Lightpalette® 90

Operations Manual

Strand Lighting

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Chapter 1
Introduction and Assistance

This manual provides information on the operating procedures for Lightpalette 90 control systems with software versions 2.5.0 and later. Some commands shown in this manual are not available on software versions before 2.5.0.

Manual Organization

This manual contains 9 chapters as shown below, plus an Index.

Introduction (chapter 1) - tells you about the organization of this manual, plus definitions and conventions used. Also tells you how to get technical help if necessary

Operational Features (chapter 2) - gives an overview of the operational features of Lightpalette 90.

Hardware Description (chapter 3) - gives an overview of the hardware and how it works together.

System Layout (chapter 4) - shows you the main elements of the system, and what they do.

Installation (chapter 5) - tells you about the installation requirements for the console and peripherals. This chapter shows pinouts for externally accessible connectors, cable types and lengths, and (where applicable) setup information.

Basic Troubleshooting (chapter 6) - tells you how to begin troubleshooting if you have problems with the system. Since actual internal repair of system components is beyond the scope of this manual, this chapter shows only the basic steps you can take without having to replace parts, and before you call for help from Strand Lighting.

Periodic Maintenance (chapter 7) - lists the steps which should be taken to keep the system running at its best.

Reference (chapter 8) - shows the commands and actions possible with Lightpalette 90 control systems. This chapter is organized alphabetically by display for easy reference, and describes the function of every key.

Tutorial (chapter 9) - is a step by step learning session to familiarize you with the operation of the control console.

Version 2.5.0 Enhancements

The following listed commands or options have been added in Lightpalette 90 software version 2.5.0:

- Scroller patching lets you assign scroller channels to lamp channels.
- The *Scroller Patch* display can be ordered by lamp channel number or scroller channel number.
- "Mark" function uses the end state of a cue rather than stage levels to create a new cue (available in Preset display only).

Version 2.0.1 Enhancements

This version of the software is the first software version to support Compact Lightpalette 90. No other features were added for this release.

Version 2.0.0 Additions and Enhancements

The following listed commands or options have been added in Lightpalette 90 software version 2.0.0:

- You can fade effects in and out using cues.
- You can specify a default setting for IN/DWELL/OUT in each effect.
- You can specify (in the *Defaults* menu) whether you want existing moves to be recorded as the first or last part of a cue when you specify parts in an existing cue.
- The default fade time can be split.
- You can swap the functions of the [RECORD] and [F1 RECORD W/O SUBS] keys. This changes [RECORD] into Record W/O Subs and [F1] into [F1 RECORD ALL].
- You can specify (in the *Defaults* menu) whether you want the current cue to be highlighted in yellow or shown in reverse video across the monitor in the *Playback Cues* display.
- The active, previous, and next cues now remain visible on the *Playback* display when you use [STOP BACK] or [GO TO CUE].

- A *Group Summary* display has been added so that you can see a list of all your groups.
- An *Effect Summary* display has been added so that you can see a list of all your effects.

- You can load cue end state levels onto a submaster. You can bank load cue end states onto a series of submasters if required. The first seven characters of the cue comment will appear on the *Submaster* display.
- You can place comments directly on "CHAN" submasters (submasters that have not had cues or groups loaded onto them).

- You can record up to 999 macros using [M*].
- The MACRO and FUNCTION keys on the hand held remote are now supported. The existing macro and function access methods have been retained for continuity (SHIFT-1 through SHIFT-8 and CTRL-SHIFT-1 through CTRL-SHIFT-8).

- The memory for notes has been quadrupled to 4000 characters.
- A new Print Screen function has been added.
- Channel oriented printouts now use the channel format mode in use by the console making the print request.
- You can access items in the *Console Definition & Status* menu (SETUP 2) and *Dimmer Output Configuration* menu (SETUP 3) using the menu numbers as well as the cursor.

- The system time and date can be set through the *System Parameters* menu. You can specify the date in American (mm/dd/yy), European (dd-mm-yy), or military (yy.mm.dd) format. Time is specified as HH:MM:SS.
- The current time and date are displayed on the *Playback* display above the fader information.
- The system time and date will appear on all printouts.

- ":" (colon), "," (comma), and "." (dot) can be used as part of a dimmer name.
- +, >, and -, are ignored if followed immediately by @. This lets you specify a level for a group of channels even if you have already typed in one of these operators.
- Negative thru lists and negative elements are allowed in level setting. If the first keystroke in a command is - the system will assume that it is prefixed by "All Channels". - GROUP 1 * means "All channels except the channels in group 1.
- In channel oriented displays, groups, cues, effects, and submasters used as the first element of a channel control list cause the display to autopage to the page containing the first channel in the element.
- Channel oriented displays are now labeled with three digit numbers unless the channel number is greater than 999.
- The channel test feature now checks only channels in the format if Channel Format is ON.
- Channels are no longer considered to be in use simply because they were forced to zero in a BLOCK Q. Channels are retained in the channel format only if they are present in a cue, group, or effect at a non-zero level. The zero-level channels are added temporarily to the channel format when a BLOCK Q is created, but are removed when the next change is made.

- A system log and keystroke log are now accessible through the *Diagnostics* display for field service use.

Version 1.8.0 Additions and Enhancements

The following listed commands or options have been added in Lightpalette 90 software version 1.8.0:

- System status is shown on the Playback monitor just above the *Fader Status* display.
- The progress of disk operations are monitored and displayed for the operator.
- Better use of color in the displays.
- **Magenta** channels are moving up
- **Green** channels are moving down
- **Aqua** channels are unchanged from previous action
- **White** channels with no background are "blocked" in the current cue (this cue has a move instruction but the channel level is the same as the previous cue)
- **White** channels with red background are on the **LEVEL WHEEL**
- **Yellow** channels are pile-on output from submaster
- When a cue fade ends, the colors indicating channel movement will remain at their values during the fade.
- If you switch from *Live* to *Preview* displays, the page display number in the *Preview* display will match the *Live* display page number. If you switch back to the *Live* display, the original page number is maintained even if you have changed display pages in the *Preview* display.
- You can use "Classic" style cue copying and moving (CUE 1 @ 5 *) to copy or move cues, as well as the F1 COPY FROM CUE and F2 COPY TO CUE buttons. If you specify an adjacent cue the command will move the cue (change the number of the cue but maintain the data). If you specify a non-adjacent cue the command will leave the original cue in place and create an identical cue with the new number. This matches the original Lightpalette method of copying cues.
- Quick Load Sub, which lets you load submaster information from a command line (if you have not pressed *) by pressing the appropriate submaster bump button.

Definitions

This manual uses the following definitions throughout:

blind recording The process of recording cues, groups, or submasters without the results showing on stage.

circuit Connection device and wiring for powering a lighting fixture from a dimmer.

dimmer Device controlling power to a lighting fixture. Two lights on the same dimmer cannot be separately controlled.

channel Device controlling a dimmer or group of dimmers. Historically, there is a physical controller (such as a slider) for each channel. On most current control systems, channels are numbers accessed by a numeric keypad. Each channel can control multiple dimmers.

live recording The process of recording cues, groups, or submasters from lighting levels which appear on stage.

patch Historically, the process of physically connecting circuits to dimmers. Now usually refers to electronic assignment of dimmers to channels. "Patch" does not refer to assignment of channels to cues or submasters.

preset A pre-defined setup of intensities for a set of channels, stored in memory for later replay.

memory Storage location for preset information.

cue The process of recalling a preset from its memory location and putting the result on stage.

> *preset, memory, and cue are often used interchangeably.*

submaster A controller (usually a linear slider controller) which lets you manually control groups, effects, cues, or channels.

fade A gradual change in stage levels from one set of intensities ("look") to another.

up-fade The portion of a fade which involves only channels which are increasing in level.

down-fade The portion of a fade which involves only channels which are decreasing in level.

crossfade A fade which contains both an up-fade and a down-fade. Also refers to fades in which the levels of one cue are replaced by the levels of another cue.

bump An instantaneous change in stage levels from one set of intensities ("look") to another.

Conventions

Lightpalette 90 consoles show channel status associated with light level setting, recording, and playback as described when each display format is presented. In general, the following color rules apply.

- **Magenta** channels are moving up
- **Green** channels are moving down
- **Aqua** channels are unchanged from previous action
- **White** channels with no background are "blocked" in the current cue (this cue has a move instruction but the channel level is the same as the previous cue)
- **White** channels with red background are on the **LEVEL WHEEL**
- **Yellow** channels are pile-on output from submaster

The following additional conventions are used in this manual.

CUE shows the actual push-button labelled "CUE."

Several keys in the Display keypad are shown differently from their label to increase legibility or distinguish them from identically labeled keys.

DISP GROUP is the "GROUP" key in the Display keypad.
UNPATCH DIM is the "UNPATCH DIMMER" key.

The three * keys are interchangeable. The two CLEAR keys and the two @ keys are also interchangeable.

PRINT SUBS shows text that appears on screen. Shown as reverse video (white lettering on black) for clarity on the printed page, regardless of its video status on screen.

RATE WHEEL (small caps, bold) refers to a named control.

[#] (bold text in square brackets) refers to something you must enter as a series of keystrokes - in this case one or more digits on the numeric keyboard.

ON (all capital text) shows status of a function or switch, as in "Turn the switch ON."

Group (normal text with first letter capitalized) shows the name of a function or mode of operation, as in Q-Only mode or Group function.

Patch (italic text with first letter capitalized) shows named items in which the name appears on a screen, as in *Patch* display (*Patch* appears on the command line). For consistency with other displays, *Playback Subs* display, *Playback Cues* display, and *Fader Status* display are italicized even though their names do not actually appear on the Playback monitor.

Names of chapters or sections are also shown in italics for emphasis.

Technical Assistance

Strand Lighting control systems require a minimum of maintenance and servicing. The system includes a diagnostic routine to simplify field troubleshooting of any problems you encounter.

Problems

If equipment does not work right when installed, or under normal load and temperature conditions, and basic troubleshooting procedures do not work, contact the Strand Lighting Field Service office serving your area. To help track equipment and speed up repairs, Strand Lighting will issue a Return Goods Authorization before the return of any defective materials.

Technical Questions

For technical questions about setup, operation, or maintenance, contact the Strand Lighting Field Service office serving your area.

Parts Purchases

To buy spare parts or documentation, please contact the Strand Lighting office serving your area.

Comments and Suggestions

For comments about equipment functions and/or possible improvements, or for comments about this manual, please call or write the Marketing Manager at the Strand Lighting office serving your area.

Addresses

Addresses for all Strand Lighting offices are shown on the reverse side of the manual title sheet.

Chapter 2

Operational Features

This chapter presents the basic operational concepts you need to operate Lightpalette 90 control consoles. The following two chapters present a detailed description of the system layout, with a description of each push-button and a description of the basic commands available. For more detail on any of the commands, see the Reference chapter (chapter 8). For a step by step tutorial on console operation, see the Tutorial chapter (chapter 9).

Lightpalette 90 systems have the following operational characteristics.

- Multiple command lines for multitasking capability.
- Ability to control lamp intensity and scroller color.
- Alphanumeric patching (circuit names can be up to 5 characters long).
- *Patch* display can be ordered by dimmer number, dimmer name, or channel number.
- Scroller patching lets you assign scroller channels to lamp channels. The *Scroller Patch* display can be ordered by lamp channel number or scroller channel number.
- Up to 128 simultaneous fades, including fades on playback faders, phantom fades, and fades within effects.
- Cues can contain up to 8 parts
- Cues can be recorded with alphanumeric labels.
- *Channel Path* display lets you edit a channel's "path" through the show.
- 64 profiles are assignable to cues or dimmers. Profile curve end points and 19 intervening points can be specified.
- Ability to "unpatch" dimmers for direct control from the *Live* and *Unpatch Dimmer* displays.
- Ability to edit command lines and control lists.
- Up to 999 groups.
- Up to 999 special effects, with up to 99 steps each.
- Control lists for effect steps can be 50 elements long (including operators), and can contain channels, cue end states, groups, submasters, and other effects, all with independent levels.
- Individually programmable step time, fade-in, dwell, and fade-out time, and overall high and low levels for effect steps.
- Operator programmable defaults for fast effects recording.
- Effects can be recorded with alphanumeric labels.
- 999 operator definable key sequences (macros) of up to 120 keystrokes each.
- Eight macro buttons for direct access to macros 1 - 8. Other macros are accessed using the [M*] key.
- Ability to reassign a damaged key to a macro key, even after the key is damaged.
- System status diagnostics to show which parts of the system are functioning correctly. Detail diagnostics displays also show system error activity if there have been problems.
- Disks can be interchanged between Lightpalette 90 and mini Lightpalette 90.

Basic Operation

You can operate Lightpalette 90 control consoles in either "Move-Fade" ("Tracking") or "Preset Control" ("Q-Only") mode.

In Move-Fade (Tracking) mode, channels remain at set levels until instructed to move to a new level. This is roughly equivalent to a computerized "piano" board, where dimmer handles maintain their position until specifically moved. Channels remaining at levels through multiple cues are said to "track" through the cues. This mode is very handy for recording a series of new cues in the *Preview* display.

In the Preset Control, or Q-Only mode, channel levels do not carry forward into following cues, unless told to do so, Each cue is an individual snap-shot of the stage picture. This mode is roughly equivalent to a computerized multi-scene preset lighting controller.

You can use [Q-ONLY TRACK] to specify a command in the opposite mode.

When deleting a cue in Tracking mode, using [Q-ONLY TRACK] records the channel move instructions from the deleted cue to the cue immediately following. Use this function to delete portions of a show without modifying cues after the deleted cue(s).

In Q-Only mode, use [Q-ONLY TRACK] to assure that channels track through to later cues when required.

Individual Command Lines

As with its predecessor Lightpalette series products, Lightpalette 90 commands are keystroke sequences completed by [*]. The command line shows all keystrokes.

> *The three [*] keys are identical and interchangeable. There is no distinction made between them in this manual.*

Unlike its predecessor products, Lightpalette 90 systems can include a main console, one or two remote consoles, and up to three hand held remotes. All of these controllers can operate at the same time. A remote device output can control other external devices. Each controller has its own command line, displays, and channel/dimmer control independent of other controllers in the system. This lets a remote console or hand held remote take actions and present displays different from the main console.

Setting or modifying channel levels at a controller establishes "ownership" of those channels or dimmers. They cannot be modified by anyone else until you release them from control or someone at another controller uses a confirming [*] or [TAKE CTRL] when taking channel control.

Various levels of security lockout can be assigned to controllers.

Command Line Editing

You can edit command line contents by using [←], [→], or [HOME] before pressing [*] if you have made a mistake, or after [*] to make entering the next command line easier.

When you use [HOME] the system erases the [*] at the end of the command line and puts a cursor under the last command line character. [←] and [→] let you move the cursor left or right without modifying the command line. Any command keys typed are inserted before the cursor. [CLEAR] deletes the cursored command or character, and moves the cursor to the following command or character. Pressing [HOME] a second time exits the Edit mode and positions the cursor at the end of the command line. When you press [*] (regardless of the cursor position), the system checks the entire command line and starts the command if it is valid. If a command requires confirmation the system asks for it, and you must press [*] a second time.

> *The two [CLEAR] keys are identical and interchangeable for normal console operation. There is no distinction made between them in this manual.*

Function Keys

The eight Function keys ([F1] through [F8]) do different things in different displays. The current function of these keys always appears at the bottom of the record monitor. As the displays change, so do the Function key actions and their labels. Function keys provide one key commands for less used functions which would otherwise require dedicated hard keys or an obscure command syntax.

Macro Keys

The eight Macro keys ([M1] through [M8]) can be programmed "by example" with custom keystroke sequences. You can also program these keys and an additional 991 macros (for a total of 999) from the *Macro* display. Macros can contain any keystrokes except submaster bump buttons. You can record macros consisting of more than one command line, if required. Only one [*] is required to terminate any command in a macro, even if it normally requires a confirming [*]. This lets you load many non-contiguous submasters with groups and effects with one command request.

All macros can be started from cues. When started from a cue, the macro starts when the channels begin to fade. This is when you press [GO] for cues without delays, and at the end of the first delay for cues with delays.

Control Lists

Control lists provide virtually unlimited combinations of lamp and scroller channels, groups, submaster information, cues (end-states), and effects. Channel levels of all elements in the control list are collected on a highest-takes-precedence basis as you enter them, and channels are removed from the list when you use [-]. You can write a control list such as the following:

[1][>][5][+][CUE LEVEL][7][-][2][0][+][GROUP][1][2][@][5][0][*]

You can also use [=] to specify levels for parts of a command line. [=] masters levels for the element or "thru list" immediately preceding it, and the [@] at the end of the command line masters all [=] levels. This lets you write control lists such as the following:

[1][>][5][=][7][5][+][CUE LEVEL][4][+][GROUP][1][2][=][2][5][@][8][0][*]

or

[CUE LEVEL][4][=][5][0][+][GROUP][4][@][9][0][*]

Display Formats

Lightpalette 90 monitors show channel data in 20 channel wide format with 100 channels per page. The standard two monitors show the record data on the right monitor and the playback data on the left monitor. The playback monitor can show the *Playback Cues* display or the *Playback Subs* display. Additional data from the record monitor can be expanded onto the playback monitor, temporarily suppressing the *Playback Cues* or *Playback Subs* display.

The Playback monitor uses six lines for current and pending fader information, leaving 19 lines for the *Playback Cues* or *Playback Subs* display. If the *Playback Subs* display is shown, the *Playback Cues* display is suppressed. You can display the cue sheet on the Record monitor by using [CUE SHEET] to access the *Cue Sheet* display if required.

Lightpalette 90 consoles show channel status associated with light level setting, recording, and playback as described when each display format is presented. In general, the following color rules apply.

- **Magenta** channels are moving up
- **Green** channels are moving down
- **Aqua** channels are unchanged from previous action
- **White** channels with no background are "blocked" in the current cue (this cue has a move instruction but the channel level is the same as the previous cue)
- **White** channels with red background are on the **LEVEL WHEEL**
- **Yellow** channels are pile-on output from submaster
- Channels with a **blue background** are scroller channels

Submaster Controls

Each submaster has a bump button which you can individually set in the *Setup* display as [5 BUMP DISABLED], [6 BUMP UP], [7 BUMP OUT], [8 INDEPENDENT] (press to make independent, press again to make non-independent), and [9 QUICK LOAD] (direct submaster loading from the command line using the submaster bump button). Independent submaster channels cannot be disabled (robbed) by wheel control, but levels can be raised above submaster levels by the **LEVEL WHEEL**, faders, and other submasters.

Fader Controls

Lightpalette 90 consoles have 8 faders grouped in pairs. You can run up to four simultaneous split fades or eight simultaneous single fades (or a combination of split and single fades) on physical faders. If you need more then eight fades running at the same time, older fades are shifted to hidden (phantom) faders. Fades on phantom faders will continue at their original rate and can be modified using the **RATE WHEEL** and the [ALL MANUAL] key. You can run up to 128 simultaneous fades on Lightpalette 90 consoles.

Effects Package

The effects package lets you specify default step time (time until the next step) and high and low levels for each effect. It also lets you specify step time, fade-in, dwell, and fade-out times, plus high and low levels individually per step. The aggregate of each step's fade-in, dwell, and fade-out times can be less than or greater than its associated step time. A step relinquishes fade control of a channel if a subsequent step controls that channel. Steps can be composed of any legal control list of 50 or fewer characters and can include channels, groups, cues, submasters, or effects. Effects can be easily copied. Pressing [HOME] spreads the current effect step onto the command line and lets you edit it.

The console software imposes realistic limits on both the number and complexity of running effects, so that you cannot exceed the memory or processing power of the system by using an extraordinarily large number of complex effects.

- The maximum number of simultaneously loaded and running effect steps is 128. Effects exceeding this limit will be loaded but not run.
- Effect contents cannot be changed while the effect is running because it must be reloaded to a cue or submaster controller. The [F6 TEST] Function key lets you instantly start and stop an effect for composition and preview. You can control the effect rate while it is running with the **RATE WHEEL**, and the output level by using a submaster handle. The system automatically assigns the effect to the first unused submaster handle for control.

- Since step time can be less then the total of fade-in, dwell, and fade-out times, you can have multiple fades in progress from a single effect. The maximum number of simultaneous fades from all submaster effects and faders is 128.
- Scroller channels are moved only during the fade-in time.
- Since the same channel can be involved in simultaneous fades on multiple submasters, those fades are handled as separate events. The maximum number of fading submaster-channels for the entire system is 1024. The same channel fading on two submasters counts as two submaster-channels.
- If an effect fade exceeds the maximum number of fades or the maximum number of fading submaster-channels, the fade will happen in zero seconds.
- Scrollers are driven to their requested levels in the "in" phase of each step. Nothing happens to scrollers in the "out" phase of each step. Scrollers must be present in channel lists through **.. [list] = [color]** phrases or specified as part of elements (e.g. groups) embedded in the step.
- Since the NEGATIVE and ALTERNATE effect attributes switch the high/low output levels, they do not affect scroller color.

Disk Library Storage

The 3.5" disk drive (or drives in a full backup system) stores and retrieves system configuration information and show elements. Control of these functions is in the *Disk & Reserve* menu. [1] LOAD SYSTEM loads both system configuration (numbers of channels, dimmers, port configurations, etc.) and show elements (cues, groups, effects, submaster contents, patch, etc.). [2] LOAD SHOW loads in only show elements. [3] LOAD PARTIAL SHOW can selectively read the patch or subsets of cues, groups, submasters, effects, or profiles even if recorded with a different number of channels, and optionally renumber them in memory.

Lightpalette 90 consoles use hard-shelled micro floppy disks for library storage and backup. The system can format any industry standard 3.5" high density disk (2.0Mb unformatted or 1.44Mb formatted capacity). The disk format is compatible with MS/PC-DOS, providing easy access to the data for use with of-line cue editing software such as LightPort.

Remote-Q Control

If you enable REMOTE Q OUT in the *Console Definition & Status* menu, the Remote Device port becomes a communication link which lets you "attach" a remote device signal to a normal cue. When you press [GO] or use [LOAD CUE] for cues attached in this manner, the system sends a message to the remote device.

If you wish to use this function, please refer to the *Installation* chapter for cable specifications and pinouts, and for the output string generated by the console when the Remote-Q attribute is attached to a cue.

Reserve System

The main console, both remote consoles, and the processor tower can contain optional duplicate electronics and thus be fully backed up.

Duplicate console electronics (when installed) can be switched using the Desk keyswitch on the console. This manually switches the console to its reserve electronics (if provided), and switches the active disk drive. This does not switch the processor tower to its reserve system. Switching the console electronics only switches systems in the local console, letting you run one console with its B (reserve) system and one with its A (main) system in multiple console systems.

On systems with full tracking backup, you can manually switch the processor tower from active to reserve with a keyswitch on the Tower, or set it to automatically switch control if a failure is detected in the active computer. If you have selected AUTOMATIC SWITCHOVER, you can still send a command from the *Disk & Reserve* menu to force the active computer to give up control to the reserve computer and stay in reserve mode. The active tower computer sends all operator commands to the reserve computer in such a way that the reserve computer always tracks the active computer.

Alternate Function Commands

If any push-button on a console (including fader manual and submaster bump buttons) becomes damaged or otherwise inoperative, you can assign its function to any of the macros. You use F3 CODE or F6 CODE (in the *Macro* display) followed by a special three-digit key code to specify the damaged key in the Macro key definition (please see the *Macro Display* section of the *Reference* chapter for key codes).

Dimmer and Fader Output Curves

Lightpalette 90 consoles provide up to 64 profiles for use as fader output curves specified in the cue or as dimmer output curves specified in the dimmer patch information. You can specify the curve end-points (0% and 100%) and 19 intervening points (05% to 95%). This lets you specify minimum and maximum dimmer levels, dimmer proportion, and dimmer output curves.

Chapter 3

Hardware Description

Lightpalette 90 consolese are powerful lighting control systems for use in theatre, television, and other performance applications. Operation of these consoles builds on the operational philosophy of the original Lightpalette consoles but is greatly expanded in features and capacity through input from designers, consultants, and board operators. Some of the new features of these consoles are:

- State-of-the-art, high-density electronics.
- Parallel, distributed cue storage and output processing providing flexible and efficient channel, dimmer, and cue expansion.
- Centralized, fully backed up processor tower with multiple control consoles and portable remotes.
- Separate, editable command lines, displays, and wheel control for each controlling device.
- Advanced commands and displays.
- Supports up to 3 full function control consoles (a main console and two remote consoles) simultaneously.
- Supports up to 3 hand held remotes ("focus remote," or "rigger's remote") if required.

Lightpalette 90 systems can be configured in a minimal system to reduce initial cost. Control stations, cue storage, and dimmers can be added later by adding only the hardware to support the additional features or capacity. A minimal system consists of a table-top portable main console connected to a centralized processor tower via a high-speed serial communications network. Additional remote consoles and hand held remotes can be connected at any time and operated independently from the main console.

Lightpalette 90 consoles use solid-state memory for rapid storage and retrieval of recorded data. Data is accessible at any time in the *Live* (active) or *Preview* (blind) displays for playback or modification. The system is micro-computer based, and programmed specifically for processing and control of performance lighting. A special purpose keyboard provides operator interface to the system. The optional remote consoles and hand held remotes provide additional control flexibility.

Main Console ("Desk")

All essential operator controls are built into a small desktop main console ("desk"), with a separate processor tower for maximum flexibility in transport and placement. The processor tower and main console can be up to 1500 feet from each other. Main console features are:

- All major operator controls are in a small desktop console for easy access.
- 24 or 48 slider submasters.
- Dual CRT outputs.
- One or two (duplicate electronic consoles only) 3 1/2" floppy disk drives.
- A/B keyswitch (Desk keyswitch).
- ON/OFF keyswitch (System keyswitch - turns Tower ON or OFF).
- ON/OFF console switch (on rear of console).
- Convenience outlets for monitors and other ancillary equipment.

The keyboard, playback, and submaster modules are printed circuit cards on which the mechanical components are mounted and which are in turn mounted to the underside of the control console work surface. In order to limit exposure to component failure, these modules contain only mechanical components, minimal electronics, and connectors.

The controller modules, disk drives, and dual color videos are connected to a Console Processor card which provides device input/output, local processing, and network communication facilities. The Console Processor card can be fully backed up by a separate identical card fed by a separate power supply. Only one Console Processor card is enabled for communication with the controller modules, its disk, videos, and the system communication network. The operator can switch between Console cards modules with the A/B keyswitch.

All control console electronics are accessible from the front of the control console by unfastening two (2) 1/4-turn fasteners and lifting the console work surface.

Console Processor Card

The Console Processor card contains two microprocessors. The first MPU handles the system network communication, video output, and disk processing. The second MPU reads the keyboard, faders, and local submasters and passes the information to the first MPU for transmission back to the processor tower. There can be two Console Processor cards in each control console.

Submaster Processor Card (SPC)

The Submaster Processor card is used in the split control console and in dual tier control consoles with more than 24 submasters to read the submaster controllers and buttons. It passes this information to the keyboard MPU in the control console via a high-speed data link.

Remote Consoles

Lightpalette 90 systems can have one or two remote consoles ("designer's remotes"). Remote consoles can be provided with or without submasters and with or without duplicate electronics. Each remote console has its own command line, displays, and wheel control, but shares other system resources (faders, groups, cues, channel patch, etc.) with the main console. The only limits on remote console capabilities are imposed by their hardware configuration and the fact that they are plugged into different input ports on the processor tower, thus labeling them to the software as remotes. Only the main console can enable or disable other desks and hand held remotes. Remote consoles can be placed up to 1500 feet from the processor tower.

Hand Held Remote

Up to three optional hand held remotes (also called "remote focus" or "rigger's remote") can communicate on the system network with the processor tower. A hand held remote is a compact hand held terminal with its own command line, liquid crystal display, and level control.

The hand held remote supports most control console functions which do not need manual faders. Operation of these functions through the hand held remote is essentially the same as through a control console.

Hand held remote functions are available only when the appropriate HAND HELD entry is set to ENABLE in the *Console Definition and Status* menu.

Processor Tower

The processor tower receives commands from controllers, processes input commands, outputs displays to controllers, processes fades, effects, and submaster functions, and outputs to the dimmer racks. The processor tower is a single cabinet which can contain both a main and reserve set of electronics and a single main/reserve transfer module to arbitrate system control. The processor tower can be switched from main to reserve manually or set to switch automatically when a failure is detected.

- All Input/Output modules are on the front of the processing tower for easy access.
- Automatic or manual switching, full tracking backup.
- DEC J11 CPU (18.0MHz).
- 128Kb EPROM for DEC J11 system program.
- 128Kb EPROM for Dimmer Processor (DPR) program.
- 256Kb CMOS static RAM for DPR patch, notes, and peripheral storage.

Processor Tower Computer Card

The computer in the processor tower is the reliable DEC KDJ11-A (J-11) running at 18 megahertz. Its main functions include command processing, display generation, and overall system control.

Memory Card

The Memory card contains the following memory:

- 128Kb EPROM for J11 program
- 128Kb EPROM for the DPR card program
- 256Kb CMOS static RAM for J11 system memory.

Serial I/O Card (SIO)

The Serial I/O card contains 3 high-speed serial ports for communication with control consoles and 3 high speed and 3 low/medium-speed serial ports for communication with the reserve system, remote device (using the Remote-Q function), printer, and hand held remotes. Two of the high speed ports are limited to lower speeds to communicate with the printer and remote device. It contains three Zilog Super8 MPUs, each of which services 1 high speed and 2 low speed ports.

- Three Zilog Super8 processors, each controlling 1 high speed and 2 low speed devices.
- RS232, RS422, RS423, and RS485 configurable serial ports with a reserve for remote device interfacing.
- Communicates with control consoles at 125Kbaud.
- Multiple access levels (set from port 1) are available for each communications port.
- Contains the printer control hardware and software.

Dimmer Processor Card (DPR)

Each Dimmer Processor card contains 320Kbytes of battery-backed CMOS RAM for program storage, cues, groups, submasters, and effects for 576 control channels. It contains an 80286 microprocessor which processes commands, fades, submasters, effects, and wheel control data. A separate ZILOG Super-8 microprocessor on the card controls dimmer curve profiling and outputs to 512 DMX512 dimmers and/or 576 AMX192 dimmers through output ports on the card. Each 512 DMX dimmers or 576 AMX dimmers requires a separate Dimmer Processor card. Each Dimmer Processor card does the following:

- Allows 600 cues with 25% of dimmers moving per cue.
- Outputs AMX192, DMX512, or a combination of both protocols.
- Allows up to 1728 dimmers (2.4Kw) on 1728 control channels for AMX192 output (using 3 DPR cards), in increments of 576 dimmers. The number of available dimmers depends on the number of DPR cards installed.
- Allows up to 1536 dimmers on 1536 control channels for DMX512 output (using 3 DPR cards), in increments of 512 dimmers. The number of available dimmers depends on the number of DPR cards installed.
- Offloads fade and output calculations from the main CPU for system.
- Uses an 80286 (12.5MHz) processor for submaster, effect, and fader calculations.
- Uses a Zilog Super8 (20MHz) processor with 32Kb RAM for proportional patching and dimmer output control.
- Has 320Kb RAM for program storage, effects processing, and cue storage.

Parallel Dimmer Processing and Cue Storage

Since channel and dimmer output processing is the major consumer of CPU cycles in a large lighting controller, and cue and preset storage is the major consumer of memory, Lightpalette 90 lets both CPU cycles and storage grow with an increase in the number of channels and dimmers.

A high-speed 80286 CPU on each Dimmer Processor card handles CPU-intensive submaster, fader, and effect calculations for 576 channels and dimmers. A Zilog Super8 on each DPR performs the proportional patching and controls the actual DMX and AMX output ports. Additional channels and dimmers require additional DPR cards. The DPR also contains all of the cues, groups, effects, and submaster storage for the 576 channels and dimmers that it controls.

Since the dimmers controlled by a DPR card might be driven by channels on another card, the DEC J-11 CPU retrieves channel data from the DPR cards and distributes it to the Super8s.

In a limited sense, each DPR is a 576 dimmer system, largely self-contained, but receiving commands, timing coordination, submaster handle, wheel level, off-card channel data, and fader fraction data from the main CPU.

Serial Transfer Module

The Serial Transfer module switches control of the system communication network between the Serial I/O cards within main and reserve computer systems contained in the processor tower. It contains 6 high-speed serial (2 limited to lower speeds) and 3 low/ medium-speed serial port connectors. It contains the transmission communication path between the main and reserve units, and the duplexed communication for automatic reserve switchover. All communication to and from the control consoles, hand held remotes, and remote device flow through this module. Control of these communication lines switches from one computer system to the other based on the position of a local keyswitch or automatically if the computer in control fails to continue requesting control.

Dimmer Transfer Module

The Dimmer Transfer module switches control of the dimmer output between the Dimmer Processor cards in the main and reserve computer systems contained in the processor tower. Each Dimmer Transfer module switches control for the outputs of 2 Dimmer Processor cards (2 DMX signals and 6 AMX signals total). Control of these dimmer signal lines switches from one computer system to the other based on the position of a local keyswitch or automatically if the computer in control fails to continue requesting control. Each 2 Dimmer Processor cards require a Dimmer Transfer card.

Printer (optional)

An optional printer can be hooked up to the processor tower for hard copy output of show information. The hardware and software for sending data to the printer are a standard part of the processor tower.

- Okidata 182 (serial interface) or equivalent.
- A 25 foot cable is supplied with printers purchased from Strand Lighting.
- Protocol: EIA RS232C, 9600 baud, 8 bit with 1 stop bits, no parity, busy indicated by XON/XOFF. Consult Strand Lighting Field Service for additional details.
- Internal control console printer electronics, connector, and printer control software are standard.
- The printer output is designed not to use special printer specific functions such as bold and underline, so that any ASCII printer conforming to the above specifications can be used. Channel status in cues is shown by special codes next to the channels.

Backup

The architecture of Lightpalette 90 lets you configure systems with nearly any desired level of redundancy.

Control Consoles

The main console and remote consoles can contain a single set of control and communication electronics or a complete dual set for backup purposes. In dual electronics desks, the actual keyboard and submaster modules (primarily passive components) are not duplicated.

If you need full component duplication, up to three (3) identical and independent control consoles can be hooked into a Lightpalette 90 system. These control consoles can be used strictly as backup, or double as remote units. Any system with a full function remote console has full backup of all main console components, even if both the main and remote console are only single electronics desks.

Tower

The processor tower can be configured with only a single set of electronics, or with two complete sets of electronics. When configured as a full backup system, it can be set to automatically transfer control to the reserve electronics in case of problems with the main set, or can be manually switched to either set of electronics.

Hand Held Remote

Since there are three (3) separate hand held remote ports on the processor tower, one or more hand held remotes can be purchased and remain plugged into the system as backup if required.

Chapter 4

System Layout

Lightpalette 90 consists of a processor tower, a desktop main console and one or two remote consoles ("desks") with monitors, and one or more optional hand held remotes. This chapter shows the basic layout for each of these items.

Main Console ("Desk")

The main controls are in a single desktop housing for most systems, although a split console might be necessary for systems which require a smaller console form factor. The main console contains disk drives, the Console keyboard, playback controls, one or two Submaster modules, connectors for two color monitors, and connectors to the communications network. It can also contain a second full set of electronics for backup purposes. If the main console is split, the second housing can contain one or two submaster modules.

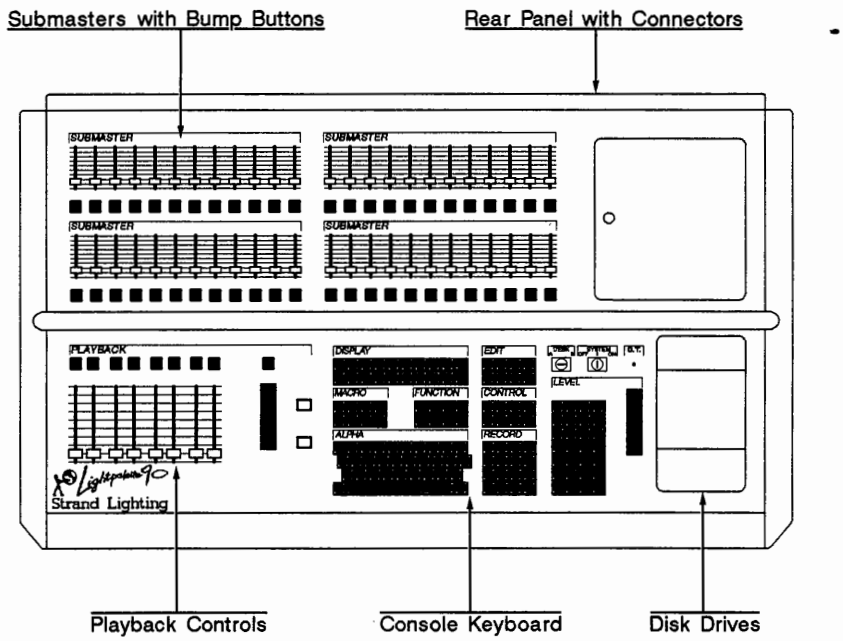


Figure 1. Control Layout

Disk Drive

Used to load main memory from a pre-recorded disk or record main memory to an initialized disk. The "A" drive is active when the Desk keyswitch is set to "A." The "B" drive is active when the Desk keyswitch is set to "B."

Console Keyboard

The right half of the main console housing contains several logically grouped keypads (which are collectively called the Console keyboard), and the OverTemp indicator. The main key groupings are:

- Display keys (see Figure 3 on page 27)
- Edit keys (see Figure 4 on page 28)
- Macro and Function keys (see Figure 5 on page 29)
- Control keys (see Figure 6 on page 29)
- Alpha keys (see Figure 7 on page 30)
- Record keys (see Figure 8 on page 30)
- Level keys (see Figure 9 on page 32)

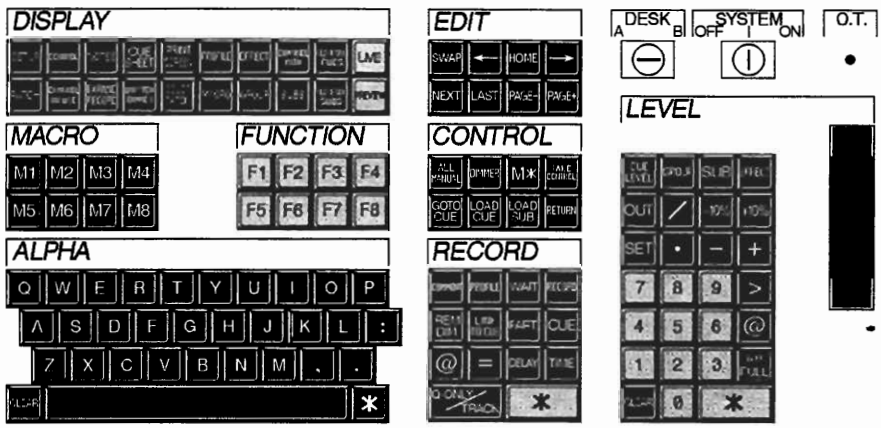
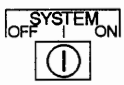


Figure 2. Console Keyboard

In dual electronics control consoles, the Desk keyswitch lets you select the active set of electronics and disk.



The System keyswitch is a momentary, center return keyswitch which lets you turn the processor tower ON or OFF. This will only control power for items plugged into the convenience outlet on the back of the tower.

> *Whenever you switch the system ON, it must first determine that it is working properly, and then establish communications with the control consoles and remotes. Under normal circumstances you will see the message* DPRs POWER UP HOT START *each time you turn the system ON.*

The OverTemp indicator provides dimmer over-temperature indication in systems so wired.

Display Keys

The Display keys let you select the display which will appear on the Playback and Record monitors.

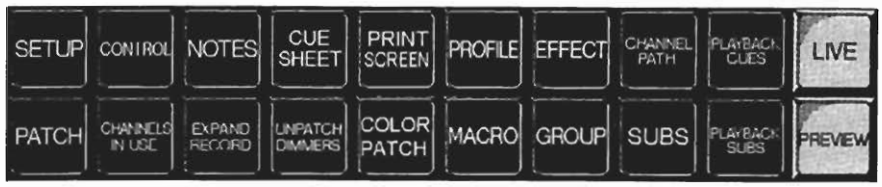


Figure 3. Display Keys

[SETUP] selects the *Setup* display on the Record monitor.

[CONTROL] selects the *Control* display on the Record monitor.

[NOTES] selects the *Notes* display on the Record monitor.

[CUE SHEET] selects the *Cue Sheet* display on the Record monitor.

[PRINT SCREEN] lets you print the current display. Press [←] to print data on the left monitor or [→] to print data on the right monitor. This key is "PRINT SCREEN" on the console, but the label is abbreviated in this manual for legibility.

[PROFILE] selects the *Profile* display on the Record monitor.

[EFFECT] selects the *Effect* display on the Record monitor.

[CHANNEL PATH] selects the *Channel Path* display on the Record monitor.

[PLAYBACK CUES] selects the *Playback Cues* display on the Playback monitor. This key is "PLAYBACK CUES" on the console, but the label is abbreviated in this manual for legibility.

[LIVE] selects the *Live* display on the Record monitor.

[PATCH] selects the *Patch* display on the Record monitor.

[CHANNELS IN USE] selects the *Channels-in-Use* display on the Record monitor.

[EXPAND REC] shows the next page of Record monitor data on the Playback monitor. Press again to return the Playback monitor to normal.

> *Display expansion is active only in channel oriented displays, and is suppressed in all other displays.*

[UNPATCH DIM] selects the *Unpatch Dimmers* display on the Record monitor. This key is "UNPATCH DIMMERS" on the console, but the label is abbreviated in this manual for legibility.

[SCROLLER PATCH] selects the *Scroller Patch* display on the Record monitor.

[MACRO] selects the *Macro* display on the Record monitor.

DISP GROUP selects the *Group* display on the Record monitor. This key is "GROUP" on the console but is shown this way to distinguish it from the GROUP key in the Level Control keypad..

SUBS selects the *Submaster* display on the Record monitor.

PLAYBACK SUBS selects the *Playback Subs* display on the Playback monitor. This key is "PLAYBACK SUBS" on the console, but the label is abbreviated in this manual for legibility.

PREVIEW selects the *Preview* display on the Record monitor.

Edit Keys

The Edit keys are used to edit the command line and see additional pages of information.

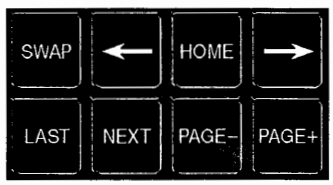


Figure 4. Edit Keys

SWAP swaps the displays in the left and right monitors.

← moves the cursor back one command line object when you are editing a command line. Selects the data on the left monitor for printing when used after PRINT SCREEN.

HOME puts the system into edit mode and highlights the last command line object.

→ moves the cursor forward one command line object when you are editing a command line. Selects the data on the right monitor for printing when used after PRINT SCREEN.

LAST selects the previous dimmer or channel in displays where it is active, or moves the current cue cursor (>) on the Playback monitor to the previous cue or part.

NEXT selects the next dimmer or channel in displays where it is active, or moves the current cue cursor (>) on the Playback monitor to the next cue or part.

PAGE- takes the display on the Record monitor to the previous page of data.

PAGE+ advances the display on the Record monitor by one full page of data.

Macro and Function Keys

Figure 5. Macro and Function Keys

M1 through M8 (Macro keys) are a group of keys whose functions you can specify and record as a combination of other keys.

F1 through F8 (Function keys) are a group of keys whose functions change by display and are shown on the bottom of the Record monitor.

Control Keys

The Control keys let you load cues out of sequence, load submasters, and specify fade and effect rate control.

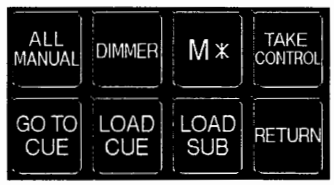


Figure 6. Control Keys

ALL MANUAL makes the **Rate Wheel** into a manual master for all fades in progress. Pressing ALL MANUAL again returns the **Rate Wheel** to normal.

DIMMER lets you take direct control of dimmers, bypassing the patch table. This unpatches the selected dimmers. They will remain unpatched until you press DIMMER RETURN * (or just RETURN * if you are in the Unpatch Dimmer display).

M* lets you specify macros numerically rather than by using the macro keys (M1 through M8). You can specify macro 1 through macro 999 using this key. Macros 1 through 8 specified using this key are the same as macros 1 through 8 specified using M1 through M8.

TAKE CTRL lets you quickly take control of dimmers or channels which are on a hand held remote **Scroller**.

TAKE CTRL lets you quickly take control of dimmers or channels which are on a **Level Wheel** in another control console or on the **Scroller Keys** in a hand held remote.

GO TO CUE lets you fade to a specific cue. The fade starts when you press * to complete the command line.

LOAD CUE lets you load a specific cue into "pending for playback" when you press * to complete the command line. Press GO to start the cue.

LOAD SUB lets you load groups, cues, or special effects to a submaster or list of submasters.

RETURN returns levels on stage or in a cue or group to levels before the last command. In dimmer mode, restores all dimmers to their patch assignments.

Alpha Keys

The Alpha keys let you enter dimmer names, write comments for cues, groups, and submasters, and write notes in the *Notes* display.

Figure 7. Alpha Keys

Record Keys

The Record keys let you create and modify cue sheet entries.

Figure 8. Record Keys

COMMENT lets you enter a comment for cues, groups, submasters, and effects.

> *In any command sequence with comments, the comment must be the last entry.*

[PROFILE] lets you assign a profile to a cue.

[WAIT] lets you access the wait time function for cues, allowing automatic follow-on of the next recorded cue.

[RECORD] lets you record cues, groups, and submasters.

[REM DIM] lets you to dim all except the selected dimmers or channels.

[LINK TO CUE] lets you link cues out of numerical order for automatic non-sequential playback.

[PART] lets you select a cue part when recording or modifying multi-part cues.

[CUE] lets you select cues for recording or modification.

[@] lets you assign levels to channels, dimmers, and groups, and patch dimmers to channels.

> *This [@] is identical and interchangeable with the [@] in the Level keypad. No distinction is made between the two [@] keys in this manual.*

[=] lets you specify levels for selectors before finishing the channel list. [=] masters levels for the selector or "thru list" immediately preceding it, and the [@] at the end of the command line masters all of the [=] levels.

[DELAY] lets you accesses the delay time function for cues.

[TIME] lets you access the fade time function for cues and duration times for effects.

[Q-ONLY TRACK] lets you change the tracking or Q-Only mode of the control console for a single cue.

[*] is called "Execute," and is similar to [Enter] on most computer keyboards. Press this to complete a command. Some actions require a second [*] to confirm.

> *This [*] is identical and interchangeable with the [*] in the Alpha keypad and the Level keypad. No distinction is made between the three [*] keys in this manual.*

Level Control

The Level keys and **LEVEL WHEEL** let you set light levels for direct control or recording in cues.

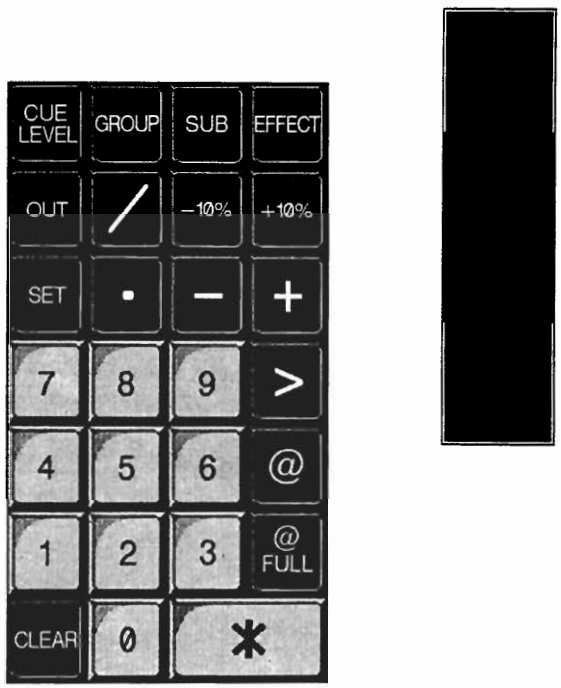


Figure 9. Level Control

[0] through [9] let you input the numerical value as engraved.

[CUE LEVEL] lets you assign the channels in a cue, with their levels, to the **LEVEL WHEEL**.

[GROUP] lets you record selected channel levels in memory as a group. Selects groups for assigning to submasters and recalls groups for live or blind playback.

[SUB] lets you record selected channel levels into submasters, and assign cues or groups to submasters. Also lets you put submaster channel assignments on the **LEVEL WHEEL**.

[EFFECT] lets you assign an effect to a cue or submaster. Also lets you put effect contents on the **LEVEL WHEEL**.

[OUT] is an immediate action button. In the *Live* display it turns the levels of elements under **LEVEL WHEEL** control OFF. In the *Preview* display it removes changes from the selected channel and lets levels from earlier cues track through the current cue.

[/] is used to divide recorded crossfade and delay times (e.g., [2][5][/][3][0]) or to assign loop repetitions.

[-10%] is an immediate action button which decreases the levels of elements under **LEVEL WHEEL** control by 10%.

[+10%] is an immediate action button which increases the levels of elements under **LEVEL WHEEL** control by 10%.

[SET] is an immediate action button which sets the levels of elements under **LEVEL WHEEL** control to the Set Level value defined in the *Setup* menu.

[.] in cue numbers lets you assign cue numbers between whole numbers (1.1, 2.4, etc.) and times shorter than a full second (0.5, 1.6, etc.). One digit is allowed after decimal point entry.

[.] in a channel control list indicates that the following commands affect only lamp channels.

[.][.] in a channel control list indicates that the following commands affect only scroller channels.

[-] same as "subtract from." Used to subtract elements from a list (e.g., [5][>][1][0][-][6]).

[+] lets you combine random elements in a listing (e.g., [1][+][5][+][CUE LEVEL][6][*]).

[>] lets you specify a range of like elements in a listing (e.g., [1][>][5][+] [GROUP][3][>][6][*]). Can be used with [+] and [-].

[@] lets you assign levels to channels, dimmers, and groups, and patch dimmers to channels.

> *This [@] is identical and interchangeable with the [@] in the Record keypad. No distinction is made between the two [@] keys in this manual.*

[@ FULL] sets level at FULL (100% or FL) when setting channel and dimmer levels, and at full recorded intensity when recalling a group.

[CLEAR] clears the highlighted item when used in the command line. When used after [*], it clears the entire command line.

[*] is called "Execute," and is similar to [Enter] on most computer keyboards. Press this to complete a command. Some actions require a second [*] to confirm.

> *This [*] is identical and interchangeable with the [*] in the Alpha keypad and the Record keypad. No distinction is made between the three [*] keys in this manual.*

The **LEVEL WHEEL** to the right of the Level keypad lets you adjust lamp levels or color for selected channels or dimmers without knowing their current level. Selected channels or dimmers maintain their relative levels as you move the wheel. Moving the **LEVEL WHEEL** UP increases light levels. Moving it DOWN decreases light levels. The **LEVEL WHEEL** is sensitive to the rate of movement. The faster you move it the larger the intensity change for a given amount of wheel motion.

Playback Controls

The left side of the main housing contains the playback controls, which let you control cues manually.

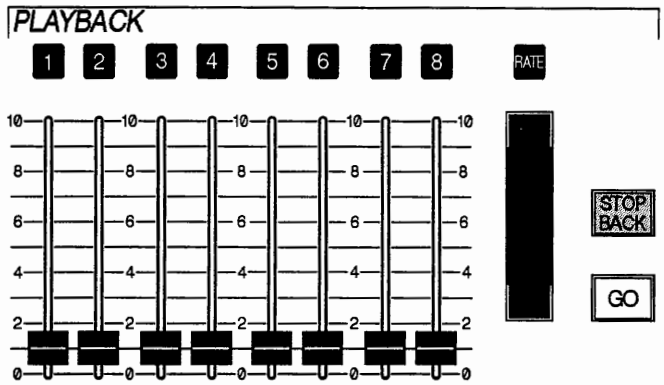


Figure 10. Playback Control

[1] through [8] are used to put the fader directly below into manual control of the fade in progress. Press this button again to release the cue from fader control when a manual fade is done.

[RATE] lets you assign specific faders or submasters to the rate wheel. Press [RATE], followed by the buttons associated with the appropriate faders and/or submasters and then [*] to assign controllers to the **RATE WHEEL**. Press [RATE] [*] to make the **RATE WHEEL** control all faders and submasters. Press [RATE] [0] [*] to release the **RATE WHEEL** from control. All rates will be frozen when you release the **RATE WHEEL**, and will not change until the fader or submaster is reloaded.

[GO] starts the next cue or cue sequence.

[STOP BACK] stops all cues. If no cues are running, [STOP BACK] causes the system to back into the previous cue.

The **RATE WHEEL** lets you adjust cue fade times. It also lets you master fades manually when used with [ALL MANUAL].

> *The* **RATE WHEEL** *does not control any faders or submasters when the control console is first turned ON. Press* [RATE] [*] *to give it control of all faders and submasters, or select the required faders and/or submasters as described above.*

The faders (**FADER 1** through **FADER 8**) let you control cues manually.

Submaster Controls

The upper part of the control console contains one or two submaster modules, each of which has 24 slider controllers and 24 bump buttons for these controllers.

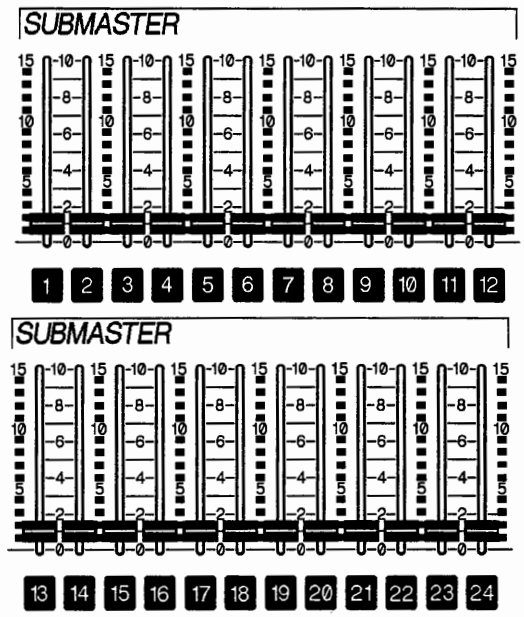


Figure 11. Submaster Module - 24 Sliders

The submaster controllers act as proportional masters for assigned channels, groups, or effects.

The Submaster Bump button associated with each submaster can be set (by the operator) to be bump up, bump out, independent on/off, or Quick Load.

Playback Monitor

This is usually the left monitor, though you can swap the data appearing on the record and playback monitor by using SWAP.

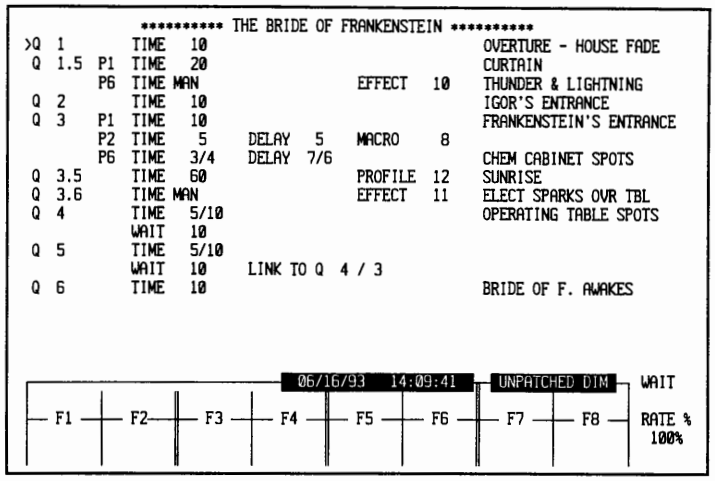


Figure 12. Playback Monitor

The playback monitor can show the *Fader Status* display at the bottom and the *Playback Cues* display or the *Playback Subs* display on the top. These are information displays and data shown on them cannot be edited or changed.

The *Playback Cues* display (press PLAYBACK CUES to access) shows cue command line information. To change data on this display you need to record the new information using one of the displays on the record monitor. The *Cue Sheet* display on the record monitor is a duplicate of the *Playback Cues* display which lets you edit cue parameters. This data can also be changed from the *Live* or *Preview* display.

The *Fader Status* display at the bottom of the monitor is always present and shows cue execution status for all faders. The *Playback Subs* display (press PLAYBACK SUBS to access) replaces the *Playback Cues* display with status and loading information for all 48 submasters.

A Macro Status banner appears above the *Fader Status* display for faders 4-6 when you are recording a macro. Otherwise this block shows the date and time.

An Unpatched Dimmer banner appears above the *Fader Status* display for faders 7 and 8 when there are any unpatched dimmers.

EXPAND REC expands the *Live* or *Preview* display from the record monitor onto the playback monitor in place of the *Playback Cues* or *Playback Subs* display. The *Fader Status* display remains on the bottom of the playback monitor. Pressing this key again returns the display to normal.

Record Monitor

This is usually the right monitor, though you can swap the data appearing on the playback and record monitors by using SWAP.

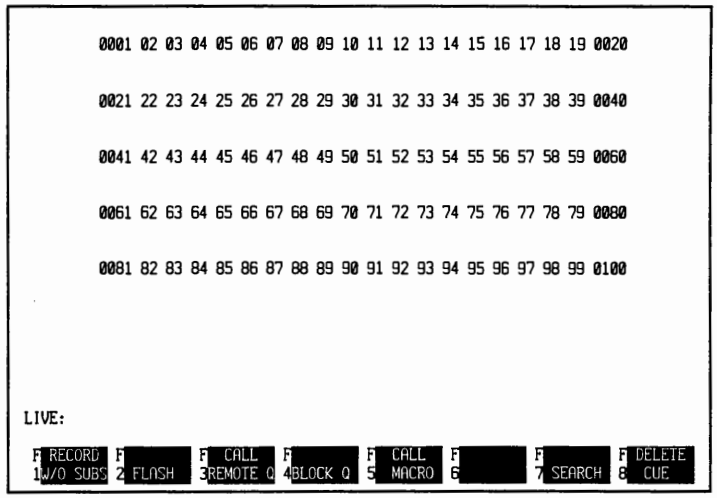


Figure 13. Record Monitor

The command line (just above the Function key labels) shows you the current operating display and mimics your keyboard input.

Read/write status information appears at right end of the command line while all disk functions are in progress. This shows the transaction status (R=read, W=write, V=verify), and the current disk head and track number.

> *This status information appears on the right hand monitor, even if you have swapped screens. It will remain on-screen until you have used* CLEAR *or have swapped screens to force a redraw.*

The remainder of the display shows information for setup, cue recording, and assignment of submasters, groups, effects, profile, etc. The following displays appear in response to Display key actions:

- *Live* display (shown above)
- *Group* Channel Display
- *Submaster* Channel Display
- *Preview* display
- *Channels-in-Use* display
- *Cue Sheet* display
- *Channel Path* display
- *Control* display
- *Effect* display
- *Notes* display
- *Macro* display
- *Profile* display
- *Patch* display
- *Unpatch Dimmers* display
- *Setup* display

Rear Panel

All connections to the processor tower, local monitors, remote video, and submaster outriggers are on the rear panel of the control console. The rear panel also includes an ON/OFF switch for use when console power is not connected to the processor tower.

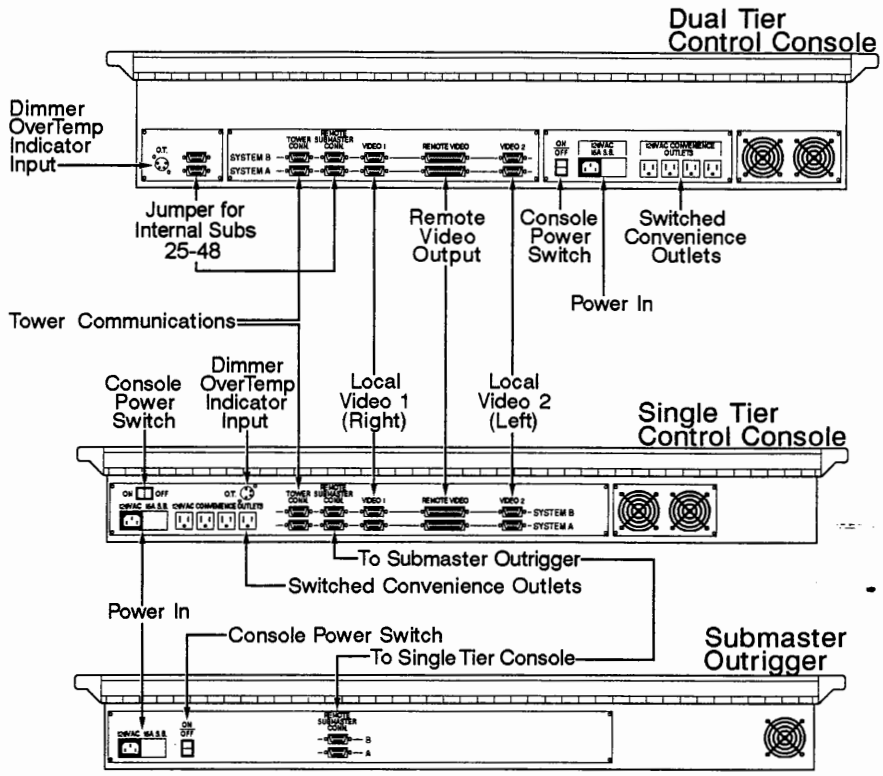


Figure 14. Main Console Rear Panel

In dual electronics consoles, if you plug your cables into the SYSTEM A connectors it is not necessary to replug cables when switching to System B unless there is physical damage to the System A connectors.

Remote Console

The remote console (sometimes called a "designer's remote") is a second main console, with or without submasters. It can be supplied with or without local backup electronics. It has its own command line, displays, and wheel control, but shares other system resources (faders, groups, cues, channel patch, etc.) with the main console.

Hand Held Remote

Up to three (3) optional hand held remotes (also called "remote focus" or "rigger's remote") can be hooked up to Lightpalette 90. These hand held remotes are compact hand held terminals which have their own command lines, liquid crystal displays, and level controls (**SCROLLER** buttons) but share other system resources with the main console.

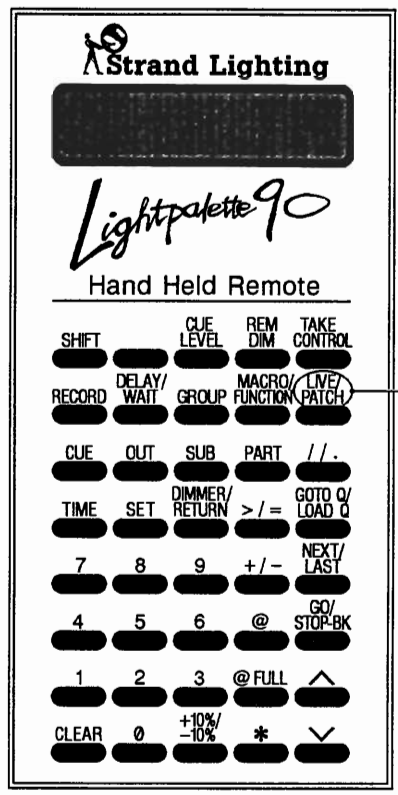


Figure 15. Hand Held Remote

The hand held remote supports many console functions which do not need manual faders. Operation of these functions through the hand held remote is essentially the same as through the main console. Three additional shift functions help you move around the LCD display:

- **SHIFT+REM_DIM** scrolls the display to the left
- **SHIFT+TAKE_CONTROL** scrolls the display to the right
- **SHIFT+CLEAR** sends the cursor to the upper left corner of the display

Caution

Since the hand held remote has its own command line you must select a display (e.g., press **LIVE***) before you can issue commands.*

You must enable the hand held remote in the Console Definition and Status *menu to use it. To avoid problems from noise interference you should disable the hand held remote when you unplug it.*

Processor Tower

The processor tower is the workhorse of Lightpalette 90. It receives commands from consoles and remotes, processes input commands, outputs

displays to consoles, processes fades, effects, and submaster functions, and outputs to the dimmer racks. The processor tower is a single "tower" style cabinet containing both a main and reserve (optional) set of computer card cages, computer cards, and power supplies. Card cages are accessible by opening the end of the tower with the external data connections. Power supplies are accessible by opening the end of the tower with the external power connections.

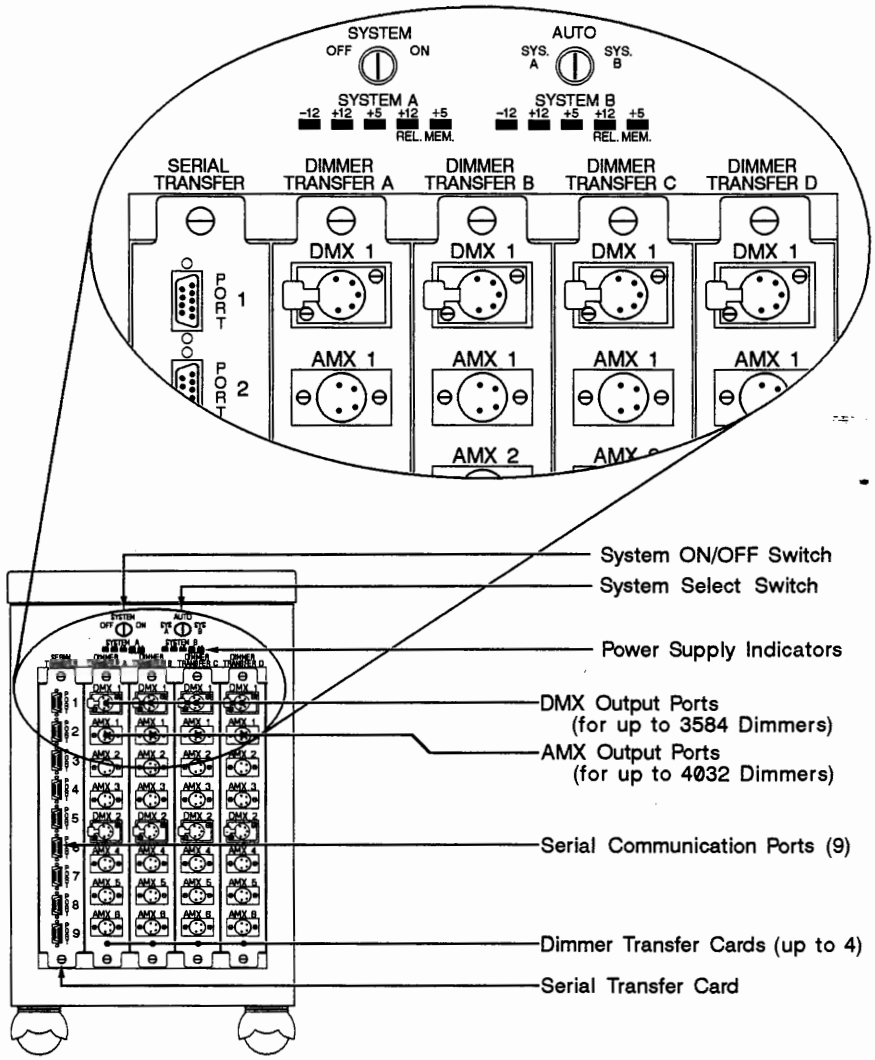


Figure 16. Processor Tower

System ON/OFF Keyswitch

The system ON/OFF keyswitch turns the tower and anything plugged into its convenience outlet (i.e., the main console) ON or OFF.

AUTO/SYS-A/SYS-B Keyswitch

The AUTO/SYS-A/SYS-B keyswitch controls the status of the optional reserve system. If it is equipped with reserve electronics, you can switch the processor tower main (SYS A) to reserve (SYS B) manually or set it to

switch automatically when a failure is detected (AUTO). If you set the switch to AUTO you can still force the reserve system active through the *Disk and Reserve* menu in the main console.

The optional reserve (B) system in dual electronics consoles is separate from the reserve system in the tower, and is not switched by this switch.

Power Supply Indicators

The power supply indicators show whether or not the various power supplies in the processor tower are functioning.

Data Connectors

There are 9 serial data connections for system communication.

Dimmer Connectors

The processor tower can be equipped with up to 7 DMX512 and 21 AMX192 outputs for dimmer communication (in increments of 2 DMX and 6 AMX outputs).

Remote Console

A remote console (sometimes called a "designer's remote") is a fully functional control console, with or without submasters. It has its own command line, displays, and wheel control, but shares other system resources (faders, groups, cues, channel patch, etc.) with the main console. You can connect up to two remote consoles to a Lightpalette 90 main console.

Chapter 5

Installation

Environment

To maximize equipment life, and minimize the chance of failures, the following environmental requirements should be met:

- **Temperature** — 20 ±5°C (68 ±9°F).
- **Humidity** — 5%-80% relative humidity maximum, no condensation.
- **Dust** — Good office environment.

Caution

If the processor tower is mounted on the floor or table top, care must be taken to assure an unobstructed air path for the cooling fans. Without airflow, interior temperatures can exceed the maximum operating temperature of 40°C, and result in damage to the equipment.

Power

A single-point conditioned power source (120VAC @ 10A 50/60Hz for 120VAC units or 220VAC @ 5A 50/60Hz for 220VAC units) must be provided for the processor tower and all consoles (except for the hand held remote, which receives its power through the control cable).

Primary power should be exclusively for the console and not used for other devices such as power hand tools, motors, transformers, and dimmers.

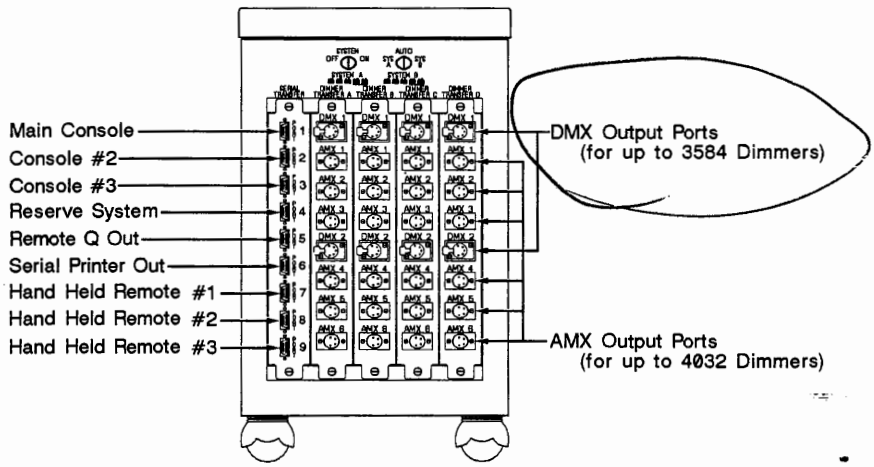
Leave the equipment connected to its primary power source *(120VAC, 60Hz, 15A, or 220VAC service for 220VAC consoles) unless maintenance is being done or the console is not in use for extended periods of time.*

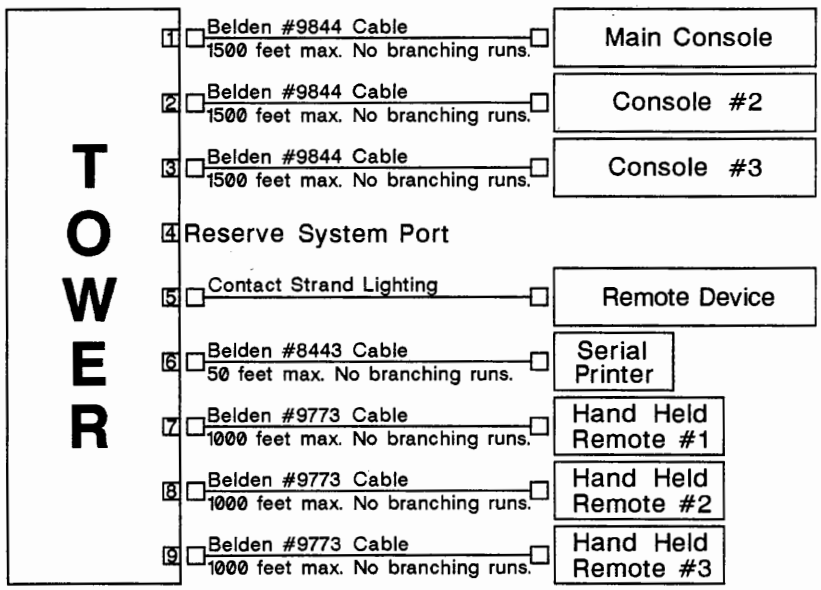
Warning

Do not plug a 120VAC unit into 220VAC power, or a 220VAC unit into 120VAC power, as damage or injury can result. Conversion between the two voltages requires modification of the power supplies.

Processor Tower Hookup

The Lightpalette 90 processor tower has 9 serial connections for the main system components, and acts as the hub of a star network. It also contains connections for dimmer output. Connections to the tower can be made directly or through wall mounted junction boxes with appropriate connectors linked by **metallic** conduit. Long runs can require serial cable termination. If you wish to verify jumper configurations on your system, please refer to the Lightpalette 90 Maintenance Manual.





Notes:
Consoles can all be single or double tier.
Single tier consoles may or may not have a submaster outrigger.
Long cable runs may require serial cable termination.

Figure 17. Tower Connectors and Cabling

Control Console Ports

Control consoles are tied directly to processor tower ports #1, #2, or #3 with a data cable. As far as the tower is concerned, there is no difference between the consoles.

Table 1. Tower Outputs to Consoles

Cable:	Belden 9844
Max Length:	1500 feet - one console per run (all EIA RS422 restrictions also apply)
Port:	High speed ports #1, #2, & #3
Connector:	Subminiature "D" 9 pin male (on Serial Transfer card)

Pin #	Signal	Comments
1	GND	Ground
2	KSYSON	System Keyswitch ON
3		
4	TXD-	Transmit Complement
5	RXD-	Receive Complement
6	KSYSOFF	System Keyswitch OFF
7	KSYSCOM	System Keyswitch Common
8	TXD+	Transmit True
9	RXD+	Receive True

Pins 4 and 8 on the tower end (pins 1 and 6 on the console end) and pins 5 and 9 on the tower end (pins 2 and 7 on the console end) are twisted pairs.

Table 2. Console Inputs From Tower

Cable:	9844
Max Length:	1500 feet - one console per run (all EIA RS22 restrictions also apply)
Connector:	Subminiature "D" 9 pin female (on rear of console)

Pin #	Signal	Comments
1	TXD-	Transmit Complement
2	RXD-	Receive Complement
3		
4	KSYSON	System Keyswitch ON
5	GND	Ground
6	TXD+	Transmit True
7	RXD+	Receive True
8	KSYSCOM	System Keyswitch Common
9	KSYSOFF	System Keyswitch OFF

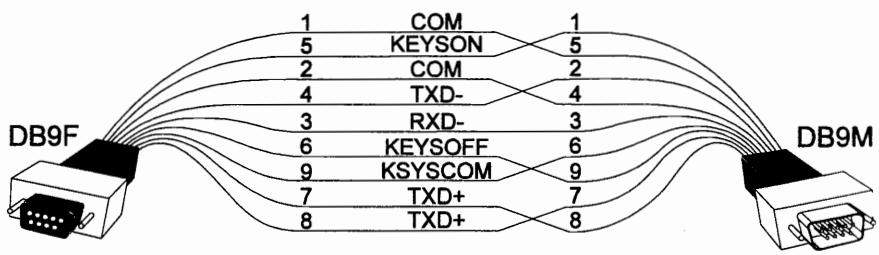


Figure 18. Tower to Console Cable

Hand Held Remote Ports

Hand held remotes are tied to processor tower ports #7, #8, or #9 with a data cable which also carries phantom power for the remote.

Table 3. Tower Outputs to Hand Held Remote

Cable:	Belden 9773
Max Length:	1000 feet - one remote per run (all EIA RS422 restrictions also apply)
Port:	Low speed ports #7, #8, & #9
Connector:	Subminiature "D" 9 pin male (on Serial Transfer card)

Pin #	Signal	Comments	Pair	Wire Color
1	GND	Ground	pair 1	Red/Black
2	RS232 TX	RS232 Transmit to Remote	pair 2	Black
3	RS232 RX	RS232 Receive from Remote		White
6	+12V	+12VDC Phantom Power for Remote	pair 3	Black/Green

Table 4. Hand Held Remote Input Pins

Cable:	Belden 9773
Max Length:	1000 feet, one remote per run
Connector:	5 pin "XLR" (on hand held remote)

Pin #	Signal	Comments	Pair	Wire Color
1	GND	Ground	pair 1	Red/Black
2	RS232 TX	RS232 Transmit to Tower	pair 2	White
3	RS232 RX	RS232 Receive from Tower		Black
5	+12V	+12VDC Phantom Power for Remote	pair 3	Black/Green

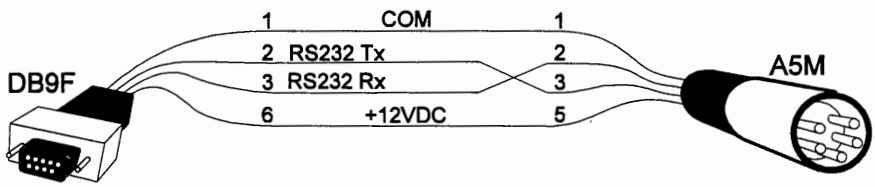


Figure 19. Hand Held Remote Adapter

If you wish to have outlets at more than 3 locations, each of the control cables can have multiple outlets along its length. Only one hand held remote at a time can be connected to each control cable loop.

Each control cable loop must be a single run with no branches.

Caution

The adapter shown above should only be used once in each remote run. *It crosses the RS232 Receive and RS232 Transmit pins so that the RS232 Transmit signal from one device ends up on the RS232 RECEIVE pin of the other device. All additional control cable extensions should be 5 pin "XLR" connector extension cables (a male connector on one end and a female connector on the other end) with pins wired 1-to-1.*

Remote Device Control

Lightpalette 90 consoles can accept input signals from a remote device to help synchronize various stage events.

Table 5. Tower Output to Remote Device

Cable:	Please contact Strand Lighting
Max Length:	Please contact Strand Lighting - one console per run (all EIA RS422 restrictions also apply)
Port:	Low speed Port #5
Connector:	Subminiature "D" 9 pin male (on Serial Transfer card)
Signal Type:	EIA RS485, 4800 baud, 8 bit with 1 stop bit, no parity

Pin #	Signal	Comments
1	GND	Ground
2	RS232 TX	RS232 Transmit (normally inoperative)
3	RS232 RX	RS232 Receive (normally inoperative)
4	LSPD TXD-	RS485 (Low Speed) Transmit Complement
5	LSPD RXD-	RS485 (Low Speed) Receive Complement
6		
7	GND	Ground
8	LSPD TXD+	RS485 (Low Speed) Transmit True
9	LSPD RXD+	RS485 (Low Speed) Receive True

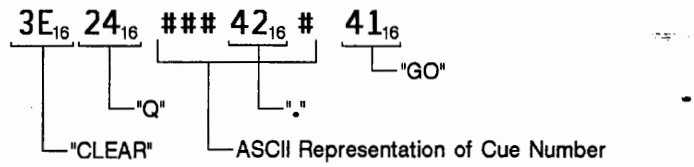


Figure 20. Remote Device Control Output String

Caution

This connection lets you control devices which are not manufactured by Strand Lighting.

Strand Lighting assumes no liability for problems caused by external devices connected to the console, or by software residing in the external devices, unless they were provided by Strand Lighting.

Dimmers

Lightpalette 90 systems are designed to drive dimmers which conform to the USITT AMX192 or DMX512 dimmer signal specification

AMX192 Control Wiring

The three types of connections provided in Strand Lighting equipment for the AMX192 signal are the XLR style connector, the TA4/TY4 Series Mini-SwitchCraft connector, and terminal blocks. Unless otherwise specified, dimmer cabinets use terminal block connections and consoles use XLR style connectors (see Table 6 for pin assignments).

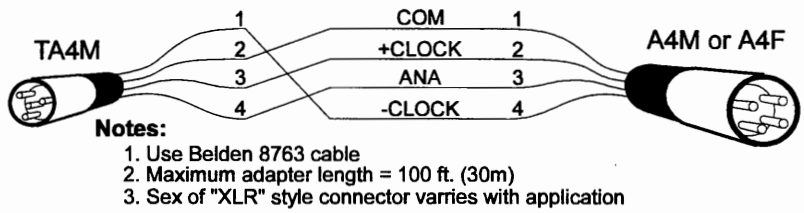
Table 6. AMX192 Control Outputs

Cable:	Belden 9156 or equal. May use Belden 8723 for adapters under 100 feet (30m) long.
Max Length:	1000 feet (300m). must be Daisy chained - no branching runs.
Connector:	Terminal block in fixed cabinets and racks. "XLR" style connector, or SwitchCraft TA4/TY4 series connector on moveable racks and packs, and on control consoles.

XLR Pin #	TA4/TY 4 Pin #	Terminal Pin #	Signal	Comments	Belden 8723	Belden 9156
4	1	AMX CLK-	CLOCK -	Clock Complement	Green	Black
2	3	AMX CLK+	CLOCK +	Clock True	White	White
1	2	AMX COM	COMMON	Analog Common	Black	Black
3	4	AMX AMUX	ANALOG	Multiplexed Analog	Red	Red

CLOCK+ and CLOCK- are one twisted pair. Analog and Common are one twisted pair.

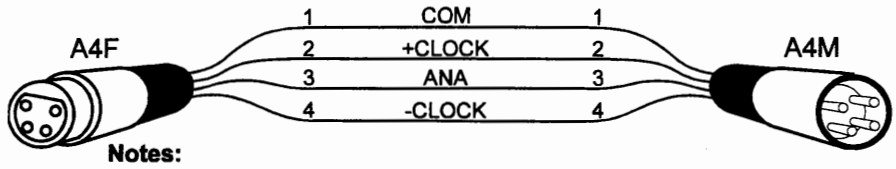
Interconnection between equipment with different plug types requires an adapter cable. The plugs on this adapter are not connected pin to pin (see Figure 21).



Notes:
1. Use Belden 8763 cable
2. Maximum adapter length = 100 ft. (30m)
3. Sex of "XLR" style connector varries with application

Figure 21. XLR to TA4 Series Adapter

Short extensions of the multiplex signal, where TA4/TY4 connectors are used, are made with Belden cable #8723 (2 pairs of shielded 24 gauge wire). Do not use this cable for runs greater than 100 feet. All other runs (in or out of conduit) are made with Belden #9156 (2 pairs of unshielded 18 gauge wire). The maximum allowed distance from the control console to the last dimmer cabinet is 1000 feet.



Notes:
1. Use Belden 9156 cable
2. Maximum extension length = 1000 ft. (300m) including all adapters

Figure 22. AMX192 Extension Cable

DMX512 Dimmer Control Wiring

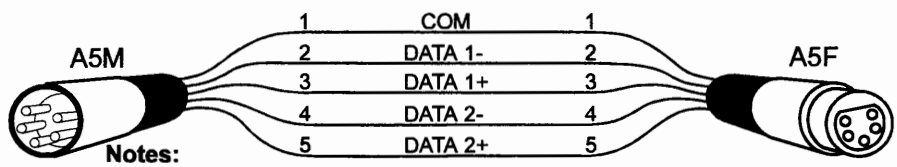
The two types of connections provided in Strand Lighting equipment for DMX512 dimmer control signals are the XLR style connector and terminal blocks. Unless otherwise specified, dimmer cabinets use terminal block connections and consoles use XLR style connectors (see Table 7).

Table 7. DMX512 Control Outputs

Cable:	Belden 9829 or equal.
Max Length:	Standard RS485 electrical characteristics apply, including line driver and receiver characteristics, line loading, and multi-drop configurations.
Connector:	Terminal block in fixed cabinets and racks. "XLR" style connector on moveable racks and packs, and on control consoles.

XLR Pin #	Terminal Label	DMX Signal	Comments	Pairs	Wire Color
1	D-GND	COMMON	Dimmer Common (shield)		shield
2	DATA- OUT	DATA 1-	Dimmer Drive Complement	pair 1	black
3	DATA+ OUT	DATA 1+	Dimmer Drive True		red
4	Not used	DATA 2-	Optional #2 Data Link Complement	pair 2	black
5	Not used	DATA 2+	Optional #2 Data Link True		white

DATA 1- and DATA 1+ are one twisted pair. Common is tied to the cable shield.



Notes:
1. Use a cable approved for RS485
2. For electrical characteristics, including driver and receiver selection, line loading, and multi-drop configurations, see RS485 specification.

Figure 23. DMX512 Dimmer Control Extension Cable

Hooking up a Printer

The printer supplied by Strand Lighting for Lightpalette 90 is an Okidata ML182 with a super high speed serial interface installed. This interface is necessary for the on-board buffer, and not for its extra speed.

Printer Cable

The printer cable uses a standard male 25-pin "D" subminiature connector on both ends.

Table 8. Console Output to Printer

Cable:	Multi-conductor jacketed (no shield).
Max Length:	50 feet
Connector:	"D" subminiature 25-pin female.
Signal Type:	EIA RS232, 9600 baud, 8 bit with 1 stop bit, no parity, busy indicated by XON/XOFF.

Pin #	Signal	Comments
1	COM	Serial Common
2	RS232 RX	RS232 Receive
3	RS232 TX	RS232 Transmit

Table 9. Printer Serial Input

Cable:	Multi-conductor jacketed (no shield).
Max Length:	50 feet
Connector:	"D" subminiature 25-pin female.
Signal Type:	EIA RS232, 9600 baud, 8 bit with 1 stop bit, no parity, busy indicated by XON/XOFF.

Pin #	Signal	Comments
2	TRANS DATA	RS232 Transmit
3	RCV DATA	RS232 Receive
7	COM	Serial Common

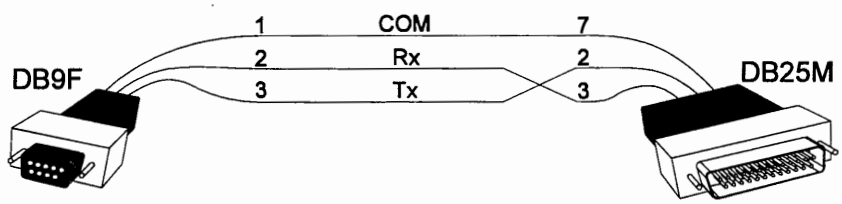


Figure 24. Printer Cable

Printer Setup

Set up an Okidata 182 with super high speed serial interface for use with Lightpalette 90 by removing the switch access cover on the upper rear of the printer and setting the circuit board and serial interface switches appropriately (see Figure 25).

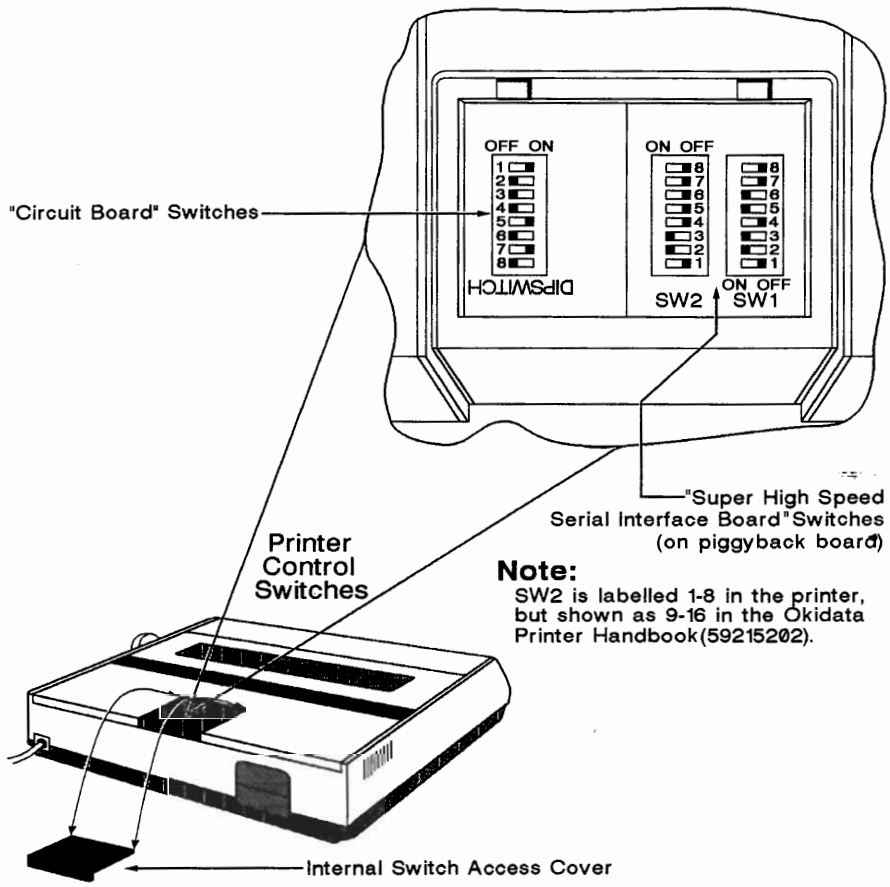
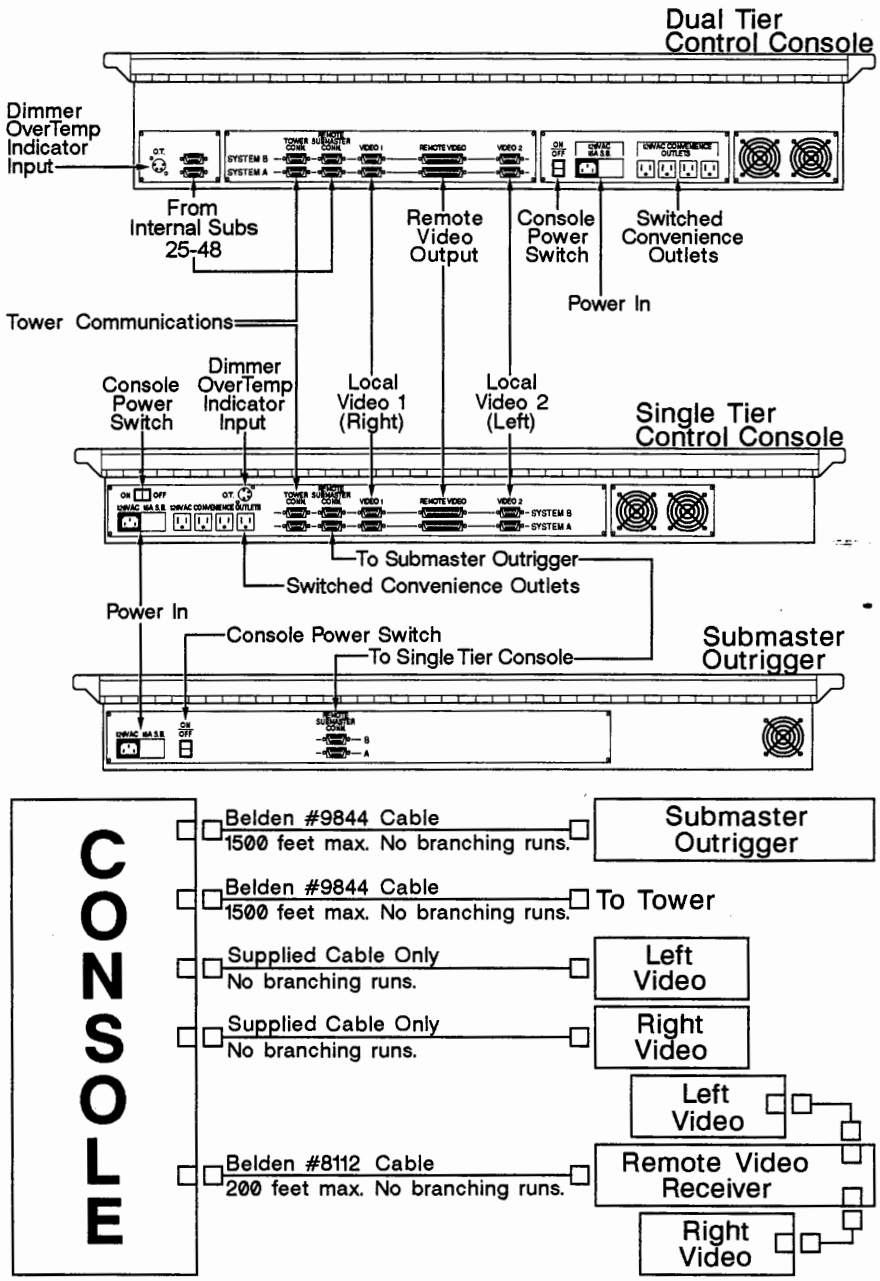


Figure 25. Okidata 182 Switch Configuration

Control Console Connections

Connections from a control console to its peripheral components can be made directly or through wall mounted junction boxes with appropriate connectors linked by **metallic** conduit.



Notes:

Dual tier 48 submaster consoles have no usable submaster outrigger receptacle.
Long cable runs may require serial cable termination.

Figure 26. Console Cabling

In dual electronics consoles, if you plug your cables into the SYSTEM A connectors it is not necessary to replug cables when switching to System B unless there is physical damage to the System A connectors.

Console Video Lightpalette 90 generate RGB TTL video signals compatible with IBM EGA video from the main console, remote consoles, and remote video receivers. These signals are intended for local monitors only (see Table 10 for connector pinouts, Strand Lighting color codes, and maximum cable lengths). Consult Strand Lighting Field Service for additional details.

Caution

Connecting a monitor which is not set up for TTL inputs can damage the Lightpalette 90, the monitor, or both.

Table 10. Video Cable Specifications

Cable:	Supplied cable only
Max Length:	Supplied cable only
Connector:	Subminiature "D" 9 pin female (on console)

Pin #	Signal	Comments
1	GND (pair 1)	Signal Ground
2	GND (pairs 2 & 5)	Signal Ground
3	RED (pair 1)	TTL red signal
4	GREEN (pair 2)	TTL green signal
5	BLUE (pair 3)	TTL blue signal
6	GND (pairs 3 & 4)	Intensity (grounded)
7		
8	HSYNC (pair 4)	Horizontal sync
9	VSYNC (pair 5	Vertical sync

Ground wires for pairs 2 and 5 are both tied to pin 2, and ground wires for pairs 3 and 4 are tied to pin 6.

Remote Video

Lightpalette 90 can drive remote monitors from any console. These are connected the rear of the console and require a remote video interface module at the monitor end to receive the signal and convert it into local video format. Additional remote video interface modules will be required to boost and condition the signal if the cable length exceeds *Max Length* in Table 10.

Remote Video Interface Module

Remote video interface modules provide signal receiving and repeating capability for the Lightpalette 90 remote video signal. These cards are buffered on the input and output and re-synchronize the video signal using the DOTCLK signal from the driving console. Each repeater card has two separate inputs (Desk Input and Loop Input) and three separate outputs (Local Video Output, Loop Output, and Remote Video Output). All inputs and outputs are isolated from each other. You can connect signals to both inputs and drive devices from all three outputs if required. Automatic sensing circuitry switches the console on-line and disconnects the Loop Input when you plug a console into the Desk Input. This lets you wire the system in a loop and create a system in which you can plug the console into any repeater board and get video to all other stations.

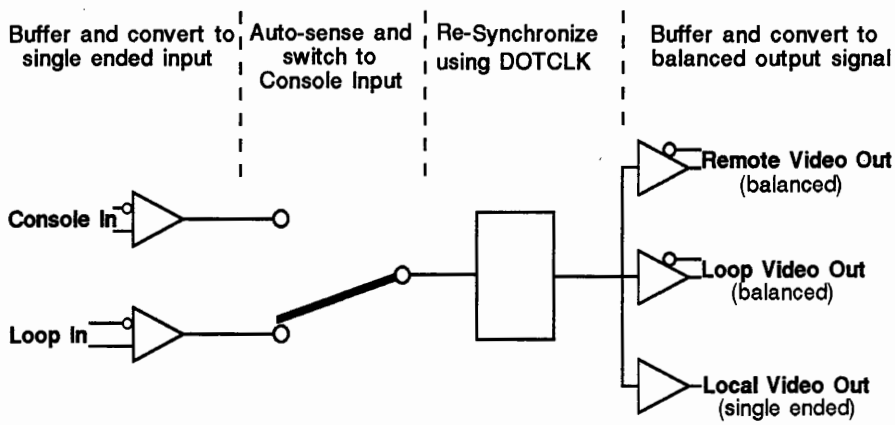


Figure 27. Repeater Card Conceptual Diagram

Sensing and signal cleanup are done using the DOTCLK signal from the driving console. Some early Lightpalette 90 consoles did not include this signal on their Remote Video Output connector. If you are retrofitting remote video into your system you should consult Strand Lighting Field Service to determine if your Console Processor card needs to be updated, and for instructions on update procedures.

Remote Video System Layout

In Figure 28 the single console is in the control booth and monitors are placed at other locations. In Figure 29 the console has been moved to the "designer's" location in the house. The loop is broken each time at the console plug-in location. This is done automatically to avoid signal conflicts. You can move the console to any other location with the same results.

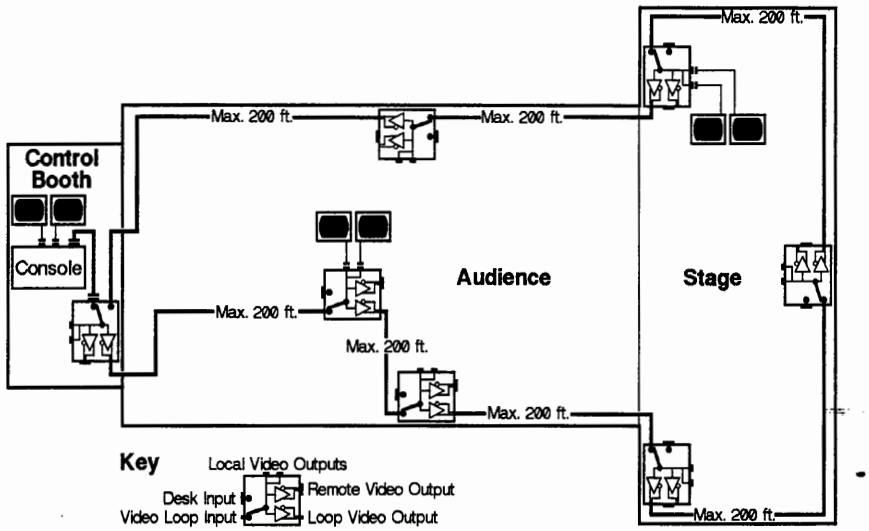


Figure 28. Console in Booth

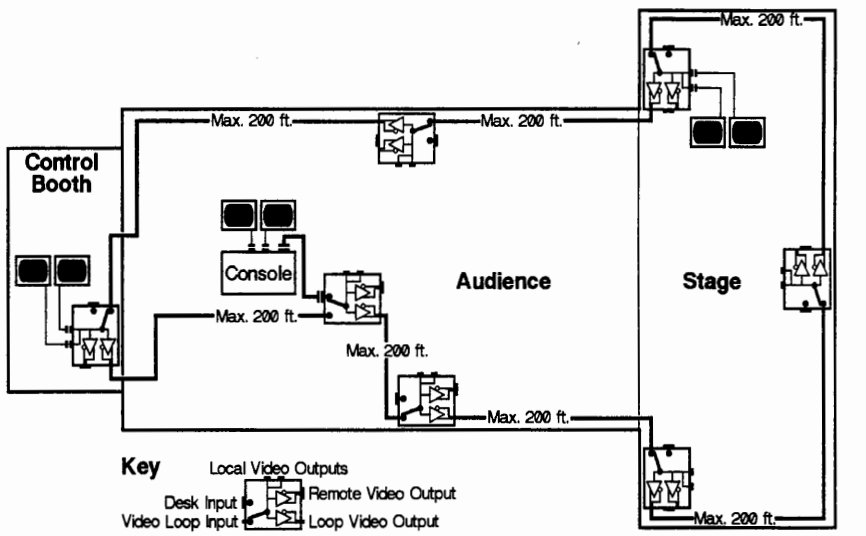


Figure 29. Console Located with Designer

Figure 30 shows a two console system with the backstage console feeding the loop so that the designer can monitor what is being done from the center of the house. In addition, a portable repeater is provided so that the feed from the center house position can be seen back stage. The main loop automatically splits into two sections when the two consoles are plugged in.

In Figure 31 the same two console system has been set up with dual repeaters in the key locations so that extensions can be avoided.

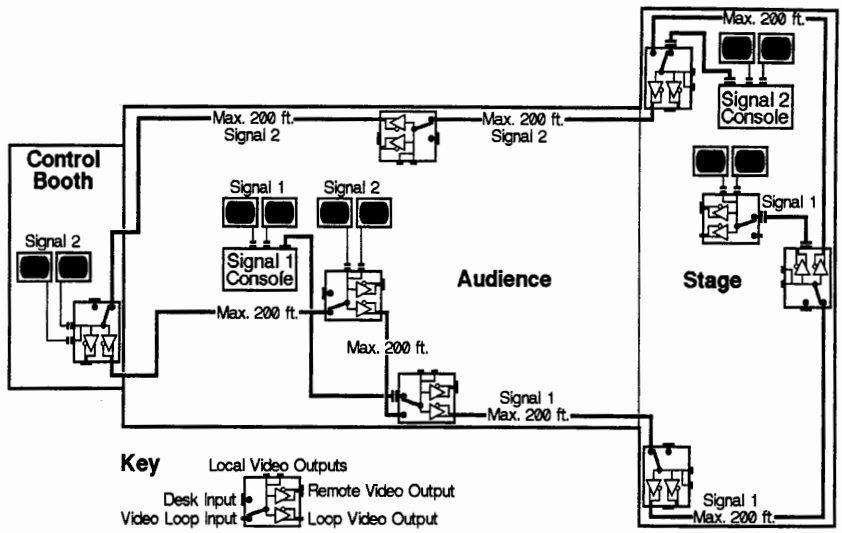


Figure 30. Dual Console System

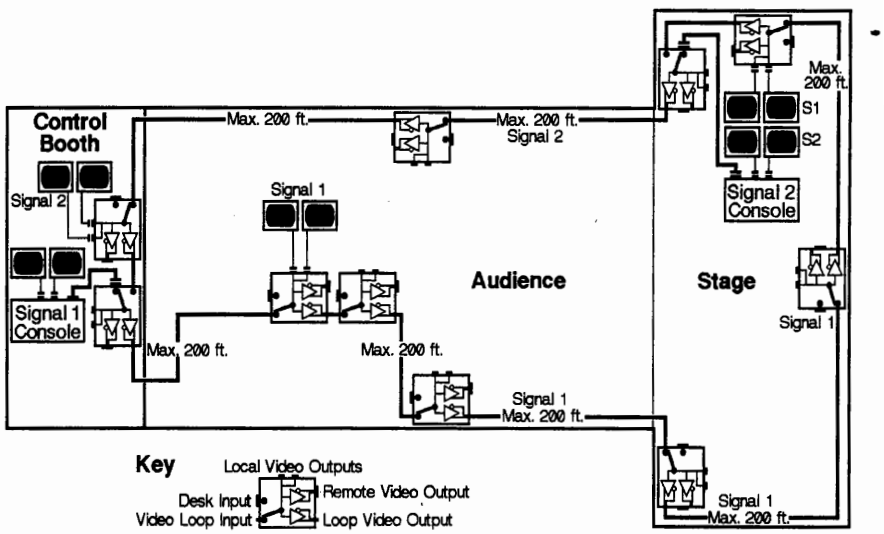


Figure 31. Dual Repeaters for Input and Output

Multiple console systems which require all locations to be able to receive feeds from all consoles will require the same number of repeater loops as the number of consoles involved.

Caution

The maximum number of remote video interface modules allowed in a single string or loop is 10 units. The maximum distance allowed between any two remote video interface modules is 200 feet.

Remote Video Cable

The cable used for remote video installations is Belden 8112. One end (and only one end) of the shield drain wire should be earth grounded.

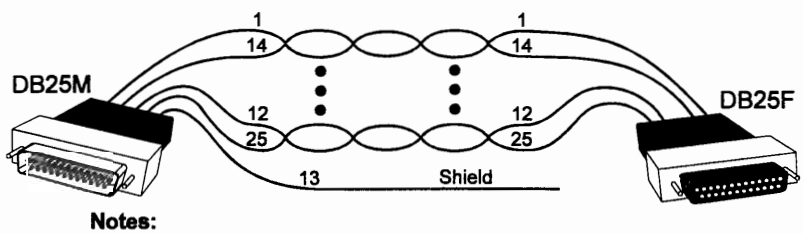
Table 11. Remote Video Output From Console

Cable:	Belden 8112
Max Length:	200 feet between repeaters
Max Repeaters:	10 per string or loop
Connector:	Subminiature "D" 25 pin female (on console)

Term #	Conn Pin #	Signal	Comments	Wire Color (Belden 8112)
1	1	#2RED+	Monitor #2 Red Signal+	white-blue stripe
2	14	#2RED-	Monitor #2 Red Signal-	blue-white stripe
3	2	#2BLUE+	Monitor #2 Blue Signal+	white-orange stripe
4	15	#2BLUE-	Monitor #2 Blue Signal-	orange-white stripe
5	3	#2GREEN+	Monitor #2 Green Signal+	white-green stripe
6	16	#2GREEN-	Monitor #2 Green Signal-	green-white stripe
7	4	#2HSYNC+	Monitor #2 Horizontal Sync+	white-brown stripe
8	17	#2HSYNC-	Monitor #2 Horiz. Sync-	brown-white stripe
9	5	#2VSYNC+	Monitor #2 Vertical Sync+	white-gray stripe
10	18	#2VSYNC-	Monitor #2 Vertical Sync-	gray-white stripe
11	6	GND	Chassis Ground	red-blue stripe
12	13	GND	Chassis Ground	blue-red stripe
13	7	DOTCLK+	Dot Generator Clock+	red-orange stripe
14	20	DOTCLK-	Dot Generator Clock-	orange-red stripe
15	8	#1VSYNC+	Monitor #1 Vertical Sync+	red-green stripe
16	21	#1VSYNC-	Monitor #1 Vertical Sync-	green-red stripe
17	9	#1RED+	Monitor #1 Red Signal+	red-brown stripe
18	22	#1RED-	Monitor #1 Red Signal-	brown-red stripe
19	10	#1BLUE+	Monitor #1 Blue Signal+	red-gray stripe
20	23	#1BLUE-	Monitor #1 Blue Signal-	gray-red stripe
21	11	#1GREEN+	Monitor #1 Green Signal+	black-blue stripe
22	24	#1GREEN-	Monitor #1 Green Signal-	blue-black stripe
23	12	#1HSYNC+	Monitor #1 Horizontal Sync+	black-orange stripe
24	25	#1HSYNC-	Monitor #1 Horiz. Sync-	orange-black stripe
25	19	COM	COMMON	black-green stripe

To insure maximum noise immunity each true (+) and complement (-) signal pair is on a twisted wire pair.

***Conn Pin #** refers to pins in the Remote Video connector on the console and the Desk Input and Remote Video Output connectors on the Video Repeater cards. **Term #** refers to terminal inputs and outputs on Video Repeater cards.*



Notes:

1. Each true(+) and complement(-) signal pair is a twisted wire pair.

Figure 32. Remote Video Cable

Submaster Outrigger

Single tier consoles have a connector for a submaster outrigger, which lets you place the submaster section of the console up to 1500 feet from the console.

Table 12. Console Input from Submaster Outrigger

Cable:	9844
Max Length:	1500 feet - one outrigger per run (all EIA RS422 restrictions also apply)
Connector:	Subminiature "D" 9 pin female (on control console)

Pin #	Signal	Comments
1	COM	Serial Common
2	KSYSON	System Keyswitch OFF
3	KSEL	
4	RXD-	Receive Complement
5	TXD-	Transmit Complement
6	KSYSOFF	System Keyswitch ON
7	KSYSCOM	System Keyswitch Common
8	RXD+	Receive True
9	TXD+	Transmit True

Table 13. Submaster Outrigger Output to Console

Cable:	9844
Max Length:	1500 feet - one outrigger per run (all EIA RS422 restrictions also apply)
Connector:	Subminiature "D" 9 pin female (on Submaster Outrigger)

Pin #	Signal	Comments
1	COM	Serial Common
2	KSYSON	System Keyswitch OFF
3	COM	Serial Common
4	TXD-	Transmit Complement
5	RXD-	Receive Complement
6	KSYSOFF	System Keyswitch ON
7	KSYSCOM	System Keyswitch Common
8	TXD+	Transmit True
9	RXD+	Receive True

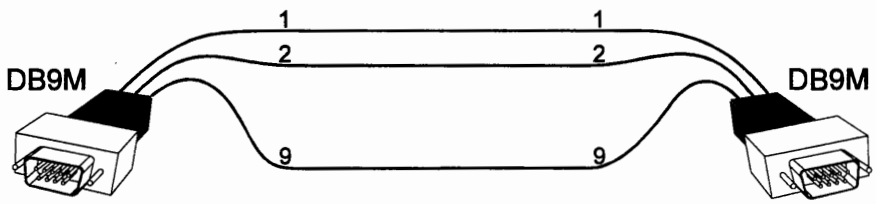


Figure 33. Submaster Outrigger Cable

Since submaster outriggers can be up to 1500 feet from the console you can set up a single tier console with remote submasters and place the submasters back stage for the stage manager, or set up the main console in a locked enclosure and the submasters somewhere else for limited access to the system.

Chapter 6

Basic Troubleshooting

This chapter provides basic troubleshooting procedures for Lightpalette 90. It does not provide comprehensive maintenance data, but lets you solve simple problems, and helps provide Strand Lighting with initial data when these procedures do not work.

For best system operation, do a routine check and cleaning once each year unless the operating environment is unusually harsh or dirty. Please consult Strand Lighting field Service if you are in doubt about the frequency of maintenance required for your system. Service and maintenance operations other than this cleaning are seldom required. In case of problems, and in order to save time and aggravation, follow the procedures outlined here before calling Strand Lighting. Observe what happens at each step. These steps answer the first questions a Strand Lighting Service Representative will ask. The person actually doing the tests should call Strand Lighting in order to minimize translation errors and other misunderstandings.

System firmware updates can be performed in the field by replacing various integrated circuit chips in the system. This is a fairly simple procedure, but should be done only under supervision from Strand Lighting Field Service.

Each section of this chapter describes a possible failure mode and actions to be taken. If all actions fail, please call the appropriate Strand Lighting office.

Caution

System Setup must be correct for your dimming system, or dimmer addressing will suffer. Once properly set, do not change the dimmer protocol, number of dimmers and 6K/12K assignments. Post system setup assignments nearby for easy reference. Always check the system setup first in any dimmer malfunction or addressing problem.

Any channel captured by an effect is at zero at the end of the effect unless later commands recapture the channel. An "Infinite Time" effect continues to "run" on a fader even after all channels are recaptured by later commands. Cancel the effect manually to remove it from the fader.

Basic Failure Types

There are several modes of computer failure. Strand Lighting has experts who can help identify and correct any type of failure which you see. Regardless of suspected failure type, call Strand Lighting Field Service if the following procedures do not work. They will evaluate failure type and involve the necessary experts.

Operator Error

Since this is the simplest type of failure to check for always recheck operating procedures before any other troubleshooting. If you have questions not answered in this manual, call Strand Lighting Field Service.

Memory "Glitch"

This is different from a "bug." A "glitch" can be caused by electrical or electromagnetic events, and changes the system memory or information on a disk. Symptoms might not surface at the time the "glitch" is introduced, but can halt the system when they do. In failures where operator error is ruled out, assume this failure mode first, and clear the system following instructions under "System Halt" in this chapter.

Hard Failure

This term describes the case of an actual component failure in the system. Depending on symptoms and the equipment in your possession, such failures can be diagnosed over the telephone and appropriate spare parts sent for swap out on site. Often such problems can be resolved without a Field Engineer on site, saving both time and expense. Even if a Field Engineer on site becomes necessary, this type of failure can usually be handled by a simple component or printed circuit board swapout, involving very little actual on-site repair time.

System Halt

Lights will not respond, and the keyboard does not respond. Lights go OFF or float to FULL depending on failure mode. If the keyboard and video respond, see under *Dimmer Addressing Problems* in this chapter. If the system halted during a disk transfer, see under *Disk Transfer Problems* in this chapter. Otherwise do the following tests. Do not continue with tests once the console is functioning properly. If lights float to full, the failure is probably on the I/O module or in the transmission line. If the console still does not function after tests are complete, call Strand Lighting Field Service. This should be done by the person doing the tests.

Reset

Turn the system keyswitch OFF, then back ON again to turn the processor tower OFF and ON. This resets the processor if there is a simple program hang-up.

Clear Reset

Press c on the Alpha keyboard and turn the console OFF for 2-3 seconds, then back ON again while CLEAR is still pressed. Hold the CLEAR key down until the system has completed its cold start. This clears memory and cold starts the system so you must re-load memory from a disk. In consoles with full backup this also clears the backup memory.

Hard Reset

A hard reset completely clears memory by removing power from the memory elements. This procedure is not detailed here, since it is seldom required, *and should be done only under the direction of a Strand Lighting Field Service technician.*

Intermittent Halt

If the console can be reset, but shuts off periodically (more than once every few months), you might have power problems. If a power conditioner is in use, plug the console directly into the wall to see if the conditioner has failed. If the power conditioner seems to be functioning, the problem could be in the building power or be related to the console power supplies. Consult Strand Lighting Field Service for additional tests or service.

Memory Corruption

For purposes of this manual, memory corruption is any problem with memory which do not cause a system halt. This is one form of Memory Glitch as defined under *Basic Failure Types*. Memory corruption can take many forms. When in doubt, consult Strand Lighting Field Service.

Source

Memory corruption can occur from several sources. Some of these are:

- A voltage spike which was not entirely eliminated by the power line conditioner or other input power conditioning device. Such spikes can result from close lighting strikes, from the power company itself, or from within your own building (i.e., air conditioning system turning on).
- Voltage spikes caused by a faulty power conditioning device. These are electronically controlled and can fail. Usually the effects of such failures are more drastic than simple memory corruption (i.e.,system halts).
- A partial or full brownout, after which the return of power can be "dirty." There is sometimes enough "trash" on line when power is restored to cause problems.
- Transfer of bad data from a corrupted disk. Disks can be corrupted in several ways. Once a disk is corrupted, clearing the memory eliminates the problem only until memory is reloaded from the bad disk. Find an uncorrupted backup disk, or re-enter data by hand (see under *Disk Drive Problems* in this chapter).

Determination of Extent

If memory is corrupted, to determine if the problem is on your show disk. The following procedures will help.

- Copy the contents of memory to a disk. This disk is corrupted, but might be valuable as a reference, or as a backup.
- Clear memory by doing a "hard reset" (See under *System Halt* in this chapter).
- Try to duplicate the observed problem starting with a blank console. This shows if the problem is in the console itself. If the problem persists during this step, call Strand Lighting Field Service. If you cannot duplicate the problem proceed to the next step.
- Load data from a show disk (not the one which was made above). If the problem re-occurs, it is on the disk. It will be necessary to find a way to work around the problem, find an older, uncorrupted disk to use for updating show data, or reprogram starting from a cleared console.
- Once you have established an uncorrupted memory, make sure that appropriate disks and backups are re-recorded with uncorrupted data. Re-initialize disks before using them for new data.

Video Problems

Video problems can be extremely frustrating in control systems which use the display extensively to tell you what the system is doing. Remember that Lightpalette 90 has a SWAP key to let you swap the displays. Since it is unlikely that both displays or video generators will fail at the same time, this will let you get through a show even if you do not have a spare monitor or dual console electronics.

Non-Functioning Console Monitor

1. Make sure that the monitor is plugged in and turned ON.
2. Check brightness and contrast controls.
3. If a known good monitor is available for testing, check the video generator by plugging the it into one, then the other of the video outputs. If there is still no picture, the problem is probably in one or both outputs of the video generator. If both outputs transmit properly to the known good monitor, the problem(s) are in the CRT(s).

Non-Functioning Remote Monitor

1. Make sure that the monitor is plugged in and turned ON.
2. Check brightness and contrast controls.
3. Plug the monitor directly into the console. If it works, you have a problem in the video distribution system.
4. Make sure that Video Repeater cards are getting power.
5. If a known good monitor is available for testing, check the video generator by plugging the it into one, then the other of the video outputs. If there is still no picture, the problem is probably in one or both outputs of the video generator. If both outputs transmit properly to the known good monitor, the problem(s) are in the CRT(s).

Disk Problems

Most disk drive problems are actually floppy disk problems. You should always have at least three backup disks (used in rotation) for each show or setup. This gives you one disk (the oldest) to write over, and still gives you two good disks for data recovery if anything happens to the newest disk

System Will Not Read a Disk, or Halts on a Read

1. Use [3] LOAD PARTIAL SHOW in the *Disk & Reserve* menu to load each data item (i.e., cues, groups, etc.) separately. If you successfully load all items, re-record the show from memory and try to read the newly recorded disk.
2. If you can only partially load your show from your primary library disk, try one of your backup disks. If this causes the same problem, save both disks.
3. Initialize a disk. Since this erases all previous data on the disk, make sure that it does not contain important data.
4. If the disk will not initialize, obtain another disk. Try at least 3 disks before giving up at this step.
5. Write several simple cues into memory.
6. Attempt to record the newly written cues to disk. If you were able to initialize the disk, this should also work.
7. Attempt to load memory from the new disk. If successful, try the original "bad" disk again. If the console halts, the original disk is bad.

In some cases, you might be able to recover parts of a show from different disks. In such cases, once you have recovered as much as you can, make a copy of the composite show before doing any final updates. If anything happens before you get a completed show disk reconstructed, you will at least not have to do the initial steps over.

Halt on Record

The write protect tab may be in the wrong position.

Use the procedure above to make certain that the problem is not a bad disk. Always test for disk failure before suspecting hardware. Although unusual, it is possible for several disks to be corrupted at once.

Cannot initialize diskette

The write protect tab may be in the wrong position.

If one disk will not initialize, it is probably bad. In dual electronics consoles, all initialization can be done using the "B" disk drive if the "A" disk drive is problematic. If these steps do not correct the problem, call Strand Lighting Field Service.

Dimmer Problems

Your system setup must be correct for your dimming system, or dimmer addressing will suffer. Once properly set, do not change the dimmer protocol, number of dimmers and 6K/12K assignments. Post system setup assignments nearby for easy reference. Always check the system setup first in any dimmer malfunction or addressing problem.

Some or all dimmers float to full

In CD80 systems, make certain that the proper number of dimmers are assigned in the *Configuration* Menu, and that 6Kw and 12Kw dimmers are properly assigned in Patch. If these are not correct, improper dimmer addressing will result. Each incorrect 6K/12K dimmer assignment will shift the dimmer output by one number.

If only a few dimmers are involved, make certain that the problem is not in the dimmer rack.

If a series of dimmers corresponding to the assigned dimmers for a particular output is not functioning, assign these dimmers to a different output and make sure that the control cable is hooked to the output. If the dimmers are still not functioning, the problem is in the rack(s). If the dimmers are now working, the output is faulty.

Caution

Once you swap outputs, dimmer numbering will shift. The manner in which they shift will depend on how you have dimmers assigned to a port. If you re-assign dimmers to a different output, make sure that you return the outputs to their normal condition after your tests.

Dimmer control is randomly shifted.

1. Check for correct patch assignment.
2. Check to make sure that the port assignments for dimmers have not been altered.
3. In CD80 systems, make certain that the proper number of dimmers are assigned in the *Configuration* Menu, and that 6Kw and 12Kw dimmers are properly assigned in Patch. If these are not correct, improper dimmer addressing will result. Each incorrect 6K/12K dimmer assignment will shift the dimmer output by one number.

Dimmer control is shifted by a fixed amount after a particular dimmer number.

1. In CD80 systems, make certain that the proper number of dimmers are assigned in the *Configuration* Menu, and that 6Kw and 12Kw dimmers are properly assigned in Patch.
2. If these are not correct, improper dimmer addressing will result. Each incorrect 6K/12K dimmer assignment will shift the dimmer output by one number.

Some dimmers cannot be controlled, act as non-dims, or will not go to FULL

1. Make sure that all patches are correct.
2. Make sure that the dimmers in question are not being modified by a profile.
3. Make sure the dimmers are not being held ON or OFF by a submaster.
4. If these check, the problem is probably in the dimmer rack.

Heap Errors

Although extensive error checking is performed on all data as it is created, for performance reasons very little error checking is performed during playback or disk loads. Since the show data is assumed to be "good" during playback, corrupted data can cause loss of control if encountered during a show.

The Heap Checker added to Lightpalette 90 software in version 1.8.5 continuously scans the memory contents for corrupted data, testing a variety of parameters for 20 elements every second. If any problem is discovered, the checker will periodically notify you of the problem until you correct the error.

If you get a Heap Error message, review the contents of the indicated element and correct any errors which you find. The Lightpalette 90 software will automatically correct any damage to the internal data structures when you edit the element. In addition, you should make a copy of your show on disk and send the disk to Strand Lighting for evaluation.

Internal Checks

The background heap checker makes the following internal checks:

- Correct heap forward and back link sizes.
- Maximum and minimum element size by type.
- Correct element number sequence.
- Legal element number (0.1 to 999.9).
- Legal cue part (0 to 9), part 9 wait and/or link.
- Legal cue command.
- Legal cue times, profiles, macros, remote cue, effect #.
- Legal comment length.
- Legal preset type.
- Legal preset contents (valid channel numbers, map/level congruency).
- End of element corresponds with next element.
- Legal effect header and step contents.

Heap Error Message Format

Heap error messages are displayed in the following format:

DPR *d*: HEAP ERROR *type number* P*x error*

Where:

d	= the DPR card which is reporting the error (base 0)
type	= the type of element (cue, efffect, group, etc.)
number	= the cue or element number
x	= the cue part or effect step with error or 0
error	= octal error code with the following bits:

000001 element number not 0 to 999
000002 comment size not 1 to 25
000004 end of preset not start of next element
000010 element fraction/type not 0 to 9 or A, B, C
000020 part not 0 (no part), 1 to 8, or 9 (wait)
000040 invalid cue command
000100 cue time not 0 - 999.0 or MAN
000200 link not 0.1 to 999.9 or count not 0 to 999
000400 cue delay not 0 to 999.0
001000 cue, effect, macro, remote q have illegal values
002000 effect step number not 1 to 99
004000 effect time not 0 to 999
010000 effect step offset to next step too large
020000 effect level not 0 to FL
040000 invalid preset channel number
100000 invalid preset compression type

Heap Error Message Examples

DPR0: HEAP ERROR EFFECT 123 P0 = 20000

The error was detected by the first DPR card (card 0). Effect 123 contains an incorrect level which is not between 0 and Full. The 20000 error code indicates that a single problem was found with the effect, in this case an invalid level.

DPR1: HEAP ERROR GROUP 52 P0 = 4

The error was detected by the second DPR card (card 1). Group 52 has internal data structure damage (the pointer to the next element). The error code of 4 shows that the end of the group is not the beginning of the next element. In this case the damage was to an internal structure, the damage will be corrected automatically when the operator edits the group.

DPR0: HEAP ERROR CUE 36.7 P1 = 6

Cue 36.7, part 1 has two problems. The error code of 6 indicates that the cue has two problems, a type 2 problem and a type 4 problem (2+4 = 6). A type 2 problem is an illegal comment size. A type 4 problem shows that the end of the cue is not the beginning of the next element.

What to Do

If you get a Heap Error message, please use the following procedure to repair the error and report it to Strand Lighting:

1. Write a disk for backup and latter analysis. **DO NOT** use your last known good disk for this purpose. As a general rule you should always be using several diskettes on a rotating basis for backups.
2. Show the system log (press SETUP 6 9 F5). Write down the heap error message exactly as it appears. If the system log shows heap errors for more than a single element copy the error messages for each element. You will need this information to find the damaged data.
3. If there are no changes to the show since the last disk was written, reload the show from the latest disk. This is the easiest and safest way to recover from a heap error.
4. If there have been changes, but you know the correct contents of the effected element, the safest procedure is to delete the damaged element and then recreate it. If the exact contents are not known the element should be examined and any errors found corrected. Even if you see no apparent errors, you should modify some parameter to ensure that the system repair any internal, and invisible, problems. For example, if the damaged element is a cue, you can modify any channel level to force the system to rewrite the cue. You can then restore the modified parameter and record the cue again.
5. Repeat step 4 for all elements which were reported by the Heap Checker. Once all errors have been corrected the heap error messages should stop.
6. Test the modified elements for correct operation. Write a diskette after the modified elements have been verified.
7. The diskette written in step 1 contains the damaged data as well as the system and keystroke logs at the time the disk was written. Please forward this diskette along with a short description of the events leading to the heap error to Strand Lighting for analysis.

Caution

DO NOT simply ignore Heap Errors. *They often indicate a hardware problem which requires attention.*

Element Count Errors

LP90 systems with more than 576 channels or dual electronics are multiprocessor systems with distributed databases. This means that your show data is maintained by more than one processor and is physically located on more than one card. When everything is working perfectly all of the data in the system is consistent, meaning that each DPR card has an identical number of cues, groups, and effects. The Lightpaletts 90 consistency checker detects any discrepancies in the number of elements currently recorded on each DPR card.

System consistency checks are performed on all DPRs on both sides of the tower whenever the current fader cue changes. This happens whenever you use RECORD, GO, or GO TO CUE, and for cue copies, renames, or deletes. The consistency check verifies that the current fader cue as well as the total number of cues, groups, and effects are the same on each DPR in the system. An error message is displayed if any differences are detected.

Many things can cause consistency errors, including operator error, hardware failures, and current or historic software problems. For instance, you will get a consistency error if you fail to load the reserve system after a disk load. If no error indication were provided you might begin your show with a false feeling of confidence that the reserve system was ready to take over if the main system should fail.

What to Do

If you get a Heap Error message, please use the following procedure to repair the error and report it to Strand Lighting:

1. Write a disk for backup and latter analysis. If the discrepancy is between the main system and the reserve write a separate disk from the reserve. These diskette(s) should be labeled immediately to avoid latter confusion. **DO NOT** use your last known good disk for this purpose. As a general rule you should always be using several diskettes on a rotating basis for backups.
2. Select the *Console Detail* diagnostic display (press SETUP 6 9 F2). The last line of the DPR Data section shows the total number of cues, groups and effects currently defined on each DPR card. The information on this line will give a rough idea of the location and extent of the discrepancy.
3. If the totals for all DPR cards match, the discrepancy is between the main and reserve sides of the tower. Write down the element totals, switch to the reserve side of the tower, and select the *Console Detail* diagnostic display (press SETUP 6 9 F2). Compare the totals with those from the main side.
4. Once you have found where the data is missing, you should reload show data from a known good source.
   - If the missing element is on the main side of the tower and no changes have been made to the show since the last disk was written, reload the show from the latest disk.
   - If the missing element is on the reserve side of the tower and no changes have been made to the show since the last disk was written, reload the reserve system from the latest disk.
   - If the missing element is on the reserve side of the tower and the main side is known to contain good information, reload the reserve system from the main system (SETUP 6 6 *).

5. If you cannot reload the missing data from disk because there have been changes since the last disk was written or you backup disk cannot be read, you must recreate the data manually. Use the element test to locate the element(s) with missing data. From the *Console Detail* display, Press F7 to start the test. The element test locates the discrepancy by searching the entire system's database. When it detects an error it posts amessage of the form:
6. [MAIN or RESERVE] DPR [#]: MISSING [element id]
7. Write this message down. If the incomplete element is no longer needed (e.g., an unused group or effect) delete the element and goto step 9.

> *When diagnosing consistency problems it is important to understand how the show database is divided. Each DPR card handles channel calculations for 576 channels and has the database entries for just those channels. If DPR #1 (the second DPR card) is missing cue 7 that means the moves for channels 577 through 1152 in group 7 have been lost. On the other hand if DPR #0 is missing cue 7 the moves for channels 1 through 576 will be missing. Additionally since only the first DPR card provides the information about the cue's attributes for the display it will appear that the element has been lost completely.*

8. Select the Effect, Group or Preview display to review the remaining information. All information from the element should be copied onto paper or printed out unless you know the complete correct contents of the element.

> *If the lost information is on DPR card #1 and the show uses less than 576 channels (or on DPR #2 when the show has less than 1152 channels), viewing the incomplete element in the effect, group, or preview display without making any changes should correct the problem.*

9. Delete the incomplete element and then recreated it from scratch. Resist the temptation to ignore the incomplete effects. They will appear to be correct, but unless they are recreated they will probably not execute correctly.
10. Repeat steps 4 to 6 for any remaining elements with missing information.
11. Test the modified elements for correct operation. Write a disk after the modified elements have been verified.
12. The diskette written in step 1 contains the damaged data as well as the system and keystroke logs at the time the disk was written. Please forward this diskette along with a short description of the events leading to the heap error to Strand Lighting for analysis.

Caution

> ***DO NOT simply ignore Element Count Errors.*** *They often indicate a hardware problem which requires attention.*

Chapter 7

Periodic Maintenance

Periodic Maintenance should be done every six (6) to twelve (12) months, depending on the environmental conditions. Although a detailed discussion of this procedure is beyond the scope of this manual, basic checklists are provided to show what is involved. Users wishing to do these procedures on their own should consult Strand Lighting Field Service. Basic Periodic Maintenance consists of the following steps:

1. Clean console
2. Clean all mechanical connections
3. Re-install all removed components, and power up.
4. Check and adjust power supplies
5. Check and adjust all mechanical controls
6. Clean disk drive (with disk drive cleaning kit available at your local computer supplies store)
7. Check and adjust CRT if necessary
8. Check backup system

Equipment necessary to do the above, but not provided by Strand Lighting, includes:

- Compressed air (must be oil and moisture free).
- Soft paint brush
- Digital volt-ohm-meter
- Oscilloscope
- Distilled water (20%) + denatured alcohol (80%).
- Floppy disk drive head cleaning kit
- Variac transformer to vary console input voltage.

Chapter 8

Reference

Keyboard commands are divided into logical groupings and accessed from appropriate menus and displays.

This chapter is a alphabetical listing of controls and functions for Lightpalette 90 consoles. It includes the following sections.

Channels-in-Use Display 76
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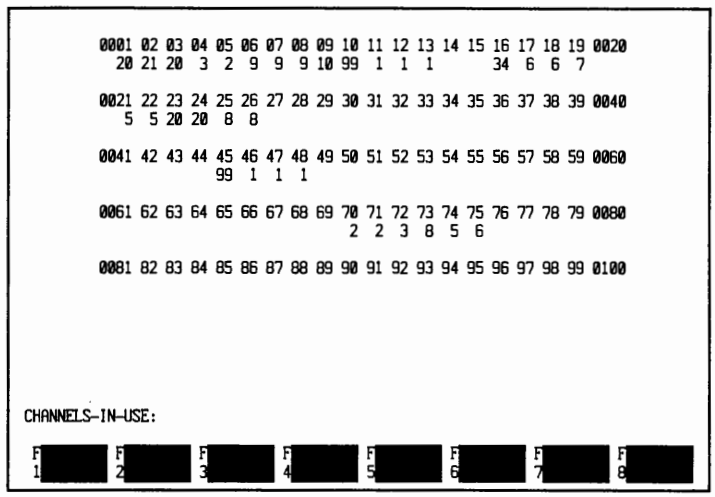
Channels-in-Use Display

The *Channels-in-Use* display shows you the number of cues in which you are using each channel. It permits you to easily identify unused or little used channels for additional lighting and to identify heavily used channels for possible relighting. There are no commands specific to this display.

Press

[CHANNELS IN USE]

to see the *Channels-In-Use* display.



- **No number** shows channels not in use.
- **Number** shows number of cues channel is used in.
- **99** shows channels used in 99 or more cues.

Navigation

[PAGE+] pages forward through the *Channels-In-Use* display.

[PAGE-] pages backward through the *Channels-In-Use* display.

[channel or element][*] goes to the display page with the lowest selected channel.

System Functions

[PRINT SCREEN][←] prints the current left hand display if the printer is active.

[PRINT SCREEN][→] prints the current right hand display if the printer is active.

Commands

There are no commands specific to this display.

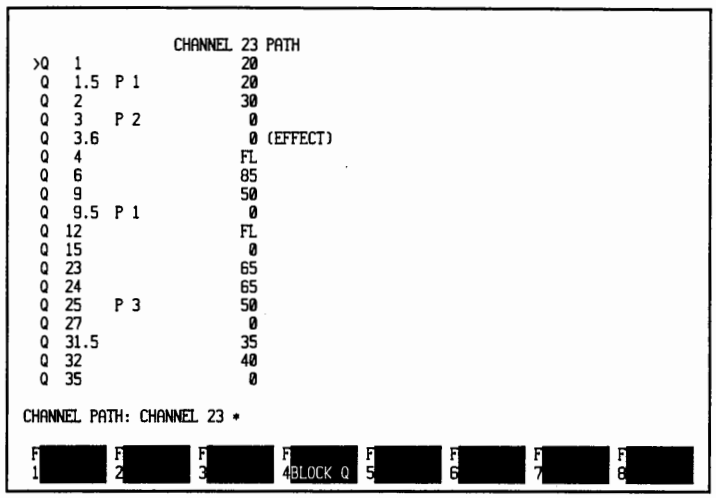
Channel Path Display

The *Channel Path* display shows you a list of all cues in which a specified channel is non-zero or is moving to zero. You can set a new level for the selected channel in the current record cue. By specifying a cue number or cue range, you can set levels in other cue(s). You cannot use the wheel for channel level control while in this display. Channels controlled in a cue by the use of an effect are shown at a level of zero, since effect termination on a fader fades effect channels to zero. Effect produced levels are noted on the display and cannot be modified.

Press

CHANNEL PATH

to see the *Channel Path* display.



- **Magenta** channels are going up in this cue.
- **Green** channels are going down in this cue.
- **Aqua** channels remain the same as the previous cue.
- **White** channels with no background are channels blocked in this cue.
- **Yellow video** shows the on stage cue number.
- **>** shows the current cue referenced in record commands or last shown in the *Preview* display.

Function Keys

F1 F2 F3 F4 BLOCK Q
F5 F6 F7 F8

Navigation

NEXT selects the next displayed cue or part.

LAST selects the previous displayed cue or part.

PAGE+ pages forward through the *Channel Path* display.

PAGE- pages backward through the *Channel Path* display.

System Functions

PRINT SCREEN ← prints the current left hand display if the printer is active.

PRINT SCREEN → prints the current right hand display if the printer is active.

Select Channels [#][*]

Specifies the channel number to be tracked and generates a new display.

Set Channel Levels [@][level][Q-ONLY TRACK][*]

Sets the displayed channel to the specified level in the current record cue ([ ]). If the level is not specified, this command lets it track though from the previous cue. [Q-ONLY TRACK], if used, reverses the tracking mode of the console for this command only.

[@][level][Q-ONLY TRACK][CUE][#][PART][#][*]

Sets the displayed channel to the specified level in the specified cue and/or part and moves the record pointer to the specified cue or part. If the level is not specified, this command lets it track though from the previous cue. [Q-ONLY TRACK], if used, reverses the tracking mode of the console for this command only.

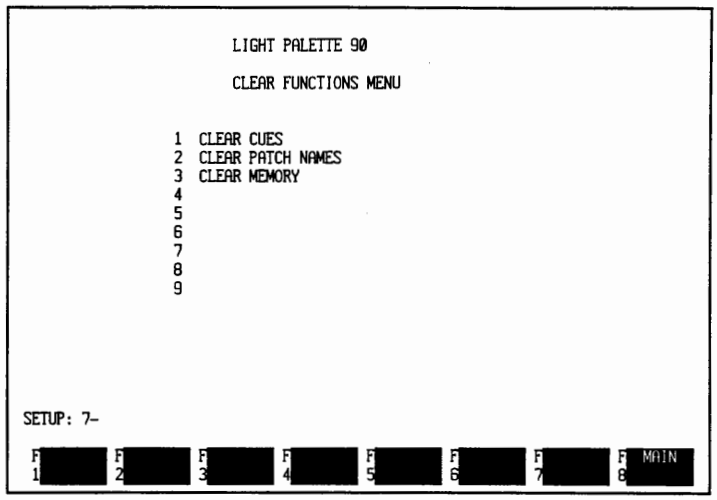
[@][level][Q-ONLY TRACK][CUE][#][PART][#][>][CUE][#][PART][#][F4][*]

Sets the displayed channel to a level in the specified cue range. Moves the record pointer to the last cue part in the range. [F4 BLOCK Q] forces the channel active in the entire cue range. Otherwise the channel level tracks through from the first cue in the range.

Clear Functions Menu

The *Clear Functions* menu lets you selectively clear cues, patch, or memory (cues and patch).

Press [SETUP] [7] to see the *Clear Functions* menu.



Function Keys [F1] [F2] [F3] [F4] [F5] [F6] [F7] [F8] MAIN MENU

Navigation [F8] or [0] returns you to the *Setup* display.

System Functions [PRINT SCREEN] [←] prints the current left hand display if the printer is active.

[PRINT SCREEN] [→] prints the current right hand display if the printer is active.

Commands [1] [*] ARE YOU SURE ? [*]

Clears all cues belonging to the requesting console. This command requires a confirming [*].

[2] [*] ARE YOU SURE ? [*]

Clears all dimmer names without resetting the basic channel patching. This command requires a confirming [*].

[3] [*] ARE YOU SURE ? [*]

Clears all cues, groups, effects, and submasters belonging to the requesting console. This command requires a confirming [*].

Command Line Editing

You can edit the command line at any time. This lets you modify long lists if you have made a slight error part way through, or use your last command as the basis for creating the next.

HOME

While in normal command mode, puts the system into command line editing mode. A red reverse video cursor will appear on the command line.

← or →

Moves the cursor left or right one item at a time without changing the command line. Any text or new keys you enter are placed to the left of the current cursor position.

> *Since each key entry is a single item, the cursor highlights the entire text string representing any key entry. It will highlight individual characters when they were entered using the Alpha keyboard.*

CLEAR

Clears the current cursored item.

[key entry]

Puts the text string representing the key to the left of the current cursor position. To replace a key entry, position the cursor on the entry, press CLEAR, and press the new key.

HOME

If you are in command line editing mode, this takes you out of editing mode but does not execute the command line.

✱

If you are in command line editing mode, this takes you out of editing mode and executes the command line.

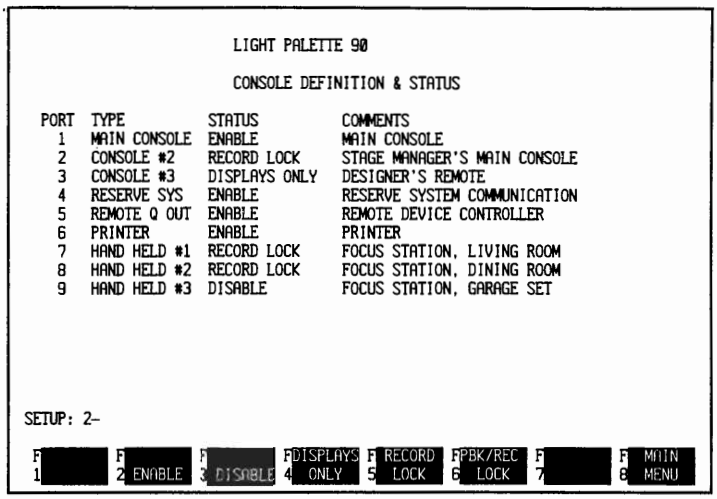
Console Definition & Status Menu

The *Console Definition & Status* menu lets you set the status of consoles and remotes.

Press

SETUP 2

to see the *Console Definition & Status* menu.



Red lettering shows the port which is currently being worked on. Pressing any function key in this display changes the current port to the new status.

Function Keys

F1 F2 ENABLE F3 DISABLE F4 DISPLAYS ONLY

F5 RECORD LOCK F6 PBK/REC LOCK F7 F8 MAIN MENU

Navigation

F8 or 0 returns you to the *Setup* display.

1 through 9 select a port for modification.

NEXT selects the next port for modification.

LAST selects the previous port for modification.

System Functions

PRINT SCREEN ← prints the current left hand display if the printer is active.

PRINT SCREEN → prints the current right hand display if the printer is active.

Select Device Status

F2

Enables the selected device for all control functions.

F3

Completely disables the selected device.

F4

Lets the selected device access displays only.

F5

Lets the selected device access displays, set channel levels live, control dimmer levels, execute playback commands, and manually execute functions which contain only those commands.

F6

Lets the selected device access displays, set channel levels live, and control dimmers.

Console Definition Comments

COMMENT [text] *

Adds a comment to the current port's comment field, or replaces the previous comment in the field.

On warm or cold start, the full tracking backup port (port #4) defaults to DISABLE *until the system finds a full backup. If a full tracking backup unit is present and functional, this port is automatically enabled by the system.*

Caution

Any console or hand held remote port which has nothing connected to it should be disabled to avoid possible interference from line noise. This is particularly important for ports which have wiring in your facility but nothing connected to them at the other end (e.g., when you unplug your hand held remote for storage).

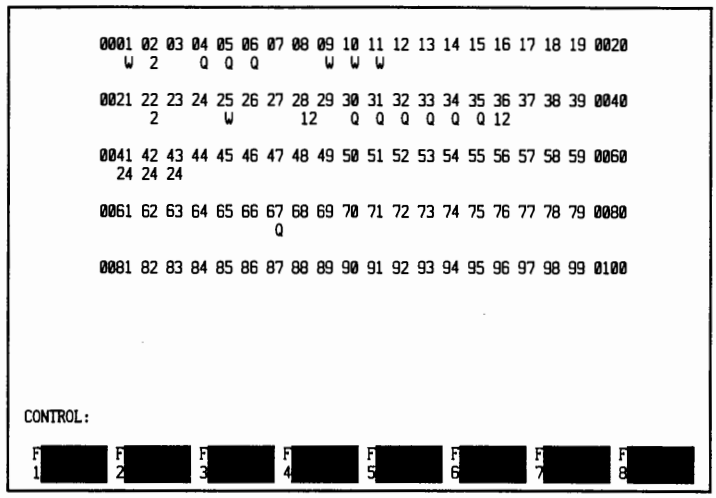
Control Display

The *Control* display shows you the source of the stage output for each channel. It mimics the *Live* display, but instead of levels, shows the source controlling the level for each channel.

Press

CONTROL

to see the *Control* display.



- **W** shows that the source is the **LEVEL WHEEL**.
- **Q** shows that the source is a cue.
- **A number** shows that the source is the indicated submaster.

Navigation

PAGE+ pages forward through the *Control* display.

PAGE- pages backward through the *Control* display.

[channel or element] * goes to the display page with the lowest selected channel.

System Functions

PRINT SCREEN ← prints the current left hand display if the printer is active.

PRINT SCREEN → prints the current right hand display if the printer is active.

Control Lists

Control lists are lists of dimmers, channels, groups, submasters, or cues (or mixtures) which let you specify channels for recording, playback, and adding to cues, groups, submasters, or effects.

Control lists contain "Selectors" which let you select items for the list, "Operators" which let you form lists and specify levels, and "Shortcut Keys" which help you manipulate selected channel levels easily.

Selectors

[0] through [9] let you specify numeric entries and levels for control lists.

> *When entering levels, [@][5][*] is the same as [@][5][0][*]. Both commands set the channel at 50%. If you need to enter a level of 5%, you must enter [@][0][5][*].*

[.] lets you specify a channel list to be exclusively lamp channels. Scroller channels in the list will be ignored.

[.][.] lets you specify a channel list to be exclusively scroller channels. Lamp channels without an attached scroller will be ignored.

[GROUP] **[#]** specifies a group as a channel list (e.g., [GROUP][1][*] assigns group 1 channels to the **LEVEL WHEEL**) or level source (e.g., [GROUP][1][@][7][*] assigns group 1 channels to the **LEVEL WHEEL** at 70% of their recorded levels).

[CUE LEVEL] **[#]** specifies a cue as a channel list (e.g., [CUE LEVEL][1][*] assigns cue 1 channels to the **LEVEL WHEEL**) or level source (e.g., [CUE LEVEL][1][@][8][*] assigns cue 1 channel levels to the wheel at 80% of their recorded levels).

[CUE] **[#]** specifies a cue for modifying its attributes (e.g., [CUE][1][TIME][5][*] assigns a fade time of 5 seconds to cue 1) or loading it on a submaster (e.g., [LOAD SUB][1][CUE][2][*] loads cue 2 onto submaster 1).

Operators

[>] selects a range of channels, submasters, effects, groups, or cues (e.g., [1][>][5][@][5][*]).

> *"thru lists" are individual items when analyzing the logic of a command line. Though you must always specify item type for each entry when using [+] (e.g., [CUE LEVEL][1][+][CUE LEVEL][2][+] ...), you do not need to specify item type for the second entry of a "thru list" (e.g., [1][>][5]). This also means that you can subtract a "thru list" from the command list (e.g., [1][+][3][>][1][0][-][5][>][7][*]).*

[+] adds channels, submasters, effects, groups or cues following the [+] to the control list (e.g., [1][+][3][+][8][@][7][*])

> *When using [+] and [>] to make control lists, if there are overlapping channels (i.e., from 2 cues) the highest level takes precedence. To make the last level (rather than the highest level) take precedence for a particular channel or channels, specify the cue, subtract out the required channels, and then specify the second cue. When channels are subtracted out, their levels go to ZERO.*

[-] subtracts channels, submasters, groups, or cues from a range. (e.g., [1][>][8][-][5][@][4][*]).

> *If the first keystroke in a command is [-] the system assumes that it is prefixed by "All Channels" (e.g., [-][GROUP][1][*] means "All channels except the channels in group 1").*

[=] specifies relative levels for some channels before finishing the channel list. The items controlled by [=] are then mastered by the overall command line level (e.g., [1][>][8][=][5][+][1][5][@][8][0][*] sets channels 1 through 8 to 40% and channel 15 to 80%).

[@] lets you specify a level for the control list. If a level is already specified, and the channel is part of a lamp/scroller pair, this key lets you specify the scroller color.

> *[+], [>], and [-] are ignored if followed immediately by this operator. This lets you specify a level for a group of channels even if you have already typed in one of these operators.*

[@ FULL] lets you set selected channels to FULL (100% - e.g., [2][@ FULL][*]).

Shortcut Keys

Level shortcut keys are immediate action keys, and do not need to be followed by [*].

[OUT] turns the levels of elements under **LEVEL WHEEL** control OFF in the *Live* display. In the *Preview* display it removes changes from the selected channel, letting levels from earlier cues track through the current cue.

[-10%] decreases levels for selected channels by 10% (e.g., [1][+][5][-10%]).

[+10%] increases levels for selected channels by 10% (e.g., [1][>][9][+10%]).

[SET] sets selected channels to the "Set" level defined in the *Defaults* menu (e.g., [1][>][5][SET]).

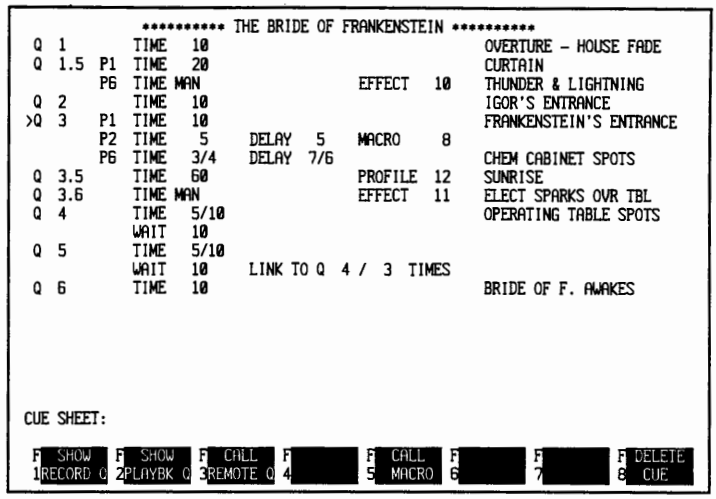
Cue Sheet Display

The Cue Sheet display lets you create or modify cue parameters and view the sequence of cues.

Press

CUE SHEET

to see the *Cue Sheet* display.



- **Red** cue or part numbers show fades in progress on fader handles.
- **Magenta** cue or part numbers show phantom fades in progress.
- The **Yellow** cue number shows the on stage cue.
- > shows the current cue referenced in record commands or last shown in the *Preview* display.

Function Keys

F1 SHOW RECORD Q | F2 SHOW PLAYBK Q | F3 CALL REMOTE Q | F4

F5 CALL MACRO | F6 | F7 | F8 DELETE CUE

Navigation

NEXT selects the next cue or part.

LAST selects the previous cue or part.

PAGE+ pages forward through *Cue Sheet* display.

PAGE- pages backward through the *Cue Sheet* display.

F1 pages the display to show the current Record cue.

F2 pages the display to show the current Playback cue.

System Functions

PRINT SCREEN ← prints the current left hand display if the printer is active.

PRINT SCREEN → prints the current right hand display if the printer is active.

Modify Cue Parameters

CUE [#] PART [#] TIME [#] / [#] DELAY [#] / [#] **[attribute]** [#] COMMENT **[text]** *

Modifies cue parameters as specified. This command does not change channel levels. If the cue number or part number are not specified, the cue with the pointer ▶ in the *Cue Sheet* display is assumed. You can attach one of the four cue attributes (Profile, Effect, Macro, or Remote-Q) to the cue if required.

> *In any command with comments, the comments must be the last item in the command list.*

Assign a Profile to a Cue

CUE [#] PART [#] TIME [#] / [#] DELAY [#] / [#] PROFILE [#] / [#] COMMENT **[text]** *

Creates or modifies a profile cue. You can specify a split profile (different profiles for the up-fade and down-fade) if required. You cannot attach an effect, macro, or Remote-Q call to a cue which uses this attribute.

Add an Effect to a Cue

CUE [#] PART [#] TIME [#] / [#] DELAY [#] EFFECT [#] COMMENT **[text]** *

Creates or modifies an effect cue. If you enter a split time for an effect, the effect is faded in or out in the second time specified. You cannot attach a profile, macro, or Remote-Q call to a cue which uses this attribute.

Add a Macro to a cue

CUE [#] PART [#] TIME [#] / [#] DELAY [#] / [#] F5 [#] COMMENT **[text]** *

Creates or modifies a macro cue. The macro is executed when the first delay times out. The command line belonging to the console requesting the cue execution is used to execute the macro. If the last command stored in the macro is unterminated, it can be started at the operator's discretion. The same cue/part can be used to fade lighting levels, but the fade uses the default profile. You cannot attach a profile, effect, or Remote-Q call to a cue which uses this attribute.

Add Remote-Q to a Cue

CUE [#] PART [#] TIME [#] / [#] DELAY [#] / [#] F3 [#] COMMENT [text] *

Creates or modifies a remote cue call. This sends a cue number and GO signal to devices attached to the Remote-Q Out port. You cannot attach a profile, effect, or macro to a cue which uses this attribute.

Control Cue Sequencing

CUE [#] WAIT [#] *

Creates or modifies a follow-on delay. If the time value is not specified, this command deletes the WAIT cue.

CUE [#] LINK TO CUE [#] / [count] *

Creates or modifies the link to an out-of-sequence cue. If the cue number is not specified, this command deletes the link. If the link is backward, you can specify the link count. On execution, when the link count is exhausted, the backward link is not taken and the sequence proceeds to the next cue. Every time the link count is exhausted, it is reset before proceeding to the next cue, allowing nested backward links with the inner links fully counted out for each execution of an outer link.

Delete a Cue

F8 [#] PART [#] Q-ONLY TRACK * ARE YOU SURE ? *

Deletes the specified cue and/or cue part.

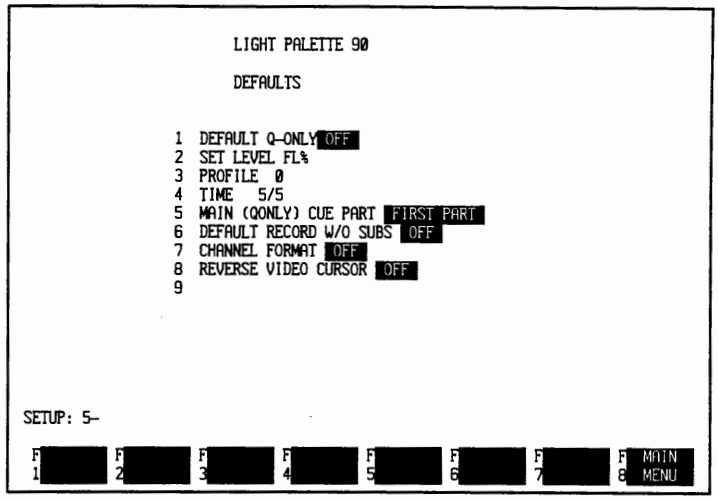
Defaults Menu

The *Defaults* menu lets you set various system defaults as required.

Press

SETUP 5

to see the *Defaults* menu.



Function Keys

F1 F2 F3 F4

F5 F6 F7 F8 MAIN MENU

Cold Start Status

The cold start status for system defaults are:

- Default Q-ONLY = OFF (displayed in red)
- Set Level = FULL
- Default Profile for cues = 0 (linear fade)
- Default Fade Time for cues = 5 seconds
- Default main cue part = First Part
- Default Record w/o Subs = OFF
- Channel Format = OFF (all channels displayed)
- Reverse Video Cursor = OFF

Navigation

F8 or 0 returns you to the *Setup* display.

System Functions

PRINT SCREEN ← prints the current left hand display if the printer is active.

PRINT SCREEN → prints the current right hand display if the printer is active.

Menu Commands 1 *

Toggles cue recording and modification mode between Q-Only (ON) and Track (OFF) modes.

2 [level] *

Sets the lighting level associated with SET.

3 [#] *

Sets the default dimmer profile curve number to be appended to all cue creation commands (unless overridden). If you do not specify a profile number, there is no default profile.

4 [#] * or 4 [#] / [#] *

Sets the default fade time for cues. The default fade time can be a single or split time. If you do not specify a time value the default becomes MAN. You can create a default manual split time by first setting the default to manual and then splitting it (4 / *).

5 *

Changes the cue part number assigned to a cue without parts. When this item is FIRST PART a cue without parts is actually cue X part 1. You will get an error message if you try to create a part 1 for any cue, since it already exists. When this item shows LAST PART a cue without parts is actually cue X part 8 and you get an error message if you try to create a part 8. The part number does not appear on the command line until there are at least two parts to a cue.

6 *

Swaps the function of RECORD and F1 RECORD W/O SUBS in the *Live* and *Preview* displays. When this is OFF the display shows F1 RECORD W/O SUBS and RECORD functions normally. When this is ON the display shows F1 RECORD and RECORD acts as a "Record Without Subs" key. This is very useful if you wish to record cues without submaster information most of the time.

7 *

Toggles the channel format status. Channel displays show all channels when this is ON and only channels used in the show when this is OFF.

The status of this function is not stored on disk.

F8 *

Toggles the playback cursor status. The playback cursor uses reverse video and color across the entire screen to identify active cues when this function is ON, and uses only color to identify active cues when this is OFF.

Dimmer Output Configuration Menu

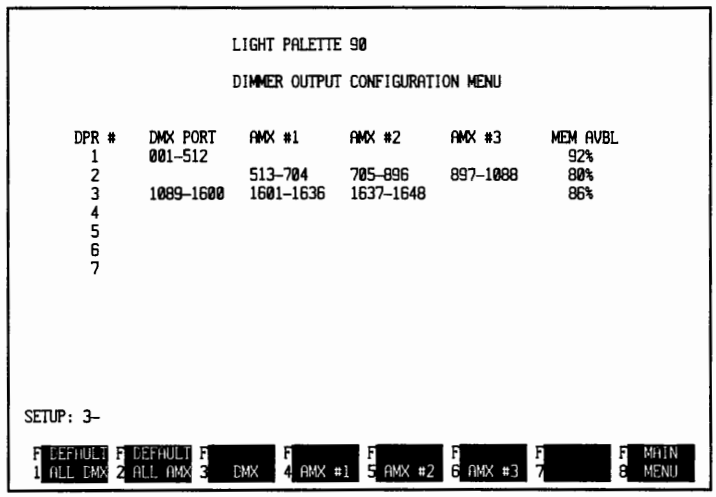
The *Dimmer Output Configuration* menu lets you tell the system what type of dimmers you have, and which outputs should control the dimmers.

> *You should set up your patching - particularly the 6K/12K assignments - before filling out the data in this display.*

Press

SETUP 3

to see the *Dimmer Output Configuration* menu.



Red text shows the DPR (Dimmer Processor card) currently active for modification.

Percentages under MEM AVBL show memory available for each DPR card. Each DPR card handles all processing for its own channels (including cue level storage and patching). Each DPR card may show different availability for its memory.

Function Keys

F1 DEFAULT ALL DMX F2 DEFAULT ALL AMX F3 DMX F4 AMX #1

F5 AMX #2 F6 AMX #3 F7 F8 MAIN MENU

Navigation

F8 or 0 returns you to the *Setup* display.

1 through 7 select a dimmer processor (DPR) for modification.

NEXT selects the next dimmer processor (DPR) for modification.

LAST selects the previous dimmer processor (DPR) for modification.

> *You cannot select a nonexistent DPR card.* NEXT *and* LAST *are inactive if you have only one DPR card.*

System Functions

PRINT SCREEN ← prints the current left hand display if the printer is active.

PRINT SCREEN → prints the current right hand display if the printer is active.

Commands

F1 *

Sets all dimmer outputs to DMX for the selected DPR card. The system assumes 512 dimmers per card.

F2 *

Sets all dimmer outputs to AMX for the selected DPR card. The system assumes 192 dimmers per port and 576 dimmers per card.

F3 [list] *

Sets the dimmer numbers to be output from the DMX output of the currently selected DPR card. The dimmer list must be a single "thru list" of contiguous dimmers, with no more than 512 dimmers.

F4 [list] *

Sets the dimmer numbers to be output from the AMX #1 output of the selected DPR card. The dimmer list must be a single "thru list" of contiguous dimmers, with no more than 192 dimmers.

F5 [list] *

Sets the dimmer numbers to be output from the AMX #2 output of the selected DPR card. The dimmer list must be a single "thru list" of contiguous dimmers, with no more than 192 dimmers.

F6 [list] *

Sets the dimmer numbers to be output from the AMX #3 output of the selected DPR card. The dimmer list must be a single "thru list" of contiguous dimmers, with no more than 192 dimmers.

The total number of assigned dimmers on all ports must be 576 or less per DPR card. Ports can not overlap.

Mantrix Rack Ordering

Some Strand Lighting consoles have automatically compensated for Mantrix consoles, which output 96 dimmer signals from their #1 dimmer output, rather than 192. If you have a dimmer bank wired for Mantrix consoles, you can access dimmers properly by assigning 96 dimmers to AMX #1 and 192 dimmers to AMX #2.

Assigning any dimmers as 6K/12K dimmers in the Patch *display will decrease the maximum number of dimmers per port. This is because 2 dimmer output signals are used for each dimmer assigned as 6K/12K. For instance, the maximum number of dimmers allowed on an AMX192 port with 2 6K/12K dimmers assigned is 190 dimmers, rather than the normal 192 dimmers.*

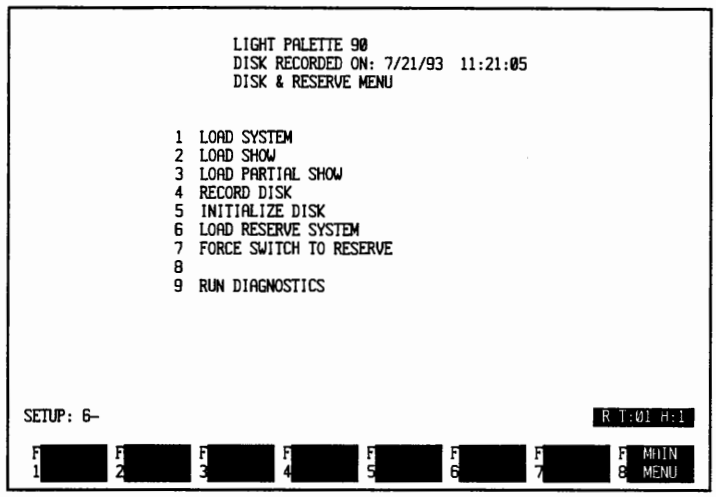
Disk & Reserve Menu

The *Disk & Reserve* menu lets you initialize, read, and write to disks, load the reserve system, force a switch to the reserve system for testing, and check system status using the diagnostics.

Caution

You can perform other operations using other consoles or remotes while disk operations are in progress. However, you should not try to change system or show parameter data while the disk is running.

Press [SETUP] [6] to see the *Disk & Reserve* menu.



Read/write status information appears in the lower right corner of the right hand monitor (whether or not you have swapped screens) while all disk functions are in progress. This shows the transaction status (R=read, W=write, V=verify), and the current disk head and track number. This information remains on screen until you press [CLEAR] or swap screens to force a redraw.

Function Keys

[F1] [F2] [F3] [F4]
[F5] [F6] [F7] [F8] MAIN MENU

Move Around the Display

[F8] or [0] returns you to the *Setup* display.

System Functions

[PRINT SCREEN] [←] prints the current left hand display if the printer is active.

[PRINT SCREEN] [→] prints the current right hand display if the printer is active.

Read From Disk

[1] [*] ARE YOU SURE ? [*]

Loads system parameters (definitions, configuration, numbers of dimmers and channels) and the show (cues, groups, effects, subs, profiles, and patch).

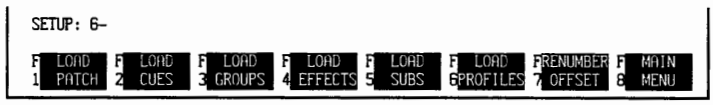
2 * ARE YOU SURE ? *

Loads everything except Number of Channels, Number of Dimmers, and Notes.

Due to extensive data verification to insure data integrity, loading a show using 1 LOAD SYSTEM or 2 LOAD SHOW can take 60-90 seconds. If you only need to load specific items (e.g., cues and patch) you can speed up the process by loading only those items using 3 LOAD PARTIAL SHOW.

3

Posts the Function keys shown below, letting you retrieve parts of the recorded show.



Caution

***All partial loads will write over the data for the item type you are loading**, but the system will not ask for confirmation.*

3 F1 * ARE YOU SURE ? *

Loads only the patch information (channel patch, dimmer names, profiles assigned, and profile assignment).

This option loads all patching and dimmer output port information. It does not load dimmer profiles. You must use F6 LOAD PROFILES to load the appropriate dimmer profiles if required.

3 F2 **[list]** F7 **[#]** * ARE YOU SURE ? *

Loads only the listed cue(s). Loads all cues if you skip **[list]**. F7 RENUMBER OFFSET (if used) adds the specified offset to the cue number as it stores the cue in memory. For example, cues 1, 2.2, and 10 with an offset of 50 are stored in memory as 51, 52.2, and 60.

3 F3 **[list]** F7 **[#]** * ARE YOU SURE ? *

Loads only the listed group(s). Loads all groups if you skip **[list]**. F7 RENUMBER OFFSET (if used) adds the specified offset to the group number as it stores the group in memory.

3 F4 **[list]** F7 **[#]** * ARE YOU SURE ? *

Loads only the listed effect(s). Loads all effects if you skip **[list]**. F7 RENUMBER OFFSET (if used) adds the specified offset to the effect number as it stores the effect in memory.

3 F5 **[list]** F7 **[#]** * ARE YOU SURE ? *

Loads only the submasters(s) specified. Loads all submasters if you skip **[list]**. F7 RENUMBER OFFSET (if used) adds the specified offset to the submaster number as it stores the submaster in memory.

3 F6 **[list]** F7 **[#]** * ARE YOU SURE ? *

Loads only the profile(s) specified. Loads all profiles if you skip **[list]**. F7 RENUMBER OFFSET (if used) adds the specified offset to the profile number as it stores the profile in memory.

Record Disk

4 * ARE YOU SURE ? *

Records all system information and the requesting console show onto disk.

Caution

This will write over any data already on the disk. *The disk must be initialized before you attempt to write to it.*

Due to extensive data verification to insure data integrity, recording a show to disk can take 60-90 seconds.

Initialize Disk

5 * ARE YOU SURE ? *

Initializes a diskette. This must be done before you try to record any shows on the disk.

Caution

This erases all data on the disk.

Due to formatting verification and disk integrity checks, disk initialization can take 3-4 minutes. After formatting the disk, this routine writes to and then reads back from every location on disk.

Disk Error Messages

If there are problems with a disk transfer, the system posts the following message:

```
ERROR STATUS (#):[####] RETURNED ON DISK REQUEST
```

The number in parentheses shows the following:

1 = Bad media
2 = Write protect error or no disk in disk drive
4 = Hardware error
8 = No disk to read, or read error

Please write down the numbers in the square brackets and contact Strand Lighting Field Service if you receive a hardware error code (4).

Handling Floppy Disks

This equipment uses hard-shelled micro floppy disks for library storage and backup. The system can format any industry standard 3.5" High Density disk (2.0Mb unformatted or 1.44Mb formatted capacity) disk.

To show that the disk drives are getting power, their indicator lights are always glowing. The indicator light on the active drive comes ON to FULL when disk transfer operations are in progress.

Caution

Make at least two copies of all essential data. *Ideally, use 3 disks. When changes are made, make two copies of current data and keep the third disk as backup.*

DON'T *leave disks unprotected. Always place disks in protective container when not in use.*

DON'T *force disks into drives. If there is resistance, find and fix the cause before insertion.*

DON'T *try to read a disk that has been formatted but has no data on it.*

DON'T *store disks where temperature exceeds 100° F.*

DON'T *store disks in areas of large magnetic fields.* ***If your dimmer racks are in the same room as the console, keep disks as far away from the dimmer racks as possible. Never place disks next to or on top of operating stage dimmers. Data will be lost.***

DON'T *power the console up or down with a disk installed in the disk drive. Power spikes can alter data on disks.*

DON'T *smoke while handling disks or operating the console.*

DON'T *transport the console with a disk in the disk drive. This will not harm the disk, but leaves the disk release push-button out and easy to damage.*

DON'T *count on a disk manufacturers lifetime guarantee and ignore the above cautions. Some manufacturers guarantee data recovery, but meanwhile your show data is out of reach.*

Disks do not last forever. As they wear out they can generate data errors. Check manufacturers recommended life span and retire disks before they become unreliable. A "lifetime" warranty simply means that the manufacturer will replace the disk and/or try to recover its data if there are problems. It does not help you get your show data back.

Reserve System Control 6 *

Loads the reserve system with the entire contents of active system, including all system and show information. This is usually done after disk information is loaded into the main system.

7 *

Forces the active system to stop requesting control, which gives control to the reserve system.

In full backup towers, the system is constantly monitoring its link with the reserve system. If this link is lost, or if the system sees indications that the reserve system is not tracking correctly, you will see:

```
RESERVE NOT RESPONDING TO HEALTH CHECK
```

If this happens, wait until the show is over and switch to the reserve system to make sure it is operating, then switch back to the main system and use 6 LOAD RESERVE SYSTEM to reload the reserve system and start it tracking.

Caution

If the reserve system has failed, the lights will go OFF when you do this. *Do not do this during a show.*

Whenever you switch from main to reserve system control, there will be a few seconds while the various consoles and remotes establish communication with the processor tower. The following messages will appear on your displays:

```
ATTEMPTING TO ESTABLISH COMMUNICATION WITH THE TOWER
COMMUNICATIONS LINK IS UP
```

During this process, the stage lights will remain unchanged.

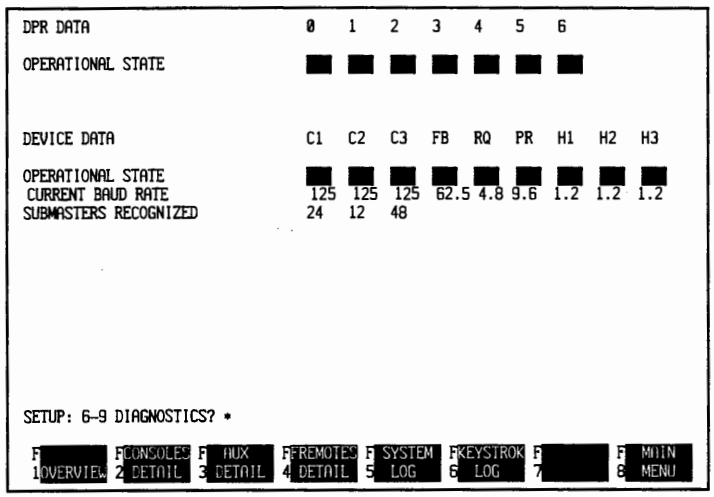
Diagnostics Overview [9]

Opens the *Diagnostics Overview* display. This lets you check on the status of various peripherals. This lets you check on the status of various peripherals. Lightpalette 90 has the capability of checking on its various parts as long as the main processors and the communication link between the main console and the processor tower are functioning.

Press

[9]

to see the *Diagnostics Overview* display.



The DPR Data Operational State blocks are 3 character blocks color coded to show Dimmer Processor status as follows:

- **Green** - Dimmer Processor card is functioning properly
- **Yellow** - Dimmer Processor card not installed
- **Red** - Dimmer Processor card is installed but not functional, or is incorrectly strapped

The Device Data Operational State blocks are 3 character blocks color coded to show device status as follows as follows:

- **Green** - device is functioning properly
- **Yellow** - device is not enabled
- **Red** - device is enabled but is not functional

The Current Baud Rate is listed in thousands.

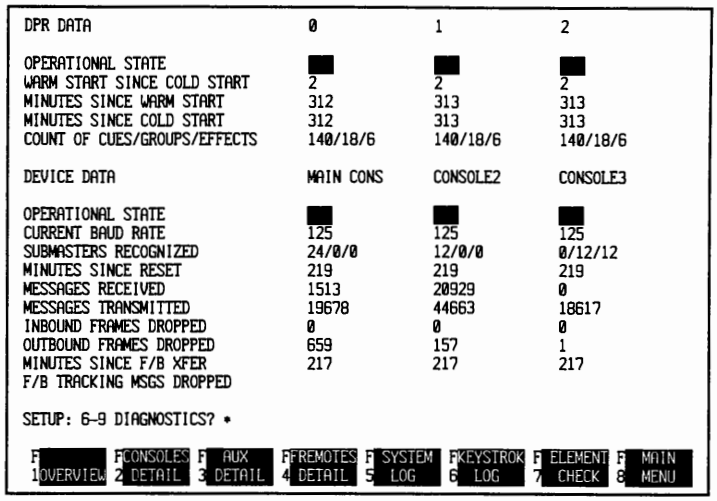
Diagnostics Detail

From the *Diagnostics Overview* display, you can access the 3 detail dislays by using the Function keys.

Press

F2

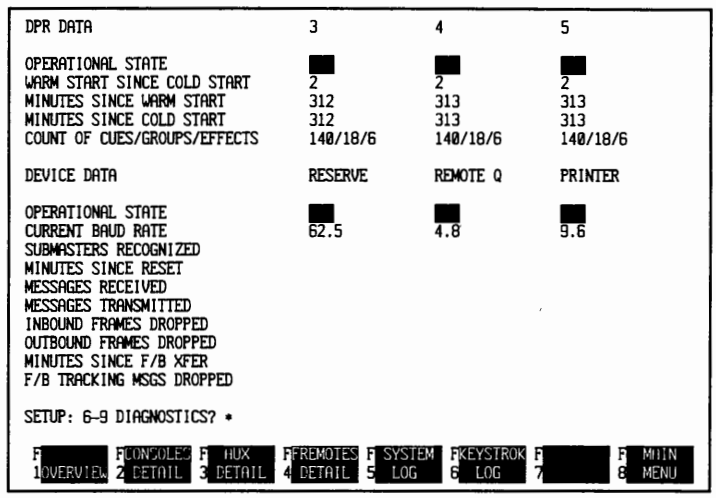
to see the *Diagnostics Console Detail* display.



Press

F3

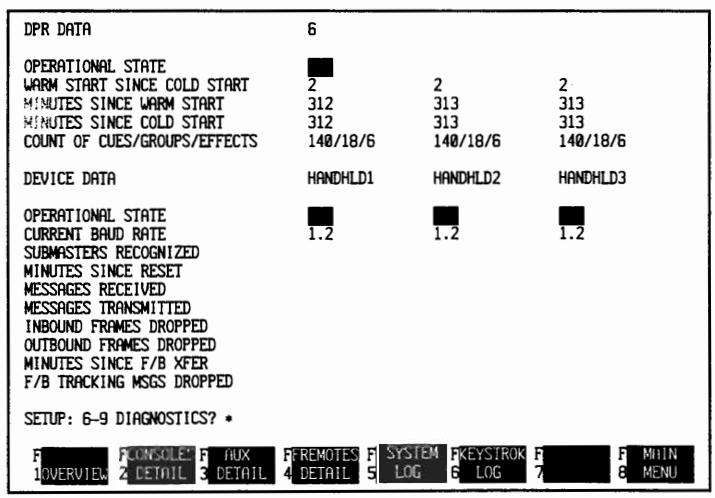
to see the *Diagnostics Aux Detail* display.



Press

F4

to see the *Diagnostics Remote Detail* display.



The color coded status blocks have the same meaning in the detail displays as in the overview display. The 3 numbers across from the Submasters Recognized heading are:

- Submasters in main console housing
- Submasters in first half of outrigger
- Submasters in second half of outrigger

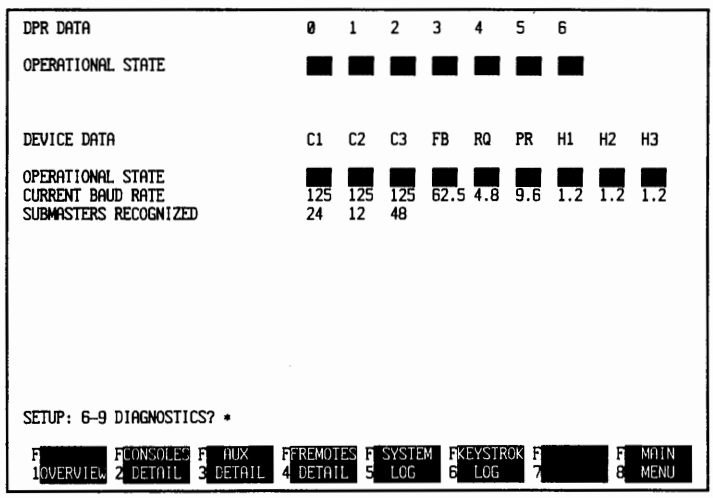
> *Not all of the categories apply to every device. For instance, the only device with any items across from* F/B TRACKING MSGS DROPPED *should be the reserve system.*

Press F5 to see the system log. The system log contains error messages recently posted to the message line. It is written to disk when you record a show, but is not read back into the system by the Load System or Load Show commands. The system log on the disk helps Field Service personnel diagnose system problems remotely.

Press F6 to see the keystroke log. The keystroke log contains the last 1000 or so keystrokes. It is written to disk when you record a show, but is not read back into the system by the Load System or Load Show commands. The keystroke log on the disk helps Field Service personnel diagnose system problems remotely.

Press F7 to do an element count check. You should need to use this only if you have gotten an "Element Count" error on your system. Please see the Basic Troubleshooting chapter for additional details.

Press F1 to return to the *Diagnostics Overview* display.



Press F8 or 0 to return to the *Disk and Reserve* menu.

Effect Display

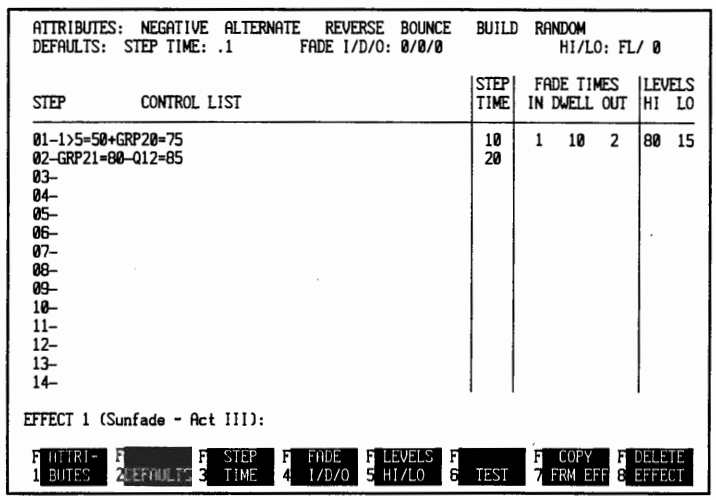
The Effect display lets you set up special effects for later playback. Effects can consist of up to 99 steps, each of which can be composed of channels, cue end states, groups, subs, and other effects used as channel lists. Since you can use cue end states as part of a step definition, you can use effects to run a series of cues repeatedly. This display lets you set the step time (time between this step and the next), the fade-in time, the dwell time (time that the effect is at its HI level), and fade-out time. Since the total of fade-in, dwell, and fade-out times can be greater than the step time, effect steps can overlap. Steps are taken in a looping manner, with the last step usually followed by the first step.

Although you can have up to 99 steps in each effect, you can only run a total of 128 loaded steps at a time.

Press

EFFECT [#] [*]

to see the *Effect* display for the specified effect.



- **Magenta** step time, fade times, or levels show levels derived from default settings. If you change the defaults, these items will change.
- **Aqua** step time, fade times, or levels show levels specifically entered. If you change the defaults, these items will not change.

Function Keys

F1 ATTRI-BUTES F2 DEFAULTS F3 STEP TIME F4 FADE I/D/O

F5 LEVELS HI/LO F6 TEST F7 COPY FRM EFF F8 DELETE EFFECT

Navigation

NEXT selects the next step or effect.

LAST selects the previous step or effect.

If the step number is displayed on the command line, this action moves the cursor to the next or last effect step. If no step number is displayed this action shows the next or last effect.

HOME opens the cursored effect step for editing.

PAGE+ pages forward through the display.

PAGE- pages backward through the display.

← moves the cursor one object left on the command line.

→ moves the cursor one object right on the command line.

System Functions

PRINT SCREEN ← prints the current left hand display if the printer is active.

PRINT SCREEN → prints the current right hand display if the printer is active.

Specify Step Number **[#][#]**

Specifies the step number if it is not on the command line. You must enter 2 digits. Each time you complete a command with * you must address the step number.

Specify Chase Parameters **[step][list]***

Lets you specify the list of channels that will be controlled by this effect and its attributes. Your control list can be up to 50 characters long and can can be composed of channels, cue end states, groups, subs, and other effects used as channel lists.

[step]F3[#]F4[in]/[dwell]/[out]F5[hi]/[lo]*

F3 STEP TIME, F4 FADE I/D/O (in/dwell/out), and F5 LEVELS HI/LO let you specify the control list, step time, fade times, and levels for the current effect step. If you do not specify fade time, step time, or levels for a step the system uses the default values.

Specify Chase Attributes F1

Presents another list of Function keys which let you select effect attributes. Any number of effect attributes can be active in an effect.

Each Function key is now an alternate action switch for selecting an attribute. Active attributes (ON) appear in reverse video at the top of the display. Press F8 RETURN when you are done selecting attributes. If all attributes are OFF the chase starts with all channels OFF (LO level). Each step turns its assigned channels ON (HI level) and previous step channels OFF.

NEGATIVE

At chase start, all channels are ON (HI level). Subsequent steps turn assigned channels OFF (LO level) and previous step channels ON. This attribute has no effect on scroller colors.

ALTERNATE

Causes each pass through the step list to alternate between negative (NEGATIVE ON) and positive (NEGATIVE OFF) chases. The state of the first pass is determined by the state of NEGATIVE. This attribute has no effect on scroller colors.

REVERSE

Causes steps to execute in reverse numerical order.

BOUNCE

Causes each pass through the step list to alternate between normal (REVERSE OFF) and reverse (REVERSE ON) chases. The direction of the first pass is determined by the state of REVERSE.

For this attribute, the first and last steps are executed twice. LP90 executes the last step on its forward pass, then executes it again at the start of its reverse pass. To make all steps the same length, set the step time for the first and last steps to half of its value in other steps.

BUILD

If NEGATIVE is OFF, all lights are OFF (LO level) at chase start. Each step turns its assigned channels ON (HI level), without turning the previous step channels OFF. All lights are turned OFF to start the next pass.

If NEGATIVE is ON, all lights are ON (HI level) at chase start. Each step turns its assigned channels OFF (LO level), without turning the previous step channels ON. All lights are turned ON to start the next pass.

RANDOM

Steps are taken in random order. REVERSE and BOUNCE have no effect on this attribute.

If you make an effect using ALTERNATE and BUILD at the same time the last step will bump to the first. To avoid this, include a blank "dummy" step as the last step of the effect.

Specify Chase Defaults F2

Presents another list of Function keys which let you select defaults for the current effect.

F3 [time] ✱

Sets the default step time for the effect.

F4 [in] / [dwell] / [out] ✱

Sets the default in, dwell, and out time for the effect.

F5 [high] / [low] ✱

Sets the default high channel level and default low channel level for the effect.

F8

Returns you to the main *Effect* display.

Test an Effect F6

Loads the current effect onto lowest numbered unused submaster for testing. Pressing **TEST** again stops the effect and unloads the submaster.

Copy an Effect F7 [#] ✱

Copies data from the specified effect into the current effect. All data for the current effect is lost.

Delete an Effect F8 ✱ ARE YOU SURE ? ✱

Deletes (clears and removes) the current effect.

Label an Effect COMMENT [text] ✱

Specifies the comment which appears at top of *Effect* display and on the *Playback Subs* display when the effect is loaded onto a submaster. Your comment can be up to 25 characters long, but only the first seven characters are shown on the *Playback Subs* display.

Add an Effect to a Cue

[CUE] [#] [PART] [#] [TIME] [duration] [/] [fade-in time] [DELAY] [#] [EFFECT] [#] [COMMENT] [text] [*]

Creates or modifies a cue that will start an effect. The first time entered is the total time the effect will run. The second time is the time it takes for the effect to fade in. You can fade a cue out by setting the time to some arbitrarily large number (less than 999) and creating an effect fade-out cue. You cannot attach a profile, macro, or Remote-Q call to a cue which uses this attribute.

You cannot enter an effect into a cue or part that already has channel levels recorded. If you want to add an effect to a cue, you must add it in a new part.

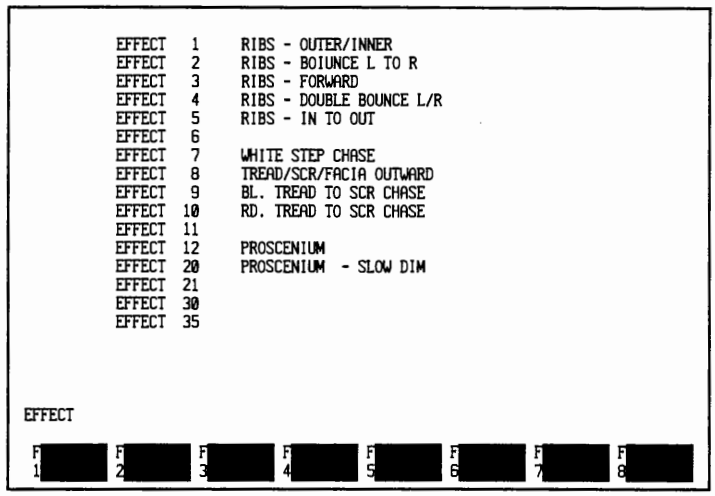
[CUE] [#] [PART] [#] [TIME] [0] [/] [fade-out time] [DELAY] [#] [EFFECT] [#] [COMMENT] [text] [*]

Creates or modifies a cue that will stop an effect. The [0] entered just after [TIME] sets this as a fade-out cue.The second time is the time it takes for the effect to fade out. This cue will do nothing if it is started after the effect has already timed out. You cannot attach a profile, macro, or Remote-Q call to a cue which uses this attribute.

Effect Summary Display

The Effect Summary display lets you see a list of all available effects. Each effect entry shows the effect number and the comment you attached to the effect. This lets you page through the list to find an effect by its description rather than by its number.

Press [EFFECT] to see the *Effect Sumary* display.



Navigation

[PAGE+] pages forward through the effect list.

[PAGE-] pages backward through the effect list.

System Functions

[PRINT SCREEN] [←] prints the current left hand display if the printer is active.

[PRINT SCREEN] [→] prints the current right hand display if the printer is active.

Select and Display an Effect

[#] [*]

Displays the selected effect.

[*]

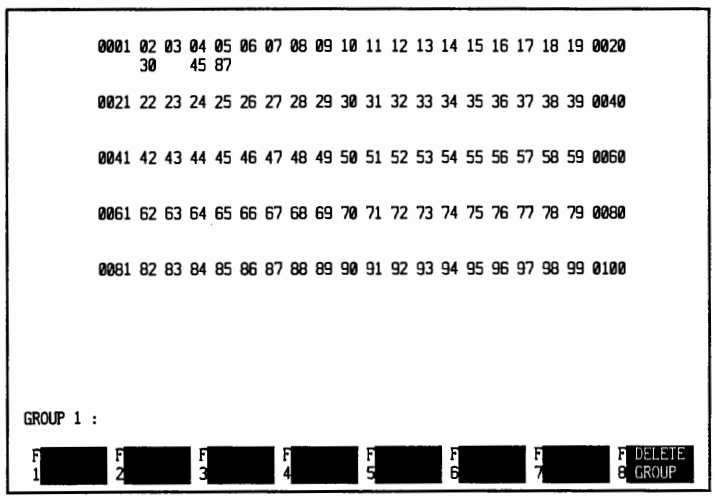
Displays the last effect edited.

Group Display

Groups let you create subsets of balanced lighting from which you can assemble more complex combinations. You can load groups onto submasters and balance them against each other. You can also record intermediate and final looks into other submasters, groups, or cues. You can define up to 999 group numbers.

Since groups take up memory just as cues do, you should generally make sure you eliminate groups once you no longer need them. Remember that cues can be used in much the same manner as groups, to specify channel levels and channel lists for other cues, submasters, etc.

Press
DISP GROUP [#] [*]
to see the *Group* display for the specified group.



Function Keys

F1 F2 F3 F4
F5 F6 F7 F8 DELETE GROUP

Navigation

NEXT displays the next group for preview or editing.

LAST displays the previous group for preview or editing.

PAGE+ pages forward through the displayed group.

PAGE- pages backward through the displayed group.

[channel or element] [*] goes to the display page with the lowest selected channel. If you are using a console with full privileges, the channel or element is also placed on the **LEVEL WHEEL**.

System Functions PRINT SCREEN ← prints the current left hand display if the printer is active.

PRINT SCREEN → prints the current right hand display if the printer is active.

Edit a Group **[list] @ [level] ***

Assigns listed elements to the **LEVEL WHEEL** at the specified level.

[list] SET

Assigns listed elements to the **LEVEL WHEEL** at the Set Level value specified in Setup (immediate action).

[list] OUT

Assigns listed elements to the **LEVEL WHEEL** and sets them to zero (immediate action)

[list] -10%

Decreases levels of listed elements by 10% (immediate action).

[list] +10%

Increases levels of listed elements by 10% (immediate action).

Delete a Group **F8 [#] ***

Deletes the specified group.

Label a Group **COMMENT [text] ***

Specifies the text that will appear on the group command line, the submaster command line if the group is loaded onto a submaster, and the *Playback Subs* display. Comments can be up to 25 characters long, but only the first seven characters are shown on the *Playback Subs* display.

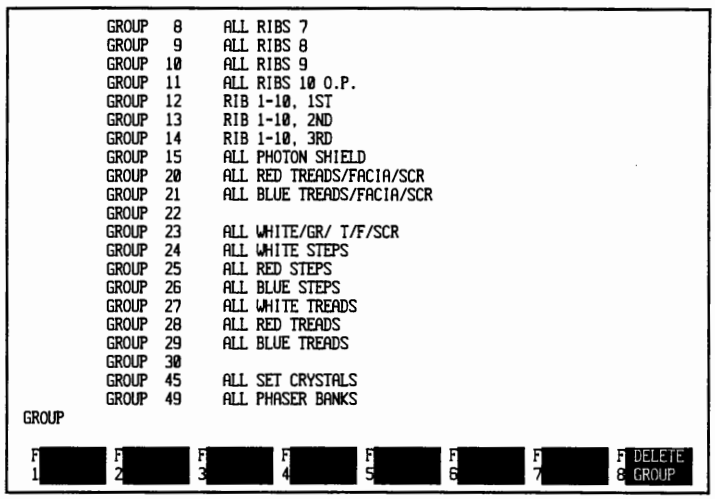
Group Summary Display

The *Group Summary* display lets you see a list of all available groups. Each group entry shows the group number and the comment you attached to the group. This lets you page through the list to find a group by its description rather than by its number.

Press

DISP GROUP

to see the *Group* display for the selected group.



Function Keys

F1 F2 F3 F4

F5 F6 F7 F8 DELETE GROUP

Navigation

PAGE+ pages forward through the group list

PAGE- pages backward through the group list

System Functions

PRINT SCREEN ← prints the current left hand display if the printer is active.

PRINT SCREEN → prints the current right hand display if the printer is active.

Select and Display a Group

[#] *

Displays the selected group.

*

Displays the last group edited.

Live Display

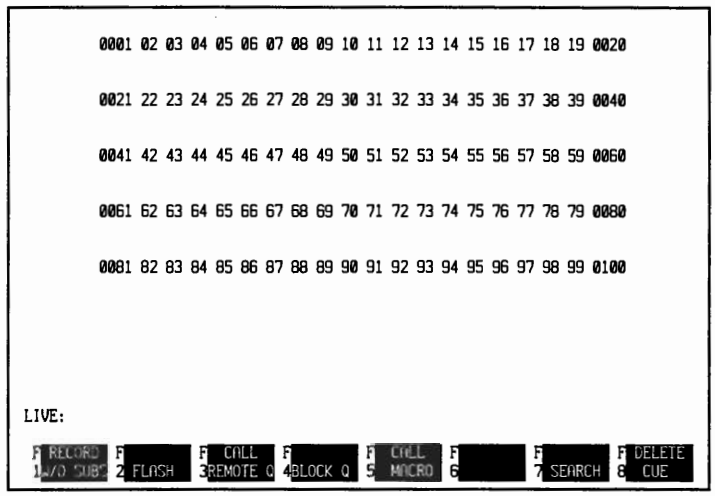
The Live display lets you set channel levels on stage and record these levels into cues, groups, and submasters.

When recording or modifying cues you do not need to specify parameters which are already recorded properly, or which have an appropriate default value for the cue. Command sequences in this section show how to record cues if you are going to change everything.

Press

[LIVE]

to see the *Live* display.



- **Magenta** channels are going up in this cue.
- **Green** channels are going down in this cue.
- **Aqua** channels remain the same as the previous cue.
- **White** channels with no background are channels blocked in this cue, or which were on the wheel and cleared.
- **White** channels with red background are on the wheel.
- **Yellow video** shows levels sourced by a submaster.

Function Keys

[F1] RECORD W/O SUBS [F2] FLASH [F3] CALL REMOTE Q [F4] BLOCK Q

[F5] CALL MACRO [F6] [F7] SEARCH [F8] DELETE CUE

Navigation

[NEXT] selects the next single channel or dimmer if a channel or dimmer is already selected.

[LAST] selects the previous single channel or dimmer if a channel or dimmer is already selected.

[PAGE+] pages forward through the *Live* display.

[PAGE-] pages backward through the *Live* display.

[channel or element] [*] goes to the display page with the lowest selected channel. If you are using a console with full privileges, the channel or element is also placed on the **LEVEL WHEEL.**

System Functions

[PRINT SCREEN] [←] prints the current left hand display if the printer is active.

[PRINT SCREEN] [→] prints the current right hand display if the printer is active.

[EXPAND REC] expands the *Live* display so that additional channels show on the playback monitor in place of the *Playback Cues* or *Playback Subs* display. The *Fader Status* display remains on the bottom of the playback monitor. Pressing this key again returns the display to normal.

General Notes

You can swap the [REM DIM] and [F1] buttons on your console by setting item 6 in the *Defaults* menu. If you have done this, the functions of the two keys will be reversed in the commands listed below.

> *In any command with comments, the comments must be the last item in the command list.*

Set Channel Levels

When modifying channel levels, **[list]** can include channels, group lists, group levels, cue channel lists, and cue channel levels. Please see the *Control Lists* section of this chapter (page 84) for more details.

[list][@][level][*] or [.][list][@][level][*]

Assigns the listed lamp channels to the **Level Wheel** and puts them on stage at the specified level. Scroller channels in the list are ignored.

[.][.][list][@][color][*]

Assigns scrollers for the listed channels to the **Level Wheel** and sets the color for the scrollers. Lamp only channels in the list are ignored.

[list][@][level][@][color][*]

Assigns the listed lamp channels to the **Level Wheel** and puts them on stage at the specified level. Also sets the scrollers for any listed lamp/scroller channels to the specified color. Scrollers will not be controlled by the wheel.

[*]

Assigns all channels with levels greater than zero to the **Level Wheel**.

[list][@ FULL][*]

Assigns the listed selectors to the **Level Wheel** and puts them on stage at FULL.

[list][@][level][REM DIM]

Assigns the listed selectors to the **Level Wheel** at the specified level. [REM DIM] then dims all channels which are **not** on the wheel.

[list] SET

Assigns the listed selectors to the **LEVEL WHEEL** and puts them on stage at the Set Level value specified in the *Defaults* display. This function does not require a confirming *.

[list] OUT

Assigns the listed selectors to the **LEVEL WHEEL** and sets them to zero on stage. This function does not require a confirming *.

[list] -10%

Assigns the listed selectors to the **LEVEL WHEEL** and decreases their levels by 10%. This function does not require a confirming *.

[list] +10%

Assigns the listed selectors to the **LEVEL WHEEL** and increases their levels by 10%. This function does not require a confirming *.

[#] F7 *

Searches backwards through cues to find the most recent use of a channel. The system switches to the *Preview* display for the cue and puts the channel on the **LEVEL WHEEL**. Until the command line is cleared, you can use NEXT and LAST to find additional cues which use this channel.

[list] @ **[level]** TAKE CTRL

Assigns the listed selectors to the **LEVEL WHEEL** and puts them on stage at the specified level, even if they are controlled by another console or remote.

TAKE CTRL

Assigns all channels with levels greater than zero to the **LEVEL WHEEL**, even if they are controlled by another console or remote.

Flash Channels

[list] F2 *

Starts the selected channel flashing between 15% and FULL. Press NEXT or LAST when a single channel is selected to scan through the channels. Press CLEAR to stop the channel from flashing and release it from **LEVEL WHEEL** control.

Set Dimmer Levels

DIMMER [list] @ [level] *

Bypasses the patch table, and sets dimmers to the specified level. This unpatches the selected dimmers. They will remain unpatched until you press DIMMER RETURN * (or just RETURN * if you are in the *Unpatch Dimmer* display).

DIMMER [list] RETURN *

Returns the selected bypassed dimmers to channel control. If you do not include a list it will return all dimmers to channel control.

Flash Dimmers

DIMMER [list] F2 *

Bypasses the patch table and flashes the specified dimmer. Press DIMMER RETURN * to stop the flashing.

Record a Cue

[list] RECORD CUE [#] PART [#] TIME [#] / [#] DELAY [#] / [#] [attribute] [#] Q-ONLY TRACK COMMENT [text] *

Records listed channels from stage to a cue, creating or modifying the cue. Records all channels if there is no channel list. Q-ONLY TRACK, if used, reverses the tracking mode of the console for this command only. The system uses existing values or default values for any missing parameters. The maximum length for comments is 25 characters. You can attach one of the four cue attributes (Profile, Effect, Macro, or Remote-Q) to the cue.

[list] F1 [list] CUE [#] PART [#] TIME [#] / [#] DELAY [#] / [#] [attribute] [#] Q-ONLY TRACK COMMENT [text] *

Records listed channels from stage to a cue but suppresses the submaster component from selected subs. Records all channels with levels if there is no channel list. Q-ONLY TRACK, if used, reverses the tracking mode of the console for this command only. The system uses existing values or default values for any missing parameters. The maximum length for comments is 25 characters. You can attach one of the four cue attributes (Profile, Effect, Macro, or Remote-Q) to the cue.

Record a Blocking Cue

[list] RECORD CUE [#] PART [#] TIME [#] / [#] DELAY [#] / [#] [attribute] [#] F4 COMMENT [text] *

Records listed channels from stage to a blocking cue, creating or modifying the cue. Records all channels with levels if there is no channel list. F4 BLOCK CUE forces all channels with no level (tracking channels) to ZERO. The system uses existing values or default values for any missing parameters. The maximum length for comments is 25 characters. You can attach one of the four cue attributes (Profile, Effect, Macro, or Remote-Q) to the cue.

[list] F1 [list] CUE [#] PART [#] TIME [#] / [#] DELAY [#] / [#] [attribute] [#] F4 COMMENT [text] *

Records listed channels to a blocking cue but suppresses the submaster component from listed submasters. Records all channels with levels if there is no channel list. F4 BLOCK CUE forces all channels with no level (tracking channels) to ZERO. The system uses existing values or default values for any missing parameters. The maximum length for comments is 25 characters. You can attach one of the four cue attributes (Profile, Effect, Macro, or Remote-Q) to the cue.

Modify or Delete Cue Parameters

CUE [#] PART [#] TIME [#] / [#] DELAY [#] / [#] [attribute] [#] COMMENT [text] *

Modifies cue parameters as specified. This command does not change cue data (channel levels). If cue # or part # are not specified, the cue with the pointer › in the *Cue Sheet* display is assumed. The system uses default values for missing parameters. You can attach one of the four cue attributes (Profile, Effect, Macro, or Remote-Q) to the cue.

> *You do not need to enter the cue number if the correct cue is on the command line. New information appears on the Cue Sheet display. This procedure does not change recorded channel levels or command line information not specifically included. You can change more than one time value in the same command statement.*

CUE [#] PART [#] TIME *

Deletes the fade time for the selected cue or part. The cue becomes a manual fade.

CUE [#] PART [#] DELAY *

Deletes the delay time for the selected cue or part.

CUE [#] PART [#] WAIT *

Deletes the wait time for the selected cue or part.

Add a Profile to a Cue

CUE [#] PART [#] TIME [#] / [#] DELAY [#] / [#] PROFILE [#] / [#] COMMENT [text] *

Creates or modifies a profile cue. You can specify a split profile (different profiles for the up-fade and down-fade) if required. You cannot attach an effect, macro, or Remote-Q call to a cue with this attribute.

Add an Effect to a Cue

CUE [#] PART [#] TIME [#] / [#] DELAY [#] EFFECT [#] COMMENT [text] *

Creates or modifies an effect cue. If you enter a split time for an effect, the effect is faded in or out in the second time specified. You cannot attach a profile, macro, or Remote-Q call to a cue with this attribute.

Add a Macro to a Cue

CUE [#] PART [#] TIME [#] / [#] DELAY [#] / [#] F5 [#] COMMENT [text] *

Creates or modifies a macro cue. The macro is executed when the first delay times out. The command line on the console requesting the cue execution is used to execute the macro. If the last command stored in the macro is unterminated, it can be started at the operator's discretion. The same cue/part can be used to fade lighting levels, but the fade uses the default profile. You cannot attach a profile, effect, or Remote-Q call to a cue with this attribute.

Add Remote-Q to a Cue

CUE [#] PART [#] TIME [#] / [#] DELAY [#] / [#] F3 [#] COMMENT [text] *

Creates or modifies a Remote-Q call. This sends a cue number and GO signal to devices attached to the Remote-Q Out port. You cannot attach a profile, effect, or macro to a cue with this attribute.

Control Cue Sequencing

CUE [#] WAIT [#] *

Creates or modifies a follow-on delay. If the time value is not specified, this command deletes the WAIT time.

CUE [#] LINK TO CUE [#] / [count] *

Creates or modifies the link to an out-of-sequence cue. If the cue number is not specified, this command deletes the link. If the link is backward, you can specify the link count. On execution, when the link count is exhausted, the backward link is not taken and the sequence proceeds to the next cue. Every time the link count is exhausted, it is reset before proceeding to the next cue, allowing nested backward links with the inner links fully counted out for each execution of an outer link.

Delete a Cue

F8 [#] PART [#] Q ONLY TRACK * ARE YOU SURE ? *

F8 DELETE CUE lets you delete the specified cue and/or cue part.

Record a Group from Stage Levels

[list] RECORD GROUP [#] COMMENT [text] *

Records listed channels to the specified group. Records all channels if there is no channel list.

[list] F1 [list] GROUP [#] COMMENT [text] *

Records listed channels to the specified group, but suppresses the submaster component from selected subs. Records all channels if there is no channel list. Maximum comment length is 25 characters.

Record a Submaster from Stage Levels

[list] RECORD SUB [#] COMMENT [text] *

Records listed channels to the specified submaster. Records all channels if there is no channel list.

Start a Remote Device

CUE [#] F3 [remote cue #] *

Tells the system to send out a start command on port #5 (the Remote-Q Out port) when the fade in the specified cue starts. The command to the external device is taken when the first fade in the cue starts (i.e., after the first delay), not necessarily when you press GO.

Macros

Macros are recorded keystroke sequences that can be played back easily by pressing a single Macro key (M1 through M8) or by using M* and specifying the macro number.

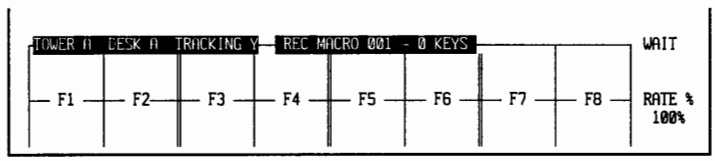
You can record up to 999 macros, the first eight of which are accessible through the eight Macro keys. You can record macros from any command line, and can record and edit macros from the *Macro* display. This section discusses how to record macros from the command line. For a discussion on how to record and edit macros in the *Macro* display, please see page 118 (*Macro Display*).

Macros can be nested (an M* command is embedded somewhere in the middle of the main macro) or chained (the last command in a macro is another M* command) if required. To nest or chain a macro you must use the Macro display to insert the M* command.

Commands with long execution times (such as the commands in the Setup menu) might not execute correctly unless they are the last command in a macro. Subsequent commands must be requested through a separate macro.

To record a macro from any command line, follow these steps:

Press
M* [#] RECORD *
to start recording the macro.



The *Fader Status* display banner shows the macro number and the current keystroke count.

If you already have a macro with the specified number the system will ask OVERRECORD EXISTING MACRO?. Choose CLEAR to cancel the operation or * to record over the selected macro.

Press the keys you wish to be part of the macro.

Press M* to stop recording and return to the command line. The system will ask STOP RECORDING & STORE MACRO?. Choose CLEAR to cancel the operation or * to record the selected macro.

> *You can start macro recording from any display, and can start macro recording while you are setting up a command. The keystrokes are recorded into the macro and executed at the same time. This lets you see the macro as you record it. To record a macro blind, you must record it from the Macro display.*

Macro Display

The Macro display shows you what keys have been recorded in the available macros, and lets you record and edit macros. Up to 999 macros are available through the eight Macro keys or through the use of [M*]. All macros execute with the current display. You can change the current display while the macro is running by specifying a Display key as part of the macro.

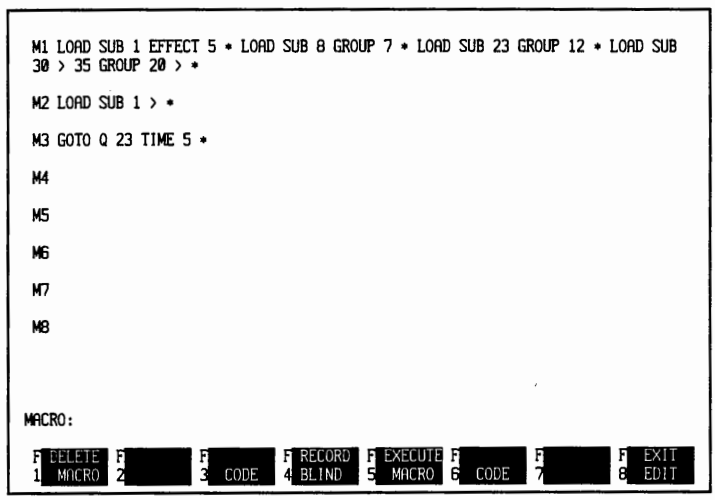
Macros can be nested (an [M*] command is embedded somewhere in the middle of the main macro) or chained (the last command in a macro is another [M*] command) if required.

Commands with long execution times (such as the commands in the Setup menu) might not execute correctly unless they are the last command in a macro. Subsequent commands must be requested through a separate macro.

Press

[MACRO]

to see the *Macro* display.



Function Keys

[F1] DELETE MACRO [F2] [F3] CODE [F4] RECORD BLIND

[F5] EXECUTE MACRO [F6] CODE [F7] [F8] EXIT EDIT

Navigation

[PAGE+] pages forward through the *Macro* display.

[PAGE-] pages backward through the *Macro* display.

System Functions

PRINT SCREEN ← prints the current left hand display if the printer is active.

PRINT SCREEN → prints the current right hand display if the printer is active.

Store a Macro **[up to 120 keys] [macro key]**

Stores up to 120 keys as a macro without execution. You can start this macro by pressing the appropriate macro key. Submaster bump buttons cannot be stored as a part of the macro.

Assign Any Single Key to a Macro

F3 [#] [macro key] or F6 [#] [macro key]

Stores (without execution) the scan code for any key on the keyboard, except bump buttons and Macro keys (see Table 14 on page 122 for a list of keyboard scan codes). This feature lets you specify an alternate method of entering a key which has become inoperative.

Edit a Macro [macro key] or M* [#] *

Brings the selected macro to the command line for editing, or assignment to another macro key if you are not currently editing.

← or →

Moves the cursor left or right one item at a time without changing the command line. Any text or new keys you enter are placed to the left of the current cursor position.

> *Since each key entry is a single item, the cursor highlights the entire text string representing any key entry. It will highlight individual characters when they were entered using the Alpha keyboard.*

CLEAR

Clears the current cursored item.

[key entry]

Places the text string representing the key to the left of the current cursor position. To replace a key entry, position the cursor on the entry, press CLEAR, and press the new key.

F4 [key]

Places **[key]** to the left of the current cursor position. To enter the code for F4 you must press F4 F4. This lets you edit macros containing macro keys, function keys, and display keys.

Only the next key after you press F4 is inserted into the macro. If you press PATCH you will be sent to the *Patch* display. If you press F4 PATCH you will insert the PATCH key into the macro without selecting the macro display. If you press F4 PATCH LIVE you will insert the PATCH key into the macro and switch to the *Live* display.

F5 M* [#] *

Places a reference to the selected macro to the left of the current cursor position.

[macro key] or M* [#] *

Closes the editing for the macro and puts the new data into the selected macro if you are currently editing.

Copy a Macro [macro spec][HOME][macro spec]

Copies the specified macro into a new macro number without deleting the original macro information. **[macro spec]** can be a macro key or a macro specified using [M*][#].

Delete a Macro [F1][macro key] or [F1][M*][#][*]

Clears keys stored in the selected macro.

Nesting and Chaining

You can insert an [M*] command in the middle of a macro (nesting), or at the end of a macro (chaining) by using [F5] EXECUTE MACRO. Record the macro as you would any other macro but use [F5][#][*] to insert an [M*] command or commands as needed. You can nest or chain macros to any number of levels, but you must keep in mind the following restrictions:

- Since the [F4] key has different meanings in each display, you cannot specify macro chaining while recording a macro live. You can record the rest of the macro live if you wish and insert the macro chaining command later.
- The maximum number of keystrokes that the macro buffer can hold at one time is 120.
- [M*] commands are "expanded" when they are encountered. Any keystrokes before the [M*] keystroke are thrown away (since they are already executed) and any keystrokes after the [M*] command are appended to the expanded macro. The maximum number of keystrokes allowed in the macro called by the [M*] command is 120 minus the number of keystrokes after the [M*] command.
- If the [M*] command is the last command in a macro, the macro called by the [M*] command can have 120 keystrokes.
- If you make a macro that creates more than 120 keystrokes when it expands an [M*] command, keystrokes after 120 will be discarded since the macro buffer cannot hold them. Keystrokes up to the 120 keystroke limit will be properly executed.
- Commands with long execution times (such as commands in the *Setup* menu) might not execute correctly unless they are the last command in a macro. Subsequent commands must be requested through a separate macro.

Exit from Edit Mode [F8]

Since all hard display keys can be stored in a macro, this is used to end the editing process without storing the results.

Table 14. Keyboard Scan Codes for Key Reassignment

Code	Key	Code	Key	Code	Key
1	EFFECT (Level keypad)	54	=	107	
2	+10%	55		108	T
3	+	56	SWAP	109	G
4	>	57	LAST	110	B
5	@ (Level keypad)	58	RATE/MANUAL	111	SPACEBAR
6	@ FULL	59	GO TO Q	112	CUE SHEET
7	* (Level keypad)	60	COMMENT	113	UNPATCH DIMMERS
8		61	REM DIM	114	
9	SUB	62	@ (Record keypad)	115	
10	-10%	63	Q ONLY/TRACK	116	R
11	-	64	LIVE	117	F
12	9	65	PREVIEW	118	V
13	6	66	F4	119	
14	3	67	F8	120	NOTES
15		68	P	121	EXPAND RECORD
16		69	:	122	
17	GROUP (Level keypad)	70		123	
18	/	71	* (Alpha keypad)	124	E
19	. (Level keypad)	72	PLAYBACK CUES	125	D
20	8	73	PLAYBACK SUBS	126	C
21	5	74	F3	127	
22	2	75	F7	128	CONTROL
23	0	76	O	129	CHANNELS IN USE
24		77	L	130	
25	CUE LEVEL	78	. (Alpha keypad)	131	
26	OUT	79		132	W
27	SET	80	CHANNEL PATH	133	S
28	7	81	SUBS (Display keypad)	134	X
29	4	82	F2	135	
30	1	83	F6	136	SETUP
31	CLEAR (Level keypad)	84	I	137	PATCH
32	RIGHT_ARROW	85	K	138	
33	PAGE+	86	,	139	
34	TAKE CONTROL	87		140	Q
35	RETURN	88	EFFECT (Display keypad)	141	A
36	RECORD	89	GROUP (Display keypad)	142	Z
37	CUE	90	F1	143	CLEAR (Alpha keypad)
18	TIME	91	F5	144	FADER 1 MANUAL
39	* (Record keypad)	92	U	145	FADER 2 MANUAL
40	HOME	93	J	146	FADER 3 MANUAL
41	PAGE-	94	M	147	FADER 4 MANUAL
42	M*	95		148	FADER 5 MANUAL
43	LOAD SUB	96	PROFILE (Display keypad)	149	FADER 6 MANUAL
44	WAIT	97	MACRO	150	FADER 7 MANUAL
45	PART	98		151	FADER 8 MANUAL
46	DELAY	88		152	RATE
47		100	Y	153	STOP/BACK
48	LEFT ARROW	101	H	154	GO
49	NEXT	102	N		
50	DIMMER	103			
51	LOAD CUE	104	PRINT SCREEN		
52	PROFILE	105			
53	LINK TO Q	106			

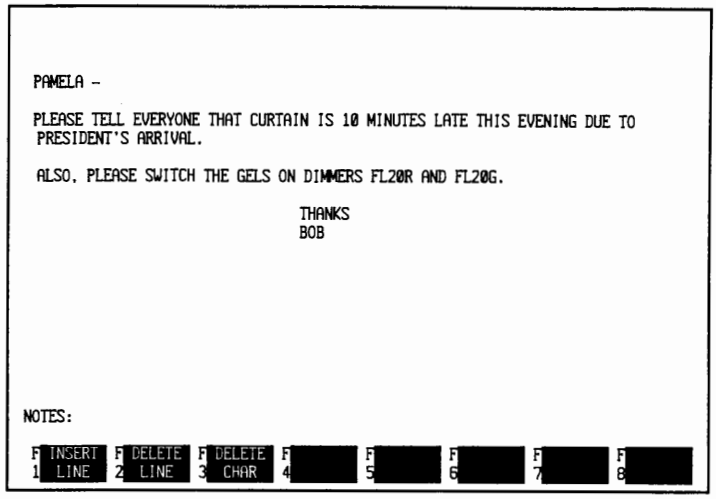
Notes Display

The Notes display lets you type notes to yourself or to others and to print those notes.

Press

NOTES

to see the *Notes* display.



Function Keys

F1 INSERT LINE F2 DELETE LINE F3 DELETE CHAR F4

F5 F6 F7 F8

Navigation

NEXT moves the cursor to the next line if a next line has been established.

LAST moves the cursor to the previous line.

PAGE+ pages forward through the *Notes* display.

PAGE- pages backward through the *Notes* display.

> *The 4000 character maximum for this display could require as few as four pages, but could easily require eight pages if the average line length is only 40 characters.*

← moves the cursor left one character.

→ moves the cursor right one character.

HOME moves cursor to the top left of the first page.

> *If you turn the console OFF with the* Notes *display shown, the* Notes *display will still be on the monitor when you turn the system back ON.*

System Functions

PRINT SCREEN ← prints the current left hand display if the printer is active.

PRINT SCREEN → prints the current right hand display if the printer is active.

Edit Notes F1

Inserts a blank line above the current cursored line.

F2

Deletes the current cursored line from the cursor to the end of the line. If the cursor is at the start of a line, this deletes the entire line and shifts all remaining lines up one line.

F3

Deletes the current cursored character and shifts all characters after it to the left.

*

Puts a carriage return and moves the cursor to the beginning of the next line.

[text]

Writes text at the cursor location, wrapping at end of the screen to the next line. All writing is done in insert mode, shifting any characters to the right of the cursor. Characters pushed past the display margins appear on a new line below the current line.

Patch Display

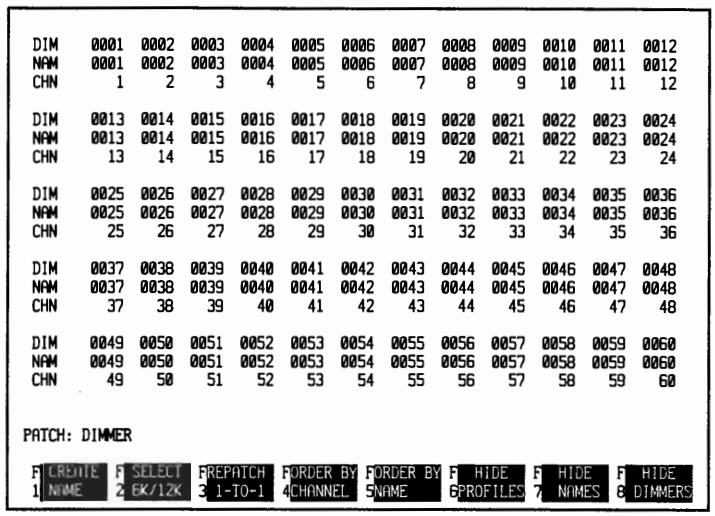
The *Patch* display shows dimmer to channel assignments for all dimmers. It can be organized by dimmer number, dimmer name, or channel number. On cold start, the *Patch* display is initialized as a one-to-one relationship with dimmer names matching the dimmer numbers.

> *You should set up your patching - particularly the 6K/12K assignments - before filling out the data in the* Dimmer Output Configuration *menu.*

Press

PATCH

to see the *Patch* display.



Reverse video dimmer numbers show 6K/12K dimmers for CD80 systems. For most other types of dimmers, including CD80 Advanced Electronics and CD80 Digital Pack Controller, there should be no 6K/12K assignments.

Function Keys

F1 CREATE NAME F2 SELECT 6K/12K F3 REPATCH 1-TO-1 F4 ORDER BY CHANNEL

F5 ORDER BY NAME F6 SHOW PROFILES F7 HIDE NAMES F8 HIDE DIMMERS

Navigation

PAGE+ pages forward through the *Patch* display.

PAGE- pages backward through the *Patch* display.

> *Selecting dimmers for patching automatically pages the display to show the maximum number of selected dimmers.*

[list] * goes to the display page with the lowest selected dimmer in consoles with Displays Only privileges. If you are using a console with full privileges, the dimmer is placed on the **Level Wheel** and changed to 6K/12K status (see below).

System Functions

PRINT SCREEN ← prints the current left hand display if the printer is active.

PRINT SCREEN → prints the current right hand display if the printer is active.

Name Dimmers [#][F1][name][*]

Names the dimmer. If you skip **[name]**, the system renames the dimmer to match its number. Dimmer names can be up to five letters and numbers, but can not begin with a number. You can use ":" (colon), "," (comma) and "." (dot) as part of a dimmer name.

[#][F1][*]

Resets the dimmer name to the ASCII equivalent of its number.

> *To reset all dimmer names to their numerical equivalent, use* [2 CLEAR PATCH NAMES] *in the* Clear Functions *menu.*

Set 6K/12K Dimmers [list][F2][*] or [list][*]

Toggles 6K/12K dimmer type ON or OFF. Dimmers set as 6K/12K are driven by two consecutive data outputs.

> *If any single dimmer on a dimmer list is 2.4Kw, all dimmers in the list will be set to 6K/12K type, regardless of their previous status.*

Clear 6K/12K Assignments [list][F2][*] [list][F2][*]

Sets all of the dimmers to 6K/12K status and then resets them to 2.4K status. The list must include all of the dimmers you want to clear.

> *The system allows uneven 6K/12K boundaries while dimmer output ports are not assigned. You cannot have a 6K/12K dimmer which "straddles" two Dimmer Processor cards. When you change the number of channels or dimmers, the dimmer output configuration, or 6K/12K assignments, the system checks to make sure that your assignments are feasible.*

Patch Dimmers [list][@][channel #][*]

Patches the listed dimmers to **[channel #]** without changing the currently selected profile.

[list][@][channel #][@][*]

Patches the listed dimmers to **[channel #]** using the default profile.

[list][@][channel #][@][profile #][*]

Patches the listed dimmers to **[channel #]** using a profile (dimmer output curve). If you skip **[profile #]** the default profile is used. No profile number shows on screen if the default profile is in use.

[list] F3 *

Patches each dimmer to its numbered channel. Dimmers exceeding the number of channels are left unpatched.

Change Display Order F4

Toggles the display sort order between channel order and dimmer order. The primary sort field (dimmer numbers, dimmer names, or channel numbers) appears at the top of the display. If the display is ordered by dimmer the screen label for this function key says ORDER BY CHANNEL. If the display is ordered by channel the screen label for this function key says ORDER BY NAME (meaning "order by dimmer name") or ORDER BY NUMBER (meaning "order by dimmer number") depending on the selection made with F5.

F5

Toggles the dimmer display sort order between dimmer number and dimmer name order. This determines the display sort order when the F4 screen label says ORDER BY CHANNEL (i.e., current ordering is "order by dimmer"). If the display is ordered by dimmer name, the Function key says ORDER BY DIMMER. If the display is ordered by dimmer number, the screen label for this function key says ORDER BY NAME.

When the display is ordered by dimmer name, named dimmers are sorted alphabetically first, and then unnamed dimmers added to the end of the list in numeric order.

F6

Show the dimmer profile numbers. If the profiles are showing, the Function key is labelled HIDE PROFILES. Pressing F6 again hides profile numbers.

F7

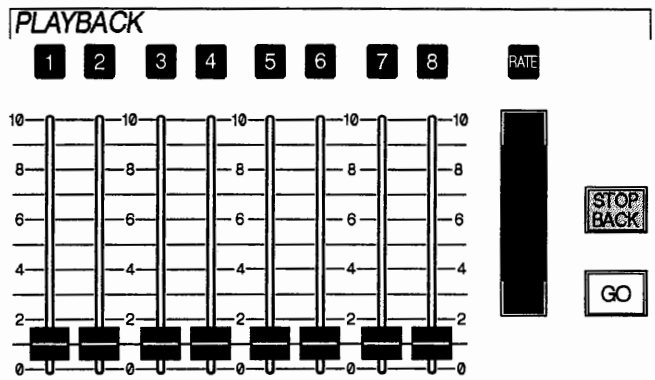
Hides dimmer names and compresses the display. If the dimmer names are hidden, the Function key is labelled SHOW NAMES. Pressing F7 again shows dimmer names.

F8

Hides dimmer numbers and compresses the display. If the dimmer numbers are hidden, the Function key is labelled SHOW NUMBERS. Pressing F8 again shows dimmer numbers.

Playback Controls

Playback controls let you play back cues and control the cue execution time and fade rates.



Basic Playback Controls

1 through 8 are used to place the fader directly below into manual control of the fade in progress.

Press this button to release the cue from fader control when a manual fade is done.

RATE lets you assign specific faders or submasters to the **RATE WHEEL**.

Press RATE, followed by the buttons associated with the appropriate faders and/or submasters and then *, to assign controllers to the **RATE WHEEL**. Press **RATE WHEEL** to make the **RATE WHEEL** control all faders and submasters. Press RATE 0 * to release the **RATE WHEEL** from control. All rates are frozen when you release the **RATE WHEEL**, and will not change until the fader or submaster is reloaded.

GO starts the next cue or cue sequence.

STOP BACK stops all cues or, if no cues are running, causes the system to back into the previous cue.

The **RATE WHEEL** lets you adjust cue fade times, and manually master fades when used with ALL MANUAL.

Faders (**FADER 1** through **FADER 8**) let you manually take control of cues.

Run Cues Out of Sequence

LOAD CUE [#] TIME [#] / [#] *

Loads the specified cue as the next action when you complete the command. If you do not specify time, it is taken from the cue sheet. You must press GO to start the cue.

GO TO CUE [#] TIME [#] / [#] *

Loads and immediately runs the specified cue. If you do not specify a time, fade time is one second. If you press TIME but supply no time, the fade is placed on a fader in manual mode.

Control Fade Rate

RATE *

Assigns all faders and submasters to the **RATE WHEEL**. Since there are no controllers assigned to the **RATE WHEEL** when the console is turned ON, this is an easy way to make sure that you have rate control.

RATE [fader manual and/or sub bump buttons] *

Attaches the selected fader(s) and/or submasters to the **RATE WHEEL**. You select fader(s) and/or submasters by pressing the fader manual button(s) and/or submaster bump buttons for the appropriate controller(s). If an unterminated Rate command is on the command line, none of the fader manual buttons or submaster bump buttons take their normal action. This applies only to the console with the unterminated Rate command.

Release Rate Control

RATE 0 *

Releases all submasters and faders from rate control. Rates for all controllers are frozen, and will not change unless the controller is again assigned to the **RATE WHEEL** or the submaster or cue is reloaded.

Fader Loading Order

The fader loading order is determined by an algorithm which attempts to place the most important cues and cue parts on the fader handles and place less important cues or cue parts on phantom faders if required.

For purposes of loading new cues, each cue running on a fader is given a weighted score (fader number + fade time). A manual cue is considered to have a higher score than any length timed cue.

Each cue or part to be loaded is also given a weighted score based on fade time. Then cues are split into 3 basic priorities:

- Multi-part and split cues are in the highest priority group
- Manual cues and effects with a run time of 999 are in the second priority group.
- Single part cues are in the lowest priority group.

Cues are assigned by priority to faders in reverse priority order. The lowest priority faders are used first, and loaded with the highest priority cue. When all faders are clear their priority is based strictly on fader number, and the first cue part will load on **FADER 1**.

Playback Cues Display

The *Playback Cues* display appears on the left monitor at system startup, and after you have pressed [PLAYBACK CUES]. The display consists of a cue sheet and fader data.

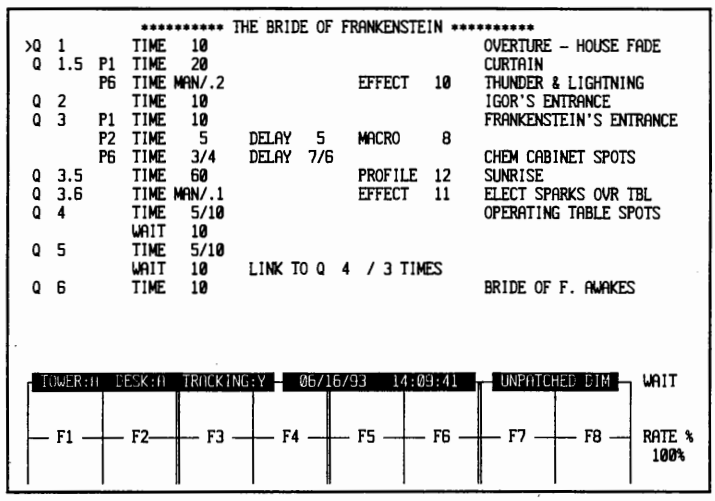
Data displayed for each cue includes cue and part number, fade time, delay time, effect, macro, profile, or Remote-Q assignment, and user comments. The cue which is currently active is highlighted all the way across the screen for easy visual identification.

Data displayed for each fader includes fader number, cue number, time or percent of fade remaining, and rate. This part of the screen is called the *Fader Status* display.

Press

[PLAYBACK CUES]

to see the *Playback Cues* display.



- **Yellow** cue is the last completed cue.
- **Red** cue or cues are currently being executed on physical faders.
- **Magenta** cue or cues are currently being run on phantom faders.
- > shows the current cue referenced in record commands or last shown in the *Preview* display.

System Functions

[PRINT SCREEN] [←] prints the current left hand display if the printer is active.

[PRINT SCREEN] [→] prints the current right hand display if the printer is active.

[EXPAND REC] expands the *Preview* display so that additional channels replace the *Playback Cues* or *Playback Subs* on the playback monitor. The *Fader Status* display remains on the bottom of the playback monitor. Pressing this key again returns the display to normal.

Status Banners

The Console Status banner over the *Fader Status* display for faders 1-3 is always present and shows the current processor tower electronics in use (A or B. A if the processor tower does not have duplicate electronics), the current Console Processor card and disk drive in use (A or B. A if the local console does not have dual electronics), and the tracking status (Y, N or X. Y if dual electronics exists and is active, N if dual electronics exists and in non-functional, and X if there is no dual electronics or if it is not activated). If any of this status information changes, the status character will flash until you acknowledge that you have seen it by swapping displays.

A Macro Status banner appears over the *Fader Status* display for faders 4-6 while you are recording a macro, and shows the macro number being recorded and the current number of keystrokes entered. Otherwise the current time and date are shown.

The Unpatched Dimmer banner appears over the *Fader Status* display for faders 7 and 8 when one or more dimmers have been unpatched. You can return these dimmers to normal status by pressing DIMMER RETURN *.

Create a Show Title

To create a show title, go to the *Setup* display and use COMENT. See under *Setup Display* in this chapter (page 147) for more details.

Playback Subs Display

The *Playback Subs* display consists of submaster and fader data, and appears on the Playback monitor if you press [PLAYBACK SUBS].

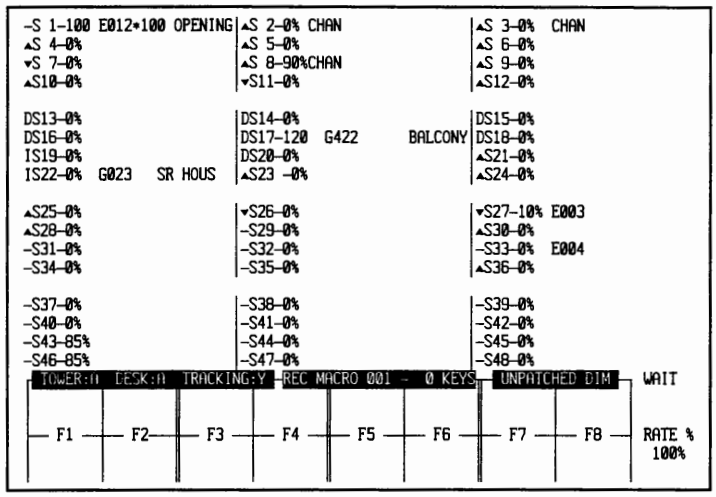
Submaster data includes submaster number, handle position, loaded element, rate (for effects), and name of loaded element.

Fader data includes fader number, cue number, time or percent of fade remaining, and rate. This part of the screen is called the *Fader Status* display.

Press

[PLAYBACK SUBS]

to see the *Playback Subs* display.



System Functions

[PRINT SCREEN] [←] prints the current left hand display if the printer is active.

[PRINT SCREEN] [→] prints the current right hand display if the printer is active.

[EXPAND REC] expands the *Preview* display so that additional channels replace the *Playback Cues* or *Playback Subs* on the playback monitor. The *Fader Status* display remains on the bottom of the playback monitor. Pressing this key again returns the display to normal.

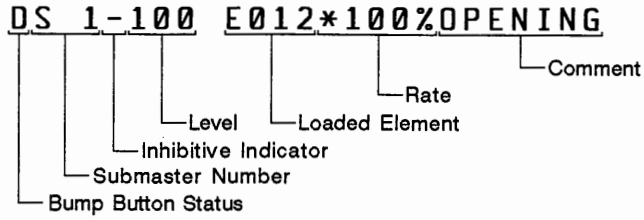
Status Banners

A Macro Status banner appears over the *Fader Status* display for faders 4-6 while you are recording a macro, and shows the macro number being recorded and the current number of keystrokes entered. Otherwise the current time and date are shown.

The Unpatched Dimmer banner appears over the *Fader Status* display for faders 7 and 8 when one or more dimmers have been unpatched. You can return these dimmers to normal status by pressing [DIMMER] [RETURN] [*].

Submaster Status Line

The *Playback Subs* display shows a separate entry for each submaster.



Bump Button Status shows the assigned submaster status:

- **Magenta** ▲ shows bump button bump up
- **Green** ▼ shows bump button bump down
- **Aqua** – shows a disabled bump button
- **Flashing yellow** I (independent) or **yellow** D (dependent) shows the status of a submaster assigned as "Independent Toggle" in the *Submaster* menu. You can toggle between Independent and Dependent modes using the submaster bump button (see page 148).

Submaster Type shows whether the submaster is normal or overrange:

- **Standard video** S or Q shows a normal submaster
- **Magenta** S or Q shows an overrange submaster
- Q instead of S shows a quick load submaster

Inhibitive Indicator turns red for all inhibitive submasters.

Level shows the submaster position. % appears only on levels under 100%.

Loaded Element shows the number and type of element loaded to the submaster:

- Q??? shows a cue and its number
- E??? shows an effect and its number
- G??? shows a group and its number
- CHAN shows channels were entered directly into the *Submaster* display
- UNLD shows a pending submaster unload

> *When you load or unload a submaster the new item does not appear on stage until you return the submaster to its home position (ZERO for pile-on submasters and FULL for inhibitive submasters). The Loaded Element indicator flashes when submaster loads or unloads are pending.*

Rate shows the current effect rate, and appears only when you load an effect on a submaster and have modified the effect rate using the **RATE WHEEL**.

Comment is the first 7 characters of the comment recorded with the loaded element.

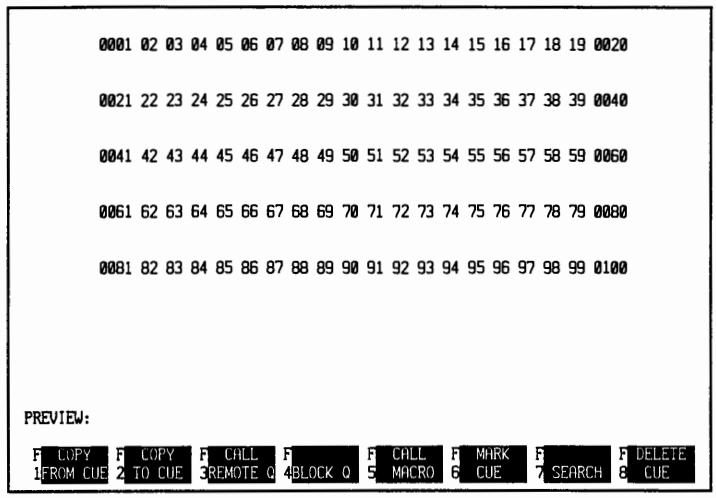
Preview Display

The *Preview* display lets you set channel levels directly into the cue (edit the cue). It also lets you change cue sheet data (cue parameters and attributes).

Press

PREVIEW

to see the *Peview* display for the cue highlighted on the *Playback Cues* display.



- **Magenta** channels are going up in this cue.
- **Green** channels are going down in this cue.
- **Aqua** channels remain the same as the previous cue.
- **White** channels with no background are channels blocked in this cue.
- **White** channels with red background are on the wheel.

Function Keys

F1 COPY FROM CUE F2 COPY TO CUE F3 CALL REMOTE Q F4 BLOCK Q

F5 CALL MACRO F6 F7 SEARCH F8 DELETE CUE

Navigation

NEXT displays the next cue or part for preview or editing.

LAST displays the previous cue or part for preview or editing.

PAGE+ pages forward through the displayed cue or part.

PAGE- pages backward through the displayed cue or part.

[channel or element] * goes to the display page with the lowest selected channel. If you are using a console with full privileges, the channel or element is also placed on the **LEVEL WHEEL.**

System Functions

PRINT SCREEN ← prints the current left hand display if the printer is active.

PRINT SCREEN → prints the current right hand display if the printer is active.

EXPAND REC expands the *Preview* display so that additional channels replace the *Playback Cues* or *Playback Subs* on the playback monitor. The *Fader Status* display remains on the bottom of the playback monitor. Pressing this key again returns the display to normal.

General Notes

All channel control commands in the *Preview* display operate on the cue shown on screen. You can display a cue and modify parameters or attributes in the same command if required.

The procedures below do not change recorded channel levels or Command line information if it is not specifically included in the command line.

> *In any command with comments, the comments must be the last item in the command list.*

Select a Cue to Preview or Edit

CUE [#] PART [#] ✱

Puts the selected cue on the *Preview* display. If the selected cue number does not exist it creates a cue with the specified number. All channels in a created cue will show as tracking through from the next lower number cue.

Modify Channel Levels

When modifying channel levels, **[list]** can include channels, group lists, group levels, cue channel lists, and cue channel levels. Please see the *Control Lists* section of this chapter (page 84) for more details.

Caution

> *Channel levels are automatically rerecorded in the cue shown on screen when you modify them in a* Preview *display.*

[list] @ [level] ✱ or . [list] @ [level] ✱

Assigns listed lamp channels to the **Level Wheel** at the specified level and records the changes into the currently selected cue (>).

. . [list] @ [color] ✱

Assigns scrollers for the listed channels to the **Level Wheel** and records the changes into the currently selected cue (>). Lamp only channels in the list are ignored.

[list] @ [level] @ [color] ✱

Assigns listed lamp channels to the **Level Wheel** at the specified level, and records new lamp levels and scroller colors into the currently selected cue (>). Scrollers will not be controlled by the wheel.

✱

Assigns all channels with levels greater than zero to the **Level Wheel**.

[list] @ FULL ✱

Assigns the listed selectors to the **Level Wheel** at FULL and records the changes into the currently selected cue (>).

[list] SET

Assigns the listed selectors to the **LEVEL WHEEL** at the Set Level value in the *Defaults* display and records the changes into the currently selected cue (>). This function does not require a confirming [*].

[list][OUT]

Assigns the listed selectors to the **LEVEL WHEEL** and sets them to OUT. Levels from previous cues will now track through to these channels, so channels with levels in previous cues will seem to be acquiring "instant levels." This function does not require a confirming [*].

[list][-10%]

Assigns the listed selectors to the **LEVEL WHEEL**, decreases their levels by 10%, and records the changes into the currently selected cue (>). This function does not require a confirming [*].

[list][+10%]

Assigns the listed selectors to the **LEVEL WHEEL**, increases their levels by 10%, and records the changes into the currently selected cue (>). This function does not require a confirming [*].

[list][Q-ONLY TRACK][*]

Modifies the tracking status of the listed channels only.

[#][F7][*]

Searches backwards through cues to find the most recent use of a channel. The system switches to the cue and puts the channel on the **LEVEL WHEEL**. Until the command line is cleared, you can use [NEXT] and [LAST] to find additional cues using this channel.

Set Dimmer Levels

You cannot set dimmer levels directly from the *Preview* display. This must be done from the *Live* or *Unpatch Dimmer* displays.

Modify or Delete Cue Parameters

[CUE][#][PART][#][TIME][#][/][#][DELAY][#][/][#][attribute][#][COMMENT][text][*]

Selects and modifies a cue or part as specified, without changing channel levels. If you do not specify a cue or part the currently selected cue (>) is modified. The system uses existing values or default values for any missing parameters. The maximum length for comments is 25 characters. You can attach one of the four cue attributes (Profile, Effect, Macro, or Remote-Q) to the cue.

CUE [#] PART [#] TIME *

Selects a cue or part and deletes its fade time. If you do not specify a cue or part the currently selected cue (>) is modified. The modified cue changes to a manual fade.

CUE [#] PART [#] DELAY *

Selects a cue or part and deletes its delay time. If you do not specify a cue or part the currently selected cue (>) is modified.

CUE [#] PART [#] WAIT *

Selects a cue and deletes its wait time. If you do not specify a cue or part the currently selected cue (>) is modified.

Change a Cue to a Blocking Cue

CUE [#] PART [#] TIME [#] / [#] DELAY [#] / [#] **[attribute]** [#] F4 COMMENT **[text]** *

Selects and modifies a cue to a blocking cue as specified, without changing channel levels. If you do not specify a cue or part the currently selected cue (>) is modified. F4 BLOCK CUE forces all channels with no levels (tracking channels) to ZERO. The system uses existing values or default values for any missing parameters. The maximum length for comments is 25 characters. You can attach one of the four cue attributes (Profile, Effect, Macro, or Remote-Q) to the cue.

Add a Profile to a Cue

CUE [#] PART [#] TIME [#] / [#] DELAY [#] / [#] PROFILE [#] / [#] COMMENT **[text]** *

Selects and modifies a cue or part as specified, and adds a profile. If you do not specify a cue or part the currently selected cue (>) is modified. You can specify a split profile (different profiles for the up-fade and down-fade). You cannot attach an effect, macro, or Remote-Q call to a cue with this attribute.

Add an Effect to a Cue

CUE [#] PART [#] TIME [#] / [#] DELAY [#] EFFECT [#] COMMENT **[text]** *

Selects and modifies a cue or part as specified, and adds an effect. If you do not specify a cue or part the currently selected cue (>) is modified. If you enter a split time for an effect, the second time is ignored. You cannot attach a profile, macro, or Remote-Q call to a cue with this attribute.

Add a Macro to a Cue

CUE [#] PART [#] TIME [#] / [#] DELAY [#] / [#] F5 [#] COMMENT [text] *

Selects and modifies a cue or part as specified, and adds a macro call. If you do not specify a cue or part the currently selected cue (>) is modified. The macro is executed when the first delay times out. The command line belonging to the device requesting cue execution is used to execute the macro. If the last command stored in the macro is unterminated, it can be started at the operator's discretion. The same cue/part can be used to fade lighting levels, but the fade uses the default profile. You cannot attach a profile, effect, or Remote-Q call to a cue with this attribute.

Add Remote-Q to a Cue

CUE [#] PART [#] TIME [#] / [#] DELAY [#] / [#] F3 **[remote cue #]** COMMENT **[text]** *

Selects and modifies a cue or part as specified, and adds a Remote-Q call. If you do not specify a cue or part the currently selected cue (>) is modified. This sends a cue number and GO signal to devices attached to the Remote-Q Out port. You cannot attach a profile, effect, or macro to a cue with this attribute.

Control Cue Sequencing

CUE [#] WAIT [#] *

Selects a cue and modifies its wait time (follow-on delay). If you do not specify a cue or part the currently selected cue (>) is modified. If the time value is not specified, this command deletes the WAIT time.

CUE [#] LINK TO CUE **[next cue #]** / **[link count]** *

Selects a cue and modifies its "next cue" link. If you do not specify a cue or part the currently selected cue (>) is modified. If you do not specify a next cue number the link is deleted. If the link is to a lower cue number you can specify a link count. On execution, when the link count is exhausted the backward link is not taken and the sequence proceeds to the next cue. When the link count is exhausted it is reset before proceeding to the next cue, allowing nested backward links with the inner links fully counted out for each execution of an outer link.

Delete a Cue

F8 [#] PART [#] Q ONLY TRACK * ARE YOU SURE ? *

Deletes the specified cue and/or cue part. Q ONLY TRACK, if used, reverses the tracking mode of the console for this command only.

Copy a Cue [F1][#][Q-ONLY TRACK][*]

Copies the specified cue (including parts) to the currently displayed cue. [Q-ONLY TRACK], if used, reverses the tracking mode of the console for this command only.

[F2][#][Q-ONLY TRACK][*] or [CUE][#][@][CUE][#][Q-ONLY TRACK][*]

Copies the current cue (and parts) to the specified cue. [Q-ONLY TRACK], if used, reverses the tracking mode of the console for this command only. If you specify an adjacent cue as the destination the command will change the number of the cue but maintain the original data (move the cue). If you specify a non-adjacent cue as the destination the command will leave the original cue in place and create an identical cue with the new number (copy the cue). [Q-ONLY TRACK], if used, reverses the tracking mode of the console for this command only.

Mark and Copy Cues [.][.][list][CUE][#][Q-ONLY TRACK][*]

Copies scroller colors for the listed channel levels from cue **[#]** into the current cue. If you do not list channels, the whole cue is copied. If you do not specify a cue number, the next cue is used. This feature is useful for copying scroller color information into the cue before the associated lamps are turned ON. [Q-ONLY TRACK], if used, reverses the tracking mode of the console for this command only.

[list][F6][CUE][#][Q-ONLY TRACK][*] or [.][list][CUE][#][Q-ONLY TRACK][*]

Copies lamp levels for the listed channels from cue **[#]** into the current cue. If you do not list channels, the whole cue is copied. If you do not specify a cue number, the next cue is used. [Q-ONLY TRACK], if used, reverses the tracking mode of the console for this command only.

Print Requests Menu

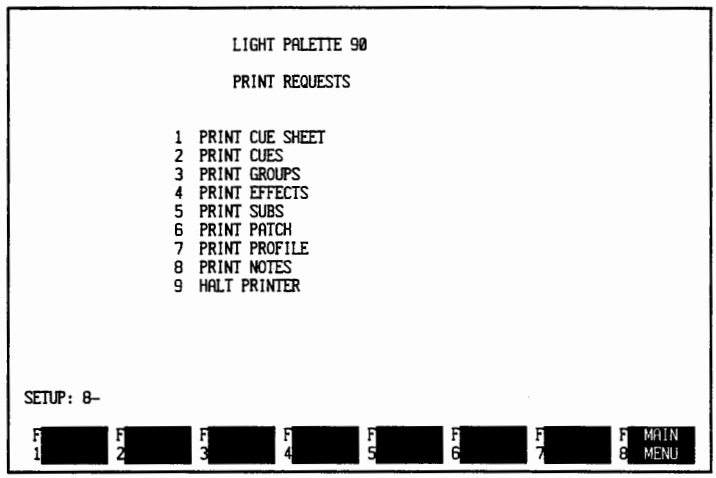
The *Print Requests* menu lets you print hardcopy of the information programmed for your show.

> *Printing is a background operation. You can continue other tasks while printing.*

Press

SETUP 8

to see the *Print Requests* menu.



Function Keys

F1 F2 F3 F4

F5 F6 F7 F8 MAIN MENU

Navigation

F8 or 0 returns you to the *Setup* display.

System Functions

PRINT SCREEN ← prints the current left hand display if the printer is active.

PRINT SCREEN → prints the current right hand display if the printer is active.

Commands

1 [cue list] *

Prints the cue sheet for the listed cues. If there is no cue list, the entire cue sheet is printed.

2 [cue list] *

Prints the *Preview* display for the listed cues. If there is no cue list, the *Preview* display for all cues is printed.

3 [group list] *

Prints the *Group* display for the listed group. If there is no group list, the *Group* display for all groups is printed.

[4] [effects list] [*]

Prints the *Effect* display for the listed effect. If there is no effect list, the *Effect* display for all effects is printed.

[5] [submaster list] [*]

Prints the *Submaster* display for the listed submaster. If there is no submaster list, the *Submaster* display for all groups is printed.

[6] [*]

Prints all patch information.

[7] [*]

Prints all profile information.

[8] [*]

Prints all Notes.

[9] [*]

Halts output to printer. If your printer has an input buffer, printing will continue until the buffer is empty or you reset the printer.

Printer Output Codes

In order to function with the maximum number of printers, Lightpalette 90 consoles output pure ASCII code without any special formatting for bold or underlining. To show channel movement status, it outputs a code character after the channel level for each channel. These codes appear after the channel level on the printout.

- ^ shows active channels moving UP
- v shows active channels moving DOWN
- . (dot) shows active channels not moving in this cue (i.e., from a Block Cue command)
- **NO CHARACTER** shows channels with a level tracking from another cue.

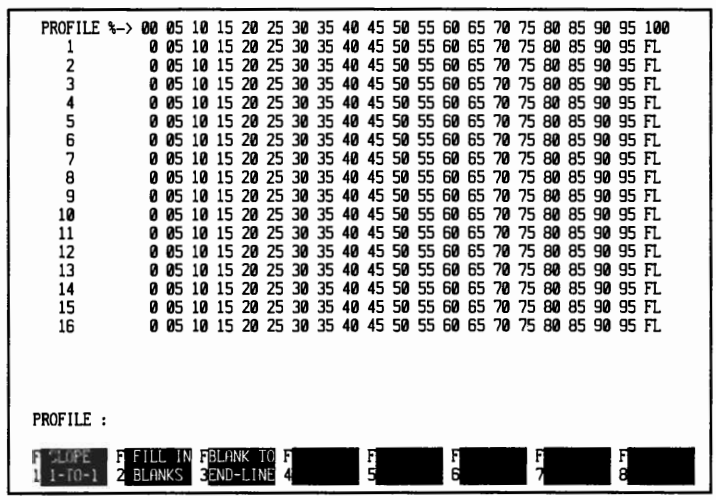
Profile Display

The *Profile* display shows the available dimmer and fader output curves. You can define up to 64 profiles, and can attach them to cues or dimmers. If you blank intermediate levels in a profile, the system interpolates across them on output. You must specify the curve end-points (0% and 100%), which can be any value between 0 and FL. When used as a dimmer output curve, this lets you set a maximum and minimum level for a dimmer, as well as dimmer proportion.

Press

PROFILE

to see the *Profile* display.



Function Keys

F1 SLOPE 1-TO-1 F2 FILL IN BLANKS F3 BLANK TO END-LINE F4

F5 F6 F7 F8

Navigation

NEXT selects the next profile.

LAST selects the previous profile.

PAGE+ pages forward through the *Profile* display.

PAGE- pages backward through the *Profile* display.

System Functions

PRINT SCREEN ← prints the current left hand display if the printer is active.

PRINT SCREEN → prints the current right hand display if the printer is active.

Edit a Profile [time fraction][@][output curve][*]

Sets the output profile curve (00 to FL) for a specific input time fraction (00 or 0% to FL or 100%).

[F1][*]

Resets the current profile to a straight curve.

[F2]

Interpolates between non-blank profile points to fill in intermediate blank points. Blanks in 0% or 100% positions default to 00 and FL.

[F3][*]

Blanks the remainder of the cursored profile curve.

This command blanks the currently selected line from the latest modified profile point.

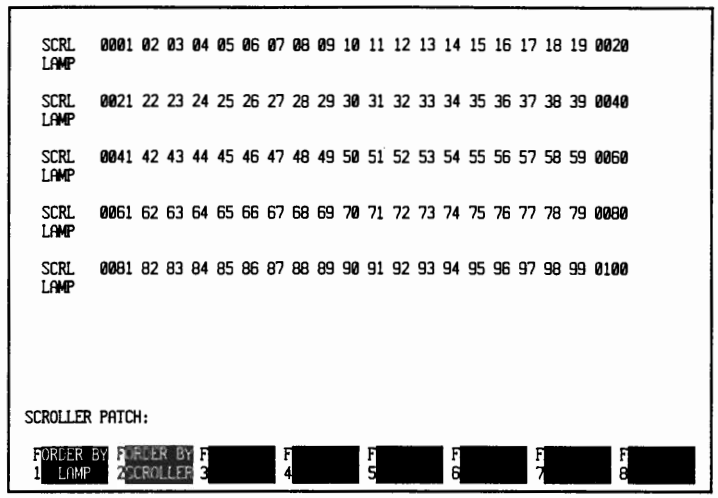
Scroller Patch Display

The *Scroller Patch* display lets patch scroller channels to lamp channels. Only one scroller channel can be assigned to each lamp channel. Any channels you do not assign in this display will be treated as lamp channels by the console.

Press

PREVIEW

to see the *Scroller Patch* display.



Function Keys

F1 COPY FROM CUE | F2 COPY TO CUE | F3 CALL REMOTE Q | F4 BLOCK Q

F5 CALL MACRO | F6 | F7 SEARCH | F8 DELETE CUE

Navigation

PAGE+ pages forward through the channel list.

PAGE- pages backward through the channel list.

[channel or element] * goes to the display page with the lowest selected channel. If you are using a console with full privileges, the channel or element is also placed on the **LEVEL WHEEL**.

System Functions

PRINT SCREEN ← prints the current left hand display if the printer is active.

PRINT SCREEN → prints the current right hand display if the printer is active.

General Notes

Channel lists contain three operators which let you specify whether you wish to control lamps, scrollers, or both.

[channel list] lets you control lamp channels only.
. [channel list] lets you control lamp channels only.
.. [channel list] lets you control scroller channels only.
[channel list] @ [level] @ [color] lets you control lamp channels and scroller channels together.
.. [channel list] . [channel list] lets you put scroller channels and lamp channels on the wheel.

To put scrollers on the wheel you must use the **..** operator. The **.** operator and the **..** operator select subsequent channels as lamp or scroller channels respectively. You can use both operators in the same command.

Scroller channels that are not assigned to lamp channels are treated as lamp channels. Since scroller channels are treated differently from lamp channels, you should always make sure that scroller channels are assigned to a lamp channel or are unpatched. Scroller channels are treated differently from lamp channels in several important ways:

- Scrollers do not respond to the **[list]** REM DIM * command.
- Scrollers do not respond to the GO TO CUE 0 *, or LOAD CUE 0 * commands, but will respond to any other levels used in these commands.
- When lamp and scroller channels are placed on the wheel together, scrollers are only moved when they are first placed on the wheel. Additional wheel movement only changes lamp levels. To use the wheel to control scroller colors, you must use the **..** operator to assign only scroller channels to the wheel.
- In effects, scrollers are driven to their requested levels in the "in" phase of each step. Nothing happens to scrollers in the "out" phase of each step. Scrollers must be present in channel lists through **.. [list] = [color]** phrases or specified as part of elements (e.g. groups) embedded in the step.
- Since the NEGATIVE and ALTERNATE effect attributes switch the high/low output levels, they do not affect scroller color.

Pair a Scroller and a Lamp

F2 [channel #] @ [scroller #] *

Orders the display by lamp channel and assigns the selected lamp channel to the selected scroller channel. If the display is already ordered by lamp channel, you do not need to press F2.

F2 [channel #] @ *

Orders the display by lamp channel and clears the selected lamp/scroller channel pairing. If the display is already ordered by lamp channel, you do not need to press F2.

F3 [scroller #] @ [channel #] *

Orders the display by scroller channel and assigns the selected scroller channel to the selected lamp channel. If the display is already ordered by scroller channel, you do not need to press F3.

F2 [channel #] @ *

Orders the display by scroller channel and clears the selected lamp/scroller channel pairing. If the display is already ordered by scroller channel, you do not need to press F3.

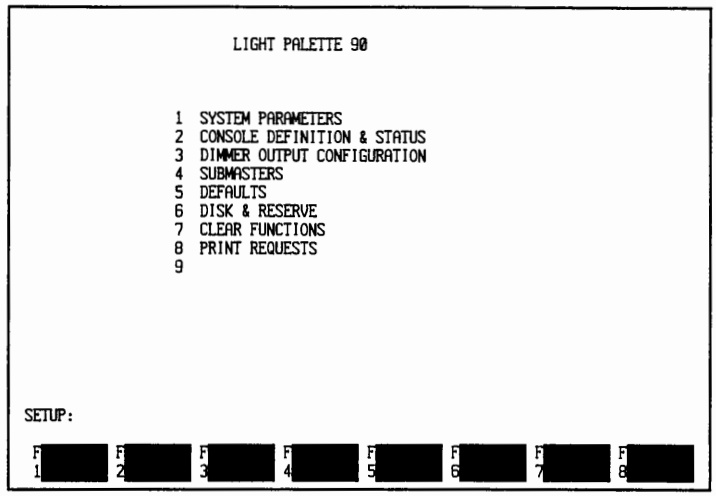
Setup Display

The *Setup* display lets you select the menus which you use to configure the system, store and retrieve information from disk, communicate with the reserve computer system, display system status, and initiate clear, print, and diagnostic requests.

Press

SETUP

to see the *Setup* display.



Select a Menu

This is the main menu from which you select all of the other system setup menus

1 through 8

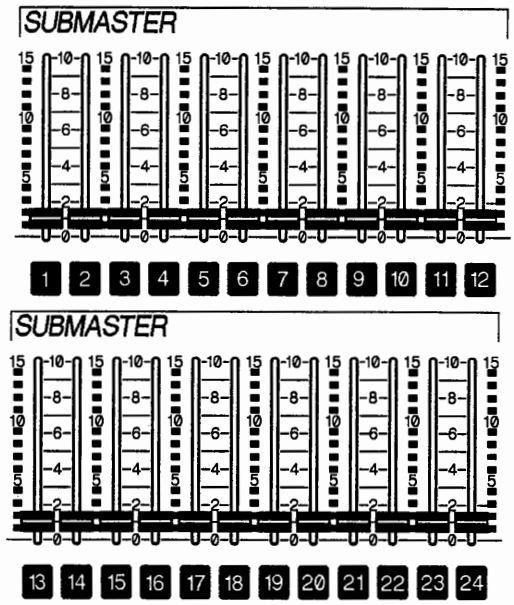
Selects a menu. Press 0 or F8 in any other menu to return here. For specifics about each of the menus, see under their alphabetical listing.

COMMENT [text] *

Creates a show label that will appear at the top of the *Cue Sheet* display and the *Playback Cues* display.

Submaster Controls

Each console can contain one or two submaster modules, or can be configured with one or both submaster modules in a separate enclosure. Each submaster module consists of 24 slider pots which act as proportional masters for assigned cues, groups, effects, or channels.



Submaster Controllers

The submaster controllers let you manually master channels, cues, groups, or effects assigned to the submaster. Submaster controllers can be set for normal or 150% overrange operation. Please refer to the *Submaster Menu* section in this chapter for details.

Submaster Bump Buttons

The bump button associated with each submaster can be set (by the operator) to be disabled, bump up, bump out, independent on/off, or quick load. Please refer to the *Submaster Menu* section in this chapter for details.

Quick Load a Submaster

[list] [@] [level] [bump button]

Assigns the channels in the list to the submaster whose bump button you press, **if** the submaster is assigned as a Quick Load submaster. Note that this is a standard channel list, except that you have not pressed [*]. If you do not include a level, the system assumes FULL.

Load Submasters [LOAD SUB][submaster list][load item list][*]

Loads the listed submasters sequentially with the cues, groups, and effects specified in the load item list. If either the submaster list or the load item list ends with [>] a bank load is performed, loading submasters sequentially with the listed load items until there are no more submasters to load or no more items in the load item list. If there is a comment for the loaded element, the first 7 characters of the comment are shown on the *Submaster* display.

> *When you load a submaster the new item does not appear on stage until you return the submaster to its home position (ZERO for pile-on submasters and FULL for inhibitive submasters). The Loaded Element indicator flashes and shows the new element when submaster loads are pending.*

Unload a Submaster [LOAD SUB][list][*]

Unloads everything from the specified submaster(s).

> *When you load or unload a submaster the new item does not appear on stage until you return the submaster to its home position (ZERO for pile-on submasters and FULL for inhibitive submasters). The Loaded Element indicator flashes and shows the new element when submaster loads are pending. The Loaded Element indicator flashes* UNLD *when submaster unloads are pending.*

Submaster Loading Lists

Submaster loading lists let you load cues, groups, or effects onto submasters. You can issue these commands from most displays and check their results by moving the submaster handle to FULL. The display you are in will not change.

You can bank load submasters by leaving either the submaster list or the load item list in the command line open (i.e., it terminates with [>][*]). Although you can load multiple submasters with multiple elements, you can only load a single cue, group, or effect onto each submaster.

Loading a cue end state onto a submaster ([LOAD SUB] **[#]** [CUE] **[#]** or [LOAD SUB] **[#]** [CUE LEVEL] **[#]**) transfers the channel level data to the submaster. If you modify the cue later the modified data will not appear in the submaster unless you reload the cue.

> *For submaster loading lists,* [CUE] *and* [CUE LEVEL] *are functionally equivalent.*

Loading a group onto a submaster ([LOAD SUB] **[#]** [GROUP] **[#]**) sets a pointer to the group data. If you update the group the new data will appear in the submaster.

The following examples will show more complex assignment lists. Usually it is easier to load submasters with different types of items separately (i.e., load groups first, then effects). However, if you want to automate the submaster loading using a macro, complex lists can let you do the task using a single macro which you can then assign to a cue.

Caution

*Be careful when loading submasters. If there is anything recorded or loaded on a submaster you are trying to overwrite, it will be erased. The system will **not** ask you for confirmation.*

[LOAD SUB] [1] [>] [5] [CUE LEVEL] [1] [>] [*] loads the first 5 cues onto submasters 1 through 5.

[LOAD SUB] [1] [>] [4] [CUE LEVEL] [1] [+] [GROUP] [1] [>] [*] loads cue 1 onto submaster 1 and the first three groups onto submasters 2 through 4.

[LOAD SUB] [1] [>] [5] [GROUP] [1] [>] [*] loads the first 5 groups onto submasters 1 through 5.

[LOAD SUB] [1] [>] [3] [EFFECT] [1] [+] [GROUP] [5] [>] [*] loads effect 1 onto submaster 1 and two groups (starting with group 5) onto submasters 2 and 3.

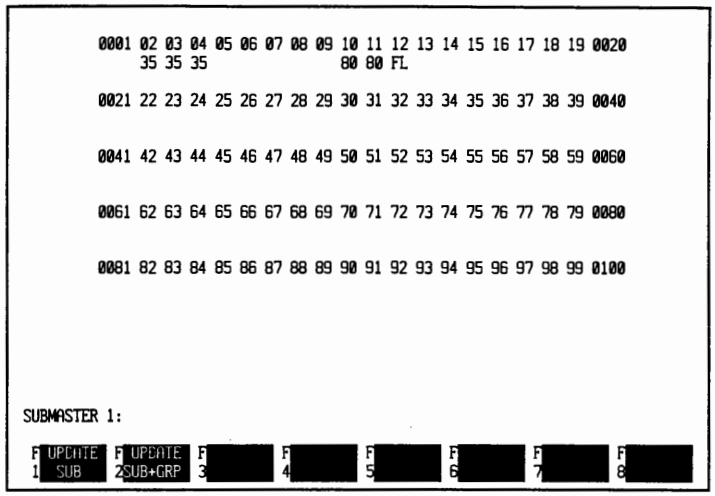
[LOAD SUB] [1] [+] [3] [EFFECT] [1] [+] [GROUP] [1] [*] loads effect 1 onto submaster 1, group 1 onto submaster 3.

[LOAD SUB] [1] [>] [4] [EFFECT] [1] [+] [GROUP] [1] [>] [2] [*] loads effect 1 onto submaster 1, group 1 onto submaster 2, and group 2 onto submaster 3. Nothing is loaded onto submaster 4, since only 3 elements are specified for loading.

Submaster Display

The *Submaster* displays list the contents of each submaster. You can set submaster levels using RECORD SUB [#] [*] or LOAD SUB [#] CUE [#] [*], or by setting levels directly with the wheel in the *Submaster* display.

Press
SUBS [#] [*]
to see the selected *Submaster* display.



Function Keys

F1 UPDATE SUB F2 UPDATE SUB+GRP F3 F4
F5 F6 F7 F8

Navigation

NEXT displays the next submaster for preview or editing.

LAST displays the previous submaster for preview or editing.

PAGE+ pages forward through the displayed submaster.

PAGE- pages backward through the displayed submaster.

[channel or element] * goes to the display page with the lowest selected channel. If you are using a console with full privileges, the channel or element is also placed on the **LEVEL WHEEL**.

System Functions

PRINT SCREEN ← prints the current left hand display if the printer is active.

PRINT SCREEN → prints the current right hand display if the printer is active.

Edit a Submaster [list] @ [level] *

Assigns listed elements to the **Level Wheel** at the specified level.

[list] SET

Assigns listed elements to the **Level Wheel** at the Set Level value specified in Setup (immediate action).

[list] OUT

Assigns listed elements to the **Level Wheel** and sets them to zero (immediate action).

[list] -10%

Decreases levels of listed elements by 10% (immediate action).

[list] +10%

Increases levels of listed elements by 10% (immediate action).

Update a Submaster F1 *

Records channels robbed by wheel control on stage in the current submaster such that the new levels mastered through the submaster handle equal the levels on stage (before inhibit submaster action). This command also re-enables submaster control of the recorded channels.

F2 *

F2 UPDATE SUB+GRP is the same as F1 UPDATE SUB, but also copies new submaster levels back into the loaded group.

Label a Submaster COMMENT [text] *

Specifies the text that will appear on the submaster command line and the *Playback Subs* display if the submaster is loaded only with channels. Comments can be up to 25 characters long, but only the first seven characters are shown on the *Playback Subs* display.

If you load a cue, group, or effect onto the submaster, the first 7 characters of the comment from the loaded item appears when you load the item. The comment can later be modified using this command.

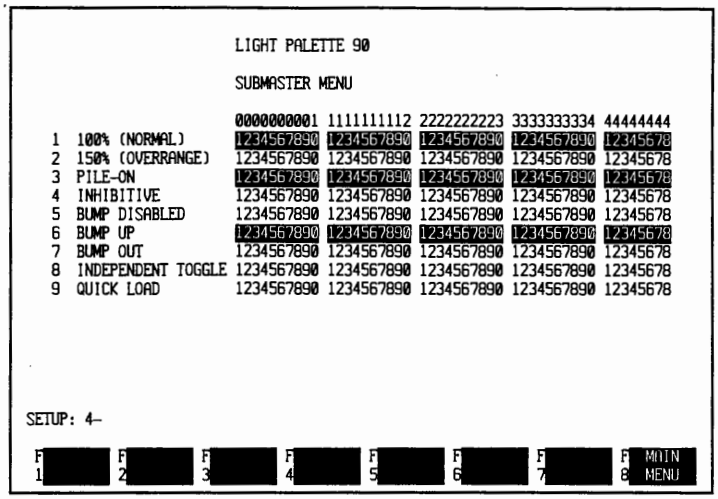
Submaster Menu

The *Submaster* menu lets you set the various defaults for the submasters as required

Press

SETUP 4

to see the *Submaster* menu.



Function Keys

F1 F2 F3 F4

F5 F6 F7 F8 MAIN MENU

Exit from the Display

F8 or 0 returns you to the *Setup* display.

System Functions

PRINT SCREEN ← prints the current left hand display if the printer is active.

PRINT SCREEN → prints the current right hand display if the printer is active.

Modify Submaster Range

1 [list] *

Inputs a list of submasters which are to be normal travel (100%) submasters. Submasters chosen in this list are shown in red text, and are excluded from the overrange (150%) submaster list.

2 [list] *

Inputs a list of submasters which are to be overrange (150%) submasters. Submasters chosen in this list are shown in red text, and are excluded from the normal travel (100%) submaster list.

Modify Submaster Pile-On Status

3 [list] *

Inputs a list of submasters which are to be pile-on (levels are added to other stage levels). Submasters chosen in this list are shown in red text, and are excluded from the inhibitive submaster list.

[4][list][*]

Inputs a list of submasters which are to be inhibitive (levels are subtracted from stage levels) submasters. Submasters chosen in this list are shown in red text, and are excluded from the pile-on submaster list.

> *Inhibitive submasters cannot be overrange.*
>
> *Remember that the normal position for inhibitive submasters is at FULL (100%). It is very easy to have an inhibitive submaster keeping lights from coming up on stage when they should be in a cue. If dimmers don't come up on stage when expected, always check for inhibitive submasters which are OFF.*

Modify Bump Button Function

[5][list][*]

Inputs a list of submasters for which the bump button is disabled. Submasters chosen in this list are shown in yellow text, and are excluded from the all other bump button selections.

[6][list][*]

Inputs a list of submasters for which the bump button momentarily forces the assigned channels to FULL. Submasters chosen in this list are shown in yellow text, and are excluded from the all other bump button selections.

[7][list][*]

Inputs a list of submasters for which the bump button momentarily forces the assigned channels OFF. Submasters chosen in this list are shown in yellow text, and are excluded from the all other bump button selections.

[8][list][*]

Inputs a list of submasters for which the bump button toggles between independent and dependent. Independent submasters are completely independent of the wheel. Selecting channels assigned to these submasters will assign them to the **LEVEL WHEEL**, but will not steal them from the submaster. The higher of the two levels (wheel or submaster) will appear on stage.

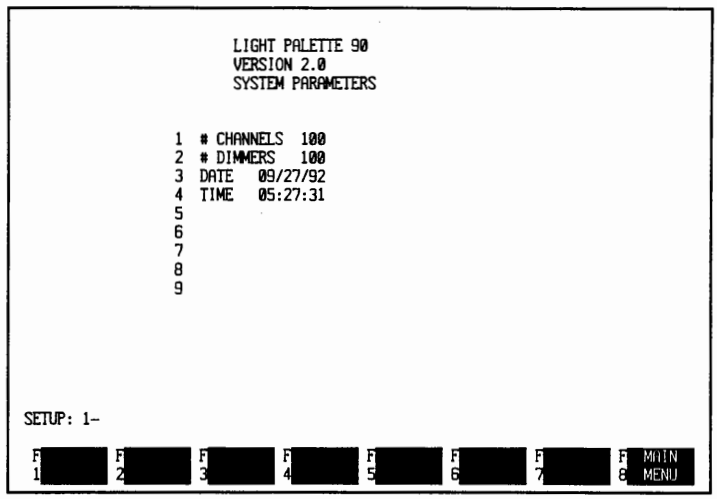
[9][list][*]

Inputs a list of submasters for which the bump button will act as a Quick Load button when you have an unterminated selection list. At all other times, the bump button will act as selected by the other four bump button functions. Assigning a bump button to Quick Load status does not change the bump status set by the other bump functions. To disable the Quick Load function you assign one of the other four bump functions.

System Parameters Menu

The *System Parameters* menu lets you tell the console the number of dimmers and channels in your theatre or studio.

Press
SETUP 1
to see the *System Parameters* menu.



Function Keys F1 F2 F3 F4 F5 F6 F7 F8 MAIN MENU

Exit from the Display F8 or 0 returns you to the *Setup* display.

System Functions PRINT SCREEN ← prints the current left hand display if the printer is active.

PRINT SCREEN → prints the current right hand display if the printer is active.

Commands 1 [#] *

Sets the number of channels in the system. Values are legal up to maximum number of channels supported on installed DPR cards (576 channels per card). Setting the number of channels higher than dimmers adjusts the number of dimmers to match the number of channels.

2 [#] *

Sets the number of dimmers in the system. Values are legal up to maximum number of dimmers supported on installed DPR cards (512 to 576 dimmers per card, depending on the dimmer output port configuration). Setting the number of dimmers lower than channels adjusts the number of channels to match the number of dimmers.

[3] [date] [*]

Sets the current date. Enter the date as mm/dd/yy, dd-mm-yy, or yy.mm.dd. This date appears on the *Playback* display above the fader information, and will be shown on all printouts.

[4] [time] [*]

Sets the current time. Enter the time as hh:mm:ss. This time appears on the *Playback* display above the fader information, and will be shown on all printouts.

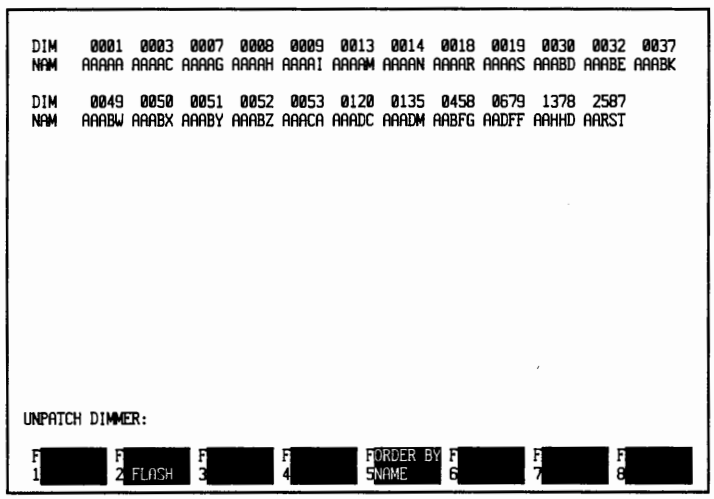
Unpatch Dimmer Display

The *Unpatch Dimmer* display shows all dimmers which are temporarily unpatched because you used [DIMMER]. This display shows the dimmer number, dimmer name, or both, depending on the current sort order setting.

Press

[UNPATCH DIM]

to see the *Unpatch Dimmer* display.



Function Keys

[F1] [F2 FLASH] [F3] [F4]

[F5 ORDER BY NAME] [F6] [F7] [F8]

Navigation

[PAGE+] pages forward through the *Unpatch Dimmer* display.

[PAGE-] pages backward through the *Unpatch Dimmer* display.

[channel or element] [*] goes to the display page with the lowest selected channel.

System Functions

[PRINT SCREEN] [←] prints the current left hand display if the printer is active.

[PRINT SCREEN] [→] prints the current right hand display if the printer is active.

Chapter 9

Tutorial

Lightpalette 90 series consoles have a proprietary user interface designed specifically for stage and studio lighting control. Despite the power and sophistication of this console, you should find it easy to learn and operate. You now have more control over the lighting for your show than with any previous lighting control system.

This tutorial will help you learn the basics, so that you can quickly operate lights and record and play back cues. Once you learn the basics, you can easily use most of the functions without having to reference extensive or complicated instructions. This tutorial does not address every function available in this powerful lighting control system. Complete details on each possible instruction are in the *Reference* chapter.

While learning to use this console, **Relax and enjoy yourself**. Don't worry about making mistakes. Explore the commands as you follow this tutorial. Experiment. You cannot damage the console with erroneous commands.

This tutorial contains step by step instructions for the following tasks:

Turn the Console ON 160
Set Channel Levels Live 160
Record a Manual Cue 164
Play Back a Manual Cue 165
Record a Single Fade Time 166
Record a Split Fade Time 167
Play Back Cues With Fade Time 168
Change Cue Timing and Sequencing 170
Multi-part Cues 173
Delay Time 178
Preview and Modify Cues 179
Controlling Scrollers 188
Groups 194
Submasters 198
Channel Control Lists 212
Profiles 217
Effects 223
Macros 235
Special Functions 243
Patch and Name Dimmers 247
System Setup 255
Disk & Reserve Functions 265
Printing 269
Clear Functions 271

Turn the Console ON

Turn the system keyswitch to ON and release it. It is a momentary action switch and will return to its center position. This turns the processor tower and its convenience outlet ON.

If your console power is plugged into an unswitched outlet rather than into the processor tower, turn the power switch on the rear of the console ON. This turns the console and its convenience outlets ON.

Whenever you switch the system ON, it must first determine that it is working properly, and then establish communications with the control consoles and remotes. Under normal circumstances you will see the message DPRs POWER UP HOT START each time you turn the system ON.

When you turn the console ON the displays will return to their status at the time you turned the console OFF.

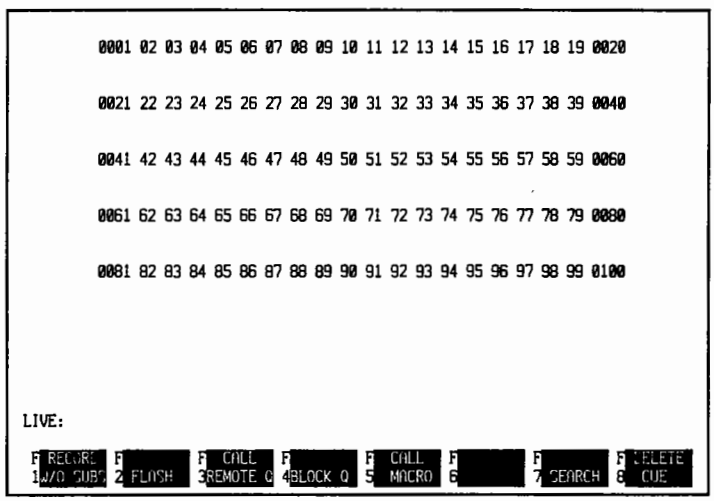
Set Channel Levels Live

The *Live* display lets you directly set channel output levels. You can use it to set light levels on stage and to record these levels into cues, groups, and submasters.

Press

LIVE

to access the *Live* display.



Set a Single Channel Level

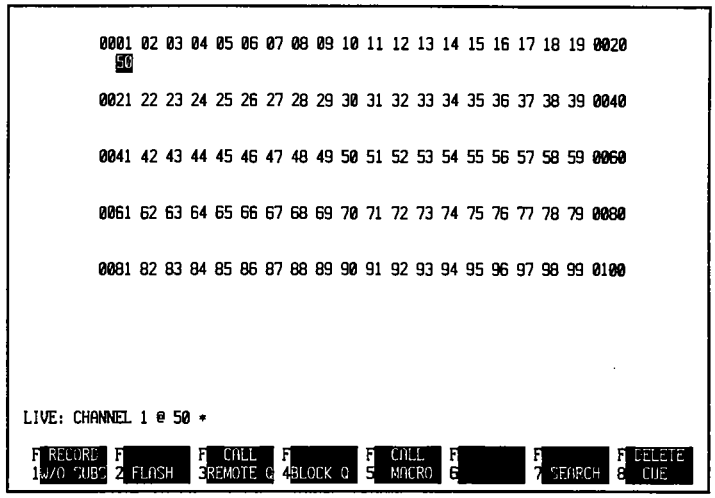
Once you are in the *Live* display, you set channels by giving the commands just as you would say them in English, ending the command with [*] to tell the console you are finished.

Press

[1][@][5][*]

to set channel 1 on stage at 50%.

The command line mimics your input as you make it. The channel level appears on the display when you press [*].



A reverse video channel level shows a channel controlled by the **Level Wheel** or the Level Control keypad. Move the **Level Wheel** up and down or type a new [@] **[level]** to see that it controls channel 1.

> *In order to conserve space, this manual will refer to the* **Level Wheel** *and Level Control keypad collectively as* **Level Wheel**. *When you are told to change levels with the* **Level Wheel** *you can use the keypad instead if you prefer.*

The channel will be released from the **Level Wheel** when you start another command line or press [CLEAR].

> *When entering levels,* [@][5][*] *is the same as* [@][5][0][*]. *Both commands set the channel at 50%. If you need to enter a level of 5%, you must enter* [@][0][5][*].

Set Multiple Channel Levels

Lightpalette 90 series control consoles use control lists to specify multiple channels and set their levels.

Control lists contain "Selectors" which let you select items for the list, "Operators" which let you form lists and specify levels, and "Shortcut Keys" which help you manipulate selected channel levels easily.

Selectors

[0] through [9] let you specify numeric entries and levels for control lists.

> *When entering levels, [@][5][*] is the same as [@][5][0][*]. Both commands set the channel at 50%. If you need to enter a level of 5%, you must enter [@][0][5][*].*

[.] lets you specify a channel list to be exclusively lamp channels. Scroller channels in the list will be ignored.

[.][.] lets you specify a channel list to be exclusively scroller channels. Lamp channels without an attached scroller will be ignored.

[GROUP] **[#]** specifies a group as a channel list (e.g., [GROUP][1][*] assigns group 1 channels to the **Level Wheel**) or level source (e.g., [GROUP][1][@][7][*] assigns group 1 channels to the **Level Wheel** at 70% of their recorded levels).

[CUE LEVEL] **[#]** specifies a cue as a channel list (e.g., [CUE LEVEL][1][*] assigns cue 1 channels to the **Level Wheel**) or level source (e.g., [CUE LEVEL][1][@][8][*] assigns cue 1 channel levels to the wheel at 80% of their recorded levels).

[CUE] **[#]** specifies a cue for modifying its attributes (e.g., [CUE][1][TIME][5][*] assigns a fade time of 5 seconds to cue 1) or loading it on a submaster (e.g., [LOAD SUB][1][CUE][2][*] loads cue 2 onto submaster 1).

Operators

[>] selects a range of channels, submasters, effects, groups, or cues (e.g., [1][>][5][@][5][*]).

> *"thru lists" are individual items when analyzing the logic of a command line. Though you must always specify item type for each entry when using [+] (e.g., [CUE LEVEL][1][+][CUE LEVEL][2][+] ...), you do not need to specify item type for the second entry of a "thru list" (e.g., [1][>][5]). This also means that you can subtract a "thru list" from the command list (e.g., [1][+][3][>][1][0][-][5][>][7][*]).*

[+] adds channels, submasters, effects, groups or cues following the [+] to the control list (e.g., [1][+][3][+][8][@][7][*])

> *When using [+] and [>] to make control lists, if there are overlapping channels (i.e., from 2 cues) the highest level takes precedence. To make the last level (rather than the highest level) take precedence for a particular channel or channels, specify the cue, subtract out the required channels, and then specify the second cue. When channels are subtracted out, their levels go to ZERO.*

[-] subtracts channels, submasters, groups, or cues from a range. (e.g., [1][>][8][-][5][@][4][*]).

> *If the first keystroke in a command is [-] the system assumes that it is prefixed by "All Channels" (e.g., [-][GROUP][1][*] means "All channels except the channels in group 1").*

[=] specifies relative levels for some channels before finishing the channel list. The items controlled by [=] are then mastered by the overall command line level (e.g., [1][>][8][=][5][+][1][5][@][8][0][*] sets channels 1 through 8 to 40% and channel 15 to 80%).

[@] lets you specify a level for the control list. If a level is already specified, and the channel is part of a lamp/scroller pair, this key lets you specify the scroller color.

> *[+], [>], and [-] are ignored if followed immediately by this operator. This lets you specify a level for a group of channels even if you have already typed in one of these operators.*

[@ FULL] lets you set selected channels to FULL (100% - e.g., [2][@ FULL][*]).

Shortcut Keys

Level shortcut keys are immediate action keys, and do not need to be followed by [*].

[OUT] turns the levels of elements under **Level Wheel** control OFF in the *Live* display. In the *Preview* display it removes changes from the selected channel, letting levels from earlier cues track through the current cue.

[-10%] decreases levels for selected channels by 10% (e.g., [1][+][5][-10%]).

[+10%] increases levels for selected channels by 10% (e.g., [1][>][9][+10%]).

[SET] sets selected channels to the "Set" level defined in the *Defaults* menu (e.g., [1][>][5][SET]).

Record a Manual Cue

Once you have a feel for how channel control works, you are ready for recording cues. For this demonstration, make sure that the channels are set as follows before proceeding.

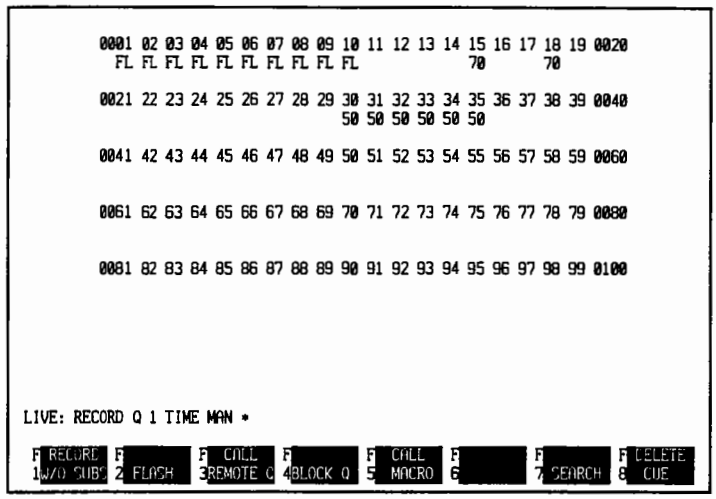
- 1 through 10 at FULL (1 > 1 0 FULL *)
- 15 and 18 at 70% (1 5 + 1 8 @ 7 0 *)
- 30 through 35 at 50% (3 0 > 3 5 @ 5 *)

Press

RECORD CUE 1 TIME *

to record the set levels as cue 1.

The command line mimics your input as you make it.



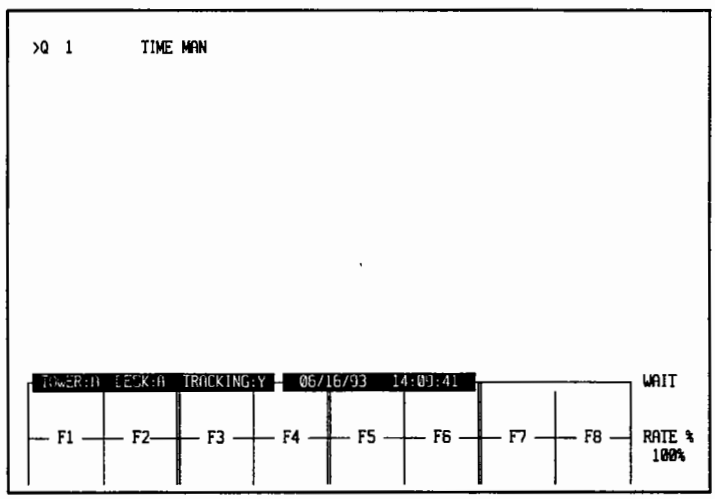
If you do not use TIME *here (i.e., if you press* RECORD CUE 1 * *) the time will default to the value set in the* Defaults *menu. Default time is accessed only when you first record a cue.*

Press

PLAYBACK CUES

if the Playback monitor does not already show the *Playback Cues* display.

The cue number appears on the cue sheet.



You have just recorded a manual cue. Note that the cue number appears on the *Playback Cues* display on the Playback monitor. Later, you will see how various special attributes can be attached to the cue for automatic playback.

Play Back a Manual Cue

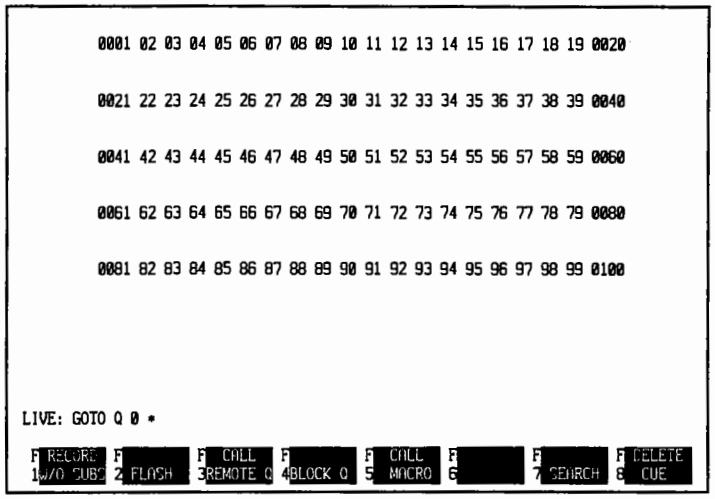
Manual cues require you to manually move a fader handle to bring the lights up on stage or crossfade between settings.

Press

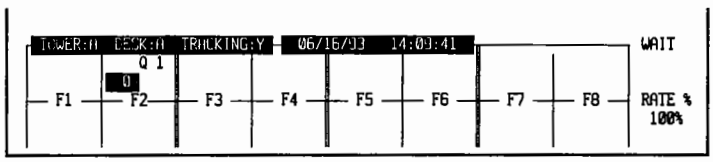
GO TO CUE 0 *

to go to a blackout on stage.

Cue zero is always a blackout, and cannot be changed.



The *Fader Status* display on the Playback monitor shows that cue 1 is loaded on **FADER 2**.

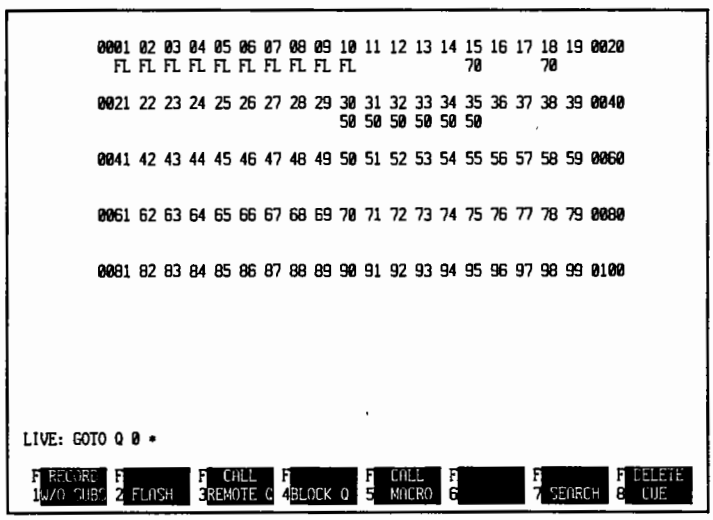


Press

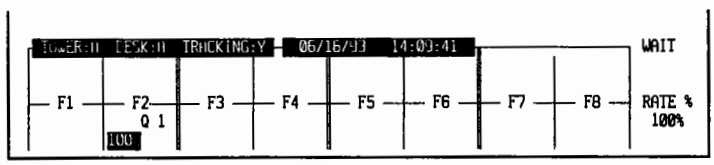
GO

and move FADER 2 Up

Cue 1 gradually fades on stage as you move the fader.



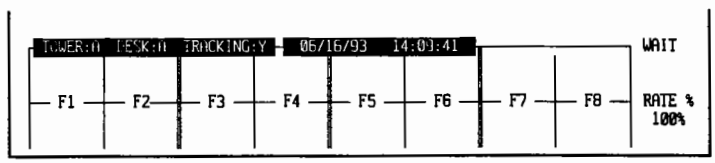
The *Fader Status* display shows cue 1 completed.



Press

2

above **FADER 2** to release the manual cue from the fader.



Record a Single Fade Time

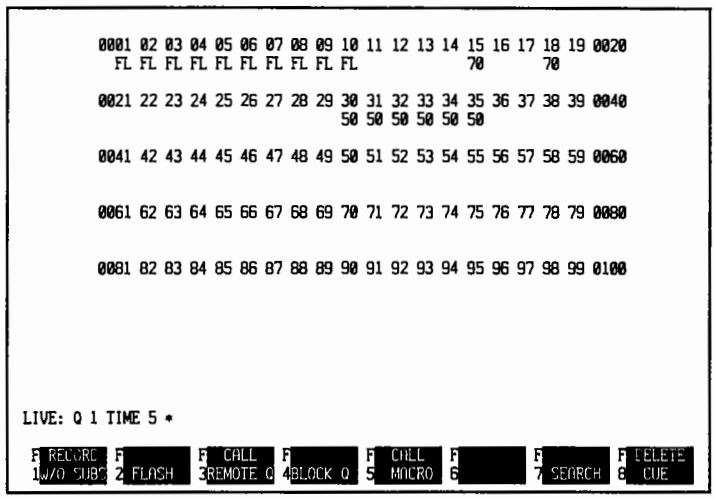
When a cue is initially recorded or selected in the *Preview* display, the system uses the default fade time established in the *Defaults* menu unless otherwise instructed. Default times can be either single or split fade times. Pushing [TIME] with no value results in a manual cue. Cues with recorded fade times will fade on stage in the specified time when started by pressing [GO]. With a single fade time, the up-fade (channels with increasing levels), and the down-fade (channels with decreasing levels) fade at the same rate. Split fade times let the up-fade and down-fade move at different rates in the same cue ("lead-lag" or "split" fades).

Press

[CUE] [1] [TIME] [5] [*]

to set cue 1 fade time to 5 seconds.

The command line mimics your input as you make it.



You now have a cue 1 with a fade time of 5 seconds. For this demonstration, please record a cue 2 with the following values:

- Channels 1 through 5 OUT
- Channels 11 and 12 at 70%
- Time 10

Record a Split Fade Time

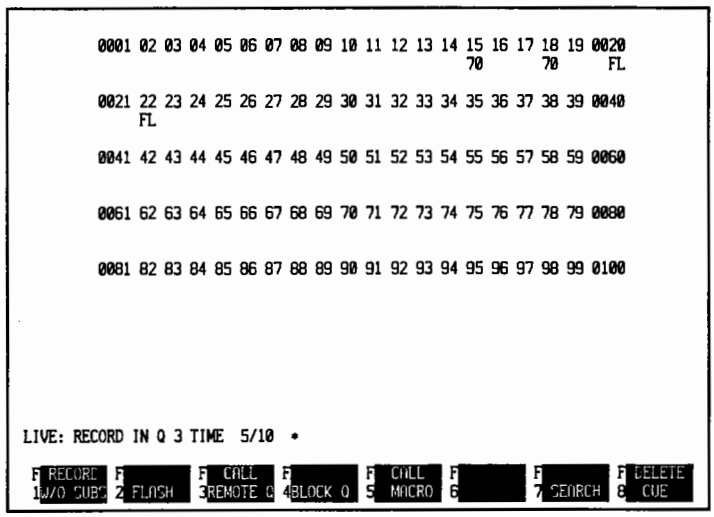
To record a split fade time, use the same format as above but enter two numbers separated by [/]. First, set levels on stage as follows:

- Channels 6 through 12 OUT
- Channels 30 through 35 OUT
- Channels 20 and 22 at FULL

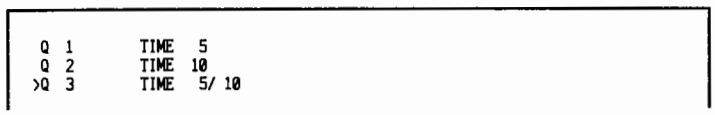
Press

[RECORD] [CUE] [3] [TIME]
[5] [/] [1] [0] [*]

to record cue 3 and set its up-fade time to 5 seconds and down-fade time to 10 seconds.



The *Cue Sheet* shows 3 cues recorded.



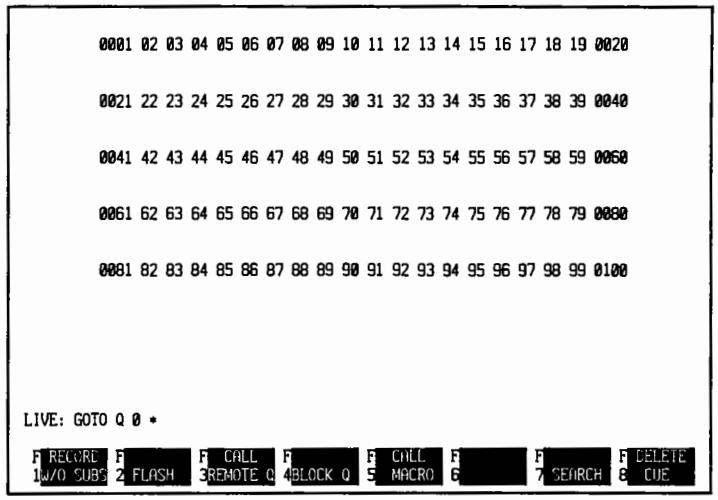
Play Back Cues With Fade Time

Cues with fade time recorded can be automatically played back by using GO. The system will take cues in their numerical order as you press GO.

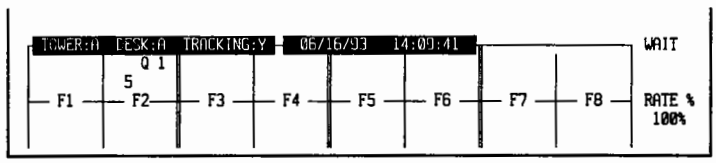
Press

GO TO CUE 0 *

to go to a blackout on stage.



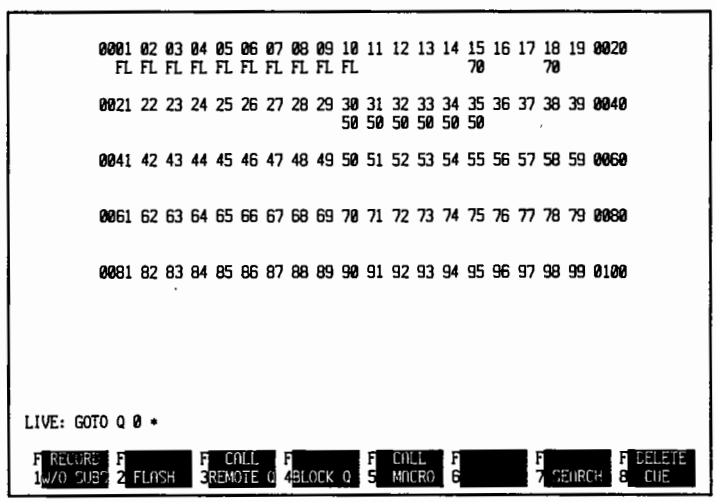
The *Fader Status* display shows cue 1 pending on **FADER 2.**



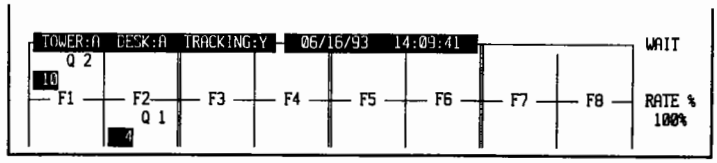
Press

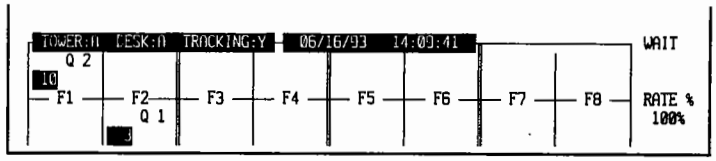
GO

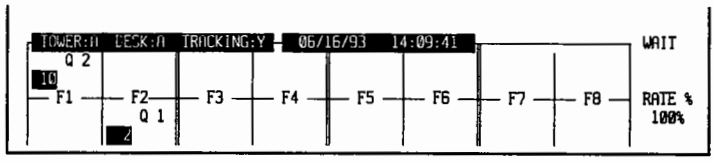
Cue 1 fades on stage in its recorded fade time of 5 seconds.

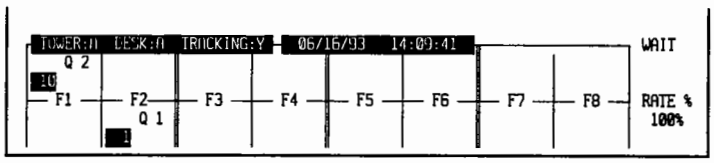


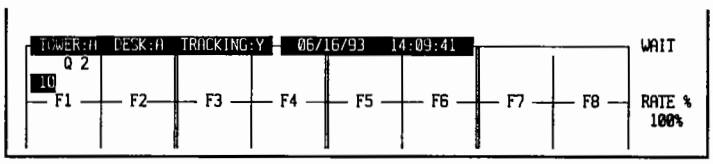
The *Fader Status* display shows cue 2 loaded pending on **FADER 1** and cue 1 time counting down.







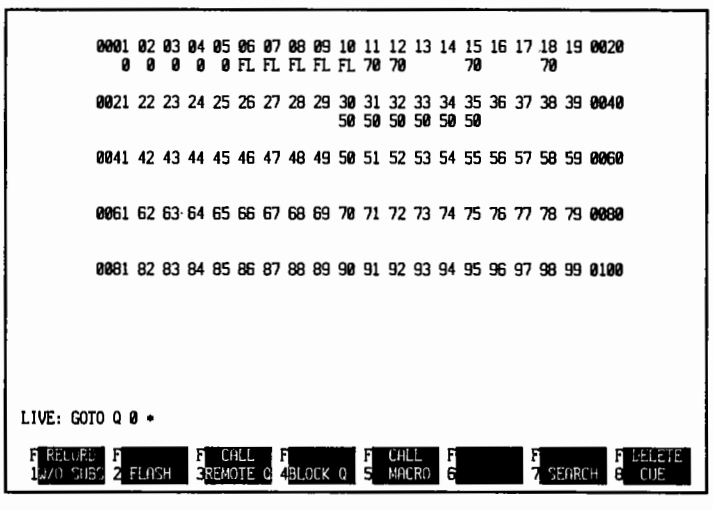


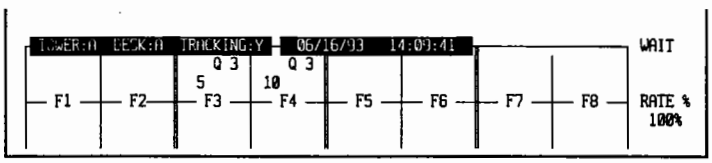


Press

GO

The system loads cue 3 pending on Faders 3 and 4, and cue 2 fades on stage in its recorded fade time of 10 seconds.



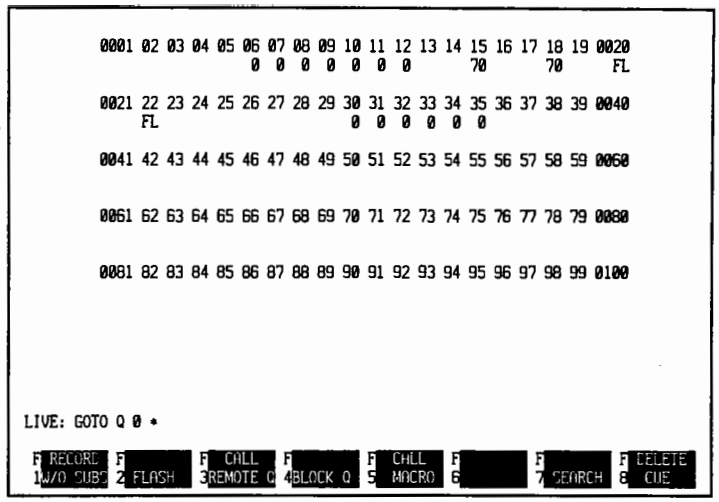


Press

GO

Cue 3 fades on stage in its recorded time.

Dimmers moving up (20 & 22) take 5 seconds to fade to recorded levels. Dimmers going out take 10 seconds.



Change Cue Timing and Sequencing

You do not have to run cues in the same order or with the same timing as they were recorded with. You can change sequencing manually if you want to change it only once, or reset the cue links to change the automatic sequencing.

Stop and Back Up Fades

You can press STOP BACK to stop all cues in progress. Press GO to re-start all cues from where they stopped. If you press STOP BACK with no fade in progress, stage lights will fade into the previous cue. You can press STOP BACK repeatedly to step back through your cues.

Manually Take Over Timed fades

You can manually take over and complete timed cues in progress by pressing the button above the fader and completing the fade with the fader controller. This lets you manually control the **remainder** of the cue, but will not let you go back to its starting state.

Modify Fade Rate

If you have assigned faders or submasters to the **RATE WHEEL**, you can change the fade rate while a timed fade is in progress by moving it up (away from you) or down (towards you). Moving the **RATE WHEEL** up speeds up the fade (makes the fade shorter). Moving the **RATE WHEEL** down slows down the fade (makes the fade longer).

When you power-up the console the rate wheel controls nothing. To assign all faders and submasters to the **RATE WHEEL**, press RATE *. To assign specific faders or submasters, press RATE, then press the fader manual or submaster bump button for all of the required controllers, and press * to complete the command. To clear all control from the **RATE WHEEL**, press RATE 0 *. This clears control, leaving the rate at its last setting until the submaster or fader is reloaded.

Play Cues Out of Sequence

You can use [GO TO CUE] to go directly to a cue, or [LOAD CUE] to load a cue onto a fader without starting it.

[GO TO CUE] starts the fade to the specified cue as soon as you press [*]. You can specify a fade time after the cue number if required (e.g., [GO TO CUE] [4] [TIME] [5] [*], which forces a fade to cue 4 in 5 seconds when you press [*]).

[LOAD CUE] loads the cue to the next available fader as the next cue. You must press [GO] to start the fade.

Modify Cue Sequencing

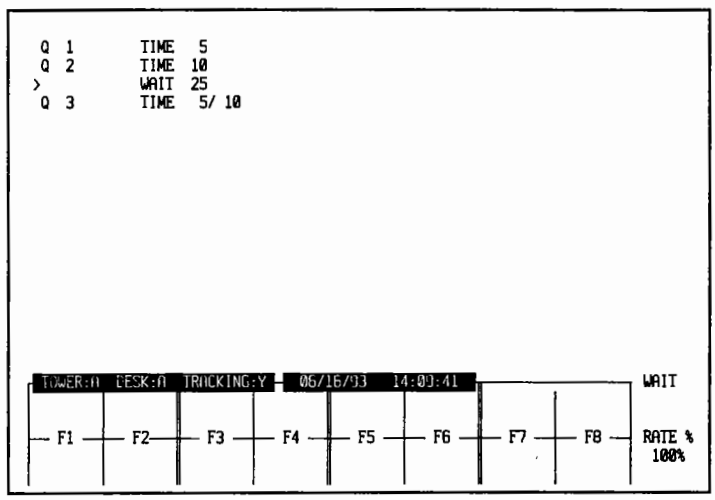
Cues can be automatically started by using [WAIT], and can be linked out of sequence using [LINK TO CUE].

Press

[CUE] [2] [WAIT] [2] [5] [*]

to insert a 25-second wait after cue 2.

This will start cue 3 automatically 25 seconds after you start cue 2.



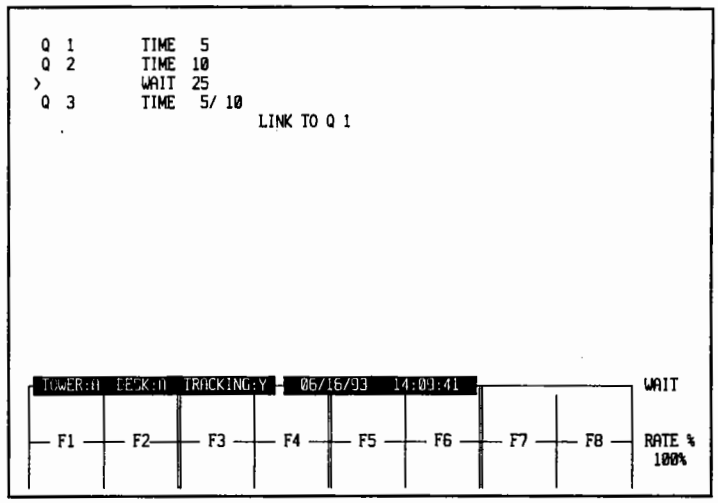
You can use wait times to automatically play back of a series of cues. Without wait times, you must press [GO] is to start every cue. Cues with wait times are also started by pushing [GO], but the system automatically loads and starts the next cue when the wait time has elapsed. The wait time countdown starts when the associated cue is started, either by using [GO], or by another wait time. cue 2 (which has a 10 second fade time and a 25 second wait) is on stage for 15 seconds before the system starts cue 3.

Press

CUE 3 LINK TO CUE 1 *

to link cue 3 to cue 1.

The system will now automatically load cue 1 when cue 3 is done.



Run Cues

to try the new sequencing.

Go back to cue 0 (GO TO CUE 0 *) and start the cues over again. Note that cue 3 starts automatically 25 seconds after you start cue 2. Pressing GO after cue 3 starts cue 1 again.

Remove Cue Links

You can remove cue links by not specifying the "link-to" cue.

Press

CUE 3 LINK TO CUE * to "unlink" cue 3.

The next cue after cue 3 will now be the next numerical cue (not recorded yet).

Multi-part Cues

You can create up to eight parts per cue with separate starting and ending times, fade rates, profiles, and effects. You can use parts to build a complex series of lighting moves within a single cue, requiring only a single press of GO to start the sequence.

Each part can have any number of channels moving to assigned levels, **but a channel can only be assigned to one part of a multi-part cue.**

> *If you set channels to move in one part of the cue (i.e., fade to FULL) and then make another move in a different part of the same cue (i.e., fade out), they will follow the instructions in the last recorded part.*

Each multi-part cue can have up to eight (8) parts. These can all be either single or split time fades. If a cue has more than eight fades (with split fades counting as two fades), all fades after #8 will go on "phantom faders". These fades will not be accessible from the console but will execute correctly. If you have any combination of up to eight fades, all of the fades will load onto console faders as long as the faders are not already occupied by higher priority fades.

Wait times assigned to multi-part cues apply to the entire cue. You must use DELAY to start different parts at different times. You can build multi-part cues from scratch or break single part cues into parts.

The following conventions determine loading precedence for multi-part fades:

- Split fades always land on the first available split crossfader pair. For instance, if faders 1, 2, and 3 have fades in progress, a split fade would be loaded on faders 5 and 6, which are the first available pair. **FADER 4** would not have any fade in progress unless another single time fade is started.
- Manual fade parts take precedence over timed fade parts.
- Non-split timed fade parts load last.

The first parts of a multi-part cue are loaded on physical faders (loaded left to right), unless preempted by split or manual fades in higher numbered parts.

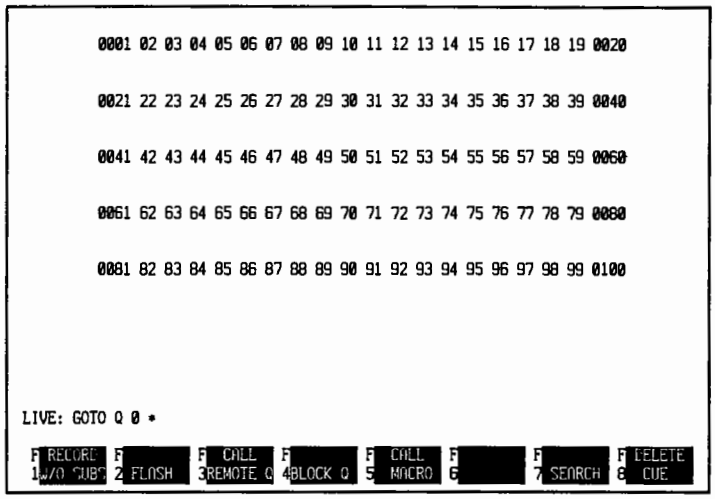
Create a Multi-part Cue

Multi-part cues can be built from scratch by setting the required dimmers on stage and entering a part number after the cue number when recording the cue.

Press

GO TO CUE 0 *

to go to cue zero.



Press

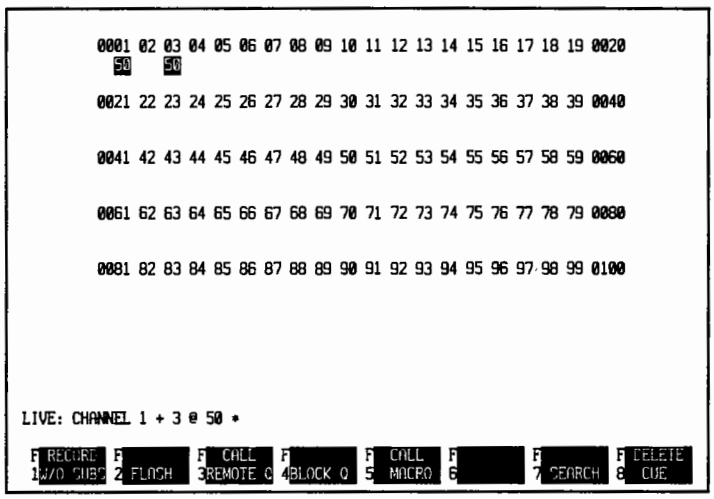
RECORD CUE 4 TIME 0 *

to record a blackout in cue 4 so that you can see the effect of the multi-part cue.

Press

1 + 3 @ 5 *

to bring the selected dimmers up on stage.



Press

RECORD CUE 5 PART 1
TIME 3 *

to record cue 5 part 1 with a 3 second fade time.

These channels change color to show they have been recorded and are no longer on the **LEVEL WHEEL**.

```
0001 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 0020
  50    50

0021 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 0040

0041 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 0060

0061 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 0080

0081 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 0100



LIVE: RECORD Q 5 P 1 TIME 3 *

F1 RECORD W/O SUBS  F2 FLASH  F3 CALL REMOTE Q  F4 BLOCK Q  F5 CALL MACRO  F6  F7 SEARCH  F8 DELETE CUE
```

The cue sheet shows cue 5 part 1.

```
 Q  1        TIME   5
 Q  2        TIME  10
             WAIT  25
 Q  3        TIME   5/ 10
 Q  4        TIME   0
>Q  5   P1   TIME   3
```

Press

2 + 4
@ 7 5 *

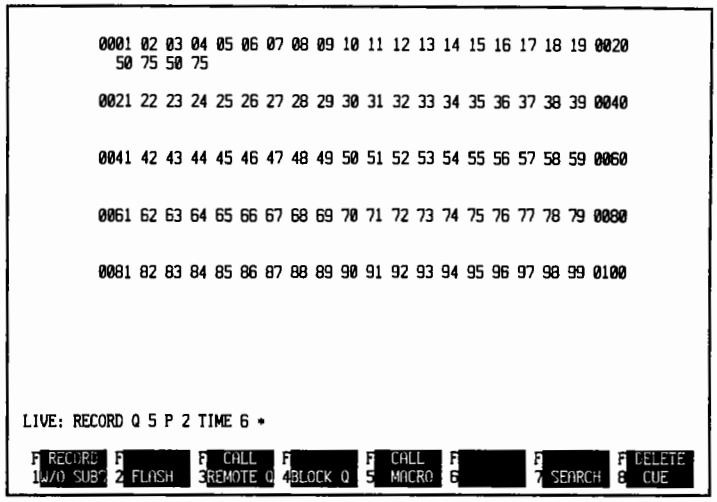
to bring additional channels up on stage.

```
0001 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 0020
  50 75 50 75

0021 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 0040

0041 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 0060

0061 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 0080

0081 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 0100



LIVE: CHANNEL 2 + 4 @ 75 *

F1 RECORD W/O SUBS  F2 FLASH  F3 CALL REMOTE Q  F4 BLOCK Q  F5 CALL MACRO  F6  F7 SEARCH  F8 DELETE CUE
```

Press

RECORD CUE 5 PART 2
TIME 6 *

To record cue 5 part 2 with a 6 second fade time.



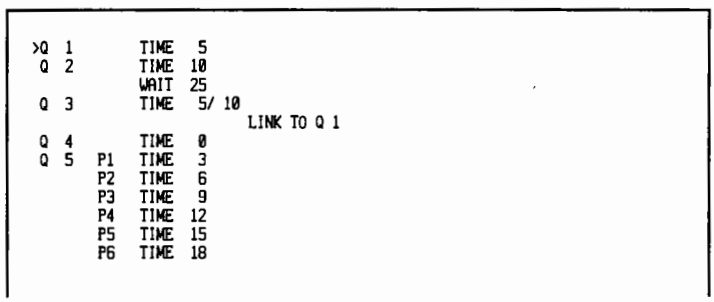
Record parts 3 through 6 using the same technique.

For this tutorial, please record the following additional cue parts:

- Cue 5 part 3: Channel 5 at FULL. Fade time is 9 seconds.
- Cue 5 part 4: Channel 6 at FULL. Fade time is 12 seconds.
- Cue 5 part 5: Channels 7 through 9 at 75%. Fade time is 15 seconds.
- Cue 5 part 6: Channels 10 through 12 at 50%. Fade time is 18 seconds.

You can form channel lists using +, >, and -. You can use -10%, +10%, SET, OUT, and FULL to help set channel levels.

The cue sheet shows all cue 5 parts.



Break an Existing Cue Into Parts

If you find that you need to split up an existing cue, you can break the existing cue into parts.

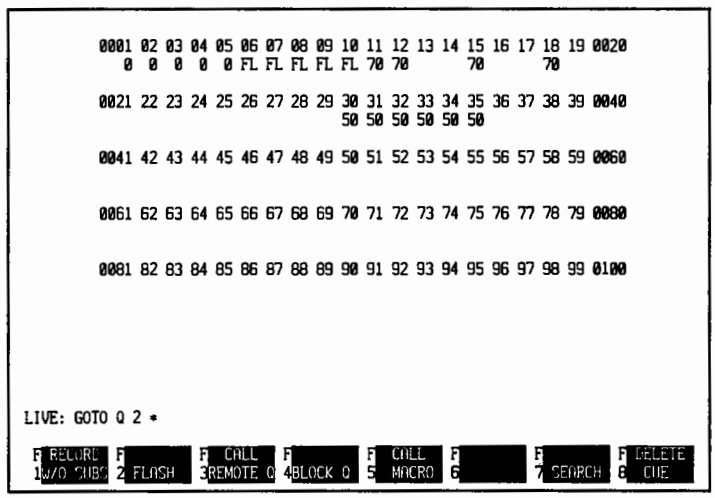
Existing cues all have part numbers, but the part numbers do not appear on the command line until a cue has at least two parts. The default part number for cues can be set to either "First Part" or "Last Part" in the defaults menu. When menu item 5 in the Defaults menu is set to FIRST PART a cue without parts is actually cue X part 1. You will get an error message if you try to create a part 1 for any cue, since it already exists. When this item shows LAST PART a cue without parts is actually cue X part 8 and you get an error message if you try to create a part 8.

This demonstration assumes that the default cue part is set to FIRST PART.

Press

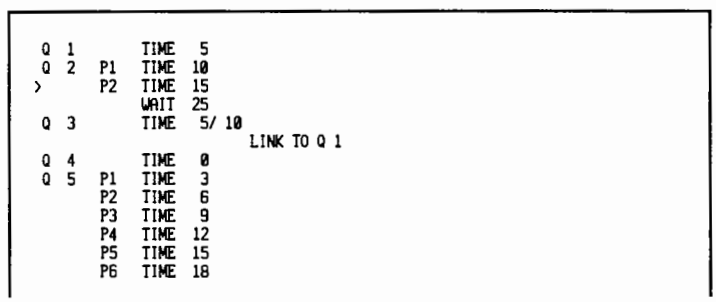
GO TO CUE 2 *

to go to cue 2 on stage.



Press

1 1 + 1 2
RECORD CUE 2 PART 2
TIME 1 5 *



This records the selected channels into cue 2 part 2, with a fade time of 15 seconds. Parts 1 and 2 appear on the *Cue Sheet* display. The system puts the original channel moves and the original cue time, into part 1. You have just split off 2 of the channels moving in this cue as a separate 15 second fade.

To see the results of your efforts so far, go back to cue 0 (GO TO CUE 0 *) and use GO to advance through the cues.

Use the RATE WHEEL to Master Faders

You can use the **RATE WHEEL** to master multi-part cues just as you master single part cues. When adjusted, it changes the rate of all running cues or cue parts unless you have assigned it to specific faders. This is the only method of adjusting the rate of a "phantom fade."

Delay Time

You can use delay times to start a cue or cue part at some fixed time after you press GO. Using delay times skillfully will let you record an 8 part cue with all parts starting and ending at different times. Delays can be put on single part cues if required (i.e., a timed delay after a specific action, or a cue call before the required start of fade). A single delay time delays both the up-fade and down-fade. Split delays let you create different delay times for the up-fade and down-fade.

In this section, the cue 5 you recorded previously is modified so that the cue parts **end** together, rather than **start** together.

Record Delay Times

Record channels 8 and 11 at FULL in cue 4, so that there will be some channels fading down when cue 5 starts (GO TO CUE 4 * 8 + 1 1 FULL * RECORD CUE 4 TIME 0 * *).

Press

CUE 5 PART 1
DELAY 2 1 *

to record a 21 second delay for cue 5 part 1.

```
>Q  1        TIME   5
 Q  2   P1   TIME  10
        P2   TIME  15
             WAIT  25
 Q  3        TIME   5/ 10
                        LINK TO Q 1
 Q  4        TIME   0
>Q  5   P1   TIME   3      DELAY  21
        P2   TIME   6
        P3   TIME   9
        P4   TIME  12
        P5   TIME  15
        P6   TIME  18
```

Complete other fade parts

Record delay and fade times for the other cue 5 parts as follows:

- Part 2 delay = 18
- Part 3 delay = 15
- Part 4 delay = 12
- Part 5 time = 15/18, delay = 9/6
- Part 6 time = 21/24, delay = 3/0

The Cue Sheet shows delay times and new fade times for all cue 5 parts.

```
 Q  3        TIME   5/ 10
                        LINK TO Q 1
 Q  4        TIME   0
>Q  5   P1   TIME   3      DELAY  21
        P2   TIME   6      DELAY  18
        P3   TIME   9      DELAY  15
        P4   TIME  12      DELAY  12
        P5   TIME  15/ 18  DELAY   9/  6
        P6   TIME  21/ 24  DELAY   3/  0
```

Press

GO TO CUE 4 *

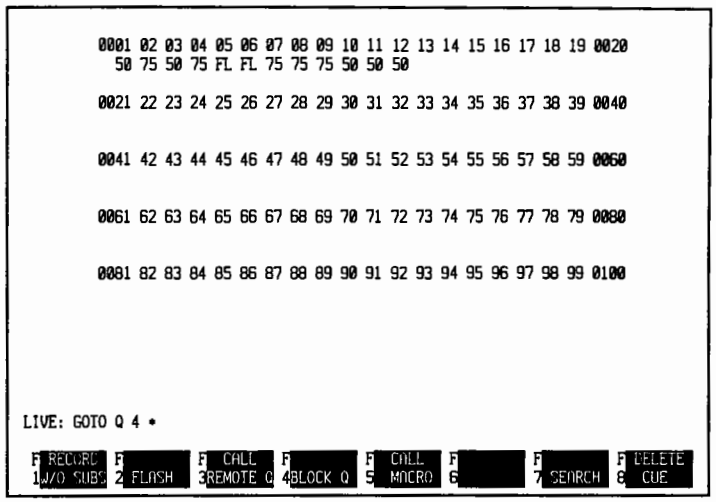
to get to cue 4.

Press

GO

to start the fade into cue 5.

The parts start at 3 second intervals but finish together.



Preview and Modify Cues

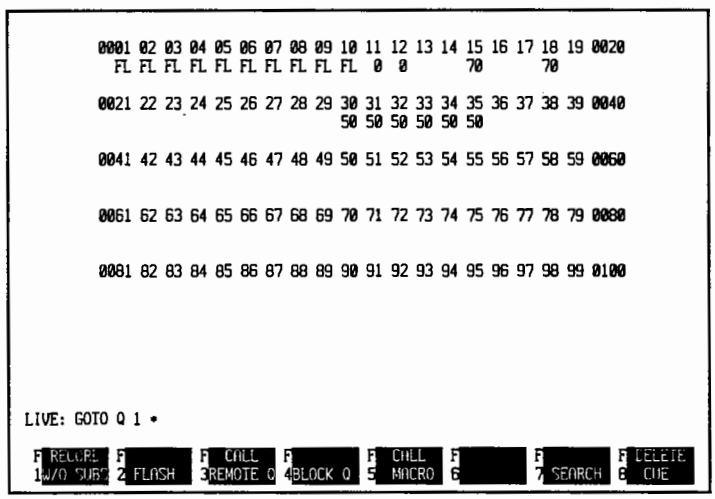
This section demonstrates how to modify and delete cues. In many circumstances, this would be the time to switch the Q-Only Function ON in the *Defaults* menu (SETUP 5 1 - see page 261 or the Defaults Menu section of the *Reference* chapter), since this would eliminate questions about what tracked and what did not. For demonstration purposes, the console will remain in Tracking mode throughout this chapter.

Modify Cue Levels Live

You can modify cues live by bringing the cue on stage, setting new levels, and re-recording the cue.

Press

GO TO CUE 1 *

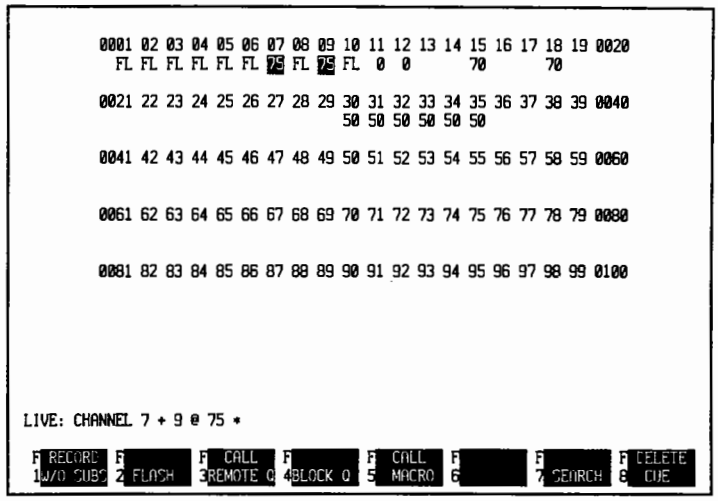


Press

7 + 9 @

7 5 *

to change the selected channel levels on stage.

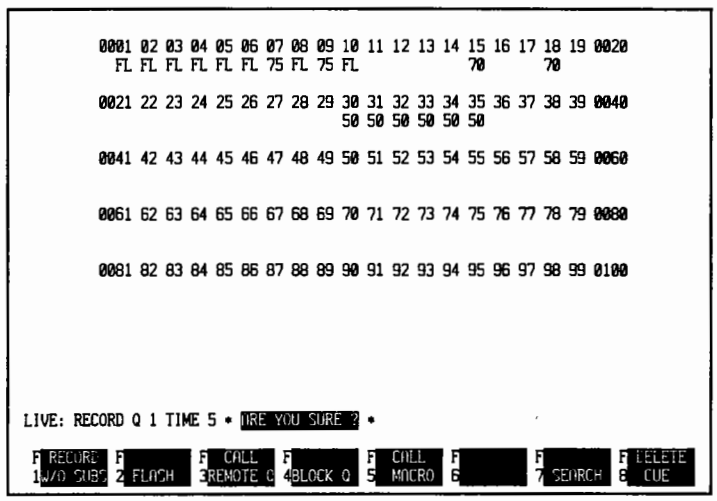


Press

RECORD CUE * *

to record the new channel levels in the current cue.

Channel levels are recorded and return to normal video (black background) to show that they are no longer controlled by the **LEVEL WHEEL**.



*You must press * twice to record over levels for cue 1 because the system always asks* ARE YOU SURE ? *when you try to write over previous data.*

These new channel levels will track into cue 2, since there is no level change recorded for them in cue 2.

Press

1 3 @ FULL *

to change the channel 13 level on stage.

```
0001 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 0020
  FL FL FL FL FL FL 75 FL 75 FL       FL    70       70

0021 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 0040
                              50 50 50 50 50 50

0041 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 0060

0061 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 0080

0081 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 0100

LIVE: CHANNEL 13 @ FL *

F1 RECORD 1W/O SUB  F2 2 FLASH  F3 CALL 3REMOTE Q  F4 4BLOCK Q  F5 CALL 5 MACRO  F6 6  F7 7 SEARCH  F8 DELETE 8 CUE
```

Press

RECORD Q-ONLY TRACK * *

to record the new channel level in this cue only and record a fade back to zero in cue 2.

The channel level returns to normal video (black background) to show that channel 13 is no longer controlled by the **LEVEL WHEEL**.

```
0001 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 0020
  FL FL FL FL FL FL 75 FL 75 FL       FL    70       70

0021 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 0040
                              50 50 50 50 50 50

0041 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 0060

0061 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 0080

0081 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 0100

LIVE: RECORD Q 1 TIME 5 Q-ONLY * ARE YOU SURE ? *

F1 RECORD 1W/O SUB  F2 2 FLASH  F3 CALL 3REMOTE Q  F4 4BLOCK Q  F5 CALL 5 MACRO  F6 6  F7 7 SEARCH  F8 DELETE 8 CUE
```

Channel 13 would normally track into cue 2, since there is no fade command in cue 2. Using Q-ONLY TRACK records a level change in cue 1, and a change back to zero in cue 2, assuring that the channel appears only in cue 1. You would not use Q-ONLY TRACK if the console were in Q-Only mode.

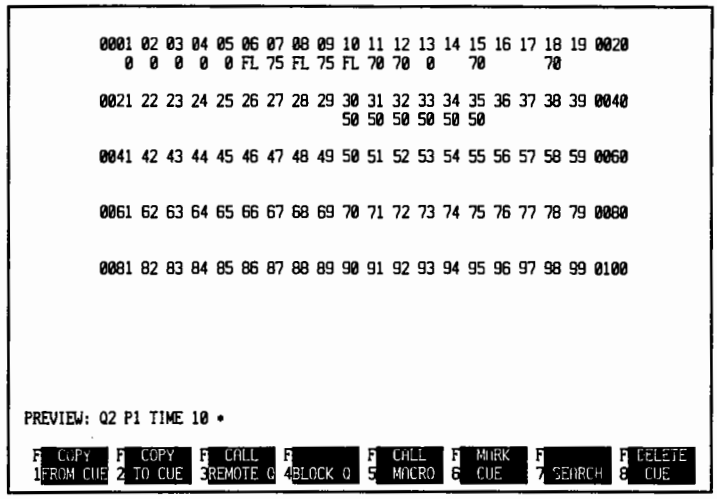
Preview Cues

You can preview cues by displaying the *Preview* display for the cue. Once you are in a *Preview* display you can use NEXT and LAST to preview other cues.

Press

PREVIEW CUE 2 *

to see the *Preview* display for cue 2.



NEXT shows you the next cue or part.

LAST shows you the previous cue or part.

PAGE+ shows you the next page of the same cue.

PAGE- shows you the previous page of the same cue.

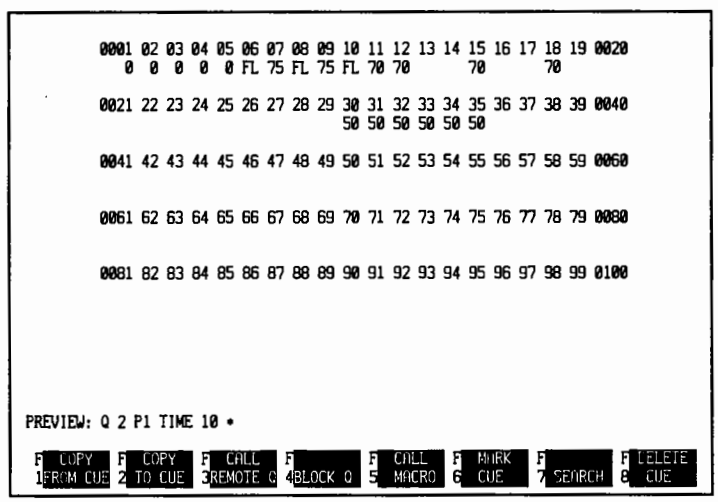
Modify Cue Levels in Preview

You can modify cues blind (without changing their levels on stage) by using the *Preview* display.

Press

PREVIEW CUE 2 *

to see the *Preview* display for cue 2.



If you call up a non-existent cue in the Preview *display you will create a new cue that tracks all of the levels from the next lower numbered cue.*

Press

[1] [@] [5] [*]

to record channel 1 at 50% in cue 2.

Since you did not use a part number, new levels are recorded into cue 2 part 1.

```
0001 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 0020
  50  0  0  0  0 FL 75 FL 75 FL 70 70  0    70       70

0021 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 0040
                              50 50 50 50 50 50

0041 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 0060

0061 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 0080

0081 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 0100

PREVIEW: Q 2 P 1 CHANNEL 1 @ 50 •

F1 COPY   F2 COPY   F3 CALL   F4        F5 CALL   F6 MARK   F7        F8 DELETE
   FROM CUE    TO CUE    REMOTE Q  BLOCK Q   MACRO     CUE       SEARCH    CUE
```

Caution

Changing channel levels while in the Preview *display automatically records the new levels* ***without any additional prompts.***

Press

[1] [1] [@] [2] [5]

[Q-ONLY TRACK] [*]

to record channel 11 at 25% in cue 2 part 1 and force it not to track into cue 3.

This channel is moved from part 2 (where it was previously recorded) to part 1.

```
0001 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 0020
  50  0  0  0  0 FL 75 FL 75 FL 25 70  0    70       70

0021 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 0040
                              50 50 50 50 50 50

0041 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 0060

0061 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 0080

0081 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 0100

PREVIEW: Q 2 P 1 CHANNEL 11 @ 25 Q-ONLY •

F1 COPY   F2 COPY   F3 CALL   F4        F5 CALL   F6 MARK   F7        F8 DELETE
   FROM CUE    TO CUE    REMOTE Q  BLOCK Q   MACRO     CUE       SEARCH    CUE
```

Modify Fade, Delay, or Wait Time

You can modify fade, delay, and wait times in the *Live* or *Preview* displays.

Press [LIVE] or [PREVIEW] to select appropriate display. Once in the *Live* or *Preview* display, modify the time value.

[CUE][#][PART][#][TIME][#][/][#][*]

[CUE][#][PART][#][DELAY][#][/][#][*]

[CUE][#][PART][#][WAIT][#][/][#][*]

> *You do not need to enter the cue number if the correct cue is marked by the record cursor (>) on the* Cue Sheet *display. New information appears on the* Cue Sheet *display. These procedures do not change recorded channel levels or command line information you do not specifically include. You can change more than one time value in the same command statement if you wish.*

Delete Fade, Delay, or Wait Time

You can delete fade, delay, and wait times in the *Live* or *Preview* display.

Press [LIVE] or [PREVIEW] to select appropriate mode. Once in the *Live* or *Preview* display, delete a time value.

[CUE][#][PART][#][TIME][*]

[CUE][#][PART][#][DELAY][*]

[CUE][#][PART][#][WAIT][*]

> *You do not need to enter the cue number if the correct cue is marked by the record cursor (>) on the* Cue Sheet *display. New information appears on the* Cue Sheet *display. These procedures do not change recorded channel levels or command line information not specifically included. You can change more than one time value in the same command statement if you wish.*
>
> *When you delete a fade time, the cue changes to a manual fade cue. When you delete a delay or wait time, the times disappear.*

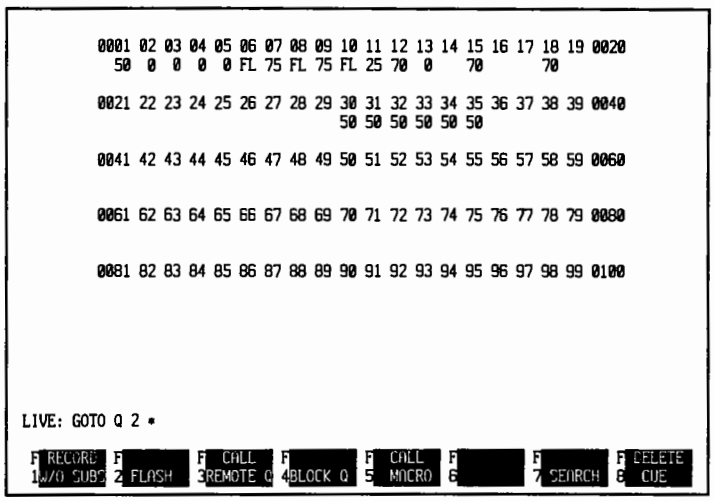
Insert Cues Live

You can insert cues live by changing channel levels in an existing cue and recording it as a cue with a number after the decimal.

Press

LIVE GO TO CUE 2 *

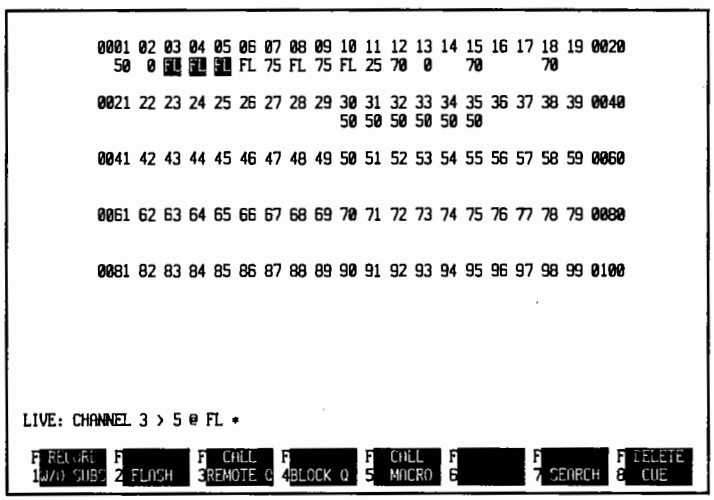
to see cue 2 live on stage. It will take about one second to fade into cue 2.



Press

3 > 5 @ FULL *

to see new channel levels on stage.

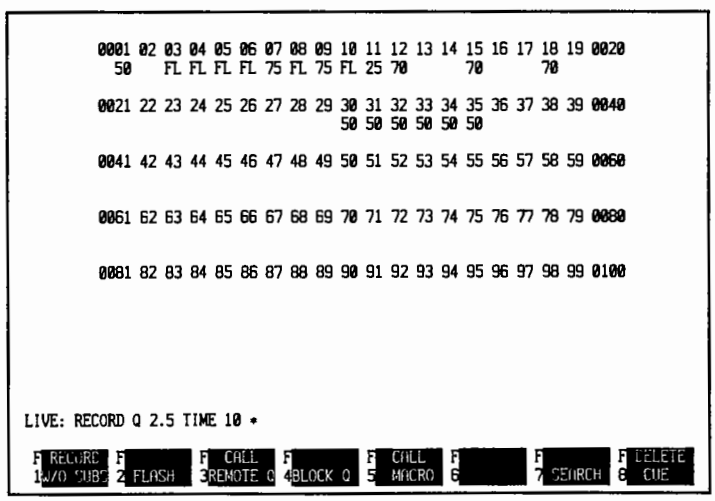


Press

RECORD CUE 2 . 5
TIME 1 0 *

to record a new cue 2.5 which is between cue 2 and 3.

These new channels will track into cue 3 since cue 3 has no level changes for them.



Insert Cues in Preview

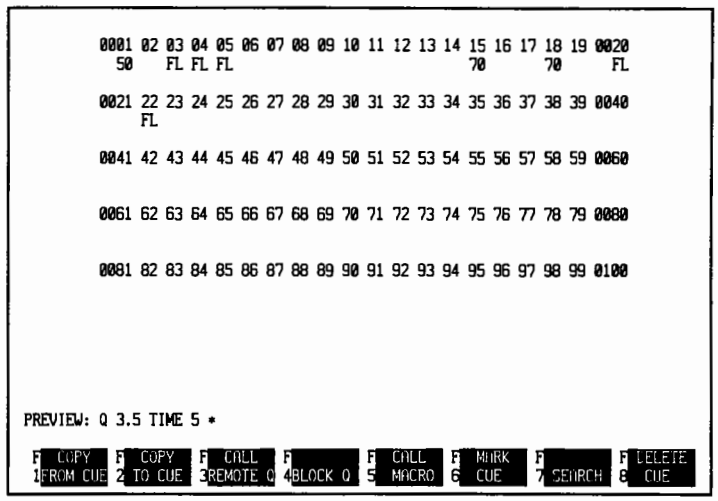
A new cue is automatically created if you try to preview a non-existant cue. You can insert cues blind by choosing a non-existant cue in the *Preview* display and changing its levels.

Press

PREVIEW CUE 3 . 5 *

to see cue 3.5 in the *Preview* display.

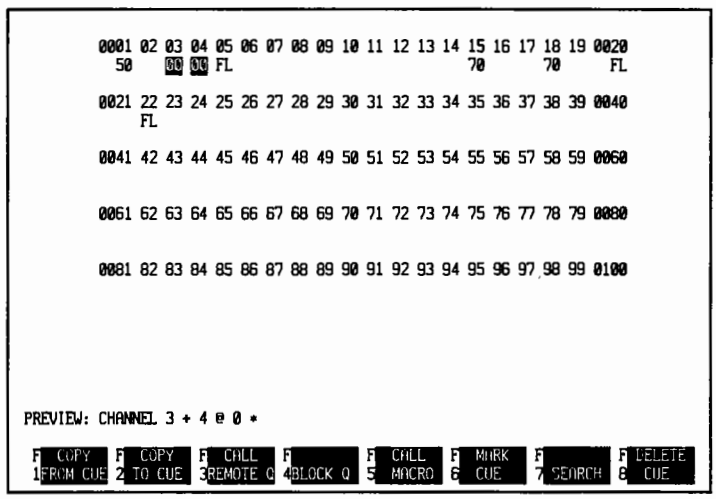
This creates a cue 3.5 with levels tracking from cue 3.



Press

3 + 4 @ 0 *

to record new channel levels in cue 3.5.



You can use COPY BACK *in the* Preview *display just as you did in the* Live *display to prevent channel changes from tracking into the next cue.*

Copy Cues

You can copy cues in the *Preview* display by using the F1 COPY FROM CUE and F2 COPY TO CUE Function keys.

> *Copying to or from an adjacent cue (i.e., there are no cues between the source and destination cue) will renumber the source cue to the destination cue number (copy the contents of the source cue to the destination cue and delete the source cue)*

Press CUE 3 F2 1 2 * to copy the contents of cue 3 into cue 12 without changing cue 3.

A new cue 12 appears on the Cue Sheet. If a cue 12 already exists, the system will ask for confirmation of the copy.

Press CUE 1 2 F2 1 3 * to rename cue 12 to cue 13.

A new cue 13 appears on the Cue Sheet and cue 12 disappears.

Press CUE 1 4 * F1 1 3 * to rename cue 13 to cue 14.

> *The destination cue must exist for you to use F1 COPY FROM CUE. If cue 14 already existed, you would not have to enter the first * above.*

Press CUE 1 5 * F1 3 * to create a cue 15 identical to cue 3 without changing cue 3.

A new cue 15 appears on the Cue Sheet.

> *You can also copy a cue in the* Preview *display by using the format CUE [#] @ CUE [#] *. If you specify an adjacent cue as the destination the command will change the number of the cue but maintain the original data (move the cue). If you specify a non-adjacent cue as the destination the command will leave the original cue in place and create an identical cue with the new number (copy the cue). This matches the original Lightpalette method of copying cues.*
>
> *You can copy cues in the* Live *display by bringing the source cue on stage and recording it with a new number.*

Mark and Copy Cues

You can mark and copy channel information between cues in the *Preview* display by using F6 MARK CUE.

Press CUE 6 * 2 1 > 2 6 F6 CUE 6 * to copy the listed channel levels from cue 6 into cue 4. If you do not list channels, the whole cue will be copied. If you do not specify a cue number to copy from, level information is copied from the next cue.

Delete Cues

You can delete cues in the *Live* or *Preview* displays.

Press F8 1 4 * ARE YOU SURE ? * to delete cue 14.

The system will always ask for confirmation (requiring you to press [*] twice) when you delete a cue.

To delete a part of a multi-part cue, specify the part number after the cue number in the command. If you do not specify the part number the entire cue will be deleted.

Delete Cues With [Q-ONLY TRACK]

When the console is in Track mode you can use [Q-ONLY TRACK] with [F8 DELETE] to eliminate the specified cue and copy any move commands to the next cue. This insures that the lights on stage for the following cue will remain unchanged.

Press [F8] **[#]** [Q-ONLY TRACK] [*] ARE YOU SURE ? [*] to delete a cue, copying any move instructions to the next recorded cue.

> *If* Q-ONLY *is ON in the* Defaults *menu you should not use* [Q-ONLY TRACK]*, since it will delete channel move instructions from the track sheet and possibly change channel levels in following cues.*

Controlling Scrollers

Lightpalette 90 control consoles let you assign scroller color control channels to their associated lamp channels. This not only associates the two channels, but also makes sure that the scroller channels are properly identified to the console. Since scroller channels are treated differently from lamp channels, you should always make sure that scroller channels are assigned to a lamp channel or are unpatched.

Scroller channels are treated differently from lamp channels in several important ways:

- Scrollers do not respond to the **[list]** [REM DIM] [*] command.
- Scrollers do not respond to the [GO TO CUE] [0] [*], or [LOAD CUE] [0] [*] commands, but will respond to any other levels used in these commands.
- When lamp and scroller channels are placed on the wheel together, scrollers are only moved when they are first placed on the wheel. Additional wheel movement only changes lamp levels. To use the wheel to control scroller colors, you must use the **..** operator to assign only scroller channels to the wheel.
- In effects, scrollers are driven to their requested levels in the "in" phase of each step. Nothing happens to scrollers in the "out" phase of each step. Scrollers must be present in channel lists through [.] [.] **[list]** [=] **[color]** phrases or specified as part of elements (e.g. groups) embedded in the step.
- Since the NEGATIVE and ALTERNATE effect attributes switch the high/low output levels, they do not affect scroller color.

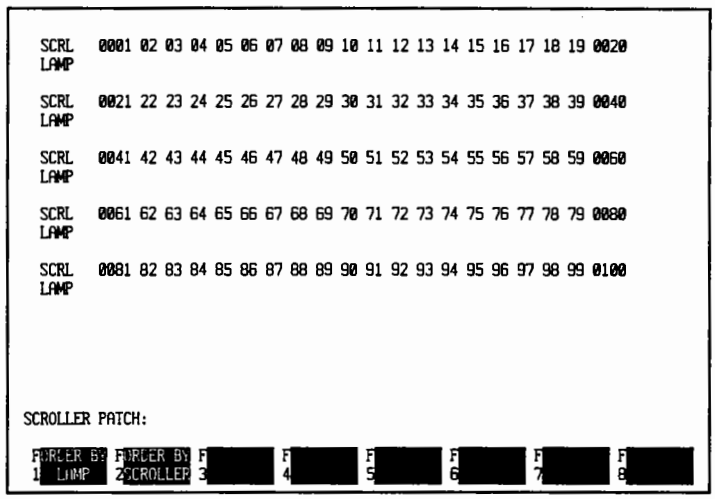
Patch Scrollers

You can patch scroller channels to lamp channels in the *Scroller Patch* display. Only one scroller channel can be assigned to each lamp channel. Any channels you do not assign in this display will be treated as lamp channels by the console.For this tutorial, we will assume that scrollers are plugged into channels 97, 98, and 99.

Press

SCROLLER PATCH

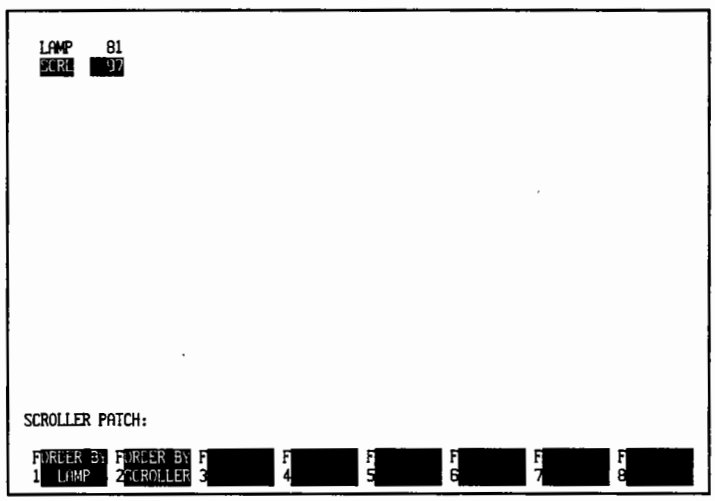
to see the *Scroller Patch* display.



Press

8 1 @ 9 7 *

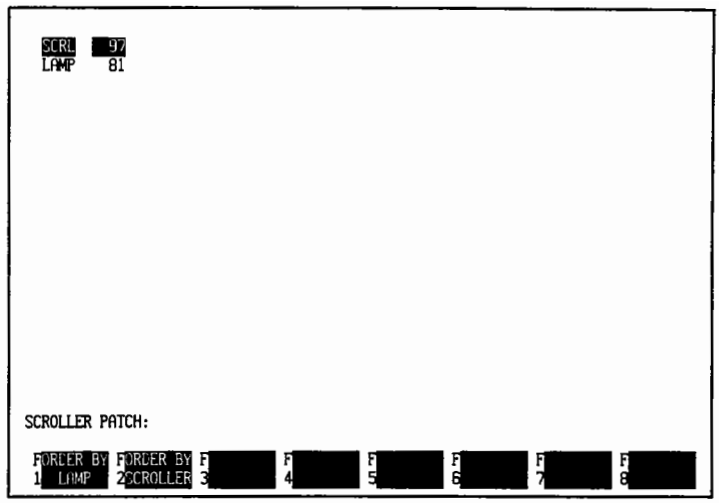
to patch lamp channel 81 to scroller channel 97.



Press

F2

to reorder the display with the scroller information on top.

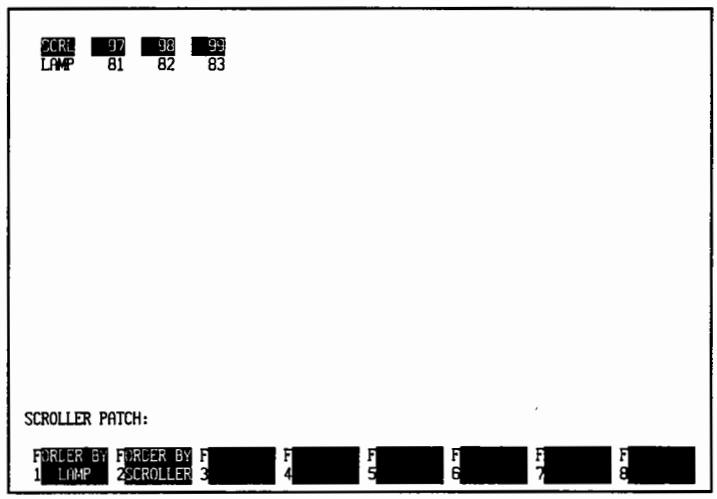


Press

9 8 @ 8 2 *

9 9 @ 8 3 *

to patch the other two scrollers.



The order of scroller and lamp numbers in the command depends on which item is on the top row. Always specify the top item in the display first. Press F1 to change back to the original order.

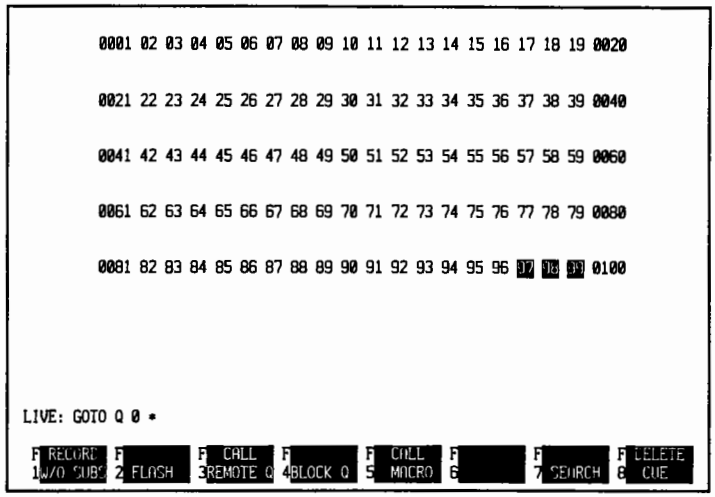
Set Scroller Levels

Once scrollers are patched, you can only control them by using the .. operator in a command line. You cannot control scrollers and lamps on the **LEVEL WHEEL** at the same time.

Press

LIVE GO TO CUE 0 *

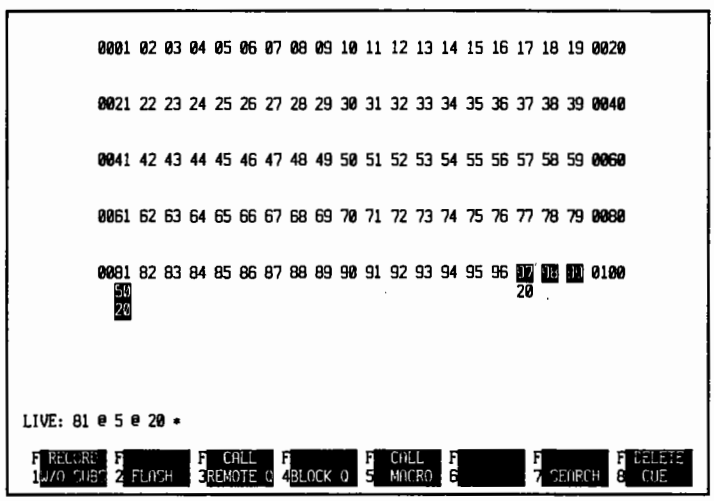
to put a blackout on stage.



Press

8 1 @ 5 @ 2 *

to set lamp 81 at 50% and its scroller to the color represented by 20%.



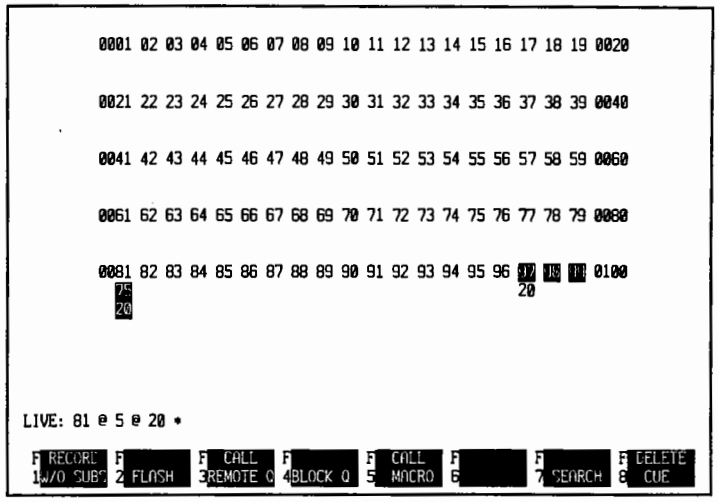
The color represented by 20% will differ between scroller types, and will also depend on the colors loaded into the scroller.

When you assign scroller lamp and color levels without explicitly telling the console that you want to control color, only the lamps are assigned to the **LEVEL WHEEL**.

Move

the **LEVEL WHEEL** until the lamp level is at 75%.

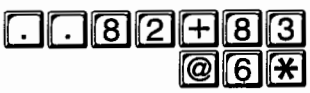
The scroller color will not change, since the command assigned only the lamps to the **LEVEL WHEEL**.



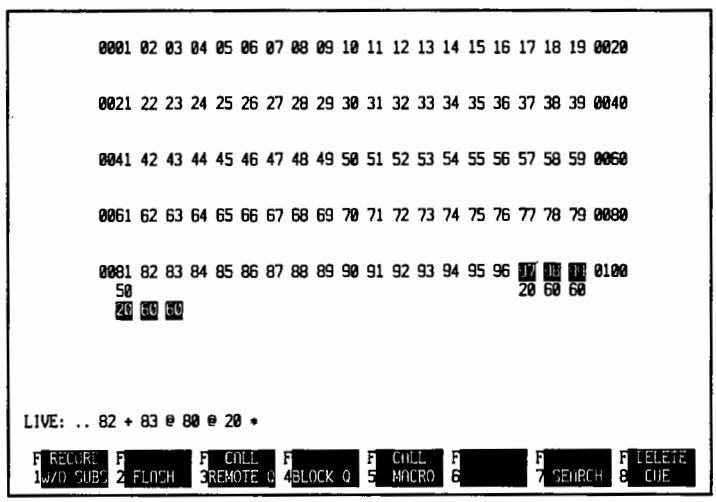
Assign Scrollers to the LEVEL WHEEL

To use the level wheel for scroller control, you must explicitly assign the scrollers in the command line with the .. operator.

Press



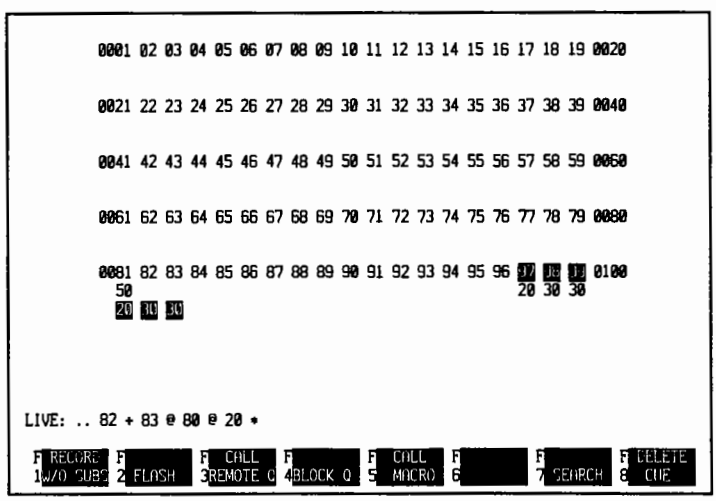
to assign the scrollers for lamps 82 and 83 to the wheel and set them to the 60% color.



Move

the **LEVEL WHEEL** until the scrollers get to their 30% color.

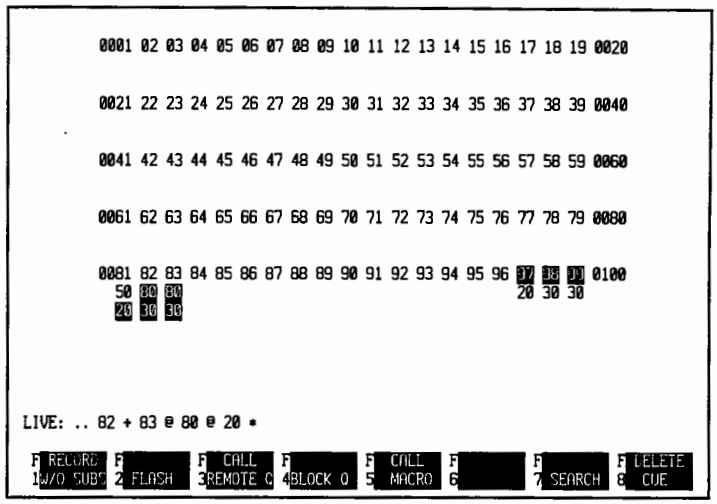
The lamp level will not change, since the .. operator in the command assigned only the scrollers to the **LEVEL WHEEL**.



Press

8 2 + 8 3 @ 8 *

to assign channel 82 and 83 lamps to the wheel and set them to 80%.



Record Scroller Cues

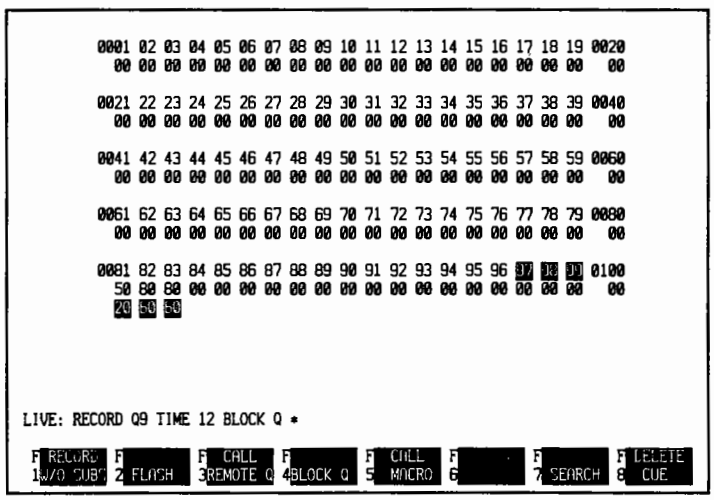
You can record lamp/scroller pairs into cues just like any other lamp-only channel. However, if you want the lamp to fade up slowly while the scroller switches instantly to its new color, you need to record lamp and scroller information in two separate cues, or record a two part cue with the lamp and scroller information in separate parts. The easiest way to do this is to put both lamp and scroller information into the new cue, and then use F6 MARK CUE to copy the scroller colors into the previous cue so that the color is already set when the lamps begin fading up.

Press

RECORD CUE 9

TIME 1 2 F4 *

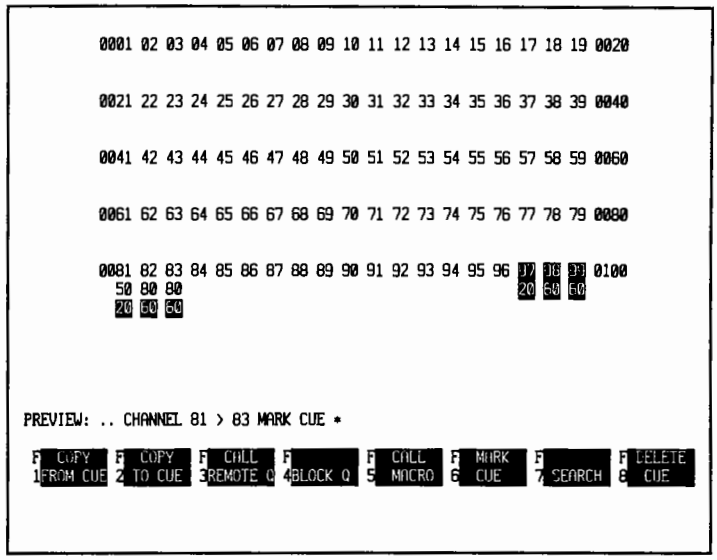
to record the current stage levels and colors into a new cue.



Press

PREVIEW CUE 7 *
. . 8 1 > 8 3
F6 *

to record the scrollers only for channels 81 through 83 into the previous cue (cue 7).



Since the lamps for these scrollers are not ON in cue 7, the scroller colors will change but cue 9 lights will stay OFF until you start cue 9.

Groups

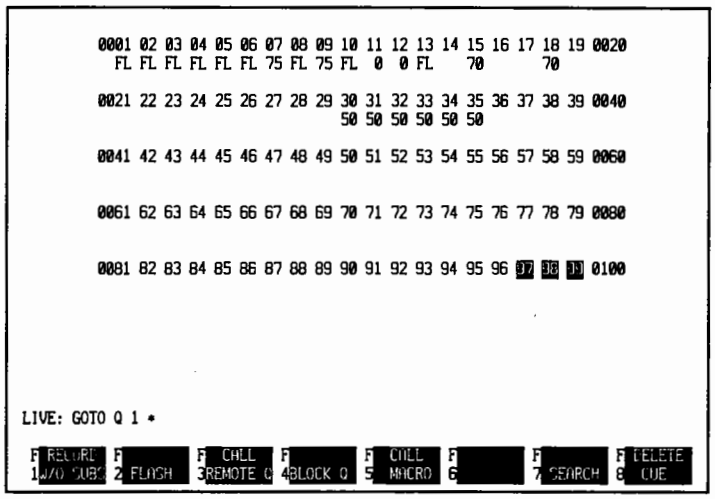
You can create up to 999 groups to use as building blocks in creating a final stage look or cue. Each channel can be assigned to more than one group. You can put scroller color information in groups by using the .. operator to specify color information in the command line. Groups can be recalled on stage as a pile-on to an existing cue or as a building block for a new cue. Since groups take space in cue memory you should exercise discretion in making multiple groups and eliminate unused groups. You can load groups on submasters for manual playback. The *Submasters* section of this manual (see page 197) demonstrates this feature.

> *In order to distinguish the two keys, the "GROUP" key in the Display keypad is shown as* [DISP GROUP] *and the "GROUP" key in the Level Control keypad is shown as* [GROUP].

Record Groups Live

You can record groups directly from levels you have set on stage.

Press
[LIVE] [GO TO CUE] [1] [*]
to put cue 1 on stage.



Press [RECORD] [GROUP] [5] [*] to record the contents of cue 1 into group 5.

There are no groups 1 through 4 yet. They can be recorded later or left blank.

Record Part of a Cue Into a Group Live

You do not have to record the entire cue as a group. By specifying a channel list before the record command, you can record only the selected channels of the cue as a group. This can be very handy if you have just spent time carefully adjusting light levels on a cyclorama, and want to save only the cyc light levels as a group.

Press [2] [+] [4] [+] [6] [+] [1] [5] [RECORD] [GROUP] [6] [*] to record only the selected channels as group 6.

You can now use this set of channels as a single item in a command list by using [GROUP] before entering the number (e.g., [GROUP] [6] [@] [7] [5] [*]).

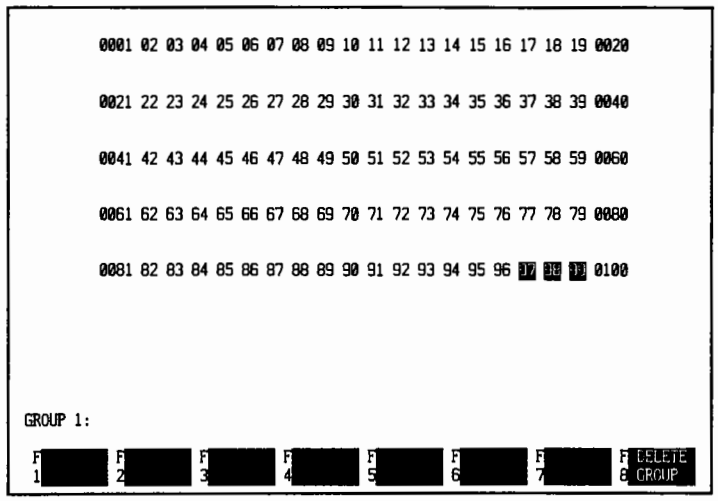
Record Groups Blind

You can record groups blind (i.e., without the results showing on stage) by using the *Group* display.

Press

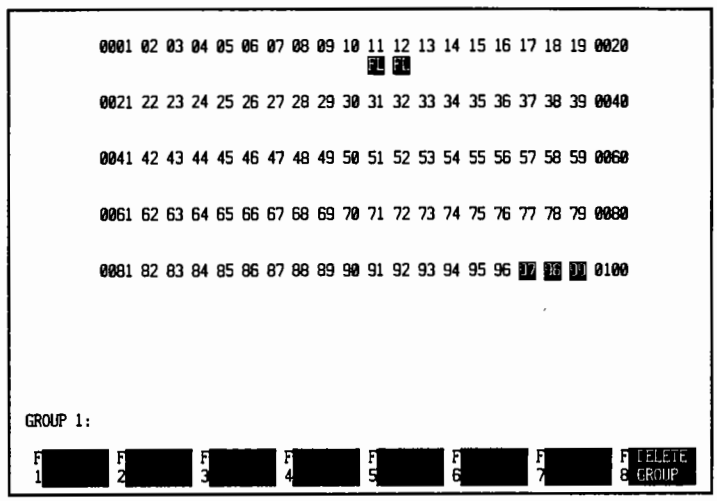
DISP GROUP 1 *

to see the *Group 1* display. There are no levels recorded in group 1 at this time.



Press

1 1 + 1 2 @ FULL *



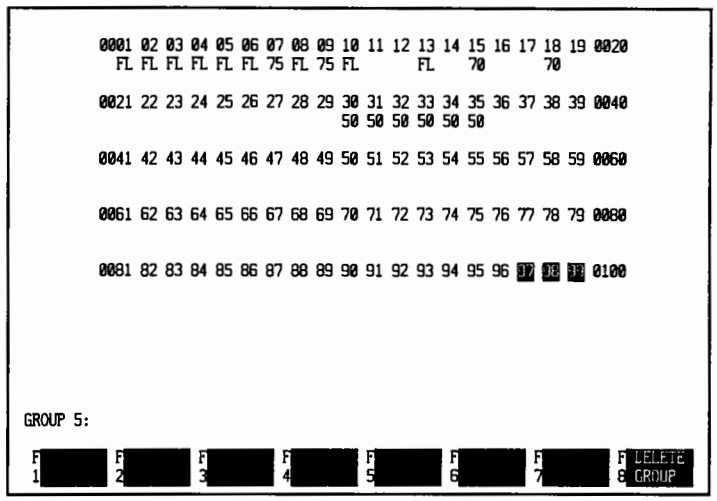
You can now use group 1 to help make other groups or cues, or you can load it to a submaster to help mix the stage output.

Preview Group Levels

Previewing group levels is the same as recording group levels blind, except that you do not record any levels.

Press

DISP GROUP 5 *



NEXT shows you the next recorded group.

LAST shows you the previous recorded group.

PAGE+ shows you the next page of the same group.

PAGE- shows you the previous page of the same group.

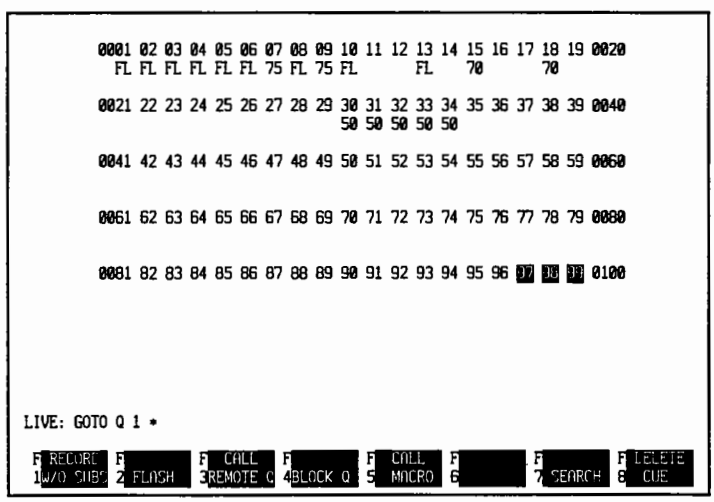
Use Groups In Cues

You can use groups to help build cues. In command lists, you must use the GROUP key before the group number, so the system knows that you are not referring to a single channel.

Press

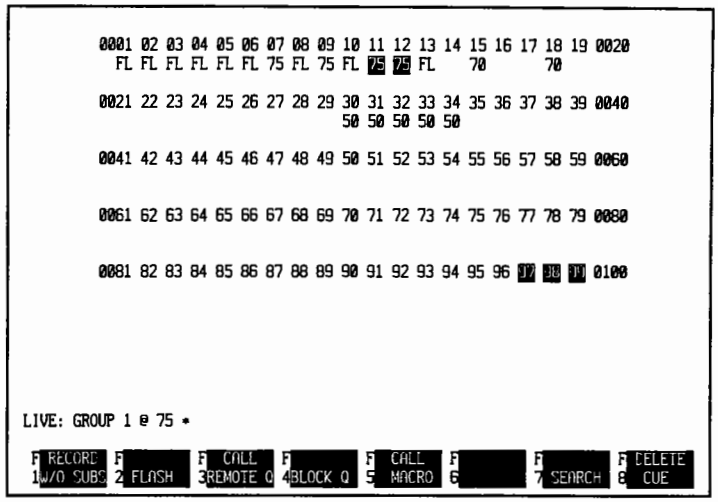
LIVE GO TO CUE 1 *

to put cue 1 on stage.



Press

GROUP 1 @ 7 5 *



You can now adjust the actual level of the channels in group 1 by using standard level setting procedures.

Press RECORD * * to record cue 1 with group 1 added to the original cue.

You can use groups to set relative levels on a series of lights (the cyc lights, for instance) and adjust them as a group when recording cues.

Delete a Group

To delete a group, go into the *Group* display for any group.

Press F8 [#] * * to delete the selected group. The system will ask ARE YOU SURE ? after the first *.

Submasters

24 or 48 overlapping submasters let you manually control effects and channels. You can select and set channels using individual channel numbers, or use cues, groups, or effects to specify the channels and their levels.

Submaster Type

Any submaster can be pile-on (additive) or inhibitive. The system default on start up is all submasters pile-on. Submaster attributes can be changed at any time.

Pile-on submasters add levels to the total stage output in a highest takes precedence manner. Pile-on submasters are normally OFF (set at their bottom limit) and are brought up on stage by moving the submaster controller towards its top limit. Channels fade to their assigned levels as you move the submaster towards its upper limit. Pile-on submasters are normally used for special areas where independent manual control of a light or group of lights is required.

Inhibitive submasters subtract levels from the total stage output. Inhibitive submasters are normally ON (set at their top limit). Channels, cues, groups, or effects assigned to inhibitive submasters are removed from stage by moving the submaster towards its lower limit. Inhibitive submasters are often used for independent manual dimming of lights such as key lights or curtain call lights. Levels recorded in inhibitive submasters identify channels which should be changed by the inhibitive action of the submaster, and do not actually contribute level information.

Submasters are normally "dependent." Any channels placed on the **Level Wheel** are controlled strictly by the **Level Wheel** until they are released from the **Level Wheel** *and* the submaster is returned to ZERO.

You can set a submaster bump button to toggle the submaster between dependent and independent modes. When a submaster is independent, channels assigned to the **Level Wheel** have separate levels on the **Level Wheel** and submaster. The higher level takes precedence.

Submaster Overrange

When assigned as pile-on, submasters can also provide a 150% overrange feature, which lets you boost channel levels by 50% of their assigned levels (up to 100%). Select the overrange feature from the *Submasters* menu (SETUP 4).

Submaster Bump Buttons

Each submaster has a bump button, which can be set in the *Submasters* menu (SETUP 4) to one of the following states.

- 5 BUMP DISABLED - bump button does nothing. The submaster is dependent.
- 6 BUMP UP - bump button forces the submaster to FULL. The submaster is dependent.
- 7 BUMP OUT - bump button forces the submaster OFF. The submaster is dependent.
- 8 INDEPENDENT TOGGLE - bump button toggles the submaster between dependent and independent modes.

Quick Load Submasters

You can also specify Quick Load submasters using 9 QUICK LOAD. Quick Load submasters will load the current channel list to the submaster if the command list is unterminated (i.e., you have not pressed *) when you press the bump button.

For example, if you have assigned submaster 2 as a Quick Load submaster, you can press 1 > 1 0 @ 5 and then press the submaster 2 bump button to load the channels 1 through 10 at 50% onto submaster 2. If you do not include a level with the channel list the system assumes FULL.

Once you have completed your command line, the other four bump button functions determine the bump button action for a Quick Load submaster. Assigning a bump button to Quick Load status does not change the bump status set by the other bump functions. To disable the Quick Load function, assign one of the other four bump functions.

Startup Defaults

This tutorial will use the system default settings for submasters. System defaults at startup are all submasters pile-on, normal (100%), and with bump buttons in Bump-on mode.

Playback Subs Display

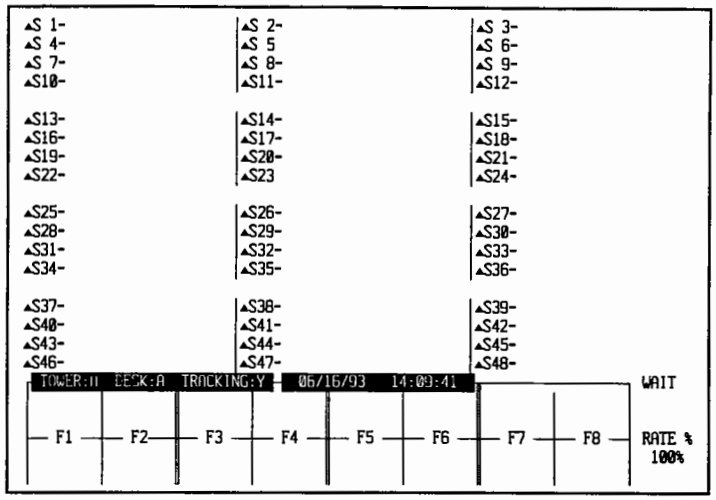
The *Playback Subs* display can be set to show submaster playback information rather than cue playback information if required.

Press

PLAYBACK SUBS

to see the *Playback Subs* display.

This display shows the source and level for all submasters.



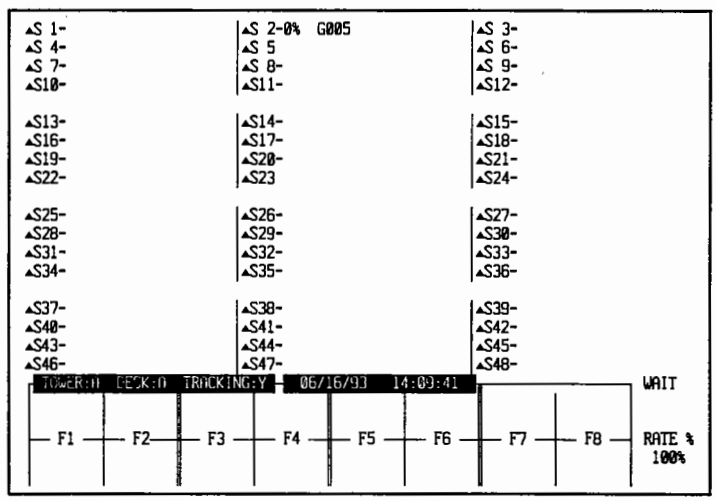
Load Submasters

You can load submasters with cues, groups, or effects. Reloading a submaster clears any previously assigned item once the submaster controller is returned to its "home" position (ZERO for pile-on submasters and FL for inhibitive submasters).

Press

LOAD SUB 2 GROUP 5 *

to load submaster 2 with group 5.



*You can also load effects on submasters by using LOAD SUB [#] EFFECT [#] *. Since no effects have been recorded yet, this command will not work at this time.*

Load Multiple Submasters

You can load a series of submasters by using control lists in the following format:

[LOAD SUB] [#] [>] [#] [GROUP] [#] [>] [#] [*]

[LOAD SUB] [#] [>] [#] [EFFECT] [#] [>] [#] [*]

[LOAD SUB] [#] [>] [#] [CUE LEVEL] [#] [>] [#] [*]

You can issue these commands from most displays and check their results by moving the submaster handle to FULL. The display you are in will not change.

You can use [+] and [>] to make the lists for multiple loading. In addition, you can specify combinations of groups, effects, and cue levels in your loading lists. If there are more submasters listed than cues, groups, and effects, the excess submasters will not be loaded. If there are less submasters listed, some of the cues, groups, or effects will not be loaded.

You can bank load submasters if required by leaving either the submaster list or the load item list in the command line open (i.e., it terminates with [>] [*]). Although you can load multiple submasters with multiple elements, you can only load a single cue, group, or effect onto each submaster.

Loading cue levels onto a submaster ([LOAD SUB] [#] [CUE] [#] or [LOAD SUB] [#] [CUE LEVEL] [#]) transfers the channel level data to the submaster. If you modify the cue the modified data will not appear in the submaster unless you reload the cue.

For submaster loading lists, [CUE] and [CUE LEVEL] are functionally equivalent.

Loading a group onto a submaster ([LOAD SUB] [#] [GROUP] [#]) sets a pointer to the group data. If you update the group the new data will appear in the submaster.

Caution

Be careful when loading submasters. If there is anything recorded or loaded on a submaster you are trying to overwrite, it will be erased once you return the submaster to its "Home" position. The system will ***not*** *ask you for confirmation.*

The following examples show some complex assignment lists. It is normally easier to load submasters with different types of items separately (i.e., load all groups first, then all effects). However, if you want to automate submaster loading using a macro, complex lists can let you do the task using a single macro which you can then assign to a cue.

[LOAD SUB] [1] [>] [5] [CUE LEVEL] [1] [>] [*] loads the first 5 cues onto submasters 1 through 5.

[LOAD SUB] [1] [>] [3] [CUE LEVEL] [1] [+] [GROUP] [1] [>] [*] loads cue 1 onto submaster 1 and the first two groups onto submasters 2 and 3.

[LOAD SUB] [1] [>] [5] [GROUP] [1] [>] [*] loads the first 5 groups onto submasters 1 through 5.

[LOAD SUB] [1] [>] [3] [EFFECT] [1] [+] [GROUP] [5] [>] [*] loads effect 1 onto submaster 1 and two groups (starting with group 5) onto submasters 2 and 3.

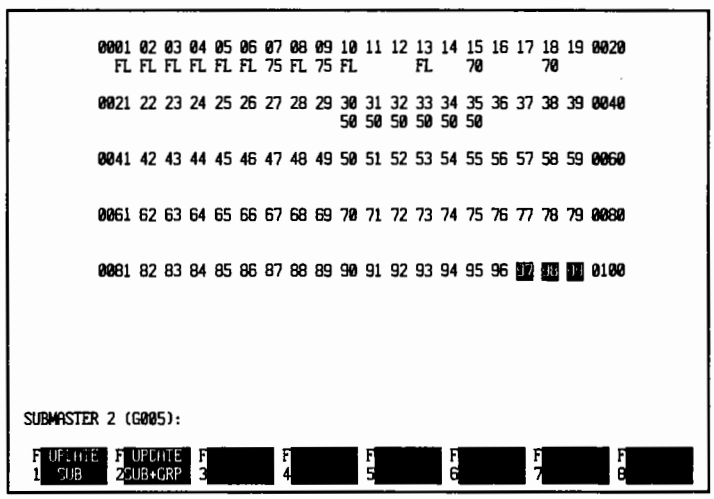
[LOAD SUB] [1] [+] [3] [EFFECT] [1] [+] [GROUP] [1] [*] loads effect 1 onto submaster 1, group 1 onto submaster 3.

[LOAD SUB] [1] [>] [4] [EFFECT] [1] [+] [GROUP] [1] [>] [2] [*] loads effect 1 onto submaster 1, group 1 onto submaster 2, and group 2 onto submaster 3. Nothing is loaded onto submaster 4, since only 3 elements are specified for loading.

Preview Submasters

You can preview the levels recorded or loaded in submasters by accessing the *Submaster* display for the appropriate submaster.

Press
[SUBS] [2] [*]
to see the display for Submaster 2.



[NEXT] shows you the next recorded submaster.

[LAST] shows you the previous recorded submaster.

[PAGE+] shows you the next page of the same submaster.

[PAGE-] shows you the previous page of the same submaster.

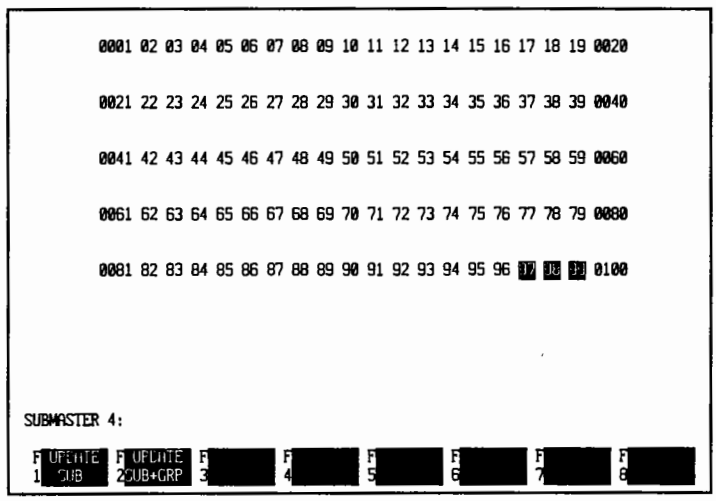
Record Submasters

You can record channels in submasters by specifying individual channels, groups, or cues. Recording submasters is the same as recording groups or recording cues blind, except that you work in the *Submaster* display rather than in the *Group* or *Preview* displays. Once channels are recorded in a submaster, you can bring the submaster controller up to bring the channels on stage. Submasters recorded in this manner are shown with CHAN (channel) as the source in the *Playback Submasters* display.

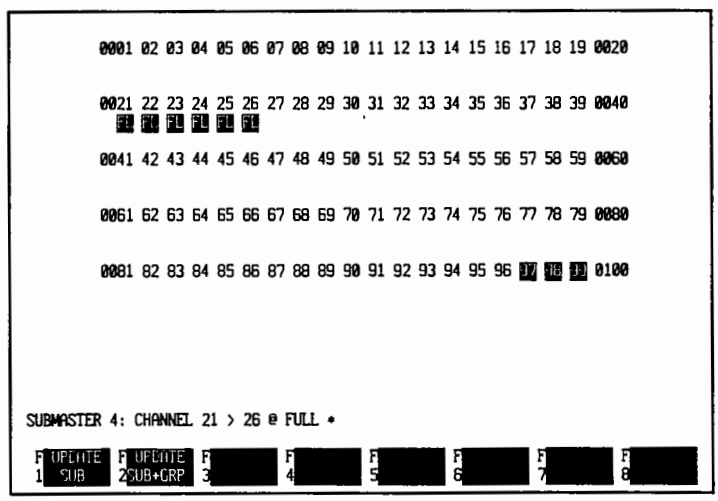
> *You can also modify a submaster loaded from a cue, group, or effect in this manner. However, you should be aware that if you reload the submaster, all of the manual changes you have made will disappear along with the previously loaded item.*

In inhibitive submasters, the recorded levels identify channels which should be changed by the inhibitive action of the submaster, and do not actually contribute level information.

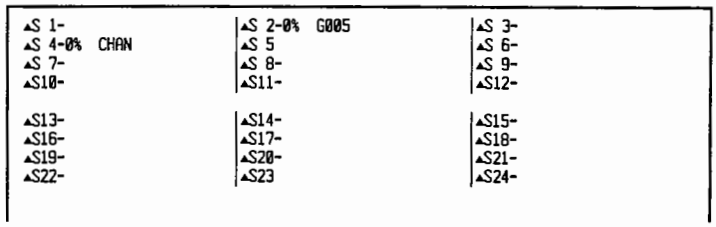
Press
SUBS 4 *
to see the display for Submaster 4.



Press
2 1 > 2 6 @FULL *
to record channel levels in Submaster 4.



An entry for Submaster 4 appears on the *Playback Submasters* display.



Add Submaster Levels to Stage Levels

Levels loaded on or recorded in a pile-on submaster can be piled-on to levels already on stage from other sources. Channels assigned to an inhibitive submaster can be dimmed out as required on stage, if the channels are on stage at some level from some other source.

Record Stage Levels With Submaster Levels

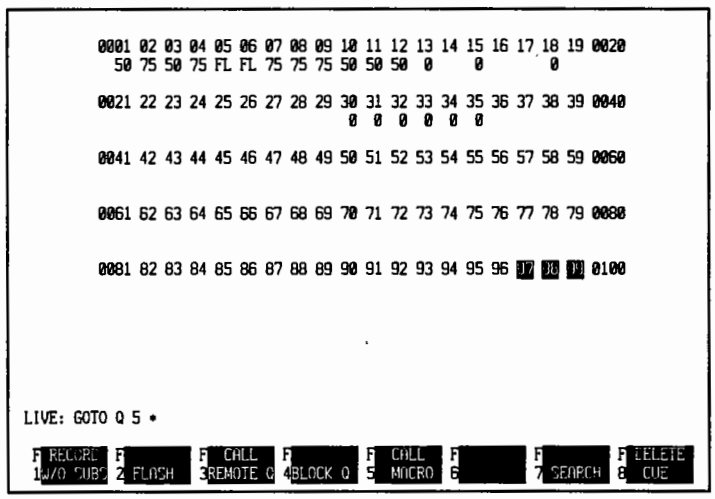
Once light levels have been set on stage as required, you can record these levels in a cue with the same procedure used to record stage looks generated with channel and group commands.

Item 6 in the Defaults *menu swaps the function of* RECORD *and* F1 RECORD W/O SUBS *in the* Live *and* Preview *displays. When this is* OFF *the display shows* F1 RECORD W/O SUBS *and* RECORD *functions normally. When this is* ON *the screen shows* F1 RECORD *and* RECORD *acts as a "Record Without Subs" key. This demonstration assumes that this item is set to* OFF.

Press

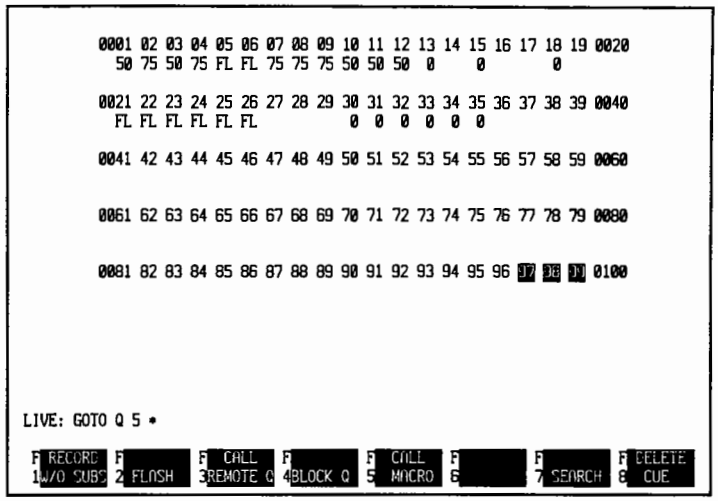
LIVE GO TO CUE 5 *

to put cue 5 on stage.



Bring up submaster 4

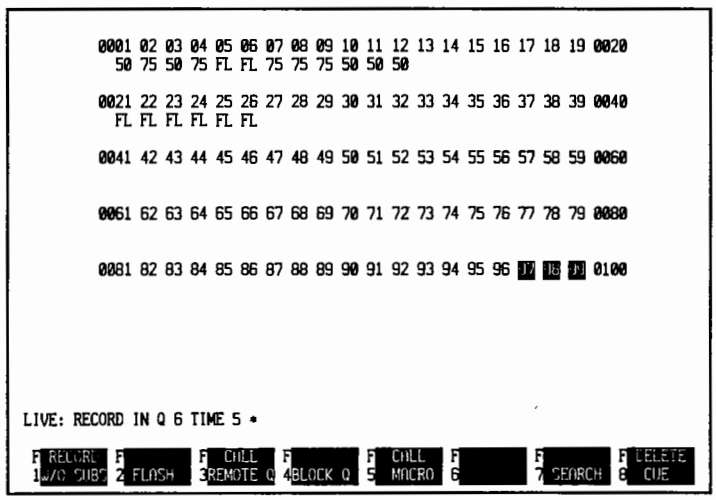
to pile submaster 4 levels on to levels already on stage.



Press

RECORD CUE 6 *

to record a cue with the submaster levels added.



Record Stage Levels Without Submasters

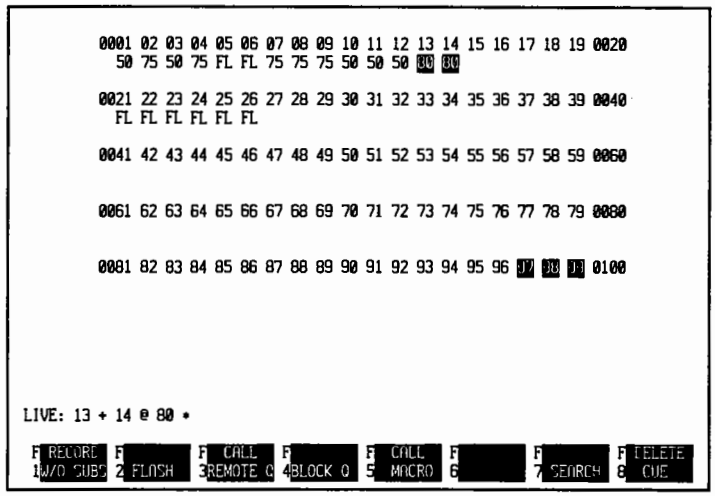
You can record a new cue without recording the levels originating from submasters by using [F1] RECORD W/O SUBS.

Item 6 in the Defaults *menu swaps the function of* [RECORD] *and* [F1] RECORD W/O SUBS *in the* Live *and* Preview *displays. When this is* OFF *the display shows* [F1] RECORD W/O SUBS *and* [RECORD] *functions normally. When this is* ON *the screen shows* [F1] RECORD *and* [RECORD] *acts as a "Record Without Subs" key. This demonstration assumes that this item is set to* OFF.

Press

[1][3][+][1][4][@][8][*]

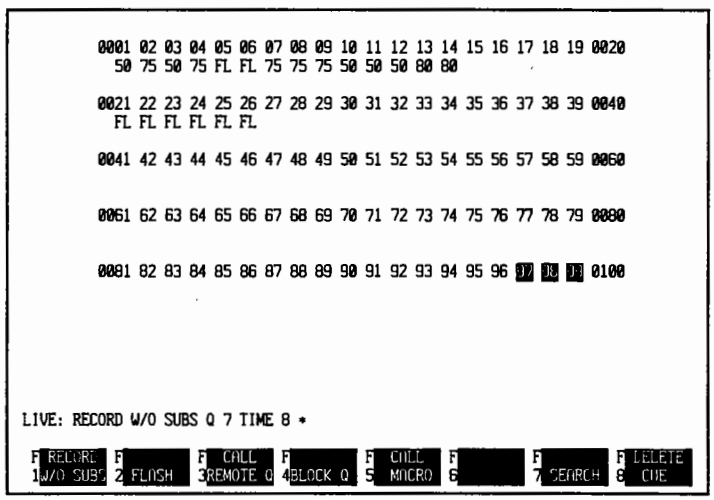
to bring up additional channels.



Press

[F1][CUE][7][TIME][8][*]

to record a cue without the submaster levels.



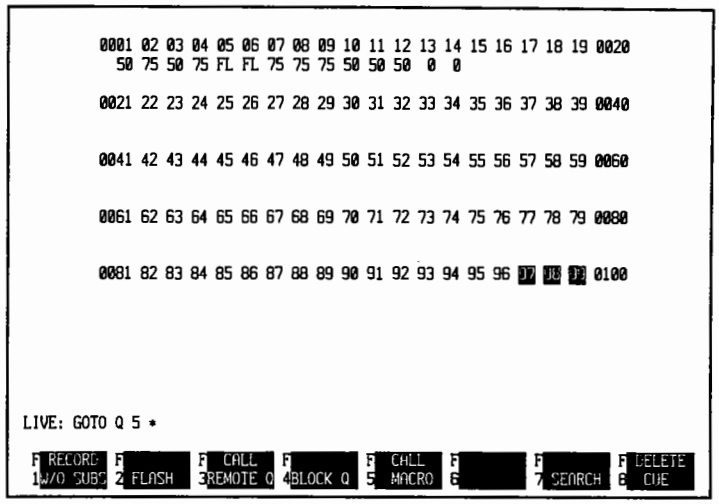
Press

GO TO CUE 5 *

and

Move Submaster 4 to ZERO

to put cue 5 on stage with no submasters.

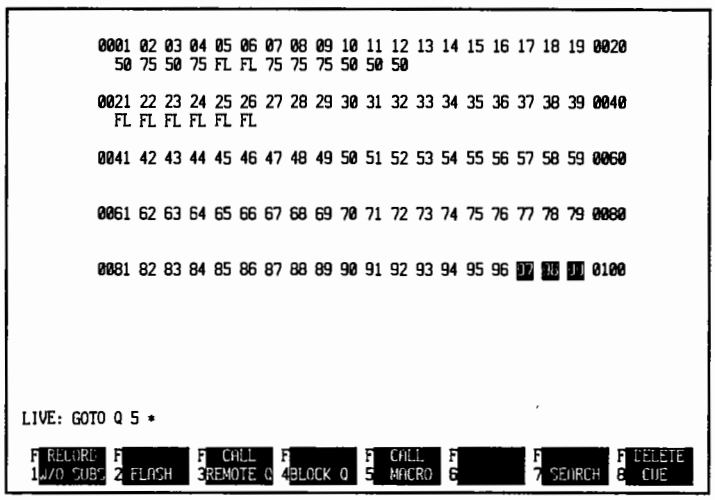


Press

GO

to fade to cue 6.

Submaster 4 levels are included in the stage levels.



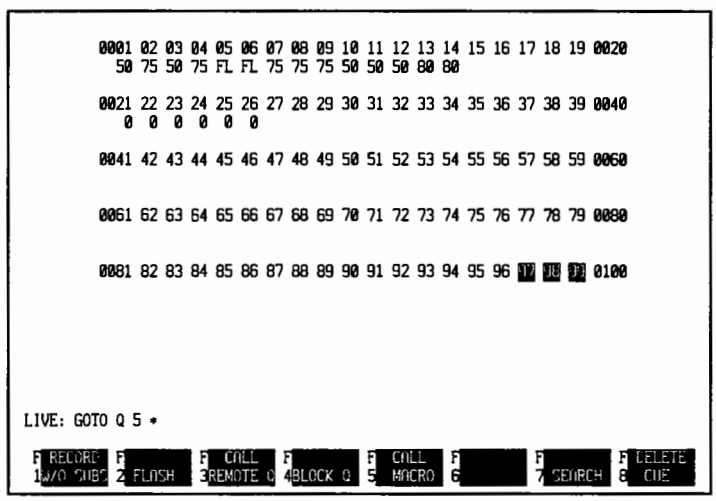
Press

GO

to fade to cue 7.

Submaster 4 levels are not included in the stage levels.

Channels raised using the **LEVEL WHEEL** appear on stage.



Take LEVEL WHEEL Control of Dependent Submaster Channels

You can easily take control of dependent submaster levels on the LEVEL WHEEL by setting new channel levels in the *Live* display. This technique does not work for independent submasters, since they are immune from LEVEL WHEEL control.

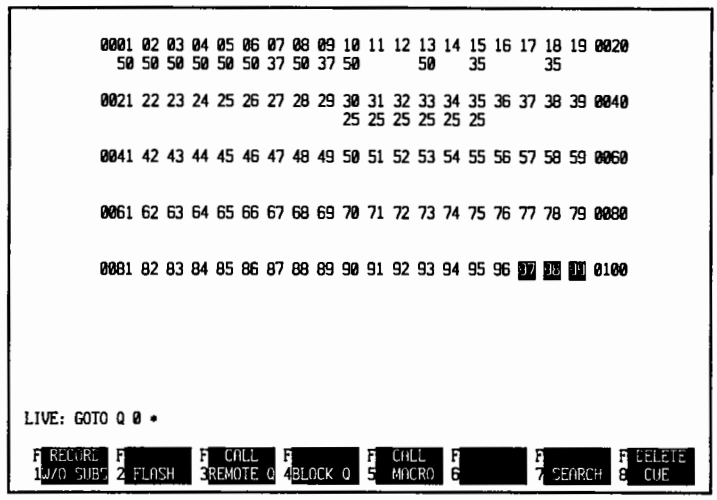
Press

GO TO CUE 0 *

to blackout the stage

Move

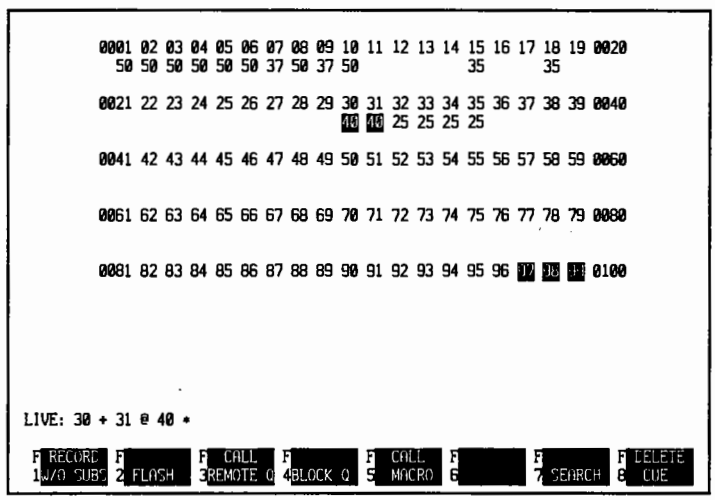
submaster 2 to 50%



Press

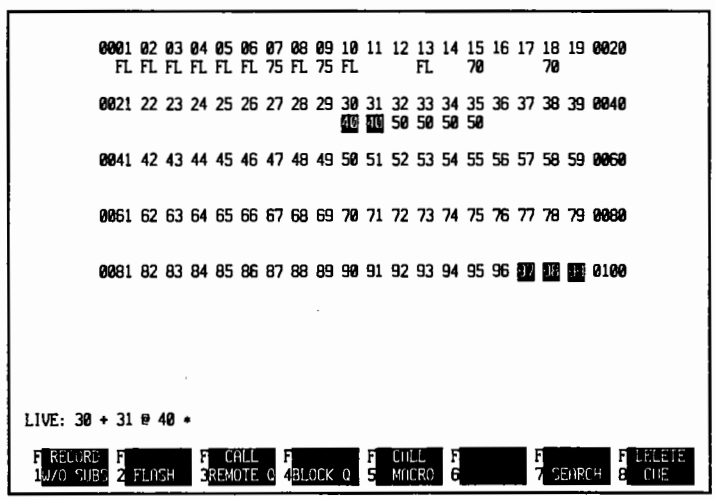
3 0 + 3 1 @ 4 *

to adjust channels.



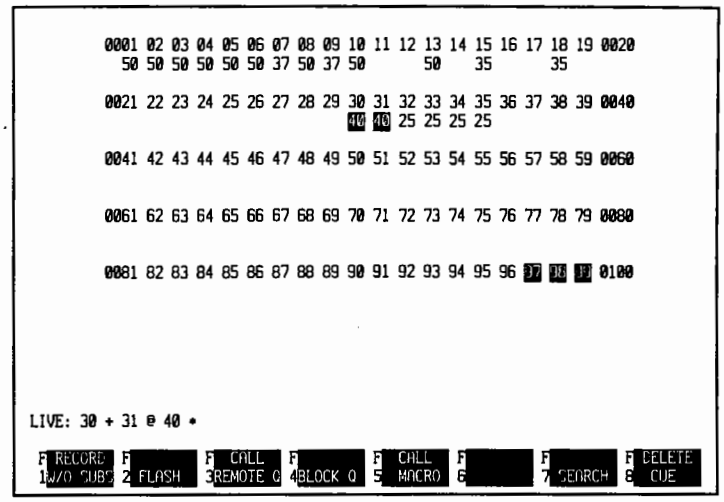
Move

Submaster 2 to FULL



Move

Submaster 2 back to 50%



To return control of a channel to a dependent submaster you must update the submaster or clear wheel control and move the submaster to ZERO.

Update Submasters

Once you have changed submaster channel levels on stage, you can update the submaster so that the recorded submaster levels, mastered through the current submaster position, will match what is on the stage.

Press

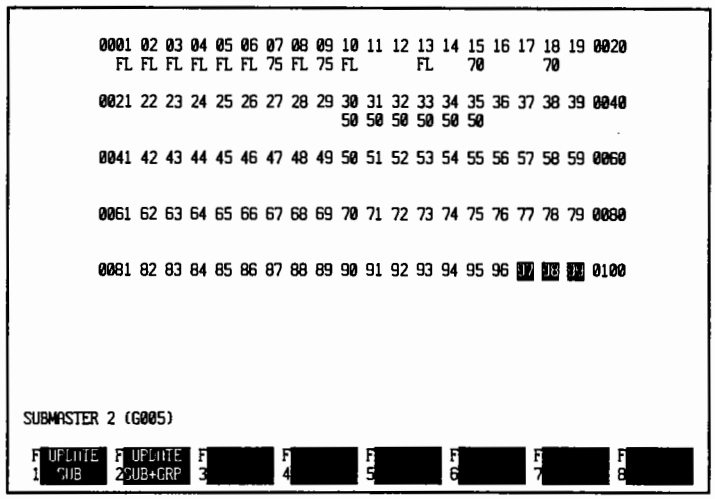
CLEAR

to release channels 30 and 31 from **LEVEL WHEEL** control.

Press

SUB 2 *

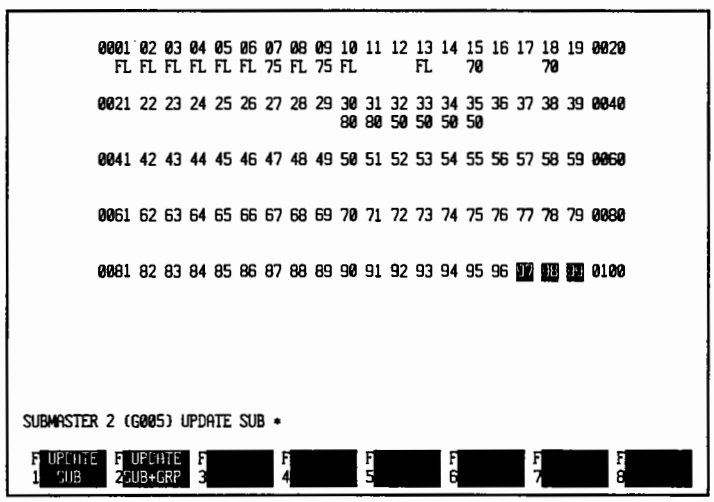
to see submaster 2.



Press

F1 *

to update the submaster data.



The system updates Submaster 2 so that it will produce the current stage levels when mastered through the current submaster setting.

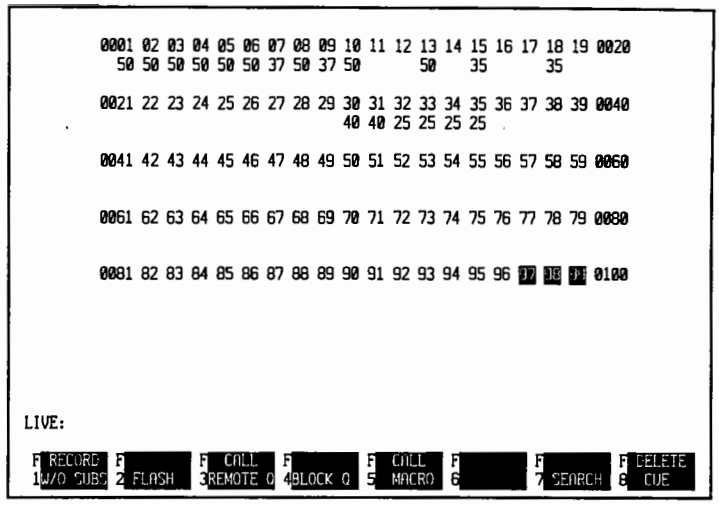
At the same time, it returns control of the channels to the submaster.

Press

LIVE

to see the current stage levels.

Channels 30 and 31 have been taken off of **LEVEL WHEEL** control and returned to submaster 2 control.



Update a Submaster and its Group

You can use the same procedure as above to update the submaster, and also update the group loaded on the submaster, by using F2 UPDATE SUB+GRP rather than F1 UPDATE SUB.

Take LEVEL WHEEL Control of Independent Submaster Levels

You cannot take **LEVEL WHEEL** control of independent submasters. However, since the channel output for independent submasters is on a "highest level takes precedence" basis with other level sources, you can set channel levels higher than the independent submaster level by putting the channels on the **LEVEL WHEEL** and bringing them up to the required level or by having higher levels set in a cue. This lets you set a minimum level for channels and still be able to set lights higher than this minimum level.

Channel on independent submasters will survive GO TO CUE 0, GO TO CUE **[#]** or **[list]** REM DIM at their current levels.

Unload a Submaster

To unload a submaster, load it with nothing.

Press LOAD SUB F2 * to unload submaster 2.

The submaster levels will remain on stage until the submaster handle is returned to ZERO. The flashing UNLD on the *Playback Submaster* display indicates that an unload is pending.

Move Submaster 2 to ZERO to fade Submaster 2 lights OFF.

Channel Control Lists

Lightpalette 90 series control consoles use control lists to specify channels for setting levels and recording cues. The basic components of a control list are listed on page 160. Now that there are several cues, groups and submasters recorded, this section discusses these lists in more detail.

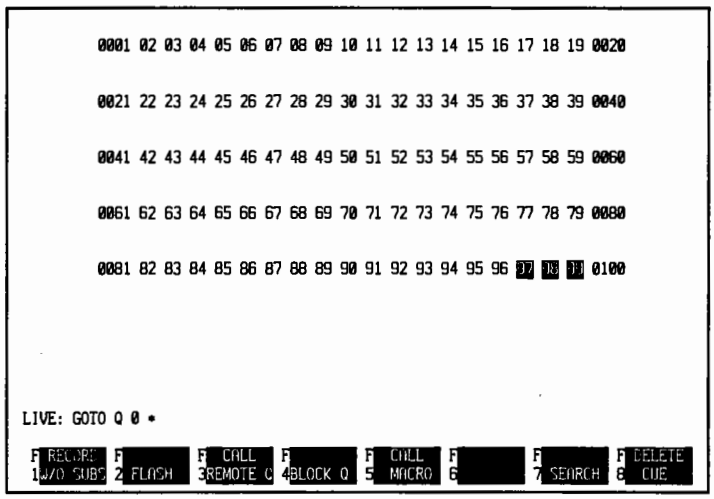
Basic Channel Lists

Channel level control lists are used in any display which lets you specify channels for control by the **LEVEL WHEEL**. In the *Live*, *Group*, *Submaster*, *Preview*, and *Effect* displays you can use channels, groups, and cues to select channels. The following examples will help you understand complex lists. The examples are done in the *Live* display so that you can see the results on stage by adjusting the **LEVEL WHEEL** if you wish.

Press

LIVE GO TO CUE 0 *

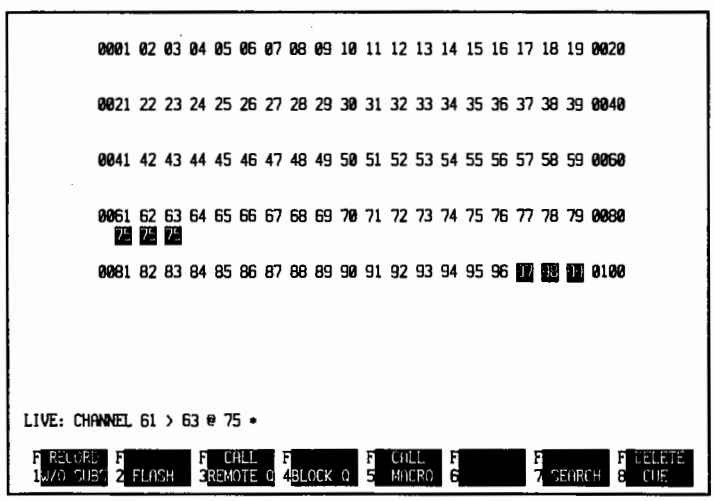
to see the *Live* display and put a blackout on stage.



Press

6 1 > 6 3 @ 7 5 *

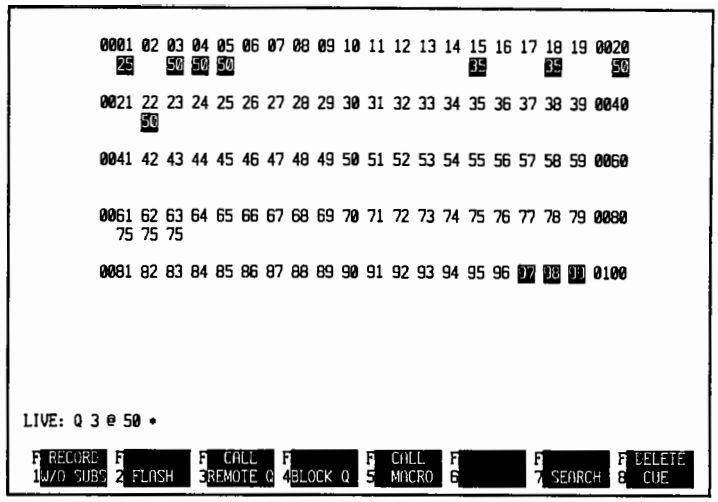
to put some channels on stage using channel selection only.



Press

CUE LEVEL 3 @ 5 *

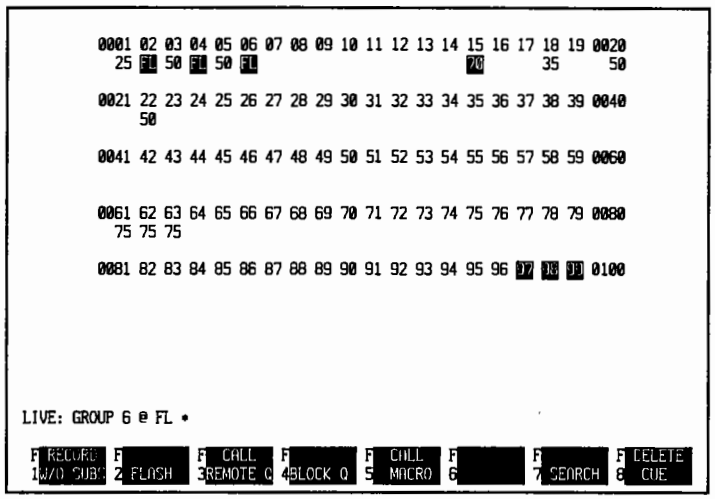
to put levels from cue 3 on stage at 50% of their recorded levels



Press

GROUP 6 @ FULL *

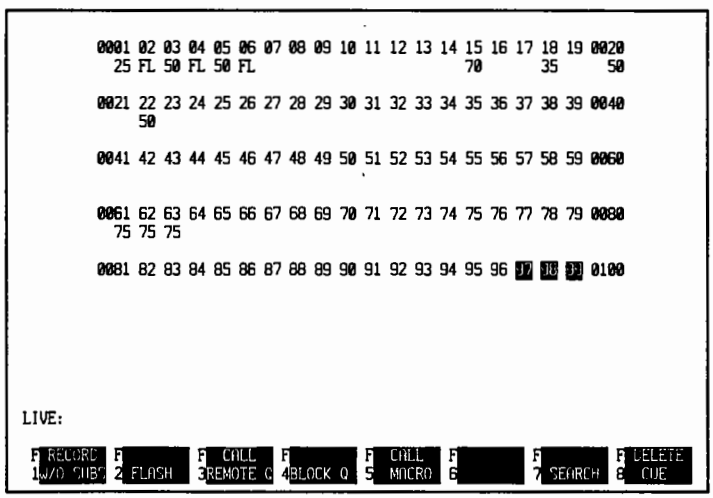
to put levels from group 6 on stage at 100% of their recorded levels



Press

CLEAR

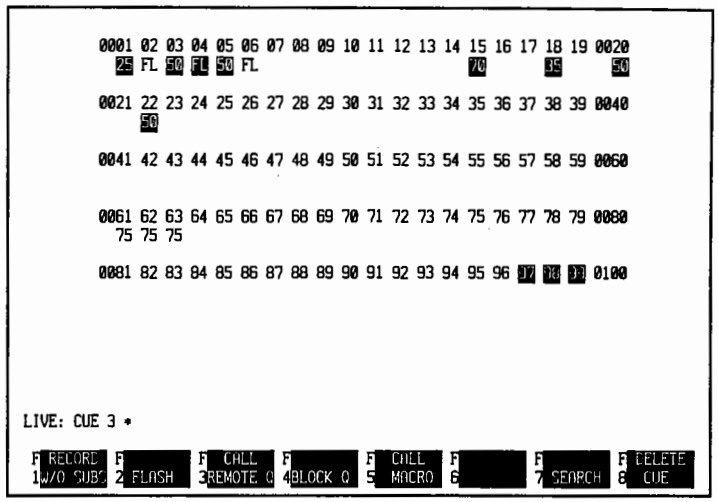
to clear levels from the **LEVEL WHEEL**.



Press

CUE LEVEL 3 *

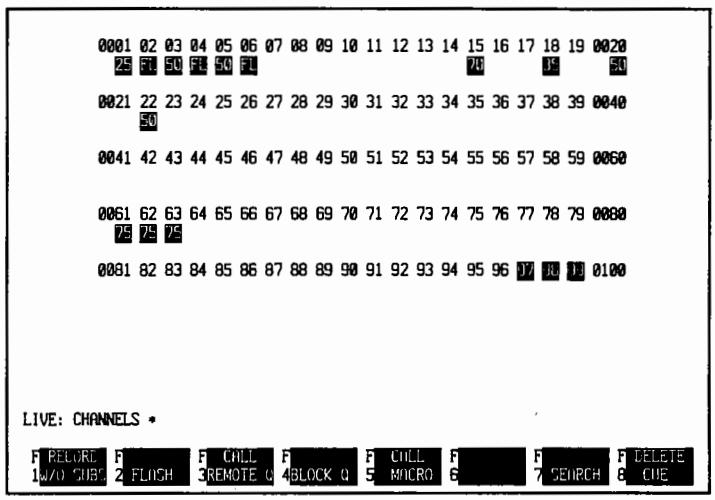
to put cue 3 channels on the **LEVEL WHEEL** without changing their levels on stage



Press

*

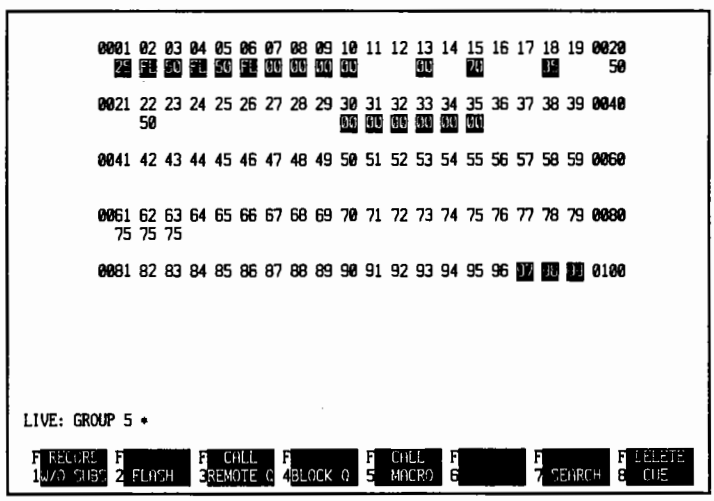
to put all active channels on the **LEVEL WHEEL** without changing their levels on stage



Press

GROUP 5 *

to put group 5 channels on the **LEVEL WHEEL** without changing their levels on stage



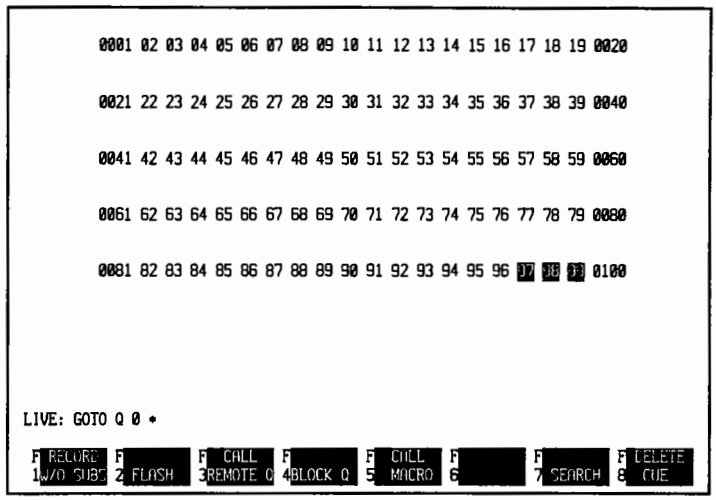
Complex Channel Level Control Lists

In addition to using various sources for extracting channel levels and lists, you can combine different item types in a single channel level statement.

Press

GO TO CUE 0 *

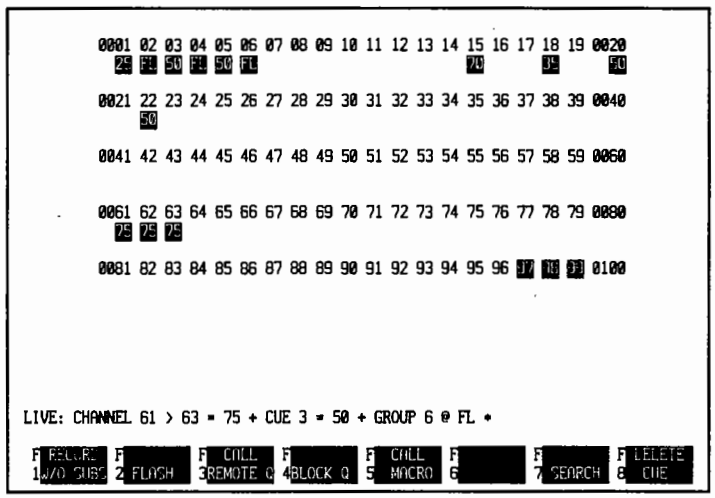
to clear levels from the **LEVEL WHEEL** and go to a blackout on stage.



Press

6 1 > 6 3 = 7 5 + CUE LEVEL 3 = 5 + GROUP 6 @ FULL *

to assign all of the previous items in a single list.



Complex control lists can contain up to 50 elements (keystrokes). In the example command line above, CHANNEL *does not count because it was assumed by the system, and* CUE*,* GROUP*, and* @_FULL *all count as single elements, since they each required only one keystroke.*

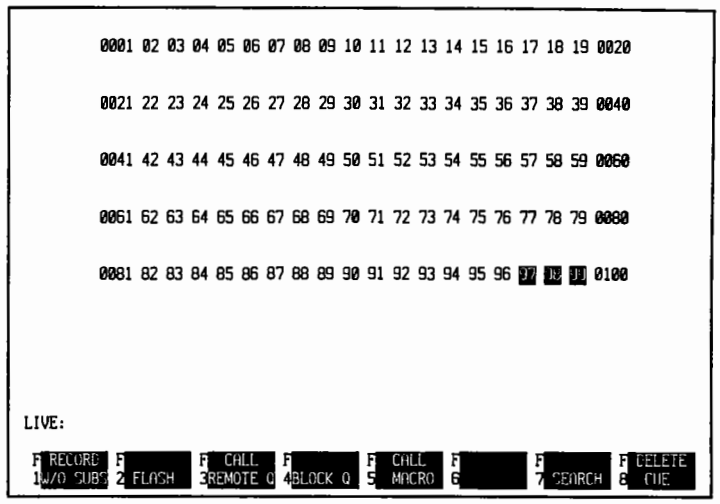
Use

the **LEVEL WHEEL** to take all channels OUT.

Press

CLEAR

to clear channels from the **LEVEL WHEEL**.

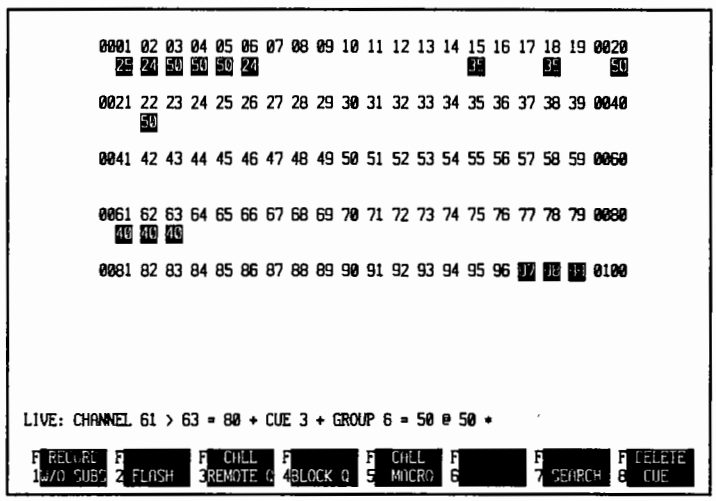


Press

6 1 > 6 3 = 8
+ CUE LEVEL 3 + GROUP 6
= 5 @ 5 *

to assign all of the previous items in a single list.

Using = lets you set a relative level for a "thru list" or single item before proceeding.



Channels 61 through 63 are set to 80%, and then taken to 50% of that level by the final @ 5 *. Group 6 is set to 50%, and then taken to 50% of that in the final output. Cue 3 is set to 50% by the final @ 5 *.

= can be used to set individual items and "thru lists" only. You cannot use + to make a list and have = master the list.
*1 + 2 = 8 + 5 @ 5 * will set channel 1 to 50%, channel 2 to 40% (set to 80 and then 50% of that) and channel 5 to 50%. 1 > 2 = 8 + 5 @ 5 * will set channel 1 and 2 to 40% and channel 5 to 50%.*

Press GO TO CUE 0 * to return the stage to a blackout.

Profiles

You can create up to 64 profiles, which can then be attached to cues or dimmers. When attached to a cue, the profile changes the cue from a linear fade to the specified profile. When attached to a dimmer, the profile changes the actual dimming curve of the dimmer. Each profile lets you specify 21 points in the fade or dimming curve, at 5% intervals. The system maps the specified % of completion (for cues) or level (for dimmers) to the new values set by the profile.

Any profiles can be used with any cue or cue part. For multi-part cues, a profile can be assigned to one or more parts, while other parts remain linear, or different profiles can be assigned to each part. You can use the same profile in multiple cues and on multiple dimmers, but you cannot assign a profile to a cue which already has an effect, macro, or Remote-Q call. The default profile can be set to any number between 0 and 64 in the *Defaults* Menu ([SETUP] [5]). Profile 0 is always a linear fade.

Profiles will change both the lamp level and scroller color information for any cue to which they are assigned.

Press

[PROFILE]

to see the *Profile* display.

```
PROFILE %-> 00 05 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100
   1         0 05 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 FL
   2         0 05 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 FL
   3         0 05 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 FL
   4         0 05 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 FL
   5         0 05 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 FL
   6         0 05 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 FL
   7         0 05 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 FL
   8         0 05 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 FL
   9         0 05 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 FL
  10         0 05 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 FL
  11         0 05 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 FL
  12         0 05 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 FL
  13         0 05 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 FL
  14         0 05 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 FL
  15         0 05 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 FL
  16         0 05 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 FL


PROFILE:

 F SLOPE    F FILL IN F BLANK TO F        F        F        F        F
 1 1-TO-1   2 BLANKS  3 END-LINE 4        5        6        7        8
```

[NEXT] selects the next profile.

[LAST] selects the previous profile.

[PAGE+] shows you the next page of 16 profiles.

[PAGE-] shows you the previous page of 16 profiles.

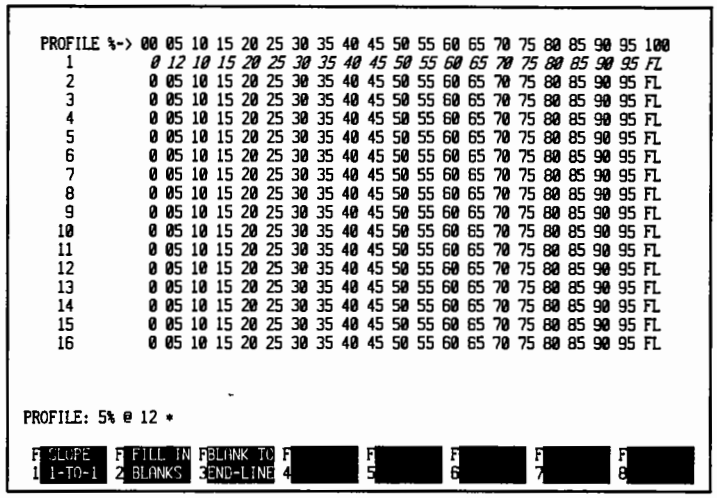
Record a Profile

You can record profiles by assigning a level to each degree of completion, in 5% intervals. When assigned to a cue the degree of completion represents percent fade completed. When assigned to a dimmer the degree of completion represents the dimmer output level.

Press

5 @ 1 2 *

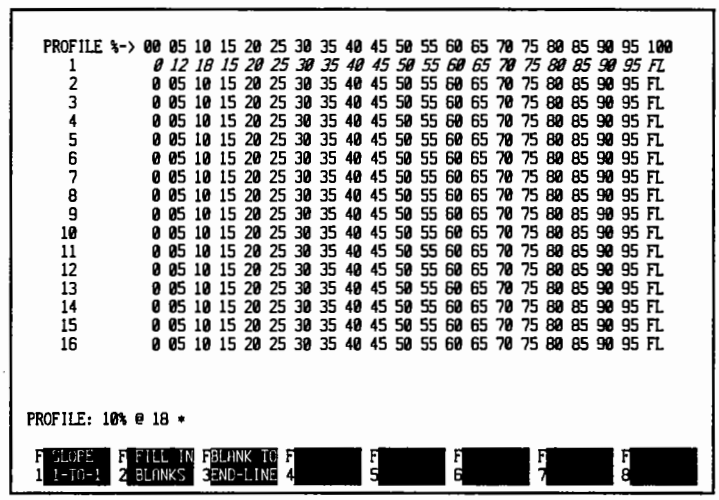
To assign a new level for the 5% completion point.



Press

1 0 @ 1 8 *

to assign a new level for the 10% completion point.

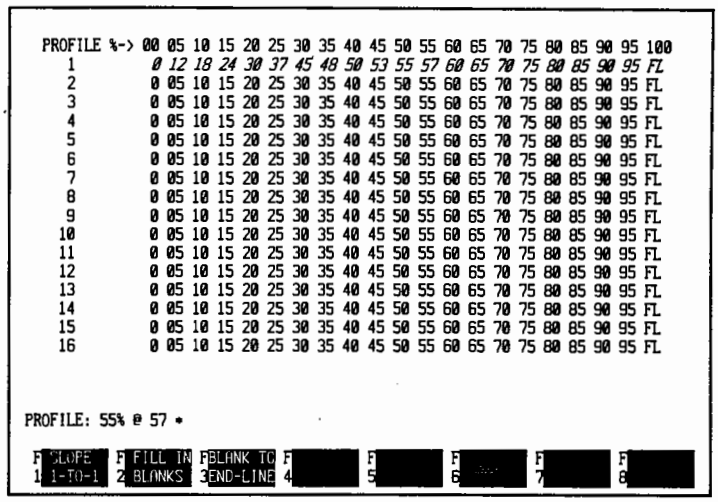


Complete the profile

Assign other level points as follows:

15% at 24, 20% at 30, 25% at 37, 30% at 45, 35% at 48, 40% at 50, 45% at 53, 50% at 55, 55% at 57

The *Profile* display shows the new levels.



When assigned to a cue this profile starts the cue very fast and then slows it down part way through the fade.

Add a Profile to a Cue

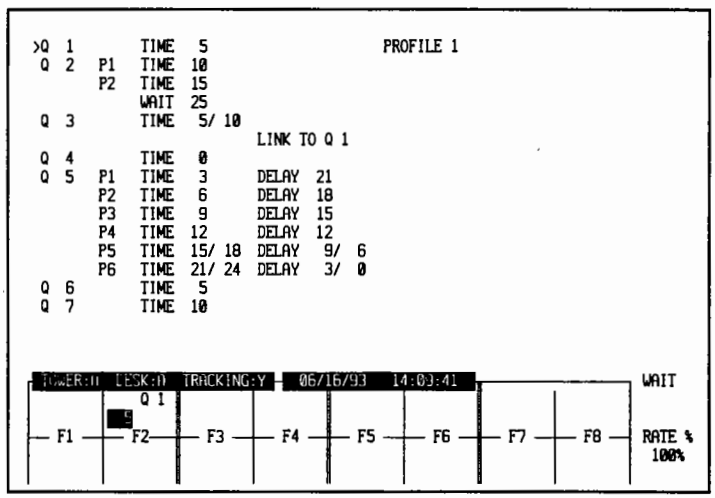
Profiles can be assigned to cues in the *Live*, *Preview*, or *Cue Sheet* displays. The procedure is the same for all of these displays.

Press

PLAYBACK CUES LIVE
CUE 1 PROFILE 1 *

to assign profile 1 to cue 1.

The *Playback Cues* display shows profile 1 added to cue 1.



You can assign the same profile to any number of cues or cue parts, but you cannot assign a profile to a cue which already has an effect, macro, or Remote-Q call.

Go to cue 0 now and start cue 1 to see how this profile modifies the fade.

Assign Default Profile

A default profile other than zero can be assigned to the show program. Once assigned, this profile changes the fade for all cues without a recorded profile. The default profile on cold restart or is 0, which is a linear fade. The default profile is set from the *Defaults* menu.

You can assign effects, macros, and Remote-Q calls to cues even if you have assigned a default profile

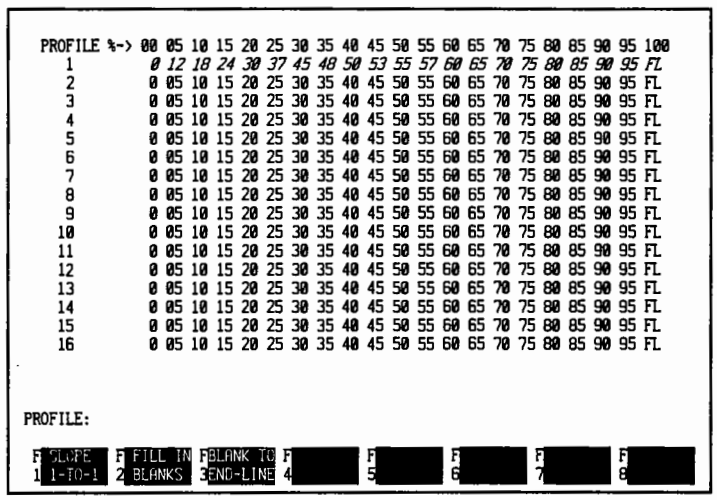
Profiles for Dimmers

You can modify dimmer output for individual dimmers by making a profile and assigning it to the dimmer when you do your show patching.

Press

PROFILE

to see the *Profile* display.

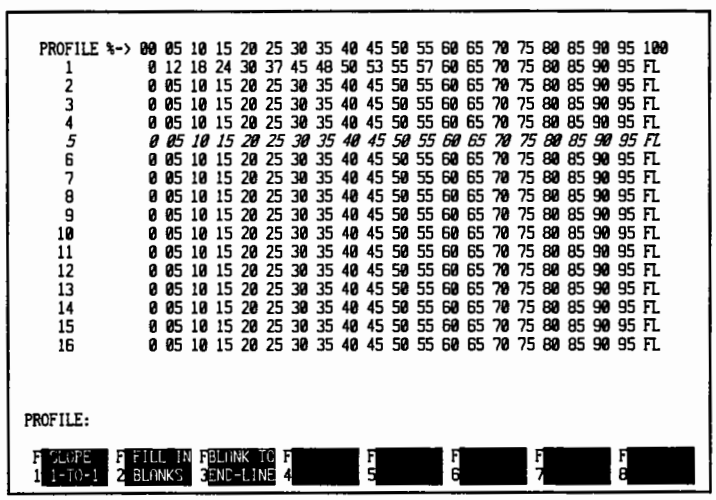


Profile With Maximum and Minimum Levels

Press

NEXT

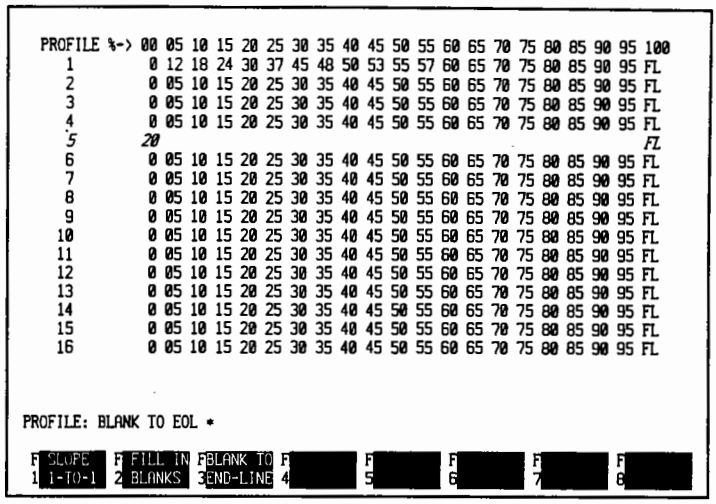
until profile 5 is highlighted.



Press

0 @ 2 0 * F3

to set the 0% level at 20% and blank the rest of the line.

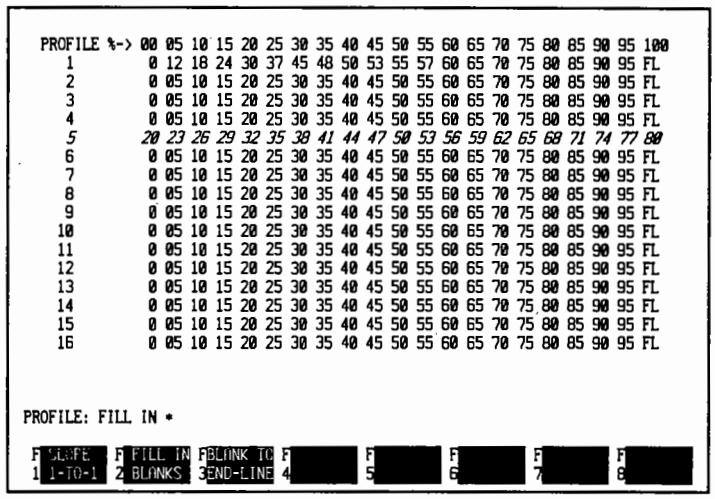


F3 BLANK TO END-LINE *will blank the currently selected line from the last modified profile point.*

Press

1 0 0 @ 8 0 * F2

to set the 100% level at 80% and fill in the rest of the line to make a linear fade where OFF is 20% and FULL is 80%.

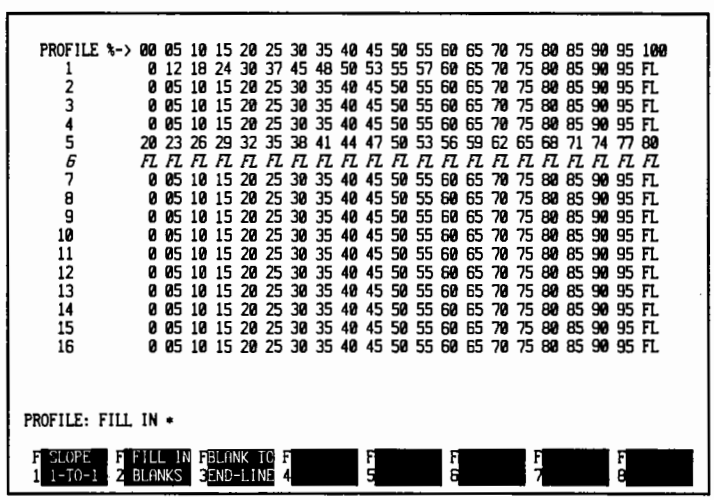


Constant ON Profile

Press

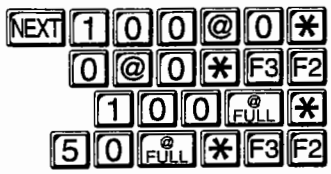
NEXT 0 @ FULL * F3 F2

to make a profile for a dimmer which is always ON.



Non-Dim Profile

Press



to make a profile for a non dim which turns ON at 50%.

```
PROFILE %-> 00 05 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100
   1         0 12 18 24 30 37 45 48 50 53 55 57 60 65 70 75 80 85 90 95 FL
   2         0 05 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 FL
   3         0 05 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 FL
   4         0 05 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 FL
   5        20 23 26 29 32 35 38 41 44 47 50 53 56 59 62 65 68 71 74 77 80
   6        FL FL FL FL FL FL FL FL FL FL FL FL FL FL FL FL FL FL FL FL FL
   7         0  0  0  0  0  0  0  0  0  0 FL FL FL FL FL FL FL FL FL FL FL
   8         0 05 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 FL
   9         0 05 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 FL
  10         0 05 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 FL
  11         0 05 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 FL
  12         0 05 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 FL
  13         0 05 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 FL
  14         0 05 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 FL
  15         0 05 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 FL
  16         0 05 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 FL


PROFILE: FILL IN *

F1 SLOPE   F2 FILL IN  F3 BLANK TO  F4        F5        F6        F7        F8
1 1-TO-1   2 BLANKS   3 END-LINE   4         5         6         7         8
```

These dimmer profiles will be assigned to cues and dimmers later in the *Patch* section of this chapter.

Effects

A special effect is a series of lighting steps executed repeatedly for a specified period of time with a specified time between each step. These are often called "Chases."

Each special effect can have between 1 and 99 steps. You can assign multiple channels, groups, submasters, other effects, and cue end states to each step, as long as the assignment command (including [+], [>], and [-]) does not exceed 30 characters. The effect duration (amount of time the effect will run) can be between 0.1 and 998 seconds ("999" defines infinite time). You can also specify "ON" and "OFF" channel levels, the time between the start of each step (Step time) and how long each step takes to fade in (In time), how long it stays ON (Dwell time) and how long it takes to fade out (Out time).

> *Although you can have up to 99 steps in each effect, you can only run a total of 128 loaded steps at a time.*

When a submaster controls an effect, step time is set by STEP TIME in the *Effect* menu, and the submaster determines the channel level.

Attributes such as Reverse, Bounce, Build, Random, Negative, and Alternative can be assigned to each effect. Attributes define effect sequence and format, and can be combined to make complex chases

Chase Attributes

The system displays active attributes (ON) in red reverse video. Selecting an attribute which is OFF turns it ON. Selecting a chase type which is ON turns it OFF. Changing chase types while an effect is running will not change the effect until it is stopped and restarted.

NEGATIVE At chase start, all channels are ON (HI level). Subsequent steps turn their assigned channels OFF (LO level) and previous step channels ON. This attribute has no effect on scroller colors.

ALTERNATE Causes each pass through the step list to alternate between negative (NEGATIVE ON) and positive (NEGATIVE OFF) chases. The state of the first pass is determined by the state of NEGATIVE. This attribute has no effect on scroller colors.

REVERSE Causes steps to execute in reverse numerical order.

BOUNCE Causes each pass through the step list to alternate between normal (REVERSE OFF) and reverse (REVERSE ON) chases. The direction of the first pass is determined by the state of REVERSE.

BUILD If NEGATIVE is OFF, all lights are OFF (LO level) at chase start. Each step turns its assigned channels ON (HI level), without turning the previous step channels OFF. All lights are turned OFF to start the next pass.

If NEGATIVE is ON, all lights are ON (HI level) at chase start. Each step turns its assigned channels OFF (LO level), without turning the previous step channels ON. All lights are turned ON to start the next pass.

RANDOM Steps are taken in random order. REVERSE and BOUNCE have no effect on this attribute.

> *If you make an effect using ALTERNATE and BUILD at the same time the last step will bump to the first. To fix this, include a blank "dummy" step as the last step of the effect.*

Assign Channels to Steps of an Effect

You can assign channels to steps of an effect by assigning channels individually, or assigning them using groups or cues. In order to best demonstrate the various attributes, this demonstration will only assign channels individually, and in sequence.

Press

EFFECT 1 *

to see the *Effect* display.

```
ATTRIBUTES: NEGATIVE  ALTERNATE  REVERSE  BOUNCE  BUILD  RANDOM
DEFAULTS:  STEP TIME: .1        FADE I/D/O: 0/0/0          HI/LO: FL  0

                                                  |STEP|  FADE TIMES  |LEVELS
STEP        CONTROL LIST                          |TIME| IN DWELL OUT |HI  LO
-----------------------------------------------------------------------------
01-                                               |    |              |
02-                                               |    |              |
03-                                               |    |              |
04-                                               |    |              |
05-                                               |    |              |
06-                                               |    |              |
07-                                               |    |              |
08-                                               |    |              |
09-                                               |    |              |
10-                                               |    |              |
11-                                               |    |              |
12-                                               |    |              |
13-                                               |    |              |
14-                                               |    |              |

EFFECT 1 :

F ATTRI-  F        F STEP   F FADE   F LEVELS  F        F COPY   F DELETE
1 BUTES   2 DEFAULTS 3 TIME   4 I/D/O  5 HI/LO   6 TEST   7 FRM EFF 8 EFFECT
```

Press

0 1 1 *

to assign channel 1 to step 1.

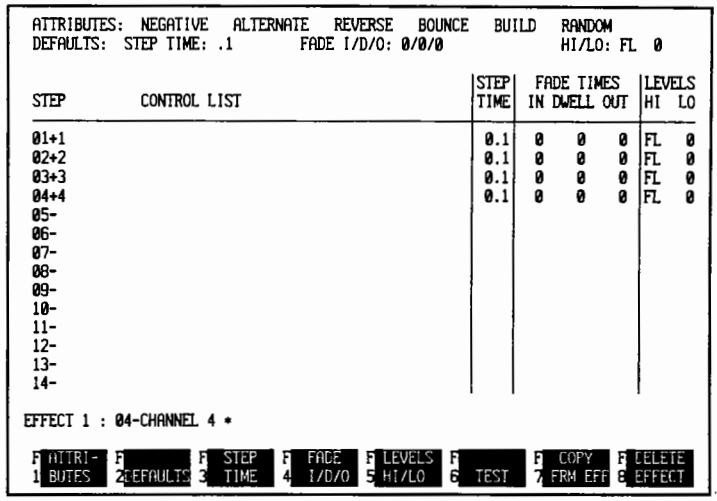
You must use two digits for the step number.

```
ATTRIBUTES: NEGATIVE  ALTERNATE  REVERSE  BOUNCE  BUILD  RANDOM
DEFAULTS:  STEP TIME: .1        FADE I/D/O: 0/0/0          HI/LO: FL  0

                                                  |STEP|  FADE TIMES  |LEVELS
STEP        CONTROL LIST                          |TIME| IN DWELL OUT |HI  LO
-----------------------------------------------------------------------------
01+1                                              | 0.1|  0    0    0 |FL   0
02-                                               |    |              |
03-                                               |    |              |
04-                                               |    |              |
05-                                               |    |              |
06-                                               |    |              |
07-                                               |    |              |
08-                                               |    |              |
09-                                               |    |              |
10-                                               |    |              |
11-                                               |    |              |
12-                                               |    |              |
13-                                               |    |              |
14-                                               |    |              |

EFFECT 1 : 01 - CHANNEL 1 *

F ATTRI-  F        F STEP   F FADE   F LEVELS  F        F COPY   F DELETE
1 BUTES   2 DEFAULTS 3 TIME   4 I/D/O  5 HI/LO   6 TEST   7 FRM EFF 8 EFFECT
```

Press

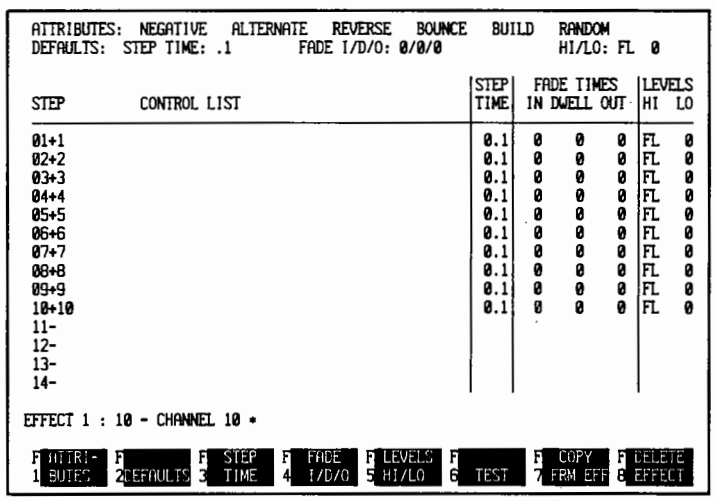
0 2 2 *
0 3 3 *
0 4 4 *

to assign channels 2, 3, and 4 to steps 2, 3, and 4.



For this demonstration, please assign channels 5 through 10 to steps 5 through 10 in the same manner.

New data appears on screen.



Test an Effect

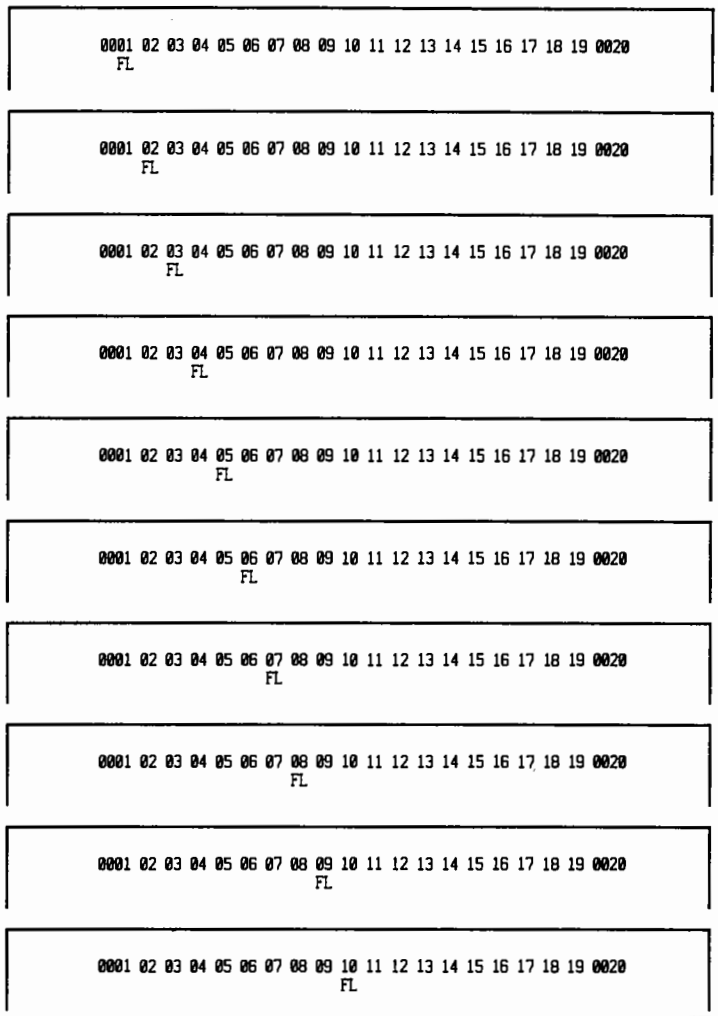
You can test an effect by using F6 TEST to assign it to a submaster.

Press F6 to assign the effect to the first available empty submaster (in this case submaster 1) and start it running.

Press LIVE to show the *Live* display.

Move the submaster 1 controller up.

The effect appears on stage and the *Live* display shows channels 1 through 10 sequencing.



The effect will continue to run on submaster 1 until you press F6 TEST again to stop it and unload it from the submaster. You can fade it in or out as required by moving the submaster controller.

Press EFFECT 1 * F6 to stop the effect and unload it from the fader.

Test the Effect With Attributes

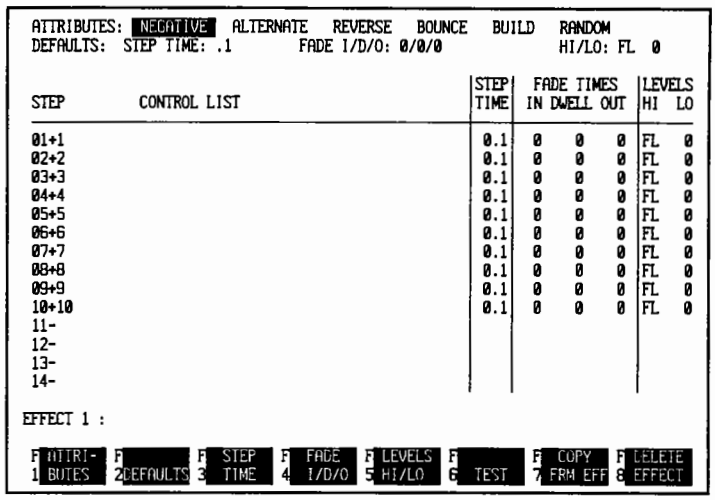
You can assign various attributes to modify how the effect works. You can assign multiple attributes to the effect if required.

Press

F1 F1 F8

to see the *Effect* display for effect 1 and change the effect to a negative chase.

NEGATIVE is highlighted, showing that it is an active attribute.



Press

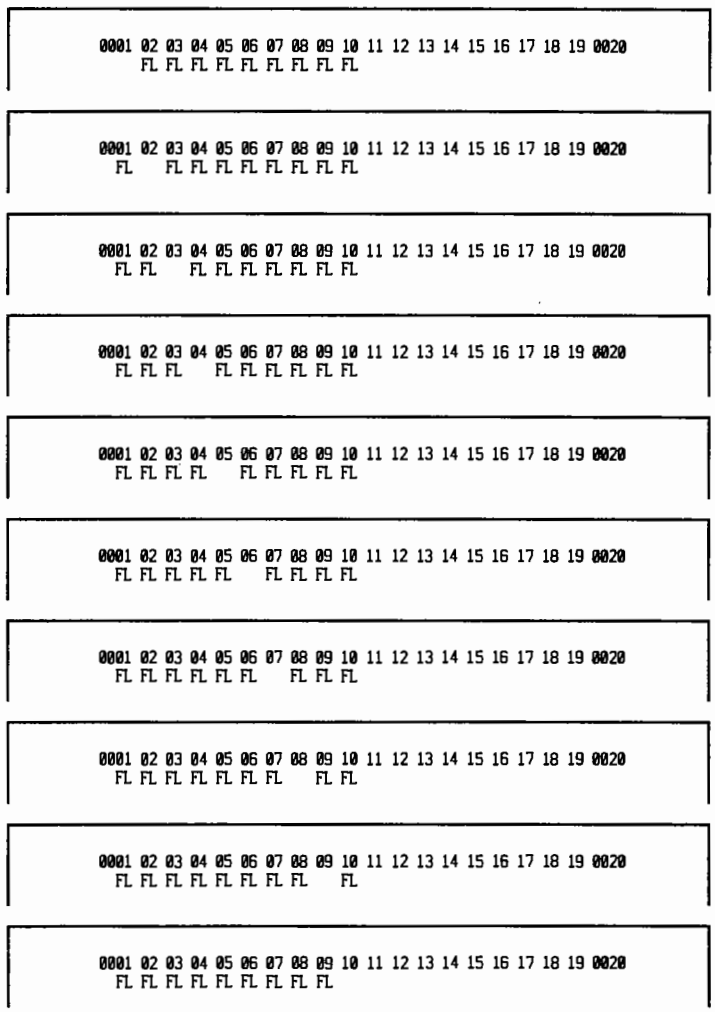
F6 LIVE

to load and start the effect and show the *Live* display.

Move

the submaster 1 controller up.

The new effect appears on stage. The *Live* display shows channels 1 through 10 sequencing.



Experiment With Attributes

Turn off the Negative attribute by pressing F1 NEGATIVE again. All attributes are alternate action functions. You should experiment at this time to see what each attribute does to the effect. Before changing attributes, press F6 TEST to stop and unload the effect. After changing attributes, press F8 RETURN to get back to the effect, and F6 TEST to load and start the effect again. When you are done, press F6 TEST again to unload the effect.

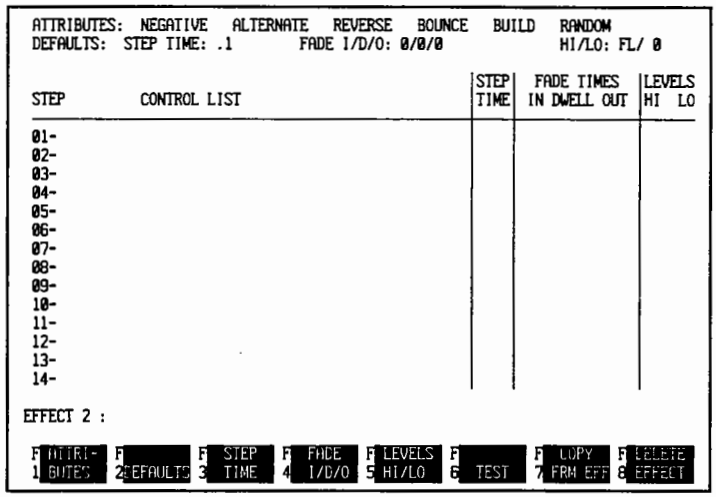
Copy an Effect

You can copy the data from another effect into the current effect to save effect programming time.

Press

EFFECT 2 *

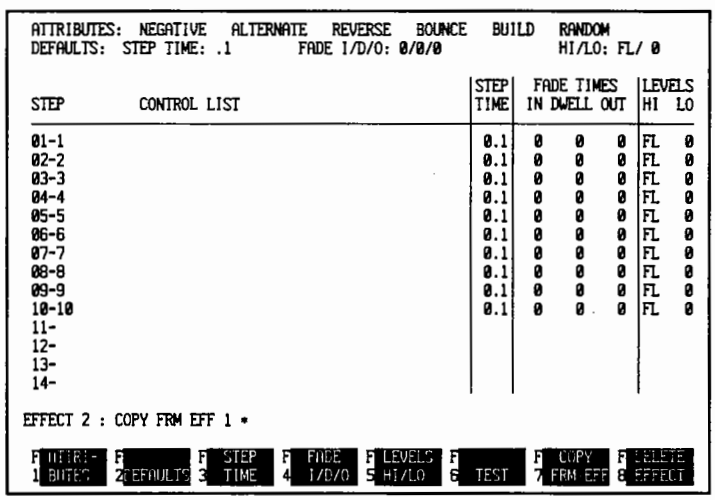
to see the *Effect 2* display.



Press

F7 1 *

to copy data from effect 1.



Set Effect Defaults

You can set step defaults for step time, fade-in, dwell, and fade-out times, and channel high and low levels. This can save much repetitive input when creating the effect, and lets you change all steps in the effect at the same time.

> *If you set these parameters using defaults, then change some steps and go back to change the defaults, the modified steps will remain at their settings. Only unchanged settings will follow the new default.*

Press

F2

to see the default choices.

```
ATTRIBUTES:  NEGATIVE   ALTERNATE   REVERSE   BOUNCE   BUILD   RANDOM
DEFAULTS:  STEP TIME: .1        FADE I/D/O: 0/0/0              HI/LO: FL/ 0

                                                  |STEP|  FADE TIMES   |LEVELS
STEP        CONTROL LIST                          |TIME| IN DWELL OUT  |HI  LO
-------------------------------------------------------------------------------
01+1                                               |  .1|  0    0    0 |FL   0
02+2                                               |  .1|  0    0    0 |FL   0
03+3                                               |  .1|  0    0    0 |FL   0
04+4                                               |  .1|  0    0    0 |FL   0
05+5                                               |  .1|  0    0    0 |FL   0
06+6                                               |  .1|  0    0    0 |FL   0
07+7                                               |  .1|  0    0    0 |FL   0
08+8                                               |  .1|  0    0    0 |FL   0
09+9                                               |  .1|  0    0    0 |FL   0
10+10                                              |  .1|  0    0    0 |FL   0
11-                                                |    |                |
12-                                                |    |                |
13-                                                |    |                |
14-                                                |    |                |

EFFECT 2 : DEFAULT

F        F        F STEP   F FADE   F LEVELS  F        F        F
1        2        3 TIME   4 I/D/O  5 HI/LO   6        7        8 RETURN
```

Press

F3 1 *

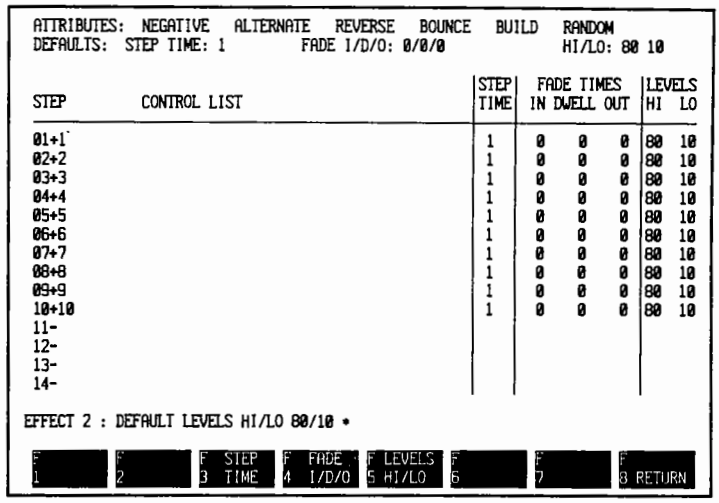
to set the default step time to 1 second.

```
ATTRIBUTES:  NEGATIVE   ALTERNATE   REVERSE   BOUNCE   BUILD   RANDOM
DEFAULTS:  STEP TIME: 1         FADE I/D/O: 0/0/0              HI/LO: FL/ 0

                                                  |STEP|  FADE TIMES   |LEVELS
STEP        CONTROL LIST                          |TIME| IN DWELL OUT  |HI  LO
-------------------------------------------------------------------------------
01+1                                               |  1 |  0    0    0 |FL   0
02+2                                               |  1 |  0    0    0 |FL   0
03+3                                               |  1 |  0    0    0 |FL   0
04+4                                               |  1 |  0    0    0 |FL   0
05+5                                               |  1 |  0    0    0 |FL   0
06+6                                               |  1 |  0    0    0 |FL   0
07+7                                               |  1 |  0    0    0 |FL   0
08+8                                               |  1 |  0    0    0 |FL   0
09+9                                               |  1 |  0    0    0 |FL   0
10+10                                              |  1 |  0    0    0 |FL   0
11-                                                |    |                |
12-                                                |    |                |
13-                                                |    |                |
14-                                                |    |                |

EFFECT 2 : DEFAULT STEP TIME 1 *

F        F        F STEP   F FADE   F LEVELS  F        F        F
1        2        3 TIME   4 I/D/O  5 HI/LO   6        7        8 RETURN
```

Press

F5 8 0 / 1 0 *

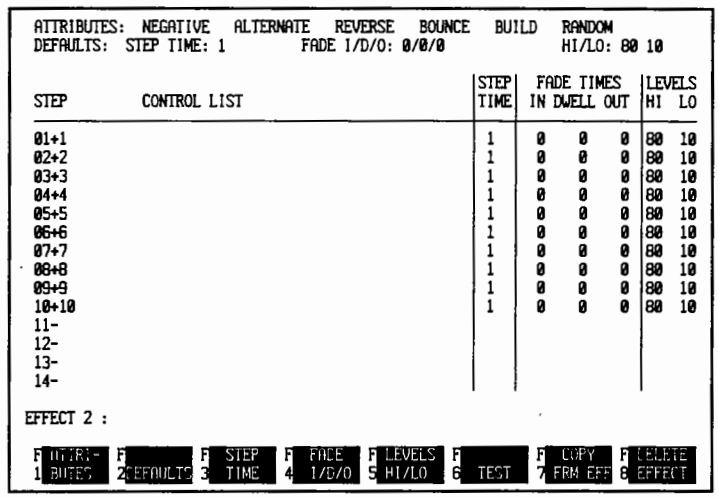
to set the default HI level to 80% and the LO level to 10%.



Press

F8

to return to the Effect 2 display.



The defaults set here apply only to the effect being modified. Other effects will maintain their own default settings.

Use In, Dwell, and Out

You can set an effect default for In, Dwell, and Out times, and then override the default on a per step basis if required. Since the combined total of In, Dwell, and Out times can be longer than the step time, you can have multiple fades in a single effect. The following example creates an effect in which each step fades in and fades out.

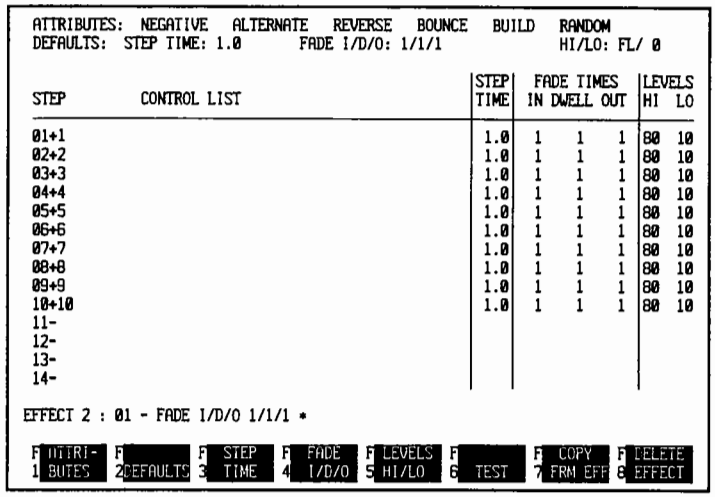
Press

F2 F4

1 / 1 / 1 *

F8

to set the default In, Dwell, and Out times for this effect to 1 second.



Press F6 to assign the effect to the first available empty submaster (in this case submaster 1) and start it running.

The effect will start running. Step 1 will fade ON in 1 second. It will then remain FULL for 1 second while step 2 fades ON. While step 2 is FULL, step 1 will be fading OFF and step 3 will be fading ON.

Press F6 to release the effect from the submaster when you are done.

You do not need to confine yourself to individual channels fading in an effect. You can assign cue end states, groups, and other effects to an effect step and set up some very complex repeating fades if required.

Caution

*The maximum number of fades which can be **in progress** (on faders and in effects) is 128 fades. In the effect shown above, the maximum number of fades in progress at any given time is 2 fades. However, if you were to set the step time to 10 seconds, there would be a maximum of 10 fades running at a time.*

Assign High and Low Channel Levels to Steps

You can assign both a "high" and a "low" levels to individual effect steps to override the default high and low levels. To set the High and Low levels for a step:

- Select the effect (e.g., EFFECT 1 *).
- Select a step (e.g., 0 1)
- Set the High and Low levels (e.g., F5 8 0 / 1 0 *). The first number is the high level and the second number is the low level.

Assign In, Dwell, and Out Times to Steps

You can assign In, Dwell, and Out times to individual effect steps to override the default times. To set In, Dwell, and Out times for a step:

- Select the effect (e.g., EFFECT 1 *).
- Select a step (e.g., 0 1)
- Set In, Dwell, and Out times (e.g., F4 1 / 1 / 0 *). The first number is the In fade time, the second number is the Dwell time, and the third number is the Out fade time.

Assign an Effect to a Cue

Effects can be assigned to cues and run as a part of a cue sequence. If required, you can assign a series of effects to a series of cues, and link the cues to repeat the series. Since you can specify links for a fixed number of passes, the entire process can be automated if required.

Press LIVE CUE 0 . 5 TIME 6 0 EFFECT 1 * to switch to the *Live* display and record cue 0.5.

Cue 0.5 has no levels but runs effect 1 for 60 seconds with step times as set in the effect.

Delete an Effect Step

You can delete an effect step if required.

- Select the required effect (e.g., EFFECT 1 *).
- Delete the step (e.g., 1 0 *). The system will ask ARE YOU SURE ? to make sure you really want to delete the step. Press * to delete the step.

> *All lights will go OFF during this step when you play back the effect unless new channels are assigned to the step.*

Modify an Effect Step

To modify an effect step, select the required step and write the new information. The system deletes the previous step assignment.

Clear an Effect

To clear an effect, select the effect and press F8 *. Press * again when asked for confirmation.

Play an Effect in a Cue

Go to cue 0. The *Fader Status* display shows cue 0.5 as the next cue.

Press GO to start cue 0.5 on **FADER 2**.

The *Fader Status* display begins counting down the effect 1 play time of 60 seconds. You can use the **RATE WHEEL** to control the effect step rate. Press **FADER 2** to stop the effect before its run time is over.

Remember, each time you power-up the console the **RATE WHEEL** *controls nothing. To assign all faders and submasters to the* **RATE WHEEL**, *press* RATE ✱. *To assign specific faders or submasters, press* RATE, *then press the fader manual or submaster bump button for all of the required controllers, and press* ✱ *to complete the command.*

Fade an Effect On Stage

To fade an effect on the stage manually, assign the effect to a submaster. The *Submasters* section of this chapter demonstrates this feature. Effects loaded on submasters will control both the lamp and scroller channels, but the submaster handle will only control lamp levels.

To fade an effect ON using a cue, assign the effect to a cue using a split time. The first number you enter after TIME will be the duration of the effect and the second number will be the fade-in time (e.g., CUE 1 TIME 3 0 / 5 EFFECT 1 ✱ sets up a cue which fades effect 1 ON in 5 seconds and keeps it running for an additional 25 seconds).

To fade an effect OFF using a cue, assign an effect to a cue using a split time with the first time as ZERO. the second time will be the fade-out time (e.g., CUE 2 TIME 0 / 5 EFFECT 1 ✱ sets up a cue which fades effect 1 OFF in 5 seconds). If the effect is not running, this cue will have no effect.

To fade the example effect ON and then OFF, start cue 1, wait 15 or 20 seconds, and start cue 2.

If you start a cue which includes channels in the effect while the effect is still in progress, the cue levels override the effect and common channels fade to the cue levels.

Use the RATE WHEEL to Control Effect Rate

The **RATE WHEEL** controls the step rate of any effect running on an assigned fader. If the **RATE WHEEL** is assigned to all faders it will change the running time of any other active cues and the step time of any other active effects.

Stop an Effect

Press the number button above the fader running the effect to stop an effect before it has timed out.

Have Channels Moving While an Effect is Running

The easiest way to have an effect running while cues are happening is to load the effect on a submaster and fade it in.

An effect can be run in a cue while other channels are fading if the channels which are *not* part of the effect are in a separate cue or cue part.

Multiple cues, with or without waits, can be started while an effect is running on a cue. Since last action takes precedence, any cues with channels overlapping the effect channels, and which start after the effect, will rob control for those channels from the effect.

Control can be gradually "robbed" from an effect in a cue. This leaves the effect counting down on the *Fader Status* display even after the effect channels are no longer under its control. Press the number button above the fader to clear such effects from the fader, or wait until the effect has timed out before loading other cues onto the fader.

Effects loaded onto submasters are not "robbed" by subsequent cues, since submasters pile-on to fader levels.

Macros

Macros let you easily record and play back multiple keystroke sequences which you use frequently. You can record macros directly from the command line or using the *Macro* display.

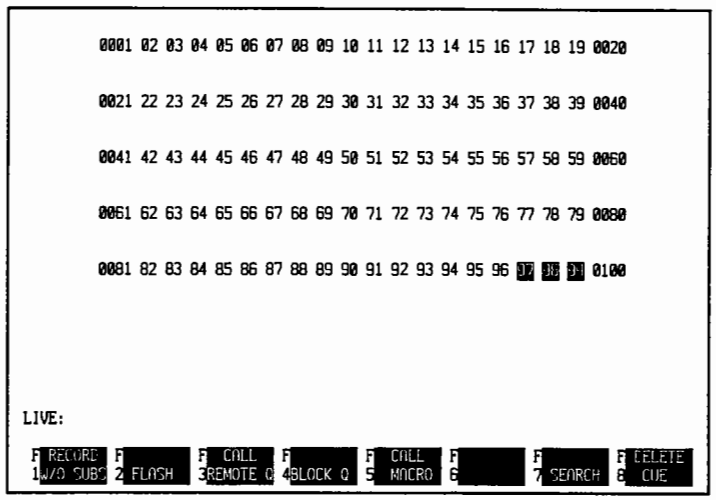
Record a Macro from the Command Line

You can record any macro number from the command line by starting the recorder and entering the keystroke sequence you wish to record.

Press

LIVE

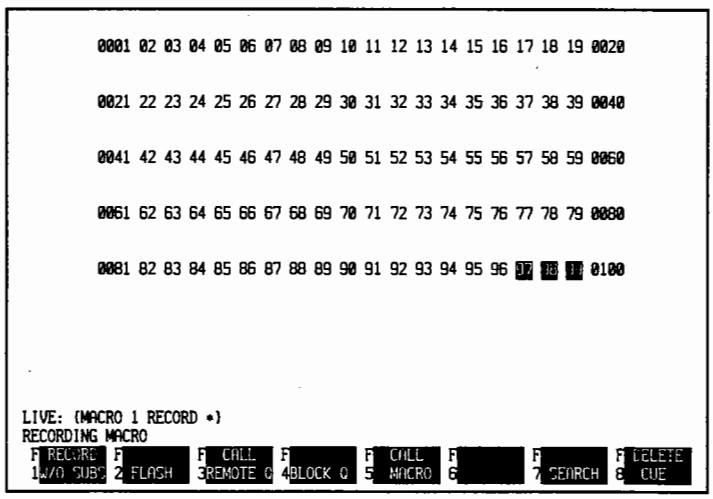
to return to the *Live* display.



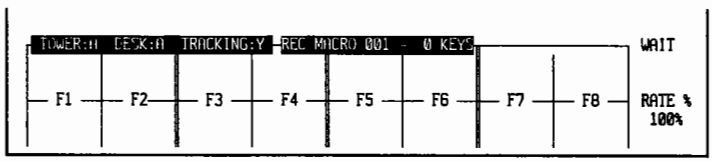
Press

M* 1 RECORD *

to start recording macro 1.



The *Fader Status* display banner shows the macro number and the current keystroke count.



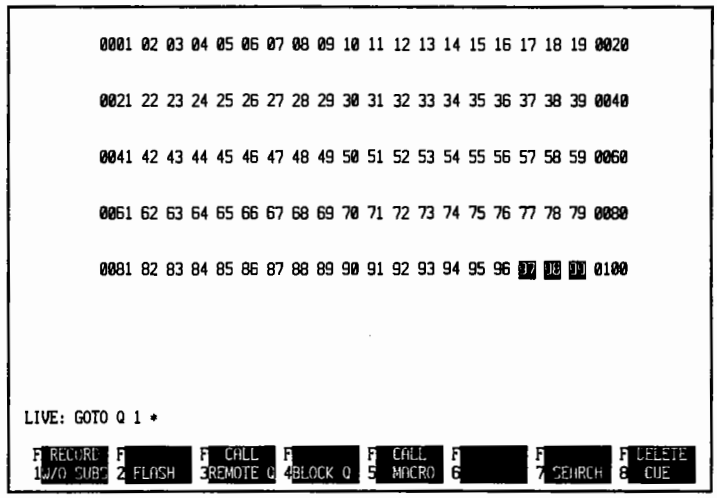
If macro 1 exists, the system will ask OVERRECORD EXISTING MACRO?. Choose CLEAR to cancel or * to overrecord the selected macro.

You can start macro recording from any display, and can start macro recording while you are setting up a command. The macro recording process takes over the system until you complete the macro.

Press

GO TO CUE 1 *

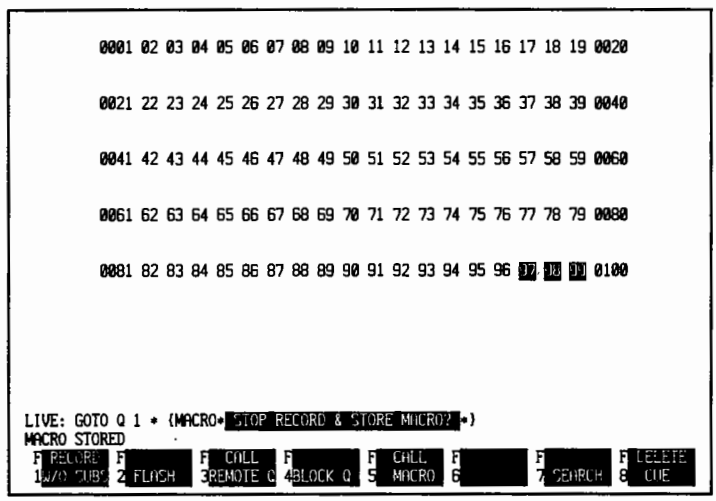
to specify the macro keys.



Press

M* * *

Close macro recording. You can later edit this macro through the *Macro* display if required.



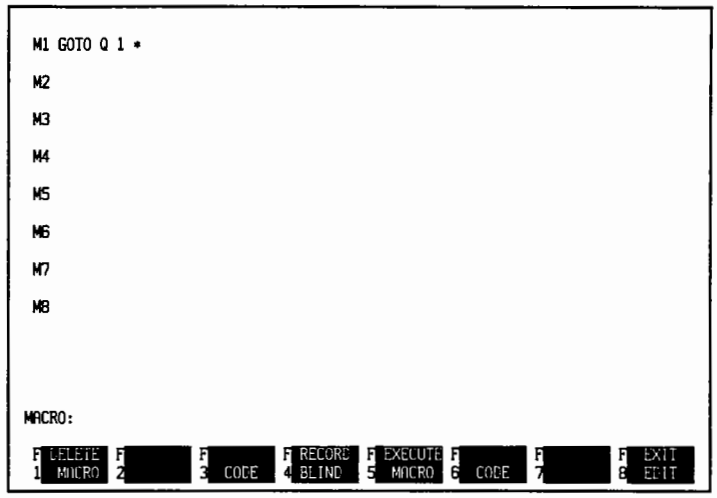
Record a Macro in the *Macro* Display

You can pre-record a macro in the macro display. This display lets you record, preview and edit macros for later use. Macros do not execute while you are in this display.

Press

MACRO

to see the *Macro* display.



PAGE+ pages forward through the *Macro* display.

PAGE- pages backward through the *Macro* display.

Record a Macro On a Macro Key

You can record macros 1 through 8 for later recall on one of the 8 macro keys, and macros 9 through 999 for later recall using [M*]. Once you have recorded the macro, you can use it at any time by pressing the appropriate macro key.

Caution

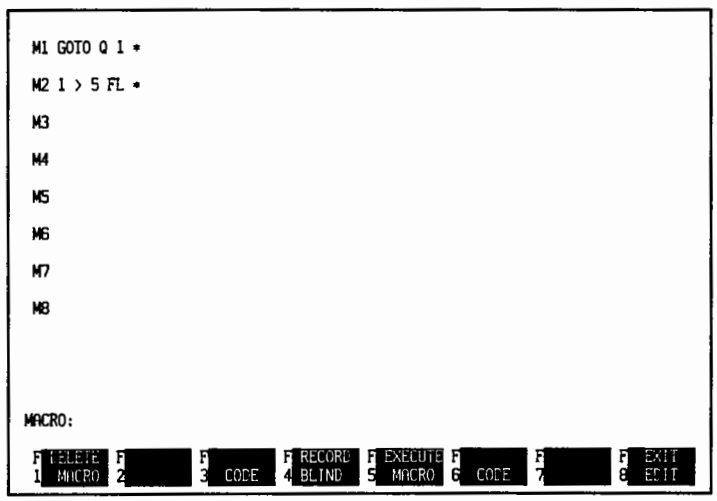
The initial example for Macro 1 used [GO TO CUE], which will work from any display. If you are recording macros which contain functions dependent on a specific display (as shown below), you must make sure you are in the appropriate display before executing the macro, or include the display select key as the first key in the macro.

Press

[1] [>] [5] [@ FULL] [*] [M2]

to record a macro on the [M2] key.

This records a macro which takes channels 1 through 5 to FULL on [M2].



Record a Macro As a Macro Number

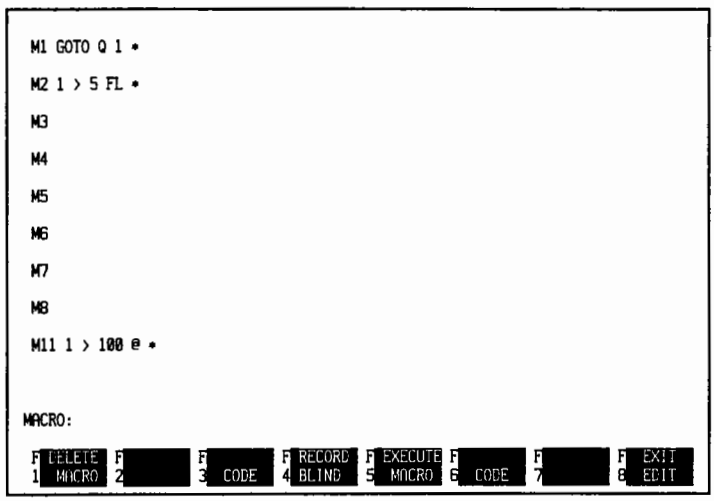
You can record 991 additional macros (9 through 999) by using [M*] and specifying the macro number. You can execute these macros by pressing [M*] [MACRO NUMBER] [*].

Press

[1] [>] [1] [0] [0]
[OUT] [M*] [1] [1] [*]

to record a macro number higher than the number of available macro keys.

This macro takes dimmers 1 through 100 to ZERO.



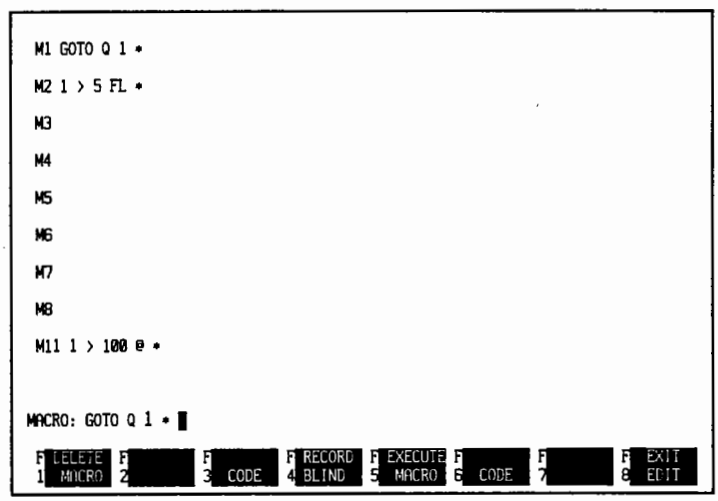
Edit a Macro

You can edit a previously macro to change its function if required.

Press

[M1]

to bring macro 1 back to the command line for editing.



Press

to highlight the number "1."

```
M1 GOTO Q 1 *
M2 1 > 5 FL *
M3
M4
M5
M6
M7
M8
M11 1 > 100 @ *

MACRO: GOTO Q 1 *
F1 DELETE MACRO  F2        F3 CODE  F4 RECORD BLIND  F5 EXECUTE MACRO  F6 CODE  F7        F8 EXIT EDIT
```

Press

to insert a "0" to the left of the "1" and delete the "1."

```
M1 GOTO Q 1 *
M2 1 > 5 FL *
M3
M4
M5
M6
M7
M8
M11 1 > 100 @ *

MACRO: GOTO Q 0
F1 DELETE MACRO  F2        F3 CODE  F4 RECORD BLIND  F5 EXECUTE MACRO  F6 CODE  F7        F8 EXIT EDIT
```

Press

to record the edited command line as macro 1.

```
M1 GOTO Q 0 *
M2 1 > 5 FL *
M3
M4
M5
M6
M7
M8
M11 1 > 100 @ *

MACRO:
F1 DELETE MACRO  F2        F3 CODE  F4 RECORD BLIND  F5 EXECUTE MACRO  F6 CODE  F7        F8 EXIT EDIT
```

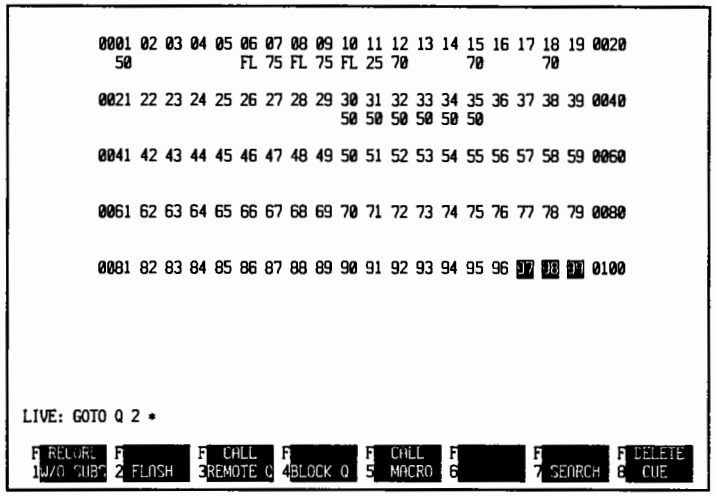
Play Back a Macro

You can play a macro in any display which accepts its commands. If your macro is for a specific display, you must change to that display before starting the macro, or include the change of display in the macro.

Press

LIVE GO TO CUE 2 *

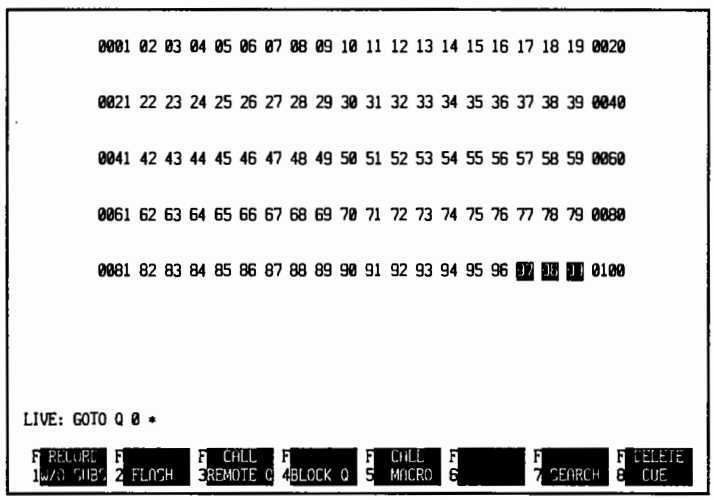
to put cue 2 on stage.



Press

M1

to go to cue 0 (a blackout).



Since GOTO is available from all displays, this macro will always put the stage into a blackout without changing your working display.

Add a Macro to a Cue

You can add a macro to a cue so that it is executed automatically with the cue. It will be started with the cue unless there are delays built into the cue. In cues with delays, the macro is started when the first delay times out. The syntax for adding a macro to a cue is shown under *Live Display* and *Preview Display* in the *Reference* chapter of this manual.

Assign a Key to a Macro

You can assign any key except the submaster bump buttons and Macro keys to a macro. The procedure for doing this is shown under *Macro Display* in the *Reference* chapter of this manual.

Nest or Chain Macros

You can insert an [M*] command in the middle of a macro (nesting), or at the end of a macro (chaining) by using [F5 EXECUTE MACRO]. Record the macro as you would any other macro but use [F5] [#] [*] to insert an [M*] command or commands as needed. You can nest or chain macros to any number of levels, but you must keep in mind the following restrictions:

- Since the [F4] key has different meanings in each display, you cannot specify macro chaining while recording a macro live. You can record the rest of the macro live if you wish and insert the macro chaining command later.
- The maximum number of keystrokes that the macro buffer can hold at one time is 120.
- [M*] commands are "expanded" when they are encountered. Any keystrokes before the [M*] keystroke are thrown away (since they are already executed) and any keystrokes after the [M*] command are appended to the expanded macro. The maximum number of keystrokes allowed in the macro called by the [M*] command is 120 minus the number of keystrokes after the [M*] command.
- If the [M*] command is the last command in a macro, the macro called by the [M*] command can have 120 keystrokes.
- If you make a macro that creates more than 120 keystrokes when it expands an [M*] command, keystrokes after 120 will be discarded since the macro buffer cannot hold them. Keystrokes up to the 120 keystroke limit will be properly executed.
- Commands with long execution times (such as commands in the *Setup* menu) might not execute correctly unless they are the last command in a macro. Subsequent commands must be requested through a separate macro.

Special Functions

Special functions are described in detail in the *Reference* chapter of this manual. The displays through which to access the special functions are listed below.

Check Dimmers

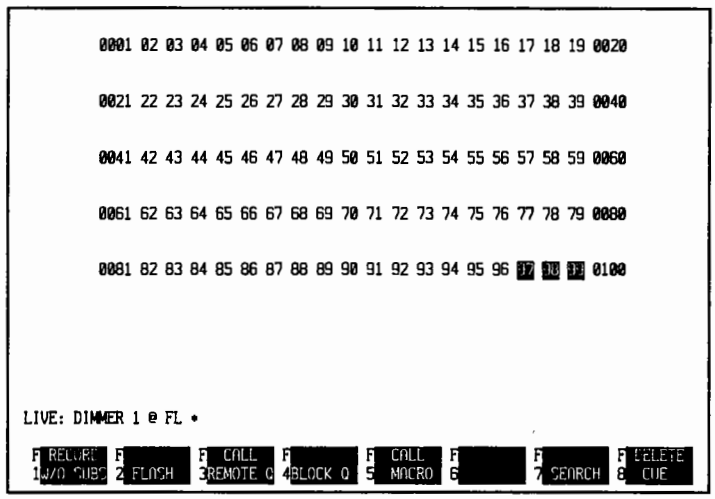
The dimmer check lets you check individual dimmers without bringing up other dimmers patched to the same channel. Dimmers can be brought up at any required level, and are *live on stage*.

When you access dimmers directly, UNPATCHED DIMMERS appears on the Playback monitor in red reverse video. This reminds you that some dimmers are receiving levels directly, without regard to channel instructions.

Press

LIVE GO TO CUE 0
DIMMER 1 @ FULL *

Nothing appears on the *Live* display because the *Live* display is showing channels, not dimmers.



Press NEXT and LAST to scan dimmers in numerical order. This unpatches the dimmers as they are selected, and repatches them when you move to the next dimmer. The last dimmer you select remains unpatched until you press DIMMER RETURN *.

Press DIMMER RETURN * to return all unpatched dimmers to their correct patching. You can return selected dimmers to their correct patching by specifying a dimmer list before pressing RETURN.

Flash Dimmers

[F2 FLASH] lets you flag individual dimmers without bringing up other dimmers patched to the same channel. Dimmers flash between 15% and FULL (100%), and are *live on stage*.

Press [DIMMER] [1] [F2] [*] to start dimmer 1 flashing between 15% and 100%.

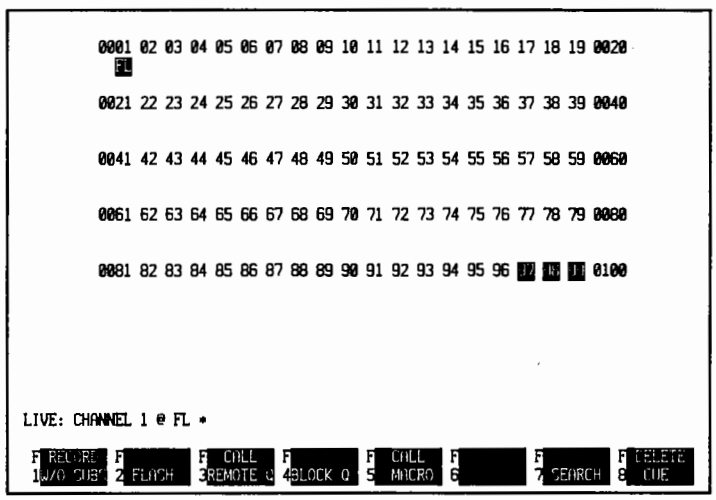
Press [NEXT] and [LAST] to scan dimmers in numerical order. This unpatches the dimmers as they are selected, and repatches them when you move to the next dimmer. The last dimmer you select remains unpatched until you press [DIMMER] [RETURN] [*].

Press [DIMMER] [RETURN] [*] to return all dimmers to their correct patching.

Check Channels

You can do a complete channel check by scanning through the channels just as you would through the dimmers.

Press [1] [@ FULL] [*] to bring the channel up on stage. The channel level shows up on stage controlled by the **LEVEL WHEEL**.



Press [NEXT] and [LAST] to scan through the channels in numerical order. If you specify a lamp channel without a color (i.e., [1] [@ FULL] [*]), [NEXT] and [LAST] will not address scroller channels. If you specify a scroller channel (i.e., [.] [.] [1] [@ FULL] [*]), [NEXT] and [LAST] will address only scroller channels. If you specify a color with a lamp channel (i.e., [1] [@ FULL] [@] [5] [*]), [NEXT] and [LAST] will address only lamp/scroller pairs.

Flash Channels

[F2 FLASH] lets you flag individual channels. Channels flash between 15% and FULL (100%), and are *live on stage*.

Press [1] [F2] [*] to start channel 1 flashing between 15% and 100%.

Press [NEXT] and [LAST] to scan channels in numerical order.

Press [CLEAR] to clear the flashing channel from the **LEVEL WHEEL**.

Return

In channel mode, RETURN lets you return levels to the levels on stage before the last command. This is equivalent to an UNDO command on the last action.

Press RETURN * to return to the previous state.

Press RETURN * again to reverse the Return command.

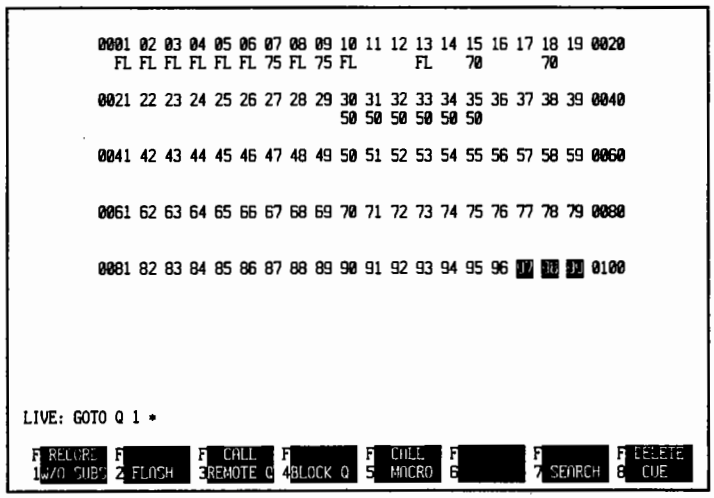
Remainder Dim

REM DIM (Remainder Dim) lets you leave a specific channel or group of channels at their current level and set all other channels to ZERO. You can specify a level for the selected channels if required.

Press

GO TO CUE 1 *

to put cue 1 on stage.



Press

3 + 4 @ 5 REM DIM *

to take all channels except 3 and 4 OUT and set channels 3 and 4 to 50%.

```
0001 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 0020
      50 50

0021 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 0040

0041 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 0060

0061 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 0080

0081 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 0100

LIVE: 3 + 4 @ 50 REM DIM *

F1 RECORD W/O SUBS  F2 FLASH  F3 CALL REMOTE Q  F4 BLOCK Q  F5 CALL MACRO  F6  F7 SEARCH  F8 DELETE CUE
```

Press

RETURN *

to put cue 1 back on stage.

```
0001 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 0020
  FL FL FL FL FL FL 75 FL 75 FL      FL    70       70

0021 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 0040
                           50 50 50 50 50 50

0041 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 0060

0061 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 0080

0081 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 0100

LIVE: RETURN *

F1 RECORD W/O SUBS  F2 FLASH  F3 CALL REMOTE Q  F4 BLOCK Q  F5 CALL MACRO  F6  F7 SEARCH  F8 DELETE CUE
```

Patch and Name Dimmers

The *Patch* display lets you preview, assign, or change patch assignments and dimmer types (2.4K or 6K/12K), and name dimmers. A dimmer can be assigned to only one channel, but a channel can control any number of dimmers.

Patch can be reset to a one-to-one dimmer-to-channel relationship by using F3 REPATCH 1-TO-1 in the *Patch* menu.

In systems with more dimmers than channels, excess dimmers have no assignment until they are patched to a channel. All dimmers, whether patched to a channel or not, can be directly accessed using DIMMER. Dimmer types are reset to 2.4K for all dimmers when a clear-reset is done but are not changed by 2 CLEAR PATCH NAMES in the *Clear Functions* menu.

CD80 6Kw and 12Kw dimmers (if any) must be correctly assigned before use of the system. Failure to do so will result in dimmer addressing anomalies, since one CD80 6Kw or 12Kw dimmer takes up two 2.4Kw dimmer spaces. This is not necessary with DMX512 dimmers or dimmers controlled through a demultiplexer as 2.4Kw dimmers. This function works with dimmer and channel number assignments to determine dimmer rack boundaries and dimmer output drive.

Since dimmer numbers must be assigned so they correspond to physical dimmer modules, there are some 6Kw assignments that are not legal. For instance, if the first dimmer number in a port is 1, you cannot assign the first 6Kw dimmer to dimmer 2 because dimmer 2 would be the second 2.4Kw dimmer in the first dimmer module. The first legal 6Kw dimmer would be dimmer 1 (the first module is a 6Kw) or any other odd numbered dimmer. If the rack numbering starts with an even number then the first 6Kw assignment must be an even numbered dimmer.

Caution

If you are using a protocol other than AMX192 or are using a Strand demultiplexer, you will still be able to assign 6K/12K dimmers. You should generally avoid doing this because its will send two consecutive dimmer signals to the dimmer rack, essentially creating two consecutive dimmers with the same dimmer number.

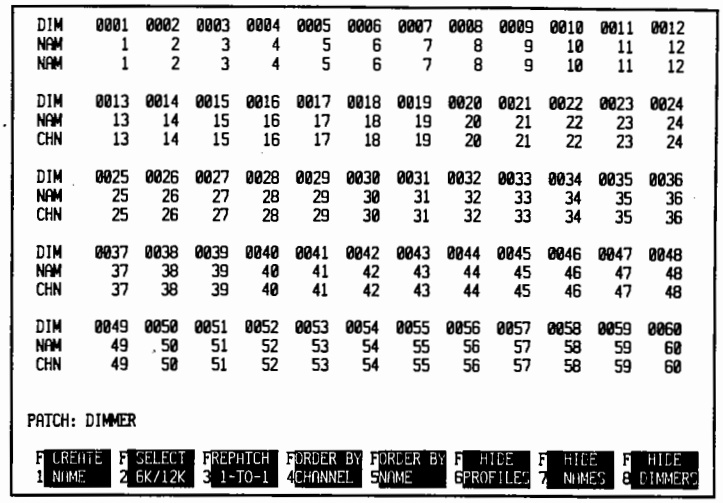
If you are using AMX192 dimmers from other manufacturers, you should check with the manufacturer to see if you need to assign 6K/12K dimmers in your system.

This demonstration assumes that patch is set to a one-dimmer-to-one-channel relationship. If not, use F3 REPATCH 1-TO-1 to reset the patch to a 1-to-1 dimmer-to-channel relationship. It also assumes that your first rack of dimmers is numbered starting at dimmer 1.

Press

PATCH

to see the *Patch* display.



```
DIM   0001 0002 0003 0004 0005 0006 0007 0008 0009 0010 0011 0012
NAM      1    2    3    4    5    6    7    8    9   10   11   12
NAM      1    2    3    4    5    6    7    8    9   10   11   12

DIM   0013 0014 0015 0016 0017 0018 0019 0020 0021 0022 0023 0024
NAM     13   14   15   16   17   18   19   20   21   22   23   24
CHN     13   14   15   16   17   18   19   20   21   22   23   24

DIM   0025 0026 0027 0028 0029 0030 0031 0032 0033 0034 0035 0036
NAM     25   26   27   28   29   30   31   32   33   34   35   36
CHN     25   26   27   28   29   30   31   32   33   34   35   36

DIM   0037 0038 0039 0040 0041 0042 0043 0044 0045 0046 0047 0048
NAM     37   38   39   40   41   42   43   44   45   46   47   48
CHN     37   38   39   40   41   42   43   44   45   46   47   48

DIM   0049 0050 0051 0052 0053 0054 0055 0056 0057 0058 0059 0060
NAM     49   50   51   52   53   54   55   56   57   58   59   60
CHN     49   50   51   52   53   54   55   56   57   58   59   60

PATCH: DIMMER

F1 CREATE NAME   F2 SELECT 6K/12K   F3 REPATCH 1-TO-1   F4 ORDER BY CHANNEL   F5 ORDER BY NAME   F6 HIDE PROFILES   F7 HIDE NAMES   F8 HIDE DIMMERS
```

You are now ready to patch dimmers.

Assign 6K/12K Dimmers

Although it is not strictly necessary, you should assign 6K/12K dimmers in numerical sequence to avoid confusion. If the system contains no 6Kw or 12Kw CD80 dimmers, you can skip to the *Patch Dimmers to Channels* section of this chapter.

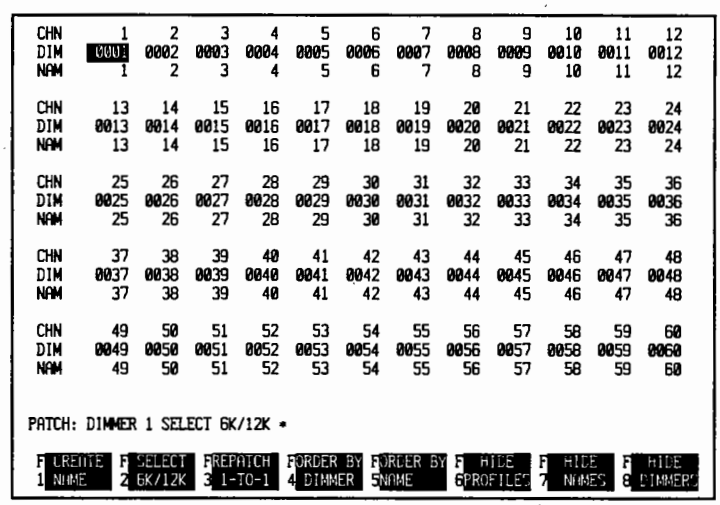
If the current F4 label says ORDER BY CHANNEL, press F4 to make sure that the *Patch* display is ordered by channel. This makes it easier to see what you are doing while you are making 6Kw assignments in numerical order.

Press

1 F2 *

to assign dimmer 1 as a 6K/12K dimmer.

The reverse video dimmer number shows 6K/12K assignment.



```
CHN      1    2    3    4    5    6    7    8    9   10   11   12
DIM   0001 0002 0003 0004 0005 0006 0007 0008 0009 0010 0011 0012
NAM      1    2    3    4    5    6    7    8    9   10   11   12

CHN     13   14   15   16   17   18   19   20   21   22   23   24
DIM   0013 0014 0015 0016 0017 0018 0019 0020 0021 0022 0023 0024
NAM     13   14   15   16   17   18   19   20   21   22   23   24

CHN     25   26   27   28   29   30   31   32   33   34   35   36
DIM   0025 0026 0027 0028 0029 0030 0031 0032 0033 0034 0035 0036
NAM     25   26   27   28   29   30   31   32   33   34   35   36

CHN     37   38   39   40   41   42   43   44   45   46   47   48
DIM   0037 0038 0039 0040 0041 0042 0043 0044 0045 0046 0047 0048
NAM     37   38   39   40   41   42   43   44   45   46   47   48

CHN     49   50   51   52   53   54   55   56   57   58   59   60
DIM   0049 0050 0051 0052 0053 0054 0055 0056 0057 0058 0059 0060
NAM     49   50   51   52   53   54   55   56   57   58   59   60

PATCH: DIMMER 1 SELECT 6K/12K *

F1 CREATE NAME   F2 SELECT 6K/12K   F3 REPATCH 1-TO-1   F4 ORDER BY DIMMER   F5 ORDER BY NAME   F6 HIDE PROFILES   F7 HIDE NAMES   F8 HIDE DIMMERS
```

Two signals will be sent from the processor tower to the dimmers for each dimmer assigned in this manner.

Caution

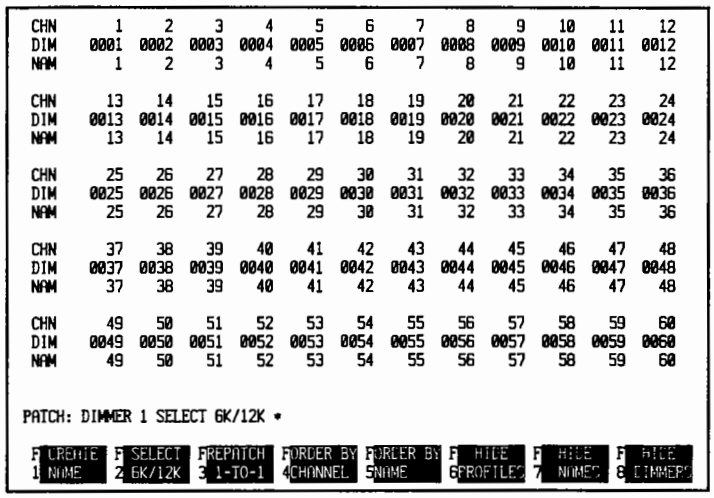
Incorrect assignment of 6K/12K status for your system will result in shifted dimmer addressing. Dimmers will be addressed properly up to the incorrectly assigned dimmer. For each 6K/12K dimmer which is incorrectly assigned, the dimmer addressing will shift by one dimmer on all dimmers with a higher number.

In order to maintain consistency with previous versions of Lightpalette, and still provide a higher level of operator assistance, you can specify 6K/12K dimmers using F2 SELECT 6K/12K *as shown above (in essence a menu selection), or by entering* [LIST] ✱ *(now the shortcut method).*

Press

1 F2 ✱

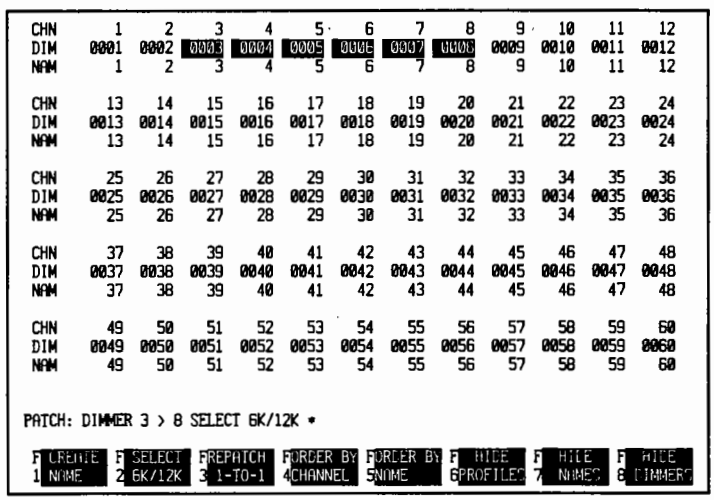
to clear the 6K/12K assignment from dimmer 1.



Press

3 > 8 F2 ✱

to assign a block of dimmers as 6K/12K dimmers.

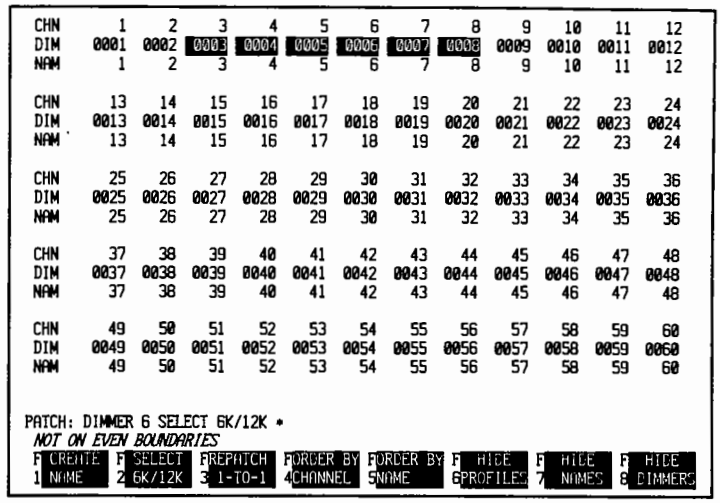


Press

6 F2 *

The system warns you that this is an incorrect selection.

Since 6K/12K assignments involve two dimmer signals you cannot change the status of a single dimmer in a series.

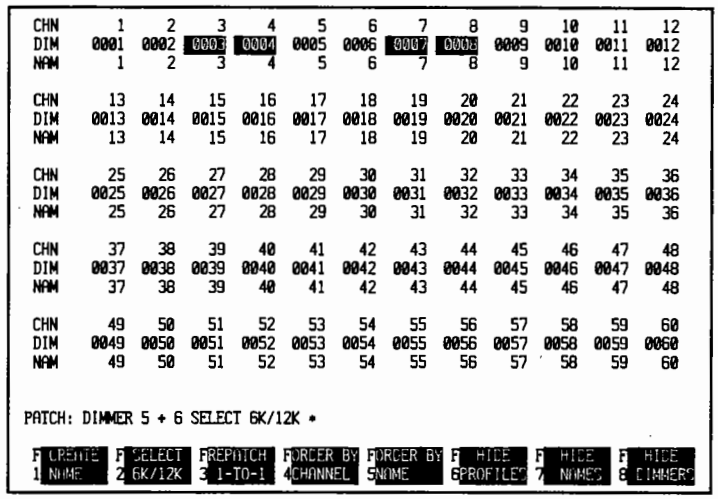


Press CLEAR to to clear the error and unlock the command line.

Press

5 + 6 F2 *

to change dimmers 5 and 6 back to 2.4Kw status.

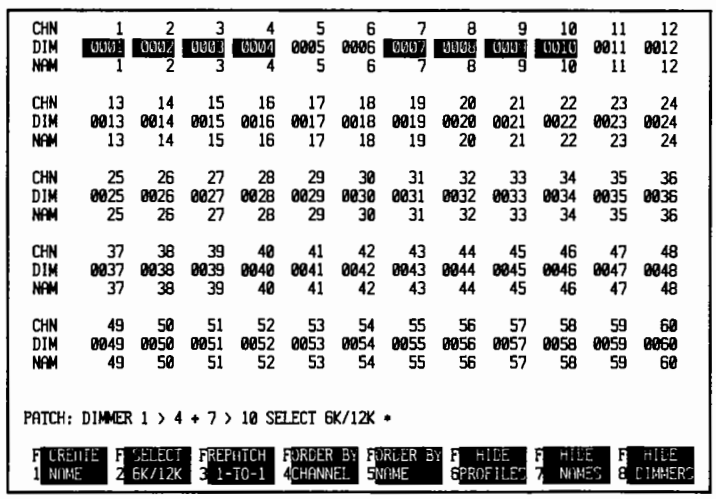


Press

1 > 4 +

7 > 1 0 F2 *

to assign additional 6K/12K dimmers.



If any single dimmer on a dimmer list is 2.4Kw, all dimmers in the list will be set to 6Kw/12Kw status, regardless of their previous status.

Clear all 6K/12K Assignments

To guarantee clearing all 6K/12K assignments, you can select all of your dimmers as 6K/12K and then select all dimmers again to set them to 2.4Kw status.

Press

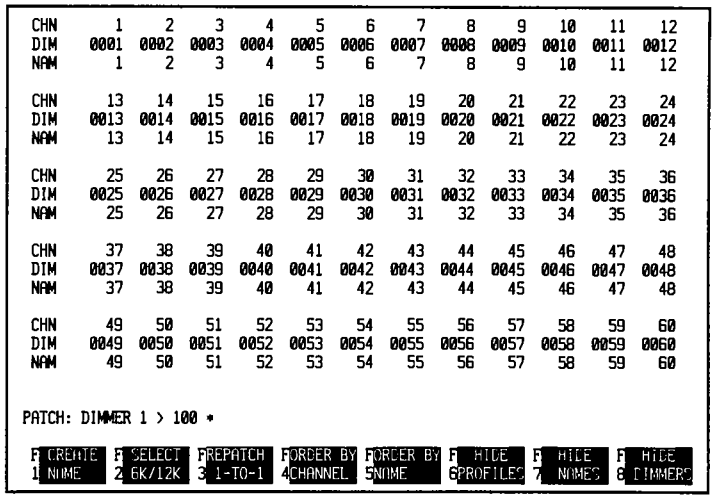
[1] [>] [1] [0] [0] [*]

to set dimmers 1 through 100 to 6K/12K status.

Press

[1] [>] [1] [0] [0] [*]

to set dimmers 1 through 100 to 2.4Kw status.



Patch Dimmers to Channels

Any or all dimmers can be patched to any channel. Each dimmer can be assigned a profile, which conditions the output to match your needs.

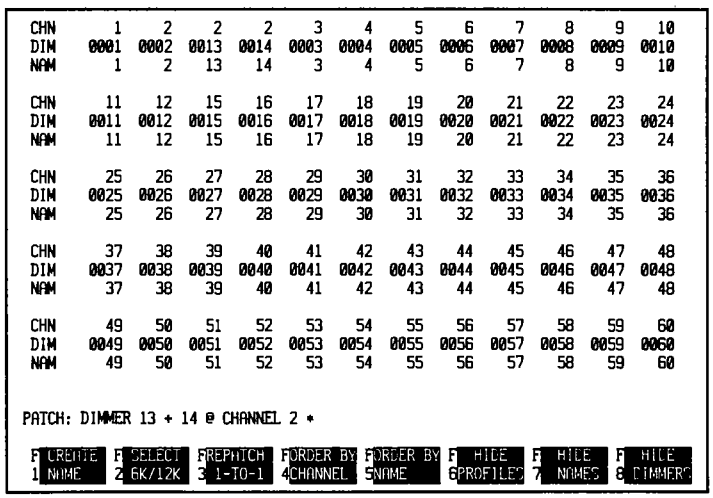
Caution

Since you can assign a profile to a dimmer, always check the patch for profiles if you are having troubles with the dimmer not reaching FULL or OFF, or if the dimmer curve is not correct. Since several people can potentially have access to show and system data, and from diverse locations, always check the Patch *display for dimmer problems even if you are sure you had it set up correctly at one time.*

Press

[1] [3] [+] [1] [4] [@] [2] [*]

to patch dimmers 13 and 14 to channel 2.



You can use [+] and [>] to form channel lists for patching, but you cannot use cues, groups, or effects as templates for patching dimmers.

Proportional Patching

Lightpalette 90 series control consoles do not have a specific "Proportional Patch" function. However, you can easily set up proportional patching using profiles assigned to individual dimmers.

Press

F6

to show profiles on the *Patch* display.

```
CHN     1    2    2    2    3    4    5    6    7    8    9   10
DIM  0001 0002 0013 0014 0003 0004 0005 0006 0007 0008 0009 0010
NAM     1    2   13   14    3    4    5    6    7    8    9   10
PRO
CHN    11   12   15   16   17   18   19   20   21   22   23   24
DIM  0011 0012 0015 0016 0017 0018 0019 0020 0021 0022 0023 0024
NAM    11   12   15   16   17   18   19   20   21   22   23   24
PRO
CHN    25   26   27   28   29   30   31   32   33   34   35   36
DIM  0025 0026 0027 0028 0029 0030 0031 0032 0033 0034 0035 0036
NAM    25   26   27   28   29   30   31   32   33   34   35   36
PRO
CHN    37   38   39   40   41   42   43   44   45   46   47   48
DIM  0037 0038 0039 0040 0041 0042 0043 0044 0045 0046 0047 0048
NAM    37   38   39   40   41   42   43   44   45   46   47   48
PRO
CHN    49   50   51   52   53   54   55   56   57   58   59   60
DIM  0049 0050 0051 0052 0053 0054 0055 0056 0057 0058 0059 0060
NAM    49   50   51   52   53   54   55   56   57   58   59   60
PRO

PATCH: SHOW PROFILES

F1 CREATE NAME   F2 SELECT 6K/12K   F3 REPATCH 1-TO-1   F4 ORDER BY CHANNEL   F5 ORDER BY NAME   F6 HIDE PROFILES   F7 HIDE NAMES   F8 HIDE DIMMERS
```

Press

1 @ 5 @ 7 *

to assign the non-dim profile recorded earlier to dimmer 1, and assign the dimmer to channel 5.

```
CHN     2    2    2    3    4    5    5    6    7    8    9   10
DIM  0002 0013 0014 0003 0004 0001 0005 0006 0007 0008 0009 0010
NAM     2   13   14    3    4    1    5    6    7    8    9   10
PRO                             7
CHN    11   12   15   16   17   18   19   20   21   22   23   24
DIM  0011 0012 0015 0016 0017 0018 0019 0020 0021 0022 0023 0024
NAM    11   12   15   16   17   18   19   20   21   22   23   24
PRO
CHN    25   26   27   28   29   30   31   32   33   34   35   36
DIM  0025 0026 0027 0028 0029 0030 0031 0032 0033 0034 0035 0036
NAM    25   26   27   28   29   30   31   32   33   34   35   36
PRO
CHN    37   38   39   40   41   42   43   44   45   46   47   48
DIM  0037 0038 0039 0040 0041 0042 0043 0044 0045 0046 0047 0048
NAM    37   38   39   40   41   42   43   44   45   46   47   48
PRO
CHN    49   50   51   52   53   54   55   56   57   58   59   60
DIM  0049 0050 0051 0052 0053 0054 0055 0056 0057 0058 0059 0060
NAM    49   50   51   52   53   54   55   56   57   58   59   60
PRO

PATCH: DIMMER 1 @ CHANNEL 5 @ 7 *

F1 CREATE NAME   F2 SELECT 6K/12K   F3 REPATCH 1-TO-1   F4 ORDER BY CHANNEL   F5 ORDER BY NAME   F6 HIDE PROFILES   F7 HIDE NAMES   F8 HIDE DIMMERS
```

Clear a Profile From a Dimmer

Easily clear a profile from a dimmer by assigning it a new profile, or assigning it a null profile.

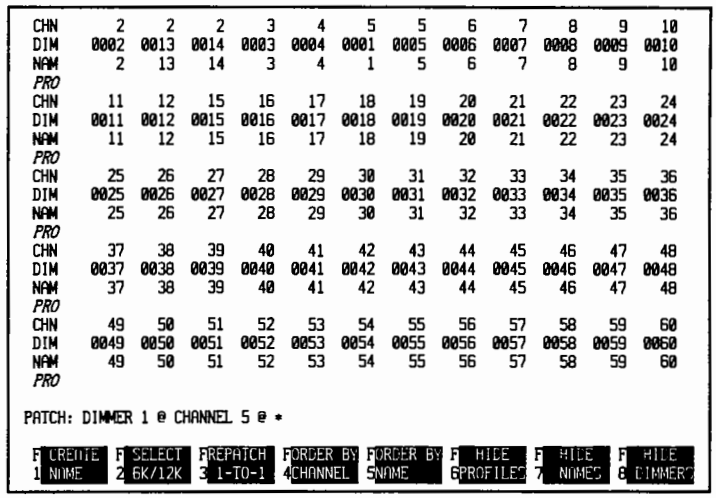
Press

1 @ 5 @ *

or

1 @ @ *

to clear the profile assignment from dimmer 1.



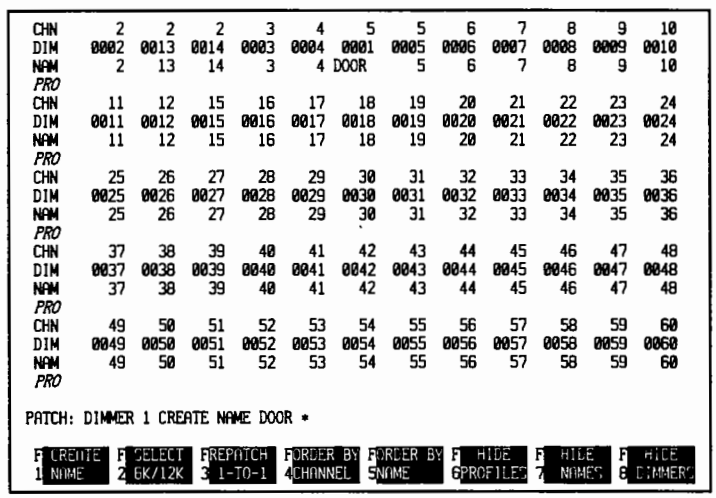
Name a Dimmer

You can name dimmers to match circuit names in your facility or to match a particular hookup. You can refer to any named dimmer by name or number when patching. Dimmer names can be up to 5 characters long and consist of letters, numbers, and the special characters ":" (colon), "," (comma) and "." (dot). When you are patching, the system identifies whether you are using a name or number by whether the first character is a number or not. The dimmer number appears in the NAM row for any unnamed dimmers.

Press

1 F1 D O O R *

to assign the name "DOOR" to dimmer 1.



Unnamed dimmers show dimmer numbers instead of names. Named dimmers appear in alphabetical order at the start of the patch table. Unnamed dimmers appear in the patch table and in numerical order after named dimmers when the patch table is sorted by name.

Rename a Dimmer

To rename a dimmer, follow the procedure for naming a dimmer and type in a different name.

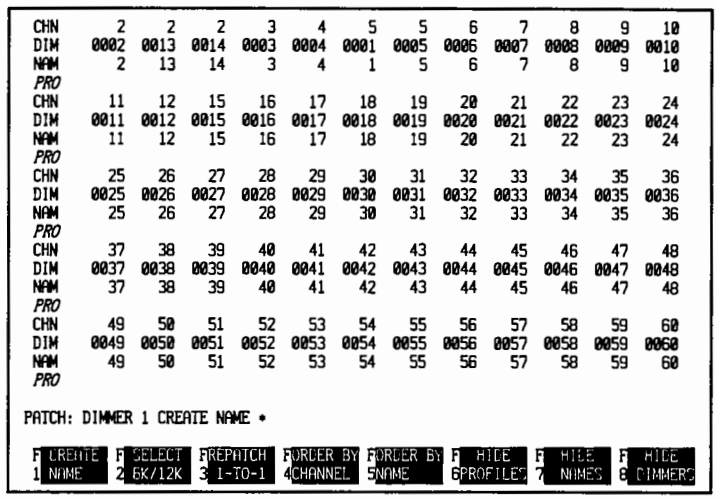
Clear a Dimmer Name

To clear a dimmer name, follow the procedure for naming a dimmer and enter no new name. The system will reset the dimmer name to the numerical equivalent of the dimmer number.

Press

1 F1 *

to reset the dimmer 1 name.



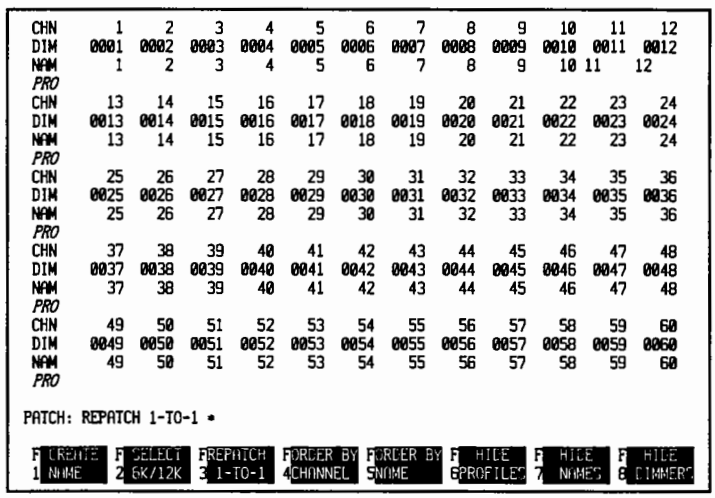
Repatch One-to-One

You can reset your patch to a one-to-one channel-to-dimmer relationship by using F3 REPATCH 1-TO-1. This does not change the dimmer names, 6K/12K assignments, or profile assignments.

Press

F3 *

to repatch the dimmers to a one-to-one relationship with channels. Dimmers without corresponding channel numbers are not patched to any channel.



Clear Dimmer Names

You can clear all dimmer names by using 2 CLEAR PATCH NAMES in the *Clear Functions* menu. This procedure is discussed in the *Clear Functions* section of this chapter.

System Setup

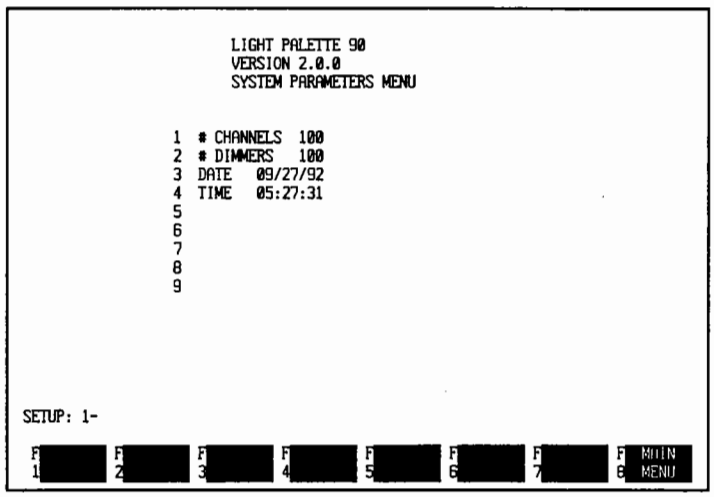
The system setup is a two level menu system. Pressing SETUP gets you to the *Setup* display, from which you can then select the various menus.

Set System Parameters

The *System Parameters* menu lets you tell the console the number of dimmers and channels in your system, and the current date and time.

Changing the number of dimmers or channels does not clear memory or eliminate cue information. If you set the number of channels to less than the number recorded, displays are truncated and you lose access to some channels until you increase the number of channels again.

Press
SETUP 1
to see the *System Parameters* menu.

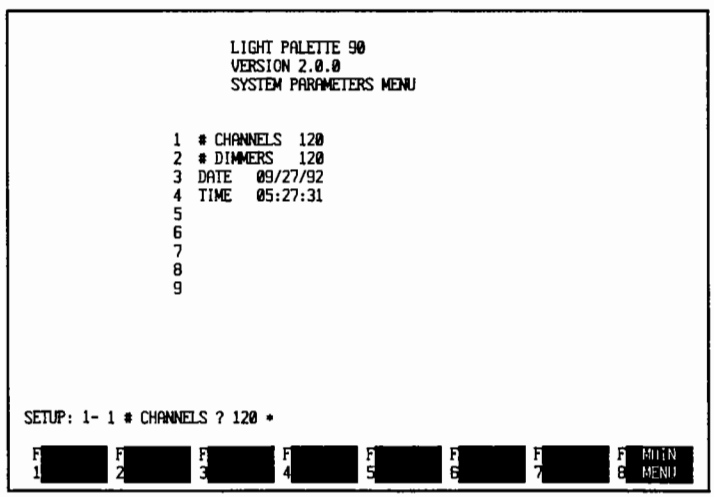


Set Number of Channels

You can set the number of channels in the system by using 1 # CHANNELS.

Press
1 1 2 0 *
to increase the number of channels to 120.

You can set the number of channels to any number up to the number of dimmers allowed by currently installed Dimmer Processor cards.



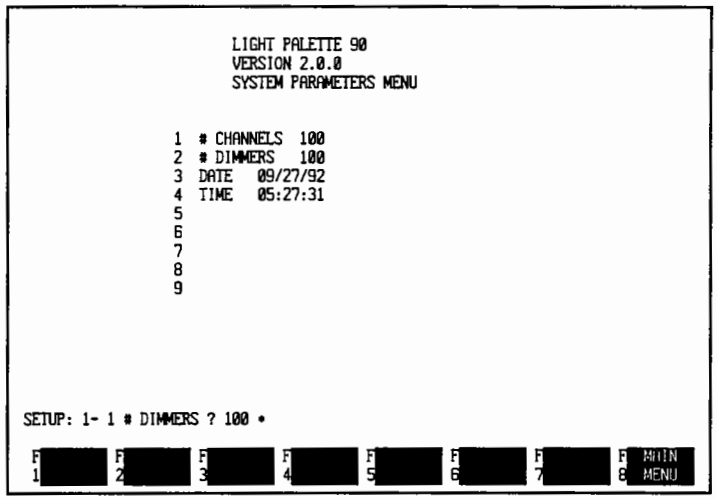
If you set the number of channels to more than the number of dimmers the number of dimmers will be automatically adjusted upwards.

Set Number of Dimmers

You can set the number of dimmers in the system by using 2 # DIMMERS.

Press
2 1 0 0 *
to decrease the number of dimmers to 100.

You can set the number of dimmers to any number up to the number of dimmers allowed by currently installed Dimmer Processor cards.



If you set the number of dimmers to less than the number of channels the number of channels is adjusted downward.

Set Date

You can set the date and time when you first start your system, and reset it as required, by using 3 DATE and 4 TIME OF DAY. The date and time shown in this menu will appear on all printouts from the system.

Press 3 **[date]** * to set the current date. Enter the date as mm/dd/yy (US format), dd-mm-yy (European format), or yy.mm.dd (military format). The system will know which format you are using by the delimiters you use.

Press 4 **[time]** * to set the current time. Enter the time as hh:mm:ss in 24 hour format (i.e., 1:00:00 pm is 13:00:00).

Press F8 or 0 to return to the *Setup* display.

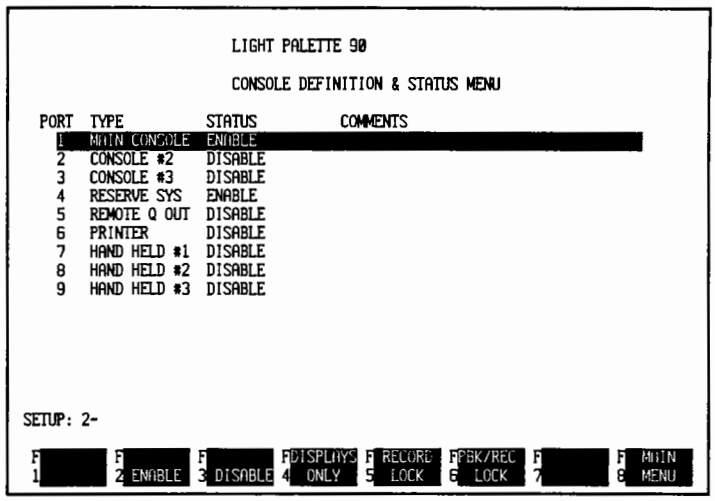
Set Device Status

The *Console Definition & Status* menu lets you set the device status of the various system communications ports.

Press

SETUP 2

to see the *Console Definition & Status* menu.

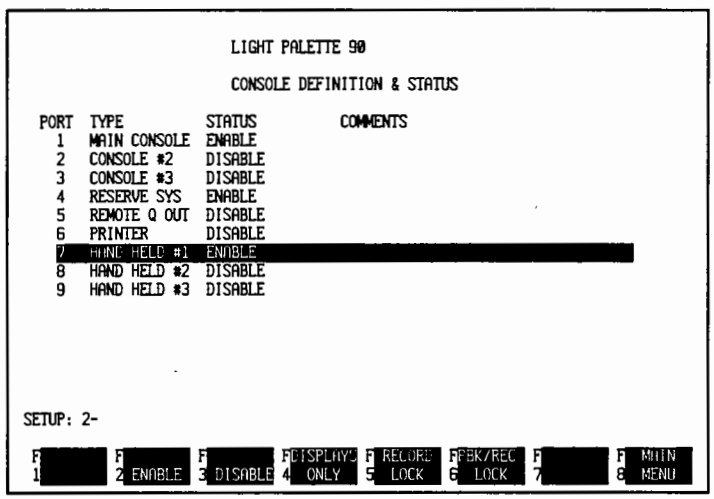


To change device status, select the port number, select the new status, and type a comment if you wish.

Press

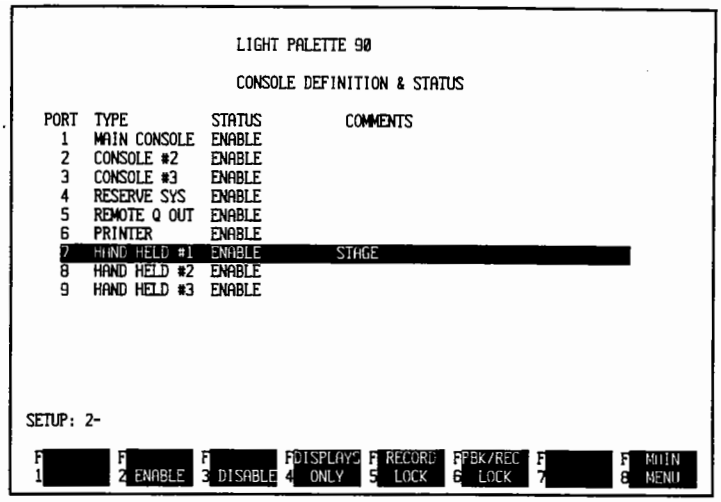
7 F2

to enable the hand held remote.



You can also use NEXT and LAST to highlight the required device and make your command selection.

Press
COMMENT S T A G E *
to enter a comment for the highlighted port.



Console Status Options

The following status options are available:

- F2 ENABLE enables all functions for the selected device.
- F3 DISABLE disables the selected device completely.
- F4 DISPLAYS ONLY allows the selected device access only to displays.
- F5 RECORD LOCK allows the selected device access to displays, live channel setting, direct dimmer control, playback commands, and manually executed functions which contain only those commands.
- F6 PBK/REC LOCK allows the selected device access to displays, live channel setting, and direct dimmer control.

On warm or cold start, the full tracking backup port (port #4) defaults to DISABLE *until the system finds a full backup. If a full tracking backup unit is present and functional, this port is automatically enabled by the system.*

Caution

To minimize interference, you should disable any console or hand held remote port when you unplug devices from the port or from facility wiring which is connected to the port (e.g., when you unplug a hand held remote for storage).

Press F8 or 0 to return to the *Setup* display.

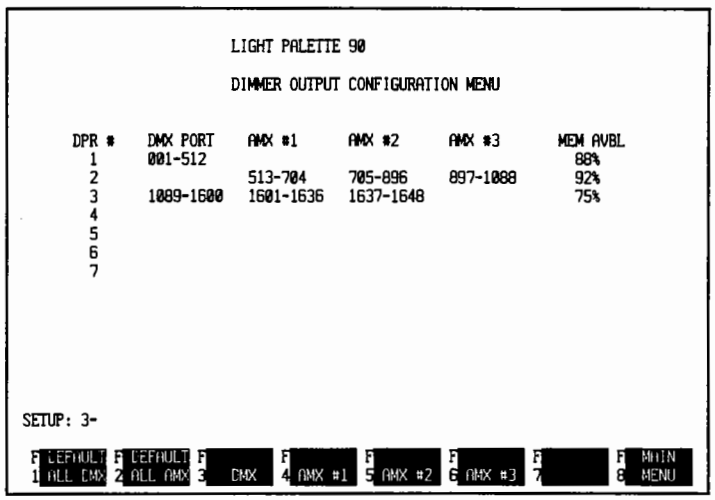
Set Dimmer Output Configuration

The *Dimmer Output Configuration* menu lets you tell the system what type of dimmers you have, and which outputs should control the dimmers.

Press

SETUP 3

to see the *Dimmer Output Configuration* menu.



Since these settings seldom change once the system is set up, this tutorial will not discuss this menu in detail. Please refer to the *Reference* chapter of this manual for details on how to set up your outputs.

However, this display includes memory availability information, so you can access it to monitor memory usage.

> *Each Dimmer Processor card handles all processing for its own channels, including cue level storage and groups. Depending on channel usage in your cues, each DPR card may show different availability for its memory.*

Press F8 or 0 to return to the *Setup* display.

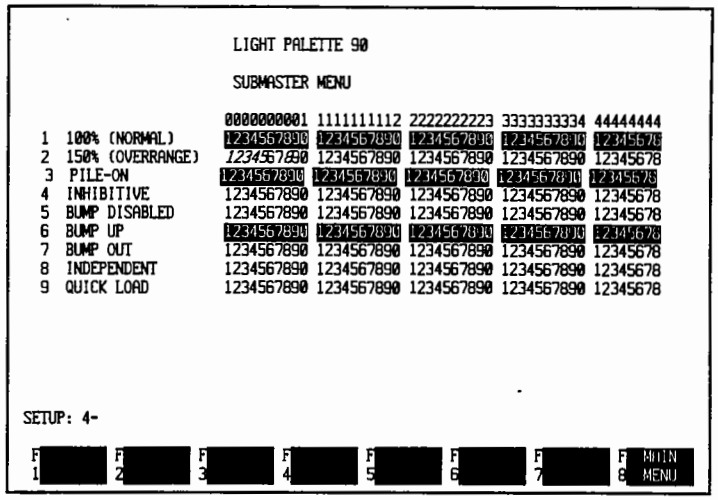
Set Submaster Configuration

The *Submaster* menu lets you set the various defaults for the submasters as required.

Press

SETUP 4

to see the *Submaster* menu.



Submaster defaults at system startup are:

- Normal = all, Overrange = none
- Pile-on = all, Inhibitive = none
- Bump Disabled = none, Bump Up = all, Bump Out = None
- Independent = None
- Quick Load = None

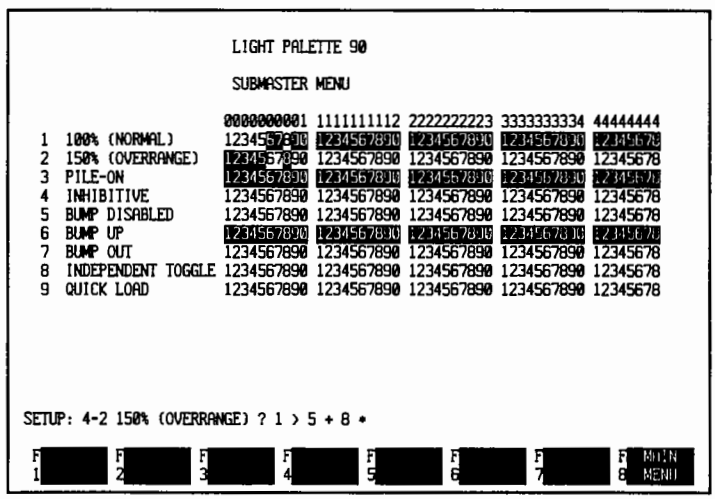
Normal/Overrange Selection

1 100% (NORMAL) and 2 150% (OVERRANGE) let you input a list of submasters to be either normal travel (100%) or overrange (150%). Submasters specified for one category are automatically removed from the other.

Press

2 1 > 5 + 8 *

to assign submasters to 150% overrange status.



Pile-On/Inhibitive Selection

[3 PILE-ON] and [4 INHIBITIVE] let you input a list of submasters which are to be either pile-on or inhibitive. Submasters specified for one category are automatically removed from the other.

The method of entry for these selections is the same as above for the normal/overrange selection.

Bump Status Selection

[5 BUMP DISABLED], [6 BUMP UP], [7 BUMP OUT], and [8 INDPENDENT TOGGLE] let you input a list of submaster bump buttons which are to be assigned to the selected category. Submasters specified for one category are automatically removed from the others.

The method of entry for these selections is the same as above for the normal/overrange selection.

Bump button status categories are defined as follows, and are mutually exclusive:

- [5 BUMP DISABLED] - bump button does nothing. The submaster is dependent.
- [6 BUMP UP] - bump button forces the submaster to FULL. The submaster is dependent.
- [7 BUMP OFF] - bump button forces the submaster OFF. The submaster is dependent.
- [8 INDEPENDENT TOGGLE] - bump button toggles the submaster between dependent and independent modes.

Quick Load Submasters

When a submaster is assigned as a Quick Load submaster by using [9 QUICK LOAD], the bump button becomes a Quick Load button if there is a channel list on the command line that has not been assigned to the **Level Wheel** using [*]. At all other times, the bump button will act as selected by the other four bump button functions. Assigning a bump button to Quick Load status does not change the bump status set by the other bump functions. To disable the Quick Load function you assign one of the other four bump functions (even if they are already assigned).

Press [F8] or [0] to return to the *Setup* display.

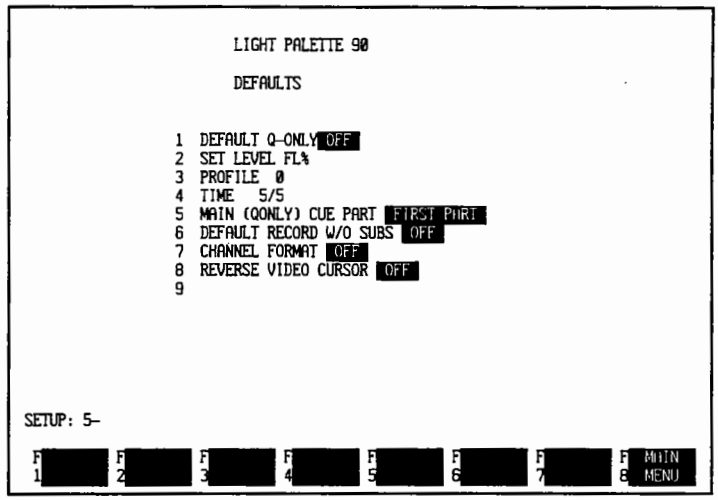
Set System Defaults

The *Defaults* menu lets you set various system defaults as required.

Press

SETUP 5

to see the *Defaults* menu.



System Defaults

The cold start status for system defaults are:

- Default Q-ONLY = OFF (displayed in red)
- Set Level = FULL
- Default Profile for cues = 0 (linear fade)
- Default Fade Time for cues = 5 seconds
- Default main cue part = First Part
- Default Record w/o Subs = OFF
- Channel Format = OFF (all channels displayed)
- Reverse Video Cursor = OFF

Set Q-Only Default

1 DEFAULT Q-ONLY toggles the cue recording and modification mode between Q-ONLY and TRACK modes.

Press 1 * to change back to Q-Only mode.

Press 1 * to change to Tracking mode.

Adjust the Default [SET] Level

[2] SET LEVEL lets you select the lighting level used with the [SET] key.

Press [2] [7] [5] [*] to change the Set Level to 75%.

Set Default Profile

[3] PROFILE lets you specify the default dimmer profile curve number to be appended to all cue creation commands (unless overridden). If the profile number is not specified, there is no default profile.

Press [3] [9] [*] to change the default profile to profile #9.

Set Default Time

[4] TIME lets you specify a default cue execution time for cue creation. If you do not specify a value, the system assumes a manual time. The default fade time can be a single or split fade time.

Press [4] [*] to change the default time to manual.

Press [4] [7] [/] [1] [0] [*] to change the default time to a 7 second up-fade and a 10 second down-fade.

Press [4] [1] [0] [*] to change the default time to 10 seconds.

Set Default Main Part

Lightpalette 90 series consoles treat every cue internally as a multi-part cue, even if it is single part cues. [5] MAIN (Q-ONLY) CUE PART IN lets you select the part number assigned to a single part cue.

When this item is FIRST PART a cue without parts is actually cue X part 1. You will get an error message if you try to create a part 1 for any cue, since it already exists. When this item is LAST PART a cue without parts is actually cue X part 8 and you get an error message if you try to create a part 8.

Press [5] [*] to change the main cue part to part 8.

Set Default Record w/o Subs

6 DEFAULT RECORD W/O SUBS swaps the function of F1 RECORD W/O SUBS! and RECORD in the *Live* and *Preview* displays. When this is OFF the display shows F1 RECORD W/O SUBS and functions normally. When this is ON the display shows F1 RECORD ALL and RECORD acts as a "Record Without Subs" key. This is particularly handy if you normally prefer to have the system ignore submasters when recording cues.

Press 6 * to change the RECORD key function to "Record Without Subs" and the F1 key function to "Record All".

Channel Format

Press 7 * to switch Channel Format ON.

When Channel Format is OFF, all channels appear on channel oriented displays. Each display page shows 100 channels. When Channel Format is ON, only channels which are used somewhere in the show appear on channel oriented displays. The first display page shows 99 channels and subsequent displays show 100 channels.

Press 7 * to switch Channel Format back OFF.

The status of the Channel Format flag is not stored on disk.

Reverse Video Playback Cursor

Press F8 * to switch the playback cursor to a reverse video line across the screen.

Press F8 * to switch the reverse video back to its standard colored text across the screen.

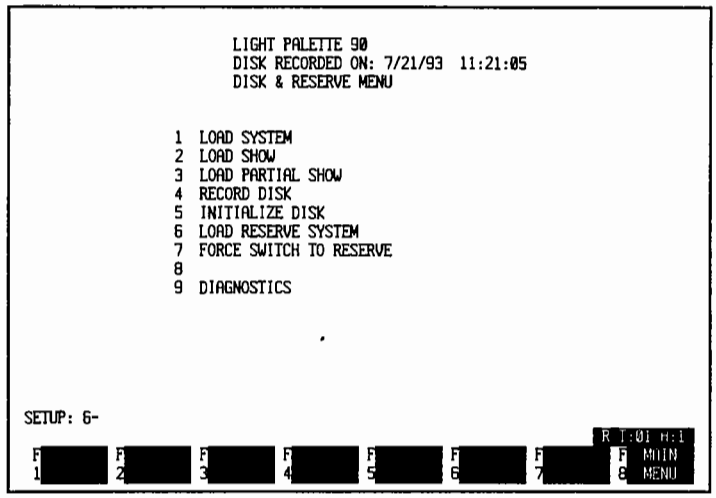
Return to Setup Display

Press F8 or 0 to return to the *Setup* display.

Disk & Reserve Functions

The *Disk & Reserve* menu lets you initialize, read, and write to disks, load the reserve system, force a switch to the reserve system for testing, and check system status using the diagnostics.

Press SETUP 6 to see the *Disk & Reserve* menu.



Load Data to Console

You can use 1 LOAD SYSTEM to load system parameters (everything set under the *Setup* display) and the show (cues, groups, effects, subs, profiles, and patch) from the disk in the current drive.

You can use 2 LOAD SHOW to load the show (cues, groups, effects, subs, profiles, and patch) from the disk in the current drive.

Press 1 * or 2 * to request a read from disk.

The system will ask ARE YOU SURE ?.

Press * to confirm the disk request.

Read status information appears at the lower right of the right hand monitor (whether or not you have swapped screens) while the read is in progress. This shows the transaction status (R=read) and the current disk head and track number. This information remains on screen until you press CLEAR or swap screens to force a redraw.

Caution

This will write over any data already on the system.

Due to extensive data verification to insure data integrity, loading a show using 1 LOAD SYSTEM or 2 LOAD SHOW can take 60-90 seconds. If you only need to load specific items (e.g., cues and patch) you can speed up the process by loading only those items using 3 LOAD PARTIAL SHOW.

Load Partial Data to Console

You can load specific parts of recorded show from disk to memory by using [3] LOAD PARTIAL SHOW. For all actions except patch, you can tell the system to add an offset the item numbers (cue numbers, group numbers, submaster numbers, etc.) as it loads them. Each load function key loads only the items shown. The procedure is identical for each type of item you want to load into memory.

Read status information appears at the lower right of the right hand monitor (whether or not you have swapped screens) while the read is in progress. This shows the transaction status (R=read) and the current disk head and track number. This information remains on screen until you press [CLEAR] or swap screens to force a redraw.

Caution

***This will write over the data for the item type you are loading**, but the system will not ask for confirmation.*

You should be careful when loading partial cues, since only the moves are stored on disk and the cues might not make sense. If you plan to load partial cues you should make sure that the first cue you wish to load is after a blackout, or a cue in which all channel data was stored using [F4] BLOCK CUE.

Press [3] [F3] [*] to load all groups, and number them as they are on the disk.

Press [3] [F3] [1] [>] [2] [4] [*] to load groups 1 through 24 from the disk as groups 1 through 24.

Press [3] [F3] [1] [>] [2] [4] [F7] [1] [3] [*] to load groups 1 through 24 from the disk as groups 14 through 37.

Record Data to Disk

You can record all system information and show information onto disk by using [4] RECORD DISK.

Press [4] [*] to request a record to disk.

The system will ask ARE YOU SURE ?.

Press [*] to confirm the request and start the recording.

Write status information appears at the lower right of the right hand monitor (whether or not you have swapped screens) while the write is in progress. This shows the transaction status (W=write) and the current disk head and track number. This information remains on screen until you press [CLEAR] or swap screens to force a redraw.

Caution

***This will write over any data already on the disk.** The disk must be initialized before you attempt to write to it.*

Due to extensive data verification to insure data integrity, recording a show to disk can take 60-90 seconds.

Initialize a Disk

5 INITIALIZE DISK initializes a diskette. All diskettes must be initialized before they can be used to record cues.

Press 5 * to request a diskette initialization.

The system will ask ARE YOU SURE ?.

Press * to confirm the initialization request. You must initialize all disks before you attempt or write to them.

> *Read/write status information appears at the lower right of the right hand monitor (whether or not you have swapped screens) while disk formatting is in progress. This shows the transaction status (R=read, W=write, V=verify) and the current disk head and track number. This information remains on screen until you press CLEAR or swap screens to force a redraw.*

Caution

> ***This erases all data on the disk.***
>
> *Due to formatting verification and disk integrity checks, disk initialization can take 3-4 minutes. After formatting the disk, this routine writes to and then reads back from every location on disk.*

Load Reserve System

6 LOAD RESERVE SYSTEM lets you load the reserve system with the entire contents of the active system (including all system and show information). You should do this whenever you load a new show or partial show from disk.

Press 6 * to request reserve system loading.

The system will ask ARE YOU SURE ?.

Press * to confirm reserve system loading.

Switch to Reserve System

[7] FORCE SWITCH TO RESERVE SYSTEM lets you force the active system to stop requesting control and let the reserve system gain control.

> *This function will work only when the selection switch on the tower is set to "AUTO". If the selection switch is set to "SYS A" or to "SYS B" the tower is already forced to the selected system.*

Press [7][*] to request a switch to the reserve system.

The system will ask ARE YOU SURE ?.

Press [*] to confirm the switch to the reserve system.

In full backup towers, the system is constantly monitoring its link with the reserve system. If this link is lost, or if the system sees indications that the reserve system is not tracking correctly, you will see:

RESERVE NOT RESPONDING TO HEALTH CHECK

If this happens, switch to the reserve system to make sure it is operating. Then switch back to the main system and use [6] LOAD RESERVE SYSTEM to reload the reserve system and start it tracking.

Whenever you switch from main to reserve system control, there will be a few seconds while the various consoles and remotes establish communication with the processor tower. The following messages will appear on your monitors:

ATTEMPTING TO ESTABLISH COMMUNICATION WITH THE TOWER
COMMUNICATIONS LINK IS UP

During this process, the stage lights will remain unchanged.

Diagnostics

[9] DIAGNOSTICS lets you see the operational and communication status of various system components.

Press [9] to see the *Diagnostics Overview* display.

From this display you can use the Function keys to see additional detail, or return to the *Disk and Reserve* menu. A more detailed discussion of the diagnostics is included in the *Disk and Reserve Menu* section of the *Reference* chapter in this manual.

Print Requests

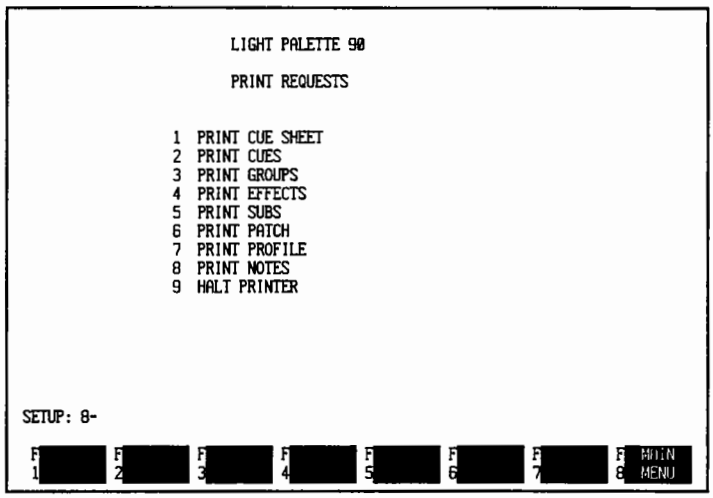
You can use the PRINT SCREEN button to print the data shown on either monitor.

PRINT SCREEN ← prints the data displayed on the current left hand monitor if the printer is active.

PRINT SCREEN → prints the data displayed on the current right hand monitor if the printer is active.

The *Print Requests* menu lets you print hardcopy of the information programmed for your show. The date and time as entered in the *System Parameters* menu will appear on each printout.

Press SETUP 8 to see the *Print Functions* menu.



Print Cue Sheet

You can print the cue sheet or partial cue sheet for your show by using 1 PRINT CUE SHEET.

Press 1 * to print the cue sheet for all cues.

Press 1 5 > 2 5 * to print the cue sheet for cues 5 through 25.

Print Cues

You can print the *Preview* display for all cues or some of your cues by using 2 PRINT CUES.

Press 2 * to print all cues.

Press 2 5 > 2 5 * to print cues 5 through 25.

Print Groups

You can print the *Group* display for all groups or some of your groups by using 3 PRINT GROUPS.

Press 3 * to print all groups.

Press 3 5 > 2 5 * to print groups 5 through 25.

Print Effects You can print the *Effect* display for all effects or some of your effects by using [4 PRINT EFFECTS].

Press [4][*] to print all effects.

Press [4] [5][>][2][5][*] to print effects 5 through 25.

Print Submasters You can print the *Submaster* display for all submasters or some of your submasters by using [5 PRINT SUBS].

Press [5][*] to print all submasters.

Press [5] [5][>][2][5][*] to print submasters 5 through 25.

Print Patch You can print the patch information for your show by using [6 PRINT PATCH].

Press [6][*] to print all patch data. You cannot print partial patch data.

Print Profiles You can print the profile information for your show by using [7 PRINT PROFILE].

Press [7][*] to print all profile data. You cannot print partial profile data.

Print Notes You can print the notes for your show by using [8 PRINT NOTES].

Press [8][*] to print all notes. You cannot print partial notes.

Halt Printer You can halt output to your printer by using [9 HALT PRINTER]. If your printer has an input buffer, printing will continue until the buffer is empty or you reset the printer.

Press [9][*] to stop output to the printer.

Printer Output Codes

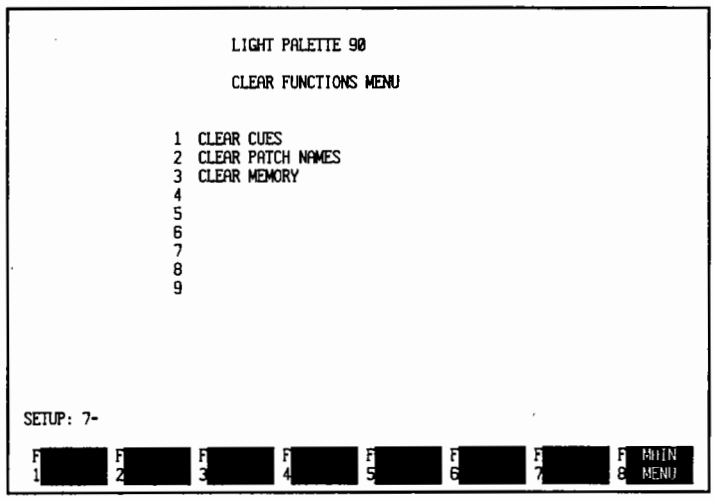
For maximum compatibility with printers, Lightpalette 90 consoles output pure ASCII code without special formatting for bold or underlining. Channel movement status is shown with a character printed after each channel number.

- ^ shows active channels moving UP
- v shows active channels moving DOWN
- . shows active channels not moving in this cue (i.e., from a Block Cue command)
- BLANK shows channels with a level tracking from another cue.

Clear Functions

The *Clear Functions* menu lets you selectively clear cues, patch, or memory (cues and patch).

Press
SETUP 7
to see the *Clear Functions* menu.



Clear All Cues

You can clear all cues without changing the system by using 1 CLEAR CUES.

Press 1 * to request cue clearing.

The system will ask ARE YOU SURE ?. This will clear all cues, but will not disturb system information.

Press * to confirm clearing all cues.

Clear Dimmer Names

You can clear dimmer names in patch by using 2 CLEAR PATCH NAMES.

Press 2 * to request dimmer name clearing.

The system will ask ARE YOU SURE ?. This will set all of you dimmer names back to the ASCII equivalent of their numbers. It will not disturb your cues or other system information.

Press * to confirm resetting dimmer names.

Clear Memory

You can clear all cues and system information by using 6 CLEAR MEMORY.

Press 3 * to request memory clearing.

The system will ask ARE YOU SURE ?. This will clear all cues and system information.

Press * to confirm clearing memory.

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