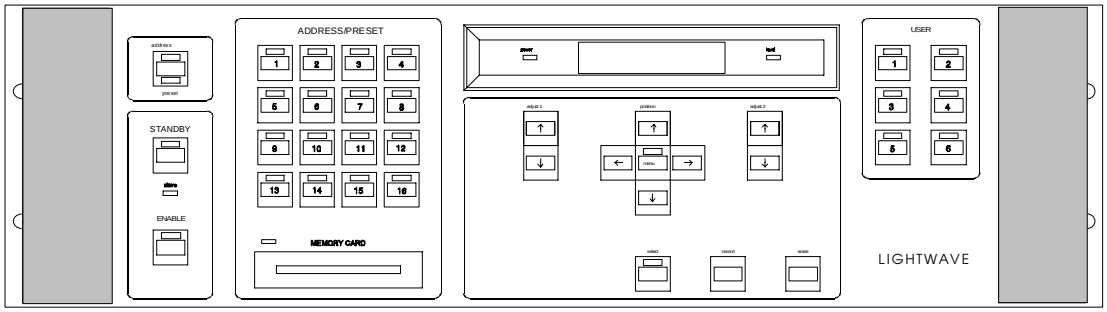
# *universal Controller*




## *User Manual Addendum*

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# Addendum to: Universal Controller Manual Version 2.0

**Insert this addendum into the Universal Controller User Manual v2.0 (November 1994). The information in this addendum replaces the section titled "MIDI" on pages 4-9 and 4-10 of the Universal Controller manual.**

Firmware version 2.04 for the Universal Controller introduces expanded MIDI control as a top-level menu option. A summary of changes is listed below:

- All MIDI setup has been moved to a separate MIDI menu item at the top level of the menu system.
- You can now select MIDI Show Control (MSC) commands or channel voice commands. Only one form of control can be used at one time.
- Channel voice messages, program change and control change have been added to preset playback and master dim control, respectively.
- (The use of MSC GO commands for preset playback remains the same.)

Before continuing, you should have properly configured the Universal controller, all fixtures and all data cables as described in the manual. This addendum applies to MIDI setup only.

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## *Initial Power-Up Menu*

After power-up the Universal controller goes through internal self-test routines then displays the Main menu shown below:

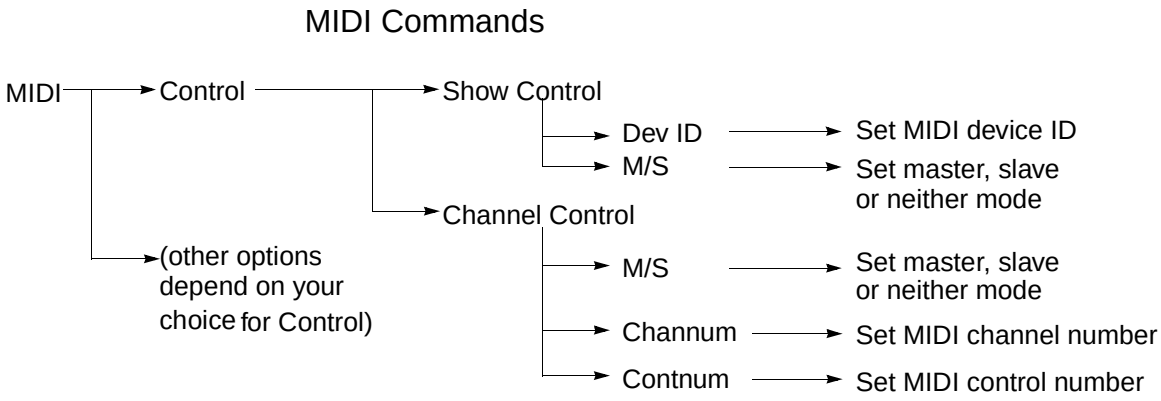
| DIM | READY | PAGE |
|---|---|---|
| 99 | ←M→ | 001 |

Pressing the <Menu> button on the controller's front panel displays the controller's top-level menu options. There are 12 top-level menu options, listed below:

| | | | | | |
|---|---|---|---|---|---|
| HOME | BACKUP | HELP | SETUP | ERASE | COPY |
| EFFECTS | ALLMEM | REMOTE | PAGELOCK | POSMEM | MIDI |

## *MIDI Menu Overview*

The chart below shows the overall structure of the MIDI menu system. More information about each option will be found in separate sections in this addendum.



## Navigating in the MIDI Menu System

Table 1 below describes the functions of the navigational keys located on the controller's front panel. Figure 3.1 on page 2-1 of the *Universal Controller User Manual* shows the location of these keys.

*Table 1: Universal Controller Navigational Keys*

| Key | Function |
|---|---|
| Menu | Moves up through the menu system |
| Arrow keys around the Menu key | Selects first- or second-level menu items |
| Adjust 1 arrow keys | Moves down through the menu system; increments and decrements numerical values (such as MIDI device ID) |
| Adjust 2 arrow keys | Moves down through the menu system |

Table 2 below describes the function keys <Select>, <Record> and <Erase>:

*Table 2. Universal Controller Function Keys*

| Key | Function |
|---|---|
| Select | Returns you to the Main menu without saving any selections |
| Record | Saves your selections and returns you to the Main menu |
| Erase | Page programming; no MIDI menu functionality |

## *Setting the MIDI Device ID (MSC Control)*

You set the controller's MIDI device ID using the Show Control menu as described below:

1. Power ON the controller or press the <Select> button to return to the Main menu, shown below:

| DIM | READY | PAGE |
|---|---|---|
| 99 | ←M→ | 001 |

2. Press the <Menu> button, then use the arrow keys around the <Menu> button to select the MIDI menu option (it will blink).

3. Press the Adjust 1 <Down> arrow key. This displays a list of menu options which will be different depending on whether Show Control or Channel Control has been previously saved. Do one of the following:

   - If Dev ID is one of the displayed options, use the arrow keys around the <Menu> button to select Dev ID (it will blink). Then see Step 5.

   - If Dev ID is not displayed, use the arrow keys around the <Menu> button to select the Control menu option if it is not already blinking. Then see Step 4.

4. Press the Adjust 1 <Down> arrow key. This displays two options: Show Control and Channel Control. Press the Adjust 1 <Up> arrow key to select Show Control (it will blink). Then press <Record>. This will save your selection and return you to the Main menu. Start with Step 2.

5. Press the Adjust 1 <Down> arrow key. This displays the following menu:

| MIDI DEVICE ID |
|---|
| xxx |

6. Use the Adjust 1 arrow keys to select the ID you wish to use, then press <Record>. This will save your selection and return you to the Main menu. Note the following about the device ID:

   - You can select any ID from 0 to 126. ID 127 is reserved for the "all call" command.

   - Set all controllers for the same ID if you wish them respond to MSC commands in exactly the same way.

   - Choose different IDs for controllers you wish to respond differently; for example, controllers connected to different types of devices. For example, suppose you have 10 controllers, eight of which are connected to various types of multi-effect fixtures (such as Trackspot® automated luminaires) and two of which are connected to more specialized fixtures (such as Emulator® laser simulators). You could set all eight "Trackspot" controllers to ID 0 and the two "Emulator" controllers to ID 1.

## *Setting Master Dim and Playing a Preset (Channel Voice Control)*

Your selections for the controller's channel number or control number are used for master dim and preset playing as summarized below:

- **Master dim:** This is set using the MIDI *control change* function; it requires both a channel number and a control number. The master dim level is an absolute value, not a delta (change) value. The value of 99 corresponds to full brightness; the value of 0 corresponds to off or full dark. More about master dim as it relates to master/slave modes of the controller is found in the section titled "Master/Slave Modes" on page 7.

- **Playing a preset:** A preset can be played back using the MIDI *program change* function. Program change requires you to set only a channel number (along with a preset number). Presets are described in Chapter 4 of the Universal controller manual.

### Setting the Channel Number

A channel number is required for both master dim and preset playback.

1. Power ON the controller or press the <Select> button to return to the Main menu, shown below:

| DIM | READY | PAGE |
|---|---|---|
| 99 | ←M→ | 001 |

2. Press the <Menu> button, then use the arrow keys around the <Menu> button to select the MIDI menu option (it will blink).

3. Press the Adjust 1 <Down> arrow key. This displays a list of menu options which will be different depending on whether Show Control or Channel Control has been previously saved. Do one of the following:

   - If Channum is one of the displayed options, use the arrow keys around the <Menu> button to select Channum (it will blink). Then see Step 5.

   - If Channum is not displayed, use the arrow keys around the <Menu> button to select the Control menu option if it is not already blinking. Then see Step 4.

4. Press the Adjust 1 <Down> arrow key. This displays two options: Show Control and Channel Control. Press the Adjust 1 <Down> arrow key to select Channel Control (it will blink). Then press <Record>. This will save your selection and return you to the Main menu. Start with Step 2.

5. Press the Adjust 1 <Down> arrow key. This displays the following menu:

| MIDI CHANNEL NUM |
|---|
| xxx |

6. Use the Adjust 1 arrow keys to select the channel number (from 0 to 15) you wish to use, then press <Record>. The channel number does not need to be unique for this controller.

## Setting the Control Number

A control number is required only for master dim.

1. Power ON the controller or press the <Select> button to return to the Main menu, shown below:

| DIM | READY | PAGE |
|---|---|---|
| 99 | ←M→ | 001 |

2. Press the <Menu> button, then use the arrow keys around the <Menu> button to select the MIDI menu option (it will blink).

3. Press the Adjust 1 <Down> arrow key. This displays a list of menu options which will be different depending on whether Show Control or Channel Control has been previously saved. Do one of the following:

   - If Contnum is one of the displayed options, use the arrow keys around the <Menu> button to select Contnum (it will blink). Then see Step 5.

   - If Contnum is not displayed, use the arrow keys around the <Menu> button to select the Control menu option if it is not already blinking. Then see Step 4.

4. Press the Adjust 1 <Down> arrow key. This displays two options: Show Control and Channel Control. Press the Adjust 1 <Down> arrow key to select Channel Control (it will blink). Then press <Record>. This will save your selection and return you to the Main menu. Start with Step 2.

5. Press the Adjust 1 <Down> arrow key. This displays the following menu:

| MIDI CONTROL NUM |
|---|
| xxx |

6. Use the Adjust 1 arrow keys to select the control number you wish to use (from 0 to 63), then press <Record>. The control number does not need to be unique for this controller.

## *Master/Slave Modes*

This section of the addendum elaborates on the section in the manual titled “Master/Slave Configuration” beginning on page 3-3.

### Master/Slave Modes and Preset Programming

Recall from the section titled “Preset Mode Programming” on page 4-45 of the manual that a preset consists of the master dim level along with the master delay/audio value and any modulation effects (color, gobo, dim or size). Because master and slave controllers are each programmed separately, it is possible for the master controller to have a different master dim level than any of the slave controllers.

When the preset is fired, the slave’s dim level will be recalled and used by the slave. The master controller does not store the dim level of any of its slaved controllers. However, when the master dim level is changed on the master controller, that dim level is sent to all slaved controllers as the new dim level. For example, if the slave’s preset master dim level is lower than the master dim level of the master controller, the light level of the slave will rise to that of the master controller.

If the same master dim levels are stored in the presets, dimming will be consistent between a master and any slaves.

### Master/Slave/Neither Modes and MIDI Commands

This section explains how selecting master, slave or neither for the controller affects the way the controller passes MIDI commands.

Configuring the controller as a master is useful for controlling other Universal controllers, and for outputting data to some sort of MIDI data capture system for later playback and control of the Universal controller.

When configured as a master, the controller will Out all MIDI data.

When the controller is configured as a slave or as neither a master or a slave, it will Thru all MIDI data. The Universal controller does not Merge data.

(Remember to take the controller out of the “master” mode when you want to control it from a playback system.)

## Selecting Master, Slave or Neither Mode

1. Power ON the controller or press the <Select> button to return to the Main menu, shown below:

| DIM | READY | PAGE |
|---|---|---|
| 99 | ←M→ | 001 |

2. Press the <Menu> button, then use the arrow keys around the <Menu> button to select the MIDI menu option (it will blink).

3. Press the Adjust 1 <Down> arrow key. This displays a list of menu options.

4. Use the arrow keys around the <Menu> button to select the M/S option (it will blink).

5. Press the Adjust 1 <Down> arrow key. This displays a menu similar to the one shown below:

| MASTER | SLAVE |
|---|---|
| no | no |

6. The menu above configures the controller as neither a master nor a slave. Do one of the following:

   - If you wish to configure the controller as neither a master nor a slave, press the <Record> button to save this selection and return you to the Main menu.

   - Press the <Right> and <Left> arrow keys beside the Menu button to select either Master or Slave (your selection will blink).

   - Press the Adjust 1 <Down> arrow key to select “no” or press the Adjust 1 <Up> arrow key to select “yes”.

7. When you have configured your controller as master, slave or neither, press the <Record> button to save this selection and return you to the Main menu.

## *Data Format*

This section describes the data format used by the commands described in this addendum.

### Channel Voice Message Control

**Control Change—used to set the Master Dim level:**

```
1011nnnn  0ccccccc  0ddddddd

where   nnnn is the channel number 0 to 15,
        ccccccc is the control number 0 to 63,
        and  ddddddd is the desired Master Dim level 0 to 99.
```

**Program Change—used to play back a Preset:**

```
1100nnnn  0ddddddd

where     nnnn is the channel number 0 to 15
          and  ddddddd is the preset number 1 to 64.
```

### MIDI Show Control GO command

| byte number | bit pattern | description |
|---|---|---|
| 1 | 11110000 | (F0h) Start of System Exclusive |
| 2 | 01111111 | (7Fh) Universal Real-time SysEx ID |
| 3 | 0ddddddd | Device ID |
| 4 | 00000010 | (02h) MIDI Show Control Sub ID |
| 5 | 00000001 | (01h) General Lighting Command Format |
| 6 | 00000001 | (01h) MSC Go Command |
| 7 | 0ccccccc | Cue number ASCII digit 1 |
| 8 | 0ccccccc | Cue number ASCII digit 2 |
| 9 | 11111110 | (F7h) End of System Exclusive |

The preset number is one or two digits from 1 to 64. Digits are sent as ASCII characters; i.e., 30h to 39h for the digits 0 to 9. Leading zeros are ignored; for example, preset 2 could be sent as 30h 32h, or simply 32h. Preset 15 would be sent as 31h 35h.