5 System setup

5 System setup

A system using the DMR8 should include the following elements:

- The DMR8 itself, comprising multitrack recorder, recording console, effects units and timecode generator
- If recording from analog sources is to be done on the DMR8, an 8-channel AD converter (for example, the YAMAHA AD8X) is essential.
- Sound sources (if microphones are to be used as the source, a microphone amplifier such as the YAMAHA HA8X is required to bring the signal level up to line level and provide phantom powering to condenser microphones).
- A control room monitoring system consisting of a power amplifier and speakers (headphones may also be connected directly to the DMR8)
- A mastering recorder capable of accepting AES/EBU or S/P-DIF digital data. One or two DAT recorders may be connected directly to the DMR8 in addition to an AES/EBU format machine. A composite digital video recorder may be used as the mastering recorder.

In addition, the following equipment may also be used:

- A studio (CUE) monitoring system, for use by the artists if they require monitoring in a separate location to the DMR8. Typically this is provided by a headphone amplifier and headphones.
- A composite (1Vpp) video monitor for displaying information from the DMR8.
- Another DMR8 or DRU8 which can be used either to expand the number of tracks available, or to extend the recording time.
- A digital sub-mixer, such as the YAMAHA DMP7D, which can be used to feed the SUB IN connector on the DMR8.
- Digital signal processing units to supplement the DMR8's internal effects. Examples of such units are the YAMAHA SPX1000 and YAMAHA DEQ7. As well as being placed in the three effect send/return loops, these units can also be placed in the three insert points.
- A digital patchbay to facilitate routing of signals.
- An external timecode generator/synchronizer, to supply a reference clock to all units in the studio.

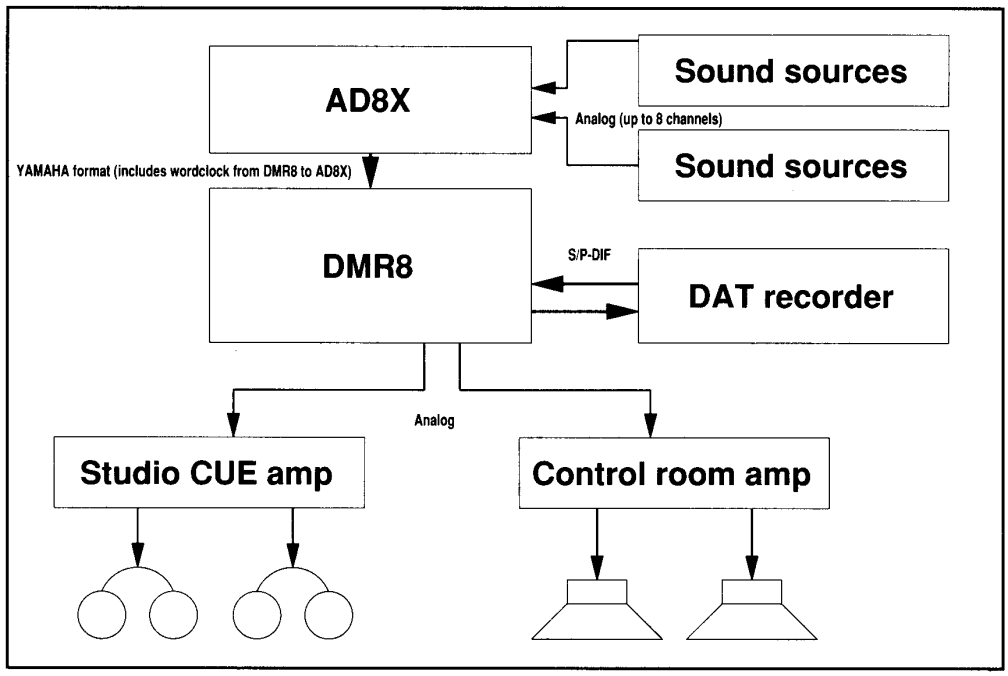
5.1 System Diagrams

The following system examples show some of the ways in which the DMR8 can be used with other equipment. Some of the principles of setting up a digital multitrack audio system are also made apparent through these examples.

For the purposes of clarity, not all the connections may be shown in these diagrams.

5.1.1 Minimum setup

This is essentially the same setup as is discribed in the "Getting Started" booklet. The DMR8 is set as the word clock master for the AD8X. A DAT recorder is used for mastering:

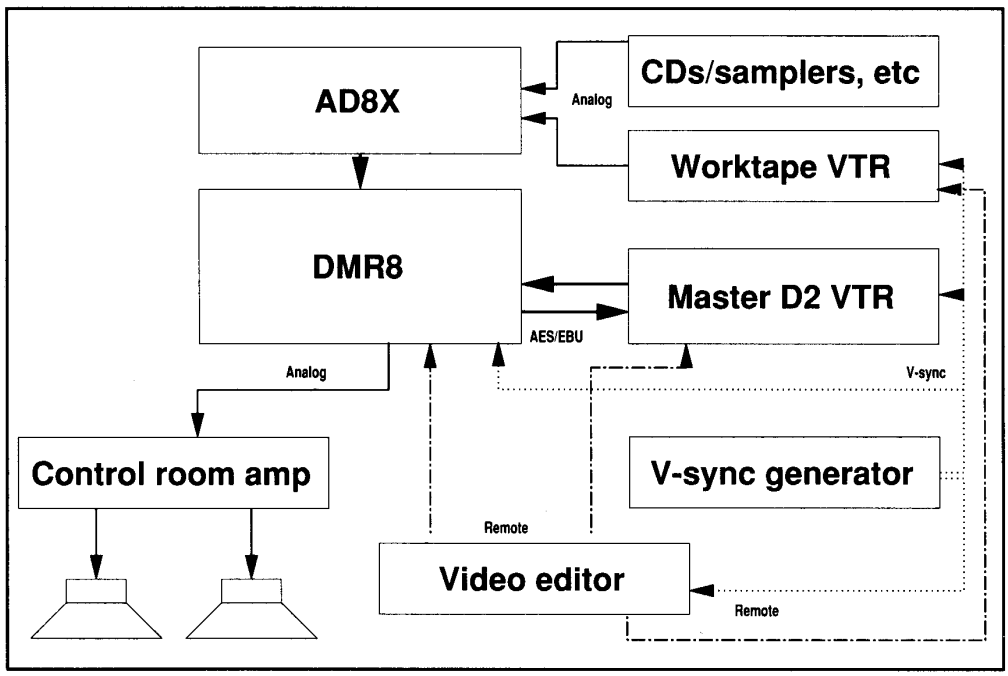


5.1.2 Video post-production

In this example, the analog actuality sound from the worktape is converted using the AD8X and fed to the DMR8, together with "spun-in" music, effects and Foley sound from CDs and samplers (the MIDI Event facilities may be used with the samplers).

Editing is performed using a video editor, which controls the DMR8 through the 9-pin REMOTE connector. Audio mastering is performed on a D2 composite digital VTR, using AES/EBU format. An external V-sync clock source is required to synchronize units.

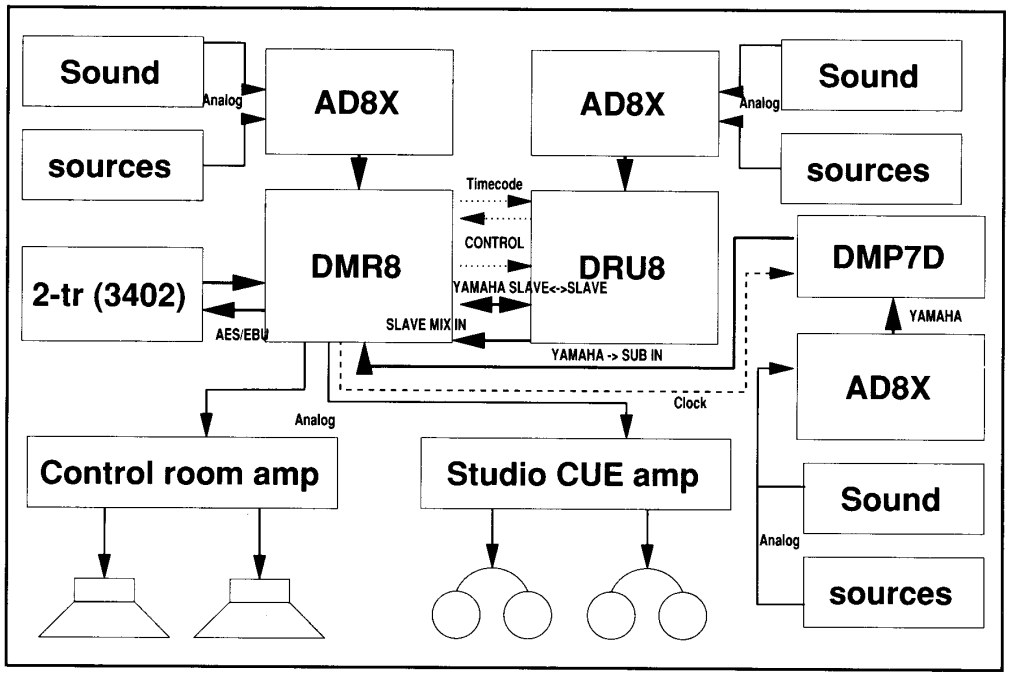
Video connections are not shown here, but the DMR8 video superimpose facility may be used to display timecode over the source video signal.



5.1.3 16-track recording

Here a DRU8 is used together with the DMR8 in "parallel chase" mode in order to provide 16 tracks of recording. A DMP7D is also used to provide another eight input channels. The DMR8 is used as a word clock master, and feeds all the digital equipment, including the DMP7D through the dedicated CLOCK OUT connector. Monitoring of the DRU8 tracks during recording is achieved through the SLAVE MIX IN connection (as shown below) and the monitoring levels may be set remotely using the DMR8's faders.

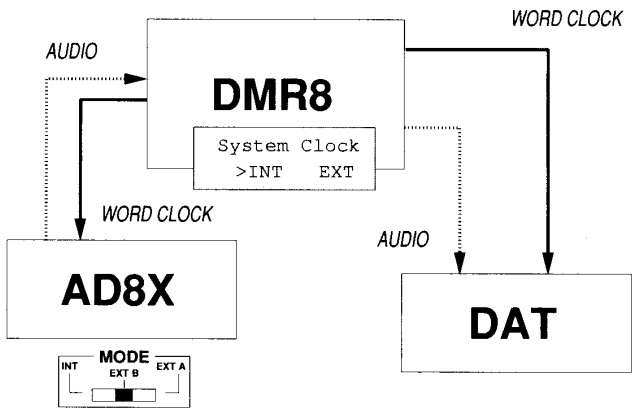
A 3402 DASH recorder is used as the mastering machine, using the AES/EBU facilities provided.



5.2 Setting the word clock

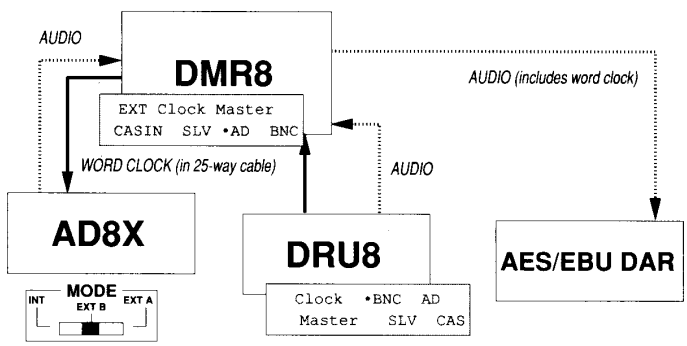
When setting up digital equipment, it is necessary that only one word clock is used throughout the system. If more than one word clock is used, there will be audio synchronization problems.

It is therefore necessary to determine which unit in the chain is to be used as the word clock master. Generally speaking, the DMR8 can be used as the word clock master:



In this example, the DMR8 acts as the word clock master. The word clock signal is transmitted down the 25-way connection to the AD8X. The DAT connection (SP-DIF) is self-clocking, and the word clock is transmitted down the coaxial connection.

In the example below, a DMR8, a DRU8 and an AD8X must share the same word clock. In this instance, the DMR8 is used as the master, feeding the DMR8 through the 25-way connector, and the DRU8 through the SLAVE connector.



In this example, the DMR8 is the word clock master for the DRU8 and AD8X. The word clock signal is transmitted down the 25-way connection (with the audio) to the DRU8, and to the AD8X (SLAVE and A-D). The AES/EBU connection. is self-clocking, in the same way as SP-DIF in the previous example

In most setups, the DMR8 is best used as the word clock master.

5.3 INITIAL SET

The INITIAL SET pages contain recorder system setup parameters which are organized into "styles".

The parameters which can be changed using these styles are:

- Style title. With preset styles, the selected style also sets appropriate track and channel names, and channel-to-track assignments.
- Internal or external sample clock selection
- If an internal clock has been selected, the sampling frequency (Fs) at which the DMR8 will operate.
- If an internal clock has been selected, whether the clock will be generated by a crystal or a phase-locked loop (PLL).
- If an external clock has been selected, the clock source input.
- Whether signals input in recording will come from the A/D or the SLAVE 25-pin 'D' connector.
- Whether the signals output from the selected connector will be tape playback only, or a selectable mixture of tape playback and input signal.

There are ten preset styles (P0 through P9) and ten user styles U0 through U9). The titles of the preset styles reflect various recording situations, as do the track and channel names and the channel-to-track assignments. Exact details of the parameters in the preset styles are given in an appendix at the rear of this manual.

The preset styles, although designed for specific applications which may not correspond to your exact needs, nonetheless can be used to provide jumping-off points for your own styles.

5.4 Inserts and Cascade

The DMR8 is provided with two mono and two stereo digital insert points. The audio data to and from these points is in YAMAHA format, from an 8-pin DIN connector, and so they are suitable for connection to any device capable of accepting and transmitting data in this format. Examples of such devices are the YAMAHA DEQ7 and SPX1000.

The two mono insert points are available for two input channels (or two channels from channels 1 through 8 in MIXDOWN mode). Insert 1 is assigned to the "left" channel of the stereo, and insert 2 to the "right" channel. On devices such as the DEQ7, this allows different EQ settings on each insert.

The STEREO and MONITOR insert points are both stereo, and allow digital processing of these busses prior to output. The format and connnector of each of these insert loops is the same as for the input inserts (stereo YAMAHA, 8-pin DIN). See the block diagram for the position of these insert points in the signal chain.

The CASCADE IN and OUT connectors allow the connection of multiple YAMAHA units; DMR8, DRU8, DMP7D, DMC1000, etc. The CASCADE IN point can be set to pre- or post- master fader in the UTILITY pages.

5.5 The [HELP] key

Despite its name, the [HELP] key is really a way of viewing and altering system parameters. When the [HELP] key is pressed, the main display will show the first page of a menu:

```
****** HELP MENU (Page 1/3) ******
1.Mixing Status   2.Fading ON/OFF
3.MIDI Event Edit 4.REMOTE Event
5.Chase Setup     6.D.Out Ch.Status
```

Pressing [SHIFT NEXT] will bring up the second page of the menu:

```
****** HELP MENU (Page 2/3) ******
 7.Dither          8.C2 Flag Display
 9.Head On Time   10.Superimpose
11.Abbreviation   12.Lock up
```

Pressing [SHIFT NEXT] again will bring up the third page of the menu:

```
****** HELP MENU (Page 3/3) ******
13.FOOT SW POLARITY
```

To select a menu option, enter the menu option number using the numeric keypad, and press the [ENTER] key. The main display will change to give the information associated with the selected menu item, and the subdisplay may also give information on how to access other screens connected with this menu item, or to return to the main HELP page.

Use the ASSIGN•EDIT keys to move the cursor and set values in the HELP screens.

The menu options available are:

1) Mixing Status

```
Mixing Status Monitor (Page 1/2)
()  ()  ()  ()  ()  ()  ()  ():Delay
()  ()  ()  ()  ()  ()  ()  ():ATT
()  ()  ()  ()  ()  ()  ()  ():Phase
```

If [SHIFT NEXT] is pressed, the screen will change to:

```
Mixing Status Monitor (Page 2/2)
()  ()  ()  ()  ()  ()  ()  ():EQ
()  ()  ()  ()  ()  ()  ()  ():C.Eff
()==()==()==()==()==()==()==():Patch
```

No settings are possible in this screen. The "( )" symbol indicates that the settings for the parameter on the appropriate channel are default values. If the settings are changed from these values, the hollow shape is filled.

In MIXDOWN mode, using the fader scroll keys will display the status of the appropriate channels. Though channel effect and patch functions are only available on channels 1 through 8, they will be shown for the channels in all scroll modes.

2) Fading On/Off

These two screens allow the setting of fade times for memories F3 11 through 14 and offset values for memories F3-11 and F3-12. These set the time that a channel takes to go from OFF to ON (the ultimate level being determined by the fader position), or *vice versa.*

When one of these memories is recalled (either with the [RECALL] key or using the AUTO EXECUTE mode), and it contains a different ON/OFF pattern to the current state, the fade is indicated by the channel ON keys flashing while the channel level changes. The faders do not move. The first screen will show:

```
 Fading ON/OFF Edit (Page 1/2)                H
        Fade Time    ON/OFF Offset            E
F3-11: >  32mSec        *    0%               L
F3-12: *  32mSec        *    0%               P
```

The second screen ([SHIFT NEXT]) shows the same for F3-13 and F3-14, except that offset is not available.

With the faders in CH FADER mode, set the ON/OFF switch settings which will be in operation when the F3 memory is recalled.

Set the fade time (32ms - 56.3s) using the ASSIGN•EDIT [↑] and [↓] keys.

For F3-11 and F3-12, set the offset. This indicates the relative positions of the ON→OFF and OFF→ON fades, allowing automated crossfades.

At 0%, the ON→OFF and OFF→ON fades start at the same time (when the [RECALL] key is pressed, or the AUTO EXECUTE F4 point is reached). At +100%, the OFF→ON fades start first. At the point when these are completed, the ON→OFF fades start. Values between 0 and +100% adjust the timing proportionately between these two extremes.

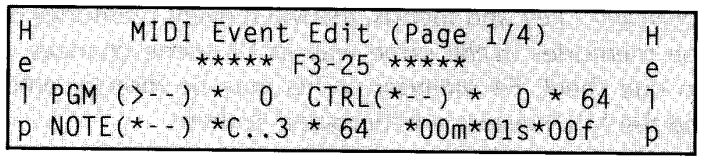
Minus values (between 0 and –100%) start the ON→OFF fades before the OFF→ON fades. At –100%, the ON→OFF fades will be totally completed before the OFF→ON fades start.

These settings, when changed, will automatically update the RAM card contents. There is no need to press the memory [STORE] key. The resulting memory may be recalled manually or using the AUTO EXECUTE function in EVENT edit.

3) MIDI Event Edit

(This is also described in the MIDI section)

These are four F3 memories (25 through 28) whose values may be set in the HELP screen. When recalled manually, or at a specific timecode point, through the EVENT EDIT AUTO mode, the MIDI data previously specified will be output from the DMR8.



As can be seen, the events which can be transmitted are: Program Change, Controller, Note On messages with velocity and (less obviously), Note Off messages.

There are three further similar screens, accessed by pressing [SHIFT NEXT], and these bring up the same parameters for programs F3-26, F3-27 and F3-28.

The first field can be set with a value from off ("--"), or 1 through 16. Use the ASSIGN·EDIT [↑] and [↓] keys and/or the numeric keypad to enter the value. This refers to the MIDI channel over which the Program Change message will be sent.

Move the cursor (ASSIGN·EDIT [→]) to the next field, and enter a program number from 0 to 127 ([↑] and [↓] and/or keypad, as with all fields in this display) for the Program Change message value to be sent.

The field immediately following the "CTRL" display refers to the MIDI channel number over which the Control Change message will be sent. No MIDI channel (no transmission) is represented by "--".

The next field refers to the MIDI controller number, which may take values between 0 and 120.

Following this as the last field of the third line of the display is the controller value, which may be set from 0 to 127. MIDI devices may react in various ways to controller settings. Make sure that the MIDI device to be controlled will interpret the controller message in a meaningful way.

The first field on the last line refers to the MIDI channel number over which the Note On message will be transmitted, off ("--") or 1 through 16.

The next field displays the MIDI note *name* of the note to be transmitted. Entering a MIDI note *number* from the numeric keypad will display the note name. For instance, pressing [6] followed by [0] (60) will display C..3. Note values may be from 0 (C-2) through 127 (G8). The [↑] and [↓] keys may also be used here.

The next field displays the MIDI Note ON velocity, which can take values from 0 to 127. A velocity of 0 is equivalent to a Note Off.

The next fields allow the setting of the time till a Note Off message, in minutes, seconds and frames. Note that this is an absolute time, which has no connection with MIDI clocks. In addition, irrespective of the current frames/second timecode setting, a second here is *always* divided into 30 frames.

This function would be useful, for example, if a video scene of a length of 00:01:12.23 requires the background sound of running water, provided by a looped sample, which could be "spun in" using this facility.

Using the [EVENT EDIT] key and menus, the MIDI event memories may be linked to F4 location memories in the same way as F1 scene changes, etc. Using a film or video cue sheet, F4 memory points may be directly entered to frame accuracy, and the MIDI events synchronized to them.

See the section on "Memories" for full details of this operation.

Selecting the F3 memory bank using the MEMORY keys, selecting one of the MIDI event memories, and [RECALL]ing it will also transmit the MIDI messages associated with this memory.

While this screen is displayed, pressing the [ENTER] key will transmit all the MIDI messages whose values are displayed here, allowing a check to be made.

4) REMOTE Event Edit

This allows the setting of four F3 memories (29 through 32) to transmit an RS-422 control message through the REMOTE 9-pin connector when the memory is recalled (manually or automatically). The format of the message is always in Type 2 format (BVE-910).

```
h          REMOTE Event Edit          h
E    Select by L/R : Change by U/D    E
L F3-29 : >LOCATE    F3-30 : *PLAY    L
P F3-31 : *PLAY      F3-32 : *EDIT ON P
```

As the screen suggests, use the [←] and [→] keys to select the memory to be edited. The [↑] and [↓] keys allow the setting of the following commands: STOP, PLAY, REC, FF, REW, EDIT ON, EDIT OFF, and LOCATE.

Transmitting the LOCATE command will locate the remote unit to the timecode position corresponding to the location memory currently stored in the DMR8.

5) Chase Status

This provides a quick view of, and edit facilities for some of the parameters available in the timecode MENU pages, allowing quick setting of the more usually-changed parameters:

```
h        Chase Setup (Page 1/2)        h
E DMR  Para : >Master  *Slave (Copy)   E
L      Seri : *Auto  *Manual *Slave    L
P Time Code : *Point *All *Remote *MTC P
```

Move the cursor using the [←] and [→] keys, and set options using the [↑] key. Note that some of these options are mutually exclusive: it is not possible to chase in POINT mode and be slaved to a DMR8, for instance.

The next screen allows the setting of one of three types of REMOTE RS-422 protocol.

Type 1 is a protocol to be used with the YAMAHA RC8 remote control/locator unit, giving a wider range of options than the others.

Type 2 corresponds to a protocol as implemented on the BVE-910 and RM-450 video editors, and the BVU-950 VTR (Sony).

Type 3 corresponds to a protocol as implemented on the CMX300 (CMX) and ACE-200 (Ampex).

6) Digital Out Channel Status

Three options are available to set the copy-permit flag on a DAT 2-track recording mixed from the DMR8.

There are three options: #1 allows one digital copy to be made from the DAT "master", #2 allows any number of digital copies to be made from the DAT "master", and #3 prohibits digital copying from the DAT "master".

Analog copies are, of course, possible whatever option is selected here.

7) Dither

This dither facility helps to eliminate quantization noise on the stereo outputs when feeding a digital input which takes fewer then the 24 bits used by the DMR8.

Space does not permit a full treatment of the theory of dithering. For a full explanation of dither and dithering techniques, consult one of the reference books available on digital audio techniques.

The first screen allows the setting of dither to be ON or OFF, and the bit setting:

```
h          Dither (Page 1/4)          h
e        *OFF      >16.5 Bit          e
```

Use the cursor keys to select and set dither. Generally speaking, if dither is required, the value in this screen should be 0.5 to 1 greater than the number of bits accepted by the digital input. For instance, a 16-bit input would use a 16.5 or 17.0 bit value here.

The next screen allows the setting of a high-pass filter for the dither operation:

```
h          Dither (Page 2/4)          h
e   Dither HPF    >THRU    *  32Hz    e
```

The filter may be set with cutoff frequencies from 32Hz to 18kHz (14kHz with 32kHz Fs). Use the cursor keys to set the value.

The next screen allows the setting of a DC offset:

```
h          Dither (Page 3/4)          h
e  DC Offset    >OFF    *ON(-10.0LSB)  e
```

Use the cursor keys to make a setting between -10.0 and +10.0 (LSB).

The last screen simply asks whether these dither settings are to be stored in battery-backed RAM when the DMR8 is turned off.

8) C2 flag display

The "C2 flag" is an internal flag set when a tape is being played back on the DMR8 and interpolation takes place to compensate for lost data (tape drop-out, etc).

To display these errors as they occur, enter the first screen of this HELP option:

```
H      C2 Flag Display (Page 1/5)      H
e           Display --- ON             e
```

Use the [↑] key to switch the display OFF and the [↓] key to switch the display ON.

Start the tape playing, and switch the main meter into METER C-R/CUE mode. Press [PEAK HOLD] The top line of the main display will show:

```
00000000  C-R PEAK METER  L-18.5 R-18.0 h
```

The eight "0"s at the top left are hexadecimal digits, corresponding to the eight PCM tracks of the DMR8. Every time a track causes a C2 flag to be set, the appropriate digit will be incremented by one.

To reset all values to "0", turn PEAK HOLD off, and then on again.

In the HELP pages, pressing [SHIFT NEXT] from the initial C2 flag page shows the first four locations at which C2 flags were set on the first track:

```
h      C2 Flag Display (Page 2/5)      h
E    Track = 1      DATA = 43021000    E
L  1 : 00:02:34.21   2 : 00:02:45.02   L
P  3 : 00:02:45.03   4 : 00:02:45.03   P
```

Use the [↑] and [↓] keys to change the track whose C2 flag locations are being displayed (1 through 8). Use the [SHIFT NEXT] key to view the remaining 11 C2 locations for the selected track.

9) Head On Time

This displays the amount of time that the heads have spent in contact with the tape in PLAY and RECORD modes (expressed in hours and minutes)This should be used to check when the heads should be cleaned using the head cleaning cassette (recommended time between cleaning is 100 hours).

To reset the counter to 0h 00m, press the [CLEAR] key.

10) Superimpose

As explained elsewhere in the manual, the DMR8 is capable of accepting a video signal and superimposing the contents of the subdisplay over the received video. Alternatively, only the OUT may be connected to a video monitor. To turn the video OUT function ON or OFF, enter this screen, and press [↑] or [↓] respectively.

11) Abbreviation

In the EFFECT fader mode, the bottom line of the main display shows three-letter abbreviations for the effect parameters being edited.

This HELP option provides 23 pages of explanation of these abbreviations. They are arranged in alphabetical order for easy reference. Use [SHIFT NEXT] and [SHIFT BACK] to go from page to page.

12) Lock up

This option has the effect of disabling almost all buttons and switches when the [↑] key is pressed. If the DMR8 is to be left unattended by the operator and switched on for some time, this option will avoid unwanted tampering.

To unlock the controls, press [↑] again.

13) FOOT SW POLARITY

This option allows you set the foot switch polarity for punch-in/punch-out recording.

Normal: punch-in/out will start/stop when the foot switch is released.

Reverse: punch-in/out will start/stop when the foot switch is pressed.

6 Mixing console

6 Mixing console

This section explains the operation of the DMR8's mixing console features, including the automated mixing facilities.

In RECMIX mode, the DMR8's mixing console allows up to eight digital inputs to be assigned to any combination of the eight PCM digital tracks on the DMR8 recording unit. A digital stereo SUB mix may also be assigned to recording tracks.

A control-room mix (C-R) and studio artists' CUE mix are available. In addition to the eight digital inputs and the stereo SUB, one or two analog AUX tracks (for click, etc) may be added to the C-R and CUE mixes

Three effects sends and returns are available; two may be assigned to tape tracks, and one is reserved as a C-R and/or CUE monitoring effect.

In MIXDOWN mode, the DMR8's mixing section may accept up to 24 inputs: eight from the DMR8's own tape tracks, eight through the AD connector, and eight through the SLAVE connector. The stereo SUB IN facility is also available.

In all modes, automated mix facilities are available, allowing recording, editing and replay of mixer parameters in real time, synchronized to timecode.

6.1 Channels and controls

The following signal paths are given in order to provide some conceptual overview of the workings of each channel. Note that the channels may take different signal paths in different modes. For an overall understanding of the mixing console's signal path, consult the block diagrams.

The signal path for each input channel in RECMIX modes is as follows:

```
DELAY → PHASE → INSERT → GAIN → EQ → CHANNEL EFFECT →
PATCHPOINT → (CUE SEND) → FADER → (EFFECT SENDS 1 - 2) →
                    ON/OFF → PAN
```

The signal path for channels 1-8 in MIXDOWN mode is as follows:

```
DELAY → INSERT → GAIN → EQ → CHANNEL EFFECT → PATCHPOINT
  → ON/OFF → PHASE → FADER → (EFFECT SENDS 1 - 3) → PAN
```

For channels other than 1-8 in MIXDOWN mode, the signal path is:

```
      DELAY → GAIN → EQ → ON/OFF → PHASE → FADER →
                  EFFECT SENDS 1 - 3 → PAN
```

The effect sends may all be assigned either pre- or post-fader (the default on resetting the DMR8 is post-fader).

For the three effect returns and the SUB IN in both RECMIX and MIXDOWN modes, the path is:

```
          EQ → MONO/STEREO → PAN → FADER → ON/OFF
```

As can be seen from the front panel of the DMR8, these facilities are not all directly available in the same way as on an analog console. The following sections explain how to access these functions. In addition, on each channel, there are also some controls which have no direct equivalent on most analog consoles, and so an explanation of the channel controls follows.

6.1.1 PAN indicator and keys

The three LEDs in the indicator show the approximate position of the pan or balance setting for each channel. When only the square red center indicator is lit, the setting is in center position of the 33 positions available. If only the triangular orange left or right LED is lit, the channel or track is panned hard left or hard right (depending on the indicator).

Any positions other than center or hard right/left will be indicated by both the center and one of the side indicators being lit.

The two pan keys below the indicator may be used to set the pan position. Continuously holding down one of these keys will move the position in the appropriate direction.

To reset the channel to the center position, hold down both pan keys for about 1 second, and then release them.

6.1.2 GROUP 1 and GROUP 2 keys

These keys allow fader movements to be grouped. A channel may be assigned to neither, either or both groups. To assign a channel to a group, press the appropriate GROUP key, which will light. To de-assign a channel from a group, press the appropriate GROUP key so that it is no longer lit.

Since the DMR8 is fitted with motorized faders, moving one fader of a group will move all other faders assigned to the same group. If a fader assigned to both groups is moved, faders belonging to both groups will be moved.

These keys also function in conjunction with the [STEREO GROUP] key, which allows ganging pairs of channels for EQ setting and ON/OFF. The practice of stereo groups is explained later in this section.

6.1.3 SELECT key

When editing parameters, the [SELECT] key is often used to select the channels whose parameters are to be edited.

6.1.4 ON key

The [ON] key of a DMR8 channel performs the same function as an ON key on a traditional console - when lit, the signal is passed through, and when off, the channel is muted.

6.1.5 EDIT key

The [EDIT] key is used in conjunction with the automix facility in order to allow manual override and editing of automix data.

6.1.6 Faders

The motorized faders are generally used to set levels, but, as explained below, may also be used to edit data.

A major difference between the DMR8 console and a traditional console is the fact that the faders perform more than one function. While a traditional console is usually equipped with rotary controls for AUX send and monitor busses, the DMR8 uses the same faders that control the levels to perform these functions. The fader use is selected using the FADER CONTROL block of keys to the left of the faders.

Details of these different modes are given in "Fader modes", below.

Absolute and relative modes

The DMR8 faders allow fine editing of levels or values, by means of a relative mode, in which a larger movement of the fader corresponds to a smaller movement in the absolute mode.

Normally, the absolute mode should be selected, but when fine adjustment is required, the relative mode may be chosen by pressing the [RLTV] key. The faders will move to the center position (depending on the fader mode currently selected, some faders may not move). The faders may now be used for fine adjustment.

Returning to absolute mode will return the faders to their original positions, adjusted according to the amount of offset added or subtracted in relative mode.

The resolution of the faders in relative mode is set in the UTILITY mode. Press the UTILITY key (in the block above the DATA ENTRY slider) four times. The display will show the current resolution of the faders in relative mode. This may be set (with the DATA ENTRY sliders or the PARAMETER [↑] and [↓] keys) to be x 5, x 4, x 3, x 2 or x 1. In other words, they will have 5, 4, 3 times, twice or the same resolution of the faders in absolute mode.

To exit from the UTILITY mode, press any other key in the [UTILITY] block or the block above.

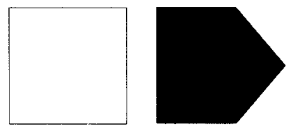
If an attempt is made to use the fader to set a value which exceeds the maximum or minimum value permissible for the parameter, the fader will move back to the maximum or minimum position (often the center).

Scrolling

The [←] and [→] keys to the left of the faders (to the right of the [COMM IN] key), are used to allow the faders and channel controls to manage more than eight channels.

On the main display of the DMR8 when in NORMAL display mode, there is an indication of the current fader scroll status (this is also displayed on the signal output from the VIDEO SUPERIMPOSE connector). Two examples of this kind of display are shown below:

Three scroll positions are available. The center position is currently selected



Two scroll positions are available. The right position is currently selected

When neither scroll key is lit, the center position is selected, but if either one is lit, the appropriate position is selected.

Scrolling allows the faders, [ON] keys, PAN keys and grouping to operate on more than 10 busses. When the main display is in NORMAL mode, a three-letter abbreviation of the channel function is given on the bottom line of the display. A full table of the different buss assignments in the different fader modes is given at the end of this section.

Grouping

The DMR8 allows the grouping of faders. When faders are grouped, moving one fader will move the other faders in the group. This provides an instant indication of all the fader positions in the group.

To group faders, the [STEREO GROUP] key must be OFF. Channels may be assigned to or removed from groups simply by pressing the GROUP 1 and/or GROUP 2 key of the channel. Moving the fader of one channel will move the faders of all other channel assigned to the same group(s).

Faders may be assigned to neither, either, or both of the groups.

NOTE: When moving a grouped fader, there may be a slight lag in the movement of the other faders, especially if many faders are assigned to the same group. However, this is a purely mechanical lag, and the actual levels of all the faders will move in time with the first fader moved.

The relative distance between faders in a group is always maintained. However, if a group fader movement would take a fader above or below its limits, the fader which would exceed the limit remains at the upper or lower level.

Fader grouping is valid in all fader modes, except channel module mode. Different groupings can be assigned in different channel modes, allowing alternative groups to be set up for different effect sends, for instance.

FADER display mode

The position of the faders can be displayed graphically on the main display when the [FADER] DISPLAY FUNCTION key is depressed. Each fader is shown as a bar; the longer the bar, the higher the fader value.

This facility can be used when the faders have been set to RELATIVE mode, and the main display will always show the absolute, not the relative positions of the faders, allowing a visual check to be made on absolute levels, even though the faders themselves do not show this.

The name of the channel, track or function to which the fader is currently assigned will be shown on the second line of the display.

In this display mode, a small "n" will appear beside the fader bar when the appropriate fader is set to nominal level (provided the fader is controlling level).

6.2 Fader modes

The different fader modes may be set using the FADER CONTROL block of keys to the left of the faders. The current fader mode will be indicated in the following ways:

i) The appropriate key will light.

ii) The bottom or second line of the main display (in NORMAL, and FADER) will indicate the channel or parameter currently affected by each fader

iii) If the main display is in PARAM ONLY or FADER mode, the top line of the display will show the current fader status

iv) The three square LEDs immediately below the main display show the current fader status: the green CH lights when the faders are in CH FADER mode, the orange SEND lights when the faders are in SEND 1, 2 or 3 mode, and the red MONITOR lights when the faders are in MONITOR or CUE mode.

v) The signal from the VIDEO SUPERIMPOSE output also shows the fader status. If the signal is not superimposing a signal received at the VIDEO SUPERIMPOSE input (ie the DMR8 is the only video source to the video monitor), the background color against which the text is displayed will change as the fader mode is changed.

The table below shows the different fader modes and their meanings:

CH FADER	Here, each fader controls the volume of a single channel (or track in mixdown mode). The name assigned to each channel or track is shown at the bottom of the main display.
SEND 1 and **SEND 2**	In these modes, each fader controls the channels' effects send levels. Fader 9 controls the return level of the effect, and fader 10 controls the total send level.
SEND 3 (MONI)	In recording modes, the faders control the amount of send to effect 3 (for the C-R and CUE mixes) from each track. In mixdown mode, it functions as an effect send in the same way as the SEND 1 and SEND 2 modes.
CH MODULE	In this mode, all the faders are used to control the parameters of a single channel, selected using the [SELECT] keys. The functions of the faders are defined (using 3-character abbreviations) at the bottom of the main display, and are also printed on the front panel of the DMR8.
EQ	Here, a channel's equalization settings may be adjusted using the faders. The channel is selected using the [SELECT] keys, and the faders will move to reflect the current equalization settings. The faders may be regarded as being arranged in groups of three, 2-4 handling bass, 5-7 midrange, and 8-10 high frequencies. Within each group of three, the first handles frequency, the second cut/boost (gain), and the third handles the bandwidth (Q) of the EQ band. Fader 1 is used as an overall channel level fader.
MONITOR	When recording, this mode allows the faders to control the track (not channel) sends to the control room mix. This is not available in mixdown mode.
CUE	When recording, the faders are used to control the amount of channel/track sent to the CUE buss. This fader function is not available in mixdown mode, except for fader 10, which is used as an overall monitor fader.
EFFECT	When an effect has been selected and the [EFFECT SELECT] or [EFFECT PARAM] key has been pressed, this mode allows direct editing of the effect's parameters (eg reverberation time) by means of the faders. Between four and ten faders may be used for this purpose (depending on the effect selected).

A complete reference table of the fader assignments in different modes is given at the end of this section.

6.3 General operation

Mixer parameters and values are for the most part shown on the main display. If visual confirmation of the operations is required, make sure that either the [NORMAL] or the [PARAM ONLY] DISPLAY FUNCTION key for the main display is pressed.

Parameters may be selected using the PARAMETER [←] and [→] keys, and set using the PARAMETER [↑] and [↓] keys, and/or the DATA ENTRY slider.

In certain circumstances (eg CH MODULE and EQ mode), the channel faders themselves double as data entry sliders. In this case, moving a fader will automatically select the relevant parameter (and show it and its value on the main display, where this is appropriate). Moving the DATA ENTRY slider or using the PARAMETER [↑] and [↓] keys may also move the fader which was last moved or selected, and moving a "channel" fader may also move the DATA ENTRY slider. The exception to this is where the "channel" fader is assigned to a real "fader" control (channel level, send level, etc).

The following explanations assume, however, that the DMR8 is in CH FADER mode.

6.3.1 Delay

To set channel delay, press the [DELAY/PHASE] key. Make sure that the top line of the main display shows "INPUT DELAY". If it does not, press the [DELAY/PHASE] key until this is displayed.

All channels' delay time may be set, both in RECMIX and in MIXDOWN modes.

The input delay time is given in samples.

To display the delay time in other units (milliseconds, etc), press the DISPLAY FUNCTION [PARAM ONLY] key.

Values may be set from 000 to 999 samples.

[SELECT] the required channel (the white ← and → keys may also be used for selection), and use the white PARAMETER ↑ and ↓ keys and/or the DATA ENTRY slider to set the required value.

6.3.2 Phase

The phase of the input channel may be altered by pressing the [DELAY/PHASE] key twice. The top line of the main display should show "PHASE". If it does not, press the [DELAY/PHASE] key until it does.

All eight input channels' phase may be selected in RECMIX modes. In MIX-DOWN modes, the phase of channels 1-8 only may be selected.

[SELECT] the required input channel (the white ← and → keys may also be used for selection).

A hollow shape on the main display indicates that the channel is in normal phase, and a filled shape indicates reversed phase.

Alter the phase using the white PARAMETER ↑ and ↓ keys and/or the DATA ENTRY slider.

NOTE - the last two shapes on the main display are for illustrative purposes only, and cannot be changed.

6.3.3 Insert

Two digital insert points (pre-fader, pre-EQ) are available. Any input channel in RECMIX modes, and channels 1-8 in MIXDOWN mode can use these insert points. Note that each insert point can only be used by one channel at a time (though a single channel may use both insert points).

Press the [UTILITY] key once, so that the top line of the main display reads "INPUT INSERT 1 SEL". If is not displayed, continue to press the [UTILITY] key until this message is displayed.

[SELECT] the channel required for insert (the white ← and → keys may also be used for channel selection).

Use the white PARAMETER ↑ and ↓ keys and/or the DATA ENTRY slider to set the insert on or off (a hollow shape indicates off, and a filled shape indicates on).

The second insert may be set by pressing the [UTILITY] key once more, so that "INPUT INSERT 2 SEL" is displayed on the main display.

The insert points are post-delay, but pre-pad. They leave and return via the two INSERT IN 8-pin DIN connectors on the rear panel.

The format is YAMAHA format, and hence may be used for direct digital connection to an SPX1000, DEQ7 or any other unit which is capable of transmitting and receiving this format.

6.3.4 Pad

A digital pad is provided, allowing up to 24dB of attenuation to be applied.

This pad is available on all input channels in RECMIX mode, and on all 24 channels in MIXDOWN mode.

Press the [INPUT ATT/PAN] key until "INPUT ATT" is displayed on the top line of the main display.

Select the channel using the channel's [SELECT] key, or the PARAMETER [←] and [→] keys.

Use the DATA ENTRY slider and/or the PARAMETER [↑] and [↓] keys to set the attenuation values.

The value will be displayed on the main display, along with a "bargraph" showing the amount of attenuation applied.

6.3.5 EQ

A three-band parametric equalizer is available for each input channel in RECMIX and MIXDOWN modes. Similar equalization may be applied to the SUB IN channel and the effect returns.

Select the channel whose EQ is to be altered, using the channel [SELECT] key.

Press either HI EQ, MID EQ or LOW EQ, depending on the frequency band to be changed.

Use the PARAMETER [←] and [→] keys to select the parameter to be changed: frequency, gain or Q, then use the DATA ENTRY slider and/or the PARAMETER [↑] and [↓] keys to set the value. The parameter ranges are:

	Frequency	Gain	Q
LOW	32Hz - 10kHz	-15dB - +15dB	Shelving, 0.1 - 5.0
MIDDLE	32Hz - 18.0kHz	-15dB - +15dB	0.1 - 5.0
HIGH	1.0kHz - 18.0kHz	-15dB - +15dB	Shelving, 0.1 - 5.0

NOTE: When recording with a sampling frequency of 32kHz, the highest frequency of the HIGH EQ setting is reduced to 14kHz.

Change the frequency band to be edited by pressing another EQ key (HIGH, MID or LOW).

To see all of a channel's EQ parameters, press the [PARAM ONLY] key of the METER FUNCTION block.

Bypassing EQ

To bypass the EQ (for comparison purposes), press the EQ band key that was last selected. The EQ will be defeated, and the main display will show "**OFF**" in the top left corner.

Resetting EQ

To reset a channel's EQ to the default settings, press the [HIGH EQ] and [LOW EQ] keys together.

Stereo grouping

A STEREO GROUP function has been provided which allows the EQ of a pair of channels to be altered simultaneously. It also allows the [ON] keys of a stereo grouped pair to be linked.

The [STEREO GROUP] key is at the bottom right of the MIXING PARAMETER group of keys. When this key is active (illuminated), the channel GROUP 1 and 2 keys perform different functions, allowing stereo pair grouping, rather than conventional fader grouping.

If a channel GROUP key (either 1 or 2) is pressed, it will start flashing, and will continue flashing until an adjacent channel's GROUP key of the same group number is pressed. Both channels' GROUP keys will then light steadily. Note that the channels have to be physically adjacent to each other.

The channel GROUP LEDs will show stereo group assignments when the STEREO GROUP key is active (lit). When the STEREO GROUP key is not active, the normal fader group assignments will be displayed using the GROUP LEDs.

Up to four stereo pair groups may be set up in this way, using groups 1 and 2. Two adjacent channels may not belong to two different stereo groups using the same stereo group number (the DMR8 will not allow such assignments to be made). The following may make things a little clearer:

Channel number	1	2	3	4	5	6	7	8
Group number	1	1		2	2	1	1	
Belongs to stereo group number	1	1		2	2	3	3	

The above group is a valid stereo group assignment. The following is not a valid assignment:

Channel number	1	2	3	4	5	6	7	8
Group number	1	1	1	1	2	2		

where the stereo groups 1-2 and 3-4 are both using group 1. To make the stereo groups 1-2, 3-4 and 5-6, the stereo group assignments would have to be:

Channel number	1	2	3	4	5	6	7	8
Group number	1	1	2	2	1	1		

where channels 3-4 are assigned to a different group to the ones adjacent on either side of them.

Note also that channels assigned to the same stereo group must be physically adjacent to each other (for instance, you cannot group channels 1 and 3 together in the same stereo group).

Stereo groups are not available on the C-R and CUE busses.

Using the EQ mode

If the [EQ] fader control key is pressed, the 10 faders control the overall channel level, and the nine EQ parameters. Select the channel to be edited by pressing the channel's [SELECT] key.

The fader assignments are shown below (only available in center scroll mode):

1	2	3	4	5	6	7	8	9	10
Ch fader	Low F	Low gain	Low Q	Mid F	Mid gain	Mid Q	High F	High gain	High Q

These assignments are also marked on the front panel, immediately above the faders.

In this mode, the DATA ENTRY slider and PARAMETER [↑] and [↓] keys may also be used, as well as the faders.

Using the CH MODULE mode

If the [CH MODULE] fader mode key is pressed, the 10 faders control different parameters. Select the channel to be edited by pressing the channel's [SELECT] key. Faders 8, 9 and 10 are assigned to EQ control, and are used for frequency, gain and Q respectively. These assignments are also printed on the front panel, immediately above the faders.

To select the EQ band which will be edited, press one of the three EQ keys (HIGH, MID or LOW).

Once again, in this mode, the DATA ENTRY slider and PARAMETER [↑] and [↓] keys may also be used, as well as the faders.

6.3.6 Channel effects

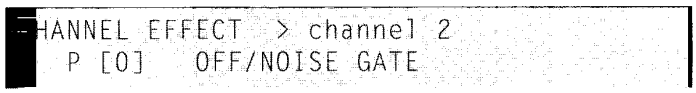
An effect may be applied to the input channels in RECMIX modes, and to channels 1-8 in MIXDOWN mode. The effects available are: OFF/NOISE GATE (0), EMPHASIS (1), DE-EMPHASIS (2), COMPRESSOR (3), HPF/LPF (4), DOUBLING (5), ECHO (6), and FLANGE (7).

These effects are self-explanatory, except perhaps for DOUBLING, which is a slapback single echo (ADT).

These effects are additional to the effects accessed through the sends 1-3, and a different channel effect may be applied to each channel. Different parameters may be applied to the same channel effect, even when it is used on different channels (for example, a hi-hat might be gently flanged at low frequency, while the bass might be simultaneously flanged deeper at a higher frequency).

Selecting channel effects

To apply a channel effect, select the channel (using the [SELECT] key). Press the [CH EFECT] key so that the top two lines of the main display show something like:



Use the PARAMETER [↑] and [↓] keys to select a channel effect. The number will start flashing in the main display, and will continue flashing until the PARAMETER EFFECT RECALL ([→]) key is pressed.

Editing channel effects

By pressing the [CH EFECT] key once more after the channel effect has been selected, the parameters of the channel effect can be modified.

The preset effects, and their respective parameters, are given in the table below:

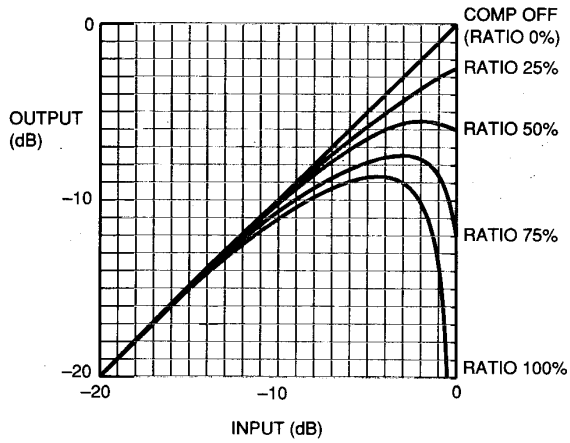
"p"	Effect name	Parameter name	Parameter ranges
0	OFF/NOISE GATE	TRG. LEVEL TRG.DLY HOLD RELEASE	OFF. 0 ~ 100% –100 ~ 100 ms 10 ~ 24000 ms 3 ~ 24000 ms
1	EMPHASIS	---	---
2	DE-EMPHASIS	---	---
3	COMPRESSOR	RATIO	0 ~ 100%
4	HPF/LPF	HPF FRQ. LPF FRQ.	THRU, 32 Hz ~ 1.0 kHz 1.0 kHz ~ 16 kHz, THRU
5	DOUBLING	DELAY DBL LEVEL	0.1 ~ 170.0 ms 0 ~ 100%
6	ECHO	DELAY FB GAIN BALANCE	0.1 ~ 170.0 ms –99 ~ +99% 0 ~ 100%
7	FLANGE	MOD FRQ. MOD DEPTH MOD DELAY FB GAIN	0.05 ~ 40 Hz 0 ~ 100% 0.1 ~ 100 ms 0 ~ 99%

Use the PARAMETER [←] and [→] keys to select a parameter, and the [↑] and [↓] keys and/or the DATA ENTRY slider to set the values within the ranges shown above.

When OFF/NOISE GATE (0) is recalled, the noise gate effect is OFF. To use the noise gate, set and select a noise gate parameter. When the TRG. LEVEL is set OFF, the other noise gate parameters are set to 0 (effect off).

When the TRG. LEVEL is set to 0% and the TRG.DLY parameter has been set, the HOLD and RELEASE parameters are effective.

The relationship between the compressor [3] ratio and the degree of compression is given in the graph below:



Storing channel effects

The values set for channel effects will reside in the eight lowest memories (0 through 7) until altered. However, it may be useful to have a set of pre-programmed channel effects, and locations U8 through U10 are provided for this.

When editing a channel effect's parameters has been completed, press the [CH EFECT] key so that a screen similar to the following is shown on the main display:

```
HANNEL EFFECT  > channel 2
  P [6]   ECHO
```

Use the parameter [↑] key to move to an unwanted memory location (one that may be overwritten) from U8 through U10. If no data is stored there, the legend "NO MEMORY" will be displayed, otherwise the name of the channel effect last stored there will be shown.

```
HANNEL EFFECT  > channel 2
  U [8]   NO MEMORY
```

Press the EFFECT STORE (PARAMETER [←]) key, and the name and parameters of the last-edited channel effect will be stored in this location, and may be recalled like any other channel effect. User locations U8 through U10 can be shared by all channels.

6.3.7 ON/OFF

The [ON] keys in each channel module are used for instant muting or enabling of a channel's sound. When stereo grouping is applied (the [STEREO GROUP] key is pressed, and stereo groups have been assigned), the [ON] keys of a stereo pair will be linked, that is, pressing the [ON] key of one channel of a stereo pair will have the same effect as pressing both [ON] keys of a stereo pair. When two channels are stereo grouped, do not press both [ON] keys of a stereo pair simultaneously, as this will cancel the grouping function.

Note the restrictions on the use of the [ON] keys in different modes, as described at the end of this section.

6.3.8 Soloing

The [SOLO] key (to the left of the numeric keypad) uses the [ON] keys in a different way. When this is pressed, the [ON] keys of channels which may be soloed (post-fader) will start flashing.

Pressing any flashing channel's [ON] key will cause it to light steadily, mute the other channels, and cause a post-fader output to the selected solo buss (output through the C-R buss).

As many valid channels as are required may be soloed at any one time.

NOTE the restrictions on the channels which may be soloed in different modes, as described in the tables at the end of this section. Also note that soloing is not available for the CUE buss.

6.3.9 Effects sends

Effect send and return levels cannot be controlled directly from the CH FADER mode. Instead, one of the [SEND] keys must be pressed in order to see and change these levels, using the faders. In scrolling modes, the scroll keys may be used to select different channels' effects sends.

Fader 9 is used to control the overall return level, and fader 10 for overall send.

Master SEND and RETURN levels can be soloed, and the [ON] keys may be used to "drop" individual channels into and out of an effect send.

Effect return-to-track assignments (in RECMIX modes) are made in the recorder settings. However, returns may be added to C-R and CUE monitor busses, using the appropriate faders in these fader modes.

To change the send of an effect between pre- or post-fader, press the appropriate [EFFECT] key, and then press the [PRE/POST] key. Using the PARAMETER [←] and [→] keys, or the channel [SELECT] keys, channels may be selected. The pre/post assignment is then made using the PARAMETER [↑] and [↓] keys.

NOTE that in RECMIX modes, send 3 can be assigned only to the C-R and CUE busses.

6.3.10 Pan/balance

The 33-position pan controls affect the balance between a stereo pair of tracks, or the pan position of the signal in the overall mix.

Continuous pressing on one of the PAN keys will move the signal on the direction signified by the key. Holding down both PAN keys of a channel simultaneously for about a second and then releasing them will reset the pan to the central position.

Since tracks are individually assignable from channels (rather than being assigned in pairs), there is no need to pan a channel hard right or hard left to send it to only one track.

6.3.11 Faders

As explained earlier, faders have different functions in different modes. See the tables at the end of this section for a complete reference.

Remember that the RELATIVE mode allows greater fine control over the fader movements.

6.4 Track assignments

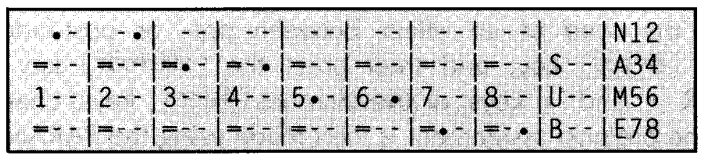
Unlike a conventional analog mixer, there are no dedicated controls to assign channels to tracks. The channel-to-track assignment can be carried out in one of two ways: using the subdisplay, when the tape recorder is being set up in each mode (this is described in the *Recorder* section), or by using the main display and the eight soft keys (below the tape transport keys). This method is described below.

The two methods interact with each other: ie changes made in one display will be reflected in the other display if it has been selected.

NOTE that channel-to-track assignment and display are not possible in MIX-DOWN mode (as no recording is being performed on the DMR8's recorder).

6.4.1 Displaying track assignments

Current channel-to-track assignments are viewable (but not changeable) when the DISPLAY FUNCTION [TRACK ASSIGN] key is pressed. The main display will show something similar to:

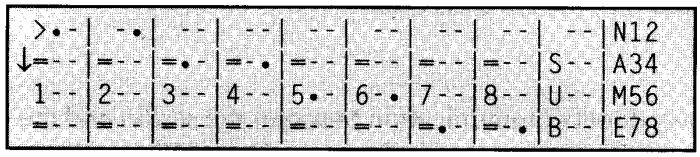


Each column gives a symbolic representation of a mixing console's buss assign buttons (in a 2x4 matrix). The "•" shapes represent an assignment to the appropriate track (as shown on the right of the display), and the hyphens represent unassigned tracks. The name of each channel is given to the left of each column.

To return the main display to any other mode, the appropriate DISPLAY FUNCTION key should be pressed.

6.4.2 Changing track assignments

In any mode other than MIXDOWN, press the green [S] key. Press the green [↑] key to obtain a similar display to the following on the main display:



The triangular cursor is moved from channel to channel by pressing that channel's [SELECT] key. When a channel has been selected, the soft keys, which correspond to tracks ([S1] = track 1 through [S8] = track 8) may be used to assign it to a track or tracks. When a channel is assigned to a track, the appropriate symbol will appear in the main display, and the soft key will illuminate. In this way, it is possible to see the channel-track assignments directly from the soft keys without looking at the main display).

When channel-to-track assignments are complete, press the green [S] key again so that the main display reverts to the desired setting.

NOTE that the SUB IN signal can also be assigned to tracks, by pressing channel 9's [SELECT] key, and proceeding as for any other channel.

The returns from effect 1 and effect 2 can also be assigned on the main display using the soft keys by pressing the FADER CONTROL [SEND 1] and [SEND 2] keys, respectively. The 9th channel name will change to a three-character abbreviation of the effect name, and may be selected using channel 9's [SELECT] key. The procedure for assigning effect returns to tracks is the same as for any other channel.

6.5 C-R monitoring

The C-R control room monitoring system should be connected to the DMR8 in one of several ways: using the stereo ANALOG OUT XLR connector pair, the AES/EBU XLR output, or the RCA (phono) S/P-DIF format connector.

It should be noted that since the C-R rotary volume and balance controls are analog, they will have no effect on the digital signals (AES/EBU or SPDIF) output from the C-R outputs.

In addition to these amplifier/speaker outputs, a pair of headphones may be used with the stereo phone connector on the rear panel. The volume of these headphones may be adjusted using the rear panel control, independently of the front panel rotary controls.

6.5.1 C-R controls

The C-R MONITOR column of keys to the left of the FADER CONTROL block allows control over the signal sent to the control room monitoring system. From bottom to top, the controls are:

COMM IN

This key allows direct communication between the studio and the control-room via the COMM IN analog microphone socket. When this latching key is pressed, the analog C-R signal is dimmed by 26dB (as indicated by the [DIM] switch lighting up).

DIM

This latching key dims the analog C-R output by 26dB.

VOLUME and BALANCE

These analog controls control the volume and balance of the analog C-R outputs.

They do not affect the C-R headphone (use the rear panel control for this) or the digital C-R outputs.

ON

Turns the C-R signal (all outputs) on or off (latching).

MONO

The stereo analog C-R and headphone signals are combined into a mono signal (latching).

PGM

This key interlocks with all the keys in this block ([PGM] through [2CH ANALOG]), except the [AUX] key, meaning that only one can be selected. When this [PGM] key is pressed, the signal output from the C-R monitors will be the C-R (MONITOR) buss (see below).

TAPE PB

Another interlocking key which allows selection of the DMR8's tape playback from the C-R outputs.

CUE

This interlocking key permits the signal sent to the CUE buss to be output from the C-R buss.

NOTE: When this key is depressed, the C-R buss cannot be assigned to the CUE buss.

AUX

This is a non-interlocking key, and enables the sound of the analog AUX tracks to be added to the analog C-R buss and headphones, as well as the AUX OUT connectors, in PGM, TAPE PB and CUE modes.

DAT 1 and DAT 2

These interlocking keys allow monitoring of the signal input at the DAT 1 and DAT 2 S/P-DIF input connectors via the C-R buss.

2CH DIGI

This interlocking key allows monitoring of the signal input at the 2 CH DIGITAL IN AES/EBU input connector via the C-R buss.

2CH ANALOG

This interlocking key allows monitoring of the signal input at the 2 CH ANALOG IN input connectors via the C-R buss.

6.5.2 C-R monitoring

The C-R mix is available as a separate mix in RECMIX modes only. In MIX-DOWN, the signal output from the C-R outputs is the stereo mix.

The faders should be set in [MONITOR] mode to adjust the levels of the C-R mix.

The actual signals being monitored depend on the recording mode and on user selection. However, the following are always available for C-R monitoring in all RECMIX modes: Slave IN, Effect returns 1-3, the two analog AUX tracks, and SUB IN. Details of the faders which control the levels of these "extra" channels are given at the end of this section.

In ALL REC mode, the tape tracks will be monitored and the levels adjusted using the faders. In other modes, a "soft key" menu or a subdisplay option may allow the choice between input signal and tape track.

Note that in PUNCH IN and TRACK EDIT modes, the DMR8 will automatically switch from tape to input and back again at the appropriate times.

Using soft keys for monitor selection

In RECMIX modes other than ALL REC, press the green [S] key, and then the green [↑] key until the words "MONITOR MIX INPUT SELECT" appear at the top of the main display. The exact number of times depends on the recording mode currently selected.

Tracks are indicated by letters in parentheses. An uppercase letter indicates that the monitoring assignment cannot be changed and a lowercase letter indicates a changeable parameter. A "P" in either upper- or lowercase indicates that the monitoring will be done from program, and an "I" in either case indicates the input will be monitored.

NOTE that these monitoring assignments are only valid when the DMR8 is in [REC] or [REHE] mode.

Use the PARAMETER ← and → keys to move the cursor, and the ↑ and ↓ keys to change values (where possible).

NOTE: these monitoring assignments are not effective in [PLAY] mode. To rehearse a recording operation, use the [REHE] key.

Press the [S] key again to restore the main display to its original state.

Using the subdisplay for monitor selection

In all the RECMIX modes except the ALL REC mode, following the track assignment pages, a screen allows the monitoring selection.

The [PARKING] key should be off, and the [SHIFT NEXT] key should be pressed until the MONITOR SELECT page is reached.

As with the main display, an "I" indicates monitoring from input, and a "P" indicates program monitoring. An uppercase letter indicates a value which cannot be changed, and a lowercase letter indicates a changeable value.

```
MONITOR   12345678
SELECT    iPPiiPPp  -1-
```

NOTE that these monitoring assignments are only valid when the DMR8 is in [REC] or [REHE] mode.

Use the ASSIGN.EDIT ← and → keys to select the channel, and the ↑ and ↓ keys to change between "i" and "p".

Monitor mix

When the faders are in [MONITOR] mode, the channels and/or tracks selected for monitoring will be displayed on the bottom line of the main display, and the relative balance may be adjusted. Note the scroll feature in this mode, which allows the addition of effect returns and the analog AUX tracks to the C-R buss.

NOTE that in MIXDOWN mode, the MONITOR fader mode is not available. The C-R buss receives the same signal as that output to the mastering machine unless a selection other than PGM (such as DAT1 or CUE) is made.

Metering

There are two methods of metering the C-R mix. The first uses the right block of eight LED meters, and is accessed by pressing the [SEND/CUE/C-R] METER SELECT key, and using the right pair of meters.

Alternatively, the main display may be used as an accurately-calibrated multi-segment meter by pressing the DISPLAY FUNCTION [METER C-R/CUE] key until "C-R PEAK METER" appears at the top of the main display.

The [PEAK HOLD] key may be used with both the LED and main display meters.

6.6 CUE

The studio artists' CUE buss may be output in the same formats as the control-room buss.

The CUE studio monitoring system should be connected to the DMR8 in one of several ways: using the stereo ANALOG OUT XLR connector pair, the AES/EBU XLR output, or the RCA (phono) SPDIF format connector.

It should be noted that since the CUE rotary volume and balance controls are analog, they will have no effect on the digital signals (AES/EBU or SPDIF) output from the CUE outputs.

In addition to these amplifier/speaker outputs, a pair of headphones may be used with the CUE stereo phone connector on the rear panel. The volume of these headphones may be adjusted using the rear panel control.

6.6.1 CUE controls

At the extreme left of the DMR8, there is a vertical strip of controls used in conjunction with the CUE buss. From bottom to top:

TALKBACK

The non-latching [TALKBACK] key is used to present the output from the integral talkback microphone to the CUE buss. While this key is depressed, the [DIM] function is activated, and the control-room output signal is dimmed by 26dB.

Adjustment of the talkback volume is performed by means of the rotary control on the rear panel.

SLATE

The non-latching [SLATE] key is used to send the signal from the TALKBACK microphone onto the analog AUX tracks. When depressed, the talkback mic is open, and the signal is directed onto the AUX track or tracks that have been selected for recording.

The talkback signal will not be sent to the CUE buss when the [SLATE] key is depressed unless the [TALKBACK] key is pressed at the same time.

VOLUME and BALANCE

These analog controls control the volume and balance of the analog CUE outputs.

They do not affect the CUE headphone (use the rear panel control for this) or the digital CUE outputs.

ON

Turns the CUE signal (all outputs) on or off (latching).

PGM

This key interlocks with all the [TAPE PB] and [C-R] keys in this block, but not the [AUX] key, meaning that only one of these three can be selected. When this [PGM] key is pressed, the signal output from the CUE monitors will be what has been selected on the CUE buss (see below).

TAPE PB

Another interlocking key which allows selection of the DMR8's tape playback from the CUE outputs.

This selection is not available in MIXDOWN mode.

C-R

This key allows the CUE buss to receive the C-R mix. When this key is depressed, the CUE buss cannot be assigned to the C-R buss.

This selection is not available in MIXDOWN mode.

AUX

This is a non-interlocking key, and enables the sound of the analog AUX tracks to be added to the CUE buss in PGM, TAPE PB and C-R modes.

6.6.2 CUE monitoring

Unlike the C-R buss, the CUE buss may include the signal from both tape and channel inputs.

In the center scroll position, the faders control track levels. In the left scroll position, channel inputs may be added to the CUE, and in the right position, effect returns, the SUB IN and the analog AUX tracks can be added.

As with the C-R mix, the automatic switch from off-tape to input recording in the punch modes (PUNCH IN and TRACK EDIT) will be monitored from tape tracks (center). The channels (left) can be added to the CUE mix to give a pre-roll monitor to the artists of their additions, allowing accurate pre-roll cueing.

NOTE: When the CUE mix is being set up, it can be monitored for accuracy in the control room, either through the CUE headphones socket, or by pressing the [CUE] C-R selection key.

6.6.3 Metering

There are two methods of metering the CUE mix. The first uses the right block of eight LED meters, and is accessed by pressing the [SEND/CUE/C-R] METER SELECT key, and using the third pair of meters in this block.

Alternatively, the main display may be used as an accurately-calibrated multi-segment meter by pressing the DISPLAY FUNCTION [METER C-R/CUE] key until "CUE PEAK METER" appears at the top of the main display.

The [PEAK HOLD] key may be used with both the LED and main display meters.

6.7 Oscillator

The line-up oscillator integrated into channel 1 allows test and line-up operations. It is a variable-frequency sine-wave oscillator and pink noise generator outputting at -6dB.

The oscillator is activated by pressing the [OSC] key, which will display the following message in the main display:

(1kHz is the default frequency when the DMR8 is shipped or reset). To turn the oscillator on, either the [↑] or [↓] oscillator key should be pressed.

Further presses of the [↑] or [↓] key will change the frequency of the oscillator, stepping through the following values (in Hz):

50, 63, 80, 100, 125, 160, 200, 250, 315, 400, 440, 441, 442, 443, 500, 630, 800, 1.0k[1], 1.25k, 1.6k, 2.0k, 2.5k, 3.15k, 4.0k, 5.0k, 6.3k, 8.0k, 10.0k[2], pink noise[3]

When the oscillator is on, it takes the place of any input to channel 1, and may be assigned as if it were an external input.

The oscillator may be turned off by pressing the [OSC] key again, so that it is no longer lit (press the [OSC] key twice if the main display is not shog the oscillator parameters).

When the oscillator is next turned on, it will use the frequency last selected.

6.7.1 Resetting the oscillator

The oscillator may be reset to its default frequency of 1kHz by holding down the oscillator [↑] and [↓] keys together for about half a second.

This method of resetting applies whether the oscillator is currently on or off.

6.8 Channel assignment in MIXDOWN

In MIXDOWN mode, twenty-four input channels are available, divided into blocks of eight. Each block of eight channels may be called "DMR" (the eight tracks on tape), "AD" (eight input channels from the AD input), or "SLV" (eight channels from the slave input).

When the [MIXDOWN] mode key is pressed, there will be a short wait while the DMR8 reconfigures itself, and resets the faders to the position where they were last left in MIXDOWN mode.

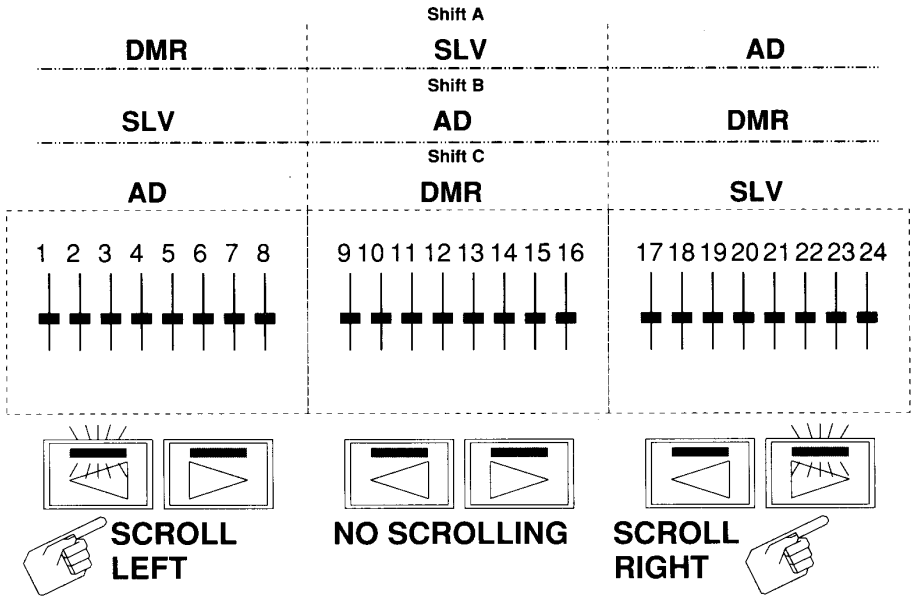
The first mixdown parameter after the title edit page which may be set up in mixdown mode is the fader assignment. Press the [SHIFT NEXT] key in order to enter this page on the sub-display.

[1] Default frequency

[2] Not available when DMR8 sampling frequency is set to 32kHz

[3] Not available in MIXDOWN mode

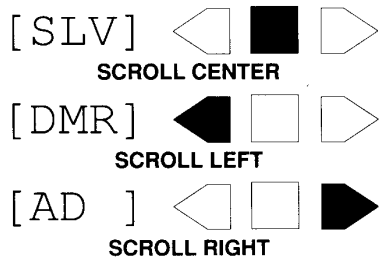
The three different combinations available are:



The fader assignment is selected using the ASSIGN.EDIT ⬆ and ⬇ keys, and confirmed when the [SHIFT NEXT] key is pressed.

NOTE: Channels 1 through 8 (irrespective of their assignment) are provided with a fuller range of features (channel effects, etc) than channels 9 through 24, as described elsewhere in this section. When setting up fader assignments, this point should be borne in mind.

On the main display, the current eight-fader block assignment will be shown on the third line in square brackets (for instance "[SLV]"), and a graphic representation of the scroll position:



This example illustrates SHIFT grouping A

6.9 Memories (F1 - F3)

The DMR8 is provided with four banks of up to thirty-two memories each. These are stored on the memory card inserted in the slot on the front panel.

USE ONLY YAMAHA MCD64 memory cards with the DMR8. Use of any other card may result in damage to the DMR8. Memories may not be stored or recalled if no memory card is inserted in the slot. Make sure that a MCD64 RAM card is always inserted in the memory card slot when using the DMR8.

The first three banks of memories are used for storing "snapshot" data of the mixer status, and for individual parameters. The fourth bank is used for storing time locations, and may be used in conjunction with the other three banks, so that memories from the other three banks are recalled as a time location is reached on the tape.

This function cannot be used in conjunction with the automix PLAY mode, but is provided as an alternative method of working.

6.9.1 F1-F4 keys (memories)

These memories are used for the following purposes:

Key	Name	Explanation
F1	ALL	Each memory event in the F1 bank can store a complete mixing console setting ("snapshot" or "scene"). Memories 1 through 16 store settings for recording, and memories 17 through 32 store settings for mixdown.
F2	GROUP	This bank allows the storage of particular parameters for the mixing console settings.
F3	SETTING	Each memory in the F3 bank can store further user-defined mixing console parameters (eg track and channel names).
F4	TC.EVENT	Each memory in this bank can be used to store a timecode location which may be used with the autolocator, or used in the EVENT EDIT facility to change the mixer settings automatically to other memory settings (in the F1, F2 and F3 banks) at the correct time.

These memories are selected by pressing the F1, F2, F3 or F4 key to select the type of memory to be recalled, then pressing the MEMORY ⬆ or ⬇ keys under the FUNCTION keys.

The 2-digit number in the LED display will show the selected number, and will flash (meaning it is not loaded) until the [RECALL] key is pressed. If the memory recalled involves changes to the fader positions, the faders will move when the [RECALL] key is pressed.

The subdisplay is used to display the memory titles, etc, and may be switched between memory and timecode display by use of the [MEMORY/TC] key.

If a change is made to mixer settings after a mixer program is recalled, a dot will appear after the LED number. This is to indicate that a change has been made in the program. Use the [STORE] key to store the current settings to the currently-selected program, or [RECALL] to restore the last-saved version.

Memories are always automatically stored on the RAM card. No further archiving operation is necessary.

If no appropriately-formatted RAM card is present, a suitable message will be displayed at the time an attempt is made to store or recall the memory.

DIRECT MEMORY

The DIRECT MEMORY keys are also available for quick recall of memories (eight for each bank). For the F1 bank eight memories are available for recording modes, and a further eight for the mixdown mode. They are used in the following way:

Press the memory bank key (F1 - F4) for the memory you want to associate with the DIRECT MEMORY keys, and then press one of the DIRECT MEMORY keys (1 - 8). Select the memory (1 - 32) and then press [STORE].

The memory stored to the DIRECT MEMORY number can then be recalled by pressing the appropriate DIRECT MEMORY key, followed by [RECALL].

Memories

The memories available are:

	1 (ALL)	2 (GROUP)	3 (SETTING)
1	*REC MIX initial data*	Equalizer #1	Channel names #1
2	REC MIX memory	Equalizer #2	Channel names #2
3	↑	Equalizer #3	Track names #1 ‡
4	↑	Equalizer #4	Track names #2 ‡
5	↑	ON/OFF #1	Grouping #1
6	↑	ON/OFF #2	Grouping #2
7	↑	ON/OFF #3	Stereo groups #1
8	↑	ON/OFF #4	Stereo groups #2
9	↑	Fader #1	Crossfade time #1 †
10	↑	Fader #2	Crossfade time #2 †
11	↑	Fader #3	Fade time (channel) #1 ¶
12	↑	Fader #4	Fade time (channel) #2 ¶
13	↑	Panpot #1	Fade time (main) #1 ¶
14	↑	Panpot #2	Fade time (main) #2 ¶
15	↑	Panpot #3	8 faders #1
16	↑	Panpot #4	8 faders #2
17	*MIXDOWN initial data*	Channel effect #1	8 panpots #1
18	MIXDOWN memory	Channel effect #2	8 EQ settings
19	↑	Channel effect #3	Channel EQ #1
20	↑	Channel effect #4	Channel EQ #2
21	↑	Effect #1	8 names #1
22	↑	Effect #2	8 names #2
23	↑	Effect #3	Offset #1
24	↑	Effect #4	Offset #2
25	↑	*Equalizer ON and flat*	MIDI output #1 ¶
26	↑	*ON/OFF switches all OFF*	MIDI output #2 ¶
27	↑	*ON/OFF switches all ON*	MIDI output #3 ¶
28	↑	*All faders zero*	MIDI output #4 ¶
29	↑	*Channel faders nominal*	Remote settings #1 ¶
30	↑	*10th fader nominal*	Remote settings #2 ¶
31	↑	*All panpots center*	Remote settings #3 ¶
32	↑	*Panpots as four stereo pairs*	Remote settings #4 ¶

NOTES:

1) Memories described in *italics* are factory presets and may not be changed.
2) Memory banks 2 and 3 are double banks; one set of 32 memories for bank 2 is available for recording modes, and another for mixdown.
3) Memories in bank 3 marked thus: †, are available only in recording modes, and are replaced by "Input Group 1 & 2" in MIXDOWN mode.
4) Memories in bank 3 marked thus: ‡ (3 and 4) are track names in RECMIX modes and channel names (3 and 4) in MIXDOWN mode.
5) Memories in bank 3 marked thus: ¶ can only have their values set and edited in the HELP menus.
6) Bank 4 consists solely of user-definable location points
7) When in RECMIX modes, only memories 1 - 16 may be selected from the F1 bank, and when in MIX-DOWN, only memories 17 - 32 may be selected. This only applies to the F1 bank.

Entering F4 location points

F4 location points may be entered in real time. First, select the F4 bank of memories. As the tape is running and being monitored, press [STORE] to enter the tape time at the time of pressing [STORE] into the location memory. Use the memory [↑] key to select the next F4 memory and repeat the process for the next location point. If you make a mistake when entering these values, the EVENT EDIT function can be used to correct mistakes.

When the tape is stopped, the numeric keypad can also be used to enter or edit F4 location values. Use the MEMORY [↑] and [↓] keys to select a memory number so that the LED display is flashing. Press [ADDRESS IN], and use the keypad to enter a time value. Press the MEMORY [STORE] key to set the value.

6.9.2 Editing memories

The [EVENT EDIT] key (one of the job keys below the tape transport keys) should be pressed to enter the memory editing jobs. There are two ways in which the memories may be edited: either in the subdisplay, where individual memories may have names assigned to them, protection switches may be turned on and off, etc, or in the main display in EVENT EDIT mode, where memories from the first three banks may be linked to memories in the fourth bank (time locations). F4 memories may also be edited in EVENT EDIT mode.

This first memory editing section is concerned with the editing of memories in the subdisplay.

Subdisplay editing

With the [MEMORY/TC] key off, the subdisplay showing the memory number on the top line, for example "F2-21 GROUP", press the [SHIFT NEXT] key. The display will change to show (for example):

```
F2-21 MEMORY TITLE EDIT
 EFF -1:****************
```

Memory title editing

The title is edited using the [↑] and [↓] keys and/or the numeric keypad in SHIFT mode to enter alphanumeric characters. When a memory title has been entered, press [SHIFT NEXT] to enter the next page on the subdisplay.

When editing F4 memories, it is not possible to enter a title. However, the time of the memory may be entered or edited directly using the numeric keypad (not in [SHIFT] mode).

Note that the title just entered will be stored in a temporary buffer, so that when you next store a memory, this title will be used to name the next memory. This is convenient if you want to name a number of F2 and F3 memories with the same name (eg the title of the session).

Memory protection

The next page enables or disables the memory protect individually for each bank, to prevent accidental rewriting of memory data. Use the ← and → keys to move the cursor, and the ↑ and ↓ keys to turn memory protection on or off. Press [SHIFT NEXT] to enter the next page.

Initializing (formatting) RAM cards

The next option is to initialize a memory card. Memory cards must always be initialized for use with the DMR8 before use. Even if the memory card has been used previously with YAMAHA equipment, the DMR8 will be unable to read it or write to it unless you initialize it. To the question:

```
MEMORY CARD INITIALIZE
     are you sure ?
```

press ↑ if you want to initialize the card (destroying any previously stored data), or [SHIFT NEXT] to enter the next page (battery check). If you initialize the card, the display will show "start", then, after a short time, "end". Press [SHIFT NEXT] or [SHIFT BACK] to enter another page.

Battery check (RAM card and DMR8)

In the next page, the battery levels of both the RAM card's battery, and the DMR8's internal lithium battery are checked. If the voltage of either falls below 2.5V, the voltage is too low. In the case of a card battery voltage being too low, replace the battery following the instructions supplied with the RAM card. If the DMR8's battery voltage is too low, refer the unit for servicing to your nearest YAMAHA service center. The lithium battery supplied with the DMR8 should last for approximately 5 years.

Editing memories (ii) - the [EVENT EDIT] key

Each F4 memory (time location) can be linked with up to three other memories; one from each bank. These memories may then be recalled automatically when an F4 location point is recalled. In this way, the F1 memories (the ALL memory settings) can be used for "scene-changing" when a particular time point is selected.

The main display and the ASSIGN.EDIT keys are used to edit the events.

The [EVENT EDIT] key is used to show the display giving the options to edit, sort or execute the Auto program on the main display (the tape must be stopped for this).

```
EVENT MENU
    >EDIT   SORT   EXECUTE
```

Move the cursor to the required option, using the ← and → keys, and press [SHIFT NEXT] to enter the next screen:

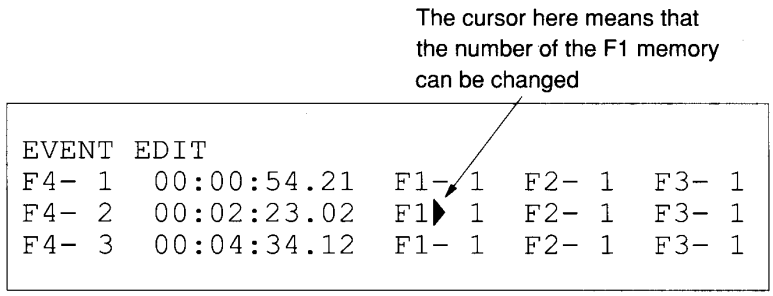
Sorting F4 memories

If the F4 memories 1 - 32 have not been entered in sequence, and hence are not in order, the SORT function should be used to correct this. If the screen has been entered using the EDIT function, press [SHIFT BACK] to return to the original menu, move the cursor to SORT, and press [SHIFT NEXT] to enter the sort routine. All the F4 entries will then be sorted, the values with the lowest time first, and the highest last.

Editing memories

Once the memories have been sorted, they may be edited (from the opening EVENT EDIT screen, move the cursor to EDIT and press [SHIFT NEXT]) to set and edit the three different memories (F1 - F3) which may be associated with each F4 time location.

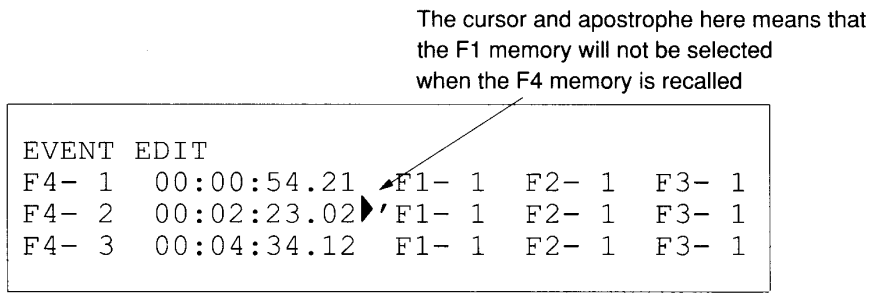
To change the memory number which is associated with an F4 location, move the cursor ([←] and [→] keys) so that it is positioned after the dash (-) of the appropriate "F" number:



Use the [↑] and [↓] keys to change the number of the memories for this F4 location.

To change to another F4 location, move the cursor to its leftmost position (before the number of the F4 location), and use the [↑] and [↓] keys.

If a particular memory is to be ignored when the F4 location is selected, this can be achieved by moving the cursor to before the "F" number (excluding the F4 numbers) and pressing the [↑] key. An apostrophe (') will appear before the F number, meaning that this memory will not be recalled when the F4 location is recalled.



Another function that can be performed here is the ability to edit the times of F4 location points. If an F4 location point has been entered at the wrong time or if a location is to be entered directly (eg from a video cue sheet), move the cursor to the appropriate field of the F4 location (hours, minutes, seconds or frames) and use the [↑] and [↓] keys to set the new value of the location.

If you have selected this location, the value will be shown in the subdisplay, and as you edit the value in the EVENT EDIT screen, the subdisplay value will change as well.

Deleting memories

Finally, lines of data can be deleted from the EVENT EDIT list. To do this, move the cursor to the leftmost position in the main EDIT screen, and press [SHIFT NEXT].

The display will then show (for example):

```
F4- 6 >LINE DELETE  EXECUTE→
```

This is the option to delete the line (EXECUTE the line-delete program) by pressing [→], or to return to the EVENT EDIT screen by pressing [SHIFT BACK]. After you have deleted the line, the main display will be re-entered automatically.

6.9.3 AUTO EVENT EXECUTE

The AUTO event EXECUTE mode means that when the F4 location point is reached, the associated memories (F1 - F3) will be recalled, and the DMR8 set to the parameters associated with these memories.

It is not possible to run the automix PLAY at the same time that the AUTO EXECUTE mode is selected.

To enable the AUTO EXECUTE mode, from the main display menu:

```
EVENT MENU
    >EDIT   SORT   EXECUTE
```

select EXECUTE and press [SHIFT NEXT]. The subdisplay will show the appropriate F4 time location and any associated memories as the tape moves past the F4 locations.

The associated memories will be recalled, and the faders and controls will change as appropriate, as the F4 location points are reached.

If no memory has been selected, a relevant message will be displayed.

6.9.4 Remote control and storage of memories

MIDI Program Change messages may be output from a sequencer or other MIDI device to the DMR8 to recall specific memories. Full details of the settings of this function are given in the appropriate MIDI section.

Memory data may also be saved to a card other than the one on which they were originally stored, and also transmitted via MIDI using a Bulk Dump function for saving to a sequencer's MIDI Data Recorder function or a dedicated MIDI bulk storage device.

6.10 Patching and inserts

Each input channel in RECMIX, and channels 1 through 8 in MIXDOWN mode, may be used with digital insertion and patching.

6.10.1 Patching

The digital patchbay connector (25-pin 'D' shell) is used with optional external equipment to provide patch facilities. The digital audio format is Yamaha MEL2 format.

The I/O points of this patchbay are post-EQ and channel effect, and pre-fader. Emphasis or the lack of emphasis applied from the patchbay may be viewed in the UTILITY menus.

For full details of the patching interface, consult your YAMAHA supplier.

6.10.2 Inserts

Two insert points are available on each channel, from the same position (post-phase, pre-pad). These are output in YAMAHA MEL2 stereo format. The "left" channel of this output corresponds to insert 1, and the "right" channel corresponds to channel 2.

To use these insert points with analog equipment, it is necessary to use suitable AD and DA convertors. With devices such as the YAMAHA SPX1000 and DEQ7, no conversion is necessary.

6.11 [UTILITY] key

The [UTILITY] key is used to set various mixing console parameters - some of which are also covered in other parts of this section. When using the [UTILITY] key, the white PARAMETER cursor keys and/or the DATA ENTRY slider should be used.

Repeated presses of the [UTILITY] key will bring up successive utility screens. Pressing any other key in the same block will turn off the utility mode. Pressing [UTILITY] again will always start at the first screen (input insert 1).

The options available are:

6.11.1 Input insert 1

In this mode, an input can be assigned to the "left" channel of the IN INSERT bus, as described above.

6.11.2 Input insert 2

As for INPUT INSERT 1. The selected channel is sent to the "right" channel of the IN INSERT bus.

6.11.3 Return mono/stereo

```
      RTN1-3,SUBIN ST/MONO SELECT
>RTN1= ST  RTN2= ST  RTN3= ST  SUBIN=ST
```

In this screen, the three effect returns and the SUB IN program can be selected to be stereophonic or monaural. Use the cursor [←] and [→] buttons to move the cursor, and the [↑] and [↓] keys and/or the DATA ENTRY slider to change the values.

In monophonic mode, the left output of the effect is assigned to both the left and right busses.

6.11.4 Fader resolution

In this screen, the fader resolution in RELATIVE mode can be set to be equal to, twice, three, four or five times the resolution of the faders in ABSOLUTE mode.

6.11.5 DRU playback delay

This enables tracks from the "DRU" (the DMR's tape recorder) to be delayed relative to other signals by ±50 samples.

In RECMIX modes, this is only available for a track if it has been selected as a MIX track.

In MIXDOWN mode, this screen is not available.

6.11.6 Output/monitor insert

This screen enables or disables the digital insert loops for the stereo OUT and the MONITOR busses.

6.11.7 Emphasis

```
DMR DIGITAL OUT EMPHASIS FLAG :  ON >OFF
INPUT MONITOR:AD=OFF,SLAVE=OFF,PATCH=OFF
```

The first line of this screen allows the setting of the emphasis flag in the digital output (emphasis is a kind of digital noise reduction).

No parameters can be changed in the second line — the three fields simply monitor the current emphasis status of the signals received at the three 25-pin connectors.

6.11.8 Patch on/off

Pairs of channels can be assigned to go through the PATCH 25-pin connector using this screen. See the block diagram for the usual position of the patch connector in the signal path (post channel effect, pre-fader in RECMIX, post channel-effect, pre ON/OFF in MIXDOWN).

6.11.9 Patch point select

Notwithstanding the above remarks, the next screen allows the position of the patch point to be changed from pre input delay to post EQ (in both RECMIX and MIXDOWN modes).

6.11.10 Cascade on/off and pre/post

The CASCADE IN can be switched on and off here. The position of this signal can be changed from pre- to post- OUT insert in the second field of this screen.

6.11.11 Solo mode

In MIXDOWN only, this screen allows the selection of the solo mode of a track or channel. In ISOLATE mode, the input signal (from tape or external) alone will be soloed. WITH EFFECT does what its name implies — any effect loops connected to this channel or track will be added to the SOLO bus. This enables isolation and monitoring of the "finished product".

6.12 Fader modes

CH FADER	Here, each fader controls the volume of a single channel (or track in mixdown mode); in other words, as you would expect an ordinary mixing console to behave. The name that you assign to each channel or track is shown at the bottom of the main display.
SEND 1 and **SEND 2**	In these modes, each fader controls the channels' effects send levels. Fader 9 controls the return level of the effect, and fader 10 controls the total send level.
SEND 3 (MONI)	In recording modes, the faders control the amount of send to effect 3 (for the C-R and CUE mixes) from each track. In mixdown mode, it functions as an effect send in the same way as the SEND 1 and SEND 2 modes.
CH MODULE	In this mode, all the faders are used to control the parameters of a single channel. The functions of the faders are defined (using 3-character abbreviations) at the bottom of the main display.
EQ	Here, a channel's equalization settings may be adjusted using the faders. The channel is selected using its SELECT key, which will light up, and the faders will move to reflect the current equalization settings. The faders may be regarded as being arranged in groups of three, 2-4 handling bass, 5-7 midrange, and 8-10 high frequencies. Within each group of three, the first handles frequency, the second cut/boost (gain), and the third handles the bandwidth (Q) of the EQ band. Fader 1 is used as an overall channel level fader.
MONITOR	When recording, this mode allows the faders to control the track (not channel) sends to the control room mix. This is not available in mixdown mode.
CUE	When recording, the faders are used to control the amount of channel/track sent to the CUE buss. This fader function is not available in mixdown mode, except for fader 10, which is used as an overall monitor fader.
EFFECT	When an effect has been selected and the EFFECT SELECT or EFFECT PARAM key has been pressed, this mode allows direct editing of the effect's parameters (eg reverberation time) by means of the faders. Between four and ten faders may be used for this purpose.
MAIN	Selects the main DMR8 unit. All fader operations carried out will be carried out on this unit.
REMOTE 1 and REMOTE 2	If other DMR8s are connected via the CONTROL IN/OUT connectors, when these keys are pressed, the fader operations will apply to the remote unit (either 1 or 2).

6.13 Controls in RECMIX modes

The following tables apply when the DMR8 is in RECMIX modes: ALL REC, SYNC DUB, PUNCH IN, PING PONG and TRACK EDIT. They give the meaning of the operation of the ten faders, (ON) keys, pan controls and grouping functions in the different scroll modes. In addition, notes on relative fader and solo operation are also given.

Where a scroll option is not given, it means that option is not available. Where an entry is represented by a hyphen ("-"), it means that this control is not available for use in this mode.

Note that the scroll keys are often used to give access to busses other than the eight input and stereo busses.

[CH FADER] mode

Fader	1	2	3	4	5	6	7	8	9	10
CTR	ch 1	ch 2	ch 3	ch 4	ch 5	ch 6	ch 7	ch 8	SUB to PGM	PGM master
RIGHT	Rtn 1 to PGM	Rtn 2 to PGM	-	-	-	-	AUX 1 IN	AUX 2 IN	-	PGM master
ON	1	2	3	4	5	6	7	8	9	10
CTR	ch 1	ch 2	ch 3	ch 4	ch 5	ch 6	ch 7	ch 8	SUB to PGM	PGM master
RIGHT	Rtn 1 to PGM	Rtn 2 to PGM	-	-	-	-	AUX 1 IN	AUX 2 IN	-	PGM master
Pan	1	2	3	4	5	6	7	8	9	10
CTR	ch 1	ch 2	ch 3	ch 4	ch 5	ch 6	ch 7	ch 8	-	-
RIGHT	Rtn 1	Rtn 2	-	-	-	-	-	-	-	-
Group	1	2	3	4	5	6	7	8	9	10
CTR	ch 1	ch 2	ch 3	ch 4	ch 5	ch 6	ch 7	ch 8	-	-

Relative fader movements may be made on the input channels only (chs 1 through 8 in the center position), and soloing may be done on these input channels in addition to the SUB IN (9).

[SEND 1] mode

Fader	1	2	3	4	5	6	7	8	9	10
CTR	ch 1 send 1	ch 2 send 1	ch 3 send 1	ch 4 send 1	ch 5 send 1	ch 6 send 1	ch 7 send 1	ch 8 send 1	Rtn 1 to PGM	Send 1 master
ON	1	2	3	4	5	6	7	8	9	10
CTR	ch 1 send 1	ch 2 send 1	ch 3 send 1	ch 4 send 1	ch 5 send 1	ch 6 send 1	ch 7 send 1	ch 8 send 1	Rtn 1 to PGM	Send 1 master
Pan	1	2	3	4	5	6	7	8	9	10
CTR	-	-	-	-	-	-	-	-	Rtn 1	-
Group	1	2	3	4	5	6	7	8	9	10
CTR	Send 1	Send 1	Send 1	Send 1	Send 1	Send 1	Send 1	Send 1	-	-

Relative fader movements may be made on the channel sends (chs 1 through 8 in center position), and soloing may be done on the master send (10) and return (9).

[SEND 2] mode

Fader	1	2	3	4	5	6	7	8	9	10
CTR	ch 1 send 2	ch 2 send 2	ch 3 send 2	ch 4 send 2	ch 5 send 2	ch 6 send 2	ch 7 send 2	ch 8 send 2	Rtn 2 to PGM	Send 2 master
ON	1	2	3	4	5	6	7	8	9	10
CTR	ch 1 send 2	ch 2 send 2	ch 3 send 2	ch 4 send 2	ch 5 send 2	ch 6 send 2	ch 7 send 2	ch 8 send 2	Rtn 2 to PGM	Send 2 master
Pan	1	2	3	4	5	6	7	8	9	10
CTR	-	-	-	-	-	-	-	-	Rtn 2	-
Group	1	2	3	4	5	6	7	8	9	10
CTR	Send 2	Send 2	Send 2	Send 2	Send 2	Send 2	Send 2	Send 2	-	-

Relative fader movements may be made on the channel sends (chs 1 through 8 in center position), and soloing may be done on the master send (10) and return (9).

[SEND 3 (MONI)] mode

Fader	1	2	3	4	5	6	7	8	9	10
CTR	ch 1 send 3	ch 2 send 3	ch 3 send 3	ch 4 send 3	ch 5 send 3	ch 6 send 3	ch 7 send 3	ch 8 send 3	Rtn 3 to C-R	Send 3 master
ON	1	2	3	4	5	6	7	8	9	10
CTR	ch 1 send 3	ch 2 send 3	ch 3 send 3	ch 4 send 3	ch 5 send 3	ch 6 send 3	ch 7 send 3	ch 8 send 3	Rtn 3 to C-R	Send 3 master
Pan	1	2	3	4	5	6	7	8	9	10
CTR	-	-	-	-	-	-	-	-	Rtn 3	-
Group	1	2	3	4	5	6	7	8	9	10
CTR	Send 3	Send 3	Send 3	Send 3	Send 3	Send 3	Send 3	Send 3	-	-

Relative fader movements may be made on the channel sends (chs 1 through 8 in center position), and soloing may be done on the master send (10) and return (9).

[MONITOR] mode

Fader	1	2	3	4	5	6	7	8	9	10
CTR	C-R 1	C-R 2	C-R 3	C-R 4	C-R 5	C-R 6	C-R 7	C-R 8	Slave to C-R	C-R master
RIGHT	Rtn1 to C-R	Rtn 2 to C-R	Rtn 3 to C-R	-	-	-	AUX 1 OUT	AUX 2 OUT	SUB in to C-R	C-R master
ON	1	2	3	4	5	6	7	8	9	10
CTR	C-R 1	C-R 2	C-R 3	C-R 4	C-R 5	C-R 6	C-R 7	C-R 8	Slave to C-R	C-R master
RIGHT	Rtn1 to C-R	Rtn 2 to C-R	Rtn 3 to C-R	-	-	-	AUX 1 OUT	AUX 2 OUT	SUB in to C-R	C-R master
Pan	1	2	3	4	5	6	7	8	9	10
CTR	C-R 1	C-R 2	C-R 3	C-R 4	C-R 5	C-R 6	C-R 7	C-R 8	-	-
RIGHT	Rtn1	Rtn 2	Rtn 3	-	-	-	-	-	SUB in to C-R	-
Group	1	2	3	4	5	6	7	8	9	10
CTR	C-R 1	C-R 2	C-R 3	C-R 4	C-R 5	C-R 6	C-R 7	C-R 8	-	-

Relative fader movements may be made on chs 1 though 8 in the center position (C-R monitor), and soloing may be carried out on these channels in addition to the slave (9).

CUE mode

Fader	1	2	3	4	5	6	7	8	9	10
LEFT	ch 1 CUE	ch 2 CUE	ch 3 CUE	ch 4 CUE	ch 5 CUE	ch 6 CUE	ch 7 CUE	ch 8 CUE	SUB to CUE	CUE master
CTR	monitor cue 1	monitor cue 2	monitor cue 3	monitor cue 4	monitor cue 5	monitor cue 6	monitor cue 7	monitor cue 8	Slave to CUE	CUE master
RIGHT	Rtn 1 to CUE	Rtn 2 to CUE	RTN 3 to CUE	-	-	-	AUX 1 OUT	AUX 2 OUT	SUB in to CUE	CUE master
ON	1	2	3	4	5	6	7	8	9	10
LEFT	ch 1 CUE	ch 2 CUE	ch 3 CUE	ch 4 CUE	ch 5 CUE	ch 6 CUE	ch 7 CUE	ch 8 CUE	SUB to CUE	CUE master
CTR	monitor cue 1	monitor cue 2	monitor cue 3	monitor cue 4	monitor cue 5	monitor cue 6	monitor cue 7	monitor cue 8	Slave to CUE	CUE master
RIGHT	Rtn 1 to CUE	Rtn 2 to CUE	RTN 3 to CUE	-	-	-	AUX 1 OUT	AUX 2 OUT	SUB in to CUE	CUE master
Pan	1	2	3	4	5	6	7	8	9	10
LEFT	-	-	-	-	-	-	-	-	SUB IN	-
CTR	monitor cue 1	monitor cue 2	monitor cue 3	monitor cue 4	monitor cue 5	monitor cue 6	monitor cue 7	monitor cue 8	-	-
RIGHT	Rtn 1	Rtn 2	RTN 3	-	-	-	-	-	SUB IN	-
Group	1	2	3	4	5	6	7	8	9	10
LEFT	Ch1 cue	Ch2 cue	Ch3 cue	Ch4 cue	Ch5 cue	Ch6 cue	Ch7 cue	Ch8 cue	-	-
CTR	monitor cue 1	monitor cue 2	monitor cue 3	monitor cue 4	monitor cue 5	monitor cue 6	monitor cue 7	monitor cue 8	-	-

Relative fader movements are possible for channel and monitor cue inputs (1 through 8 in both center and left scroll modes), and no soloing is possible in this mode. Channel cues are all mono.

EQ mode

Fader	1	2	3	4	5	6	7	8	9	10
CTR	Channel fader	Low F	Low gain	Low Q	Mid F	Mid gain	Mid Q	High F	High gain	High Q
ON	1	2	3	4	5	6	7	8	9	10
CTR	Channel ON/OFF	-	-	-	-	-	-	-	-	-
Pan	1	2	3	4	5	6	7	8	9	10
CTR	Channel pan	-	-	-	-	-	-	-	-	-
Group	1	2	3	4	5	6	7	8	9	10
CTR	-	Low Freq	← Gain	← Q	Mid Freq	← Gain	← Q	High Freq	← Gain	← Q

Relative fader movements are possible on the equalization parameters (chs 2 through 10), and using ch1, the input may be soloed.

[EFFECT] mode

Fader	1	2	3	4	5	6	7	8	9	10
CTR	Effect param	←	←	←	←	←	←	←	←	←
Group	1	2	3	4	5	6	7	8	9	10
CTR	Effect param	←	←	←	←	←	←	←	←	←

ON/OFF and pan have no meaning in EFFECT mode. All faders assigned to effect parameters may be operated in relative mode, and no soloing is possible in this mode.

[CH MODULE] mode (1-8)

Fader	1	2	3	4	5	6	7	8	9	10
CTR	Channel fader	Pan	delay	ATT	Send 1	Send 2	Ch CUE	EQ F	EQ gain	EQ Q
ON	1	2	3	4	5	6	7	8	9	10
CTR	Channel ON/OFF	-	-	-	-	-	-	-	-	-
Pan	1	2	3	4	5	6	7	8	9	10
CTR	Channel panpot	-	-	-	-	-	-	-	-	-

The grouping keys have no function in the CH MODULE fader mode, no matter what channel has been selected. The faders assigned to pan, delay and attenuation (chs 2, 3 and 4) may be operated in relative mode, and ch1 may be used to solo the input.

[CH MODULE] mode (Ch 9 selected)

Fader	1	2	3	4	5	6	7	8	9	10
CTR	SUB in to PGM	Rtn 1 to PGM	Rtn 2 to PGM	Rtn 3 to C-R	Slave to C-R	Slave to CUE	-	-	-	-
ON	1	2	3	4	5	6	7	8	9	10
CTR	SUB in to PGM	Rtn 1 to PGM	Rtn 2 to PGM	Rtn 3 to C-R	Slave to C-R	Slave to CUE	-	-	-	-
Pan	1	2	3	4	5	6	7	8	9	10
CTR	SUB in	Rtn 1	Rtn 2	Rtn 3	-	-	-	-	-	-

The grouping keys have no function in the CH MODULE fader mode, no matter what channel has been selected. No relative fader movement is possible in this mode. Chs 1 though 4 may be used to solo the SUB IN and returns 1 through 3.

CH MODULE mode (Ch 10 selected)

Fader	1	2	3	4	5	6	7	8	9	10
CTR	PGM master	Send 1 master	Send 2 master	Send 3 master	C-R master	CUE master	-	-	-	-
ON	1	2	3	4	5	6	7	8	9	10
CTR	PGM master	Send 1 master	Send 2 master	Send 3 master	C-R master	CUE master	-	-	-	-

The pan keys have no function here, and neither do the grouping switches. No relative fader movements are possible in this mode. Chs 2 through 4 may be used to solo sends 1 through 3.

6.14 Controls in MIXDOWN mode

The following tables describe the functions of the controls in MIXDOWN mode, in the same format as for the RECMIX mode tables.

[CH FADER] mode

Fader	1	2	3	4	5	6	7	8	9	10
LEFT	ch 1	ch 2	ch 3	ch 4	ch 5	ch 6	ch 7	ch 8	SUB in	Stereo master
CTR	ch 9	ch 10	ch 11	ch 12	ch 13	ch 14	ch 15	ch 16	SUB in	Stereo master
RIGHT	ch 17	ch 18	ch 19	ch 20	ch 21	ch 22	ch 23	ch 24	SUB in	Stereo master
ON	1	2	3	4	5	6	7	8	9	10
LEFT	ch 1	ch 2	ch 3	ch 4	ch 5	ch 6	ch 7	ch 8	SUB in	Stereo master
CTR	ch 9	ch 10	ch 11	ch 12	ch 13	ch 14	ch 15	ch 16	SUB in	Stereo master
RIGHT	ch 17	ch 18	ch 19	ch 20	ch 21	ch 22	ch 23	ch 24	SUB in	Stereo master
Pan	1	2	3	4	5	6	7	8	9	10
LEFT	ch 1	ch 2	ch 3	ch 4	ch 5	ch 6	ch 7	ch 8	SUB in	Stereo master
CTR	ch 9	ch 10	ch 11	ch 12	ch 13	ch 14	ch 15	ch 16	SUB in	Stereo master
RIGHT	ch 17	ch 18	ch 19	ch 20	ch 21	ch 22	ch 23	ch 24	SUB in	Stereo master
Group	1	2	3	4	5	6	7	8	9	10
LEFT	ch 1	ch 2	ch 3	ch 4	ch 5	ch 6	ch 7	ch 8	SUB in	Stereo master
CTR	ch 9	ch 10	ch 11	ch 12	ch 13	ch 14	ch 15	ch 16	SUB in	Stereo master
RIGHT	ch 17	ch 18	ch 19	ch 20	ch 21	ch 22	ch 23	ch 24	SUB in	Stereo master

Relative fader movements are possible on the channel inputs (chs 1 through 8), and soloing is also possible on these channels, in addition to the SUB IN (9).

SEND 1 mode

Fader	1	2	3	4	5	6	7	8	9	10
LEFT	ch 1 send 1	ch 2 send 1	ch 3 send 1	ch 4 send 1	ch 5 send 1	ch 6 send 1	ch 7 send 1	ch 8 send 1	Rtn 1	Send 1 master
CTR	ch 9 send 1	ch 10 send 1	ch 11 send 1	ch 12 send 1	ch 13 send 1	ch 14 send 1	ch 15 send 1	ch 16 send 1	Rtn 1	Send 1 master
RIGHT	ch 17 send 1	ch 18 send 1	ch 19 send 1	ch 20 send 1	ch 21 send 1	ch 22 send 1	ch 23 send 1	ch 24 send 1	Rtn 1	Send 1 master
ON	1	2	3	4	5	6	7	8	9	10
LEFT	ch 1 send 1	ch 2 send 1	ch 3 send 1	ch 4 send 1	ch 5 send 1	ch 6 send 1	ch 7 send 1	ch 8 send 1	Rtn 1	Send 1 master
CTR	ch 9 send 1	ch 10 send 1	ch 11 send 1	ch 12 send 1	ch 13 send 1	ch 14 send 1	ch 15 send 1	ch 16 send 1	Rtn 1	Send 1 master
RIGHT	ch 17 send 1	ch 18 send 1	ch 19 send 1	ch 20 send 1	ch 21 send 1	ch 22 send 1	ch 23 send 1	ch 24 send 1	Rtn 1	Send 1 master
Pan	1	2	3	4	5	6	7	8	9	10
LEFT	-	-	-	-	-	-	-	-	Rtn 1	-
CTR	-	-	-	-	-	-	-	-	Rtn 1	-
RIGHT	-	-	-	-	-	-	-	-	Rtn 1	-
Group	1	2	3	4	5	6	7	8	9	10
LEFT	ch 1 send 1	ch 2 send 1	ch 3 send 1	ch 4 send 1	ch 5 send 1	ch 6 send 1	ch 7 send 1	ch 8 send 1	-	-
CTR	ch 9 send 1	ch 10 send 1	ch 11 send 1	ch 12 send 1	ch 13 send 1	ch 14 send 1	ch 15 send 1	ch 16 send 1	-	-
RIGHT	ch 17 send 1	ch 18 send 1	ch 19 send 1	ch 20 send 1	ch 21 send 1	ch 22 send 1	ch 23 send 1	ch 24 send 1	-	-

Relative fader movements are possible on the individual channels sends (chs 1 through 8), and soloing is possible on the send master (10) and return (9).

SEND 2 mode

Fader	1	2	3	4	5	6	7	8	9	10
LEFT	ch 1 send 2	ch 2 send 2	ch 3 send 2	ch 4 send 2	ch 5 send 2	ch 6 send 2	ch 7 send 2	ch 8 send 2	Rtn 2	Send 2 master
CTR	ch 9 send 2	ch 10 send 2	ch 11 send 2	ch 12 send 2	ch 13 send 2	ch 14 send 2	ch 15 send 2	ch 16 send 2	Rtn 2	Send 2 master
RIGHT	ch 17 send 2	ch 18 send 2	ch 19 send 2	ch 20 send 2	ch 21 send 2	ch 22 send 2	ch 23 send 2	ch 24 send 2	Rtn 2	Send 2 master
ON	1	2	3	4	5	6	7	8	9	10
LEFT	ch 1 send 2	ch 2 send 2	ch 3 send 2	ch 4 send 2	ch 5 send 2	ch 6 send 2	ch 7 send 2	ch 8 send 2	Rtn 2	Send 2 master
CTR	ch 9 send 2	ch 10 send 2	ch 11 send 2	ch 12 send 2	ch 13 send 2	ch 14 send 2	ch 15 send 2	ch 16 send 2	Rtn 2	Send 2 master
RIGHT	ch 17 send 2	ch 18 send 2	ch 19 send 2	ch 20 send 2	ch 21 send 2	ch 22 send 2	ch 23 send 2	ch 24 send 2	Rtn 2	Send 2 master
Pan	1	2	3	4	5	6	7	8	9	10
LEFT	-	-	-	-	-	-	-	-	Rtn 2	-
CTR	-	-	-	-	-	-	-	-	Rtn 2	-
RIGHT	-	-	-	-	-	-	-	-	Rtn 2	-
Group	1	2	3	4	5	6	7	8	9	10
LEFT	ch 1 send 2	ch 2 send 2	ch 3 send 2	ch 4 send 2	ch 5 send 2	ch 6 send 2	ch 7 send 2	ch 8 send 2	-	-
CTR	ch 9 send 2	ch 10 send 2	ch 11 send 2	ch 12 send 2	ch 13 send 2	ch 14 send 2	ch 15 send 2	ch 16 send 2	-	-
RIGHT	ch 17 send 2	ch 18 send 2	ch 19 send 2	ch 20 send 2	ch 21 send 2	ch 22 send 2	ch 23 send 2	ch 24 send 2	-	-

Relative fader movements are possible on the individual channels sends (chs 1 through 8), and soloing is possible on the send master (10) and return (9).

[SEND 3 (MONI)] mode

Fader	1	2	3	4	5	6	7	8	9	10
LEFT	ch 1 send 3	ch 2 send 3	ch 3 send 3	ch 4 send 3	ch 5 send 3	ch 6 send 3	ch 7 send 3	ch 8 send 3	Rtn 3	Send 3 master
CTR	ch 9 send 3	ch 10 send 3	ch 11 send 3	ch 12 send 3	ch 13 send 3	ch 14 send 3	ch 15 send 3	ch 16 send 3	Rtn 3	Send 3 master
RIGHT	ch 17 send 3	ch 18 send 3	ch 19 send 3	ch 20 send 3	ch 21 send 3	ch 22 send 3	ch 23 send 3	ch 24 send 3	Rtn 3	Send 3 master
ON	1	2	3	4	5	6	7	8	9	10
LEFT	ch 1 send 3	ch 2 send 3	ch 3 send 3	ch 4 send 3	ch 5 send 3	ch 6 send 3	ch 7 send 3	ch 8 send 3	Rtn 3	Send 3 master
CTR	ch 9 send 3	ch 10 send 3	ch 11 send 3	ch 12 send 3	ch 13 send 3	ch 14 send 3	ch 15 send 3	ch 16 send 3	Rtn 3	Send 3 master
RIGHT	ch 17 send 3	ch 18 send 3	ch 19 send 3	ch 20 send 3	ch 21 send 3	ch 22 send 3	ch 23 send 3	ch 24 send 3	Rtn 3	Send 3 master
Pan	1	2	3	4	5	6	7	8	9	10
LEFT	-	-	-	-	-	-	-	-	Rtn 3	-
CTR	-	-	-	-	-	-	-	-	Rtn 3	-
RIGHT	-	-	-	-	-	-	-	-	Rtn 3	-
Group	1	2	3	4	5	6	7	8	9	10
LEFT	ch 1 send 3	ch 2 send 3	ch 3 send 3	ch 4 send 3	ch 5 send 3	ch 6 send 3	ch 7 send 3	ch 8 send 3	-	-
CTR	ch 9 send 3	ch 10 send 3	ch 11 send 3	ch 12 send 3	ch 13 send 3	ch 14 send 3	ch 15 send 3	ch 16 send 3	-	-
RIGHT	ch 17 send 3	ch 18 send 3	ch 19 send 3	ch 20 send 3	ch 21 send 3	ch 22 send 3	ch 23 send 3	ch 24 send 3	-	-

Relative fader movements are possible on the individual channel sends (chs 1 through 8), and soloing is possible on the send master (10) and return (9).

[MONITOR] mode

The [MONITOR] key has no use in MIXDOWN mode. The mixed program signal (to the mastering machine) is the same as that output on the C–R buss.

CUE mode

Fader	1	2	3	4	5	6	7	8	9	10
LEFT	-	-	-	-	-	-	Aux 1 out	Aux 2 out	-	CUE OUT/ 2 TR REC master
CTR	-	-	-	-	-	-	Aux 1 out	Aux 2 out	-	CUE OUT/ 2 TR REC master
RIGHT	-	-	-	-	-	-	Aux 1 out	Aux 2 out	-	CUE OUT/ 2 TR REC master
ON	1	2	3	4	5	6	7	8	9	10
LEFT	-	-	-	-	-	-	Aux 1 out	Aux 2 out	Rtn 3	CUE OUT/ 2 TR REC master
CTR	-	-	-	-	-	-	Aux 1 out	Aux 2 out	Rtn 3	CUE OUT/ 2 TR REC master
RIGHT	-	-	-	-	-	-	Aux 1 out	Aux 2 out	Rtn 3	CUE OUT/ 2 TR REC master
Pan	1	2	3	4	5	6	7	8	9	10
LEFT	-	-	-	-	-	-	-	-	Rtn 3	CUE OUT/ 2 TR REC master
CTR	-	-	-	-	-	-	-	-	Rtn 3	CUE OUT/ 2 TR REC master
RIGHT	-	-	-	-	-	-	-	-	Rtn 3	CUE OUT/ 2 TR REC master

Grouping has no effect in this mode. In addition, neither soloing nor relative fader movements are possible in this mode.

EQ mode

Fader	1	2	3	4	5	6	7	8	9	10
LEFT	Channel fader	Low F	Low gain	Low Q	Mid F	Mid gain	Mid Q	High F	High gain	High Q
CTR	Channel fader	Low F	Low gain	Low Q	Mid F	Mid gain	Mid Q	High F	High gain	High Q
RIGHT	Channel fader	Low F	Low gain	Low Q	Mid F	Mid gain	Mid Q	High F	High gain	High Q
ON	1	2	3	4	5	6	7	8	9	10
LEFT	Channel on/off	-	-	-	-	-	-	-	-	-
CTR	Channel on/off	-	-	-	-	-	-	-	-	-
RIGHT	Channel on/off	-	-	-	-	-	-	-	-	-
Pan	1	2	3	4	5	6	7	8	9	10
LEFT	Channel panpot	-	-	-	-	-	-	-	-	-
CTR	Channel panpot	-	-	-	-	-	-	-	-	-
RIGHT	Channel panpot	-	-	-	-	-	-	-	-	-
Group	1	2	3	4	5	6	7	8	9	10
LEFT	-	Low F	Low gain	Low Q	Mid F	Mid gain	Mid Q	High F	High gain	High Q
CTR	-	Low F	Low gain	Low Q	Mid F	Mid gain	Mid Q	High F	High gain	High Q
RIGHT	-	Low F	Low gain	Low Q	Mid F	Mid gain	Mid Q	High F	High gain	High Q

Soloing is only possible on ch 1 (input channel), but relative fader movements are possible on all equalization parameters (chs 2 through 10).

[EFFECT] mode

Fader	1	2	3	4	5	6	7	8	9	10
LEFT	Effect param	←	←	←	←	←	←	←	←	←
CTR	Effect param	←	←	←	←	←	←	←	←	←
RIGHT	Effect param	←	←	←	←	←	←	←	←	←
Group	1	2	3	4	5	6	7	8	9	10
LEFT	Effect param	←	←	←	←	←	←	←	←	←
CTR	Effect param	←	←	←	←	←	←	←	←	←
RIGHT	Effect param	←	←	←	←	←	←	←	←	←

The pan and ON/OFF controls have no function in this mode. Soloing is not possible, but relative fader movements may be made for all faders assigned to effect parameters.

[CH MODULE] mode (1-8)

Fader	1	2	3	4	5	6	7	8	9	10
LEFT	Channel fader	PAN	delay	ATT	Send 1	Send 2	Send 3	EQ freq	EQ gain	EQ Q
CTR	Channel fader	PAN	delay	ATT	Send 1	Send 2	Send 3	EQ freq	EQ gain	EQ Q
RIGHT	Channel fader	PAN	delay	ATT	Send 1	Send 2	Send 3	EQ freq	EQ gain	EQ Q
ON	1	2	3	4	5	6	7	8	9	10
LEFT	Channel on/off	-	-	-	-	-	-	-	-	-
CTR	Channel on/off	-	-	-	-	-	-	-	-	-
RIGHT	Channel on/off	-	-	-	-	-	-	-	-	-

The pan and grouping controls have no function in this mode. Soloing is possible only on ch 1 (input solo), and relative fader movement is only possible on pan, delay and attenuation (chs 2 through 4).

[CH MODULE] mode (Ch 9 selected)

Fader	1	2	3	4	5	6	7	8	9	10
LEFT	SUB in	Rtn 1	Rtn 2	Rtn 3	-	-	-	-	-	-
CTR	SUB in	Rtn 1	Rtn 2	Rtn 3	-	-	-	-	-	-
RIGHT	SUB in	Rtn 1	Rtn 2	Rtn 3	-	-	-	-	-	-
ON	1	2	3	4	5	6	7	8	9	10
LEFT	SUB in	Rtn 1	Rtn 2	Rtn 3	-	-	-	-	-	-
CTR	SUB in	Rtn 1	Rtn 2	Rtn 3	-	-	-	-	-	-
RIGHT	SUB in	Rtn 1	Rtn 2	Rtn 3	-	-	-	-	-	-
Pan	1	2	3	4	5	6	7	8	9	10
LEFT	SUB in	Rtn 1	Rtn 2	Rtn 3	-	-	-	-	-	-
CTR	SUB in	Rtn 1	Rtn 2	Rtn 3	-	-	-	-	-	-
RIGHT	SUB in	Rtn 1	Rtn 2	Rtn 3	-	-	-	-	-	-

Grouping has not possible in this mode. No relative fader movement is possible in this mode, and soloing is restricted to the SUB in and the three returns (chs 1 through 4).

[CH MODULE] mode (Ch 10 selected)

Fader	1	2	3	4	5	6	7	8	9	10
LEFT	Stereo master	Send 1 master	Send 2 master	Send 3 master	Monitor master	-	-	-	-	-
CTR	Stereo master	Send 1 master	Send 2 master	Send 3 master	Monitor master	-	-	-	-	-
RIGHT	Stereo master	Send 1 master	Send 2 master	Send 3 master	Monitor master	-	-	-	-	-
ON	1	2	3	4	5	6	7	8	9	10
LEFT	Stereo master	Send 1 master	Send 2 master	Send 3 master	Monitor master	-	-	-	-	-
CTR	Stereo master	Send 1 master	Send 2 master	Send 3 master	Monitor master	-	-	-	-	-
RIGHT	Stereo master	Send 1 master	Send 2 master	Send 3 master	Monitor master	-	-	-	-	-
Pan	1	2	3	4	5	6	7	8	9	10
LEFT	Stereo master	Send 1 master	Send 2 master	Send 3 master	Monitor master	-	-	-	-	-
CTR	Stereo master	Send 1 master	Send 2 master	Send 3 master	Monitor master	-	-	-	-	-
RIGHT	Stereo master	Send 1 master	Send 2 master	Send 3 master	Monitor master	-	-	-	-	-

Grouping has no effect in this mode. No relative fader movement is possible in this mode, and soloing is limited to the three master sends (chs 2, 3 and 4).