

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

5

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

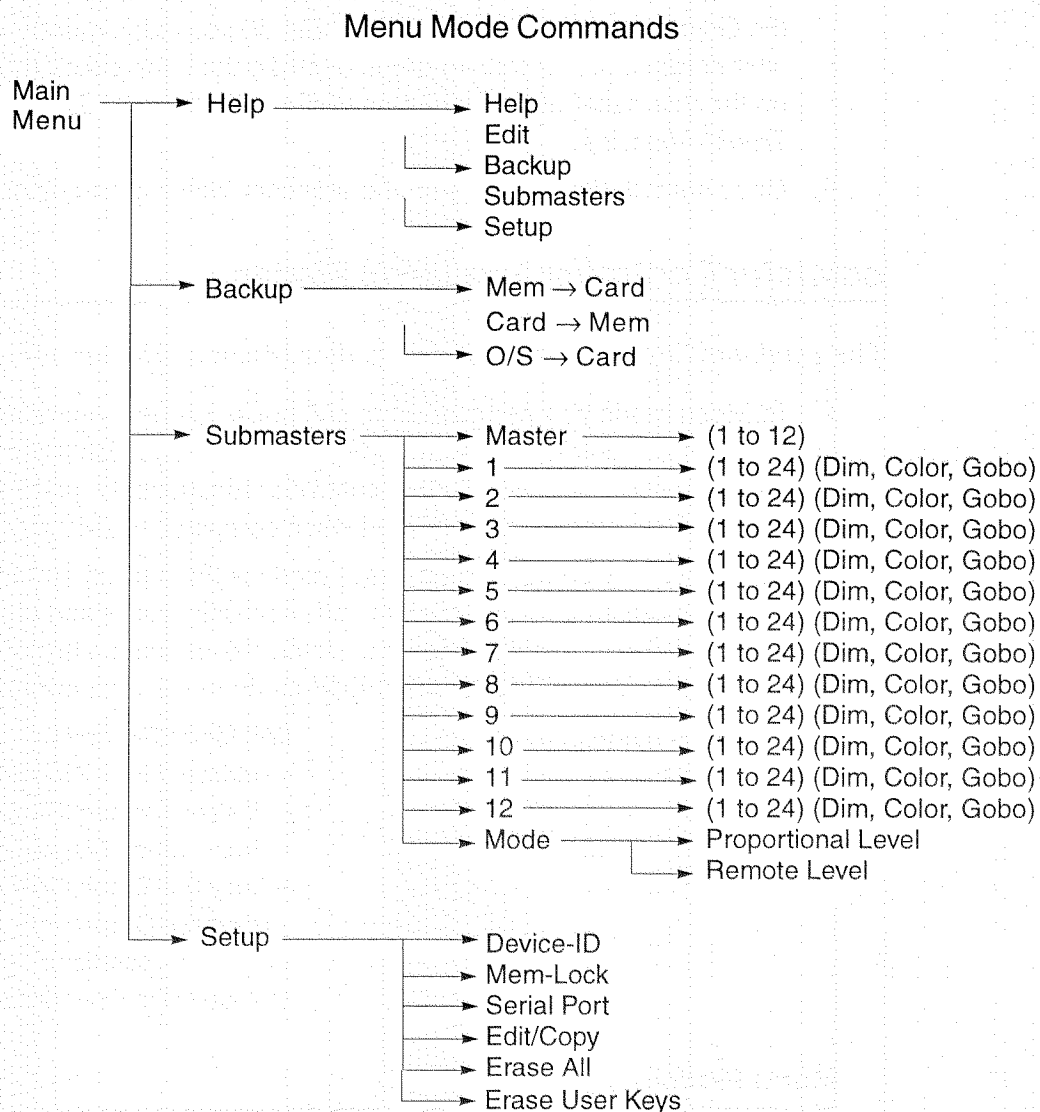
This section explains how to navigate and use the Menu mode submenus.

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.

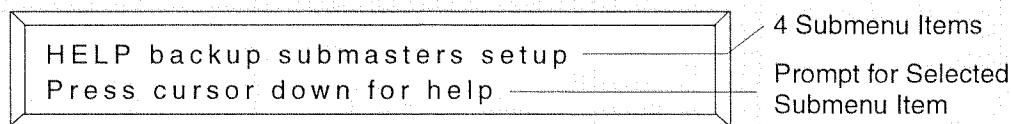


Figure 5.1. Main Menu

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:

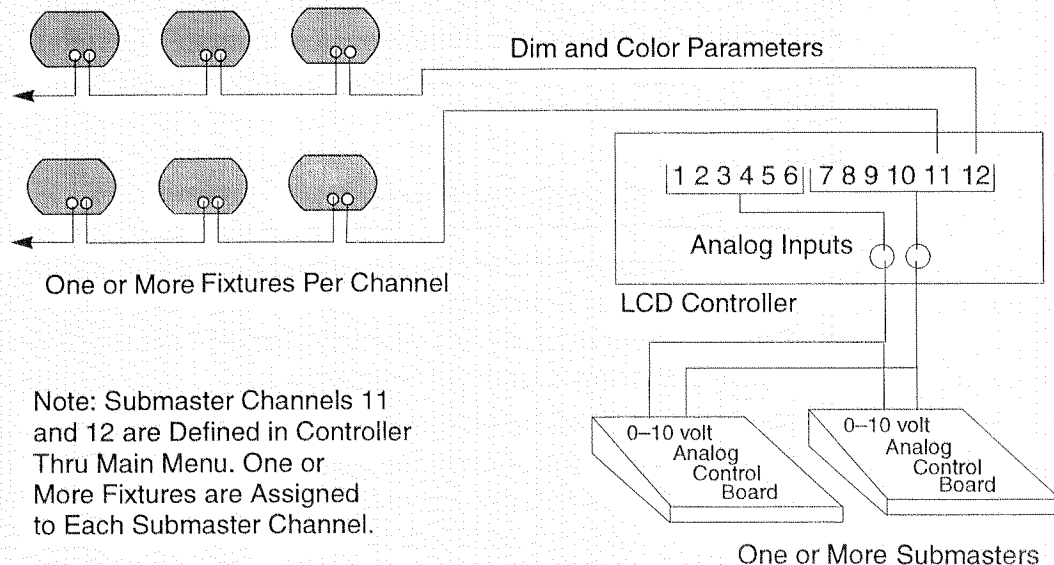
- save the *emulator* Controller’s internal User RAM to a removable Memory Card.
- load (update) the *emulator* Controller’s internal User RAM from a Memory Card.
- transfer the *emulator* Controller’s operating system to another controller.

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.



Note: Submaster Channels 11 and 12 are Defined in Controller Thru Main Menu. One or More Fixtures are Assigned to Each Submaster Channel.

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. 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. 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/Preset (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
```