

Chapter 5

Operating the System

In this section you:

- power up the *emulator* System and home all connected fixtures
- learn about the *emulator* Controller's Menu and IMP modes
- perform Menu mode operations
- learn system programming concepts and controller Address/Preset concepts
- record scenes, loops, and presets
- program User Keys 1 through 8
- copy, edit, and erase pages
- playback scenes, loops, and presets
- perform the controller's monitoring and master dim functions

Initial Power Up

In this section you power up the system and home connected fixtures.

Turning On the Controller

Your *emulator* System should be completely and properly set up. You should be familiar with the controller's front panel operation, if not, refer back to *Chapter 3*. All of the fixtures should be assembled, optimized, tested, hung, and their Personality and Address DIP switches should be set correctly; refer back to *Chapter 2* for instructions. All of the data cables should be constructed, tested, run, and connected properly; refer back to *Chapter 4*. All of the fixtures and the controllers should be connected to appropriate power sources. Refer back to *Chapters 1, 2, and 3* for instructions.

Perform the following steps to power up the *emulator* System:

1. Turn on power to all fixtures connected to the *emulator* Controller. To turn on fixture power, press the "I" side of the fixture's Power switch. You will hear a brief clatter sound from the Gate (shutter) and the fan will operate for about one minute.
2. Insert the controller key into the front panel Power keyswitch and turn the key clockwise. The LCD window briefly shows the Boot version number and all LEDs briefly flash. In a moment the Master, Standby, Address, and any initialized or programmed Address/Preset LEDs light.
3. If there is a Memory (RAM) Card inserted into the Memory Card slot that contains Operating System data, the LCD window displays a message that asks you whether or not you want to replace the controller's Operating System with the Operating System saved on the Memory Card. Follow the instructions in the LCD window to proceed. Refer to *Chapter 7* for Memory (RAM) Card functions.

4. If there is no Memory Card inserted, or if you do not respond to the prompt in the LCD window within 10 seconds, the controller performs a self test. The LCD window displays: "Checking memory 1-9, Please wait." as it runs the self-test. The test counts up through the Memories from 1 to 6 slowly and then again quickly.
5. The LCD window displays the IMP (Intensity, Memory, and Page) mode parameters: "Intensity:99 Memory:1 Page:1." IMP mode is explained in detail later in this section.



Caution: Do not touch or move the joystick when applying power to the controller; it is being initialized at its rest position. The controller uses the initial value of the coordinates of the joystick as a reference point.

6. At the same time, the controller remotely powers up all connected fixtures. Each fixture turns on its lamp and fan and then performs a homing operation. Homing a fixture strikes the lamp, turns on the cooling fan, and sets the Color wheel and Gate to their home (default) positions. You will hear a brief chatter sound while the Gate is homing. If everything checks out, the fixture idles with the lamp off and Gate closed, quietly waiting for its next command. If it fails to home or strike the lamp check the LED indicators on the rear panel of the fixture and refer to *Section 8, General Maintenance & Troubleshooting*.

Note: The lamp and fan in each fixture turn on upon one of following three conditions; 1) upon initial power up, 2) upon receiving a Home command, or 3) upon coming out of fixture Lockout. Once the lamp is switched off, the fan continues to operate for a period of about one minute, then it automatically shuts off.

The *emulator* Controller and all connected fixtures should now be turned on and homed. Continue with the *emulator* Controller Modes section. The following *Homing Fixtures from emulator Controller* section explains how to manually home a fixture at any time from the controller's front panel.

Homing Fixtures from *the emulator* Controller

When you perform a homing operation on a fixture, you cause the fixture to close its light gate, strike its lamp and fan (if off), and return the color wheel and shutter gate to their home positions.

To home one or more fixtures (in Address or Preset mode):

1. To home one or more fixtures, at any time, press the HOME key on the *emulator* Controller's front panel. The HOME key LED flashes for 10 seconds.
2. While the HOME key LED is flashing, press the ADDRESS keys of the fixtures that you want to home.
3. The HOME and selected ADDRESS key LEDs now flash for another 10 seconds while the fixtures are performing their homing operation. Then, the LEDs turn off signaling the end of the homing operation.

Homing a fixture strikes the lamp, turns on the cooling fan, and sets the Color wheel and Gate to their home (default) positions. You will hear a brief chatter sound while the Gate is homing. If everything checks out, the fixture idles with the Gate closed (lamp turns off in about 30 seconds), quietly waiting for its next command. If it fails to home or strike the lamp check the LED indicators on the rear panel of the fixture and refer to *Section 8, General Maintenance & Troubleshooting*.

4. Once homed, the fixtures join the sequence running and open their light gates.

***emulator* Controller Top Level Modes**

The *emulator* Controller operates in either Menu or IMP mode.

- In Menu mode you perform setup and house keeping operations, such as, backups and configuring edit/copy operations. You also assign submasters, as required, in this mode. All other controller functions are performed in IMP mode. Menu mode is seldom used when compared to IMP mode usage.
- IMP (Intensity, Memory, and Page) mode is the normal system operating mode. In this mode you program and playback scenes and chases. You also monitor the parameters of any connected fixture and control the master dim for all fixtures. You will learn about IMP mode in the *Programming* section.

Menu Mode Features

- Help
- Backup
- Submasters
- Setup

IMP Mode Features

- Address Mode Programming
- Position Memory Programming
- Preset Mode Programming
- Copy/Edit/Erase Operations
- Playback Operations
- Monitor Operations
- Master Dim Operations

Menu Mode

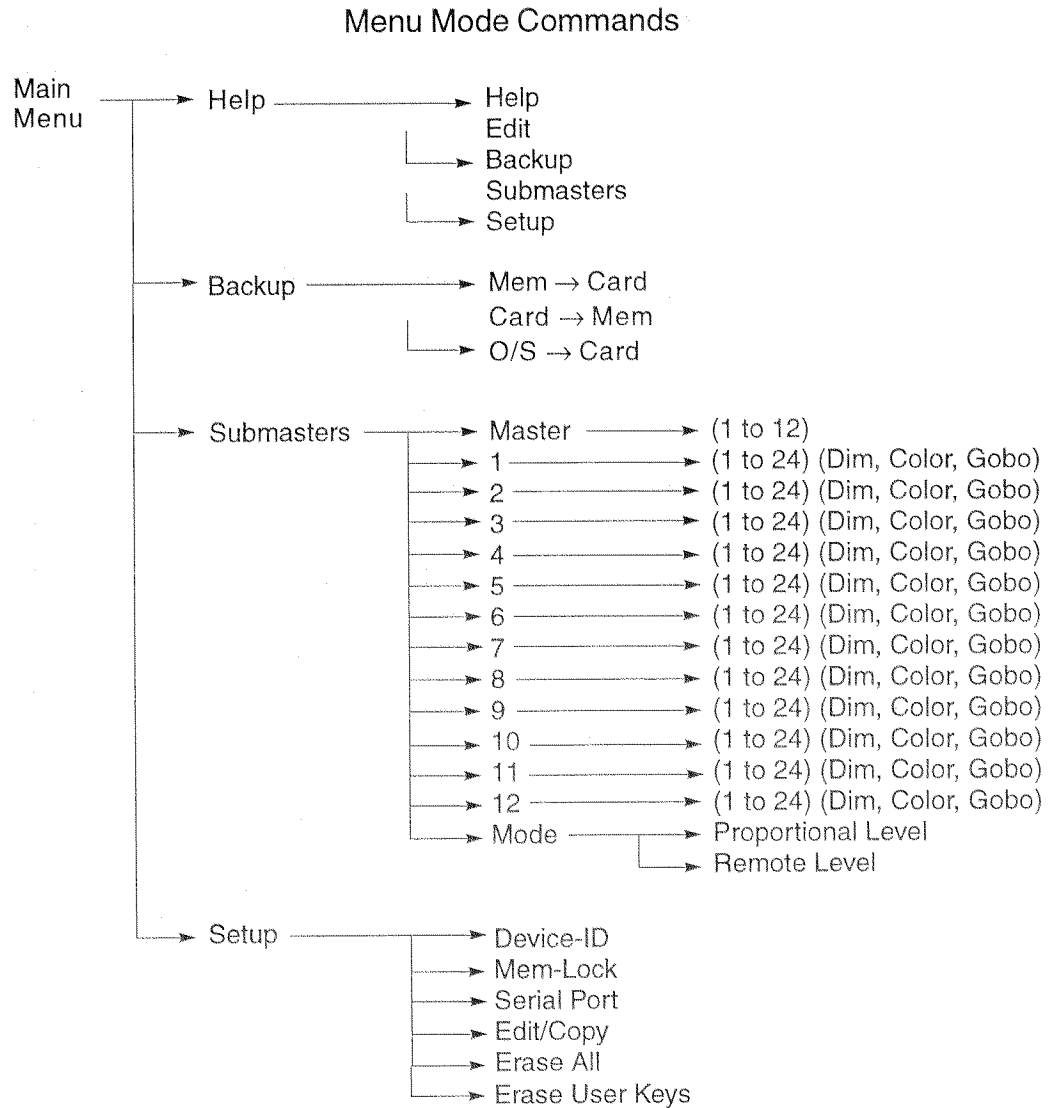
This section explains how to navigate and use the Menu mode submenus.

How to get around in Menu Mode

In Menu mode you can back up the controller's Memory in several different ways and assign submasters. The Setup command in the Menu mode allows you to set the Device ID for Show Control and select which Memories you want to lock out.

Note: Any sequence or Preset that is playing back continues while the controller is in Menu mode.

The following diagram maps out all of the Menu mode commands available through the LCD window.



To access the Menu mode:

1. Press the MENU key. The LCD window displays the Main menu showing all the submenus as Figure 5.1 shows.

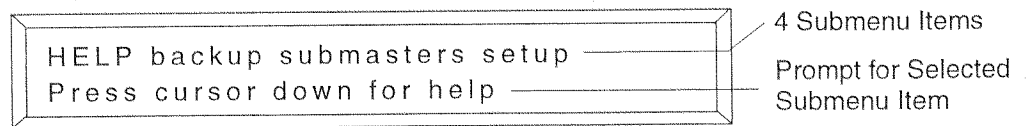


Figure 5.1. Main Menu

Notice that all submenus are listed only in the top row. The second row provides prompts or values for the selected submenu item. To select a submenu item from the Main menu, press the CURSOR Left or Right Arrow key. The four menu CURSOR keys surround the MENU key. Notice that each time you press the CURSOR Left or Right Arrow keys a different menu item changes. Also notice that the letters in the name of the selected submenu item are capitalized or, in some cases, an item is enclosed in square brackets “[]”. Figure 5.1 shows HELP as the default item and that you press the CURSOR Down Arrow key to display the help messages. Remember that capital letters or bracketed letters or numbers indicate a *selected* menu item.

2. Select any item in the Main menu by pressing the CURSOR Right Arrow key next to the MENU key. You can only go right from the Help submenu.
3. After you select the submenu item that you want to alter, press the CURSOR Down Arrow key under the MENU key to view the selections.
4. Use the CONSTRUCT Up and Down Arrow keys to change the values if any are assigned to the submenu item. The CONSTRUCT keys are located to the left of the CURSOR keys below the LCD window. For example, in the Setup submenu, you can define any Device ID number between 1 and 223. To change the value of this number, press the CONSTRUCT Up and Down Arrow keys.
5. Return to the Main menu by pressing the CURSOR Up Arrow key.
6. To exit Menu mode and return to IMP mode, press the MENU key.

Using Menu Mode Submenus

This section explains how to perform the operations related to each of the following submenu:

- Help
- Backup
- Submaster
- Setup

Help

The Help menu displays information about each of the submenu items.

1. Press the MENU key to display the menu items.
2. You use the CURSOR Left or Right Arrow key to select items from the display except for the first menu item. Since **Help** is the first menu item it is already displayed in all capital letters. The second line of the LCD window prompts: “Press cursor down for help.”

HELP backup submasters setup
Press cursor down for help.

3. Press the CURSOR Down key. A submenu appears similar to the Main menu, except “edit” is added to the list of submenus.

HELP edit backup submasters setup
Press cursor down for help on help.

4. Use the CURSOR Left and Right Arrow keys to select the submenu item that you want for additional help. The second line of the LCD window prompts: “Press cursor down for help on (submenu name).”
5. Press the CURSOR Down Arrow key to read the help screens. Follow the instructions in the LCD window to continue.
6. Press the MENU key at any time to exit help.

Backup

Select the Backup submenu to:

- save the *emulator* Controller’s internal User RAM to a removable Memory Card.
- load (update) the *emulator* Controller’s internal User RAM from a Memory Card.
- transfer the *emulator* Controller’s operating system to another controller.

Chapter 7 provides detailed procedures on performing all the Memory Card backup and transfer operations.

Submasters

A submaster is an analog, 0-10 volt, control board that lets you remotely adjust, in real time, the dim and color Construct parameters for selected fixtures. The remote analog control board is connected to the *emulator* Controller through the Analog Inputs connectors on the rear panel of the controller. You can define up to 12 submasters through the LCD window Setup feature. Refer to Figure 5.2.

Although you assign the twelve Analog Inputs (1-6 and 7-12) as submasters, they are normally used as Page Select or Binary Presets depending on the controller’s DIP Switch B settings. The controller supports mixing submasters with Binary Presets, however, it is recommended that you assign submasters from the top down in order (for example, Channels 12, 11, 10, and so on) to simplify the Binary Preset addressing scheme which begins with the least significant bit (for example, Channels 1, 2, 3, and so on). Refer to *Chapter 6, Remote Access and Control* and *Appendix E* for additional information on Page Select and Binary Presets.

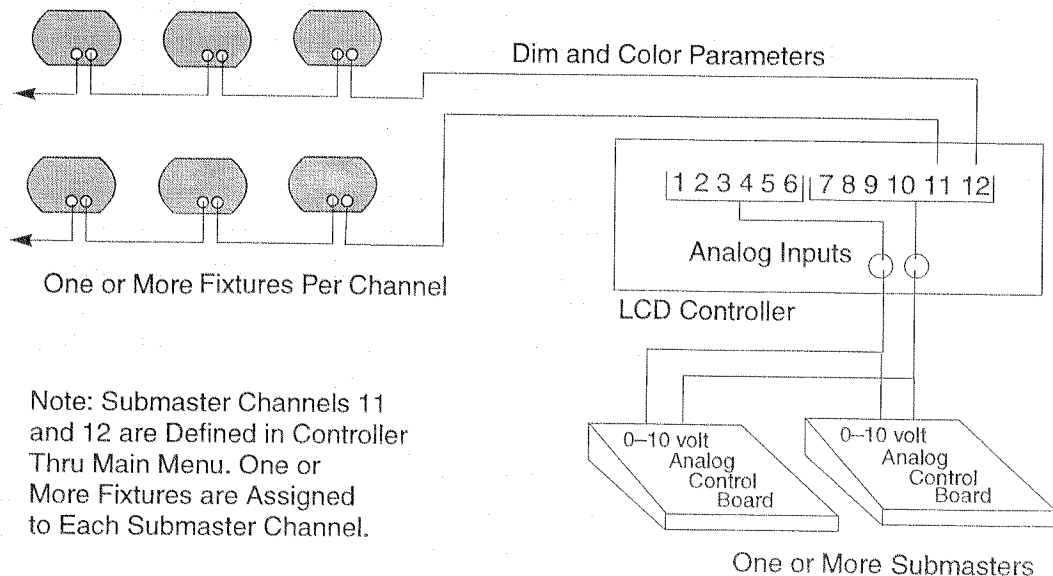


Figure 5.2. Submaster Concept

The *emulator* Controller's Analog Inputs are true 0-10 volt analog values that you can assign as submasters. The submasters operate at the level *above* the fixtures and control the overall level of the fixtures on top of what was already programmed. That is, the submaster control *overrides* the controller programming.

There are two submaster modes available that you define through the SUBMASTER menu, Proportional level mode or Remote level mode:

Proportional Level Mode — This mode provides traditional submaster control. The submaster value is multiplied by the programmed fixture value. That is, if the recorded dim value for the selected fixture is at 50 percent and a submaster is at 50 percent, then the fixture realizes 25 percent dimming; .50 times .50 equals .25. If there are two or more submasters then the submaster with the higher setting has control. For example, assume you have decided to assign 2 submasters to one fixture. You set submaster 1 at 20 percent dim, set submaster 2 at 50 percent dim, and program the fixture at 50 percent. Between the 20 percent submaster and the 50 percent submaster, the 50 percent submaster has control because the 50 percent value overrides the 20 percent value. Now, the 50 percent submaster level proportionally affects the fixture's 50 percent programmed dim level, for a final output of 25 percent dim level. That is, the final output will be 50 percent of 50 percent for the dim level of the fixture. The submaster would have to be set at 100 percent for the fixture to operate as programmed.

Remote Level Mode — In this mode the device with the higher level has control of the dimming. That is, *higher takes precedence*. For example, if you program the fixture for 50 percent and the submaster at 60 percent, then the submaster has control. However, if you program the fixture for 50 percent and the submaster at 50 percent, then there is no change until one device drops below 50 percent.

Submasters can control fixture dimming level and colors. The default selection is dim level. Color submaster assignments change a fixtures color with the movement of a fader on your remote analog controller. For more information about assigning submasters refer to *Assigning Fixtures to a Submaster* later in this section.

Assign a Channel for Master Dim

When you assign a channel to the Master dim level it has priority over the other channels. The channel you select for the Master cannot also function as a Submaster. For example, if you select channel 1 for the Master dim, then you cannot assign any fixtures to Submaster 1.

Note: When the Master dim is assigned to a channel, the *emulator* Controller no longer functions as the Master dim control. Hence, the Intensity setting numbers do not change when you press the CONSTRUCT Up/Down Arrows keys. The Master dim level is controlled by another device on the assigned channel.

To assign a channel to a Master dim level:

1. Press the MENU key to display the menu items.
2. Press the CURSOR Right Arrow key twice to select submasters from the Main menu. SUBMASTER is capitalized when selected.

```
help backup SUBMASTERS setup
Press cursor down for submaster function
```

3. Press the CURSOR Down Arrow key to view the submaster submenu. The first line of the LCD window displays: "[Master] 1 2 3 4 5 6 7 8 9 10 11 12 MODE." These indicate the Master dim, the twelve assignable submasters, and the Mode selection.

```
[MASTER] 1 2 3 4 5 6 7 8 9 10 11 12 MODE
No channel assigned to master dim
```

4. The second line of the LCD window displays the status of the Master dim setting. If there is no channel assigned to the Master dim, the second line of the LCD window displays: "No channel assigned to master dim."
5. Use the CONSTRUCT Up and Down Arrow keys to select a channel for master dim. Remember that the channel you assign to Master dim cannot also be assigned as a submaster.
6. After you set the channel for Master dim, you can assign submaster channels while the controller is in the submaster submenu. You do this by pressing the CURSOR Left and Right Arrow keys, or you can return to the Main menu by pressing the CURSOR Up Arrow key.

Assign Fixtures to a Submaster

To have a particular submaster control the dimming or color of a particular fixture (or fixtures), you have to assign that fixture (or fixtures) to that submaster. There are 12 submasters available (only eleven are available if you have assigned one channel to master dim).

To assign a fixture to a submaster:

1. Press the MENU key to display the menu items.
2. Press the CURSOR Right Arrow key twice to select “submasters” from the Main menu. SUBMASTERS is capitalized when selected.

```
help backup SUBMASTERS setup
Press cursor down for submaster function
```

3. Press the CURSOR Down Arrow key to view the submaster submenu. The first line of the LCD window displays: “[Master] 1 2 3 4 5 6 7 8 9 10 11 12 MODE.” These indicate the Master dim, the twelve assignable submasters, and the Mode selection.

```
[MASTER] 1 2 3 4 5 6 7 8 9 10 11 12 MODE
No channel assigned to master dim
```

4. From the Submaster submenu, you can select the submaster in which you want to assign fixtures. Press the Cursor Right or Left arrow keys to select the number of the submaster to which you want to assign fixtures.
5. When you have selected a submaster, the second line of the LCD window displays: “Use A/P keys to assign submaster (x).” Notice that the brackets move from MASTER to the selected submaster on the top line.

```
Master [1] 2 3 4 5 6 7 8 9 10 11 12 MODE
Use A/P keys to assign submaster 1
```

6. Press the Address/Presets (A/P) keys of the fixtures that you want assigned to that submaster. The fixtures’ LEDs light to indicate that they are assigned to that submaster. For example, to assign fixture 5 to submaster 1: Press the number 5 A/P key and confirm that its LED illuminates.

You can assign anything from none to all of the fixtures to each of the submasters. It is acceptable to assign a fixture to more than one submaster. The higher submaster dim setting has priority over the other submasters. That is, the submaster that assigns a higher dimming value to the fixture overrules the other submaster value that is assigned to that same fixture.

7. If you want a submaster to control color instead of dimming level, press the COLOR key now.
8. After you have selected the fixtures for one submaster, you can assign other submaster channels while the controller is in the Submaster submenu in the same manner, or you can return to the Main menu by pressing the CURSOR Up Arrow key.

Setup

In Setup mode you:

- set the controller's Device ID for Show Control operation
- lock out Memory to prevent inadvertent editing
- set the controller to use either the RS-232 serial port or the MIDI port
- configure the Copy command parameters
- erase all of User Memory
- erase User keys (restore)

Set Device ID

The Device ID uniquely identifies the controller and any other devices that respond to a Show Control signal (for example: theater boards, hoist controllers, and so on). The Device ID has different meaning depending on which show control mode you use, Lightwave Show Control or MIDI Show Control.

In Lightwave Show Control mode, ID = 0 means that the device responds to any ID. For example, even if you were to send out Device ID=7, the controller with Device ID=0 would respond. Device ID= 0 is the default setting.

MIDI Show Control uses Device ID= 127 (7Fh) instead of ID = 0 to tell a device to respond to any signal.

To set the Device ID:

1. Press the MENU key to display the menu items.
2. Press the CURSOR Right Arrow key three times to select **setup** from the Main menu. The word **SETUP** appears in all capital letters when selected.

help backup submasters **SETUP**
Press cursor down for setup functions.

3. Press the CURSOR Down Arrow key to access the setup submenus. The LCD window displays the options: device-id, mem-lock, serial port, edit/copy, and erase all. Notice the right pointing arrow in the LCD window indicating to scroll in this direction for more items.

DEVICE-ID mem-lock serial port edit/cop→
Device ID = 0

4. Since Device-ID is the first menu item it is already selected and displayed in all capital letters. The second line of the LCD window prompts: "Device ID = 0."
5. Press the CONSTRUCT Up and Down Arrow keys to change the value of the device-id for this particular *emulator* Controller. Values range from 0 to 223.
6. Press the CURSOR Left or Right Arrow keys to select another Setup submenu item, or press the CURSOR Up Arrow key to return to the Main menu.

Set Memory Locks

Use the Memory Lock function to lock out a Memory so that it cannot be edited without first being unlocked.

1. Press the MENU key to display the menu items.
2. Press the CURSOR Right Arrow key three times to select **setup** from the Main menu. The word **SETUP** appears in all capital letters when selected.

```
help backup submasters SETUP
Press cursor down for setup functions.
```

3. Press the CURSOR Down Arrow key to access the **setup** submenus. The LCD window displays the options: **device-id**, **mem-lock**, **serial port**, **edit/copy**, and **erase all**. Notice the right pointing arrow in the LCD window indicating to scroll in this direction for more items.

```
DEVICE-ID mem-lock serial port edit/cop→
Device ID = 0
```

4. Press the CURSOR Right Arrow key once to select **mem-lock**. The words **MEM-LOCK** appear in all capital letters when selected.

```
device-id MEM-LOCK serial port edit/cop→
Use A/P keys 1-9, Off = locked
```

5. The second line of the LCD window displays: "Use A/P keys 1-9, off=locked."
6. Press the A/P keys of the Memories that you want to lock out and thus prevent unwanted editing. The LEDs for each Memory (1-6) turn "Off" when you press its A/P key. When the LED is "Off" the Memory is locked.
7. Press CURSOR Left or Right arrow keys to select another Setup submenu item, or press the CURSOR Up Arrow key to return to the Main menu.

Serial Port

Use the Serial Port function to set the controller to use either its RS-232 serial port or the MIDI ports.

1. Press the MENU key to display the menu items.
2. Press the CURSOR Right Arrow key three times to select **setup** from the Main menu. The word **SETUP** appears in all capital letters when selected.

```
help backup submasters SETUP
Press cursor down for setup functions.
```

3. Press the CURSOR Down Arrow key to access the **setup** submenus. The LCD window displays the options: **device-id**, **mem-lock**, **serial port**, **edit copy**, and **erase all**. Notice the right pointing arrow in the LCD window indicating to scroll in this direction for more items.

```
DEVICE-ID mem-lock serial port edit/cop→  
Device ID = 0
```

4. Press the CURSOR Right Arrow key twice to select **serial port**. The words SERIAL PORT appears in all capital letters when selected.

```
device-id mem-lock SERIAL PORT edit/cop→  
Use RS-232 for Lightwave Backup/Control
```

5. Depending on the current setting of the controller, the second line of the LCD window displays: "Use RS-232 for Lightwave Backup/Control" or "Use MIDI Show Control and Sysex Backup."
6. Press the CONSTRUCT Up or Down Arrow keys to change the selection between MIDI or RS-232.
7. Press CURSOR Left or Right Arrow keys to select another Setup submenu. Press the CURSOR Up Arrow key to return to the main menu.

Edit/Copy

Use the Edit/Copy menu item to modify how you use the Copy command. The Edit/Copy function itself does not perform any copying functions. The Copy command, which allows you to copy Address and Page parameters, is explained later in this section. You define the operation of this feature through the Setup menu.

The Edit/Copy menu item determines whether the Copy command copies all of the Constructs from one fixture to another or whether no Constructs are copied from one fixture to another. The default setting of the controller is "Share all Constructs until selected."

If "Share all constructs until selected" appears in the second line of the LCD window, the copy command copies all of a fixture's parameter Constructs to the fixture you have selected to "copy to." If you do not want to copy all of these Constructs, you must select the particular Construct that you **do** want to copy by pressing its respective parameter key until the LED indicator above that key lights. Only the Constructs you select are copied.

If "Don't share all constructs until selected" appears in the second line of the LCD window, the copy command does not automatically copy all of a fixture's Constructs to the fixture you have selected to "copy to." You select which Constructs you want to copy by pressing their respective parameter keys. When the LED indicator above a Construct key is on, the parameter settings of that Construct is copied.

To define the Edit/Copy feature:

1. Press the MENU key to display the menu items.

2. Press the CURSOR Right Arrow key three times to select **setup** from the Main menu. The word **SETUP** appears in all capital letters when selected.

```
help backup submasters SETUP
Press cursor down for setup functions.
```

3. Press the CURSOR Down Arrow key to access the **setup** submenus. The LCD window displays the options: **device-id**, **mem-lock**, **serial port**, **edit/copy**, and **erase all**. Notice the right pointing arrow in the LCD window indicating to scroll in this direction for more items.

```
DEVICE-ID mem-lock serial port edit/cop→
Device ID = 0
```

4. Press the CURSOR Right Arrow key three times to select the **edit/copy** item. The words **EDIT/COPY** appears in all capital letters when selected. Notice this time that the LCD window shows a left pointing arrow indicating that the menu items shifted to the left to display **EDIT/COPY**.

```
←em-lock serial port EDIT/COPY erase all
Share all constructs until selected
```

5. Depending on the current setting of the controller, the second line of the LCD window displays: "Share all constructs until selected" or "Don't share all constructs until selected."
6. Press the CONSTRUCT Up or Down Arrow keys to change the selection between Share or Don't share.
7. Press CURSOR Left or Right Arrow keys to select another Setup submenu item, or press the CURSOR Up Arrow key to return to the main menu.

Erase All

The Erase All function provides a quick way to clear all of User Memory. That is, this operations clears everything, but the Operating System. You may want to temporarily backup User Memory to a Memory Card before you Erase All.

To execute the Erase All feature:

1. Press the MENU key to display the menu items.
2. Press the CURSOR Right Arrow key three times to select **setup** from the Main menu. The word **SETUP** appears in all capital letters when selected.

```
help backup submasters SETUP
Press cursor down for setup functions.
```

3. Press the CURSOR Down Arrow key to access the **setup** submenus. The LCD window displays the options: **device-id**, **mem-lock**, **serial port**,

edit/copy, and erase all. Notice the right pointing arrow in the LCD window indicating to scroll in this direction for more items.

```
DEVICE-ID mem-lock serial port edit/cop→  
Device ID = 0
```

4. Press the CURSOR Right Arrow key four times to select the **erase all** item. The words **ERASE ALL** appears in all capital letters when selected. Notice this time that the LCD window shows a left pointing arrow indicating that the menu items shifted to the left to display **ERASE ALL**. The second line in the LCD window displays: "Hold SELECT, press ERASE to clear memory."

```
←em-lock serial port edit/copy ERASE ALL  
Hold SELECT, press ERASE to clear memory
```

5. Press and hold the SELECT key and then press the ERASE key. Do not release the SELECT key. The second line in the LCD window now displays: "ERASE again to confirm, SELECT to cancel."

```
←em-lock serial port edit/copy ERASE ALL  
ERASE again to confirm, SELECT to cancel
```

6. To complete the erase operation, while still holding the SELECT key, press the ERASE key again. The LCD window first displays: "ERASING... Memory: 1-6". Then it displays: "The controller will now restart...". The system performs a normal power-on restart.

Erase User Keys

The Erase User keys function allows you to erase or restore User keys 1 through 8 to their pre-programmed values. That is, Random, Audio 1, Audio 2, Color, Size, and Dim modulate. You would perform this operation to restore the keys to their original values when you no longer need the macros. Note that when you perform this operation that keys 1 to 6 are returned to their pre-programmed values and keys 7 and 8 are erased.

To erase all eight User keys:

1. Press the MENU key to display the menu items.
2. Press the CURSOR Right Arrow key three times to select **setup** from the Main menu. The word **SETUP** appears in all capital letters when selected.

```
help backup submasters SETUP  
Press cursor down for setup functions.
```

3. Press the CURSOR Down Arrow key to access the **setup** submenu. The LCD window displays the options: **device-id**, **mem-lock**, **serial port**, **edit/copy**, **erase all** and **erase user**. Notice the right pointing arrow in the LCD window indicating to scroll in this direction for more items.

```
DEVICE-ID mem-lock serial port edit/cop→  
Device ID = 0
```

4. Press the CURSOR Right Arrow key five times to select the erase user item. The words ERASE USER appears in all capital letters when selected. Notice this time that the LCD window shows a left pointing arrow indicating that the menu items shifted to the left to display ERASE USER. The second line in the LCD window displays: "Hold SELECT & ERASE to clear user keys"

```
←serial port edit/copy erase all ERASE USER
Hold SELECT & ERASE to clear user keys
```

5. Press and hold the SELECT key and then press the ERASE key. Do not release the SELECT key. The second line in the LCD window now displays: "ERASE again to confirm, SELECT to cancel."

```
←serial port edit/copy erase all ERASE USER
ERASE again to confirm, SELECT to cancel
```

6. To complete the erase operation, while still holding the SELECT key, press the ERASE key again. The LCD window displays: "ERASING... USER KEYS".

Programming

The *emulator* controller has six separate Memories, each containing 99 Pages. This provides a total of 594 Pages of storage in the controller's memory. You can program each Page individually, in a sequence, or in loops. A Page (traditionally called a scene) consists of Constructs (Color, Gate, Delay, Xfade, Position, Speed, and so on) that you define for up to 24 fixture Addresses and their modifications. You program the controller in IMP mode.

IMP mode provides you with two programming modes, Address and Preset:

Address Mode: In Address mode you directly program one or more fixtures by entering Construct parameters directly into Memories and Pages and then record the parameters. You then playback the information by manually selecting Memories and Pages or automatically by selecting the AUTO (auto advance) key.

Preset Mode: In Preset mode you save a program that you created in Address mode as a Preset program and assign it a keypad number. You then recall the program at any time by its assigned keypad number.

Note: If you are not familiar with the *emulator* Controller's Constructs read or review *Section 3* before programming the controller.

Address Mode Programming

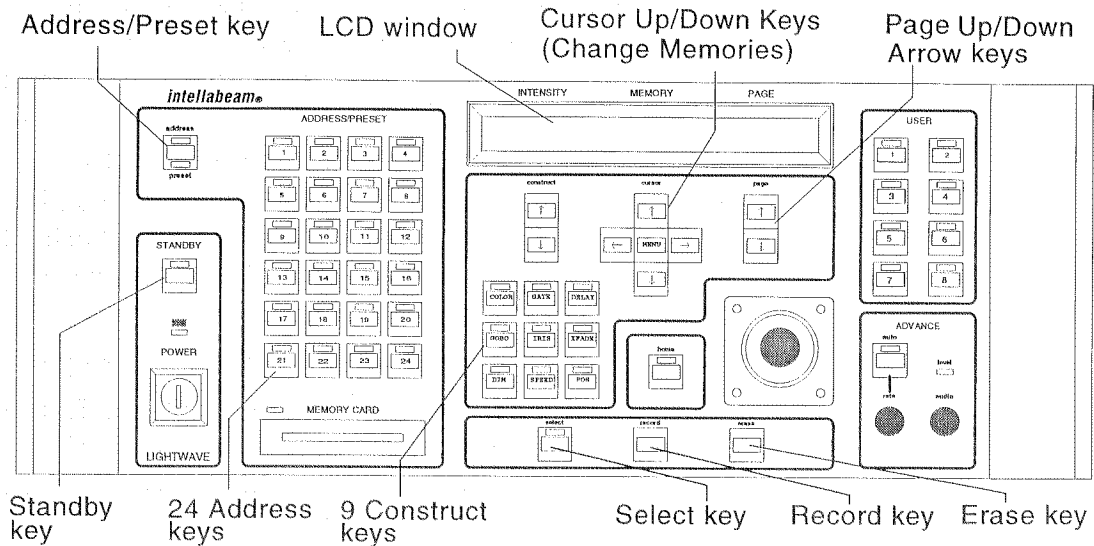
There are 24 Addresses available on the *emulator* Controller that control 24 fixtures. You can assign more than one fixture to an Address, thus configure up to 24 sets of fixtures. If several fixtures are assigned to the same Address, they all share the same Constructs and they all move at the same time in response to the joystick when you select their Addresses.

A Page consists of the Construct parameters and positions for up to 24 fixture Addresses and their modifications. You can compare a single Page to a “scene” in traditional lighting desk nomenclature. An individual Page can be as simple as a single fixture, in plain white light, shooting straight out, or as complicated as multiple fixtures with completely different colors and patterns moving everywhere.

You playback these Pages as static scenes, simple chases, or very complex chases. No individual chase can be longer than 99 Pages. Creating a Page can be accomplished easily by using the simple four-step method as follows:

The Four-Step Method to Create a Page

- To begin Programming, **make sure you are in IMP (Intensity, Memory, Page) mode**. If the LCD window does not show the current Intensity, Memory and Page setting, the controller is in Menu mode. Press the MENU key to exit Menu mode. In IMP mode, you access the Memory and Page where you begin programming.
- Make sure you are in Address mode (the LED under the ADDRESS key will be lit if you are in Address mode.). If you are not in Address mode, press the ADDRESS/PRESET key to change the controller to Address mode. The ADDRESS/PRESET key toggles the controller between these two modes. The ADDRESS/PRESET key is located in the upper left corner on the front panel of the controller. Refer to Figure 5.3.
- Use the CURSOR Up/Down Arrow keys to select the Memory and the PAGE Up/Down keys to select the Page where you want to begin programming. For example, Memory 1, Page 1, or Memory 3, Page 4.
 1. Press the SELECT key. The SELECT key LED flashes. Ensure that the Standby lamp is out. Refer to Figure 5.3.
 2. Next, select one or more fixture Addresses that you want to program by pressing their respective controller ADDRESS keys.
 3. Set the Construct parameters by pressing the desired Construct key. Use the CONSTRUCT Up/Down Arrow keys to set the Construct parameters for the selected Addresses. Refer to *Chapter 3* for information about Construct parameters. Repeat this step for each Construct parameter that you want to change or define.
 4. Press the RECORD key. The LCD window indicates recording. To playback the Page refer to the *Playback* section later in this chapter.



Note: 9 prime Construct keys are on the front panel. Select remaining Constructs through the LCD window.

Figure 5.3. emulator Controller Front Pane I

Selecting a Range of Addresses

To select a block or range of Addresses, simultaneously press both the highest and lowest numbered ADDRESS keys of the desired range. All Addresses from the lowest numbered key to the highest numbered key that you press are selected. For example, to select Addresses 1 through 8, press keys 1 and 8 at the same time.

Editing Construct Parameters

You edit Constructs whenever you want to change the existing parameters for a program. For example, you want to change colors, delay, and so on for one or more fixtures. You edit Construct parameters in IMP mode. In this mode, you set the Intensity (Master Dim), select the Memory to use, and select the Page within the Memory to program. From this mode, you program and edit your light show.

To edit fixture Constructs:

1. Place the controller in IMP mode. If the controller is in Menu mode, press the MENU key to exit Menu mode and enter IMP mode.

Intensity: 99	Memory: 1	Page: 1
---------------	-----------	---------

2. Press the SELECT key.

The LCD window displays: "Select fixtures to edit using A/P keys, or press SELECT to exit."

Select fixtures to edit using A/P keys, or press SELECT to exit.

3. Press the appropriately numbered keys on the Address/Preset keypad to select the fixtures that you want to edit. The 24 ADDRESS keys corresponding to the fixtures with the same Address. That is, ADDRESS key 1 corresponds to the fixture Addressed as 1, ADDRESS key 2 corresponds to the fixture Addressed as 2, and so on.

The Construct menu appears in the LCD window. There are 16 Constructs available through the LCD window menu: Gate, Color, Position, Program, Speed, Xfade, Delay, Rotate (F2), Scan (F1), Dim, Scale, X-scale, Y-scale, X-function, Y-function, and X-Y sync. The first nine Constructs are also accessible through keys.

Refer to *Chapter 3* for details on Constructs and their parameters.

4. To select a Construct, press the CURSOR Right or Left arrow keys until the menu item that you want to edit is capitalized. If the Construct is assigned to a key you can press the individual Construct key. Notice that the name of the Construct key you press becomes capitalized in the LCD window.
5. To edit the Construct's parameter, that is change its value, press the CONSTRUCT Up and Down arrow keys. These keys are located just to the left of the MENU key under the LCD window.
6. Press the RECORD key to save your changes. Press the SELECT key to cancel the operation. The controller then returns to IMP mode.

Creating and Running Loops

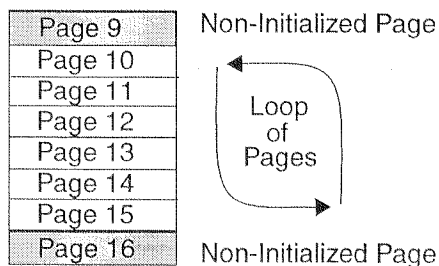
A loop is a sequence of Pages that runs continuously until you stop it. For example, you may have created a sequence in Pages 5 and 6 that moves the beam from position A to position B, changes program from a rotating triangle to a spinning circle, and then changes colors from red to green. You now want to continuously run these two pages in a loop.

To continuously run a sequence of Pages in a loop you must bracket the Pages that you want to include in the loop with two Non-Initialized Pages. In the previous example, you would make Pages 4 and 7 Non-Initialized pages. Then, when you run the loop, it would run continuously from Pages 5 through 6.

Creating a Non-Initialized Page

A Non-Initialized Page acts as a "placeholder" to indicate the beginning and end of a chase or loop. To create a Non-Initialized Page you perform a double erase operation to the Page.

The controller automatically places a Non-Initialized "Page" before Page 1 and after Page 99. However, if you want to program a Loop from Page 10 to Page 15 you would make Pages 9 and 16 Non-Initialized Pages in order for Pages 10 through 15 to perform as a Loop.



To create a Non-Initialized (un-initialize) page:

1. Select the first or beginning Page that you want to “Non-Initialize.” Use the PAGE Up/Down keys to select the Page. Use the CURSOR Up/Down keys to select the Memory.
2. Press the SELECT key to select the Page. The SELECT key LED flashes. Disregard the LCD window display for this step.
3. Press the ERASE key once. The LCD window displays: “Press ERASE to un-initialize M:x (x=current memory #) P:x (x=current page #) or press SELECT to exit.”

Press ERASE to un-initialize M: x P: x
or press SELECT to exit.

4. Press the ERASE key a second time to un-initialize the page. In a moment the controller returns to IMP Mode.

Repeat steps 1 to 4 for the second or ending Non-Initialize page.

Note: When you press any A/P key while the controller is on a Non-Initialized Page the LCD window displays:” This page is not initialized.”

This completes the Non-Initialize page operation.

Running a Loop

With the loop created and bracketed with Non-Initialized Pages you can now run the loop.

To run a loop:

1. Use the PAGE Up/Down keys to display in the LCD window any Page in the loop.
2. Then, press the AUTO key located over the RATE knob. The auto LED lights and the loop runs beginning from the Page you set in the LCD window.
3. The controller advances the Pages at the rate you set with the RATE knob. Adjust the knob clockwise to run the loop faster and counterclockwise to run the loop slower. Note that any delay times you program increase the Page advance rate.

Position Memory (Position Preset)

The *emulator* Controller has a time-saving feature called Position Memory (commonly called “Position Preset”). Position Memory allows a Page to refer to another Page for X and Y position information. This allows *many* Pages to use the same X and Y position information from another single Page. When that one reference Page is altered, all Pages that refer to it reflect the change. **Memory 6 is the Memory designated as “Position Memory.”** You can program all 99 Pages of Memory 6 as position preset Pages. Note that you can still use all Pages not used as Position Memory as regular Memory Pages.

The following scenario is a typical example of Position Memory: A show is programmed for a specific focus (that is, lead singer - down stage center, drummer - up stage center, keyboard player - stage left). In Memory 6, Page 1 is programmed with all fixtures directed towards the lead singer. Since this position is stored in Page 1 of Memory 6, it is referred to as “position number one” or “position one.” Similarly, positions two and three for the drummer and keyboard player are programmed into Memory 6, Pages 2 and 3 respectively.

A show can be programmed in Memories 1 through 5, or in Pages of Memory 6 that have not been used as position reference Pages. You can now easily adjust the positions of the fixtures by position number instead of by joystick movement on each individual Page.

Position Memory provides for a simple process where you can quickly update a show when it moves from one venue to another. At each venue the fixtures may be mounted in different positions and the stage and trusses may be arranged differently. In the above example, only Pages 1, 2, and 3 of Memory 6 need to be changed in order to update the whole show. All Pages with positions 1, 2, and 3 will be adjusted automatically.

Creating Position Reference Pages in Memory 6

The Pages in Memory 6, where you record position information, become Position Preset Pages 1 to 99. Do not confuse “Position Presets” with “Preset mode programming covered in a following section.

1. Select a Page in Memory 6. The Page number you select in Memory 6 becomes the reference Position Preset number (1 to 99) when you complete this procedure. Use the CURSOR Up/Down keys to select Memory 6 and PAGE Up/Down keys to select a Page.
2. Press the SELECT key, the SELECT key LED flashes.
3. Press the ADDRESS keys of all the fixtures that you want to include in this Position Preset. To select all Addresses press keys 1 and 24 together.
4. Use the joystick to position the fixtures on a reference point (for example, lead singer - center and front.)
5. Press the RECORD key. The position information for this Position Preset is now recorded. The assigned Position Preset number is the same number as

the Page you selected in step 1. For example, if you selected Memory 6, Page 5, in step 1, then when you apply this Position Preset at a later time, it will be Position Preset 5.

Using the Position Reference Pages in Memory 6

1. Select the Memory and Page that you want to program.
2. Press the SELECT key, the SELECT key LED flashes.
3. Press the ADDRESS keys for the fixtures that you want to reference to the Position Presets recorded in the Position Memory Page in Memory 6.
4. Press the POS (Position) key and the LCD window now displays either “JOYSTICK”, or “POSITION: PRESET 1- 99” for Position Preset numbers which refer to positions in Memory 6. If the display shows “JOYSTICK,” it means that the position of this fixture is determined by the positioning of the joystick on the **current** Page and that no Position Preset in Memory 6 is referenced.
5. Use the CONSTRUCT Up/Down arrow keys to select the desired Position Preset number in Memory 6 that you want to reference.
6. Press the RECORD key.

The fixtures that you selected in step 3 now use the position information recorded in the Position Preset reference Page in Memory 6. Any time you change the position of the Addresses on the Position Preset reference Pages in Memory 6, the Pages that refer to that Page for position will also change.

Address Lockout (Fixture Exclusion)

This feature enables the **temporary** removal of one or more fixture Addresses from all sequences. This might be necessary in the event of a malfunction or if you want to remove an Address from a program for a special event or effect. Removing a fixture in this manner requires no reprogramming because no Memory is actually changed. Use Address Unlock to return the fixture to normal operation. Locked Addresses are returned to unlocked position at controller power up.

To lockout an Address:

1. Press and hold for 30 seconds the ADDRESS key of the Address that you want to lock out. The LCD window displays the current parameter settings for that Address while you hold in the ADDRESS key.

Dim	Clr	Gbo	Gat	Irs	Spd	Pos	Xfd	Dly	Pag
99	1	1	CL	99	99	JS	0.1	0.0	1

2. After 30 seconds the bottom line in the LCD window displays: “Address x is locked out.” The lamp of the locked out fixture turns off.

Dim Clr Gbo Gat Irs Spd Pos Xfd Dly Pag Address x is locked out
--

Note: Anytime you press an unlocked ADDRESS key, the LCD window displays the abbreviated parameter titles and their values.

Address Unlock

You can return any locked out Addresses to normal operation by using the same procedure that locks out an Address. Also, all Addresses are returned to their un-locked settings upon power up of the controller. The LCD window displays: "Address x is locked out." when you select a locked Address.

To unlock a locked Address (fixture):

1. Press and hold the locked out ADDRESS key for 30 seconds.
2. The settings programmed for that Address appear in the LCD window. The lamps of the fixtures turn on when unlocked. The Address is now unlocked.

Preset Mode Programming

A Preset is a recording of a programmed Page or sequence of Pages that you create in Address mode. This recording is then assigned a Preset number that you use when you want to recall the program. Thus, Presets allow you to immediately recall a programmed Page or sequence of Pages. Presets store all of the Construct parameters, Advance, and Effect settings that were programmed with a Page or sequence of Pages. You can change the Advance and Effect settings during the Preset recording process. The Page Advance rate is stored with each Preset. These Advance, and Effect settings can also be adjusted during the playback of a Preset. The Audio level is independent of the Presets. Preset can hold either a single Page (a static scene) or a group of consecutive Pages (a chase or loop) that advances automatically.

Presets are selected by front panel access, using the 24 PRESET keys. In addition, the *emulator* Controller is capable of storing up to 1023 Presets by using a remote analog input device.

Note: If you lock out any Memories you also lock out Presets from those Memories.

Recording A One Page Preset (Scene)

To record a single Page (static scene) as a Preset, the Page does not need to be bound on either side by Non-Initialized Pages as does a Loop of Pages.

To record a one Page Preset:

1. Select the Memory and Page that you want to record as a Preset. You must have previously recorded the Page in Address mode.

2. Select Preset mode by pressing the ADDRESS/PRESET key. The Address LED turns “Off” and the Preset LED turns “On”.
3. Press the SELECT key.
4. Press the numbered Preset key (1 to 24) where you want to store the Page as a Preset. The ADDRESS keys become Preset keys in Preset mode.
5. Press the RECORD key. You can now recall this Preset by the PRESET key number you assigned in step 4.

Recording A Sequence (Loop or Chase) as a Preset

To record a Loop (Chase) as a Preset, the Loop must be running. That is, the Pages must be advancing in auto playback mode or in audio playback mode. A Loop is a group of consecutive Pages bound by a Non-initialized Page before the group of consecutive Pages and a Non-initialized Page after the group of consecutive Pages. Refer to *Creating a Non-initialized Page* earlier in this section if you are not familiar with this concept.

To record a sequence or loop as a Preset:

1. Use the PAGE Up/Down Arrow keys and select any Page within the loop that you want to record as a Preset.
2. With the controller in Address mode, press the AUTO key. The Pages start advancing, playing back the loop at the rate set by the RATE knob.
3. Press the ADDRESS/PRESET key to change the controller from Address Mode to Preset Mode. The PRESET LED below the ADDRESS/PRESET key lights to indicate that the controller is in Preset Mode.
4. Press the SELECT key. The SELECT key LED flashes and the LCD window displays: “Select preset to edit using A/P keys, or press SELECT to exit.”

Select preset to edit using A/P keys,
or press SELECT to exit.

5. Press the PRESET key (1 to 24) on the front panel where you want to store the Loop.
6. Adjust the Advance, Rate, and Effect settings if required; these settings are recorded as part of the Preset. Whenever you playback a Preset, the Preset advances through its Pages according to the Advance, Rate, and Effect settings you set when you recorded the Preset.
7. Press the RECORD key. You have now recorded a Loop as a Preset.

If you ever want to change the Advance, Rate, or Effect settings during the Preset playback, you can do so manually while the Preset is playing. These manual adjustments do not permanently change the way the Preset plays back. The Preset returns to the settings that you defined when you recorded the Preset.

Note: To revert back to the original Preset rate after manually adjusting the rate, press the PRESET key again.

Programming a Preset in Twelve Level Preset Access Mode

Twelve Level Preset Access is a way of expanding the number of available Presets from 24 (that is, the 24 Preset buttons on the front panel of the *emulator* Controller) to 288 by using an auxiliary controller. Programming in Twelve Level Preset Access is similar to programming Presets with the *emulator* Controller with one exception; one of the twelve Analog Inputs on the rear of the *emulator* Controller must be activated during programming. Before beginning, make sure the *emulator* Controller is configured for Twelve Level Preset Access by setting Personality DIP Switch B on the rear of the *emulator* Controller to Switch 3 "On." Also, make sure an analog controller is correctly patched to the Analog Inputs connector on the rear of the controller. Refer to *Twelve Level Preset Access* in Chapter 6 for additional information.

To program a Preset using Twelve Level Preset Access:

1. Put the controller in Preset mode by pressing the ADDRESS/PRESET key until the Preset LED lights.
2. Press the PAGE Up/Down Arrow key to select any Page within the loop that you want to record as a Preset.
3. Press the AUTO key. The Pages start advancing, playing back the loop.
4. Press the SELECT key. The SELECT key LED flashes.
5. Activate the 0-10 volt analog input channel where you want to store the desired Preset. For example, to program the first level of 24 Presets, turn on channel one on the auxiliary controller. To program the second level of 24 Presets (25 to 48), turn on channel two on the auxiliary controller, and so on through the 12 levels. Twelve levels times 24 equals the maximum 288 presets.

Note: The table in Appendix E contains a time saving list of Preset numbers, keys, and levels.

6. Press the PRESET key number (1-24) on the front panel where you want to store the Preset. You can now adjust the Advance, Rate, and Effect settings. These settings are recorded as part of the Preset. Whenever you playback a Preset, the Preset advances through its Pages according to the Advance, Rate, and Effect settings you set when you recorded the Preset. However, if you ever want to change any of the Advance or Effect parameters when playing back a Preset, you can do so manually while the Preset is playing. These manual adjustments do not permanently change the Preset. It automatically reverts back to the initial settings as recorded.
7. Press the RECORD key. The Select LED stops flashing and the Preset is now recorded.

Recalling a Preset in Twelve Level Preset Access Mode

To recall the Preset, press the ADDRESS/PRESET key, the PRESET key LED lights. This puts the *emulator* Controller in the Preset mode. Turn on the channel on the auxiliary controller where you recorded the Preset. On the *emulator* Controller press the PRESET key number of the Preset you wish to recall.

Programming a Preset in Binary Preset Access Mode

Binary Preset Access is a way of expanding the number of available Presets from 24 (the 24 Preset buttons on the front panel of the *emulator* controller) to 1023 by using an auxiliary controller.

Programming in Binary Preset Access is similar to programming Presets as usual with the *emulator* Controller with one exception; any combination of the first 10 of the 12 Analog Inputs on the rear of the *emulator* Controller must be activated during programming. Before you begin, ensure that the controller is configured for Binary Preset Access by setting Personality DIP Switch B on the rear of the controller to: Switches 3 and 5 “On.” Also, make sure an analog controller is correctly patched to the Analog Inputs connector on the rear of the *emulator* Controller. Refer to *Binary Preset Access* in Chapter 6.

To program a Preset using Binary Preset Access:

1. Select Preset mode by pressing the ADDRESS/PRESET key; the Preset LED lights.
2. Use the PAGE Up/Down Arrow keys to select any Page in the loop of Pages that you want to record as a Preset.
3. Press the AUTO key. The Pages start advancing, playing back the loop.
4. Press the SELECT key. The SELECT key LED flashes.
5. Press a numbered PRESET key on the front panel of the *emulator* Controller. The PRESET key that you press is not important; this action only alerts the controller that you are about to record Presets. You can now adjust the Advance, Rate, and Effect settings. These settings are recorded as part of the Preset. Whenever you playback a Preset, the Preset advances through its Pages according to the Advance, Rate, and Effect settings that you set when you recorded the Preset. However, if you want to change any of the Advance or Effect parameters while playing back a Preset, you can do it manually. These manual override operations do not permanently change the Preset.
6. Activate any combination of the first 10 of 12, 0-10 volt, input channels. This unique combination of activate and non-activate channels can be represented as a binary number with 10 digits where the Preset is stored.

Appendix E provides a chart listing the Analog Input Channel values for all 1023 channels. For example, you may store Preset 1 as the binary equivalent of 1(1000000000). This is channel 1 “On” and channels 2 to 10

“Off.” Preset number 948 is stored as the binary equivalent of 948 (0010110111), which is channels 3,5,6,8,9, and 10 “On” and channels 1, 2, 4, and 7 “OFF.”

7. Press the RECORD key. The SELECT key LED stops flashing and one of the PRESET key LED’s on the front panel lights up indicating that you recorded a Preset. The LED that lights is not necessarily the one that you pressed, but the one corresponding to the remainder (long division) of the decimal equivalent of the binary Preset number divided by 24. In the above example, decimal Preset number 948 divided by 24 is 39 with a remainder of 12 which causes the LED for Preset key number 12 to light up.

Recalling a Preset in Binary Preset Access Mode

To recall the Preset, press the ADDRESS/PRESET key, the PRESET key LED lights. This puts the *emulator* Controller in the Preset mode. On the auxiliary controller, turn on the channel for the recorded Preset that you want to recall.

User Definable Keys 1 Through 8

This section explains how to record, playback, and edit the eight front panel USER keys. This section also explains how to abort a USER key playback operation. USER Keys 1 to 6 are factory programmed for common usage of these keys, that is, Random advance, Audio 1 advance, Audio 2 advance, and Color, Gobo, and Light Effects. However, you can easily record your own macros using these eight keys to suit your special purposes as explained in this section. If you record macros with any of the USER keys, you can still access the pre-programmed functions through the USER key *function* menu operation. Refer to Chapter 3 for details on the pre-programmed functions of these keys. Refer to the **SETUP** submenu earlier in this chapter on how you can easily restore the eight keys back to their factory pre-programmed values.

User keys 1 through 6 are factory programmed as follows:

User 1 – Random (time) Advance Key

User 3 – Audio Advance 1 Key

User 5 – Audio Advance 2 key

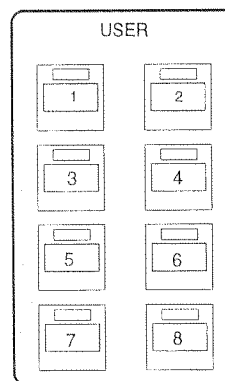
User 2 – Effect 1 Color Modulate Key

User 4 – Effect 2 Gobo Modulate Key

User 6 – Effect 3 Dim Modulate Key

User 7 – Undefined

User 8 – Undefined



User Key States

When you press a USER key one of three states occur depending on how long you press and hold the key.

1. Press and hold the selected USER key in for up to 1 second to playback the macro assigned to the key.
2. Press and hold the selected USER key in for 2 to 3 seconds to enter the Edit menu where you can abort, playback, record, or perform one of the pre-programmed functions.
3. Press and hold the selected USER key in for 3 seconds or more to abort the Playback of the User Key macro.

Playback User Key Macros

Follow this procedure to playback a macro assigned to USER keys 1 to 8.

- Simply press and release the desired USER key within 1 second and the macro begins playing back.

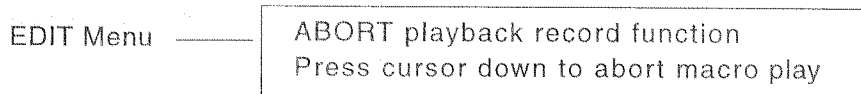
You can also playback macros through the USER Key EDIT menu.

Edit User Keys

The Edit state provides a submenu where you are provided with an alternate method to abort and playback macros. More importantly though, this is where you record (create) the USER key macros. This is also where you can activate the pre-programmed special effects (Random advance, Audio 1 and 2 advance, color, size, and Dim) without performing the restore (erase) procedure. Thus, you can define all eight USER keys and still have access to the original pre-programmed special effect functions.

To enter the EDIT state:

1. Press and hold the desired USER key from 2 to 3 seconds. If you exceed 3 seconds you enter the Abort state. The LCD window displays the EDIT menu:



The top line lists the available item that you can perform from this menu. When you select menu items with the CURSOR Right/Left Arrow keys the menu items change to capital letters. The bottom line prompts you with the required action to perform the selected menu item. It will usually request that you press the CURSOR Down Arrow key to continue.

2. Then, go to the following section associated to the menu item that you want to perform. For example, to record a macro go to the following *Record User Key Macros* section.

Abort Playing Macro

Select this menu item to abort the currently running macro. This operation has the same effect as pressing the USER key for more 3 seconds or more.

To perform an abort operation:

- Since abort is the first item in the EDIT menu it is selected by default. Then, just press the CURSOR Down Arrow key and the macro aborts.

Playback Macros

Select this item to playback macros from within the EDIT menu. Otherwise, you playback macros by just pressing the appropriate USER key.

To playback macros from the EDIT menu:

1. From the EDIT menu press the CURSOR Right Arrow key once to select playback. Playback changes to capital letters.
2. Then, press the CURSOR Down Arrow key to play the macro assigned to the USER key that you pressed to enter the EDIT menu.

Record User Key Macros

You can program any one or all of these eight keys as desired. When you record a macro and assign it to a USER key, you cannot then use the key to recall its pre-programmed function. However, you can still recall the pre-programmed function through the EDIT menu *function* item; see the following section. When you decide to restore the pre-programmed values remember that the controller restores the six pre-programmed keys.

A macro is a recording of key presses that you assign to one of the six USER keys. Then, you simply press the USER key once to playback the macro.

To record a macro for the selected USER key:

1. From the EDIT menu press the CURSOR Right Arrow key twice to select record. Record changes to capital letters.

Note: when you complete your macro key presses you will reenter the EDIT menu again to stop the macro recorder.

2. Next, press the CURSOR Down Arrow key to open the macro recorder.
3. Now, every key press you make is recorded in this macro. The macro accepts up to 256 key presses.
4. When you have completed your macro press the same USER key again that you started with to re-open the EDIT menu. That is, the USER key that you want to assign to this macro. This time the EDIT menu displays stop recording rather than recording.
5. Press the CURSOR Right Arrow twice to select the stop recording item.
6. Then, press the CURSOR Down Arrow key to complete the operation.

Activate Random, Audio, and Effects Functions

The last item in the EDIT menu is function. This feature allows you to access the six pre-programmed functions originally assigned to USER keys 1 to 6. This is useful if you want to enable a special effect, but the key is now assigned to a macro.

To enable Color modulate, Size modulate, Dim modulate Audio advance (Audio 1), Audio halt (Audio 2), or Random through the EDIT menu function item:

1. From the EDIT menu press the CURSOR Right Arrow key three times to select function. Function changes to capital letters.
2. Then, press the CURSOR Down Arrow key to enter the FUNCTION submenu. The LCD window displays:

```

COLOR size dim audio1 audio2 random
Press cursor down to enable color mod
  
```

Notice that the top line displays the FUNCTION submenu. The bottom line prompts you to press the CURSOR Down Arrow key to perform the selected menu item. When you select menu items with the CURSOR Right/Left Arrow keys the menu items change to capital letters.

3. Select the desired effect with the CURSOR Left/Right Arrow keys. When the selected item is in capital letters press the CURSOR Down Arrow key to enable the effect.

Copying

The *emulator* Controller records all parameters that you program. Therefore, it is easy to repeat certain parts of the controller's Memory by copying parameters.

The copying function of the controller allows you to copy:

- certain parameters of an Address to another Address or range of Addresses.
- the entire contents of a programmed Page to any another Page in any other Memory.
- a group of programmed Pages to any other group of Pages in any other Memory.

Note: You can modify the way the controller copies information from one Address to another through the Setup menu. The Edit/Copy menu item controls whether the initial “copy” command copies all of the Constructs from one fixture to another or whether no Constructs are copied from one fixture to another until you select specific Constructs. The default setting of the controller is “Share all constructs until selected.” Refer back to the *Edit/Copy* feature described in the Setup section.

Page Copy

Use Page copy to copy the entire contents of a programmed Page to any other Page in any other Memory. This is useful for creating a Loop or Chase of Pages that only contain slight changes, such as movement changes or single parameter changes.

To copy the contents of one Page to another Page:

1. First, ensure you are in IMP mode, the ADDRESS LED is lit on the ADDRESS/PRESET key, and that the SELECT key LED is **not** lit or flashing. Select the Page (source) that you want to copy using the PAGE Up/Down Arrow keys.
2. Press the SELECT key. The LCD window displays: "Select fixtures to edit using A/P keys, or press SELECT to exit."

Select fixtures to edit using A/P keys,
or press SELECT to exit.

3. Select the Memory and Page (destination) where you want to copy the contents of the current page. Press the CURSOR Up/Down Arrow keys to change the Memory number. Press the PAGE Up/Down Arrow keys to change the Page number. When you press the CURSOR or PAGE key for the first time, the LCD window shows the source Memory and Page fields. The destination Memory and Page fields follow your key presses.

Copy M: x P: x to M: x P: x
Press RECORD to save, SELECT to exit.

4. Press the RECORD key. The Page copy is complete. The controller returns to IMP mode. You can repeat this procedure as often as you wish.

Block Copy

Use Block copy when you want to repeat multiple consecutive Pages. This function can save time when you want to repeat multiple chases with slight parameter changes each time the chase repeats.

To copy a block of Pages to the same or another Memory:

1. Use the PAGE Up/Down Arrow keys and select any Page within the group of Pages that you want to copy.
2. Press the SELECT key. The LCD window displays: "Select fixtures to edit using A/P keys, or press SELECT to exit."

Select fixtures to edit using A/P keys,
or press SELECT to exit.

3. Press the AUTO key, located just to the right of the joystick. The LCD window displays: "COPY FROM M: x P: x thru M: -- P: -- to M: -- P: -- "

Copy	From M: x P: x	to M:— P:—
	thru M:— P:—	

4. Select the Memory and first Page of the block of Pages you want to copy. Press the CURSOR Up/Down Arrow keys to change the Memory number. Press the PAGE Up/Down Arrow keys to change the Page number. Notice the "From" prompt in the LCD window displays the beginning Memory and Page values as you enter them.
5. Press the AUTO key again. Select the last Page of the block of Pages you wish to copy. Press the PAGE Up/Down Arrow keys to change the Page number. Notice the "thru" prompt in the LCD window displays the ending Memory and Page values as you enter them.
6. Press the AUTO key a third time. Select the first Page of the destination block of Pages you want to copy. Press the CURSOR Up/Down Arrow keys to change the Memory number. Press the PAGE Up/Down Arrow keys to change the Page number. Notice the "to" prompt in the LCD window displays the destination Memory and Page values as you enter them.
7. **(Optional Step)** Pressing the CONSTRUCT Up/Down Arrow keys at this point toggles the controller between Copy and **Copy Reverse**. Copy Reverse reverses the sequence of Pages that you are copying.
8. Press the RECORD key. The SELECT key LED turns "Off" and the controller returns to IMP mode.

Address Parameter Copy

Once you program an Address, you can copy some or all of the parameter settings to other Addresses on the same Page or onto another Page. This saves time when you want many fixtures on a Page or within a Loop of Pages to have the same or similar settings.

Copy Construct Parameters From One Address to Another Address on the Same Page

1. Press the SELECT key. The LCD window displays: "Select fixtures to edit using A/P keys, or press SELECT to exit."
2. Select the Address containing the source Construct parameters that you want to copy.
3. Then, select the Construct parameters in the source Address that you want to copy by pressing the appropriate front panel Construct keys. Also, any Constructs that were edited through the LCD window menus are copied. If you do not select any Construct parameters to copy, then either: 1) all Constructs are copied, or 2) no Constructs are copied

depending on how you defined the Edit/Copy function through the Setup menu.

4. Select one or more destination ADDRESS keys to receive the Construct parameters from the source Address.
5. Press the RECORD key to save the changes or press the SELECT key to discard changes.

Copy Selected Addresses From One Page to Another Page

1. Press the SELECT key. The LCD window displays: "Select fixtures to edit using A/P keys, or press SELECT to exit."

Select fixtures to edit using A/P keys,
or press SELECT to exit.

2. Select the source Addresses that you want to copy. Remember the Page number containing these Addresses.
3. Press the PAGE Up/Down Arrow keys to select the destination Page to receive the selected Addresses. As you press the PAGE key the destination Page value is displayed on the right side of the LCD window. All parameters (whether selected or not) from the source Addresses are copied to the destination Page. Only the selected parameters of the selected Addresses are copied to the new (destination) Page.

GATE dim color cspeed gobo gspeed iris→
GATE: CLOSED P: x

Page
Value

4. Press the RECORD key to save changes or press the SELECT key to discard changes.

Editing Pages

When you edit a Page that you previously programmed, one or more Address LEDs are lit, indicating that the gates of these fixtures are open. If you select the Gate Construct of a programmed fixture, you will notice that the second line of the LCD window shows that the gate is open. Modifying the Addresses on a Page can be accomplished in the same fashion as programming previously un-programmed fixtures.

To edit a previously programmed Page:

1. To change the programming of certain Addresses on a Page you must be in IMP (Intensity, Memory, Page) mode. If you are not in IMP mode, press the MENU key to return to IMP mode.
2. Use the CURSOR and PAGE Up/Down Arrow keys to select the Memory and Page that you want to edit.

3. Press the SELECT key. The SELECT key LED flashes. The LCD window displays: "Select fixtures to edit using A/P keys, or press SELECT to exit."

Select fixtures to edit using A/P keys,
or press SELECT to exit.

4. Select one or more Addresses that you want to edit by pressing the desired ADDRESS keys in the Address/Preset area on the controller.
5. The SELECT key LED and the LEDs on all the selected ADDRESS keys flash.
6. Then, edit all of the desired Constructs (color, dim, gate, position, delay, and so on) for the selected Addresses by pressing each CONSTRUCT key (or select from LCD window items) and then set the Construct parameters with the CONSTRUCT Up/Down Arrow keys.
7. To save all of the new parameter settings, press the RECORD key. To cancel the operation press the SELECT key.

Erasing Pages and Creating Blackout Pages

You may want to erase a Page when there is undesirable or old Pages in Memory. It is often best to clear out these Pages to prevent confusion in future programming. Otherwise, you can record over the old Pages. An erased Page is still an Initialized Page; it acts as a "placeholder" Page in a loop of Pages. Therefore, use this feature to create Blackout pages.

Note: To prevent inadvertent erasing of Presets, you cannot directly erase Pages used as Presets. You record over existing Presets to change them.

1. Select the Page you wish to delete using the PAGE Up/Down Arrow keys.
2. Press the SELECT key. The LCD window displays: "Select fixtures to edit using A/P keys, or press SELECT to exit."

Select fixtures to edit using A/P keys,
or press SELECT to exit.

3. Press the ERASE key once. The LCD window displays: "Press ERASE to un-initialize M:x P:x, or press SELECT to exit."

Press ERASE to un-initialize M: x P: x
or press SELECT to exit.

4. **Do not press the ERASE key** again as stated in the LCD window, instead press the RECORD key. The LCD window briefly displays: "Recording." The controller then returns to the IMP mode. All of the parameter settings are set back to the default settings.

Note: if you inadvertently press the ERASE key a second time you create an Un-initialized Page rather than an erased or Blackout Page. To re-initialize the Page, record any fixture Construct in the Page.

Memory Lock/Unlock

You can protect entire Memories from unauthorized editing or programming.

To lock a Memory:

1. Press the MENU key.
2. Press the CURSOR Right Arrow key three times to select **setup**. **SETUP** is capitalized when selected.
3. Press the CURSOR Down Arrow key.
4. Select mem-lock from the **SETUP** menu by pressing the CURSOR Right Arrow key once. **MEM-LOCK** is capitalized when selected. The second line of the LCD window displays: "Use A/P keys 1-6, off=locked."

```
device-id MEM-LOCK serial port edit/cop→  
Use A/P keys 1-6, off = locked
```

5. The LEDs above ADDRESS/PRESET keys 1-6 are lit (unless a Memory is already locked out).
6. Press the ADDRESS/PRESET key (1-6) corresponding to the number of the Memory that you want to lock out. When the LED above the key goes out the Memory is locked.
7. Press the MENU key to exit back to IMP mode.

To unlock a locked memory:

1. Perform steps 1 through 5 in the previous "To lock a Memory" procedure.
2. Then, press the ADDRESS/PRESET key (1-6) corresponding to the number of the Memory you want to unlock. The LEDs on locked Memories are off. The LED above the ADDRESS/PRESET key turns on when you unlock the Memory.
3. Press the MENU key to exit back to IMP mode.

A locked Memory is protected from all Erase and Record functions. If someone tries to access a protected Memory, the LCD window displays: "Memory x is locked out." Where x equals the locked Memory.

```
LOCKOUT. . . Memory: x      Page: x  
Memory x is locked out
```

When program data is crossloaded between controllers or downloaded from a computer and the controller receiving the data has one or more Memories locked, those Memories will **not** be overwritten by the new data.

For example, if you want to copy Memories 1, 2, and 3 from controller A to controller B, while keeping Memories 4 through 6 on controller B the way they are, you need to lock Memories 4 through 6 on controller B before the program data is transferred. Refer to Chapter 7, *External Memory Storage and Transfer*, for a complete description of the Memory transfer procedures.

Caution: loading controller User Memory from a Memory Card replaces all of the controller's User Memory, *including* locked Memories.



Playback

You can playback a program manually or automatically. Programs consist of single Pages, a sequence of Pages, a loop (chase) of Pages, or a Preset. You can also playback all Pages of all Memories in sequence.

Playing Single Pages — You playback single Pages manually by simply selecting the Memory with the CURSOR Up/Down keys and the Page with the PAGE Up/Down keys. The moment you select the Page it performs the operations recorded in the Page.

Manually playing a sequence of Pages — You can play a sequence of Pages manually. Play them manually by selecting the Memory and first Page in the sequence and then keep “bumping” the Page Up/Down keys to proceed through the sequence.

Automatically playing a sequence of Pages — To play a sequence automatically, select the first Page in the sequence and then press the AUTO key. The sequence will play from the current Page until it finds a Non-Initialized Page. If there is no Non-Initialized Page, then the sequence will wrap at Page 99 and continue with Page 1 running continuously until you deselect the AUTO key; the sequence stays in the same Memory. If there is a Non-Initialized Page anywhere in the Memory other than 0 and 99, the sequence will act like a loop or chase and loop back to Page 1.

Playing a loop — You playback a loop automatically. A loop has a Non-Initialized Page as its first and last page. You select any Page in the loop and then press the AUTO key; the loop runs continuously. When it encounters the ending Non-Initialized Page it loops back to the beginning Non-Initialized Page and continues until you deselect the AUTO key.

Playing a Preset — You playback a Preset in a similar fashion as a loop. That is, when you select a Preset it runs continuously until you select another Preset or exit Preset mode.

Varying Playback rate — To vary the playback rate during Auto mode adjust the RATE knob under the AUTO KEY; clockwise is faster, counterclockwise is slower. If you have a delay programmed into the Page it is added to the time set by the RATE knob adjustment.

Auto mode also provides several audio input override effects where you can advance or halt Pages according to the program information. You can also change fixture colors and light intensity according to the program information.

Page Playback - Manual Advance

To manually playback the Pages within a Memory:

1. If the controller is in Standby mode, remove the controller from Standby by pressing the STANDBY key; the STANDBY key LED turns “Off”.

Note: When the controller exits Standby it immediately plays the Page currently displayed in the LCD window.

2. Then, use the PAGE Up/Down Arrow keys to select any Page that you want to Playback. The fixtures change their settings immediately according to what is recorded on each Page. The controller advances one Page at a time each time you press either the PAGE Up or Down Arrow keys.
3. If you press and hold either the PAGE Up or Down Arrow key, the Pages change quickly until 1 or 99 is reached. If you release and press the PAGE Up/Down Arrow key again, the process repeats.

Page Playback - Auto Mode

To automatically playback Pages within a Memory:

1. If the controller is in Standby mode, remove the controller from Standby by pressing the STANDBY key; the STANDBY key LED turns "Off".

Note: When the controller exits Standby it immediately plays the Page currently displayed in the LCD window.

2. Select the starting Page within the loop (although you can start from any Page within the loop). Press the AUTO key, it is located to the right of the joystick. As soon as you press the AUTO key the controller begins to playback all of the Pages within the current Memory until it encounters a Non-Initialized Page. When it encounters a Non-Initialized Page it loops back to the starting Non-Initialized Page in the loop and continues with the first programmed Page after the Non-Initialized Page. The controller runs continuously sequencing through the loop until you deselect the AUTO key.
3. To vary the playback rate (speed) turn the RATE knob, located just below the AUTO key. Turn the RATE knob clockwise to speed the playback rate or counterclockwise to slow the playback rate. The RATE knob adds to the Delay time programmed into each Page.

Live Control of Fixtures During Auto Playback

During a playback you may want to have "live" control (override) over the Constructs of one or more fixtures. For example, an activity occurs that you want to track with a "free spot". You could quickly select a fixture to use as a spot and manually control it with the joystick.

To have "live" control of one or more fixtures:

1. Press the SELECT key. The SELECT key LED flashes.
2. Select the numbers of one or more fixtures that you want to manually control by pressing their corresponding ADDRESS keys on the controller. You now have "live" control over the selected fixtures. You can change (override) any of the fixtures' Constructs, however, you cannot record the changes made during "live" control.

3. To return from “live” control press the SELECT key. The SELECT key LED stops flashing. The selected fixtures return to their original programmed settings and join the Sequence running.

Audio Input Playback Modes

You can use a musical source to control *emulator* auto playback through five *emulator* playback modes. Plug your musical source into the 6 mm (1/4 inch) Stereo Audio Input jack on the *emulator* Controller’s rear panel. Although the input jack is a stereo connector, the controller accepts a monaural input on one of the stereo connections. Then, follow the directions as explained for the applicable mode: Audio 1, Audio 2, Effect 1, Effect 2, and Effect 3. The five keys associated to these modes are labeled User keys 2 through 6 as explained in the following. USER 1 key is used for the Random Advance feature.

Audio 1: Press USER 3 key; its LED lights. This Auto playback method *advances*

USER 3 *Pages with the amplitude of the musical information.* You can adjust the strength of the audio input signal by using the AUDIO (level) knob located directly to the right of the RATE knob. The strength of the signal is indicated by the Audio level LED located just above the AUDIO knob. Turn the AUDIO knob counterclockwise to decrease signal strength and clockwise to increase signal strength. Full counterclockwise is “off” and full clockwise is maximum signal.

Audio 2: Press USER 5 key; its LED lights. This Auto playback method *halts the*

USER 5 *advance of Pages with the amplitude of the musical information.* You can adjust the strength of the audio input signal by using the AUDIO (level) knob located directly to the right of the RATE knob. The strength of the signal is indicated by the Audio level LED located just above the AUDIO knob. Turn the AUDIO knob counterclockwise to decrease signal strength and clockwise to increase signal strength. Full counterclockwise is “off” and full clockwise is maximum signal.

Effect 1: Color Modulate: Press USER 2 key to implement this feature; its LED

USER 2 lights. The color modulate effect instructs all active fixtures to begin changing colors from their current settings with the *beat* of the audio input signal. The color modulate effect overrides the Color program information. You can adjust the strength of the audio input signal by using the AUDIO (level) knob located directly to the right of the RATE knob. The strength of the signal is indicated by the Audio level LED located just above the AUDIO knob. Turn the AUDIO knob counterclockwise to decrease signal strength and clockwise to increase signal strength. Full counterclockwise is “off” and full clockwise is maximum signal.

Effect 2: Size Modulate: Press USER 4 key to implement this feature; its LED

USER 4 lights. The size modulate effect causes each active fixture to change pattern size with the *amplitude* of the audio input signal. The size modulate effect overrides the size program information. You can adjust

the strength of the audio input signal by using the AUDIO (level) knob located directly to the right of the RATE knob. The strength of the signal is indicated by the Audio level LED located just above the AUDIO knob. Turn the AUDIO knob counterclockwise to decrease signal strength and clockwise to increase signal strength. Full counterclockwise is “off” and full clockwise is maximum signal.

Effect 3: Light Modulate: Press USER 6 key to implement this feature; its LED lights. The Light Modulate effect causes the light intensity of all active fixtures to follow the *amplitude* of the audio input. When the light modulate effect is engaged, all fixtures are dimmed to their minimum intensity level until it senses an audio input. You can adjust the strength of the audio input signal by using the AUDIO (level) knob located directly to the right of the RATE knob. The strength of the signal is indicated by the Audio level LED located just above the AUDIO knob. Turn the audio knob counterclockwise to decrease signal strength and clockwise to increase signal strength. Full counterclockwise is “Off” and full clockwise is maximum signal.

Preset Playback

Presets store a Page or group of Pages and their Advance, Effect, Master dim, and RATE knob settings. However, you can alter the Advance and Effect controls by implementing “live” control over the Preset playback. Any changes made to the Advance and Effect selections during Preset playback do not affect the Advance and Effect selections stored in the Preset Memory. When you playback a Preset, it continues to playback indefinitely until another Preset is selected or you exit Preset mode. You playback Presets in the same manner as playing back a loop of Pages within a Memory.

To Playback a Preset:

1. Press the ADDRESS/PRESET key to select Preset mode. The Preset LED lights. The controller is now in Preset Mode.
2. Select the number of the Preset that you want to play back by pressing the corresponding key on the ADDRESS/PRESET keypad. The Preset immediately begins to playback and runs continuously. Refer to the previous *Programming a Preset in Twelve Level Preset Access Mode* section for information on selecting Presets in this mode.
3. If you want to change to another Preset during the currently running Preset, select another Preset. To quit Preset playback press the ADDRESS/PRESET key and exit back to Address mode. The currently running Preset stops at the Page that is active when you press the ADDRESS key. Back in Address mode the LCD window displays the Preset mode Page that was active when you returned to Address mode.

Note: When you return from Preset mode to Address mode the rate remains at the Preset level. Turn the RATE knob slightly in either direction to reestablish the existing Address mode rate.

Automatic All-Memory Playback

The *emulator* Controller can automatically sequence through (playback) all 99 Pages in all nine Memories.

To perform an all-Memory playback:

Press the Menu CURSOR Up/Down Arrow key until the LCD window “Memory:” field displays either: 1-all or 6-all.

The Initialized Pages in Memory 1 begin sequencing according to the Advance and Rate setting. When the controller completes playing back Memory 1’s highest Initialized Page, the controller advances to Memory 2, and plays back all of its Initialized Pages. This playback process continues through Memory 6, Page 99. When all Pages in Memory 6 playback the operation wraps around and continues with Memory 1 and runs continuously until you disable All-Memory playback.

Each Memory number will be followed by “-all” as the Memories playback.

To disable All-Memory Sequencing:

Press the CURSOR Up/Down Arrow key until “-all” no longer appears as part of the Memory value in the LCD window.

Controller Address Monitoring

You can instantly inspect the Address Construct parameters at any time while in IMP mode. To inspect the Construct parameters just press and hold any ADDRESS key. A summary of the parameters for that Address is displayed in the LCD window. The top line identifies the Constructs as Figure 5.1 shows; the bottom line provides the parameter value (not shown). The Gate field displays “Cl” for closed and “Opn” for open. The Position field displays “JS” for joystick or the defined preset number. For detailed information about Constructs refer to Chapter 3.

If an Address is locked out, the bottom line displays the message:

“Address xx is locked out.”

While holding the Address key, you can step through Memories and Pages and observe the Address values change to the new Memory and Page values.

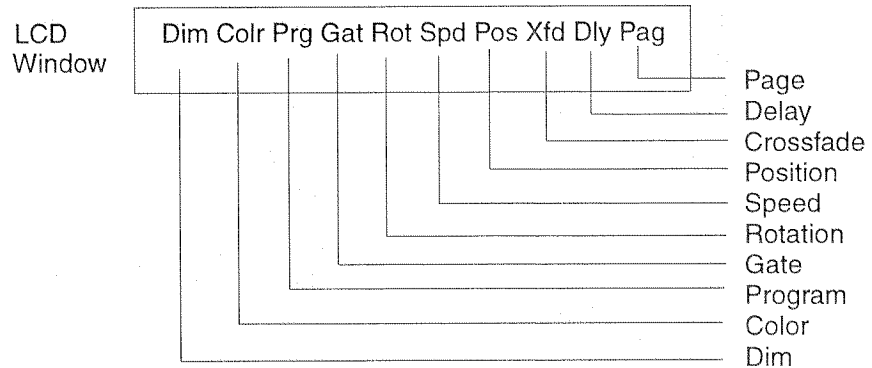


Figure 5.4. Address Summary Construct Fields

Master Dim

You can easily perform Master Dim operation from the front panel that affect all fixtures. The Intensity field displays the current state of the Master Dim. The default value is “99” which equates to full bright. The “0” value equates to off or full dark (off). To adjust the Master Dim press the CONSTRUCT Up or Down key. Notice that the dim value in the Intensity field follows the CONSTRUCT Up/Down keys similar to using a fader control. Press and hold the CONSTRUCT Up/Down key to quickly change the dimming value.