on, or to say yes to an Are You Sure ? message.

Data entry wheel

The data entry wheel is used to increase and decrease parameters values. Turn it anticlockwise to decrease a value, clockwise to increase it.

②⑨ **METER SELECT keys**

[I] key

This key selects the signal source for meter bank I: INP (Input channels), MON (Monitor channels), or ST INP (Stereo channels).

[II] key

This key selects the signal source for meter bank II: MON (Monitor channels) or BUS (Bus outputs).

[III] key

This key selects the signal source for meter bank III: AUX (auxiliary sends) or CUE CR (CUE and C-R monitor outputs).

[HOLD] key

This key is used to switch the meter peak hold function on and off.

③⑩ **CONSOLE STATUS [REC] & [MIX] keys**

These keys select the Rec and Mix modes. See “Rec & Mix Modes” on page 28.

③⑪ **FADER STATUS**

[BUS MSTR] key

When this key is off (light off), the channel faders control the channel signal levels, that is, Input channels or Monitor channels, and the black print legend on the left-hand side of the faders should be used. When it is on (light on), the channel faders control the Bus output levels and the BUS LED (top right of channel fader 8) lights up. The red print legend on the right-hand side of the faders should be used.

③⑫ **AUX SEND section**

LEVEL control

This control adjusts the level of the currently selected auxiliary send.

[ON] keys

These keys are used to mute the corresponding auxiliary send.

[1], [2], & [3] keys

These keys select which auxiliary send is to be affected by the LEVEL control. If the “Auto Effect Screen” parameter on the [Config.] LCD function is set to “on”, the [Effect 1] and [Effect 2] LCD functions appear automatically when the [1] and [2] keys are pressed respectively.

③③ SOLO section**AFL LEVEL control**

In AFL mode, this control adjusts the level of the Solo bus that is fed to the C-R monitor.

[AFL] key

This key is used to select the solo mode: AFL or SOLO. See “SOLO [AFL] key” on page 62.

③④ TALKBACK section**MIC**

An internal condenser microphone for talkback.

LEVEL

This control adjusts the level of the talkback microphone.

[SLATE] key

Pressing this key mutes the C-R monitor outputs and outputs a sine wave, whose frequency and level is specified by the [OSC] LCD function, to the Bus outputs specified using the [Talkback] LCD function.

[ALL] key

Pressing this key dims the C-R monitor outputs and outputs the talkback microphone signal to the CUE and STUDIO MONITOR OUT (ANALOG) outputs and any buses specified using the [Talkback] LCD function.

[ON] key

Pressing this key dims the C-R monitor outputs and outputs the talkback microphone signal to the CUE and STUDIO MONITOR OUT (ANALOG) outputs.

③⑤ CUE section**LEVEL control**

This control adjusts the signal level of the CUE MONITOR OUT (ANALOG) outputs.

[MON] key

This key selects the source for the CUE and STUDIO MONITOR OUT (ANALOG) outputs: key off (light off) for CUE, that is, Aux bus monitoring, and key on (light on) for C-R monitor signal monitoring.

[ON] key

This key turns the CUE MONITOR OUT (ANALOG) outputs on and off.

③⑥ STUDIO MONITOR section**LEVEL control**

This control adjusts the signal level of the STUDIO MONITOR OUT (ANALOG) outputs.

[ON] key

This key turns the STUDIO MONITOR OUT (ANALOG) outputs on and off.

37 DIM section

LEVEL control

This control adjusts the signal level of the dimmed C-R monitor signal.

[DIM] key

When this key is pressed, the C-R monitor signal is dimmed to the level set using the above LEVEL control. The Dim function is engaged automatically when the TALKBACK [ON] or [ALL] key is pressed.

38 [MONO] key

When this key is on, the left and right signals of the C-R monitor are summed into mono.

39 C-R MONITOR section

SMALL LEVEL control

This control adjusts the signal level of the SMALL MONITOR OUT (ANALOG) outputs.

[SMALL] key

This key toggles the C-R monitor signal between the SMALL and LARGE MONITOR OUT (ANALOG) outputs. Key off for LARGE MONITOR, key on for SMALL MONITOR.

LARGE LEVEL control

This control adjusts the signal level of the LARGE MONITOR OUT (ANALOG) outputs.

[EXT] key

When this key is pressed, the [EXT Mon] LCD function appears allowing you to select a 2TR MONITOR INPUT connection for monitoring.

[CUE] key

When this key is pressed, the [CUE Sel] LCD function appears allowing you to select an Aux bus for monitoring.

[ST] key

When this key is pressed, the monitor source is set to the Stereo bus.

Note: Once selected, pressing the [EXT], [CUE], or [ST] key again will mute the LARGE and SMALL MONITOR OUT (ANALOG) outputs. See "C-R Monitor [EXT], [CUE], & [ST] keys" on page 61.

40 PHONES section

A recessed, 1/4 inch stereo phone jack for connecting a pair of headphones.

LEVEL

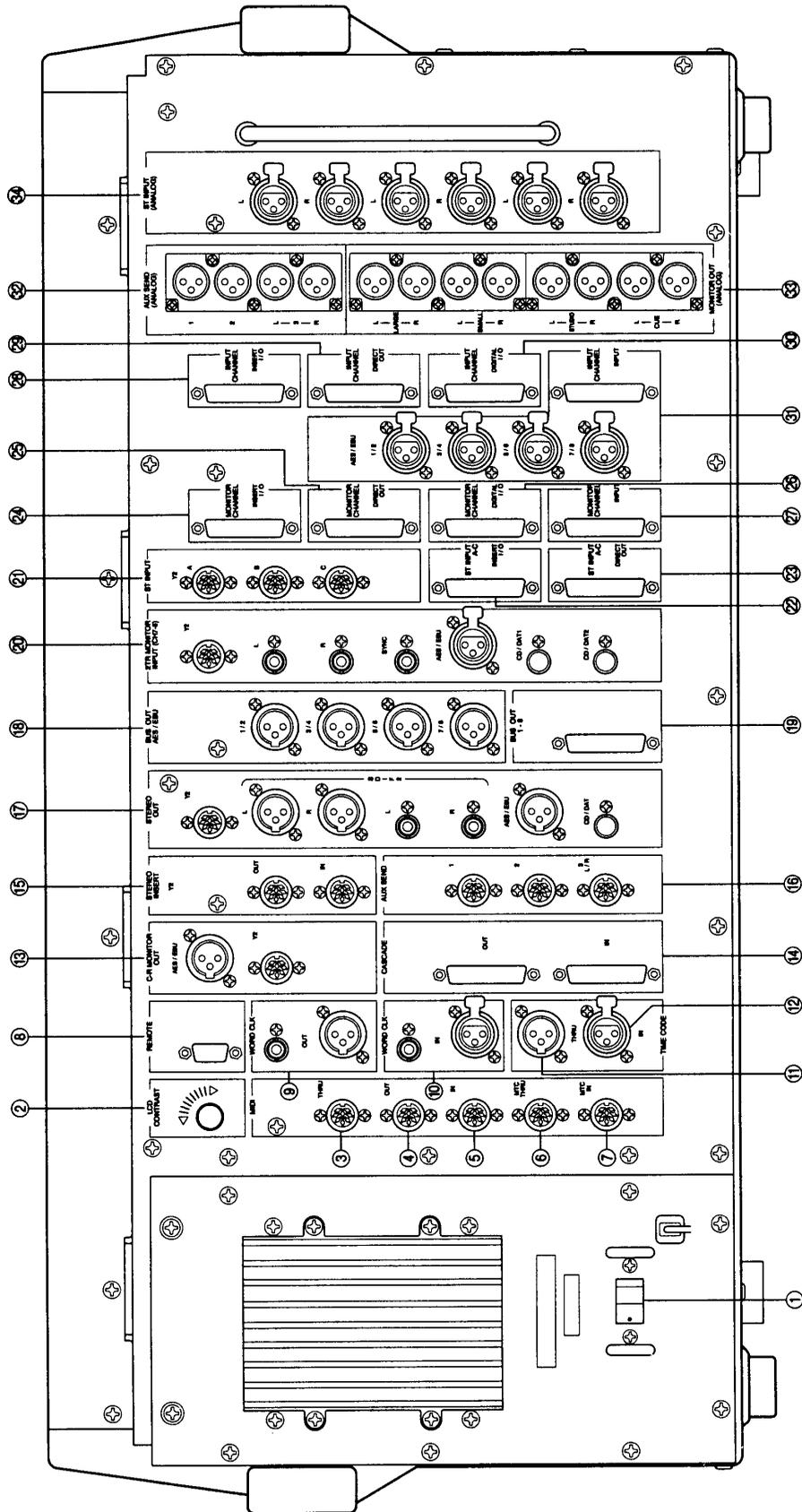
This control adjusts the headphone volume.

41 MEMORY CARD slot

The RAM card slot accepts a Yamaha MDC64 type RAM card, which is used to store two banks of 32 scene memories. See "Working with RAM Cards" on page 93.

- ④② **Floppy disk drive**
The floppy disk drive accepts 3.5 inch 2DD type floppy disks, which can be used to store DMC1000 data such as scene memories, automation data, and setup data. See “Floppy Disk Operations” on page 89.
- ④③ **Meter Banks I, II, & III**
These meter banks contain 12-segment LED bargraphs that can be used to monitor signal levels from the following: Input channels, Monitor channels, Stereo channels, Bus outputs, Aux sends, Cue monitor, and C-R monitor. See “Meter Banks I, II, & III” on page 73.
- ④④ **L STEREO R meters**
These 32-segment LED bargraphs indicate the Stereo output levels. See “L STEREO R Meters” on page 73.
- ④⑤ **Scene MEMORY number display**
Two 7-segment LEDs that display scene memory numbers. A red dot in the bottom right-hand corner indicates whether or not the current console settings agree with the contents of the scene memory that was recalled last. See “Scene Memory Number Display” on page 92.
- ④⑥ **TIME CODE display**
Eight 7-segment LEDs that display the timecode value in hours, minutes, seconds, and frames.
- ④⑦ **LCD**
An 8-line 40-character LCD that displays LCD functions, scene memory names, operation confirmation messages, and error messages.
- ④⑧ **DF LED**
This LED lights up when the selected timecode frame type is 30 drop frame.

The Rear Panel



- ① **POWER switch**
Used to power the DMC1000 on and off.
- ② **LCD CONTRAST control**
Adjust this control so that the LCD is easy to read. When the LCD is viewed from a different height or angle, you may need to readjust this control.
- ③ **MIDI THRU**
Outputs the MIDI data that is received at the MIDI IN connector.
- ④ **MIDI OUT**
Outputs MIDI data such as Controllers, Program Change, System Exclusive, etc.
- ⑤ **MIDI IN**
Receives MIDI data. Program Change messages for scene memory recall, Controllers for parameter control, etc.
- ⑥ **MTC THRU**
Outputs the MTC that is received at the MTC IN connector.
- ⑦ **MTC IN**
Receives MTC for automation synchronization. See “Automation & Synchronization” on page 101.
- ⑧ **REMOTE**
A 9-pin D-sub connector for receiving ESAM II commands from a video edit controller or computer. See “Video Edit Controllers” on page 137.
- ⑨ **WORD CLOCK OUT**
A BNC connector for outputting a DMC1000 derived wordclock. See “Setting the Wordclock Source” on page 25.
- ⑩ **WORD CLK IN**
A BNC connector for inputting an external wordclock. See “Setting the Wordclock Source” on page 25.
- ⑪ **TIMECODE THRU**
Outputs the SMPTE timecode that is received at the TIMECODE IN connector.
- ⑫ **TIMECODE IN**
Receives SMPTE timecode for automation synchronization. See “Automation & Synchronization” on page 101.
- ⑬ **C-R MONITOR OUT**
An XLR-3-32 type connector that outputs the C-R monitor signal in AES/EBU format, and a 8-pin DIN connector that outputs it in Yamaha Y2 format.
- ⑭ **CASCADE IN/OUT**
Two 25-pin D-sub connectors that are used to common the Stereo buses, Aux buses, Bus (group) buses, and Solo buses of all DMC1000s connected in a cascade system. The bus format is Yamaha Y2. See “Cascading the DMC1000” on page 134.

- ⑮ **STEREO INSERT Y2 IN/OUT**
Two 8-pin DIN connectors make up the stereo insert point for the Stereo output. The input and output format is Yamaha Y2. See “Stereo Insert” on page 58.
- ⑯ **AUX SEND 1, 2, 3L/R**
Three 8-pin DIN connectors that output the auxiliary send signals in Yamaha Y2 format. Auxiliary send signals are also output as analog signals.
- ⑰ **STEREO OUT Y2, SDIF2, AES/EBU, CD/DAT**
An 8-pin DIN connector that outputs the master Stereo signal in Yamaha Y2 format. A pair of XLR-3-32 type connectors and a pair of BNC connectors that output it in SDIF2 format. An XLR-3-32 type connector that outputs it in AES/EBU format. Finally, an RCA/phono connector that outputs it in CD/DAT format.
- ⑱ **BUS OUT AES/EBU**
Four XLR-3-32 type connectors that output the eight Bus signals (in pairs) in AES/EBU format.
- ⑲ **BUS OUT 1-8**
A 25-pin D-sub connector that outputs the eight Bus signals. The output format can be set to Yamaha Y1, Yamaha Y2, SDIF2, or M. See “Setting the Bus Output Format” on page 55.
- ⑳ **2TR MONITOR INPUT (CH7-8) Y2, SDIF2, AES/EBU, CD/DAT1, CD/DAT2**
The outputs of a 2-track master recorder can be connected to these connectors for confidence monitoring and playback. The following input formats are provided. An 8-pin DIN connector for Yamaha Y2 format. Three BNC connectors (two signal, one sync) for SDIF2 format. An XLR-3-31 type connector for AES/EBU format. Finally, two RCA/phono connectors for CD/DAT format signals.
- ㉑ **ST INPUT Y2, A, B, C**
Three 8-pin DIN connectors for inputting Yamaha Y2 format signals into the three Stereo channels.
- ㉒ **ST INPUT A-C INSERT I/O**
A 25-pin D-sub connector that carries the insert send and return signals for the three Stereo channels. The signal format is Yamaha Y2.
- ㉓ **ST INPUT A-C DIRECT OUT**
A 25-pin D-sub connector that outputs the Stereo channel signals: pre on/off switch, pre fader, or post fader. The output format can be set to Yamaha Y1, Yamaha Y2, SDIF2, or M. See “Setting the Direct Output” on page 51.
- ㉔ **MONITOR CHANNEL INSERT I/O**
A 25-pin D-sub connector that carries the insert send and return signals for the Monitor channels. The signal format is Yamaha Y2.
- ㉕ **MONITOR CHANNEL DIRECT OUT**
A 25-pin D-sub connector that outputs the Monitor channel signals: pre on/off switch, pre fader, or post fader. The output format can be set to Yamaha Y1, Yamaha Y2, SDIF2, or M. See “Setting the Direct Output” on page 45.

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- ②⑥ **MONITOR CHANNEL DIGITAL I/O**
A 25-pin D-sub connector for inputting signals to the Monitor channels. It also outputs the eight Bus signals. The signal format is Yamaha Y2. See “Setting the Input Format” on page 44.
 - ②⑦ **MONITOR CHANNEL INPUT**
A 25-pin D-sub connector for inputting signals to the Monitor channels. The input format can be set to Yamaha Y1, Yamaha Y2, SDIF2, or M. See “Setting the Input Format” on page 44.
 - ②⑧ **INPUT CHANNEL INSERT I/O**
A 25-pin D-sub connector that carries the insert send and return signals for the Input channels. The signal format is Yamaha Y2.
 - ②⑨ **INPUT CHANNEL DIRECT OUT**
A 25-pin D-sub connector that outputs the Input channel signals: pre on/off switch, pre fader, or post fader. The output format can be set to Yamaha Y1, Yamaha Y2, SDIF2, or M. See “Setting the Direct Output” on page 32.
 - ③⑩ **INPUT CHANNEL DIGITAL I/O**
A 25-pin D-sub connector for inputting signals to the Input channels. It also outputs the eight Bus signals. The signal format is Yamaha Y2. See “Setting the Input Format” on page 31.
 - ③⑪ **INPUT CHANNEL INPUT**
A 25-pin D-sub connector and four XLR-3-31 type connectors for inputting signals to the Input channels. The input format can be set to Yamaha Y1, Yamaha Y2, SDIF2, M, or AES/EBU. See “Setting the Input Format” on page 31.
 - ③⑫ **AUX SEND (ANALOG)**
Four XLR-3-32 type connectors that output the auxiliary send signals as analog signals. Auxiliary send signals are also output in Yamaha Y2 format.
 - ③⑬ **MONITOR OUT (ANALOG)**
Eight XLR-3-32 type connectors for outputting the Large, Small, Studio, and Cue monitor analog signals.
 - ③⑭ **ST INPUT (ANALOG)**
Six XLR-3-31 type connectors for inputting analog signals to the three Stereo channels.
-

Chapter 2: Getting Started

Power up, Power off

Caution: Before powering on, make sure that the AC receptacle voltage matches that marked on the DMC1000's rear panel. And, remove the dummy disk from the floppy disk drive.

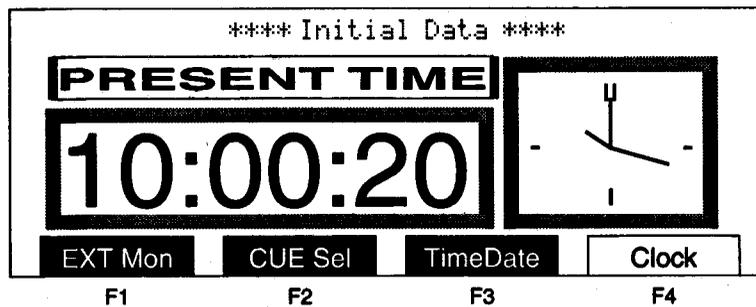
If the DMC1000 is set up to use an external wordclock source, the device supplying the external wordclock should be powered on before the DMC1000.

Use the rear panel POWER switch to power the DMC1000 on and off.

If the DMC1000 is powered off, wait at least 5 seconds before powering on again.

Real-Time Clock

The [Clock] LCD function displays a real-time digital clock.

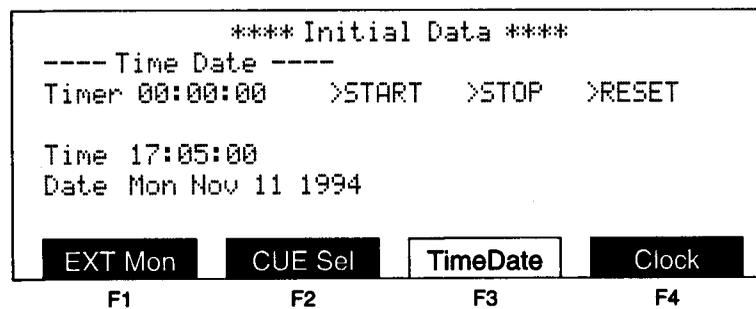


The clock can be set so that it appears automatically when the DMC1000 is not used for more than 10 minutes, and when first powered on. On the [Config.] LCD function, set the "Auto Clock Display" parameter to "on".

Setting the Clock

The [TimeDate] LCD function is used to set the time and date.

Use the PARAMETER SELECT keys to select a parameter and the PARAMETER ADJUST keys or data entry wheel to set the parameter value.



Timer

The [TimeDate] LCD function also contains a useful timer with start, stop, and reset functions. This could be used for timing sessions, etc.

Use the PARAMETER SELECT keys to select a timer function and the [+1/ON] key to execute it.

The timer will continue counting even while other LCD functions are displayed.

Selecting Channels

For controls that are shared by all channels such as the EQUALIZER controls, PAD control, [Ø] key, [LPF] and [HPF] keys, and rotary PAN control, you must select the channel you want to affect before making any adjustments. Channels can be selected in three ways: channel [SEL] keys, CH SELECT keys, or fader touch sense. When a channel's [SOLO] key is turned on, that channel is selected automatically.

When channels are selected in the ways listed above, only one channel can be controlled at a time. However, channels can be linked so that a number of channels can be controlled together. See "Linking Channels" on page 86.

Channel [SEL] Keys

Channels 1~8 each have a [SEL] key. When the EQUALIZER [MON] key is off (light off), these keys select Input channels 1~8. When the EQUALIZER [MON] key is on (light on), these keys select Monitor channels 1~8.

When a channel is selected, its [SEL] key lights up. The corresponding CH SELECT key also lights up.

The ST INPUT A-C channel has a [SEL] key and [SEL A], [SEL B], and [SEL C] keys. To select a Stereo channel, first press the [SEL] key, then the corresponding [SEL A], [SEL B], or [SEL C] key.

The currently selected Stereo channel is indicated by the CH SELECT keys and the A, B, and C LEDs next to the ST INPUT A-C fader.

CH SELECT Keys

Note: Before using the CH SELECT keys to select a channel, make sure that the [LINK 1], [LINK 2], [G1], or [G2] key is not lit. If one of these keys is lit, the CH SELECT keys operate as link or group set up keys.

To select a channel, press the respective CH SELECT key.

When a channel is selected, the selected CH SELECT key lights up. The corresponding channel's [SEL] key also lights up.

Fader Touch Sense

A channel can be selected just by touching its fader knob. On the [Config.] LCD function, set the "Touch Sense Sel." parameter to "on".

The individual Stereo channels still have to be selected using the [SEL A], [SEL B], and [SEL C] keys. Similarly, the EQUALIZER [MON] key must be lit to select Monitor channels.

Note: To use the faders for touch selection, you must actually touch the fader knob. Touching the fader knob with a pen or other insulating object will not trigger the sensor.

Getting Around the LCD Functions

[PREV] & [NEXT] keys

LCD functions can be selected using the LCD CONTROL [PREV] and [NEXT] keys. If you keep pressing either key you will eventually cycle through all the available LCD functions.

LCD function names appear in groups of four along the bottom of the LCD. When the name of the LCD function you require appears, press the corresponding [F] key.

Note: Some LCD functions require you to exit before you can select other LCD functions. Usually, the [F4] key is used to exit an LCD function.

If you double click on the [NEXT] key, the [Function] LCD function will appear. If you double click on the [PREV] key, the first LCD function in the [Function] menu will appear. Initially, the first LCD function is the [Equalize.] LCD function.

[UNDO] key

Press the [UNDO] key to return to the last selected LCD function.

Using the [Function] LCD Function

Another way to select LCD functions is to use the [Function] LCD function. This LCD function shows a 4-column menu of all the LCD functions.

**** Initial Data ****			
---- LCD Function Assign ----			
Equaliz.	EQ.Graph	PanPot	Pad
Phase	Meter	Routin9	FadeTime
Input	Aux	Master	Groupin9
MIDI	Control	Program	Bulk
[SELECT]	[UNINIT]	[INIT]	[EXIT]
F1	F2	F3	F4

Use the PARAMETER SELECT keys to select an LCD function in the menu, then press the [F1] (SELECT) key to select that LCD function. When you've finished with the selected LCD function, press the [UNDO] key to return to the [Function] LCD function, and select another LCD function.

The [PREV] and [NEXT] keys can be used to scroll through the [Function] LCD function menu. To exit from the [Function] LCD function, press the [F4] (EXIT) key.

Customizing the [Function] LCD Function

The [Function] LCD function can be customized so that, for example, LCD functions that you use a lot are placed together at the top of the menu.

Use the PARAMETER SELECT keys to position the cursor next to the menu cell that you want to change, then use the PARAMETER ADJUST keys or data entry wheel to set the LCD function.

To reset the [Function] LCD function to its initial setup, press the [F3] key (INIT). To restore your custom setup, press the [F2] key (UNINIT).

Your custom settings can be saved to floppy disk in the setup data. See "Floppy Disk Operations" on page 89.

Auto Parameter Screen

When the Auto Parameter Screen parameter on the [Config.] LCD function is set to on, LCD functions are selected automatically when the corresponding panel controls are adjusted.

The following table shows which controls call LCD functions.

Control	LCD function
Channel AUX Level control	AUX
Rotary PAD control	PAD
PAN control	PAN
AUX SEND level control	MASTER
ST PAN [<] & [>] keys	PAN
Talkback ON key	TALKBACK
Talkback ALL key	TALKBACK
Talkback SLATE key	OSC
Group ENABLE key	GROUPING
Group G1 key	GROUPING
Group G2 key	GROUPING
Link ENABLE key	LINK
Link LINK1 key	LINK
Link LINK2 key	LINK
AFL key	SOLO
Phase [Ø] key	PHASE
PAN select [BUS], [MON], [AUX3] keys	PAN
PAN [<] & [>] keys	PAN
Meter SELECT [I], [II], [III] keys	METER
Meter HOLD key	METER
BUS MASTER Fader Status key	MASTER

Selecting LCD Function Parameters

When you have located the required LCD function, use the PARAMETER SELECT keys to select the variable parameters. Not all items shown on the LCD functions are variable parameters. Some items just display settings and data.

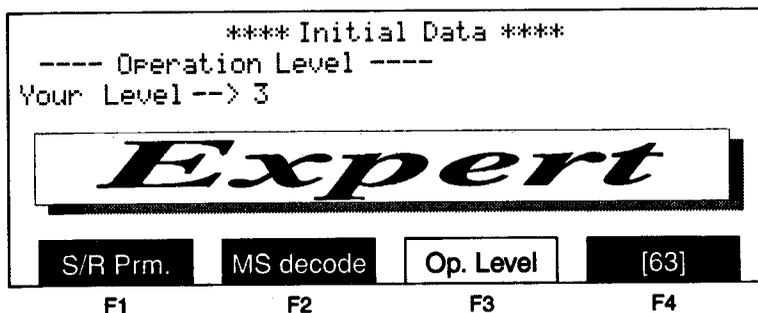
Setting LCD Function Parameter Values

To adjust and set variable parameters use the PARAMETER ADJUST keys or the data entry wheel.

Operator Level

To suit the requirements of different users, four operator levels are available: Expert, Intermediate, Basic, and Locked. The Expert level allows access to all DMC1000 parameters, while the Basic level allows access to basic mixing parameters such as faders, mutes, solo, and scene memory recall. This means that unskilled users can perform basic mix operations without the risk of inadvertently setting some of the more complex parameters.

The operator level is set on the [Op.Level] LCD function shown below.



To set the operator level, position the cursor next to the desired level and press the [+1/ON] key.

The four operator levels are explained below.

(0) Locked

All parameters are locked, no operations are possible.

The [UNDO] key, however, can be used to select the previous LCD function.

(1) Basic Level

Basic mixing parameters such as faders, mutes, solo, etc., are available. Scene memories can be recalled, and LCD functions can be viewed but not set. See the following tables for full details.

(2) Intermediate Level

In addition to the functions available in the Basic level, the BUS, AUX, PAN, EQ, and PAD functions are available. See the following tables for full details.

Note: For the Basic and Intermediate operator levels, unavailable parameters are still set if a scene memory containing those parameters is recalled. For example, the Group function cannot be accessed by the Basic or Intermediate level. However, if a scene memory containing Group settings is recalled, those Group settings are effective.

(3) Expert Level

All parameters are accessible.

The following tables show which parameters can be accessed at the different levels. Since all parameters can be accessed at (3) Expert level, and no parameters can be accessed at (0) Locked level, only parameters for (1) Basic level and (2) Intermediate level are shown.

Input Module

Parameter	Level	Parameter	Level
Bus Assign	2	Monitor EQ On/Off	2
Stereo Assign	2	Monitor On/Off	1
Bus INP/MON Select	1	Monitor Solo	1
Aux Level Encoder	2	Channel Select	1
Aux INP/MON Select	1	Flip	1
Aux 1 On	2	Panpot	2
Aux 2 On	2	Pan Select INP	1
Aux 3 On	2	Pan Select MON	1
Aux 1 Select	1	Pan Select AUX	1
Aux 2 Select	1	Input EQ On/Off	2
Aux 3 Select	1	Input On/Off	1
Monitor Level Encoder	1	Input Solo	1
Bus To Monitor	2	Linear Fader	1

Stereo Input Module

Parameter	Level	Parameter	Level
Bus Assign	2	ST.B EQ On	2
Stereo Assign	2	ST.C EQ On	2
Aux Level Encoder	2	Stereo Input Select	1
Aux 1 On	2	Panpot	1
Aux 2 On	2	Pan Select L	1
Aux 3 On	2	Pan Select R	1
Aux 1 Select	1	ST.A Solo	1
Aux 2 Select	1	ST.B Solo	1
Aux 3 Select	1	ST.C Solo	1
Select A	1	ST.A On	1
Select B	1	ST.B On	1
Select C	1	ST.C On	1
ST.A EQ On	2	Linear Fader	1

Master

Parameter	Level	Parameter	Level
Channel Select 1-8,A,B,C	1	Aux Master 2 Select	1
Link1	3	Aux Master 3 Select	1
Link2	3	AFL Level	1
Enable	3	AFL Key	2
Group1	3	Talkback Level	1
Group2	3	Slate	1
Enable	3	All	1

Parameter	Level	Parameter	Level
Pad Encoder	2	On	1
Phase	2	Cue Level	1
LPF	2	Cue Monitor To Cue	1
HPF	2	Cue On/Off	1
Panpot Encoder	2	Studio Level	1
Pan INP Select	1	Studio On/Off	1
Pan MON Select	1	Dim Level	1
Pan AUX Select	1	Dim On/off	1
Global	1	Mono (C-R Mono)	1
EQ Encoders	2	Small Level	1
EQ Shelving	2	Large Level	1
EQ Reset	2	Small/Large Select	1
EQ Monitor Select	1	Monitor Ext	2
Aux Master Encoder	2	Monitor Cue	2
Aux Master 1 On	2	Monitor ST	2
Aux Master 2 On	2	Stereo Master On/Off	1
Aux Master 3 On	2	Stereo Linear Fader	1
Aux Master 1 Select	2	Phone Level	1

Meter

Parameter	Level	Parameter	Level
Meter Select 1, 2, 3	1	Meter Hold	1
Automation	1	LCD	1
Memory	1	Parameter	1

Connecting Cable Notes

Yamaha 25-pin D-sub

For the 25-pin D-sub type connections there are two Yamaha cable types available:

DDK crossed cables should be used for the 25-pin D-sub connections that input and output digital audio data, that is, all 25-pin D-sub connections that are labeled "I/O".

JAE straight cables should be used for input only and output only 25-pin D-sub connections.

Both cable types are available from your Yamaha DMC1000 dealer.

Yamaha 8-pin DIN

For Yamaha Y2 8-pin DIN connections use Yamaha YDC803, YDC805, and YDC815 digital audio cables, 3, 5, and 15 meters respectively.

AES/EBU

For AES/EBU connections, use only dedicated AES/EBU connecting cables (110 ohm impedance). For example, Sony ECD-3C, ECD-10C, and ECD-30C.

CD/DAT

For CD/DAT connections, use dedicated CD/DAT (S/PDIF) cables.

SDIF2

SDIF2 connections use BNC connecting cables (note that SDIF2 format data is also input and output via some of the 25-pin D-sub connections).

Wordclock

Wordclock only connections typically use BNC or XLR type connectors. Ordinary XLR type audio cables can be used for the XLR wordclock connections and standard BNC connecting cables for BNC wordclock connections.

MIDI/MTC

For MIDI and MTC connections, use quality MIDI cables that do not exceed 15 meters (50 ft.) in length.

Initial Settings

Since the DMC1000 has numerous input and output connection possibilities, it is impossible to explain every possible set up procedure. However, here are a few points to bear in mind when configuring a DMC1000 system.

- For 25-pin D-sub digital input connections you must set the input format: Yamaha Y1, Yamaha Y2, SDIF2, or M. See the [I.Format] LCD function.
- For 25-pin D-sub digital output connections you must set the output format: Yamaha Y1, Yamaha Y2, SDIF2, or M. See the [O.Format] LCD function.
- You must set up the wordclock. See “Wordclock Setup” on page 24.

The “8-Track DMC1000/DRU8 System” on page 140 of the “System Examples” chapter shows how the DMC1000 should be set up for a basic system.

Wordclock Setup

What is a Wordclock?

A wordclock is a clock signal that is used to synchronize the data processing circuits (DSPs) of devices that are connected as part of a digital audio system. Word refers to a digital audio data word, typically there is one wordclock pulse per digital audio data word. When digital audio data is to be transferred between devices in a system, it is essential that all devices are synchronized to one common wordclock source. That is, one device operates as wordclock master and all others operate as wordclock slaves.

Typically, the wordclock master should be the recording device on which digital audio data is to be edited. However, if you have a device that cannot synchronize to an external wordclock, then that device must be used as the wordclock master, although, it must be able to supply a stable wordclock signal for the other devices. If you have two such units, one of them will have to be used without wordclock synchronization.

Make sure that the device designated as wordclock master is set up for wordclock master operation, and the slave devices are set for wordclock slave operation.

Set the wordclock frequency (sampling frequency) on the master device only. Usually, the wordclock frequency settings on a slave device that is synchronized to an external wordclock are ignored.

Note: Digital input signals from devices that are not using the same wordclock source as the DMC1000 can be monitored, however, the signal will not be correct. Make sure there is only one wordclock master and all other slave devices are actually locked onto that wordclock.

Some digital audio connections require a separate connection just for the wordclock signal. The following table shows how wordclock signals are handled by each digital audio format.

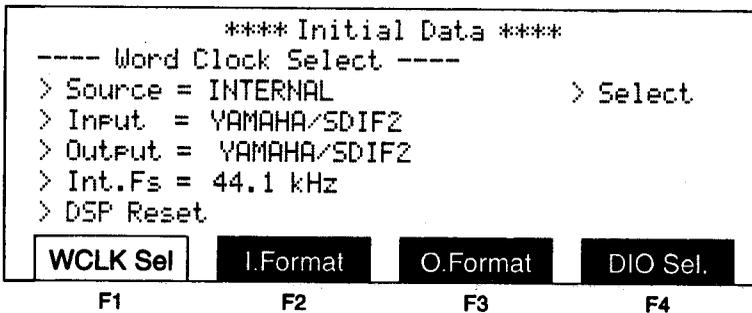
Digital Audio Connection Format	Wordclock
Yamaha 8-pin DIN	Wordclock carried on a separate conductor within the cable (sent from outputs only).
Yamaha 25-pin D-sub	Wordclock carried on a separate conductor within the cable.
AES/EBU	Self clocking signal.
CD/DAT (S/PDIF)	Self clocking signal.
SDIF2	Requires a BNC wordclock connection (separate from digital audio data).

The “System Examples” starting on page 140 show how the wordclock should be set up for a number of practical digital audio system applications.

“Digital Audio Formats” on page 165 shows the relationship between wordclock and digital audio word for the Yamaha, Sony, and Mitsubishi formats.

Setting the Wordclock Source

The [WCLK Sel] LCD function is used to set the wordclock source.



1. Position the cursor next to “Source”.
2. Use the PARAMETER ADJUST keys or data entry wheel to select a source. All the available wordclock sources are listed in the “Selectable Wordclock Sources” table on page 27.
3. Position the cursor next to “Select”.
4. Press the [+1/ON] key.

A team of Yamaha runners will appear on the LCD while the DMC1000 synchronizes to the selected wordclock source.

Input: this parameter sets the wordclock format for the BNC and XLR-3-31 type WORD CLK IN connections. If the external wordclock is sourced from a WORD CLK IN connection, this parameter should be set to the external wordclock format (YAMAHA/SDIF2 or M).

Note: If the external wordclock is sourced from one of the 25-pin D-sub input connections, the wordclock format is automatically set when the digital input signal format is set. See "Setting the Input Format" on page 31.

Output: this parameter sets the wordclock format for the BNC and XLR-3-31 type WORD CLK OUT connections: YAMAHA/SDIF2 or M.

IntFs: if the wordclock source is set to "INTERNAL", this parameter can be used to set the wordclock frequency (44.1kHz/48kHz). If an external wordclock source is selected, this parameter displays the external wordclock frequency.

DSP Reset: see "DSP Reset" on page 128.

Note: Although the internal wordclock frequency can be set to 44.1kHz or 48kHz, the DMC1000 can synchronize to external wordclocks from 32kHz to 48kHz $\pm 10\%$.

Note: If the wordclock source is set incorrectly or the external wordclock becomes disconnected, the error message "Wrong WCLK Source is selected" will appear on the LCD and the DMC1000 will keep trying to sync to the selected wordclock source indefinitely. Therefore, make sure that a wordclock signal is present at the selected source.

Selectable Wordclock Sources

Source	Rear Panel Connection	Connector
INPUT	INPUT CHANNEL INPUT	25-pin D-sub
INPUT DIO	INPUT CHANNEL DIGITAL I/O	25-pin D-sub
AES/EBU 1/2CH	INPUT CHANNEL AES/EBU 1/2	XLR-3-31 type
AES/EBU 3/4CH	INPUT CHANNEL AES/EBU 3/4	XLR-3-31 type
AES/EBU 5/6CH	INPUT CHANNEL AES/EBU 5/6	XLR-3-31 type
AES/EBU 7/8CH	INPUT CHANNEL AES/EBU 7/8	XLR-3-31 type
MONITOR	MONITOR CHANNEL INPUT	25-pin D-sub
MON DIO	MONITOR CHANNEL DIGITAL I/O	25-pin D-sub
2TR AES	2TR MONITOR INPUT AES/EBU	XLR-3-31 type
2TR CD/DAT1	2TR MONITOR INPUT CD/DAT1	RCA/phono
2TR CD/DAT2	2TR MONITOR INPUT CD/DAT2	RCA/phono
2TR SDIF2	2TR MONITOR INPUT SDIF2	BNC
2TR Y2	2TR MONITOR INPUT Y2	8-pin DIN
ST INPUT A	ST INPUT Y2 A	8-pin DIN
ST INPUT B	ST INPUT Y2 B	8-pin DIN
ST INPUT C	ST INPUT Y2 C	8-pin DIN
INP INS	INPUT CHANNEL INSERT I/O	25-pin D-sub
MON INS	MONITOR CHANNEL INSERT I/O	25-pin D-sub
ST INPUT INS	ST INPUT A-C INSERT I/O	25-pin D-sub
STEREO INS	STEREO INSERT Y2 IN	8-pin DIN
CASCADE	CASCADE IN	25-pin D-sub
WCLK IN	WORD CLK IN	BNC / XLR-3-31 type
BUS OUT	BUS OUT 1-8	25-pin D-sub
INPUT DIR	INPUT CHANNEL DIRECT OUT	25-pin D-sub
MON DIR	MONITOR CHANNEL DIRECT OUT	25-pin D-sub
ST INPUT DIR	ST INPUT A-C DIRECT OUT	25-pin D-sub
INTERNAL	-	-

Rec & Mix Modes

The CONSOLE STATUS [REC] and [MIX] keys are used to select the Rec and Mix modes. Rec mode should be used when recording to multitrack (tracking) and Mix mode should be used for final mixdown. Essentially, the [MIX] key activates the [FLIP] key on all channels. While the [REC] key deactivates all [FLIP] keys. In either mode, all Input channels and Monitor channels can be routed to the buses.

Rec Mode

In **Rec mode**, Input channel signals are controlled by the INPUT [ON], [EQ], [SOLO], and fader. The routing [MON] key is off so Input channels are routed using the ROUTING keys.

Monitor channel signals are controlled by the MONITOR [ON], [EQ], [SOLO], and LEVEL control. Monitor channels can be routed to the buses by pressing the [MON] key.

Mix Mode

In **Mix mode**, Input channel signals are controlled by the MONITOR [ON], [EQ], [SOLO], and LEVEL control. Input channel can be routed to the buses by pressing the [MON] key.

Monitor channel signals are controlled by the INPUT [ON], [EQ], [SOLO], and fader. The routing [MON] key is on so Monitor channels are routed using the ROUTING keys.

Note: The operation of the MONITOR [BUS] key, AUX keys, and PAN keys are not affected by the Rec and Mix modes.

ROUTING [MON] keys

In Rec mode, the ROUTING [MON] keys can be used to effectively put individual channels into Mix mode: [MON] key off for Rec mode, on for Mix mode. As you will notice, when Mix mode is selected, all the channel [MON] keys are switched on, and when Rec mode is selected, they are switched off. If all channel [MON] keys are set to on, the CONSOLE STATUS [MIX] key is switched on automatically.

[FLIP] keys

When a [FLIP] key is on, the Input channel signal is controlled by the MONITOR [ON], [EQ], [SOLO], and LEVEL controls, and the Monitor channel signal is controlled by the INPUT [ON], [EQ], [SOLO], and fader controls.

All [FLIP] keys are turned on when the CONSOLE STATUS [MIX] key is pressed (i.e. Mix mode selected). When the CONSOLE STATUS [REC] key is pressed (i.e. Rec mode selected), all [FLIP] keys are turned off.

Data Organization

Fig 2-1 shows how various DMC1000 data can be stored to floppy disk. All data shown in the “DMC1000 RAM Memory” box is retained while the DMC1000 is powered off.

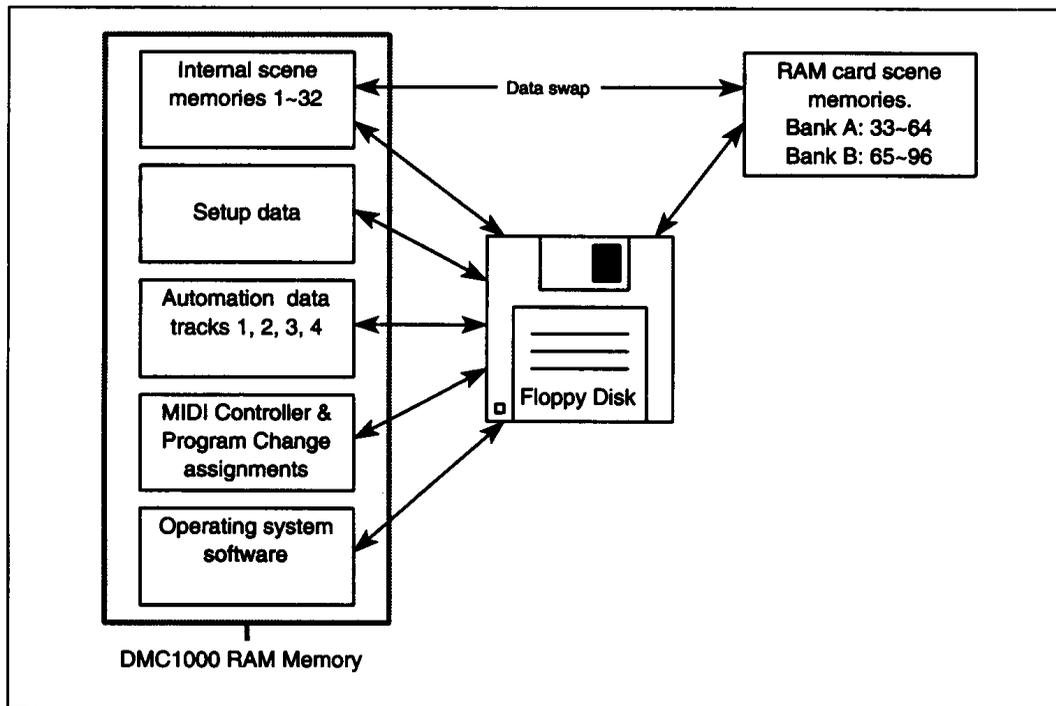


Figure 2-1 DMC1000 data organization

Internal Scene Memories

Up to 32 mix scenes, or *mix snapshots* can be stored as internal scene memories. Scene memory 0 is a ROM scene memory that cannot be changed. When scene memory 0 is recalled, all controls are set for unity gain, for example, EQ flat, faders at unity gain (0), etc. Input pads are set to -6 dB. Scene memory 0 is useful for resetting all controls before a new session.

Setup Data

Setup data refers to parameter settings made using the LCD functions such as [WCLK Sel] and [I.Format]. Parameters that are stored as setup data are listed on page 172.

Automation Data

Automation data consists of data from the four tracks and the Memory Sequence Edit [At.MemEd] and [At.CntEd] LCD functions. See “Automation” on page 100 for full details.

MIDI Controller & Program Change Assignments

These data are the MIDI Controller to DMC1000 parameter assignments and the MIDI Program Change to scene memory assignments. See “MIDI & the DMC1000” on page 129.

RAM Card Scene Memories

Up to 64 scene memories can be stored to an external RAM card: 32 in bank A (33~64), and 32 in bank B (65~96). So in combination with the 32 internal scene memories, up to 96 scene memories are available at once.

Note: For long-term RAM card scene memory storage, we recommend that you save all scene memories to floppy disk.

Floppy Disk

All the above data types can be saved to floppy disk, even scene memories from the RAM card. By saving all the above data types you can keep all DMC1000 data that relates to a particular mixing session for easy recall in the future. See “Floppy Disk Operations” on page 89 for full details.

Note: Solo parameters 793~811 and master monitor parameters 983~987 are not stored in scene memories or with the setup data.

Operating System Software

The operating system is the software that controls the basic hardware operations and file management. It is loaded into the DMC1000 before shipping, so when the DMC1000 is first powered up it will load automatically. If for some reason you need to reload the operating system, this can be done using the [Boot] LCD function. See “Loading the System Software from Disk” on page 125. New operating system software only needs to be loaded from disk once. Once loaded it is stored in RAM and will load automatically upon power on.

MIDI Bulk Dump

The following data types can be saved to a MIDI data recorder or transferred to another DMC1000 as MIDI Bulk Dump data (System Exclusive): internal scene memories, RAM card scene memories, setup data, edit buffer data, MIDI Controller assignments, and MIDI Program Change assignments.

Edit buffer data consists of the same parameters that are stored within a scene memory. This allows you to save the current console settings as MIDI Bulk Dump data, without having to use a scene memory.

Chapter 3: Input Channel

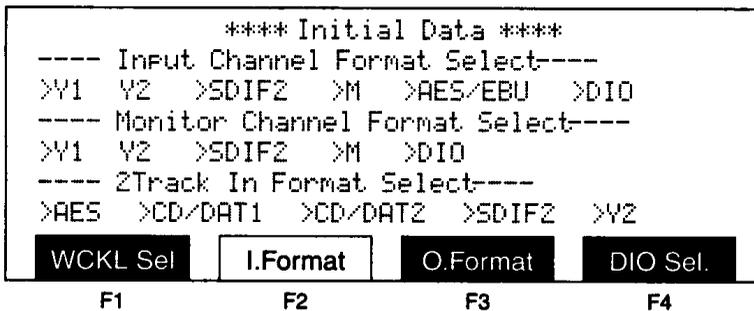
This explanation of the Input channels is in Rec mode. In Mix mode, when the ROUTING [MON] key is on, or when the [FLIP] key is on, controls marked with a double dagger symbol (‡) are fed the Monitor channel signal. See “Rec & Mix Modes” on page 28.

Input Channel Connections

Connection	Connector	Format	Notes
INPUT CHANNEL INPUT	25-pin D-sub	Y1, Y2, SDIF2, or M	See “Setting the Input Format” on page 31
INPUT CHANNEL AES/EBU	XLR-3-31 type	AES/EBU	
INPUT CHANNEL DIGITAL I/O	25-pin D-sub	Y2 (DIO [I.Format])	8 input signals & the 8 Bus outputs
INPUT CHANNEL INSERT I/O	25-pin D-sub	Y2	Input channel insert send and returns. See “Insert” on page 36
INPUT CHANNEL DIRECT OUT	25-pin D-sub	Y1, Y2, SDIF2, or M	See “Setting the Direct Output” on page 32

Setting the Input Format

The [I.Format] LCD function is used to set the Input channel format.



Use the PARAMETER SELECT keys to select a format on the “Input Channel Format Select” row, then press the [+1/ON] key to select it. The selected format will flash on the LCD.

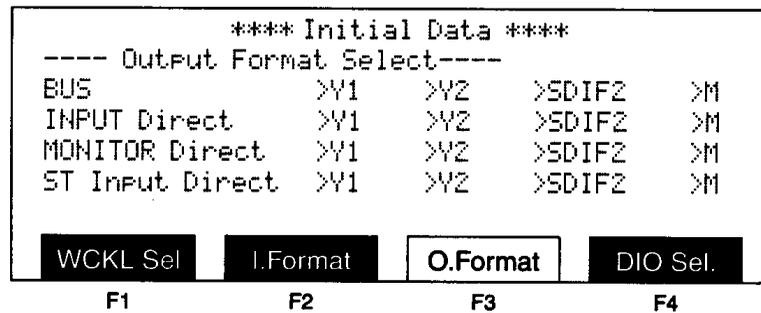
Y1, Y2, SDIF2, M: selecting one of these formats will select the INPUT CHANNEL INPUT 25-pin D-sub connection as the Input channel signal source. The format you select depends on the device sending the signals.

AES/EBU: selecting this format will select the INPUT CHANNEL AES/EBU XLR-3-31 type connections as the Input channel signal source.

DIO: selecting this format will select the INPUT CHANNEL DIGITAL I/O 25-pin D-sub connection as the Input channel signal source. The I/O format is to Yamaha Y2. This connection also outputs the eight Bus outputs. So, for example, multitrack connection to a DRU8 Digital Recorder can be achieved using just one connection.

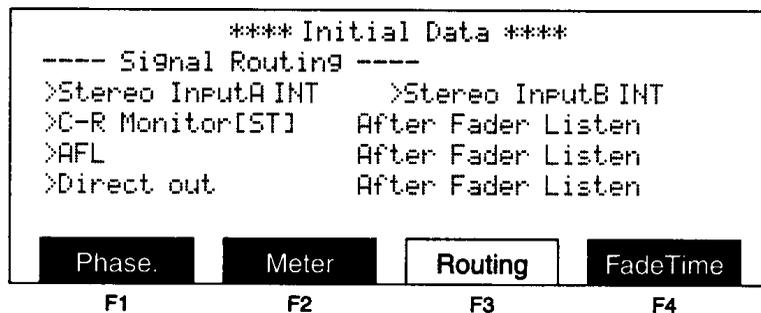
Setting the Direct Output

The [O.Format] LCD function shown below is used to set the format for the INPUT CHANNEL DIRECT OUT connection (INPUT Direct).



Use the PARAMETER SELECT keys to select a format on the “INPUT Direct” row, then press the [+1/ON] key to select it. The selected format will flash on the LCD.

The signal source point for the INPUT CHANNEL DIRECT OUT connection is set on the [Routing] LCD function shown below. The options are: After Fader listen, Pre Fader Listen, and Pre Switch Listen (pre [ON] key).



Position the cursor next to “Direct out”, then use the PARAMETER ADJUST keys or data entry wheel to select a source point. This setting also sets the direct output source for the Monitor channels and Stereo channels.

Pad

The [Pad] LCD function allows you to set a signal pad from 0.0 dB to -95.2 dB. When a System Reset is performed, see “System Initialize” on page 126, or scene memory 0 is recalled, all pad settings are set to -6 dB. This is because digital audio signals are usually at a relatively high level, so during mixing you would soon run out of headroom.

**** Initial Data ****								
---- Pad Setting ---- (-dB)								
1	2	3	4	5	6	7	8	
6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
A	B	C	MON 1					
6.0	6.0	6.0	-6.00 (-dB)					
Equaliz.		EQ.graph		Panpot		Pad		
F1	F2	F3	F4					

Input channel pad settings are displayed on the top row of the [Pad] LCD function (1~8). Use the PARAMETER SELECT keys to select an Input channel and the PARAMETER ADJUST keys or data entry wheel to set the pad level. Alternatively, select the Input channel, then use the rotary PAD control.

To set the pad for all channels simultaneously, position the cursor over the parameter at the bottom-right and use the PARAMETER ADJUST keys or data entry wheel.

LPF & HPF

To apply an LPF (Low Pass Filter) or HPF (High Pass Filter) to an Input channel, select the Input channel, then press the [LPF] or [HPF] key respectively: light on for filter on, light off for filter off.

To adjust the roll-off frequency of either filter, see “[Equaliz.] LCD function” on page 34.

[EQ] key (bypass) ‡

To bypass the EQ section for A-B comparisons, etc., press the INPUT [EQ] key: light off for EQ bypass, on for EQ in circuit.

EQ

The EQ section has 4-bands, and each band has GAIN, F (frequency), and Q controls. Each band can be set to any one of eight filter types. Initially, the LOW control is set a low frequency shelf type, the LOW MID and HIGH MIDs as mid frequency peak types, and the HIGH control as a high frequency shelf type. The different filter types can be selected on the [Equaliz.] LCD function that is explained below.

This EQ explanation also applies to the Monitor channels and Stereo channels. To select an Input channel, turn off the EQUALIZER [MON] key, then select a channel. For Monitor channels, turn on the EQUALIZER [MON] key, then select a channel. For Stereo channels, use the ST INPUT A-C channel’s [SEL A], [SEL B], and [SEL C] keys.

EQ adjustments can be performed in any one of three ways, or any combination of the three: EQUALIZER controls, [Equalize.] LCD function, or [EQ.graph] LCD function.

EQUALIZER Controls

To adjust a channel's EQ, select the channel, then use the EQUALIZER controls explained below.

Q controls: adjust the Q of each band from 8.16 to 0.1. Q control is not available for all types of EQ filter.

f controls: set the frequency of each band from 20 Hz to 20 kHz. For Band and Peak type filters, this will be the band's center frequency. For LPF, HPF, etc., it will be the -3 dB roll-off point.

GAIN controls: set the boost or cut of each band from -18 dB to +18 dB.

LOW [SHELF] key: select a Peak or Lshl (Low shelf) type EQ filter for the LOW band: [SHELF] key on for Lshl type, off for Peak type. Note that the light will also come on when a Hshl (High shelf) type EQ filter is selected for the LOW band.

[RESET] key: reset the EQUALIZER GAIN controls to 0 dB (center position).

HIGH [SHELF] key: select a Peak or Hshl (High shelf) type EQ filter for the HIGH band. Note that the light will also come on when a Lshl (Low shelf) type EQ filter is selected for the HIGH band.

[MON] key: this key selects whether Input or Monitor channels are controlled by the EQUALIZER controls, PAD control, [Ø] key, and the [LPF] and [HPF] keys. Light off for Input channels, light on for Monitor channels. On an LCD function that can be used to set Input channel and Monitor channel parameters, the relevant Input channel or Monitor channel parameter will be selected automatically when this key is pressed.

EQ adjustments made using the EQUALIZER controls can be viewed on the [Equaliz.] and [EQ.graph] LCD functions.

[Equaliz.] LCD function

The [Equaliz.] LCD function can be used to adjust the four EQ bands. Furthermore, a different EQ filter type can be selected for each band, and the roll-off frequencies for the HPF and LPF can be set. The HPF and LPF can also be turned on and off. The currently selected channel and its [EQ] key setting (on/off) are indicated above the EQ settings.

If the "Auto EQ Screen" parameter on the [Config.] LCD function is set to "on", the [Equaliz.] LCD function will appear automatically when one of the rotary EQ controls is adjusted.

**** Initial Data ****				
Channel = 1 on INPUT				
Q	*	0.721	0.721	*
Freq	105.11k	1.00k	4.00k	12.70k
Gain	0.0	0.0	0.0	0.0
Type	Lshl	Peak	Peak	Hshl
HPF/LPF	off	99.2	off	8.0k
Equaliz.	EQ.graph	Cascade	Disk	
F1	F2	F3	F4	

Select a channel, then use the PARAMETER SELECT keys to select a parameter and the PARAMETER ADJUST keys or data entry wheel to adjust it.

Q: 8.16 to 0.1

Freq: 20 Hz to 20 kHz

Gain: -18 dB to +18 dB

Type:

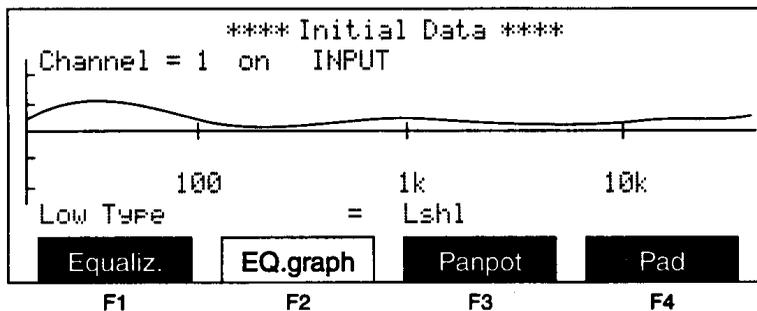
Type	Description
Peak	Peaking
Lshl	Low frequency shelf
Hshl	High frequency shelf
Band	Band pass

Type	Description
LPF2	2nd order 12 dB/oct low pass filter
HPF2	2nd order 12 dB/oct high pass filter
LPF1	1st order 6 dB/oct low pass filter
HPF1	1st order 6 dB/oct high pass filter

HPF/LPF: HPF: on/off, 20 Hz to 10 kHz. LPF: on/off, 1.0 kHz to 20 kHz. Both 12 dB/oct.

[EQ.graph] LCD function

The [EQ.graph] LCD function displays the EQ response curve for the currently selected channel. It can also be used to adjust the four EQ bands and the HPF and LPF. The currently selected channel and its [EQ] key setting (on/off) are indicated above the EQ graph.



Select a channel, then use the PARAMETER ADJUST keys to select an EQ parameter, the currently selected EQ parameter is indicated on the bottom line of the display. Use the data entry wheel to adjust the selected EQ parameter.

EQ adjustments made using the EQUALIZER controls are displayed on the [EQ.graph].

EQ Mode

There are two EQ modes that affect the relationship between the Q and GAIN parameters: Constant Q and Constant Energy. These modes can be selected using the "Equalizer Constant" parameter on the [Config.] LCD function.

Constant Q: the Q parameter is unaffected by the GAIN parameter.

Constant Energy: when the GAIN parameter is adjusted, the Q parameter will be adjusted automatically to maintain a constant volume level.

This EQ mode setting also affects the Monitor channels and the Stereo channel's EQs.

Insert

On/Off Setting

Unlike normalizing inserts, the DMC1000's inserts have to be turned on for use, and must be turned off when not in use.

Insert on/off settings are made on the [Ins. On] LCD function shown below.

**** Initial Data ****							
---- Insert on/off ----							
1	2	3	4	5	6	7	8
INP	off	off	off	off	off	off	off
MON	off	off	off	off	off	off	off
ST.A	off		ST.B	off		ST.C	off
ST MASTER			off				
Emphasis		Emp. mon		Ins. On		Ins. Pre	
F1	F2	F3	F4				

Use the PARAMETER SELECT keys to select an insert and the PARAMETER ADJUST keys or data entry wheel to turn it on or off.

The channel insert send and return signals are output and input via the corresponding INSERT I/O 25-pin D-sub connectors (INPUT, MONITOR, or ST INPUT A-C). The format is Yamaha Y2.

Pre or Post EQ

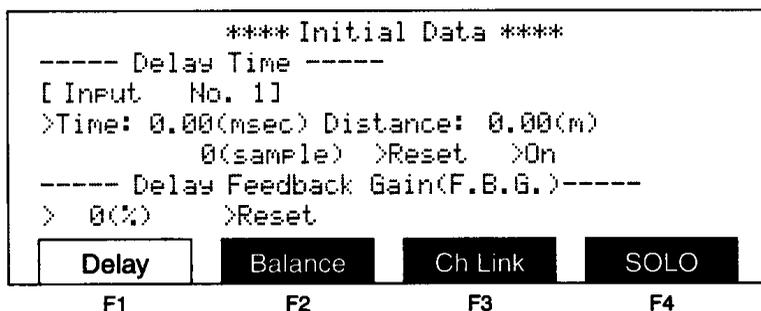
The insert point can be pre EQ or post EQ. This setting is made on the [Ins. Pre] LCD function shown below.

**** Initial Data ****							
---- Insert Pre/Post ----							
1	2	3	4	5	6	7	8
INP	pst	pst	pst	pst	pst	pst	pst
MON	pst	pst	pst	pst	pst	pst	pst
ST.A	pst		ST.B	pst		ST.C	pst
Emphasis		Emp. mon		Ins. On		Ins. Pre	
F1	F2	F3	F4				

Use the PARAMETER SELECT keys to select an insert and the PARAMETER ADJUST keys or data entry wheel to select "pre" (pre EQ) or "pst" (post EQ).

Delay

The [Delay] LCD function can be used to compensate delays caused by microphone placements at various distances from a sound source, or as just a delay. The delay time can be set from 0.00 to 371.47 msec, and you can set the delay in msec, meters, yards, or samples. The delay also has a feedback control with a -99% to +99% range.



The distance parameter is calculated on the basis of the speed of sound through air at 15 degrees centigrade (59.0°F), using the following formula.

$$\text{delay time} \times \frac{(331.5 + 0.61 \times 15)}{1000m}$$

Select a channel, then set the parameters, which are explained below. The currently selected channel is indicated in square brackets on the third line of the LCD.

Time: set the delay time: 0.00 to 371.45 msec (max delay depends on sampling frequency).

Distance: set the delay in meters or yards.

(m): set the distance units to meters or yards.

(sample): set the delay in samples: 0 to 16,381

Reset: reset the delay parameter to 0 samples.

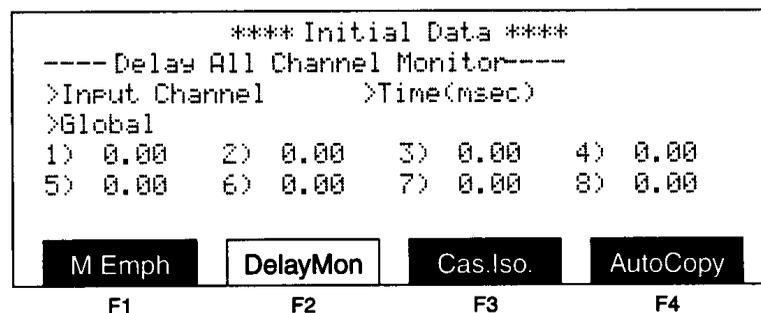
On: turn the delay on and off (this setting is not stored when the DMC1000 is powered off).

Delay Feedback Gain (F.B.G.)

(%): set the feedback parameter from -99% to +99%. Positive values for normal-phase feedback, and negative values for reverse-phase feedback.

Reset: reset the feedback parameter to 0(%).

Delay settings for all channels are displayed on the [DelayMon] LCD function in msec, meters, yards, or samples. The delay can also be set on this LCD function.



Position the cursor next to “Input Channel”, and use the PARAMETER ADJUST keys or data entry wheel to select “Monitor Channel”, “Stereo Input Channel”, or, of course, “Input Channel”.

Position the cursor next to “Time(msec)”, and use the PARAMETER ADJUST keys or data entry wheel to select the delay units: msec, meters, yards, or samples.

To set the delay for all channels simultaneously, position the cursor over the Global parameter and use the PARAMETER ADJUST keys or data entry wheel.

Phase

To phase reverse a channel signal, select the channel, then press the [Ø] key: light on for phase reverse, light off for phase normal.

Phase settings can be displayed and set on the [Phase] LCD function.

- + phase normal
- phase reverse

**** Initial Data ****											
Phase	---- [+]: Normal [-]: Reverse										
	1	2	3	4	5	6	7	8	A	B	C
INP	+	+	+	+	+	+	+	+	+	+	+
MON	+	+	+	+	+	+	+	+	+	+	+

Phase.	Meter	Routing	FadeTime
F1	F2	F3	F4

Use the PARAMETER SELECT keys to select a channel and the PARAMETER ADJUST keys or data entry wheel to set the phase.

[On] key (mute) ‡

To mute an Input channel, press the corresponding INPUT [ON] key: light on for channel on, light off for mute.

Routing

To route an Input channel signal to a Bus output, make sure that the ROUTING [MON] key is off and press the corresponding ROUTING key: light on for channel to Bus assign, light off for no assign. All Input channels are initially routed to the Stereo bus.

To send the Input channel signal to a Bus output, the INPUT [ON] key must be on. The signal level is controlled by the channel fader, and the signal can panned between odd and even Bus outputs.

Pan

To pan the Input channel signal between odd and even buses and the Stereo bus, make sure that the PAN [BUS] key is on, then use the PAN [<] and [>] keys. Pressing both keys simultaneously will set the pan to center.

Alternatively, select the Input channel, make sure that the [BUS] key below the rotary PAN control is on, and use that rotary PAN control.

Input channel pan settings can be displayed and set on the [Panpot] LCD function (BUS).

```

**** Initial Data ****
---- Panpot Setting ----
      1  2  3  4  5  6  7  8      A  B  C
BUS 16 16 16 16 16 16 16 16  L  0  0  0
MON 16 16 16 16 16 16 16 16  R 32 32 32
AUX 16 16 16 16 16 16 16 16  >Nominal
      16 16 16 16 16 16 16 16  Center
  
```

Equaliz.	EQ graph	Panpot	Pad
F1	F2	F3	F4

Use the PARAMETER SELECT keys to select an Input channel (1~8 on the “BUS” row) and the PARAMETER ADJUST keys or data entry wheel to adjust the pan position.

0 = pan left, 16 = pan center, 32 = pan right.

Nominal: select Center or L/R. When Center is selected, the signal is at 0 dB in the pan center position and +3 dB when panned hard left or hard right. When L/R is selected, the signal is at -3 dB in the pan center position and 0 dB when panned hard left or hard right.

The Nominal parameter setting affects the Input channel and Monitor channel pan pots. For aux and Stereo input (A, B, C) pan pots, the level is 0dB when panned hard left or hard right.

Fader ≠

Used to adjust the level of the Input channel signal that is fed to the Stereo bus, Bus outputs, and post-fade auxiliaries. Refer to the black print legend on left-hand side of the fader. When a fader is positioned at the unity gain position (0), the red LED on the left of the fader lights up.

The fader position can be monitored on the [Input] LCD function shown below. Although it says “Input Level” on the display, it does not mean Input channel level, it purely indicates the faders position. In Rec mode and Mix mode, the fader positions are indicated on the top row of the display, and the MONITOR LEVEL control positions on the second row. However, when a [FLIP] key is on, the fader positions are indicated on the second row, MONITOR LEVEL controls on the top row.

```

**** Initial Data ****
---- Input Level ----(dB) * = unity
      1  2  3  4  5  6  7  8
      *  *  *  *  *  *  *  *
      *  *  *  *  *  *  *  *
      A  B  C  STEREO
      .  .  .  *
  
```

Input	Aux	Master	Grouping
F1	F2	F3	F4

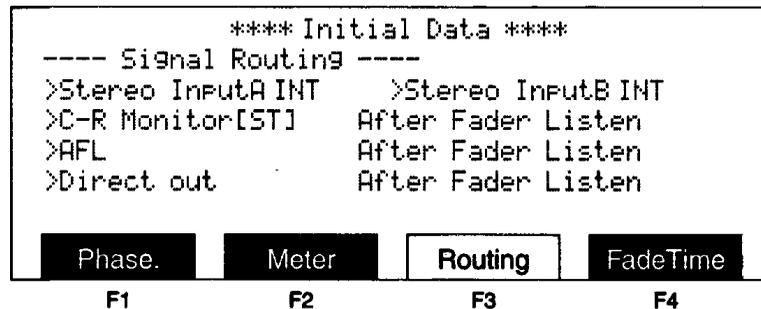
Although intended for automation fader editing, the Fader Edit LCD function can be used to graphically display the fader positions.

Note: If the FADER STATUS [BUS MSTR] key is on, the channel faders control the Bus output levels. See “Setting the Bus Output Levels” on page 56.

[SOLO] key ‡

To solo an Input channel, press an INPUT [SOLO] key. See also “SOLO [AFL] key” on page 62 for details about the SOLO and AFL modes.

The AFL mode signal source can be set to “After Fader Listen”, “Pre Switch Listen”, or After Panpot Listen” on the [Routing] LCD function (AFL).



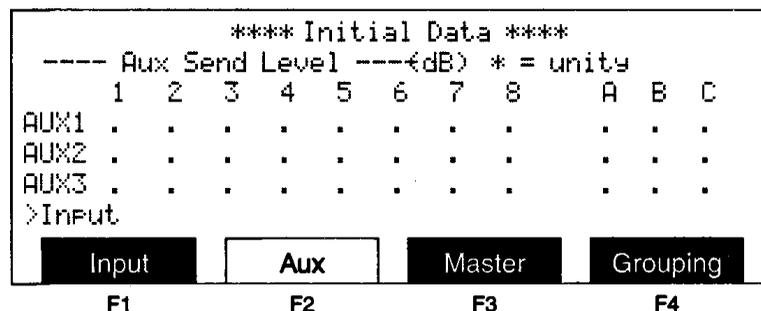
Use the PARAMETER SELECT keys to select “AFL” and the PARAMETER ADJUST keys or data entry wheel to set the signal source. This setting affects all [SOLO] keys.

Auxiliary Sends

To send a post-fade Input channel signal to an Aux bus, make sure that the AUX [MON] key is off, select the Aux send using the AUX [1], [2], and [3] keys, switch on the respective AUX [ON] key, then set the Aux send level using the AUX LEVEL control.

To send a pre-fade Input channel signal to an Aux bus, press the AUX [PRE] key (light on), then switch on the Aux send and set the level.

The positions of the AUX LEVEL controls are displayed on the [Aux] LCD function shown below.



To display the position of Monitor channel AUX LEVEL controls, position the cursor next to “Input”, and press the [+1/ON] key. Press the [-1/OFF] key to return to the Input channel display.

Aux 3 Send Pan

The Aux 3 bus is stereo, so Input channel signals sent to the Aux 3 bus can be panned. Initially, the Input channel's AUX 3 pan controls are set to center.

To pan an Input channel signal across the stereo Aux 3 bus, make sure that the PAN [AUX3] key is on, then use the PAN [<] and [>] keys.

Alternatively, select the Input channel, make sure that the [AUX3] key below the rotary PAN control is on, and use that rotary PAN control.

Input channel Aux 3 pan settings can also be displayed and set on the [Panpot] LCD function (AUX).

**** Initial Data ****												
---- Panpot Setting ----												
	1	2	3	4	5	6	7	8	A	B	C	
BUS	16	16	16	16	16	16	16	16	L	0	0	0
MON	16	16	16	16	16	16	16	16	R	32	32	32
AUX	16	16	16	16	16	16	16	16	>	Nominal		
	16	16	16	16	16	16	16	16		Center		

Equaliz.	EQ.graph	Panpot	Pad
F1	F2	F3	F4

Use the PARAMETER SELECT keys to select an Input channel (1-8 on the "AUX" row) and the PARAMETER ADJUST keys or data entry wheel to adjust the pan position.

0 = pan left, 16 = pan center, 32 = pan right.

The "Nominal" parameter is explained on page 38.

The stereo Aux 3 send could be used as two sends by panning channels either hard left or hard right.

Auxiliary Send Ducking

If the "AUX Send Ducking" parameter on the [Config.] LCD function is set to "on", pre-fade Aux send signals will be shut off when the fader is at its minimum position. This parameter affects Input channel sends, Monitor channel sends, and Stereo channel sends.

Metering

The Input channel signal level's can be monitored on meter bank I. Use the METER SELECT [I] key to select INP. The signal source point can be set to pre EQ, post EQ, or post fader. See "Meter Banks I, II, & III" on page 73.

Input Channels 7 & 8

Input channels 7 & 8 can be set to receive input signals 7 & 8 or the 2TR monitor input signal. See "2TR Monitor Signal into Input Channels 7 & 8" on page 69.

Channels as Stereo Pairs

Input channels 1&2, 3&4, 5&6, and 7&8, and Monitor channels 1&2, 3&4, 5&6, and 7&8 can be configured as stereo pairs using the [ST Pair] LCD function shown below.

**** Initial Data ****				
---- Stereo Pairing ----				
	1&2	3&4	5&6	7&8
INP	off	off	off	off
MON	off	off	off	off
Copy = on				
Config.	Function	ST Pair	BitShift	
F1	F2	F3	F4	

To configure a stereo pair, select a channel pair and press the [+1/ON] key. To cancel a stereo pair, select the channel pair and press the [-1/OFF] key.

When a stereo pair is configured, parameter settings from the odd channel are copied to the even channel, except for pan; the odd channel is panned hard left and the even channel is panned hard right. Subsequent parameter adjustments made on either channel affect both channels in the stereo pair. For example, if the odd channel is routed to Bus 3, the even channel is automatically routed to Bus 4. Stereo pair channels are soloed together.

If you don't want to copy the odd channel parameter settings to the even channel, set the "Copy" parameter to off. The Copy parameter is set to on each time the DMC1000 is powered on.

When channels are configured as a stereo pair, they are released from the GROUP and LINK functions. These functions do, however, remain effective for other channels.

MS Decoder

The MS decode function allows you to decode signals recorded using MS microphone techniques. This eliminates the need for external MS decoder equipment. Only channels configured as a stereo pair can use this function.

MS decoding is controlled from the [MSdecode] LCD function shown below:

**** Initial Data ****				
---- MS Decode ---- [+1] & [-1] = Off				
	1&2	3&4	5&6	7&8
INP	100%	-100%	100%	100%
	1&2	3&4	5&6	7&8
MON	100%	-100%	100%	100%
	S/R Prm.	MSdecode	62	63
F1	F2	F3	F4	

The *M* signal should be assigned to the left channel, and the *S* signal to the right channel.

The width of the stereo image and the level of rear sound can be varied using the width parameter. The *M* and *S* channels are decoded as follows:

$$L = M + W \times S \quad (W: \pm 100\%)$$

$$R = M - W \times S \quad (W: \pm 100\%)$$

The parameter range is: -100% to -1%, Off, 0% to +100%

When set to Off, $L = M$, and $R = S$.

The MS decode circuit is located after the pre-EQ insert point.

Chapter 4: Monitor Channel

This explanation of the Monitor channels is in Rec mode. In Mix mode, when the ROUTING [MON] key is on, or when the [FLIP] key is on, controls marked with a double dagger symbol (§) are fed the Input channel signal. See “Rec & Mix Modes” on page 28.

Monitor Channel Connections

Connection	Connector	Format	Notes
MONITOR CHANNEL INPUT	25-pin D-sub	Y1, Y2, SDIF2, or M	See “Setting the Input Format” on page 44
MONITOR CHANNEL DIGITAL I/O	25-pin D-sub	Y2 (DIO [I.Format])	8 monitor input signals & the 8 Bus outputs
MONITOR CHANNEL INSERT I/O	25-pin D-sub	Y2	Monitor channel insert send and returns
MONITOR CHANNEL DIRECT OUT	25-pin D-sub	Y1, Y2, SDIF2, or M	See “Setting the Direct Output” on page 45

Setting the Input Format

The [I.Format] LCD function is used to set the Monitor channel format.

```

**** Initial Data ****
---- Input Channel Format Select----
>Y1 Y2 >SDIF2 >M >AES/EBU >DIO
---- Monitor Channel Format Select----
>Y1 Y2 >SDIF2 >M >DIO
---- ZTrack In Format Select----
>AES >CD/DAT1 >CD/DAT2 >SDIF2 >Y2

```

F1
F2
F3
F4

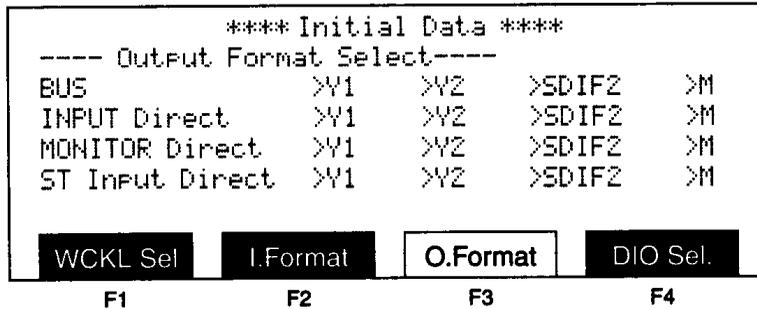
Use the PARAMETER SELECT keys to select a format on the “Monitor Channel Format Select” row, then press the [+1/ON] key to select it. The selected format will flash on the LCD.

Y1, Y2, SDIF2, M: selecting one of these formats will select the MONITOR CHANNEL INPUT 25-pin D-sub connection as the Monitor channel signal source. The format you select depends on the device sending the signals.

DIO: selecting this format will select the MONITOR CHANNEL DIGITAL I/O 25-pin D-sub connection as the Monitor channel signal source. The I/O format is to Yamaha Y2. This connection also outputs the eight Bus outputs. So, for example, multitrack connection to a DRU8 Digital Recorder can be achieved using just one connection.

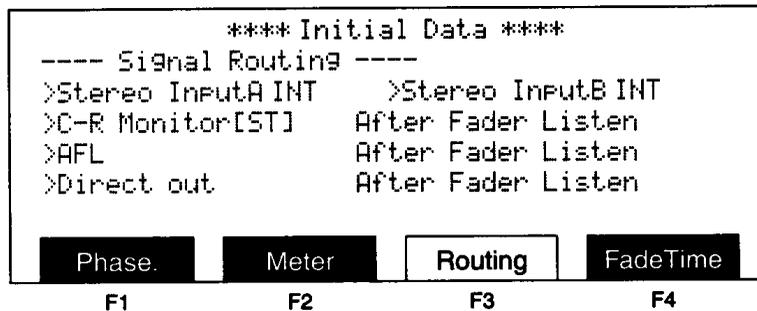
Setting the Direct Output

The [O.Format] LCD function shown below is used to set the format for the MONITOR CHANNEL DIRECT OUT connection (MONITOR Direct).



Use the PARAMETER SELECT keys to select a format on the “MONITOR Direct” row, then press the [+1/ON] key to select it. The selected format will flash on the LCD.

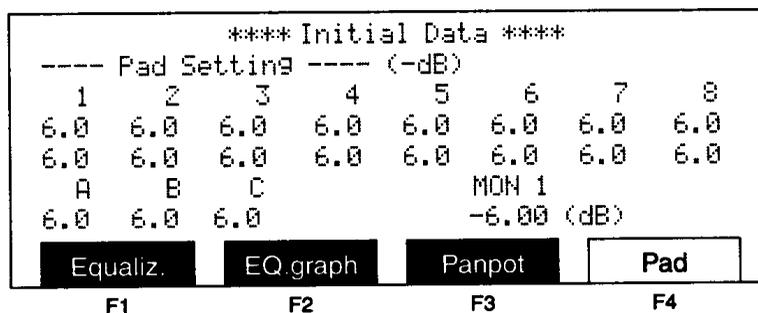
The signal source point for the MONITOR CHANNEL DIRECT OUT connection is set on the [Routing] LCD function shown below. The options are: After Fader listen, Pre Fader Listen, and Pre Switch Listen (pre [ON] key).



Position the cursor next to “Direct out”, then use the PARAMETER ADJUST keys or data entry wheel to select a source point. This setting also sets the direct output source for the Input channels and Stereo channels.

Pad

The [Pad] LCD function allows you to set a signal pad from 0.0 dB to -95.2 dB. When a System Reset is performed, see “System Initialize” on page 126, or scene memory 0 is recalled, all pad settings are set to -6 dB. This is because digital audio signals are usually at a relatively high level, so during mixing you would soon run out of headroom.



Monitor channel pad settings are displayed on the second row of the [Pad] LCD function (1~8). Use the PARAMETER SELECT keys to select a Monitor channel and the PARAMETER ADJUST keys or data entry wheel to set the pad level. Alternatively, select the Monitor channel, then use the rotary PAD control.

To set the pad for all channels simultaneously, position the cursor over the parameter at the bottom-right and use the PARAMETER ADJUST keys or data entry wheel.

LPF & HPF

To apply an LPF (Low Pass Filter) or HPF (High Pass Filter) to a Monitor channel, select the Monitor channel, then press the [LPF] or [HPF] key respectively: light on for filter on, light off for filter off.

To adjust the roll-off frequency of either filter, see “[Equaliz.] LCD function” on page 34.

[EQ] key (bypass) ‡

To bypass the EQ section for A-B comparisons, etc., press the MONITOR [EQ] key: light off for EQ bypass, on for EQ in circuit.

EQ

See “EQ” on page 33.

Insert

See “Insert” on page 36.

Delay

See “Delay” on page 37.

Phase

See “Phase” on page 38.

[ON] key (mute) ‡

To mute a Monitor channel, press the corresponding MONITOR [ON] key: light on for channel on, light off for mute.

Routing

To route a Monitor channel signal to a Bus output, make sure that the ROUTING [MON] key is on and press the corresponding ROUTING key: light on for channel to Bus assign, light off for no assign.

To send the Monitor channel signal to a Bus output, the MONITOR [ON] key must be on. The signal level is controlled by the MONITOR LEVEL control, and the signal can panned between odd and even Bus outputs.

Pan

To pan the Monitor channel signal between odd and even buses and the Stereo bus, make sure that the PAN [MON] key is on, then use the PAN [<] and [>] keys. Pressing both keys simultaneously will set the pan to center.

To pan the Monitor channel signal, make sure that the PAN [MON] key is on, then use the PAN [<] and [>] keys. Pressing both keys simultaneously will set the pan to center.

Alternatively, select the Monitor channel, make sure that the [MON] key below the rotary PAN control is on, and use that rotary PAN control.

Monitor channel pan settings can be displayed and set on the [Panpot] LCD function (MON).

**** Initial Data ****												
---- Panpot Setting ----												
	1	2	3	4	5	6	7	8	A	B	C	
BUS	16	16	16	16	16	16	16	16	L	0	0	0
MON	16	16	16	16	16	16	16	16	R	32	32	32
AUX	16	16	16	16	16	16	16	16	>	Nominal		
	16	16	16	16	16	16	16	16		Center		

Equaliz.	EQ.graph	Panpot	Pad
F1	F2	F3	F4

Use the PARAMETER SELECT keys to select a Monitor channel (1~8 on the “MON” row) and the PARAMETER ADJUST keys or data entry wheel to adjust the pan position.

0 = pan left, 16 = pan center, 32 = pan right.

Nominal: select Center or L/R. When Center is selected, the signal is at 0 dB in the pan center position and +3 dB when panned left or right. When L/R is selected, the signal is at -3 dB in the pan center position and 0 dB when panned left or right.

The Nominal parameter setting affects the Input channel and Monitor channel pan pots. For aux and Stereo input (A, B, C) pan pots, the level is 0dB when panned hard left or hard right.

LEVEL control ‡

In Rec mode, this control adjusts the Monitor channel level. Effectively, it is the Monitor channel fader. In Mix mode, when the ROUTING [MON] key is on, or when the [FLIP] key is on, it will control the Input channel level.

The LEVEL control position can be monitored on the [Input] LCD function. See “Fader ‡” on page 39.

Fader ‡

In Mix mode, when the ROUTING [MON] key is on, or when the [FLIP] key is on, the fader can be used to adjust the level of the Monitor channel signal that is fed to the Stereo bus, Bus outputs, and post-fade auxiliaries. Refer to the black print legend on left-hand side of the fader. When a fader is positioned at the unity gain position (0), the red LED on the left of the fader lights up.

The fader position can be monitored on the [Input] LCD function. See “Fader ‡” on page 39.

Although intended for automation fader editing, the Fader Edit LCD function can be used to graphically display the fader positions.

Note: If the FADER STATUS [BUS MSTR] key is on, the channel faders control the Bus output levels. See "Setting the Bus Output Levels" on page 56.

[SOLO] key ‡

To solo a Monitor channel, press a MONITOR [SOLO] key. See also "SOLO [AFL] key" on page 62 for details about the SOLO and AFL modes.

The AFL mode signal source can be set to "After Fader Listen", "Pre Switch Listen", or After Panpot Listen" on the [Routing] LCD function. See "[SOLO] key ‡" on page 40.

Auxiliary Sends

To send a post-fade Monitor channel signal to an Aux bus, press the AUX [MON] key (light on), select the Aux send using the AUX [1], [2], and [3] keys, switch on the respective AUX [ON] key, then set the Aux send level using the AUX LEVEL control.

To send a pre-fade Monitor channel signal to an Aux bus, press the AUX [PRE] key (light on), then switch on the Aux send and set the level.

The positions of the AUX LEVEL controls are displayed on the [Aux] LCD. See page 40.

Aux 3 Send Pan

The Aux 3 bus is stereo, so Monitor channel signals sent to the Aux 3 bus can be panned. Initially, the Monitor channel's AUX 3 pan controls are set to center.

To pan a Monitor channel signal across the stereo Aux 3 bus, make sure that the channel's AUX [MON] key is on, press the PAN [AUX3] key (light on), then use the PAN [<] and [>] keys.

Alternatively, make sure that the channel's AUX [MON] key is on, press the [AUX3] key below the rotary PAN control is on, and use that rotary PAN control.

Monitor channel Aux 3 pan settings can also be displayed and set on the [Panpot] LCD function (bottom row).

**** Initial Data ****												
---- Panpot Setting ----												
	1	2	3	4	5	6	7	8	A	B	C	
BUS	16	16	16	16	16	16	16	16	L	0	0	0
MON	16	16	16	16	16	16	16	16	R	32	32	32
AUX	16	16	16	16	16	16	16	16	>	Nominal		
	16	16	16	16	16	16	16	16		Center		
	Equaliz.		EQ graph			Panpot		Pad				
	F1		F2		F3		F4					

Use the PARAMETER SELECT keys to select a Monitor channel (1~8 on the bottom row) and the PARAMETER ADJUST keys or data entry wheel to adjust the pan position.

0 = pan left, 16 = pan center, 32 = pan right.

See "Pan" on page 38 for an explanation of the "Nominal" parameter.

Auxiliary Send Ducking

If the “AUX Send Ducking” parameter on the [Config.] LCD function is set to “on”, pre-fade Aux send signals will be shut off when the fader is at its minimum position. This parameter affects Input channel sends, Monitor channel sends, and Stereo channel sends.

Metering

The Monitor channel signal level's can be monitored on meter bank I or II, but not both simultaneously. Use the METER SELECT [I] key to select MON or the METER SELECT [II] key to select MON. The signal source point can be set to pre EQ, post EQ, or post fader. See “Meter Banks I, II, & III” on page 73.

Monitor Channels as Stereo Pairs

See “Channels as Stereo Pairs” on page 42.

MS Decoder

See “MS Decoder” on page 43.

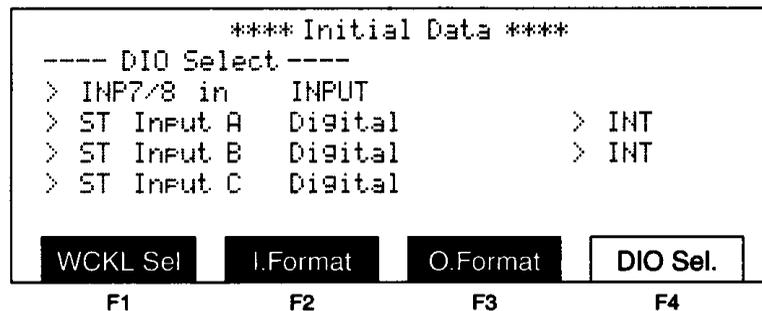
Chapter 5: Stereo Channel

Stereo Channel Connections

Connection	Connector	Format	Notes
ST INPUT (ANALOG) A, B, C	XLR-3-31 type	Analog	All stereo inputs
ST INPUT A, B, C Y2	8-pin DIN	Y2	
ST INPUT A-C INSERT I/O	25-pin D-sub	Y2	
ST INPUT A-C DIRECT OUT	25-pin D-sub	Y1, Y2, SDIF2, M	See "Setting the Direct Output" on page 51

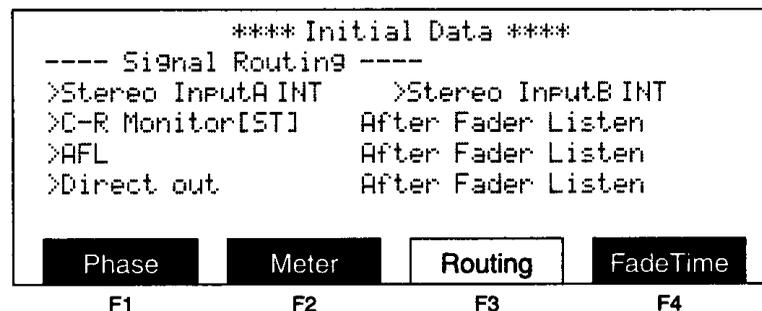
Selecting the Input

The [DIO Sel.] LCD function is used to select the input source, analog or Yamaha Y2 digital, for the Stereo channels. Stereo channels A and B can also be set to INT for use as internal effects returns or EXT for normal Stereo channel operation.



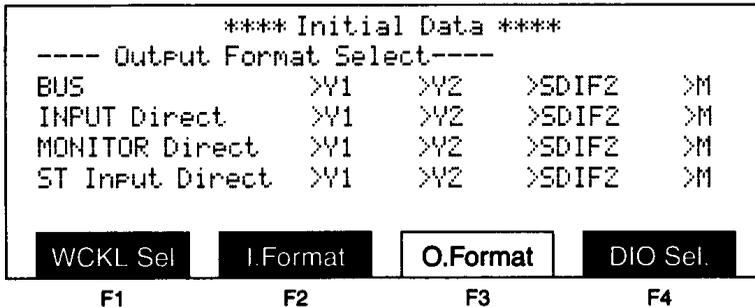
Use the PARAMETER SELECT keys to select a parameter and the PARAMETER ADJUST keys or data entry wheel to set it. Fig 14-1 on page 76 shows how Stereo channels A and B can be used as internal effects returns or normal stereo inputs.

The INT/EXT settings for Stereo channels A and B can also be set on the [Routing] LCD function shown below (Stereo InputA and Stereo InputB).



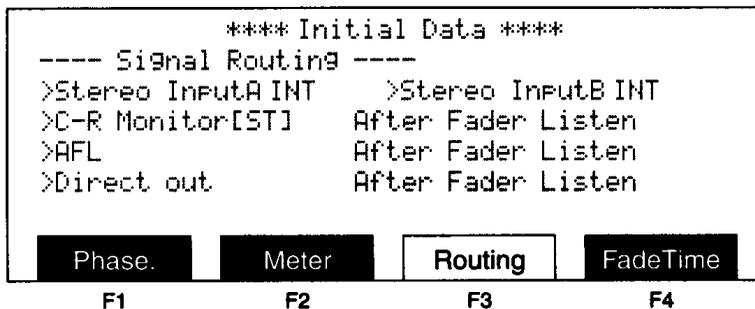
Setting the Direct Output

The [O.Format] LCD function shown below is used to set the format for the ST INPUT A-C DIRECT OUT connection (ST Input Direct).



Use the PARAMETER SELECT keys to select a format on the “ST Input Direct” row, then press the [+1/ON] key to select it. The selected format will flash on the LCD.

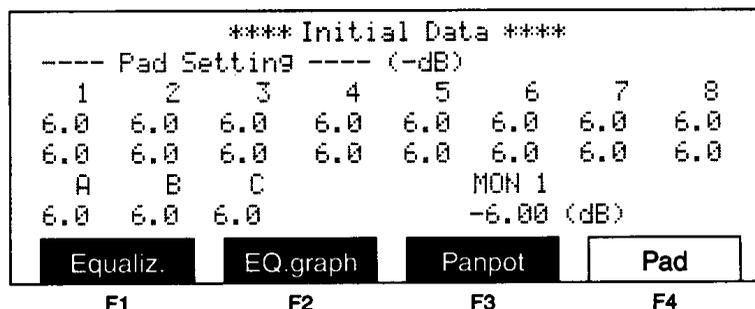
The signal source point for the ST INPUT A-C DIRECT OUT connection is set on the [Routing] LCD function shown below. The options are: After Fader listen, Pre Fader Listen, and Pre Switch Listen (pre [ON] key).



Position the cursor next to “Direct out”, then use the PARAMETER ADJUST keys or data entry wheel to select a source point. This setting also sets the direct output source for the Input channels and Monitor channels.

Pad

The [Pad] LCD function allows you to set a signal pad from 0.0 dB to -95.2 dB. When a System Reset is performed, see “System Initialize” on page 126, or scene memory 0 is recalled, all pad settings are set to -6 dB. This is because digital audio signals are usually at a relatively high level, so during mixing you would soon run out of headroom.



Stereo channel pad settings are displayed on the bottom row of the [Pad] LCD function (A, B, C). Use the PARAMETER SELECT keys to select a Stereo channel and the PARAMETER ADJUST keys or data entry wheel to set the pad level. Alternatively, select the Stereo channel, then use the rotary PAD control.

To set the pad for all channels simultaneously, position the cursor over the parameter at the bottom-right and use the PARAMETER ADJUST keys or data entry wheel.

LPF & HPF

To apply an LPF (Low Pass Filter) or HPF (High Pass Filter) to a Stereo channel, select the Stereo channel, then press the [LPF] or [HPF] key respectively: light on for filter on, light off for filter off.

To adjust the roll-off frequency of either filter, see “[Equaliz.] LCD function” on page 34.

[EQ] key (bypass)

To bypass the EQ section for A-B comparisons, etc., press the relevant ST INPUT A-C channel’s [EQ] key: light off for EQ bypass, on for EQ in circuit.

EQ

See “EQ” on page 33.

Insert

See “Insert” on page 36.

Delay

See “Delay” on page 37.

Phase

See “Phase” on page 38.

[ON] key (mute)

To mute a Stereo channel, press the corresponding ST INPUT A-C [ON] key: light on for channel on, light off for mute.

Routing

To route a Stereo channel signal to a Bus output, select the Stereo channel using the [SEL A], [SEL B], and [SEL C] keys, then press the corresponding ROUTING key on the ST INPUT A-C channel: light on for channel to Bus assign, light off for no assign.

To send a Stereo channel signal to a Bus, the Stereo channel’s [ON] key must be on. The signal level is controlled by the ST INPUT A-C channel fader.

Pan/Width

The left signal of a Stereo channel is initially panned to the left (odd Bus outputs) and the right signal is panned to the right (even Bus outputs).

To change the initial pan setting, select the Stereo channel, select the left or right signal using the PAN [L] and [R] keys, then use the PAN [<] and [>] keys. Pressing both keys simultaneously will set the pan to center. If you set the left channel pan the same as that of the right channel, the right channel will automatically be set to what was the left channel setting. This allows you to control the width.

Alternatively, select the Stereo channel, select the left or right signal using the PAN [L] and [R] keys, and use that rotary PAN control.

**** Initial Data ****												
---- Panpot Setting ----												
	1	2	3	4	5	6	7	8	A	B	C	
BUS	16	16	16	16	16	16	16	16	L	0	0	0
MON	16	16	16	16	16	16	16	16	R	32	32	32
AUX	16	16	16	16	16	16	16	16	>Nominal			
	16	16	16	16	16	16	16	16	Center			

Equaliz.	EQ.graph	Panpot	Pad
F1	F2	F3	F4

Use the PARAMETER SELECT keys to select the left (L) or right (R) signal of a Stereo channel (A, B, C) and the PARAMETER ADJUST keys or data entry wheel to adjust the pan position.

0 = pan left, 16 = pan center, 32 = pan right.

Balance

A Stereo channel's left and right signals can be level balanced before they are fed to the Stereo bus and odd and even buses. This setting is made on the [Balance] LCD function shown below.

**** Initial Data ****											
---- Balance ----											
>ST.A	16	>ST.B	16	>ST.C	16						
>Stereo Master	16										
>Monitor Master	16										

Delay	Balance	Ch Link	SOLO
F1	F2	F3	F4

Use the PARAMETER SELECT keys to select "ST.A", "ST.B", or "ST.C" and the PARAMETER ADJUST keys or data entry wheel to set the balance.

0 = left (+3 dB), 16 = center, 32 = right (+3 dB).

Fader

Used to adjust the level of the Stereo channel signals that are fed to the Stereo bus, Bus outputs, and post-fade auxiliaries. Refer to the black print legend on left-hand side of the fader. When a fader is positioned at the unity gain position (0), the red LED on the left of the fader lights up.

The ST INPUT A-C channel's fader is effectively three faders in one. Use the [SEL A], [SEL B], and [SEL C] keys to select the Stereo channel that is to be controlled by the fader. The position of the A, B, and C faders can be monitored on the [Input] LCD function. See "Fader ‡" on page 39.

Although intended for automation fader editing, the Fader Edit LCD function can be used to graphically display the fader positions.

[SOLO] key

To solo a Stereo channel, press the corresponding [SOLO] key on the ST INPUT A-C channel. See also "SOLO [AFL] key" on page 62 for details about the SOLO and AFL modes.

The AFL mode signal source can be set to "After Fader Listen", "Pre Switch Listen", or After Panpot Listen" on the [Routing] LCD function. See "[SOLO] key ‡" on page 40.

Auxiliary Sends

To send a post-fade Stereo channel signal to an Aux bus, on the ST INPUT A-C channel, select the Aux send using the AUX [1], [2], and [3] keys, switch on the respective AUX [ON] key, then set the Aux send level using the AUX LEVEL control.

To send a pre-fade Stereo channel signal to an Aux bus, press the AUX [PRE] key (light on), then switch on the Aux send and set the level.

The signal fed to the Aux 1 and Aux 2 buses is a summed signal of the Stereo channel's left and right signals. For the Aux 3 bus, the Stereo channel's left signal is fed to the Aux 3 Left bus and Stereo channel's right signal is fed to the Aux 3 Right bus.

The positions of the AUX LEVEL controls are displayed on the [Aux] LCD. See "Auxiliary Sends" on page 40.

Metering

The Stereo channels signal level's can be monitored on meter bank I. Use the METER SELECT [I] key to select ST IN. The signal source point can be set to pre EQ, post EQ, or post fader. See "Meter Banks I, II, & III" on page 73.