EPAC TECHNOLOGY GUIDE

Written by Evan Shimizu
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Introduction

This guide aims to explain the audio, lights and video systems in the Edina Performing Arts Center. This guide focuses on the audio system, which contains the single most complex piece of equipment in the theater: the sound board. I hope that newcomers and experienced techies can find something of use in this guide and I hope that the directions are clear enough so that anyone can effectively use the technology in the theater.

The guide is organized into four sections.

The first section, entitled "Quick Start" covers basic tasks that are needed for any general event in the theater. There are detailed instructions for using a wireless mic, turning on lights and com setup for shows.

The second section deals with the Audio system. It covers basic and advanced sound board operations. This section also covers patching, monitor setup, video feed setup and default patches and board setup.

The third section provides an overview of the light board. Since the advanced operations used in shows are taught by a lighting designer, the advanced light board operations are not detailed in this section. The topics covered include setting up the board, selecting and turning on channels and recording cues.

The fourth section contains a step-by-step guide to setting up cameras in EPAC for use with Bloom Studio.

I have included a DVD containing the source files (InDesign CS3 Format) for this guide in the back when you need to update it in the future. Also on the DVD are digital copies of this guide and the instruction manuals for the Yamaha M7CL-48 Sound Board, the PMD570 digital recorder, and the ETC Expression 3 Light Board.

-Evan Shimizu
June 2010

Acknowledgements

I would like to thank Andy Warner for his assistance with the sound system in EPAC and for proofreading this guide/dealing with my typos. Thanks to Mr. Matthes for giving me the chance to work will all of this technology. Thanks to everyone on the artistic teams that I've worked with in my three years of theater.

And special thanks to the awesome tech crews I've worked with.
You guys rock. This is for you.

1 QUICK START

1.1.1 House PA System Overview

The Edina Performing Arts Center PA (Public Address) System allows for the use of a microphone, iPod or computer without turning on the sound board. The following is an overview of the PA system components.

Input Panels

Mic Input

(The only important jack)

This number (P5 in this case) is the Input Number
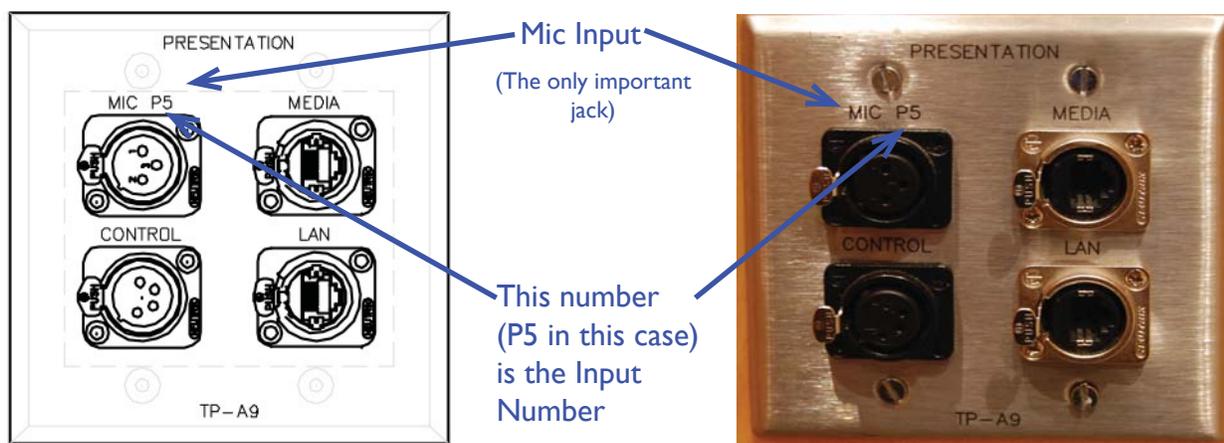
Figure 1-1 PA Input Panels

These two images show PA input panel number 5. The image on the left is a schematic drawing, and the one on the right is the actual panel. The input number is used for volume control. There are 4 parts to a PA input panel. Only the mic input really matters. The other inputs are used only for the rare special cases.

Input Panel Locations

There are 7 of these panels located on or near the stage. The panels all say "Presentation" on the top. Pick a panel that is close to the where you will be using your wired mic/iPod/Computer.

Panel Number	Location
P1	Stage Right Downstage Wall
P2	Stage Left Downstage Wall
P3	Center of House Side Pit Wall
P4	Stage Lip House Left
P5	Stage Lip House Right
P6	In the Booth, near the bottom of the wall of panels
P7	In the middle of the house in the floor panel

Table 1-1 Input Panel Locations

AUDIO

Volume Control

The PA system has a very simple volume control system located upstairs in the booth right under the stage manager com panel.

PA Volume Control Panel

Green Light indicates the input that is being adjusted

Input Number

Overall Volume sets the maximum volume for all PA inputs. If you've turned up the input you're using all the way, and it's still too quiet, turn this up.

Volume Level
The more red lights, the louder the sound.

Control Knob
Press the button to change input (moves the green light).
Turn Right to increase volume.
Turn Left to decrease volume.

Figure 1-2 PA Volume Control Panel

To change the Volume
Press the Control Knob until the green light is shining next to the input whose volume you want to adjust. The input number of each com panel is the number written next to the mic input. Turn the knob to set the volume for that input.

And that's it! Those are the only components of the PA system. Easy, right? The next sections will tell you how to connect and use a mic and computer.

1.1.2 Using a Wired Mic with House PA

> ⚠️ **Warning**
>
> You cannot use a wireless mic with the PA system. If you require a wireless mic, follow the setup directions in section 1.2.2 "Using a Wireless Mic with the Sound Board."

To use a wired microphone with the House PA, you will need to get a microphone and a 3-pin XLR cable. XLR connectors look like this:

Male Connector

Female Connector
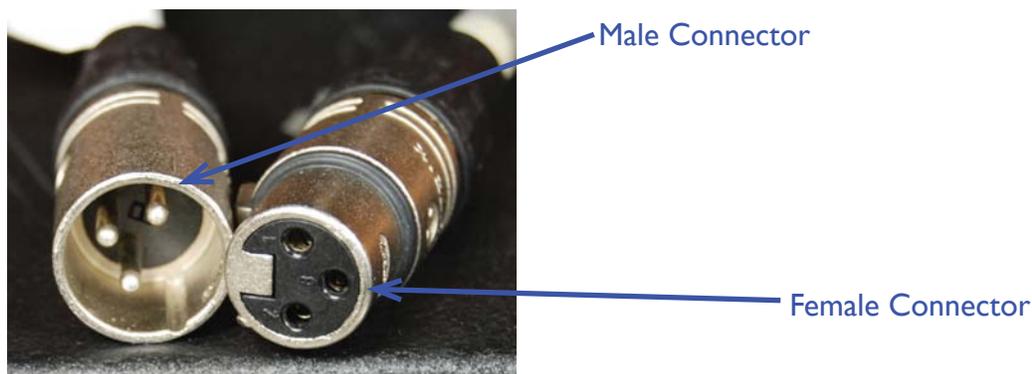
Figure 1-3 A XLR cord

XLR is available on the landing above the sound booth. Make sure that you check the ends of the cable to make sure you have the right one. Once you have your equipment, follow these steps.

1. Find an Input Panel close to where you will use the mic. See Table 1-1 for panel locations.
2. Connect the mic to the XLR cord. You will insert the female connector into the mic.
3. Insert the other end of the XLR cord into the PA input as shown below.

2. Put this in the mic

1. Find the closest one of these.

3. Put this end

In here
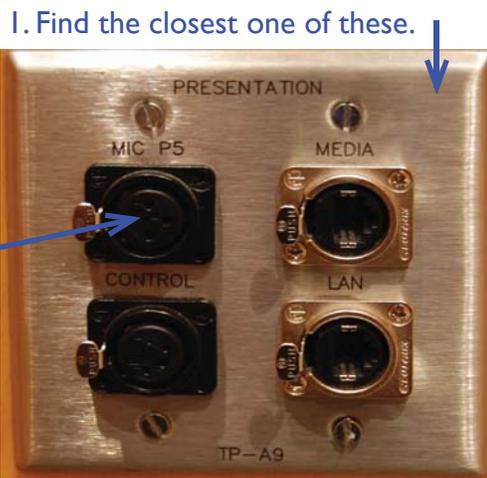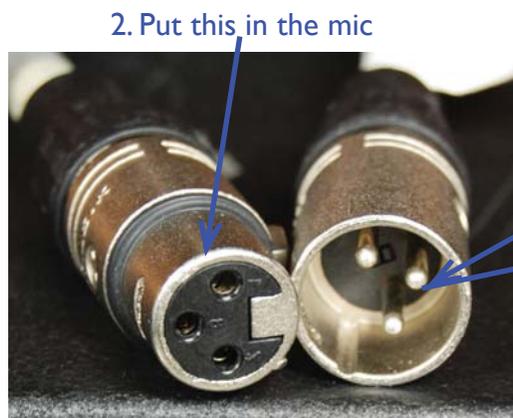
Figure 1-4 Connecting a Mic to House PA

4. Turn on the mic. You're done!
If the sound coming through the mic is too quiet or too loud, and adjust the volume on the PA Volume Control Panel following the steps in section 1.1.1.

AUDIO

AUDIO

Troubleshooting

Most mics have a on/off switch. First make sure that this switch is on. If it is on and still no sound comes through, go up to the PA volume control and increase the volume of the input you put your mic into. If you still can't get any sound, you may have a broken microphone or a bad sound cord. At that point, you can try getting a new XLR cord and repeating the connection process. If, after changing the cord, the mic still doesn't work, you will need to find a different microphone to use.

1.1.3 Using an iPod/Computer with House PA

The process of connecting an iPod/Computer to the PA system is very similar to the process of connecting a microphone. However, you will need a different kind of cable. There is a headphone jack to XLR cable in the black box. Ask Mr. Matthes before taking this cord. If that cord is not available, you will need to use a quarter inch cable with an adapter and a Direct Box. The cables are readily available in the theater, the quarter inch to eighth inch adapter is not.

Steps for using a Direct Box

If you have the cord that goes directly to the PA Input, you can skip this section.

Figure 1-5 The Sound Box

1. Grab a direct box from the sound box, normally located upstairs in the booth. Direct boxes are in the back of the top drawer.

The Sound Box
Direct Boxes are in this drawer in the back.

2. Find a quarter inch cable, a quarter inch to eighth inch adapter, and XLR cable. The adapter might not be available in EPAC. The cables are located on the landing above the sound booth or in the sound box.

Quarter Inch Cables are often in this drawer

3. Plug the quarter inch cable into the jack labeled "Input." Put the adapter on the other end and put that end in the computer.

Plug Quarter Inch Cable in here, the jack labeled "Input."

Figure 1-6 A Direct Box

Figure 1-7 Direct Box: Side View

4. Plug the XLR Cord into the Direct Box as shown. You are ready to go. Follow the directions in the next part to complete the setup.
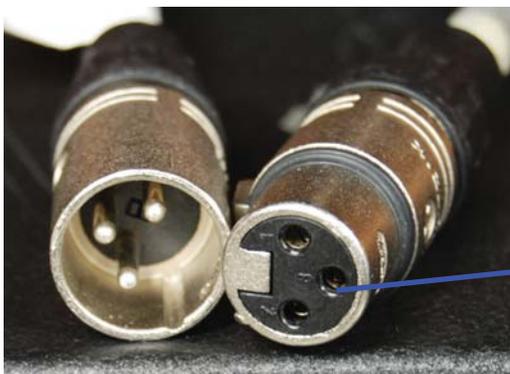
Plug this in here

Figure 1-8 Connecting XLR to Direct Box

Connecting to the PA System
If you have the cord that goes directly from headphone jack to PA Input, start here. If you do not have this cord, go back and read the steps for setting up a Direct Box.

1. Find an input close to where you will use the computer or iPod.
2. Plug in the XLR cord to the PA input.

1. Find the closest one of these.

...In here

Put this end...
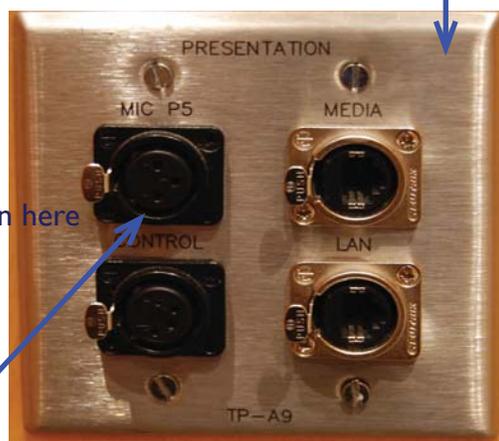
Figure 1-9 Connecting an iPod/computer to House PA

3. Turn your iPod/Computer on, turn up the volume, and you're done!

If the sound is too soft or too loud, you can control the volume directly from your device. If it is still too quiet, use the House PA Volume Control Panel to adjust the volume.

Troubleshooting

If your iPod is not making noise: Check the volume and make sure that it is playing a song that you can hear. If you still can't hear it, check the volume on the PA Volume Control Panel. If all else fails, try using a different cord or Direct Box.

If your computer is not making noise: Check the volume and make sure that it is playing an audible sound. Also make sure you have the cord plugged into the right jack. On most computers, the headphone jack is marked with an icon of a pair of headphones. If you still can't hear it, adjust the PA Volume. If that doesn't work, try using a different cable or Direct Box.

AUDIO

1.2.1 Sound Board Overview

The EPAC sound board has many components, but only a few are necessary for basic operation.

Sound Board Control Overview

This only covers the relevant controls for quick setup. If you need more information on a particular component, go to Section 2.2 "Board Basics."``

Central Mixing Area
These faders are not permanently assigned to any one channel.
They change depending on what set is selected to display. See Section 2.2.

Touch Screen
Displays information and controls for selected channels

Channel Controls
See Section 2.2
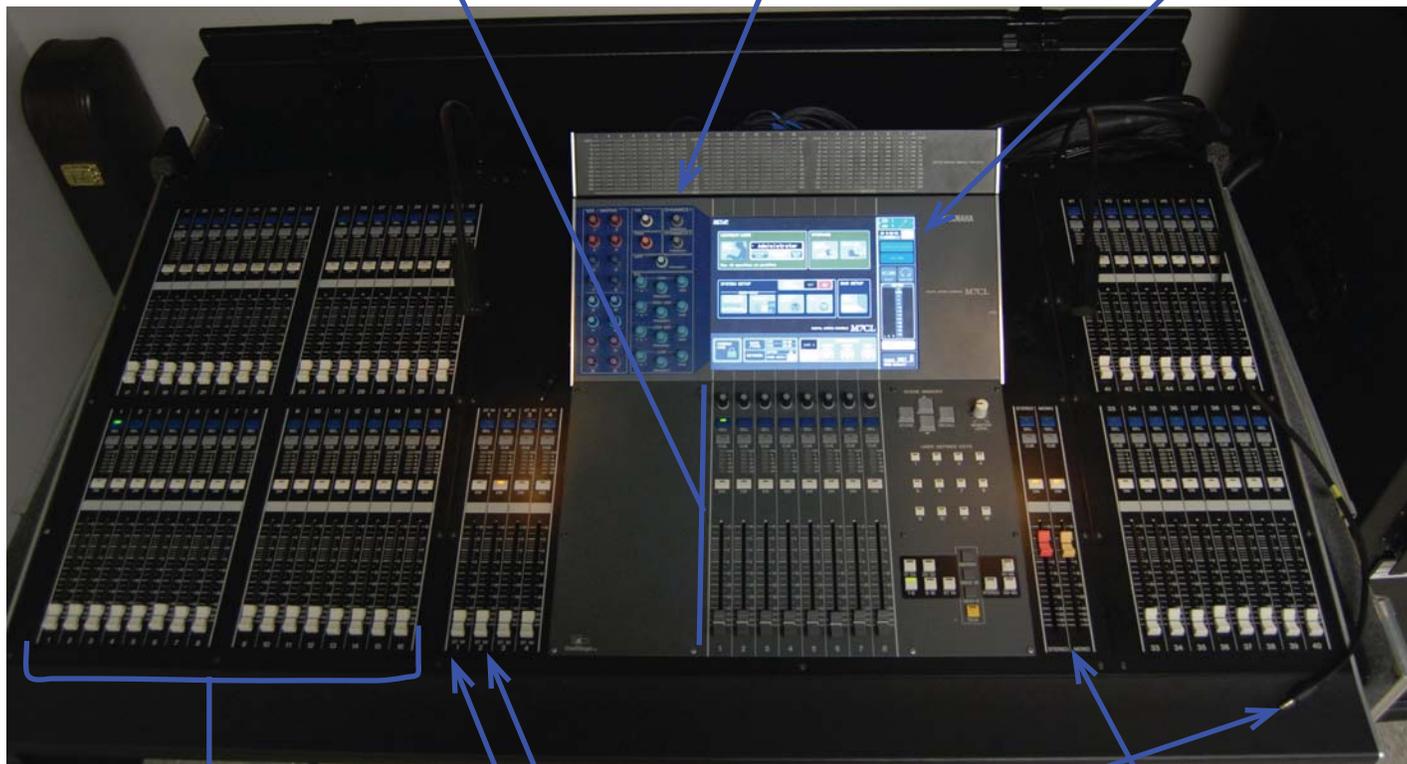
Faders 1-16
These are the wireless mic channels.
You control volume with these.

The iPod Connection
Fader for Stereo 2 - The iPod connector

Fader for Stereo 1 - The CD Player

Stereo Master (Red) and Mono Master (Yellow) Controls Overall Volume going to Stereo and Mono stacks respectively.

Figure 1-10 Sound Board Control Overview

AUDIO

Select Button (The Blue Button)
Turns Green when Channel is Selected.
Used to make changes to channel settings

Volume Meter
Lights up when sound is coming through
Lower bars means softer sound. Colors change as sound gets louder. Green lights indicate a softer sound than orange lights.

On Button
If the light is orange, the channel is on.

Fader (Or Volume Control)
The higher the white slider is, the louder the sound.

Channel Number
The number used to identify the channel

Figure 1-11 Sound Board Fader Detail

AUDIO

The touch screen controls are not necessary for basic operation, and will only be referenced briefly in this section. If you need to know more about the controls, see Section 2.2 "Board Basics."

1.2.2 Using a Wireless Mic

> ⚠️ **Note**
>
> You can use a wired mic with the sound board, but the setup is more complicated. To learn more about connecting wired mics to the sound board, see Section 2.1 "Patching."

There are two types of wireless mics in EPAC. One is the normal handheld mic and the other is the over the ear or clip on mic pack. The process for using these two mics are about the same. For most uses, a handheld mic is sufficient.

Using a Wireless Handheld Mic

Figure 1-12 Sound Rack Power Switch

1. Turn on the Sound Board. To do this, press this switch, located on the cart right next to the sound board.

2. Grab a mic from the Sound Box.

Batteries are in this drawer

Handheld mics look like this.

Figure 1-13 Handheld Mic

Mics are in this drawer.

Figure 1-14 Sound Box

3. Check to see if the mic has batteries. Do this by unscrewing the mic case or holding the power button to see if the mic turns on. If it has no batteries, insert 2 AA batteries as marked.

Grab Here   And Here   Then Twist to unscrew

Figure 1-15 Unscrewing a Wireless Mic

Batteries are on the other side of the screen.
It takes 2 AA batteries. You can get more from the sound box.

4. Put the mic back together. Make sure the hole for the screen matches up with the screen. The mic won't actually let you put the case back on if the hole and screen aren't aligned. Then turn the mic on.

The Power Button
Located on the bottom of a wireless handheld mic.
Press and hold to turn on if mic is off.
Press and hold to turn off if mic is on.
Press once quickly to mute or unmute

Figure 1-16 Handheld Mic Power Button

5. Find the Mic number. This is the number written on the white sticker stuck somewhere on the mic. If there is no white sticker, look for something that says "RF-#" where "#" is the number of the mic (i.e. 1). Note that if you are using Mic 1 you cannot use the same numbered wireless mic pack. Use one mic on each number.

6. Find the channel number on the sound board corresponding to the mic number that you found in step 5. For example, if you have mic number 1, you would find channel 1 on the sound board. Press the on button if the orange light is off. If the light is on, you don't have to press anything.

7. While talking into the mic, move the slider to a position where you can comfortable hear yourself talking. For most people, this happens around -20 to -15 dB on the board with default settings.

AUDIO

AUDIO

This channel has sound going through it. The normal speaking volume should stay in this green-first orange range.

Move the slider to around here for most uses.
You are free to adjust it lower or higher depending on your needs.
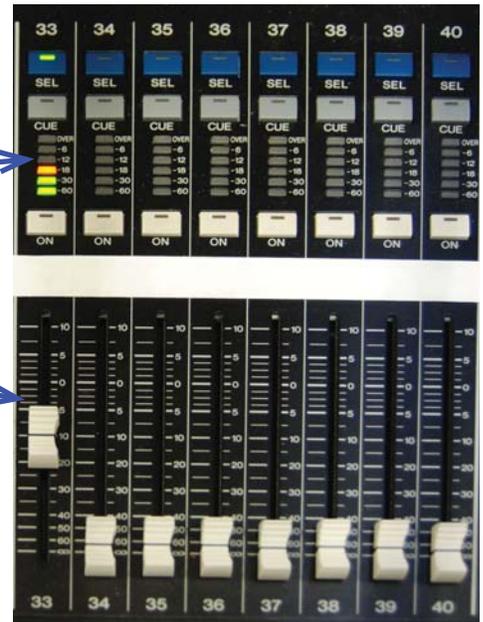
Figure 1-17 Adjusting Faders

8. You are ready to use the mic. Take it on stage and try it out!

Using a Wireless Mic Pack
The steps for a wireless mic pack are only slightly different from the steps for a handheld mic.

1. Turn on the board, as detailed in step one of "Using a Wireless Handheld Mic."

2. Grab a mic pack from the sound box.

Mic Packs look like this.

Batteries are in this drawer

Figure 1-18 Mic Pack

Mics are in this drawer.

Figure 1-19 Sound Box

3. Pop open the battery compartment. If the mic does not have batteries, put two AA batteries in as marked.

Push the black latch on the cover of the compartment to open it.
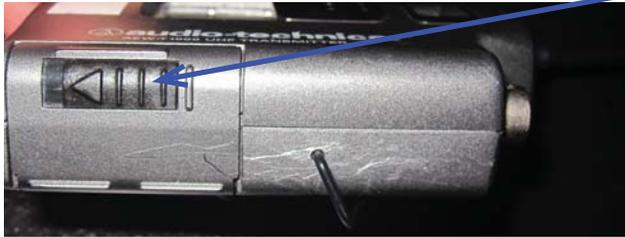
Figure 1-19 Mic Pack Battery Compartment

4. Connect a headset to the mic as shown. You can use a lav mic or a headset.
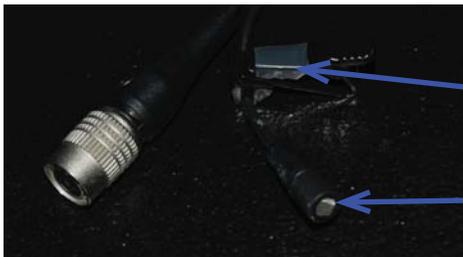
Use this clip to attach the mic to your shirt.

Plug in Mic here.
Carefully push the connector in until you hear or feel it click.

Figure 1-21 Pack Connector

The Lav Mic

Figure 1-19 Lav Mic

When you're done, it should look something like this.
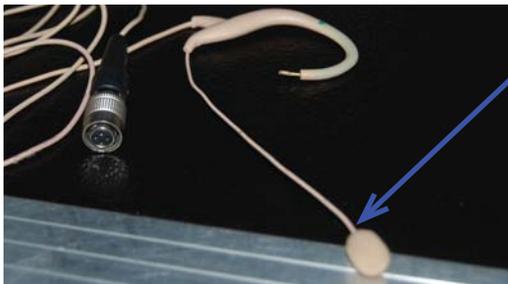
The Headset Mic
Be especially careful with this part of the mic.

Figure 1-20 Headset Mic

Power button
Once connected to a mic, press and hold to run on. When you're done, press and hold to turn off.

Figure 1-22 Connecting a Headset

5. Put the mic on carefully. For lav mics, just clip the mic onto a collar. For headset mics, carefully place the mic over the ear. Mic tape is available in the second drawer of the mic box if the mic does not stay on. Run the cable of the mic down the back of your shirt to prevent the wire from catching on a corner and breaking. Turn the mic on.

6. Go to step 5 of "Using a Wireless Handheld Mic" and follow the directions to the end.

AUDIO

AUDIO
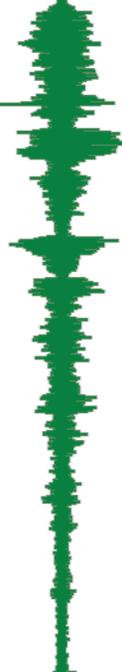
Troubleshooting Wireless Mics

The mic is not picking up sounds / Why Can't I Hear Anything?

First, check to see if the mic is on or needs new batteries. If the mic is on, check to see it it's muted. You can tell that the mic is muted by looking for a small "Mute" displayed next to the battery status on the mic panel. To un-mute the mic, briefly press the power button.

If the mic is un-muted and powered on, check the fader on the sound board. Make sure the on button over the channel you're using is on (orange light is on). If that does not solve the problem, check the

Stereo/Mono faders. Make sure that they are on and that the sliders are at 0 dB.
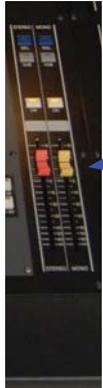
Make sure these are on and at 0 dB

If the Stereo and Mono Faders are on and you can see green lights above the fader, then you will have to patch the channel to the Stereo or Mono output. In regular English, this means that the audio needs to be told where to go. Follow the steps below to do this.

Figure 1-23 Stereo and Mono Faders

Patching Faders to Stereo/Mono

1. Press this button if your mic number is between 1 and 8
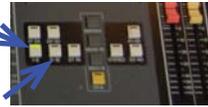
Or Press this button if your mic number is between 9 and 16

2. On the Touch Screen, find your channel number. Press this small section in the column under your channel

3. This screen will pop up. Press the Mono and Stereo buttons under your channel number. They should light up. Press the "X" in the top right corner when you are done.

Figure 1-24 Stereo/Mono Patching

If the fader does not have any lights above it when you are talking into it, you will have to adjust the head amp. Follow the steps below to do this.

And if even the head amp settings fail to change anything, you have a broken headset or misconfigured mic. Just get a different handheld mic or mic pack and headset and start again.

Adjusting Head Amp - The Basics

1. Press the Select Button for the channel you want to adjust. It will turn green.

2. Turn this knob, labeled "HA" to the right to increase head amp.
Turn it to the left to decrease head amp.

Figure 1-25 Head Amp Basics

I've tried everything and nothing I do works!
First, don't panic. Next, calmly tell Mr. Matthes so someone can come help you trouble shoot the sound system.

AUDIO

AUDIO

1.2.3 Using the CD Player

The Sound Board is by default connected to a CD player. You can play normal audio CDs and MP3 CDs on it.

1. Turn on the sound board by flipping this switch on the rack next to the board.

This switch also turns the CD player on.

Figure 1-26 Sound Rack Power Switch

2. Load a CD into the CD player and press play.

Press Eject to Open and Close Tray   Play

Figure 1-27 Loading the CD Player

3. On the sound board, find the channel marked "ST IN 1" for Stereo Input 1. Push the on button if it is not glowing orange already. Slowly move the fader up until the CD player's sound is comfortable to listen to. That's all there is to it.

Stereo 1

Press this if it's not orange already.

Slide this up until you can hear the CD player comfortably
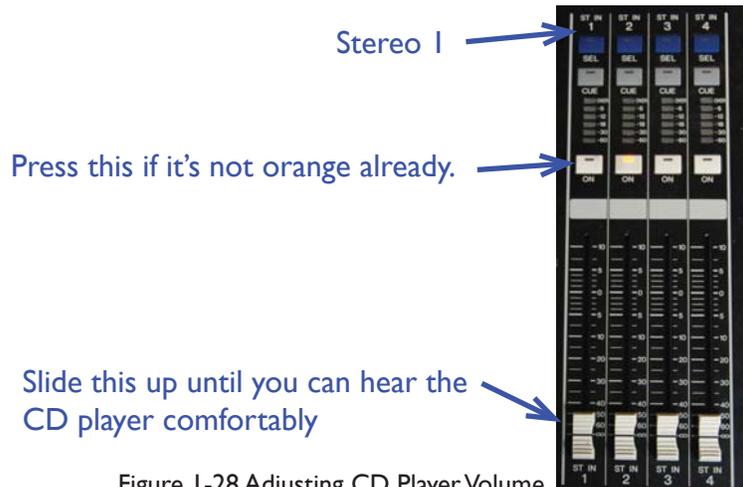
Figure 1-28 Adjusting CD Player Volume

CD Player Controls

Eject   Figure 1-29 CD Player Controls

Play/Pause Stop Scan Backwards Fast Forward   Track Seek
Turn Right to move forward
Turn Left to move backward
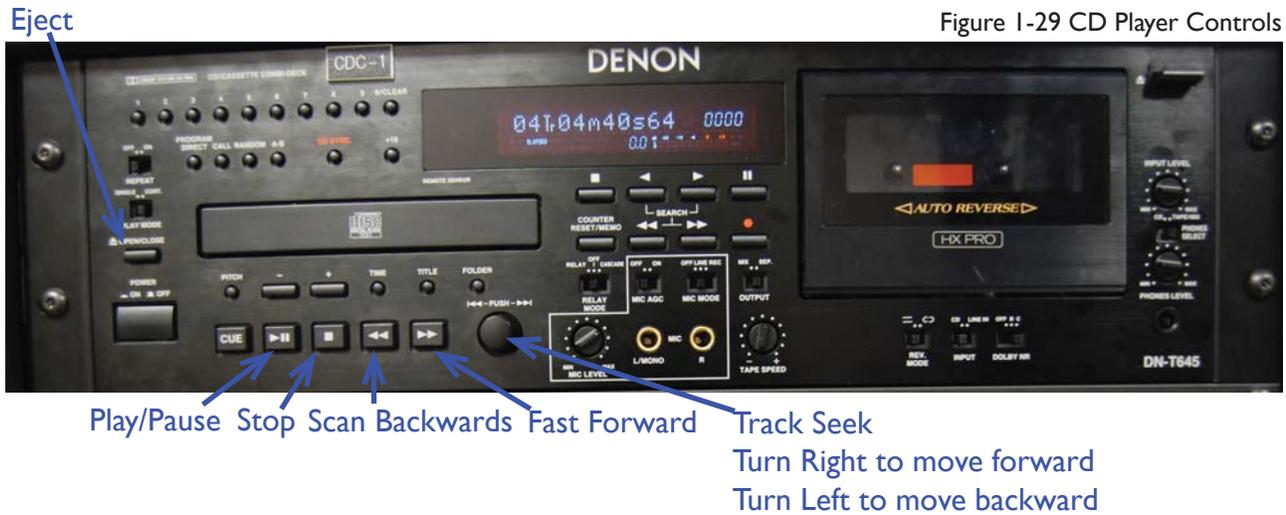
Troubleshooting the CD Player

As always, make sure everything is turned on. If ST IN 1 is not showing any green lights (meaning sound is coming through), make sure that the CD is playing. If the CD is playing and nothing is coming through, make sure the CD player is plugged in to the right place. See Section 2.2.7 "Moving the Board" for more information.

AUDIO

1.2.4 Using an iPod/Computer

Possibly even easier than using the CD player, using an iPod or computer with the sound board is simple.

1. Find the eighth inch to stereo XLR cable, shown below. The connector looks like the connector on your average pair of headphones.

The iPod/Computer Eighth Inch Cable

Figure 1-30 The iPod/Computer Input

2. Plug the connector into your iPod or the headphone jack of your computer.

3. Find the channel labeled "ST IN 2." Play a song. Turn your iPod/computer's volume up until you see the volume meter on ST IN 2 reach orange. If the song you're playing is too soft to reach this level, don't worry. Just leave your device at the maximum volume.

Stereo In 2 - The iPod/Computer input

Adjust the volume on your iPod/computer until the meter shows an orange colored bar here.

4. Move the slider up until you can hear your music through the speakers at a comfortable volume.

Once the device volume is set, move this up until you can hear your music through the speakers at a comfortable volume.

Figure 1-31 Stereo In 2

AUDIO

Troubleshooting the iPod/Computer Input

As always, make sure everything is turned on. If ST IN 2 is not showing any green lights (meaning sound is not coming through), make sure that the device is playing something. If you're using a computer, make sure that it is un-muted. If after checking everything, you still cannot make any noise, the cord may have gotten unplugged. See Section 2.2.7 "Moving the Board" for more information.

If the volume is still too quiet even at max volume, you may have to adjust the head amp for ST IN 2. Follow the steps demonstrated in "Troubleshooting Wireless Mics" in Section 1.2.2.

AUDIO
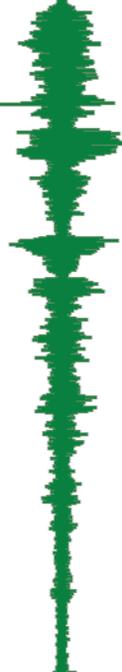
1.3.1 Light System Overview

EPAC's lighting system has two main components: the Light Board and the House System. These two systems share the same circuitry, and sometimes they conflict with each other. Only use one system at a time to prevent these conflicts.

House System
The easiest system to use, the lights, both on stage and off stage can be controlled with this simple system.

The Stage Manager Rack
This rack is located back stage left. It has all of the controls for stage and house lights in one place.

Enable/Disable Switch
Can disable the House System completely. Only do this if you're using the light board and encounter problems. A red light will turn on above the keyhole if the system is disabled.

Individual Work light Controls
You won't ever have to use these in normal use.
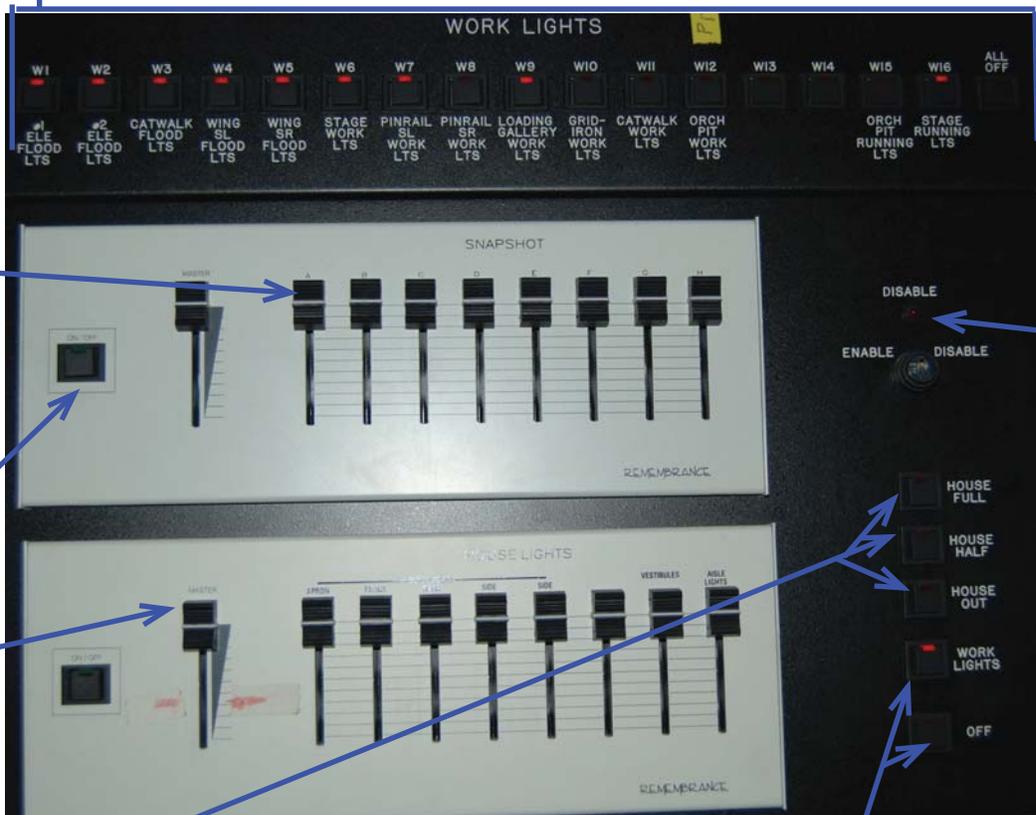
Snapshot
Brings on stage lights up. Each slider controls a different set of lights.
Turn Snapshot on by pressing the on/off button.

House Lights Panel
Not Used.

Figure 1-31 The Stage Manager Rack

House Light Controls
They act as marked.
House Full - House Lights turned up as bright as they go.
House Half - House Lights are dimmed.
House Out - House Lights are turned off.

Work light Controls
They work as almost marked.
Work Lights - Turns work lights on.
Off - Somewhat misleading, this button only turns work lights off, not all lights.

LIGHTS

Booth Panel

The panel in the light booth has the same controls as the Stage Manager Rack, minus the Individual Work light Controls. You can use Snapshot from here as well.

Snapshot
See Note on the Stage Manager Rack

Enable/Disable Switch
See Note on the Stage Manager Rack
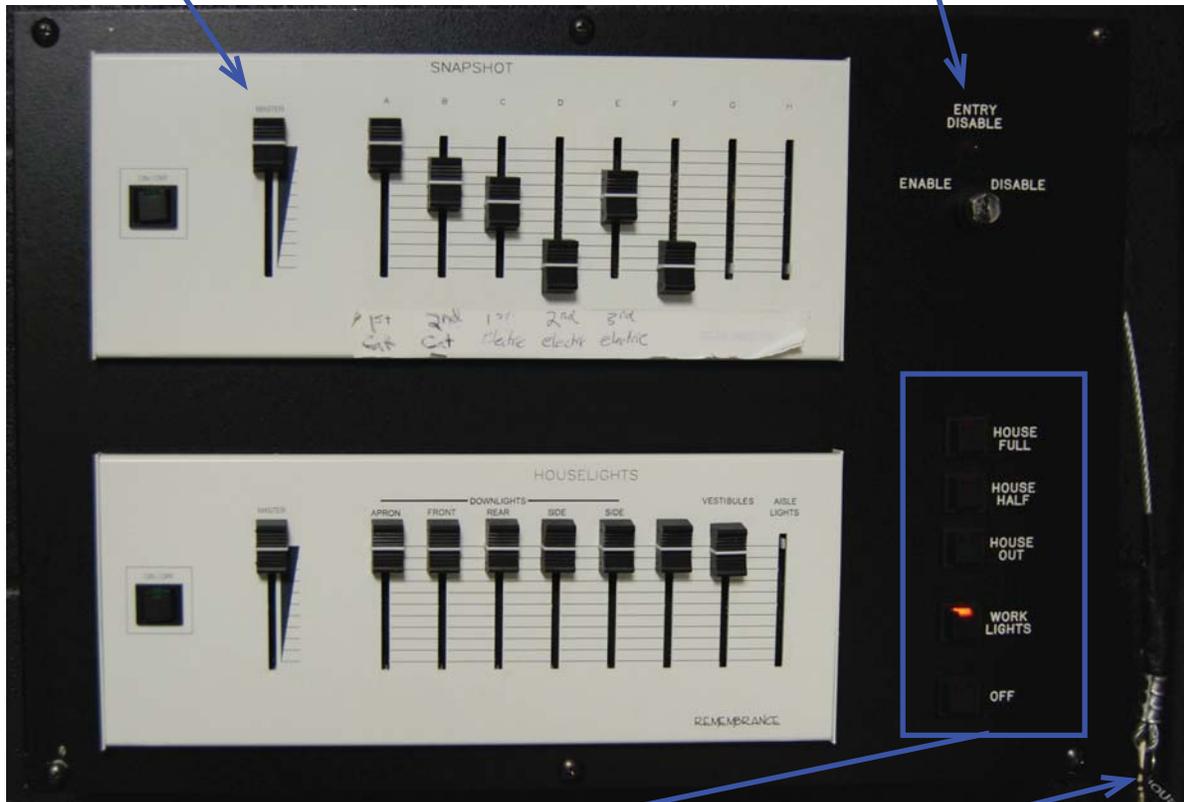
Figure 1-32 The Booth Panel

Light Controls
See notes on the Stage Manager Rack

Enable/Disable Key
Used to Enable or Disable the system.
Goes in the keyhole above the Light Controls

Wall Panel

Easily accessible panels give control over house and work lights.
These are located on the wall near the doors of the theater.
There are 5 buttons on these panels: House Full, House Half, House Out, Work Lights, and Off. See the notes on the preceding page for descriptions on what these buttons do.

Figure 1-32B Wall Panel

LIGHTS

The Light Board

The diagram below highlights the areas of the board needed for use outside of a show. The only parts you need to know about to get light on stage are the Submasters and the Grandmaster. What you get on stage at any given time will change depending on what show is opening or what show has recently closed.

If you are doing a show, you will use more of the board. See Section 3 "Lights" for more detailed information.

Grandmaster
Controls the maximum brightness for lights.

Submasters
Used to quickly control a preset group of lights.
These change with every show, so ask someone who was involved in the last production to find out which submaster controls which lights.
Moving the slider higher increases the light brightness.

The Wheel
If channels are selected, it can be used to quickly adjust the level of those channels. Note that the right wheel doesn't do anything.

LIGHTS

Figure 1-34 The Light Board

Channel Select Button
Used to select a particular channel or a set of channels.

Keypad
Used for entering channel numbers or levels.

This screen will be shown on the left monitor on the light board. It shows channel numbers (in grey) and the levels (as a percent of maximum output) underneath the channel number in yellow. Currently all lights on stage are off

Figure 1-35 The Main Light Board Display

This screen will be shown on the right monitor on the light board.
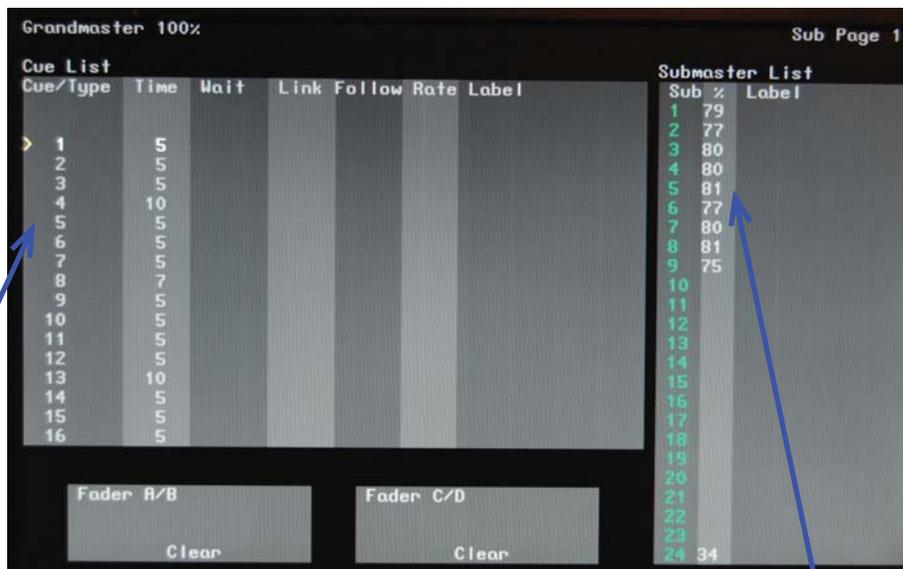
Figure 1-36 Secondary Light Board Display

Cue List
If there are any cues written, the next cue in line will be shown.
This part of the screen is not needed for non-show use.

Submaster List
Shows all of the submasters
and the level that they are at
as a percentage of maximum
output.

LIGHTS

1.3.2 Turning Stage Lights On

There are two main ways to turn on lights. You can use the house system or the light board. The light board offers more control while the house system allows for quick and easy setup.

Using the House System

1. Find the Stage Manager Rack or the Booth Panel. Press the On button next to the Snapshot Panel. The button will turn green.

Push This
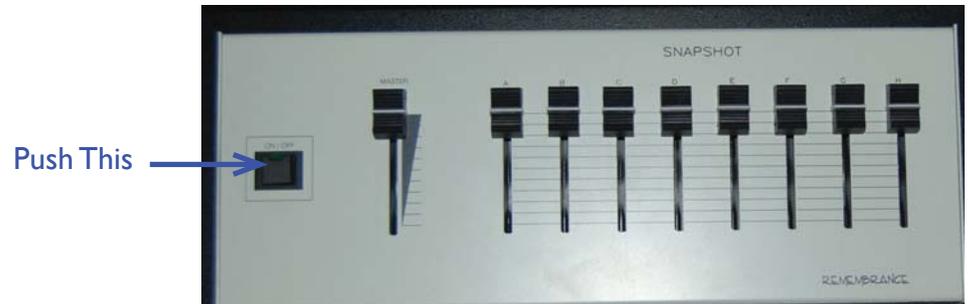
Figure 1-37 Snapshot

2. Now you should have light on stage. That's it. One step and done. From here, you can move the sliders around to get the light you want on stage. Remember that the Snapshot turns on rows of lights and is not easy to selectively control.

Using the Light Board

1. Turn the light board on. The power switch is behind the board, so feel around until you find it.

Power is located back here

Figure 1-38 Power Switch

LIGHTS

2. Move the Grandmaster up.

Grandmaster should be at this position

Figure 1-39 Grandmaster Position

3. Move the submasters up. Each show has a different setup so the submaster assignments will change. Talk to the light designer and board operator from the last show to determine the submaster assignments. In general, submaster 24 controls the house lights.

Move these up.

House Lights normally controlled by this submaster

Figure 1-40 Submasters

Troubleshooting

If you can't get lights to turn on, take a look at the sliders and make sure that they are up to the top. If you're using the light board, check the Grandmaster first. If you're using the Snapshot, make sure the on button has a green light above it. If it doesn't, press the button.

If there are some lights that aren't turning on or off on stage, they may not be plugged in, as they were not needed for the most recent show.

If you are using the light board and some house lights are not turning off, just hit "House Out" on one of the House System panels.

What if I want to control the lights more selectively?
If you need more control, read Section 3. 4 "Turning Lights On" for information on how to control lights from the board. You can always ask a light tech for assistance if you need it.

LIGHTS

1.4.1 Com Overview

The com system is used for tech crew communications. There are 4 com channels: A, B, C and D. The channels have different uses.

Channel	Function
A and B	Communicates with Green room and Ticket Office. What you say on this channel could potentially be heard by anyone in the green room or ticket office. Usually only the Stage Manager had access to these channels during a show.
C	Used for communications between the light tech crew.
D	Used for backstage communications with deck captains.

Table 1-2 Com Functions

Connecting coms to these channels is a matter of plugging in the com to that channel using one of the com panels scattered around the theater. There are 20 panel locations, but not all of them are conveniently located. The Stage Manager's Com Panel is in the sound booth.

Sound Booth - Middle Panel on the Right Wall	Sound Booth - On the left wall.
Light Booth - Center under windows	House Left Upper Landing
House Right Upper Landing	Middle of House - Middle Panel
House Right Floor Panel	House Left Floor Panel
Stage Right Downstage Panel	Stage Left Downstage Panel
Stage Right Upstage Panel	Stage Left Upstage Panel
Pit - House Side Wall Center	Pit - Costume Shop Wall Left
Pit - Costume Shop Wall Right	Catwalk 1 (Closest to Stage) Center
Catwalk 2 (Farthest from Stage) Center	Catwalk - Stage Left
Costume Room Racks	Video Room Panel

Table 1-3 Com Locations

Com panels look like the picture below and will always say "Intercom" next to the four jacks.
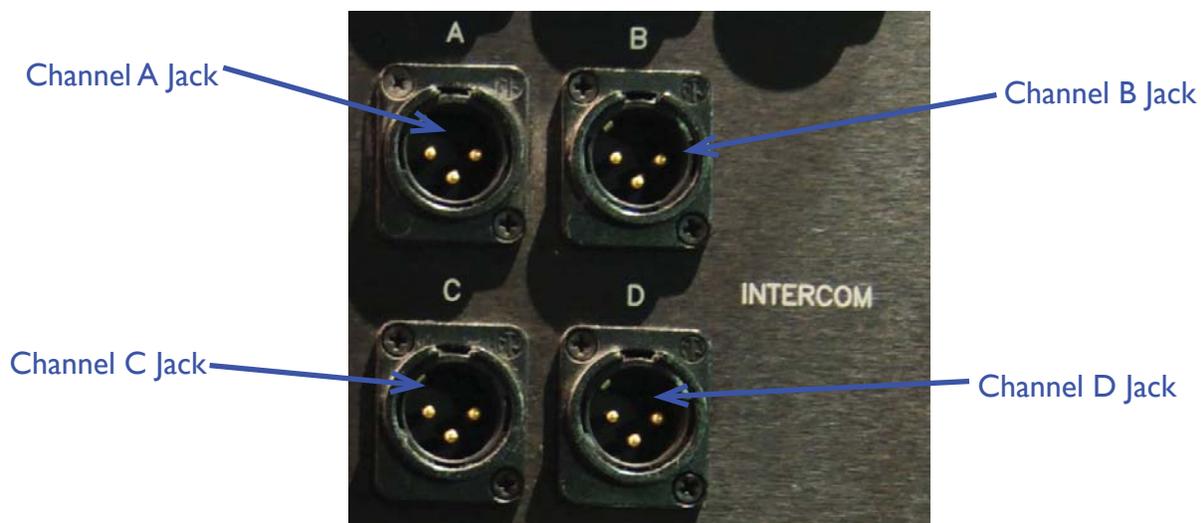
Figure 1-41 Com Panel

Com Packs

There are two types of com packs. One type can only utilize one channel, while the other can use two channels at once.

Single Channel Com

Single Channel Com Pack Back

Input Jack
Plug in the XLR cord here.
If you are chaining coms to-
gether, the XLR cord running
out of the first com plugs in
here as well.
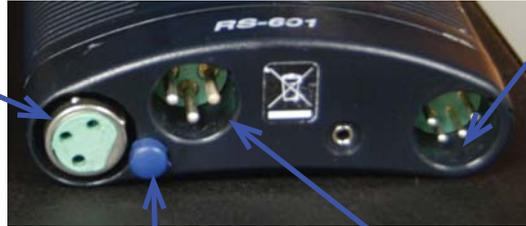
Headset Jack
Plug in a headset here.

Figure 1-42 Single Channel Com Back

Cord Release Button
Press and hold this button while pulling
out the XLR plug to disconnect the
Com from the cord.

Pass-through
You can chain coms together using this port
and an XLR cable. The other com will be on
the same channel as the original com.

Single Channel Com Pack Front

Talk Button.
Press and hold to turn on your com mic.
When this is on, anything you say can be heard
by others on the same channel.
Double Press to lock the mic on.
Press again while locked to unlock the mic.

Talk Indicator Light
Turns green when the mic is on.

Volume Control
Turn right to increase volume.
Turn left to decrease volume.

Call
Press to make all call lights on
the same channel light up. Used
to get the attention of other
people on com.

Call Light
Turns bright red when someone
presses the call button.

Figure 1-43 Single Channel Com Front

COM

Two Channel Coms

These coms are confusing because the connectors do not clearly indicate which talk channel is which. For example, you might be plugged into channels C and D but the buttons say Talk A and Talk B. For this reason, these coms are not often used, not to mention that they create huge tangles of wire. Test each channel by talking into each individually to someone else.

Two Channel Com Pack Back

Input Jack
Plug in the two channel connector shown below to this jack.

Headset Jack
Plug in a headset here.

Figure 1-44 Two Channel Com Back

Cord Release Button
Press and hold this button while pulling out the plug to disconnect the Com from the cord.

Two Channel Pass-through
Chaining these coms requires a special connector that is not readily available in EPAC, but like single channel coms, they can be chained together.

Two Channel Com Connector

Figure 1-45 Two Channel Com Connector

These ends connect to normal XLR cables.

This end goes to the input jack of the com pack.

Two Channel Com Pack Front

Talk Buttons.
Functions the same as the single channel packs. Talk A lets you talk on the channel plugged into the "A" cord on the connector, and likewise for Talk B. The cord might not indicate what connector corresponds to what talk button.

Talk Indicator Light
Turns green when the mic for the corresponding channel is on.

Volume Control
Knob on the left controls Talk A. Right knob controls Talk B.

Call
Press to make all call lights on the same channel light up. Used to get the attention of other people on com.

Call Light
Turns bright red when someone presses the call button on the corresponding channel.

Figure 1-46 Two Channel Com Front

The Stage Manager's Panel

This panel allows the stage manager to talk and listen to all channels as he or she wishes. It also contains controls for the com system as a whole.

Headset Jack
You can plug in a headset right in there or use the extension cord in the sound cart to allow the use of the panel from more than 2 feet away.

Mic On
Press once to turn the headset mic on.
Press while on to turn the mic off.
The green light will light up while mic is on.

All Talk
Push and hold to talk on all channels.

Listen Buttons
Press to hear what is being said on this channel.
Press while on to turn off listening.
The green light will light up while listening is on.

Volume Control
Controls the volume of all channels.
Turn right to increase volume, left to decrease.

Power
Make sure it's switched on.

Figure 1-47A Stage Manager's Com Panel

Program Feeds
The Program Feed is the sound that is coming out of the sound board. It allows people on com to better hear the show.
You can adjust the volume of the feed for each channel with these controls.
Turn the white knob left to decrease the feed volume, turn right to increase the volume.
You can disable the feed for a channel by flipping the switch to off.

Talk
Push button on each channel to talk.
Talk is automatically locked for each channel and will light up to indicate what channels are active

Announce
Push and hold to talk through overhead speakers in green room, costume shop and workshop. Used for 30/15/places calls.
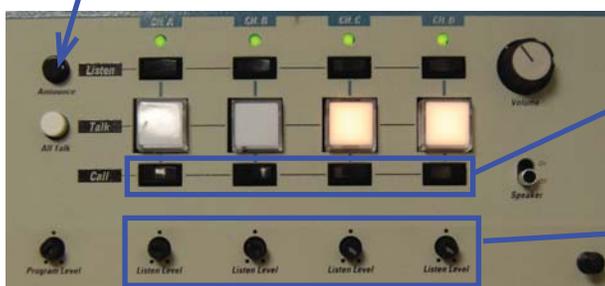
Call
Call the corresponding channel.
When someone calls, the talk button for the corresponding channel will blink.
It will not change colors.

Listen Level
Controls the volume of each channel individually.

Figure 1-47B Stage Manager's Com Panel Detail
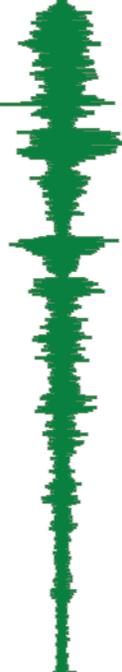
Green Room Wall Panel
This panel allows the green room to communicate with the stage manager.

COM

Call Light
Turns on when someone is calling.

Channel Select
Should always be set to A. Switches between com channels A and B.

Call
Calls the channel currently selected.

Com Volume
Turn right to increase volume, left to decrease.
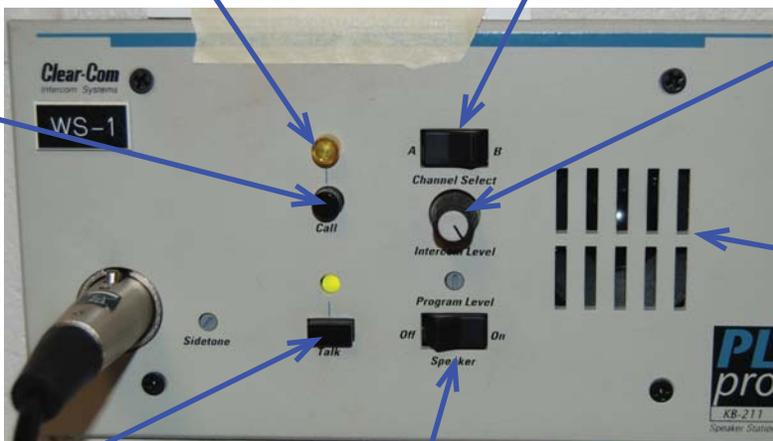
Speaker
Com conversations can be heard from this if it's on.

Figure 1-48 Green Room Wall Panel

Talk
Push to enable talk. You do not have to hold it. The light will turn green if the panel is ready for talk. You actually talk into the phone shown below, so don't start talking to the panel and expect a response.

Speaker On/Off Switch
Turns the speaker on or off. Should be on so that the stage manager is heard by all in the green room.

Phone Talk
Push and hold this button to talk.

1.4.2 Connecting Coms

1. Get some XLR cables, a com pack and a headset. XLR cables are available on the landing above the sound booth. Com packs and headsets are available in the bottom drawer of the light booth cabinet.

Coms are in this drawer

Figure 1-49 Com Cabinet

2. Find a com panel that is good for your position.

3. Plug the XLR cable into the jack corresponding to the channel you want to talk on. Put the other end into the Com input jack.
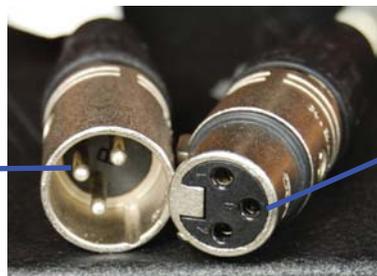
Put this in one of these
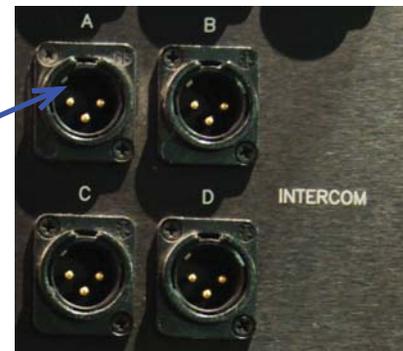
Put this in here

Figure 1-50 Com Connection

4. Plug in a headset. The com is ready for use.

Put this connector in here

Figure 1-51 Headset Connection

COM

Troubleshooting Coms

The com system in EPAC is infamously finicky. It has been known to suddenly drop the volume of all coms on a particular channel and the some time later restore full volume. The stage manager rack has restarted itself during a performance and sometimes it will click and pop randomly. Most of the time these problems don't occur.

If you cannot hear anyone on com, check what channel you're on and what channel they're on. If you are on different channels, you cannot hear people on a different channel. Make sure your volume is at a reasonable level and that your headset is securely plugged in. If you still can't hear anyone, try using a different com pack.

If people cannot hear you, check your talk button and your headset connection. If the talk button does not light up when you press it, try using a different com pack. If it does light up, but you still cannot be heard, check your volume and make sure it is turned up to a reasonable level. If that does not work as well, try using a different headset.

If the coms are crackling and popping, check the connections between the com and the wires. Make sure the connections are secure. It's hard to pinpoint what the source of crackling and popping on com is, so have everyone check their connections. It could also be the system acting up, and that will eventually resolve itself.

COM

1.5   Video

EPAC does not currently have any permanent video equipment. Please see Section 4 "Video" for information on how to use the video room and how to use the video ties.

VIDEO

2 AUDIO

AUDIO

2.1 Patching

2.1.1 What is a Patch?

A **patch** is a connection of two devices, such as the connection between a microphone and the sound board. A patch is often not a direct connection, but rather a series of connections. When someone says "patch this to the sound board," they mean that you must complete the connection from the microphone to the board. There are 58 microphone jacks and 48 inputs to the board. Patching allows you to be flexible in how you use these connections

Think of the sound as a train, and the mic and sound board as two different stations. The mic cables are the tracks. The train wants to go from one station to the other, but the tracks are not built from one station to the other (the patch is incomplete). You must build the tracks (plug in the mic cable) so that the train can reach the correct station. Patches are not hard wired. They are made to be flexible and change with every show. In terms of our analogy, the tracks get ripped up after the train is no longer needed.

In EPAC, the "stations" are often a microphone and the sound board. You plug in a microphone on stage into a wall panel. However, the panel does not go directly to the sound board. You have to go down to the costume shop and rout the signal from the wall panel to the board. The following section will guide you through this process.

Maps of the EPAC inputs and the standard patch for EPAC are available in Section 2.6 "Audio Appendix."

2.1.2 Patching Mics and Direct Inputs

The most common patches you will make are mics, on stage and in the pit, and direct inputs using direct boxes, often for pianos and basses. The act of patching a mic to the sound board is not hard, but keeping track of what cord goes where can be very confusing. While patching, it is good practice to keep a log of the patch setup, with notes about what mic goes to what wall panel input to what board channel. The process for patching both mics and direct inputs is the same.

1. Gather your mics and other equipment and choose what board channels will be used by each device. Knowing what board channels will be used in advance will save you a lot of time and frustration. Write this information down.

2. Go to the location where you will connect the equipment. This should not be hard since there are wall panels all over the EPAC stage and pit.

3. Plug in your mic or direct input to an input on the wall panel. Inputs have "Microphones" written above them. Write down what you plugged in where next to the channel you want it to go to.
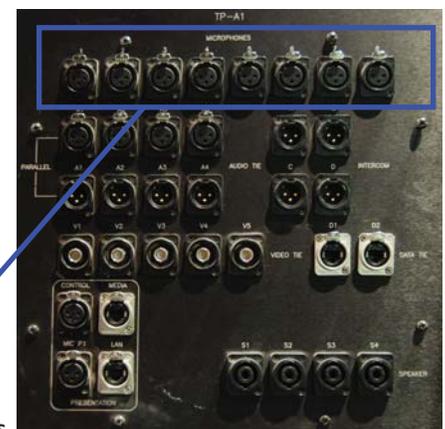
These are the Inputs.

Figure 2-1 Wall Panel Inputs

4. Go down to the costume shop and find the black racks in the back of the costume shop.

The racks are back here.

Figure 2-2 Costume Shop Racks

5. In the middle rack you will see a bunch of jacks. The top group of jacks are the microphone inputs and are labeled as such. They correspond to the wall panel inputs. The group of jacks with all of the wires plugged into them are the sound board inputs.

6. Take the cord that is plugged into the channel you want to patch something to. Plug that cord into the jack in the upper group corresponding to the number of the Microphone input you plugged the mic into. Now the signal from the microphone you patched should be going into the sound board.

These are the Microphone jacks. They correspond to the numbers written on the wall panels.

These are not used. See section 2.1.3

These are the board inputs, also called the "Mic Split Inputs". They correspond to the channels of the board. So input 17 corresponds to channel 17 on the board. Put the other end of the cord into a Microphone jack to relay that signal to the board.

For example, if you want a microphone plugged into Microphone input number 28 to go to board channel 17 you would pick up the cord plugged into Mic Split Input 17 and plug the other end of it into Microphone number 28.

Inputs 1-16 are reserved for the wireless mics. See Section 2.1.3.
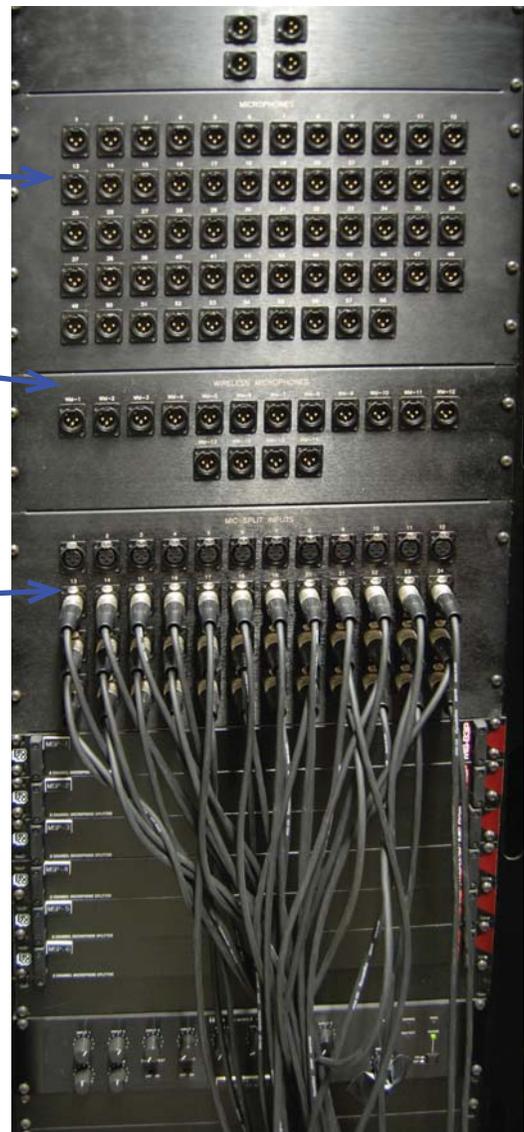
Figure 2-3 The Patch Rack

AUDIO

AUDIO

Troubleshooting Patches

If you are having trouble getting a mic to connect through to the sound board, go back and inspect the wiring. Make sure everything is plugged into the correct locations and consult your notes to make sure everything is going to the right place. Also make sure the back of the board has all of the correct wires plugged into it, see Section 2.2.7 "Moving the Board" for information on setting up the back of the board. If everything is wired correctly but you are not getting sound, check the mic to see if it is switched on and then check the head amp settings and see if your mic needs phantom power. See Section 2.4.1.6 to setup phantom power. You can try using a different cord if none of these options work.

2.1.3 Wireless Mics

The 16 permanent wireless mics are connected directly to the board. They occupy channels 1 through 16 on the board. This is why there are no cords running from Mic Split Inputs 1 through 16, since the wireless mics are patched directly from the wireless mic rack in the sound booth. You can add more wireless mics by patching them into the board through the Microphone inputs on the wall panels or you can patch them right into the board. The wireless mic systems you rent may have different placement requirements, so choose the patching method that best suits your placement needs.

2.1.4 Direct to Board Patching

You can run mics directly into the board. The board is setup so that the numbered cables running into the back of it correspond to the Mic Split Input of the same number. This is useful if you need a wired god mic.

1. Get a wired mic and an XLR cord.

2. Unplug the cord connected to the channel you would like to put your mic in. Make sure to plug this cord back in when you are done with the mic. That's it!

Board inputs are labeled with "Input" written above them. It can be hard to read the numbers, so bring a flashlight along and double check that you are disconnecting the right cord. These particular inputs are the wireless mic inputs.

Figure 2-4 Back of the Board

The wires have the number of their proper input/output written on them in case you forget where the go. They are color coded in sets of 8: red are channels 1-8, yellow are 9-16, blue are 17-24, black are 25-32, white are 33-40 and purple are 41-48.

2.1.5 Audio Ties

Audio tie lines are connections that can be used for any purpose. They can serve as com lines for the video room or as additional inputs if the Microphone inputs are not available. The process for connecting devices using audio tie lines is almost the same as described above, but the audio tie lines do not go anywhere by default. They can be used to patch additional microphones into the board by running a cable from the audio tie in the rack to the proper Mic Split Input. The audio tie line patch rack is located to the right of the Microphone to Board patch rack. For information on where each audio tie line is accessible, see Section 2.6 "Audio Appendix."

In general, audio ties are used mainly for the video room com line, and feeds to the video room as described in Section 4.1.4 "Setting up Video Com" and Section 2.3.4 "Feeds for Video." The video com lines are based on tie lines A59 and A60. There are connections from A59 to A33 and from A60 to A41. Those are the default patches for the video com system. Tie lines A67-A70 are reserved for the audio feeds sent to the video room.

Note that not all tie lines end up in the costume shop basement. There are a few that go directly to the booth or to the video room. See Section 2.6 for details.

AUDIO

2.2 Board Basics

2.2.1 Control Overview

Normal faders had their operations described in Section 1.2.1 "Sound Board Overview" and will not be detailed again in this section. Many screens will not be shown in this overview and will be shown as-needed.

The Centralogic Faders

These are the grey faders in the center of the desk, as shown in Figure 2-5. These can be used to control all the 48 individual channel faders in blocks of 8, as well as many functions that do not have permanent physical controls. The navigation keys are used to choose which channels are controlled by the centralogic controls, and the touch screen is updated to reflect the bank the controls are assigned to.

Multi-function Knobs
These knobs control the highlighted set of knobs displayed on the touch screen.

Scene Memory
Store and Recall preset settings. See Section 2.4.2.1 for more info.

Monitor Level
Volume control for cued channels. See Section 2.2.5

User Defined Keys
See Section 2.4.2.4 for more info.

Stereo/Mono Masters
Controls the overall volume for the Stereo and Mono speakers. Red is Stereo, Yellow is Mono.

Figure 2-5 Centralogic

Faders
These faders can change what channels they control with a press of one of the buttons to the right. They function as normal faders and if you move one of the sliders, you will see the corresponding white slider on the board move (if it exists, this won't happen for something like a Mix).

Navigation Keys
Press these buttons to change what channels the Centralogic faders control. The faders are arranged from left to right in ascending order, so if you've selected channels 25-32, the left most fader will control channel 25. These buttons also allow access to Mixes, Matrices, and DCAs. See Sections 2.3 (Output) and 2.4.1.7 (DCAs) for more info.

Summary Screen

This is the sound board screen you'll see the most. You can reach other screens from this one, and those displays will be discussed in their appropriate sections. These settings will be discussed in Section 2.2.3 "Channels" unless otherwise noted. Touch a control to highlight it for use with the Multi-Function knobs.

Channel Name
Touch to bring up Name Entry Screen.

Head Amp
The white ring around this control indicates that the Multi-Function Knobs can be used to control this setting

Selected Channel
Touch arrows to move one channel left or right.

Phantom Power
Touch to bring up Phantom Power display. See Section 2.4.1.6.

Sends on Fader
See Section 2.3.2

Channel Job
Brings up a menu where you can control mute groups (2.4.1.7), channel links (2.4.1.8) and DCAs (2.4.1.7).

Equalizer
See Section 2.4.1.1

Dynamics
See Section 2.4.1.2

Rack
See Section 2.4.1.3

Mix Summary
Shows the volume of each channel going to mixes or matrices.

Meter
Shows the volume coming out of the main output channels. The right side shows Cue volume level (Section 2.2.5).

Stereo/Mono Patch
Shows what speakers the channel goes to. Touch to bring up Stereo/Mono patch screen.

Setup
Brings up Setup Screen

Mute and DCA Group status
Highlighted numbers mean that the channel is in a particular DCA or mute group. Red numbers mean mute group, yellow mean DCA.

Scene Menu
Brings up the scene menu. Shows the current scene. See Section 2.4.2.1.

Figure 2-6 Summary

Channel Detail Screen

This screen displays all of the information about one channel. The various parts of this screen will be addressed later. Reach this screen by pressing one of the channel control knobs on the side.

Push a Knob to get to the Channel Detail screen.

To exit the screen, press one of the navigation keys in the Centralogic section.

Figure 2-7 Channel Summary Screen

AUDIO

2.2.2 Speaker and Amp Overview

You have encountered the Stereo and Mono Masters before in this guide, but what exactly does that mean? They are simply different sets of speakers. The speaker breakdown is as follows.

Figure 2-8 Stereo and Mono Speakers
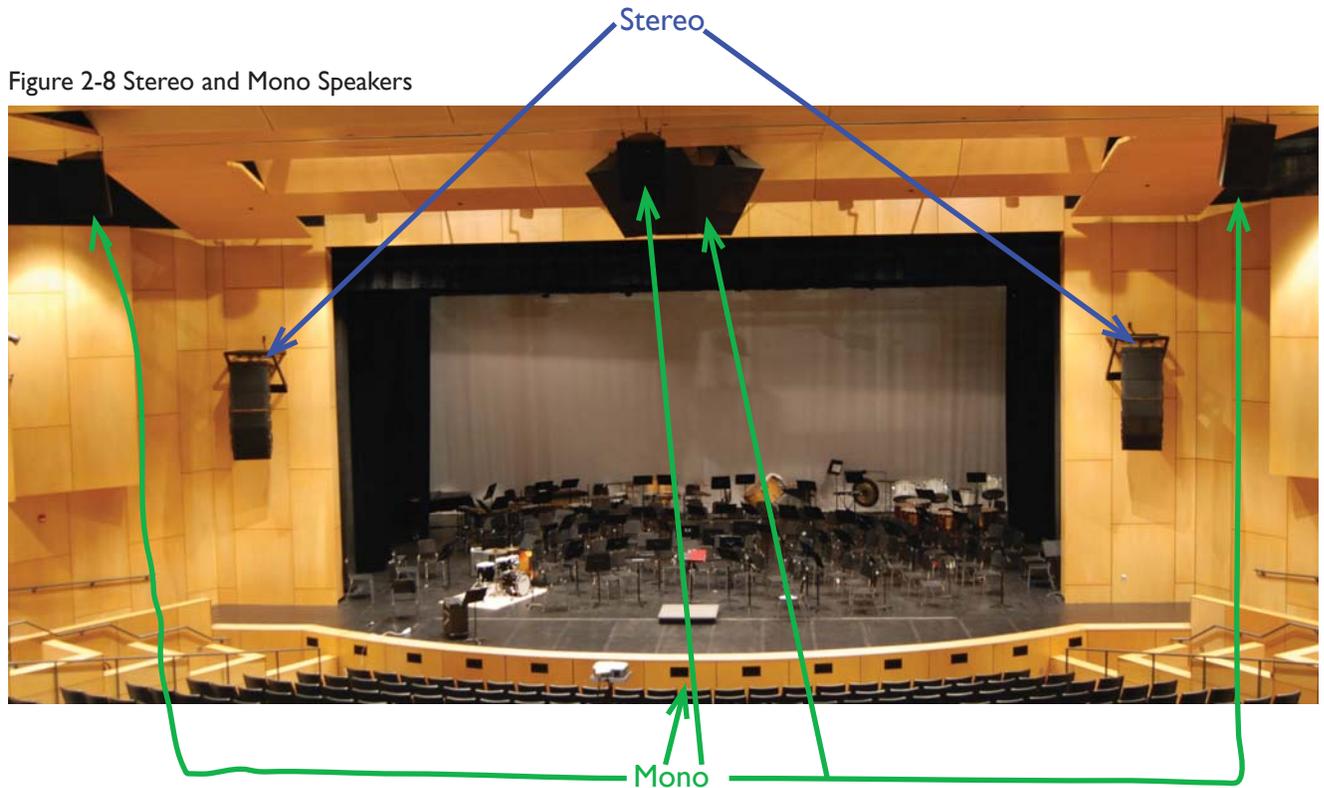
Clearly, the Mono send goes to more places. The Mono output is sent to the center stack, the rear fills (those three speakers towards the back of the house) and the front fills (those black holes in the lip of the stage. The Stereo output goes to the left and right stacks only.

These speakers are controlled by amplifiers. There is no reason for you ever to need to change anything, but for reference these amps are located in two racks on the house left corner of the catwalk.

For musicals, the convention is to have vocals run through the Mono speakers only while the pit and sound effects run through the Stereo speakers only. This allows the vocals to cut through the pit and other sounds so that people in the back of the theater can clearly hear vocals.

The Speaker Amp Rack Looks Like This

Figure 2-9 Speaker Amp Rack

2.2.3 Channels

Each microphone or direct input you plug in goes into a channel. From a channel, you control all aspects of how that sound comes out of the speaker. This section will discuss the basic channel functions. Next to each entry, screenshots of the control in summary view and channel view will be shown, with summary view on the left, and channel view on the right. Physical controls just have one picture. Channels have other controls than those listed here, but they are beyond the scope of this section. See Section 2.4.1 for Advanced Channel Functions

On/Off
This button turns the channel on and off. The orange LED will light up when the channel is on.

Figure 2-10 On

Select
Press this button to select the channel. A selected channel's name will appear in the top right corner and if a control knob on the left of the touch screen is pressed, the selected channel's summary screen will appear. The LED will glow green when a channel is selected

Figure 2-11 Select

Cue
Cues the channel for listening through the monitor jack. LED glows orange when channel is cued. See Section 2.2.5.

Figure 2-12 Cue

Volume Meter
Indicates the volume coming in to each channel. LED colors go from green to red. Green is quiet, red is too loud (signal got clipped).

Figure 2-13 Volume Meter

Fader
Controls the volume. Higher is louder. You might notice that the volume goes from negative infinity to +10 dB. 0 dB on a fader means that the channel is sending its audio out at 100% of it's volume. Think of the fader more as a percent of full volume. The output volume is read from the black line on the slider.

Figure 2-14 Fader

Head Amp (HA)
This setting amplifies the signal coming into the board. Counter-intuitively, numbers that are more positive mean a quieter sound. Having too loud of a head amp can lead to signal clipping, where the sound sounds too loud and grainy. Technically signal

Figure 2-15 Head Amp

clipping means that the top of the signal gets cut off, or clipped. You can change it by touching the control and using the Multi-Function Knobs or you can select the channel with the select button and use the knob marked "Head Amp" to the left of the touch screen.

Stereo/Mono Patch and Pan
States which speaker sets the channel is going to. Can go to stereo and mono, one of the two, or none. Touch the little Stereo/Mono icons to bring up a screen where you can change the settings or you can change the settings from the channel summary

Figure 2-16 Stereo/Mono

screen. Simply touch the buttons to enable or disable the corresponding patch. Enabled patches will turn colors, red for stereo, yellow for mono. The knob shown controls Stereo Pan. This determines if more sound should come through the left side or the right. Touch it to control it with the Multi-Function Knobs.

AUDIO

Channel Name
Displays the Icon and Name of the channel. Touch this button to bring up the Name
Entry Screen to enter a new name for the channel. You use the on screen keyboard
as you would use a normal keyboard. You can touch the name bar to place the
cursor or to highlight text.

Figure 2-17 Channel Name

X Button
Touch to close window.

Icon
Touch it to go to the icon
select screen.

Text Field
You can touch this to place
your cursor or to select text.

Name Entry Screen
Virtual Keyboard acts like a
normal keyboard.

Touch this to go to the icon
select screen. Touch an icon
to use it for the channel.
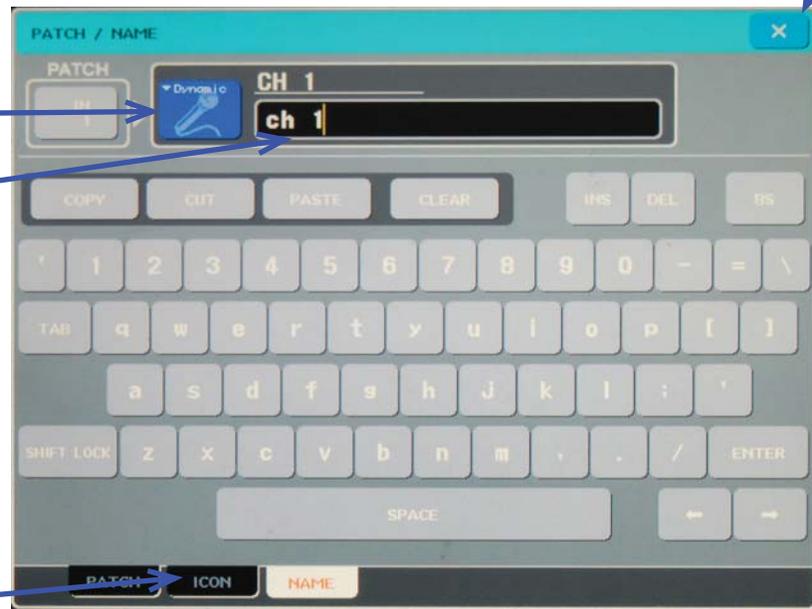
Figure 2-18 Name Entry

2.2.4 Channel Defaults

There are a couple conventions that channels follow in EPAC. Typically, vocal channels are set to only
run through the Mono speakers. This allows vocals to cut through music or sound effects and even a pit
orchestra. Pit mics are set to run only through the stereo stacks with no pan (left and right are balanced).
Sound effects are run through the stereo stacks. Video presentations (like a movie screening) run through
both stereo and mono and sometimes presentations will use both stereo and mono for a wireless mic.

These settings are stored in the EPAC Default scene (see Section 2.4.2.1 for information on how to recall
the default settings).

AUDIO

2.2.5 Cuing

Ever wanted to hear what's coming through a channel but didn't want everyone else to hear it? Well you can do just that with cuing! Just press the cue button on any channel, mix, matrix or DCA to hear whatever it coming through that particular channel or mix. You can cue multiple channels at once. The overall cue volume is displayed on the right side of the meter. It will have a blue outline and say "Cue" when channels are cued.

Press cue on an active channel...

...And its volume will show up in the cue meter. Plug in some headphones to hear what's in the cue meter
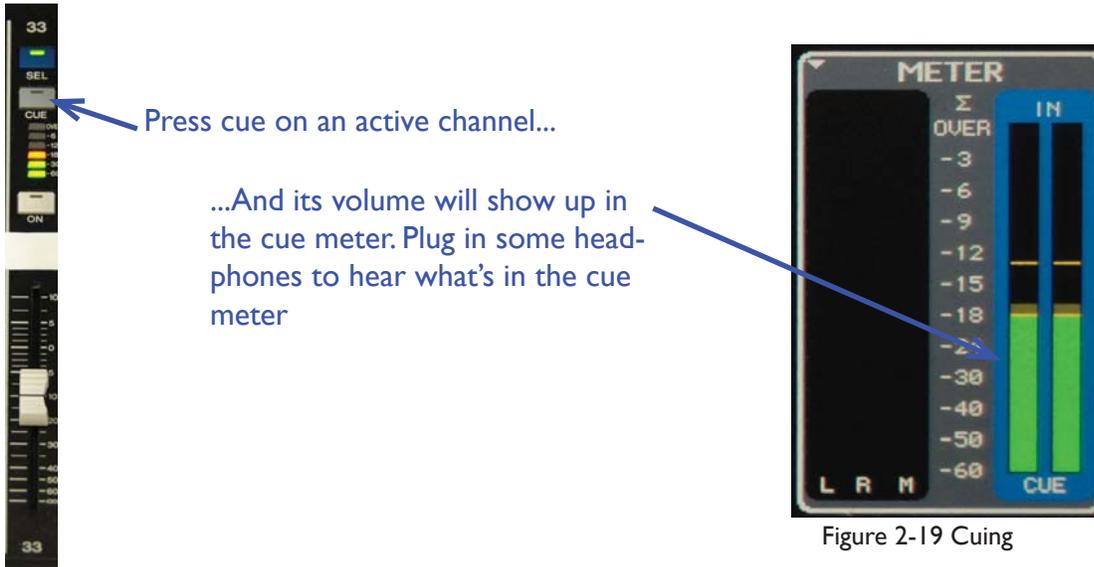
Figure 2-19 Cuing

To hear the cued channels, you will need a pair of headphones with a quarter inch jack. There may be an eighth inch to quarter inch adapter in or around the sound board. Plug in your headphones to the jack located right under the lip of the board.

Use this to adjust volume. Left is quieter, right is louder.

Plug in headphones here.

Figure 2-20 Phones Jack

To stop cuing a channel, just press the cue button again and the orange light will turn off and the channel will no longer be cued. You can also touch the right side of the meter to clear all cues at once.

When to Cue
Anytime that you need to isolate a channel but still need everything else to come out of the speakers, you should use cue. Cue can also be used for backstage "silent" mic checks, where the actor talks into his mic while you listen on cue to make sure it works without turning on the main speakers. If you are making a mix for the video, you can cue that mix to make sure the balance for the DVD is correct.

If you are having trouble hearing the cue through your headphones, check that the Level knob is turned up and that the Monitor Level knob is turned up. It is located on the top of the board.

AUDIO

2.2.6 Stereo Channels

Stereo Channels are the 4 channels to the immediate left of the Centralogic faders. They are marked with ST IN before their numbers. These channels take two inputs, right and left, from a single source and link them together into a single channel. They function the same as normal channels and cannot be unlinked. If you make a change to the left channel on the touch screen, the same change will be applied to the right channel, with the exception of stereo pan. These channels are reserved for things such as the CD player and iPod/Computer hookup. Note that these are devices which natively transmit a stereo feed. See Section 2.4.1.8 for information on linking non-stereo in channels together.

2.2.7 Moving the Board

The board is often moved between the middle of the house rehearsal position to the show position in the booth. Moving the board is not quite as difficult as it seems, but you will need at least 3 people to move it.

1. First make sure everything is off.

2. Disconnect the snakes from the panel or cord that they are attached to. In the booth, the snakes will be attached to other snakes that leads to the speaker amps. In the mid-house position, the snakes will be plugged into the panel marked "Sends" and "Inputs." These are a bundle of cords that take all of those little plugs in the back of the board and puts them into one convenient plug. Imagine if you had to unplug over 50 cables to move the board. Place the caps on the snakes and the wall panel connectors to prevent accidental damage.

Connected Snakes in the Booth
Unscrew the blue or black caps so that you can pull them apart. Do not attempt to pull apart the snakes if the ring is still around them.

Front of House Snake Panel
This is the panel where the snakes are connected. Unscrew the rings before you pull to disconnect them from the panel.

Figure 2-19 Snake Inputs

3. Disconnect the power cords from their outlets and the wall. You will need to disconnect the board power supply from the back of the board since it is connected to the sound cart.

Power Supply
There is a ring that you must twist so that the power supply disconnects. It makes a satisfying sound whenever you connect or disconnect it.

Figure 2.20 Power Supply

4. Disconnect the cords running from the sound box to the sound board. The power cable was one of them, and there are a few others. The cords in ST IN 1 go to the CD player and need to be disconnected. Look for any other cords that are connected to the sound rack (where the CD player us). Pull these cords clear of the board and move the sound box to the side. You can now take it down (or up) to the floor (or booth) using the elevator. Remember where the cords you unplugged went.

These cords go to the digital audio recorder. When you move the board, they should be disconnected. If they aren't already. They are labeled "Recorder L" and "Recorder R" (but they currently aren't in this picture).

Figure 2-21 Disconnecting Cords

5. Remove the lamps. Place them in the back of the board. At this time, carefully put the snakes in the back of the board as well.

6. Find the case on wheels for the sound board. It should be in or around the light booth.

7. Carefully lift the case over the sound board so that the wheels are opposite the lip of the board. Latch the case shut. The lid of the case goes over the lip of the board. If you can't find it, just be extra careful when moving the board.

Wheels on this side

Figure 2-22 Board Case

Once latched, push up the stand legs, and carefully tip the metal stand down.

8. Move the stand away from the wall or any other obstructive objects. Push up the two legs that stabilize the board. This allows the entire stand to tip so that the board lands on the wheels. Tip the board and the stand down very carefully. Remove the metal stand when done.

The stand with legs retracted.
There is a small brown knob to move the legs.
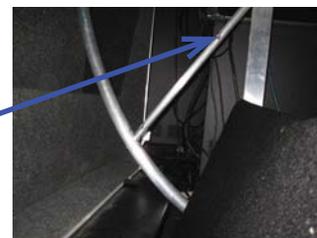
Figure 2-22B Board Stand

AUDIO

9. Move the board to its new location.

10. When in position, roll the board so that the smaller half of the case is on the bottom so that the touch screen is facing up. Put the metal stand so that the two little notches are under the case. Carefully tilt the board up.

11. Move the board to its final position, put down the legs and uncase the board.

12. Reconnect everything. Put the sound rack cords back where you unplugged them from, put the snakes back into panel TPA-19D (in the house) or connect it to the other snakes (in the booth). Reconnect the power supply, turn the board on and test to make sure your move was successful.

Moving the Board Outside of EPAC
It has happens every year for Current Jam. The people moving the board to Fick don't need to and probably won't read this, but if you're planning to take it somewhere else and haven't done this process before you should read this. To do this, you will need to unplug everything in the back of the board, find where the power supply is plugged into the sound cart and pack up the board as detailed in steps 7 and 8. When putting the board back, make sure everything is plugged back into the board exactly as it was before.

When you get the board back from Current Jam, clear all of the scenes, load the EPAC Default scene and make sure everything got plugged back in to the proper location, since they never put it back the way it was before.

AUDIO

2.3 Output and Monitors

2.3.1 Omnis

So you have all this audio coming into the board, but how do you get it out? That's where Omnis come in. They are all-purpose audio outputs. The feeds sent to the monitor and speaker amps are run through Omnis, as are Monitor feeds. Monitors are used to allow the actors on stage to hear the music and their own voice so that they stay with the pit in a musical. During plays and musicals, they are often used so that they backstage crew can hear what's going on. There are 12 different amps for monitors. Their inputs can be found in the booth. Next to the monitor amp inputs are the main speaker inputs. These are the connections that feed the mono and stereo speakers.

The omnis plugged into the board are distinguished from the inputs by their plug type. Omnis have a female XLR plug while inputs have a male plug. The cords plugged into Omnis with numbers around their plugs correspond to the matching plug on the wall panel in the booth.

Figure 2-23 Omnis at the Board

Omnis
The red and yellow plugs have a corresponding plug on the patch wall in the booth. So whatever goes into Omni cord 1 comes out in the matching number cord at the wall panel. There is a set of blue plugs as well, but they have no current permanent connections anywhere.

These silver plugs do not have a matching cord at the wall. You can use your own cords to redirect the audio somewhere other than the wall in the booth,

Figure 2-24 Omnis at the Wall
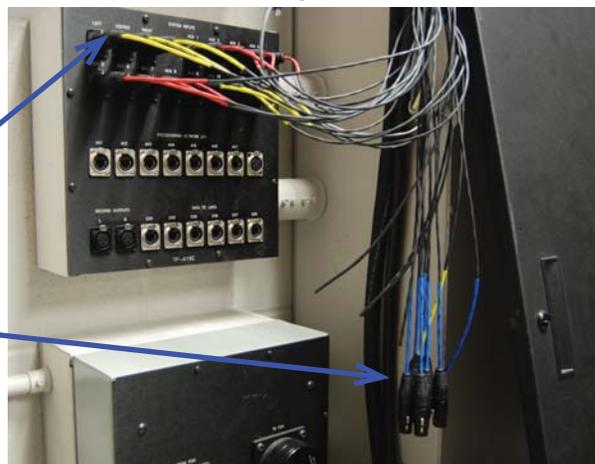
This is where the colored Omni cords end up. Most are plugged into the 12 speaker amps and 3 are used for the speaker stacks.

The dangling Omni cords have matching plugs stuck in the back of the board. You can use them if you'd like, but remember to reset the patch when you're done.

AUDIO

There are 16 Omni outs built into the board. 3 of them have a permanently assigned function. The default Omni patch is detailed below.

Omni	Function	
1-7	Monitor Outputs.	
8-9	Feeds to Digital Recorder, see Section 2.4.3. "Recorder L" goes in Omni 8, "Recorder R" goes in Omni 9.	
10-13	For audio feeds to video room. See Section 2.3.4.	If unused for video, these double as Monitor Feeds, with the exception of Omni 13, which is unassigned by default.
14	Feeds the Center Speaker Stack. Permanent Assignment.	
15	Feeds the Left Speaker Stack. Permanent Assignment.	
16	Feeds the Right Speaker Stack. Permanent Assignment.	

Table 2-1 Omni Standard Patch

2.3.2 Mixes and Matrices

Mixes and matrices are a different way to get audio out of the board. You have 16 mixes and 8 matrices to work with and each one can have a different set of inputs. For example, so that the actors can follow the music on stage you would make a mix containing piano and send it to a monitor.

Controlling Mixes and Matrices

You remember the summary screen? Remember all of those colorful knobs that took up most of the screen? Those are the indicators that show how much of each channel is going into a mix.

You control mixes in a variety of ways. The first is on the summary screen. Touch the virtual knob of the mix you'd like to control. You can then turn the Multi-Function Knob to set the volume going to that mix. You can set the mix volume for multiple channels using this technique.

Touch a knob to select it for use. A white outline will appear around it. You then use the Multi-Function Knobs to control the volume of the mix.

The mixes are numbered in ascending order from left to right. So the top left pink knob is Mix 1, the top right pink knob is Mix 2, the bottom left pink knob is 3 and so on. They are color grouped in sets of 4.

Figure 2-25 Mixes on the Summary Screen

The second method involves one channel. You can press the select button for one channel and proceed to adjust the settings using the knobs on the side of the touch screen. Press one of these knobs to enter the channel summary screen, where it will bring up a screen that lets you view the pre-fader or post-fader status of the mix. More on that soon.

Select a channel and you can use these knobs to control mix volume for that mix. Press a knob to bring up the Channel summary screen.

Touch this to switch the view on this screen and the summary screen to Matrix view. This screen will show you what the Channel is sending to the Matrix.

Mix Summary
From this screen, you can see the pre/post-fader status. You can also touch the on button to turn the channel send to a mix on or off. If a channel is sending to a mix, the button will light up. A mix with "Pre" written above it is sending on Pre-Fader

Touch a virtual knob to bring up the Mix Dialog.

Figure 2-26 Mix and Matrix Knobs

Figure 2-27 Mix Summary

AUDIO

Touching a knob in the Channel Summary screen brings up the most useful dialog for mixes and matrices. From this dialog, you can set pre-fader and post-fader settings while controlling the send volume for 8 channels at a time.

Touch to set pre-fader or post-fader. Button lights up if channel is sending pre-fader.

These two buttons set all visible channels to pre or post fader as marked.

Use the Multi-Function Knobs to control the send level for the 8 shown channels.

Use these buttons to change what mix sends you are editing.

Turns Mix Send on or off. If the button is lit up, channel is sending to mix.

Figure 2-28 Mix Dialog

AUDIO

Pre and Post-Fader

The board sends channel input to mixes in two different ways. The first is Pre-Fader. This setting means that the board takes the volume before it is modified by the fader and puts that in a mix. So if you have a loud sound coming through a channel but are keeping it relatively quiet with the fader and then send it to a mix post fader, the sound will remain at its input volume. The send volume you set for post-fader will not change. It will remain at the set level until you change it. This setting is good for sending the pit to on-stage monitors and for sending a pit mix to the video room.

Post-Fader means that the board takes the volume of the signal after you apply the fader to it, and puts it into a mix. When using post-fader, think of the volume of the send as a percent of the volume you're sending to the main speakers. The volume of the send will change as you change the fader. This is great for sending vocal mixes to the video room.

Note that the channel has to be on for anything to be sent to a mix or matrix.

Changing Overall Mix Volume and Patch

To change the Overall Mix volume and what Omni it is exporting to, you will use the Centralogic portion of the board.

Push one of the grey buttons in the middle to bring up the mix summary screen. From here, you can turn on mixes and matrices like they were normal channels using the center faders.
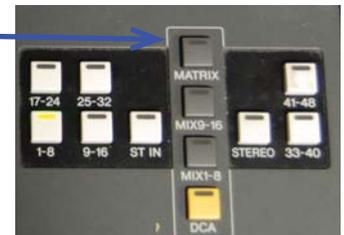
Touch the box under the name of the Mix or Matrix to bring up the patch overview dialog.

While on this screen, you can move the faders to change the overall volume of the mix.

In this dialog, touch the box under the mix you'd like to patch.

Figure 2-29 Mix Patching

Touch the name of an Omni to patch the Mix
to that Omni. You can select more than one
Omni. If something is already being sent to an
Omni, a dialog box asking you if you'd like to
change the patch will appear. Selected Omnis
will be highlighted.

Note that while you can assign multiple omnis to one
mix, each omni can only output one signal. In other
words, you cannot send two mixes to one omni.
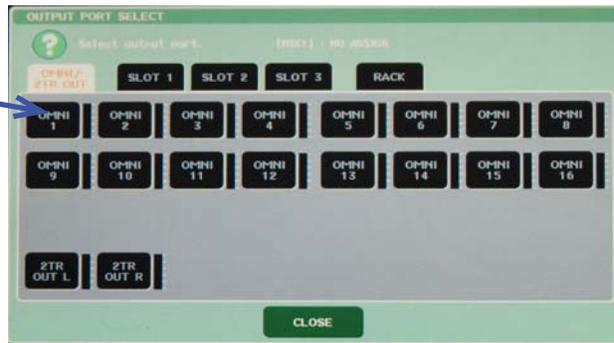
Figure 2-29 Mix Patching

Sending Mixes to Matrices

On the mix overview screen, the columns show 8 virtual knobs instead of the normal 16 and have "To Matrix" written under them. Touch these knobs and use the Multi-Function Knobs to send the mix to the matrix. Pressing a knob on the side of the touch screen will bring up the matrix summary screen for that mix. From there you can treat the mix as a normal channel and send it to a matrix pre or post fader.

Sends on Fader

This little button is a very handy way to visually see what is being sent to a mix by what channel. When you press it, all of the faders will suddenly move to their send levels. You can now move them to change the send level for the mix you have selected. You can also turn the send for a particular channel on and off using the on/off button on the fader. Be careful to not confuse this screen with your normal mixing environment. If you're wondering why all of your changes do nothing to influence what's coming out of the speakers, make sure that you're not on sends on fader.

The button is called "Sends on Fader" because that's exactly what it does. It shows the send levels on the faders for each channel.

Figure 2-30 Sends on Fader

Mix/Matrix Button
You can view and modify Matrix sends using this button. Press it to bring up a list of Matrices. Press the name of a Matrix to view and edit the sends.

The Sends on Fader Menu
Touch a mix name to show the sends on the faders. The selected mix will be highlighted in color.

X Button
Press to close menu.

AUDIO

2.3.3 Monitor Feeds

Patching Monitor Feeds

Monitor feeds should be sent to one of the 12 speaker amps. Those amps are fed by inputs into the 12 jacks labeled Aux in the wall panels in the booth.
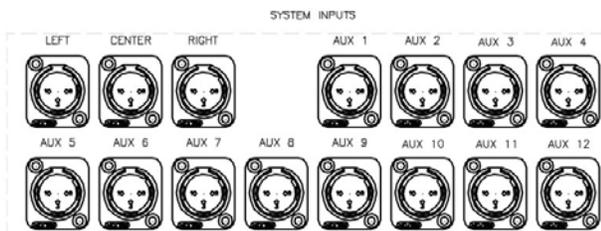
These go to the corresponding amps down here.

Figure 2-31 Monitor Amps

You connect the amp running from the Aux jack where you plugged in your Omni to the speaker output you want your monitor to run through. Monitor cords have blue shells and are available on the landing above the sound booth. The Monitors themselves are big huge black speakers with two ports for a cable. It does not matter what plug you choose to plug your cable into. You can chain together two monitors so that you don't use up more Amps to power the same feed since you can only patch two speaker jacks per Amp. Chaining together more than two monitors is not recommended.

Figure 2-32A Speaker Jacks   There is a matching jack on the other side.

Speaker jacks are on most wall panels on stage`

This is a Monitor. It is Heavy.

Figure 2-32B Monitor

Setting Up a Monitor Feed

1. Choose what channels you want to send to a monitor. For musicals, this usually means that you send some vocals post-fader between -26 and -10 dB and some Piano pre-fader between -20 and -10 dB. Put those into a mix. Front of house noise is difficult to hear on stage, so don't be afraid to put more vocals and music on stage.

2. Patch that mix to an Omni (that is not 14-16) of your choice. Make sure that Omni is plugged into an Aux jack.

3. Place Monitors where they are needed and find the nearest speaker jack. Write down the speaker jack numbers you are using.

4. Go downstairs and patch your mix to the speaker jacks you're using. So if you were using Amp 6 and S8, you would patch one of Amp 6's cords to S8.

What To Do When You Get Feedback

When you get feedback, which is that loud tone that occurs when a microphone hears itself, don't panic. Quickly turn off the mix that is feeding the monitors or turn off the Stereo and Mono Masters. Turn down the overall volume of the mix. Turn the mix back on. Slowly raise the volume to a point where you do not get feedback.

If feedback is a persistent problem, check your settings for on stage mics. They could be sending at too high of a volume or they might be on pre-fader. Just turn down the sends and you should be ok.

Monitor mixing is tricky. You have to find that balance between too loud and too quiet. Listen to what the **actors** want, and try to accommodate their needs the best that you can without feedback. It never hurts to go on stage and listen to the monitors yourself.

2.3.4 Feeds for Video

In EPAC, shows are regularly recorded using the Bloom Video Studio. Setting up the audio feeds for this is not a terribly difficult process. 4 feeds are created for a musical: a vocal mix, a pit mix, a sound effects mix and a mix from a hanging mic in the theater. Put the following mixes into four different mix channels of your choosing. The following information is for musicals. For dramas, you will create the mixes with the exception of a floor mic mix instead of a pit mix

The **vocal mix** is created from all of the vocal mics and all channels are sent at 0 dB post-fader to the mix.

The **pit mix** is created from the pic mics that are setup. The pit mix is a bit more complicated since the video does not have much ambient sound to work with. It is made from a pre-fader mix of all the pit. This means that the sound mixer has to listen to the pit mix to ensure musical balance. Not every channel in this mix will have the same volume. **For dramas only**, the floor mic mix takes the place of the pit mix. Floor mics are sent at 0 dB pre-fader.

The **sound effects mix**, and mix for other miscellaneous sources, is created from all channels that are all sent at 0 dB post-fader.

The **house mic mix** is sent from Channel 48 where the house mic is almost always patched at 0 dB pre-fader.

Patch these to the four omnis listed below. Unplug those omnis from their normal places in the booth panels and plug them into the specified audio ties:

Mix	Omni	Audio Tie
Vocal	10	A67
Pit	11	A68
Sound Effects	12	A69
House Mic	13	A70

Table 2-2 Audio Feeds for Video Patch Table

You also need to set the delay on all Omni ports **except the house mic** to 29 ms. See section 2.4.2.5. The goal of delaying the audio is to have it arrive at the same time. See Section 4.1.4 to complete the audio tie line patching for video.

AUDIO

2.4 Advanced Topics

So you've mastered all of this basic stuff, but want to know more? This section covers some advanced topics, ones that aren't crucial to board operation, but will make your mixing life so much easier.

2.4.1 Channels

We shall begin with topics regarding channels. These include dynamics settings, basic effects, Direct In/Out, DCAs and mute groups and channel linking. These sections assume a basic proficiency regarding board use. You should be familiar with navigating the interface and using the Centralogic controls.

2.4.1.1 The Equalizer

Does someone sound like they're talking into a can and you want to fix that? Want to create an effect that sounds like a PA system? The Equalizer can help you do just that. The Equalizer allows you to selectively boost or decrease the volume of specific frequencies. Get there by pressing this area of the summary screen on any channel.

Figure 2-33 EQ

Library
Stores preset EQ settings.
You can load presets in this screen or save your current settings as a preset.

Flat
Turns the gain on each frequency to 0.

Default
Resets Equalizer to default settings

Figure 2-34 EQ Dialog

HPF (High Pass Filter)
Reduces the low frequencies to get rid of low audio bumps. Press the On button to activate the HPF, turn the knob to adjust the frequency that the HPF stops at.

On
Turns EQ on or off. Highlighted button means EQ is on.

In and Out Meters
Shows volume of incoming audio and audio after going through the EQ.

EQ Knobs
Frequency - Moves position of corresponding yellow dot.
Gain - Moves the yellow dot vertically. Tells EQ how much of each frequency to increase or decrease.
Q - The EQ draws smooth curves between points to smooth out the EQ. This setting tells the EQ how sharp the slope should be going into that point. Higher numbers mean steeper slopes.

AUDIO

Ok so you can work that thing, but what exactly do those frequency markings mean? Frequency corresponds to pitch. By adjusting specific frequencies, you can compensate for sounds that are lacking in particular pitches to give it a fuller sound. The following table summarizes what pitches correspond to what frequencies.

Name	Frequency	Description
Very High	8-20 kHz	Includes cymbals and highest instrument noises (think piccolo really high).
High	5-8 kHz	Includes the very high end of vocals. Boosting this range can boost vocal presence.
Low High	2.5-5 kHz	A continuation of the High frequencies, this range also boosts vocal presence. Too much of this frequency range leads to harsh sounds.
High Midrange	1.2-2.5 kHz	Includes vocal consonants and high notes from brass instruments. Too much of this "pinches" the sound, as if the source has its nose pinched.
Midrange	750-1.2 kHz	Includes voice vowels and the musical tones that make a "colorful" tone.
Low Midrange	250-750 Hz	Includes low vocals and low instrument pitches. Too much of this leads to an unclear sound. Too little of this creates a thin sound (like the PA in EPAC).
Bass	50-250 Hz	Crank this sucker to make the walls and floor shake. Yes this controls the vocal and instrumental bass. Too much of this create a thick, booming sound.
Sub Bass	Below 50 Hz	Usually too low for voices and instruments. This is the frequency that really makes your seat vibrate from a movie explosion sound effect.

Table 2-3 Frequencies

The board's equalizer uses 4 frequency ranges rather than the 8 listed: High - 10 kHz to 20 kHz, High Mid - 1 kHz to 10 kHz, Low Mid - 100 Hz to 1 kHz and Low - 20Hz to 100 Hz.

A little hint as to creating a PA-sounding channel, you would drop all of the frequencies down as far as they can go, except for the 1 kHz to 2.5 kHz range, which you will boost as far a you can take them.

Don't be afraid to experiment with the equalizer. If you mess it up a lot, just hit the "Default" button to reset the EQ to its original settings.

AUDIO
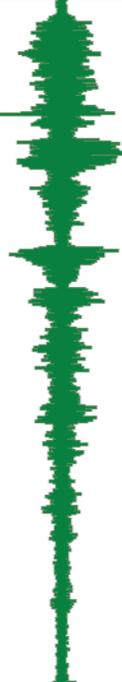
2.4.1.2 **Dynamics**

Those two boxes under the EQ box on the summary screen are the Dynamics settings. There are two sets of Dynamics, creatively named Dynamics 1 and Dynamics 2. The Dynamics 1 set includes Gate, Ducking, Compressor and Expander. Dynamics 2 includes Compressor, Compander-H, Compander-S, and De-esser. Of these dynamics, the Compressor and the Compander-S are the only commonly used dynamics settings. These settings will be described in this section. If you want to learn more about the remaining Dynamics settings, consult the "Dynamics Parameters" section in the Appendix of the M7CL Owner's Manual in the sound cart.

You can only have one particular dynamics setting active in a group at once. For example, it is impossible to have a De-Esser and a Compander-H active at the same time since they are both in the Dynamics 2 group.

Both the Compander-S and the Compressor are available in Dynamics 2. You will only need one of them active at a time, since the Compander is a combination of a compressor and an expander.

To open the Dynamics screen, press the corresponding dynamics box on the summary screen. These boxes display the results of the selected setting. They will be greyed out if the dynamics setting is set to off. The Dynamics 2 summary box displays the incoming audio volume as well.

Dynamics 1 ——
Dynamics 2 ——
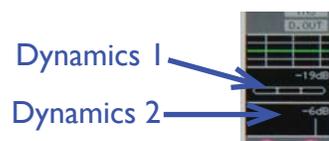
Figure 2-35 Dynamics

The Compressor

A compressor automatically reduces the volume of a sound once the incoming volume reaches a certain point. This is incredibly useful for those people who love to shout at random times and you don't have time to reduce the volume of the fader. To set up a Compressor, enter the Dynamics 2 screen. The Compressor is chosen by default.

Meters
GR - Shows the effects of the dynamics settings. For a compressor, an orange bar will drop from the top showing how much reduction is being applied.
IN - Incoming volume, OUT - Outgoing volume, adjusted according to the graph.

Graph
This plots incoming volume on the horizontal axis and outgoing volume on the vertical axis. It is a visual representation of your settings.

Threshold
Tells the compressor at what volume to start compressing. Usually usually gets dropped to -20 to -30 depending on the person.

On
Turns the dynamics settings on or off. Button will be highlighted if dynamics are on.

Figure 2-36 The Compressor

Ratio
How strong the compression is. Turn right for a stronger compression. Watch the graph.

Outgain
How much the overall volume is boosted. Turn right to increase volume. Watch the graph.

The controls that were not discussed involve how fast the compressor is applied and released. The default settings are usually fine, see the M7CL Owner's Manual for more information.

When creating Compressor settings, use the graph. It tells you exactly what the compressor is doing at any given volume. Remember that the incoming volume is shown horizontally and the outgoing volume vertically. Adjust the settings until you feel that the sound is under control while you mix.

The Compander (Soft)
The Compander-S, or Soft Compander, combines the effects of an expander and a compressor into one neat little package. This is good for controlling those people who have a very large vocal dynamic range. Be careful not to limit them too much. It can be a little difficult to get the exact settings you want, but with a little bit of fiddling you can get the compander to work in your favor. Get to this screen by touching the "Compander-S" button on the right.

Meters
Same function as
compressor

Graph
Same deal as the
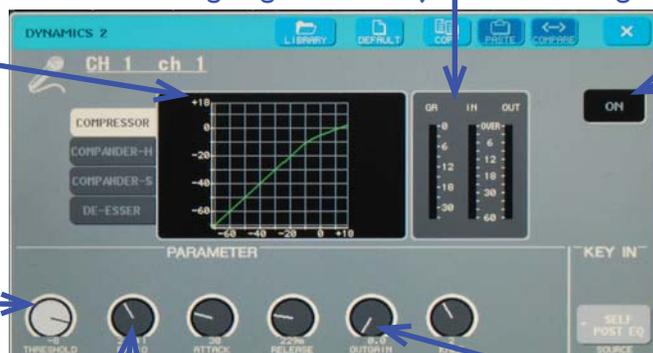Compressor graph.

Figure 2-37 The Compander

On
You know what
this does by now I
hope.

Threshold
Sets the point
at which the
compressor
activates.

Ratio
Sets how much compression is
applied. Visually, this will mess
up the compander graph a
lot. Use the other settings to
compensate.

Outgain
This time the Outgain is used
to compensate for louder
volume output. Turn it right to
reduce the overall volume.

Width
Sets how far below the
Threshold expansion is
applied. As always, watch the
graph.

Companders have the odd tendency to cut out lower volumes. In the graph above, any sound less than -60 dB is completely inaudible, which is great if the person wearing that mic doesn't whisper. I've found that this can create some weird volume swings, so a smoother, more consistent Compander graph is recommended. Companders and compressors should be applied to floor and hanging mics as well.

Of these two settings, the compressor is used more often. It is usually applied to all wireless mics. Some presets are available in the library, but not all of them apply to the compressor. Usually, you're better off creating your own settings and listening for the best result.

And again, feel free to experiment. Just hit the "Default" button to reset the compressor and compander when you feel you've messed them up enough.

AUDIO

AUDIO

2.4.1.3 Direct In/Out and Rack Effects

When sound comes into a channel, it usually runs right through the EQ, dynamics settings and fader and then goes out to the speakers. You can intercept the sound in the channel at any time using Direct In/Out. Direct Out lets you run the sound to an external device and Direct In lets you mainly run the sound through the effects rack before dropping back into the channel. The Effects Rack includes a multi-band EQ and effects such as Reverb, Chorus, Echo and so on. These are not commonly used, but there are times when a show calls for an echo sound effect.

This section will not tell you how to use the effects built into the rack because there are just too many of them. Consult the "Effect Type List" and "Effects Parameters" sections in the appendix of the M7CL Owner's Manual for information on how to use a particular effect.

Inserting a Channel to the Rack

1. Press the Direct In/Out box on the overview screen under the channel you would like to put an effect on. If you are using a Stereo Channel for an effect you will have to do this twice, once for the left channel and once for the right.

Direct In/Out →

Figure 2-38 Direct In/Out

2. In the popup, press the tab that says "1ch" at the bottom. The 8ch summary is useless for what we want to do.

Touch this to tell the audio where to go. Select a patch from the dialog that pops up. For a single channel going to the rack, select the Left channel of a Rack.

Touch this to tell the channel what's coming back in. Select the output that matches the input you chose for the "Out" button.
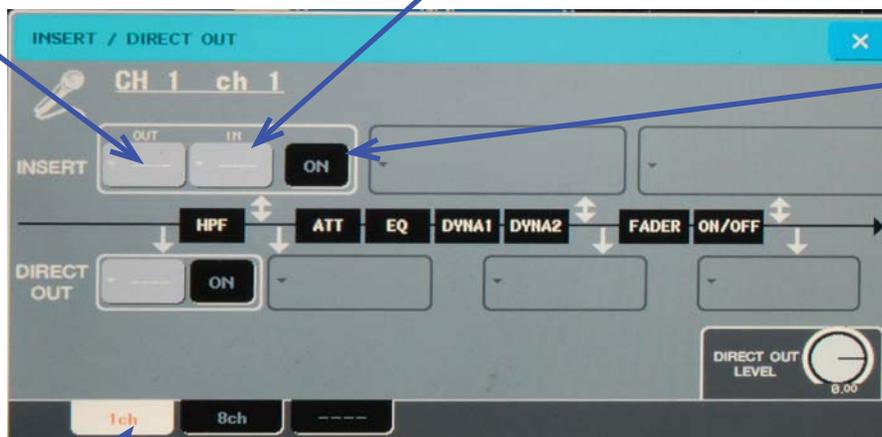
On
Opens the virtual gate and lets the audio go down the specified path.

Figure 2-39 To Rack

Touch this to get to this screen

3. Press the "Out" button. This is where you are sending the audio. Choose a Rack. If using a single channel, choose the left rack. If using a stereo channel, match the left rack input with the left channel and the right rack input with the right channel.

4. Press the "In" button. This is where the audio comes from when its done. Match the rack you selected in step 3 with the rack you select here.

5. Go to the Rack screen.   Touch this to go to the rack screen

6. Find the number of the rack you ran your audio to. Touch it to modify the settings and to find your desired effect. While in an effects rack, touch the picture next to the effect name to select a different effect. You should now be able to hear this effect from the speakers. The below picture shows an effects rack. Racks 1-4 are Multi-band EQs.

Figure 2-40 To Rack

Touch this to pick a different effect.

Effect Name

Input and Output
The name of the channel you inserted should be here.

Bypass
Skips over the effect. So you can listen to what changes the effect has on the sound. If this is highlighted, the effect is being bypassed.

AUDIO

Figure 2-40 Effects Rack

Controls
Look at all those knobs! Each effect has a different set of these. You'll need to read the Owner's Manual if you want to know exactly what these do.

Sometimes the Direct In/Out process creates this odd internal feedback loop if done incorrectly. For this reason, leave the channel off while patching. Once the volume appears stable, turn the channel back on and use as normal.
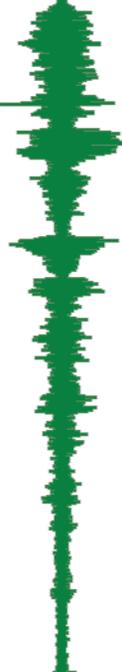
AUDIO

Direct Out and Insertion Points

You may have noticed that there are these grey boxes on the Direct In/Out screen. Those represent places where you can insert or output the audio. The black boxes in the center say what the audio has run through by the point indicated by the arrows. So you can put an effect on after the Dynamics and EQ have been applied, but for effects it doesn't matter that much. You can leave the Insert box where it is by default.

These have more practical uses for the Direct Out. You can choose to send out the raw audio, before even the High Pass Filter, or send it post-fader.

Touch a grey box to move the insertion or output point to that location.

Direct Out Level
Controls how loud the direct out send is.

Figure 2-41 Direct Out
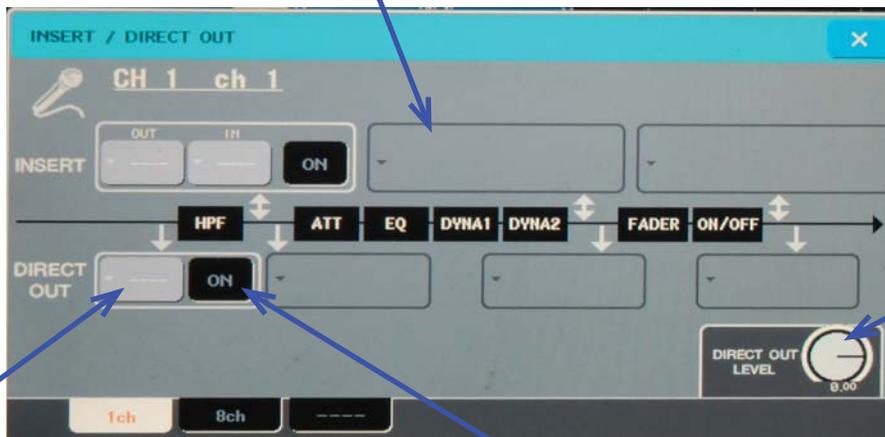
Touch this to specify the output location (an Omni in other words)

On
Turns the Direct Out send on.

2.4.1.4 **Digital Patching**

Patching is almost always done downstairs, but there may be rare instances when you have to patch using the board's internal patching system. This system allows you to reassign inputs as needed, leading to confusing things like Input 1 going to channel 28 or something equally weird. You may have to do this if the board has been reset to get the CD player and iPod connection back to their normal channels.

Enter the Patch screen by pressing the area right next to the Head Amp.

Touch here for patching

You will be greeted by the following screen. From here you can control Head Amp and set the Input Patch for the channel. The Input Patch is the source of the audio coming into the channel. For board channels, this should be

Figure 2-42 Patching

IN 1 for channel 1, IN 2 for channel 2 and so on. For ST IN 1 (the CD player), ST IN 1 L and ST IN 1 R should be patched and likewise for ST IN 2. You can put inputs (not that you'd want to do this) in two different channels at once. So IN 5 could go to both channel 5 and Channel 40.

Press a button to bring up the Input Patch dialog for that channel. Touch an input to patch that input to the channel. Patched inputs will be highlighted.

Figure 2-43 HA / Patch

That's really about it for digital patching. It's a larger issue in Fick, but this is an EPAC guide. If something doesn't seem quite right (especially with the CD player), check the digital patch.

AUDIO

2.4.1.5 Mono/Stereo Out

This topic was covered way back in Section 1.2.2, but there are a few things that were not mentioned. It is possible to have a channel not go to either Stereo or Mono. Why would anyone do this? Let's say you have a house mic. You use it to record audio of the show for the video room and just in general. You don't want it to hear itself because it will cause feedback, but a channel has to be on to send its contents to a mix. How to get around this? Keep the channel on but don't send it to the main speaker stacks.

Also, the Mode should be left on "Stereo." The board is not setup for the LCR mode.

Leave the Mode on Stereo.
Press Mode to toggle between the modes.

Figure 2-44 Stereo/Mono

2.4.1.6 Phantom Power

Phantom Power is one of those weird things that mics need sometimes. It sends power through to the mics patched to that channel so that they work correctly. Not all mics needs this and it should only be enabled for condenser mics that need it and are **plugged directly into the board**.

To activate Phantom Power, go to the HA / Patch dialog.

Touch here for phantom power

Figure 2-45 Phantom Power

Press the button that says +48V to enable Phantom Power for the corresponding channel. It will turn red when enabled.

Figure 2-46 Enabling Phantom Power

AUDIO

If you cannot enable phantom power, the master phantom power source may be disabled. Go to Setup and press +48V Master On.

To Use Phantom Power, this should be highlighted as shown.

Figure 2-47 Phantom Power Master

2.4.1.7 DCAs and Mute Groups

DCAs, or Digitally Controlled Amplifiers, control the overall volume of a group of faders. They are excellent for mixing a chorus. Mute groups are groups of channels that can be muted all at once with the press of a button. DCAs can do the job of mute groups, so Mute groups have a more limited functionality. DCAs preserve the relative levels of channels in that group. So if you have a loud channel and a soft channel, the loud channel will still be louder than the soft channel when the DCA volume is lowered. To setup a DCA, follow the steps below.

1. Press the Green CH Job button on the right to open this menu. Press "DCA Group."

2. Select the DCA Group you want to place channels in.

Figure 2-48 Setting Up DCAs

3. Press select on the channels you want in the DCA group you've chosen. Selected channels will be highlighted in yellow. Close when you are done.

AUDIO

AUDIO
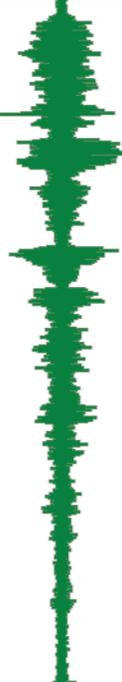
Now when you press the yellow DCA button in the Centralogic section, you can control the overall volume of the newly created DCA group by moving the slider corresponding to the number of the DCA. You can mute all channels in the DCA by pressing the On/Off button in the center section. While in DCA mode, the summary screen will not change, but the bottom of the screen will turn yellow and display the DCA names. You can change the names of DCAs by pressing their yellow box.

You will see this at the bottom of the touch screen when the DCA button is selected

Figure 2-48 DCA Border

Touch a box to change the name and icon for the DCA group.

Setting up a mute group is as straightforward as setting up a DCA. Follow the steps below.

1. Press the Green CH Job button on the right to open this menu. Press "Mute Group."

2. Select the Mute Group you want to place channels in.
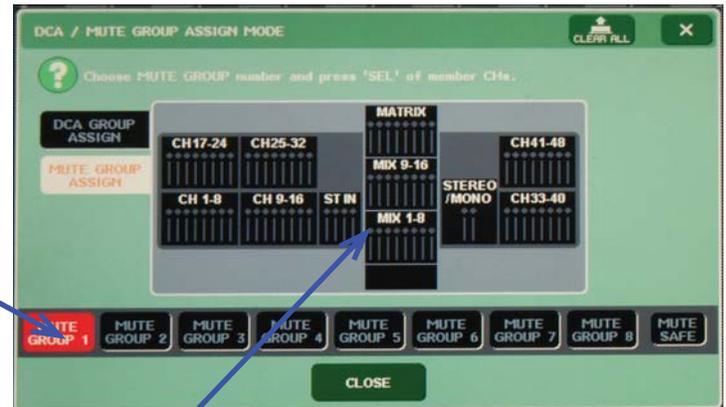
Figure 2-50 Mute Groups

3. Press select on the channels you want in the Mute group you've chosen. Selected channels will be highlighted in red. Close when you are done.

As you may have noticed, you can put mixes and matrices in a mute group, but not a DCA. If you put channels or mixes into the Mute Safe group, you will not be able to mute them, even if they were accidentally put into a mute group and that mute group was muted.

Using mute groups is not as straightforward as using DCAs. You will have to configure User Defined Keys (Section 2.4.2.4) that you can hit to mute and un-mute mute groups (that's a lot of muting).

2.4.1.8 **Channel Link**

If you're using a stereo mic or running the Left and Right feeds out of a piano, it can be useful to link those two channels together, as if they were a Stereo Channel.

1. Press the Green CH Job button on the right to open this menu. Press "CH Link."

2. Press and hold briefly the select buttons of the two channels you want to link. They will light up here.

3. Select the parameters you'd like to link. You can link all parameters (HA, Dynamics, EQ, Mix Send) which is the default, or only link specific parameters. Linked parameters are high-lighted.

These are the mix sends that are linked in each channel. By default they should all be high-lighted, meaning that both linked channels are sending the same thing to these mixes.

Figure 2-51 CH Link

Now that the channels are linked, you should be able to move one fader and see the other move in sync with it. To de-link channels, go back to the CH Link menu and briefly press and hold the select button on the linked channels. The channels will light up on the display and then go back to normal black.

AUDIO

2.4.2 System

The following sections deal with the system functions that assist with various non-mixing functions on the board. They include functions like saving settings for all channels on the board to be recalled later, a meter, saving your settings to a USB drive and user control and management.

2.4.2.1 Scene Store and Recall

This is the most important non-mixing function the board offers. With the scene store system, you can take a snapshot of all of your board settings, including fader levels, mix sends, and even output patches, to be recalled later. Scenes are useful for saving the level of a sound effect and for tu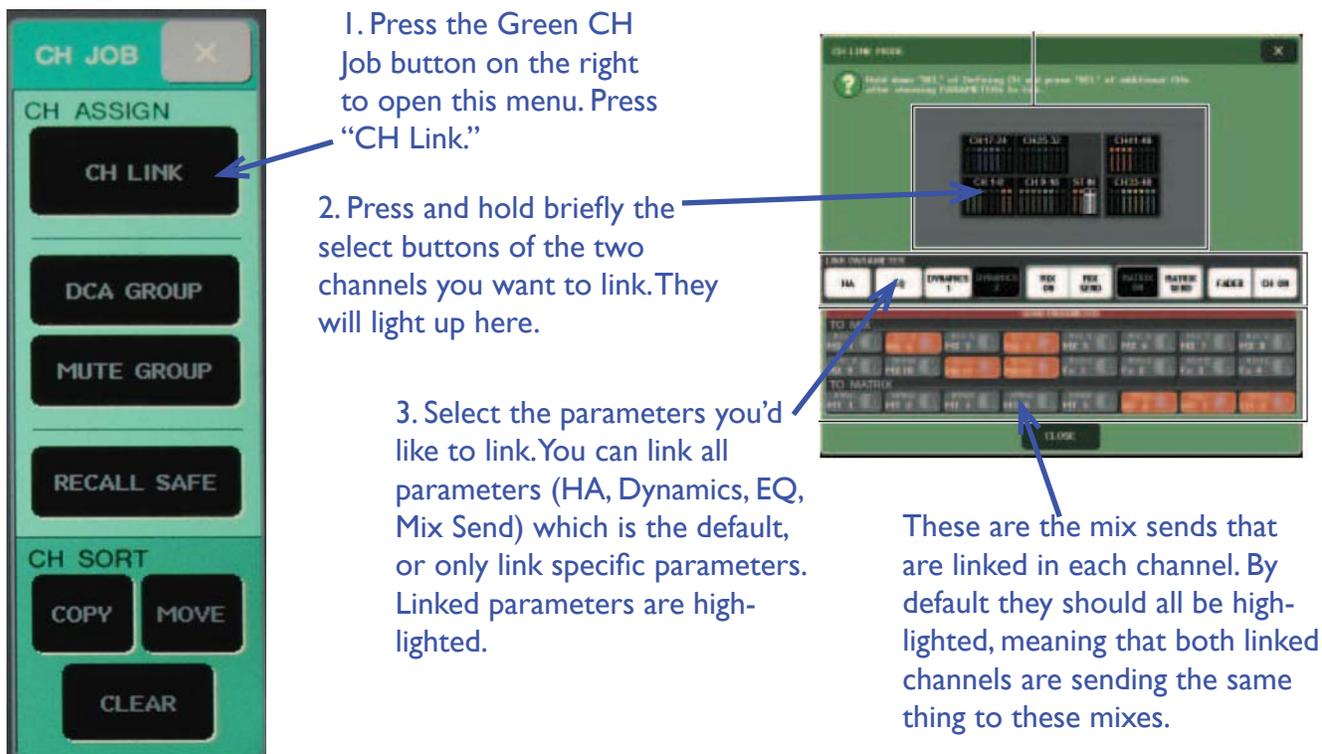rning large groups of mics on and off. However, it is important to not go overboard with scenes. Do not use them for small changes, like turning one mic on or off. Recalling a scene brings the fader levels to where you saved them, so frequent scene changes can mess with your balance each time you recall something. Smart use of the Scene Store and Recall system will save you a bunch of time and make your mixing life a lot easier. There are some shows that are too small to use this, for the large shows, use this early and often. Scenes are ideal for turning mics on and off as groups of actors enter and leave the stage.

Saving Scenes

You will want to do this only after you've run the show a few times without scenes so that you know what has to turn on or off when. I usually end up writing scenes sequentially and the going back to refine them during the cue to cue.

1. Set up all the channels the way you want them to be saved.

2. Press the Scene Memory Up and Down Keys to select what scene number you would like to save the scene in. The bottom right box indicates the current scene number and name. This number will blink when you move to a different scene with the Up and Down keys.

Push these to navigate scenes.
Up increases the scene number.
Down decreases the scene number.

Figure 2-52 Navigating Scene Store

When you press the buttons, this display will change numbers and names and the number will flash.
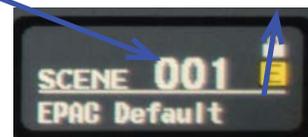
A yellow "E" means the scene has been changed from the saved settings.

3. When the scene number you want to save your scene in is highlighted, press the "Store" key. A dialog will pop up asking for a name and an optional description. Enter a descriptive name. Press Store. A dialog will pop up confirming where you're saving the scene. Check again that you're saving the scene in the right place if you are overwriting a scene.

Press Store to Save your Scene in the highlighted scene slot.

Figure 2-52 Saving Scenes

Recalling Scenes

1. Use the navigation keys to move to the number of the scene you want to recall. If you are recalling default settings, select scene 001 "EPAC Default."

2. Press Recall. The board as you saved it will load.
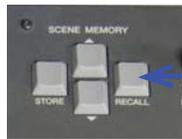
Press Recall to load a scene.

Figure 2-53 Recalling Scenes

Scene Menu
The Scene menu shows a list of all of your scenes and gives you various options you can use to manage them. Among these options are cut, copy, paste and insert.

Copy
Copies highlighted scene.

Lock
Touch to lock scene.
Locked scenes can be re-called but not modified.

Title
Name of Scene.
Touch to change.

No.
Scene Number

Selection knob
Turn the correspond-ing multi-function knob to move through the list. Press and hold down the knob while turning to select mul-tiple scenes.

Multi Select
Touch this to enable selection of multiple scenes. While this is activated, turning the knob will highlight a range of scenes starting at the scene where the button was pressed to the scene you turn the knob to.

Paste
Pastes copied or cut scene at the highlighted location.
Can overwrite scenes.

Clear
Deletes highlighted scenes.

Cut
Cuts out highlighted scene.

Insert
Puts copied or cut scene in at the highlighted slot and moves all other scenes down. Useful for reordering scenes.

Undo
For when you make a mistake. Undoes the last action you made.

Comment
Additional short infor-mation about the scene.
Touch to change.

Global Paste
See next page.

Figure 2-54 Scene Menu

Store and Recall Undo
You can undo scene storage or recalls with these buttons.

AUDIO

AUDIO

Global Paste

Did you change a setting in the first scene and now have to change the setting in all the other scenes? Well you're in luck. With Global Past, you don't need to go back through each scene by hand, you can have the board do it. This feature is great for changing things like Dynamics settings on one channel throughout the entire scene list.

1. In the scene you made the change in, go to the scene menu and press Global Paste in the bottom Right.

2. The following screen will pop up. Looks intimidating huh?

3. Press the "Set By Select" button on the touch screen and press select on the channels with the parameters you want to copy to the rest of the scenes.

4. Select the parameters you want to copy on the touch screen. Highlighted parameters will be copied.

5. Choose the scene you want to copy from using the corresponding multi-function knob and choose the ending scene with the other knob. You are selecting a range of scenes to copy the settings to with these knobs. The range will be highlighted on the right.

6. Hit Paste. The parameters have been copied to all of the selected scenes.

Set By Sel
Press this to allow channel selection using the select button

Selected channels will show up in green here

Shows the first scene in the selected range.

Shows the last scene in the selected range.

Select Parameters to copy for the selected channels here.
Selected parameters are highlighted.

Use the multi-function knobs to set the range of the paste operation.

Figure 2-55 Global Paste

You can paste settings from outputs, the rack and even patches and names. Use these tabs to choose what channels you'd like to paste.

Paste
Hit this when you're ready to paste the parameters from the selected channels to the selected scenes.
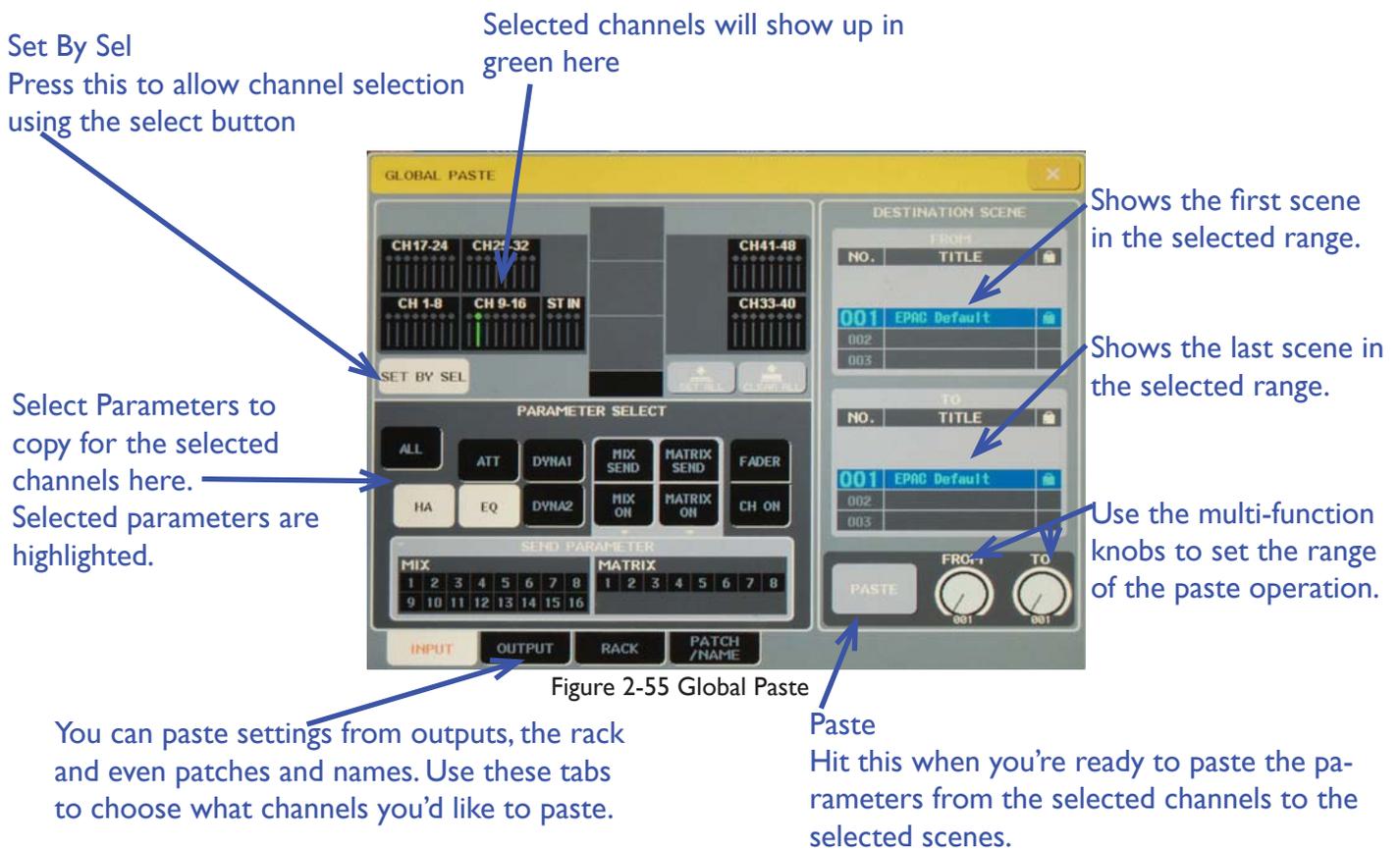
2.4.2.2 **Recall Safe**

Equally important as the Scene Store and Recall system is the Recall Safe feature. There will be channels and mixes that you do not want to change when you recall a scene. For example, you will not want the Stereo and Mono masters to change their output every time you recall something and you won't want a monitor feed to suddenly change volume when you recall something. To prevent a channel from changing its settings when you recall a scene, you must make it Recall Safe.

Making a Channel Recall Safe

1. Go to the CH Job Menu and press Recall Safe.

2. Press the select button on the channel or mix you want to make recall safe.

3. Select the parameters you want to keep recall safe. This can be all parameters or just one parameter and anything in between.

4. Press the safe button. The selected channel will change colors on the display.

Clear All
Resets the Recall Safe status of all channels and mixes.

Recall Safe Summary
Green channels are completely recall safe: all parameters are recall safe. Blue channels are partly recall safe: only a few parameters are recall safe. Channels with no color are not recall safe.

Global Recall Safe
These apply to all channels.
When you load a scene the patches should normally not change

Set By Sel
Allows you to turn on Recall Safe for a channel by pressing the Select button on a channel

Parameter Select
Touch a parameter to make it recall safe for that channel.

Safe
Press this to make the channel recall safe for the selected parameters.
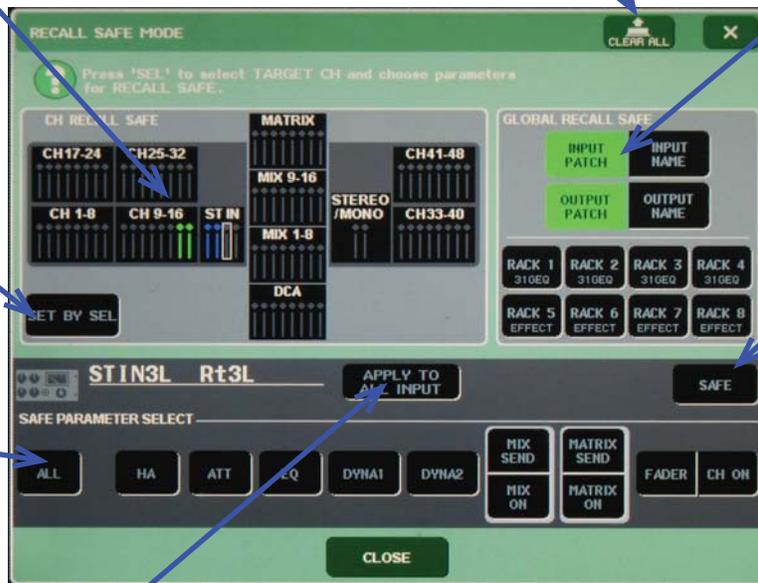
Apply to All Input/Output
Puts your recall safe settings for one channel on all of the other channels.

Mixes and Matrices have a special parameter: With Mix Send. This makes all the of the channel mix send levels recall safe.

Figure 2-56 Recall Safe

AUDIO
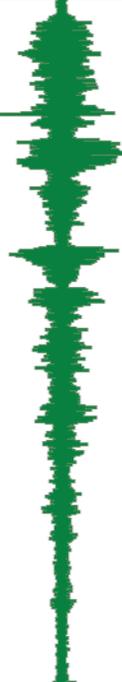
Recall Safe Notes
Recall safe is crucial for running a smooth mix during a show. Use it well. It is a good idea to completely recall safe the Stereo and Mono masters as well as any mixes or matrices that you are using. If there is some setting that you never want to change and you're afraid that it might if you recall a scene, make only that setting recall safe for the channel it's on. What you have to know when using recall safe is what you want to remain constant throughout the show.

2.4.2.3 USB Output

You can save your scenes and settings to a USB jump drive, just in case someone comes along and accidentally messes up some setting. This is a pretty easy thing to do.

1. Insert a Jump Drive. There is a port on the right side of the touch screen.

USB Drive goes here

Figure 2-56 USB Port

Press Save/Load

2. Go to the Setup Screen and press Save/Load.

3. You will see a list of files and directories on your jump drive. Press the save button on the bottom to save a copy of your settings and scenes to your jump drive.

To load your settings go back to the same Save/Load screen. Then highlight the file you wish to load and press the load button in the bottom right.

Figure 2-57 Save/Load

2.4.2.4 Users and User Defined Keys

The board has a feature that lets you load your own personalized settings to the board using a User Key. More importantly, it lets you define what the mysterious numbered User Defined Keys on the board do. It also lets you set a password for board locking if you're worried about someone messing with the board while you're gone for a few minutes.

Creating a new User

1. Go to the Setup screen. Insert a jump drive. Your user key is linked to the file on the jump drive.

Press Create User Key

User Setup
Press to change user settings, such as User Defined Keys

Login Box
Press to Login under your User Key

Console Lock
Press to lock board. You can take your USB Drive out when the board is locked but you must put it back in to unlock the board. If you lose your USB drive, turn the board off and back on to unlock it.
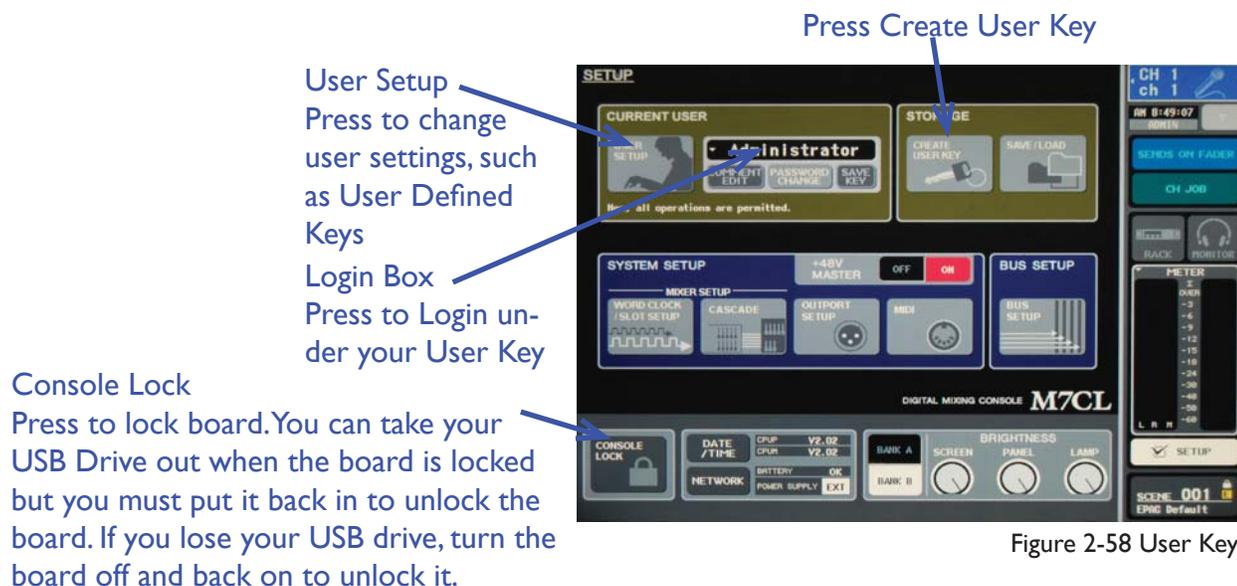
Figure 2-58 User Keys

2. A window with lots of boxes pops up. Make sure the "Power User" button in the top right is highlighted, make sure all of the boxes are highlighted green, and make sure that you've given yourself the permissions to edit all faders (all faders are highlighted green in the diagram of the board).

3. Enter your username and password in the indicated fields.

4. Press "Create." The board will automatically log you in under your new user key.

Logging In

1. Put in your USB drive. Press the box on the Setup screen that says "Administrator." A dialog will pop up asking you what user you'd like to log in as. Press External User Key.

2. Enter Your Password. You are logged in under your user key. When you're done, remember to log the administrator back in.

Configuring User Defined Keys

1. Log in as the user for whom you wish to change the User Defined Keys.

2. Press "User Setup" on the Setup screen.

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3. Press the Tab that says "User Defined Keys."

4. You will see the 12 User Defined Keys shown on the touch screen. Touch one of these buttons to bring up a menu with options detailing what operations are allowed on they keys. From here you can select a new function for the button you've touched.

*Note that User Defined Keys are the only way to quickly enable and disable Mute Groups, so if you are using mute groups, you should have a key defined to that group.

2.4.2.5 Outport Overview

This screen gives you an overview of what Omnis are being used by what mix and what the delay on those omnis are. **For video feeds, you need to set the delay to 29 ms and turn it on**. It lists Omnis in numerical order and what mix is feeding it above each entry. To get there, go to the Setup screen and press "Outport Setup."

Touch the box above the delay knobs to pick a mix to send to the Omni

Turn the corresponding multi-function knob to adjust delay

Touch the Delay button to turn on the delay for that Omni. An Omni that's being delayed will have this button highlighted.

Meter shows what is going into each Omni.

Figure 2-60 Outport Overview

Use these tabs to switch what outputs are displayed.

2.4.2.6 Meter

Did you know that you can touch the meter to bring up a more detailed meter screen? Well you can, and the board will display a screen that shows you what volume is going into each channel.

This screen shows the exact level of each channel's fader

Metering mode
Press these buttons to change the metering mode fore their respective windows.

Peak Hold
Draws a line at the highest reached volume (the peak) and displays it until this is turned off.

Touch this to get to this screen.
Touch it again to exit.

Figure 2-61 Meter

Metering Modes
Pre-HPF the volume going into the channel before the HPF is applied.
Pre-Fader the volume going into the channel after the HPF has been applied.
Post On shows the volume coming out of the channel.

2.4.2.7 Date and Time

If the board's date and time get messed up, you can fix that by going to the setup screen. Press Date and Time and use the knobs to set the correct date and time.

Touch this to bring up the set Date and Time display.
Use the multi-function knobs to adjust the date and time.

Figure 2-62 Date and Time

AUDIO

2.4.2.8 Adjusting Brightness

When it's dark, the board's screen can get pretty bright. To adjust the brightness of the screen, lamps, and LEDs, go to the Setup screen. Use the multi-function knobs to adjust brightness settings.

Bank Change
Switch between preset levels of brightness. While on a particular bank, changing any setting is automatically saved in that bank.

Figure 2-63 Brightness Settings

Controls Screen Brightness
Turn left to dim, right to brighten

Panel
Controls brightness of LEDs on board's surface

Lamp
Controls the brightness of the lights on the board.

AUDIO

2.4.3 The Digital Recorder

This little device takes what you put into it and records it onto a Compact Flash card. To use it, you first have to send something to it through these two cords in omnis 8 and 9. They are labeled "Recorder L" and "Recorder R."
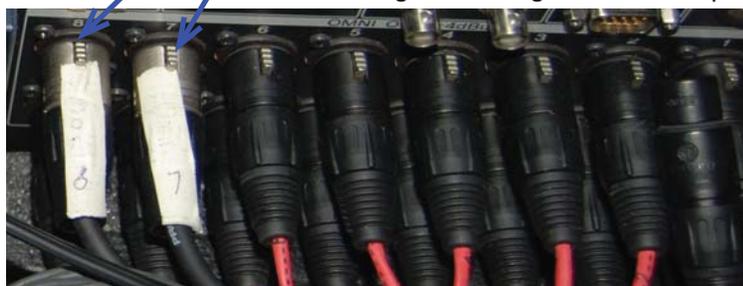
Figure 2-64 Digital Recorder Inputs

Then just go on over to the recorder, and push the record button to prep it for recording. The button will flash and all you have to do is press it again to start recording.

Figure 2-65 Digital Recorder

Insert Compact Flash Card Here

Push Once to prep for recording
Push while flashing to record.
Push while red to stop recording.

There are two recording profiles. Profiles are sets of recording settings. To select a profile, press the "Menu" button. Then turn the jog wheel to select a preset profile. Presets 1 and 2 have been setup; preset 1 records a Stereo 128 kbps MP3 and preset 2 records a Mono 64 kbps MP3. Push the jog wheel to accept the preset.

1. Press Menu

2. Turn the jog wheel to select a preset. Press to confirm.

To view or change the recording settings, select a preset, then turn the jog wheel until "RecFormat" is displayed. Push the knob while "RecFormat" is displayed to view recording settings. Push the knob to move through each setting. Turn the knob on any setting to change the flashing setting. Press "Menu/Set" to save your changes. The sample rate should be 48kHz for minimal noise artifacts.

If you need more help with the recorder, see the online documentation for the PMD570.

AUDIO

2.4.4 Mixing Tips

A few more tips and tricks to keep in mind while mixing.

Use Your Ears
This should be obvious. If something doesn't sound right to you, chances are that it doesn't sound right to other people. Listen carefully to the sound in the theater and adjust from there. Listening from different vantage points in the theater can help you get an idea of the theater soundscape that you should keep in mind while mixing from the booth.

Riding the Faders
Mr. Matthes will often tell you that you need to "ride the faders." Well, what does that mean? It means that as you listen, you should adjust the faders so that there is a nice balance of sound. Pull down the loud people when they're loud, boost the soft people when they're soft (when appropriate, there are times when you want the louds to be really loud and the softs to be really soft). For soft sounds, if you can't hear it, chances are that most people can't hear it either, so keep your softs within reason.

Musical Balance
Important for musicals. You should know the music and the basic principals of musical balance. If you're unsure of how to balance a pit, talk to the pit director, who will tell you what instruments to keep loud and which ones to keep soft. Mixing a bass into the pit is the most difficult part of the pit. Bass is critical for a musical foundation, but too much bass muddies the sound and can sometimes be physically uncomfortable. Find the middle ground where the bass lays down a nice, deep, soothing musical root (unless it's supposed to be edgy). Vocals take precedence in a musical, so keep them audible above the music, but not so loud that they dominate the pit. It's a tricky balance, especially in quiet songs. Keep a pit DCA handy to deal with this after the pit balance is set.

Talk to the Vocal Director
Important for musicals. When creating your mic plot, talk to the vocal director to see what people should get a mic for the chorus. Your director will tell you exactly what they want for each song and who they want the focus on. And they will love you if you talk to them regularly. Keep your vocal director happy.

Centralogic Locking
If you hold down one of the buttons that switches what channels are in the center you can lock the faders. What this means is that you can control the volumes, turn them on and off and cue the 8 channels you locked in the center using the grey faders. While the center faders are locked, you can press a navigation key to switch to a different set of 8 channels and use the touch screen and multi-function knobs to change the settings on those channels without taking away control of the 8 channels you locked. The border around the bottom row of boxes stating the name of each fader turns curvy and the light of the button you held starts blinking. This little feature causes some confusion when you can't figure out what happened to the center, but it does allow for some nice mixing techniques.

One of my favorite things to do was to lock the DCA faders and keep an eye on the settings of the normal channels on the touch screen. While the faders are locked, you can change the settings for any other channel on the board without disturbing what channels your center faders control. It might be a little confusing at first, but it's a useful technique to keep in mind. To unlock the center faders, hold down the button with the flashing light until it stops flashing and the bottom border of the screen reverts to its normal display.

This is a confusing concept to get I know. What it boils down to is that when you lock a set of faders, you have essentially made them "permanent" faders for whatever set you locked. The best way to understand the locking system is to try it out yourself and play around with it for a while.

Be Smart with Scenes
By this I mean don't go overboard with scenes. As stated before, it is not necessary, and probably more work, to use a scene for a single mic turning on or off. Use them for big changes.

Fine-tuning Settings with Knobs
If you press down a knob while turning you can select values with increased precision. For example, say you want to send a feed to a mix at -11 dB. But you can only get values of -10 and -12 dB. Hold down the knob while turning to get it to go to -11 dB. This works for a variety of different screens.

AUDIO
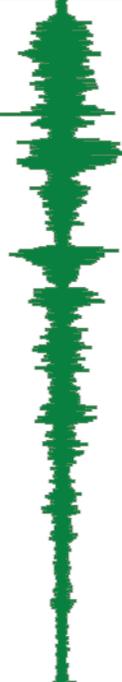
2.5 Troubleshooting

Well, it has to happen eventually. Something isn't working right for you. This section contains help for fixing common problems while running the sound board.

2.5.1 I Can't Hear What I Should Be Hearing

- Make sure the proper channels are on. Check the Stereo and Mono masters and make sure they are up and on and check the channel you're using.
- Check that the mic is on.
- Check the Stereo/Mono patch (Section 1.2.2).
- Check your head amp setting.
- If using a computer or iPod, make sure the volume is up and something is playing.
- Check your patch. Make sure everything is going to the right place.
- If you're using a wireless mic, make sure that it is not muted and that it is transmitting on the correct frequency (Section 2.6.2).
- If your checks lead to nothing, tell Mr. Matthes and have someone else look at your problem.

2.5.2 The Mic is Making Odd Sounds

The Mics in EPAC are very susceptible to interference. RF-16 in particular has more of these problems than the other mics. The pops and crackles could also signify a bad headset. There are a few things you can do.
- Put a big antenna on the mic pack instead of using a small stubby one.
- Turn of cell phones. Yes it does affect the mics. Just a little bit, but it's noticeable.
- Put the mic on RF High. To check this, press the set button once on the mic. Use the arrows to scroll until you see something starting with RF on the screen. If it is on RF Low, press and hold set until the screen starts blinking. Scroll with the arrows until you see RF High. Press and hold set.
- Check the connection between the pack and the headset.
- Try replacing the headset. When you have time, test that headset on a different mic pack to see if the headset is actually broken.

2.5.3 The Mic is Not Transmitting Sound

- See if the mic is on.
- If it is a wireless mic, see if it's muted. If it is, briefly press the power button to un-mute it.
- If using a wireless mic, the headset may be broken. Try a new headset.
- If using a wired mic, you may have a bad wire or a broken mic. Try replacing the wire and try using a different mic.

2.5.4 The Monitor Does Not Work

- See if your Mix is patched to the right place and see if your monitor is plugged in to the right place.
- Make sure your Mix send is on.
- Make sure your Mix send is loud enough.

2.5.5 **I Get Too Much Feedback**

- If you hear ringing in the theater, that indicates that you are close to getting feedback. Turn down you overall mix if you hear this.
- Turn down your monitor mix.
- If you have hanging mics, turn their volume down.
- If you have mics close to the house, turn their volume down.
- Reduce the Stereo and Mono volume.

2.5.6 **The Board Does Not Turn On**

- Plug in everything.
- Turn the power switch on the sound card on.
- There is a secondary power switch on the bottom of the sound cart. Turn that on.

2.5.7 **I Can't Hear the Speakers**

- Do you have something playing through the stacks?
- If you do and you still can't hear them, a processor in the amps might have blown. Tell Mr. Matthes and don't panic because there's nothing you can do. Someone will come in and the speaker system will be fixed up shortly.

AUDIO

AUDIO

Mic Inputs

1-8 Downstage Right

9-16 Downstage Left

17-24 Upstage Right

25-32 Upstage Left

33-40 Pit Wall - House Side

41-48 Pit Cosutme Shop Wall - House Left

49-56 Pit Cosutme Shop Wall - House Right

MIC 57

MIC 58
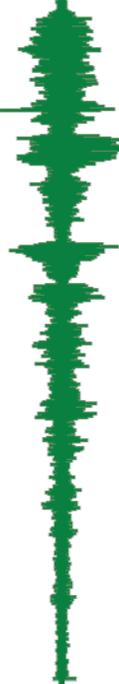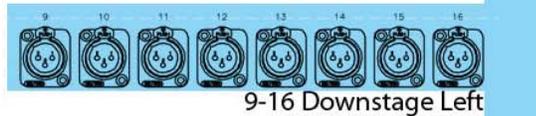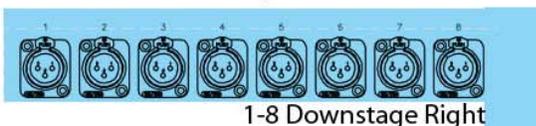
Hanging Mic →

57-58 First Catwalk Center

Mic Input Map

MICROPHONES　　Costume Shop Rack

Patches

Hanging Mic

Mic 58 to In 48

MIC SPLIT INPUTS

Wireless Mics
Nothing should
be plugged
in here.

Costume Shop Rack
Board Inputs

Key

To EPAC Costume Shop Rack	(blue)
To EPAC Booth	(green)
To Bloom Studio (Video Room)	(red)
Default Patch Connections	(purple)
To Stage	(yellow)

This chart maps out the mic inputs and
where they go along with the default patch
connections.

Mic Split Outputs

The inputs going to the
board actually come out at
three different locations.
The outputs going to
the board are already setup.

Mic Out to Stage Left
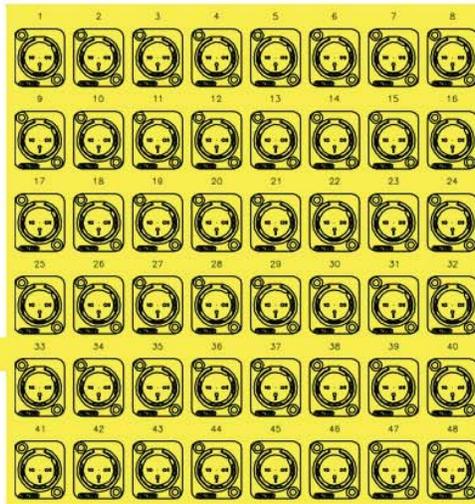For Monitor mixer if you ever have one.
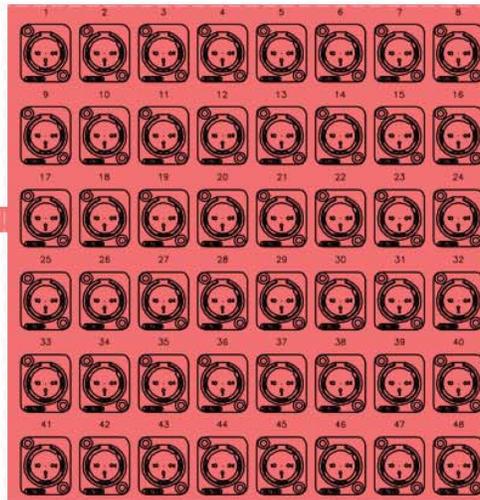
TP–A34A
Mic Out to Video Room

MICROPHONE OUTPUTS

The Hanging Mic should
be patched to Channel 48
by default.
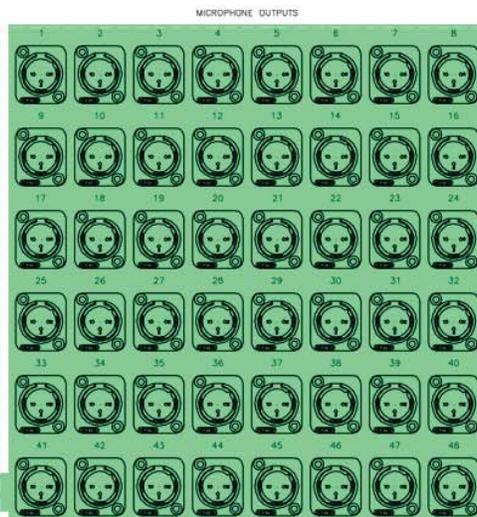
TP–A19A
Mic Out to Board - In Sound Booth

AUDIO

AUDIO

Audio Tie Map

A1-A4 Downstage Right

A5-A8 Downstage Left

A9-A12 Upstage Right

A13-A16 Upstage Left

A17-A20 House Side Pit Wall

A21-A24 Pit - Costume Shop Wall Left

A25-A28 Pit - Costume Shop Wall Right

A29-A30 House Left Floor Panel

A31-A32 House Right Floor Panel

A33-A36 House Mid Wall Stage Right

A37-A40 House Mid Wall Center

A41-A44 House Mid Wall Stage Left

A45-46 House Left Upper Landing

A47-48 House Right Upper Landing

A57-A58 On Panel TP-A29

A75-A77 House Center Floor Panel

Key

To EPAC Costume Shop Rack	▬
To EPAC Booth	▬
To Bloom Studio (Video Room)	▬
Default Patch Connections	▬
To Stage	▬

This chart maps out the audio ties and where they go along with the default patch connections. Audio ties can transmit signals in both directions. These are not one way paths.

AUDIO TIE LINES
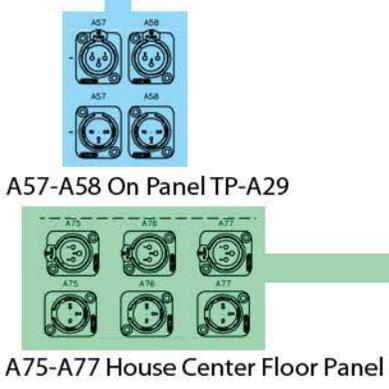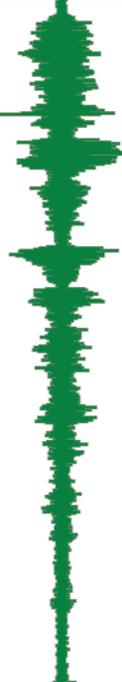
A1-A66
Costume Room Rack

You can get more coms on the video room channel
by running a cord out of A33 or A 41 and into another tie.

A59 and A60 are
the root of the Video
Com Line. They
are usually routed to
the left and right panels
on the house mid walls
where the cameras are.
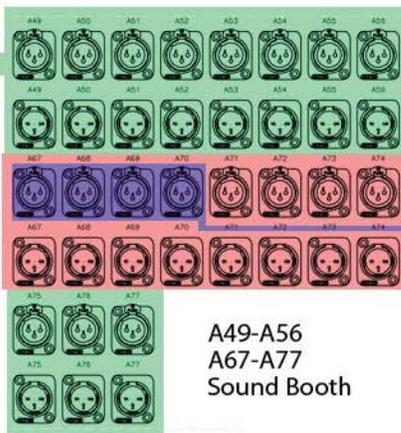
A49-A56
A67-A77
Sound Booth

Audio Ties 67-70 are used
to send feeds to the video
room for mixing.
A67 is for the Vocal Mix
A68 is for the Pit Mix
A69 is for the Effects Mix
A70 is for the Hanging Mic
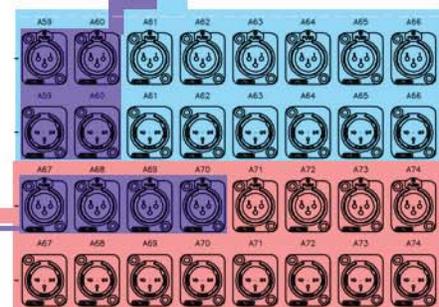
A59-A74
Bloom Studio (Video Room)

AUDIO

AUDIO

This diagram shows the basic setup of the sound system.
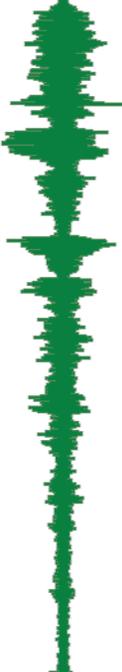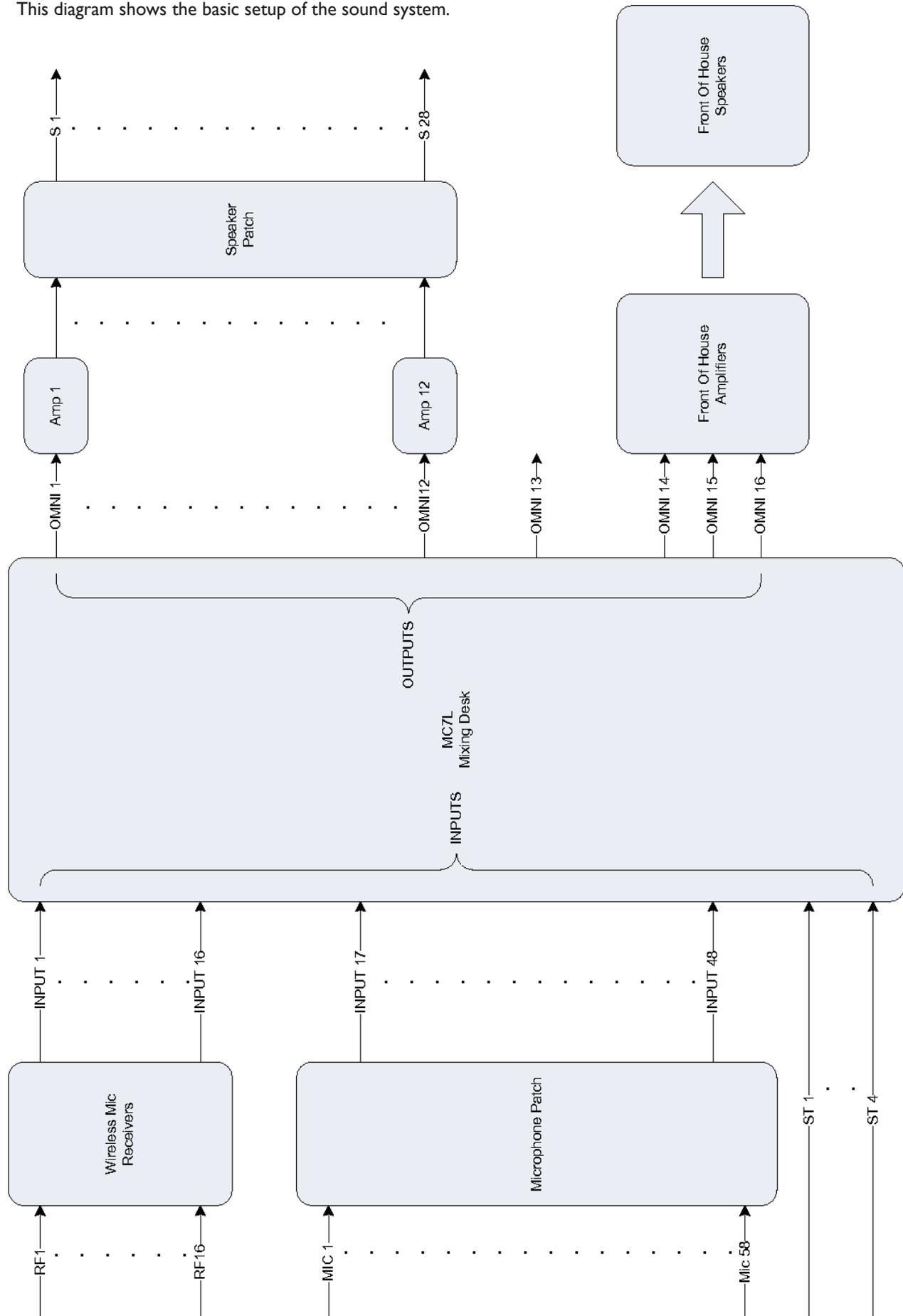
2.6.3 Wireless Frequency Table

The wireless mics should be set to the following frequencies.

Mic Number	Frequency	Mic Number	Frequency
1	662.375	9	663.125
2	666.625	10	668.375
3	671.625	11	673.125
4	678.625	12	679.875
5	655.625	13	664.250
6	665.875	14	669.750
7	670.375	15	675.500
8	676.875	16	657.500

Table 2-4 Mic Frequencies

*Note: Mic 16 is in conflict with a Digital TV Signal. That channel will experience more interference than the other channels.

If the Mic Frequency on the Pack Does Not Match The Receiver
ONLY CHANGE THE MIC FREQUENCIES IF THEY DIFFER FROM THE TABLE. RESET FREQUENCIES TO THOSE LISTED IN THE TABLE.

-On the Mic Pack, press set. Use the arrows to scroll through the options until you see numbers on the screen. Hold set. The screen will flash. Use the arrows to select a new frequency. Hold set to store the new frequency. To cancel setting the frequency, press set once quickly. The screen will flash "ESCAPE" and return you to the menu.

Standard Patch Notes
Try to reset the patch to this after a show.

Patch	Notes
Mic 58 to Channel 48	Hanging Mic
A67-A70 in booth to A67-A70 in Video Room	Sends for Video Mix
A59 to A33	Video Room Com
A60 to A41	Video Room Com

Table 2-5 Standard Patch

AUDIO

3 LIGHTS

3.1 Board Overview and Setup

The board controls were covered in Section 1.3.1 and will not be covered again here. Everything in this section is basic light board functions. If you need more help, talk to a light tech or the lighting director for a show.

Moving the Board
Moving the light board is a lot easier than moving the sound board.

1. Turn the board off. Unplug the power cord from the wall. The surge protector will beep in protest, but you can ignore it.

2. Unplug the DMX cables from the wall. Try to remember what DMX cable went where. It is important that they are plugged into the right port.

Unplug these when moving the board.
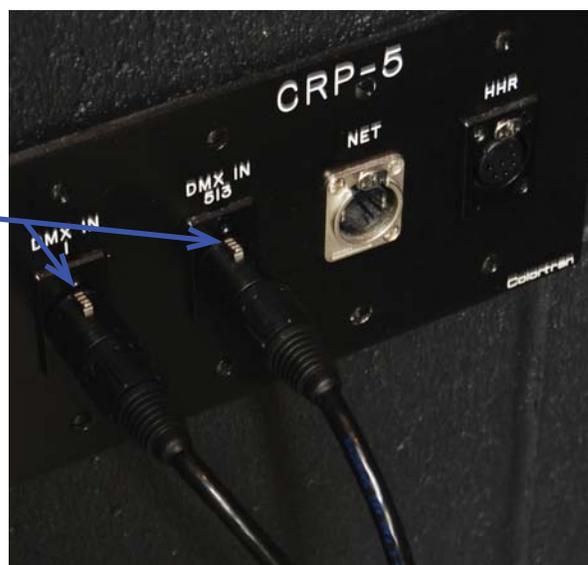
Figure 3-1 DMX Wall Panel

3. Wheel the board to the new location, either in the middle of the house or in the booth.

4. Plug in the DMX cords to the correct places. If you don't remember what cord went where, find the tag in the back of the board to determine what cord goes into what jack.

5. Plug the power supply back in. You may have to turn the surge protector back on by holding the on button on the front of it.

Check the tags on the cords in the back of the board to figure out what cord to plug into what DMX jack.

Figure 3-2 DMX in Board

LIGHTS

3.2 Dimmers and Lights

Dimmers are the things that allow you to make lights dim, rather than just being on or off. They are what the light board is actually controlling when you turn on a light. When you plug in a light, you are connecting it to the dimmer marked above the connector. But before you can use a dimmer, you have to hang a light a plug it in. Dimmers are located in room 377 E. You need a key to enter this room.

Hanging a Light

1. Get a wrench and some light cable if you need it.

2. Go to the place you want to put the light. You may have to bring down an electric.

3. Put the C-Clamp over the pipe and fasten the safety cable around the pipe.

4. Secure the C-Clamp by tightening the bolt. Turn the bolt until the light is secure. Do not over-tighten the bolt as it can damage the pipe and the clamp.

5. At this point the light is technically hung. What remains is to focus it. If you're working on an electric, you'll just have to guess at what angle you'll have to point the light to hit the right spot unless you have a lift. In general, you will want to point the center, where the light is strongest, at the point you wish to light.

6. Remember the dimmer number you plugged the light into so you can control it with the board.

C-Clamp
Place it over the pipe as shown.

C-Clamp Bolt
Used to secure the clamp to the pipe.

Barrel
There is a small bolt you can loosen to move the barrel. This changes the light edge (soft edge or hard edge).

Safety Cable
Secure this before you start doing any-thing`

Shutter
There are 4 of these. Use them to restrict the bounds of the light.

Tilt Knob
Turn to loosen and allow the light to tilt.

Figure 3-3 Hanging Lights

LIGHTS

3.3 Patching and Checking Dimmers

Once you have a light plugged into a dimmer, it's time to go up to the board and patch the dimmer to a channel so you can use it. The light board organizes dimmers into channels. One channel can contain multiple dimmers. By putting a dimmer in a channel, you can control it through the board.

Patching Dimmers

1. If the board is not in a one-to-one patching scheme, you will have to go to the patch dialog. To get there, press "Patch." You can determine the current patch state by pressing the "Channel" button followed by the number of your dimmer, pressing "At" and then pressing "Full." If you see your light turn on, the board is most likely in a one-to-one patch configuration.

2. In the patch screen, press the "Dim" button. Enter the number of your dimmer. Press "Enter."

3. The screen will jump to where your dimmer is and it will be highlighted.

4. Now enter the number of the channel you want to put the dimmer in. Press "Enter." The dimmer should now be shown next to the channel you entered. If you want to unpatch a dimmer, press "Dim" and the number of the dimmer. Then enter 000 for the channel number. Press "Enter."

The Patch screen.
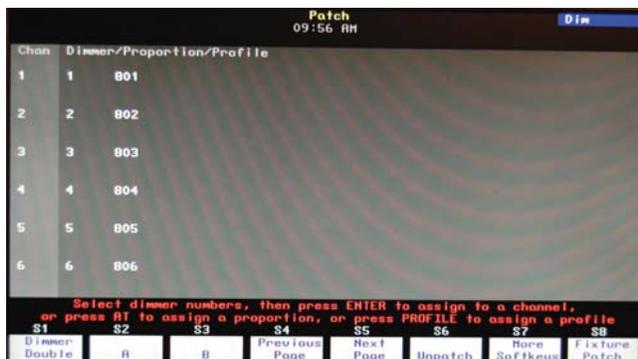
Figure 3-4 Patching Overview

Patch Button

Dim Button

Number Entry Pad   Enter Button
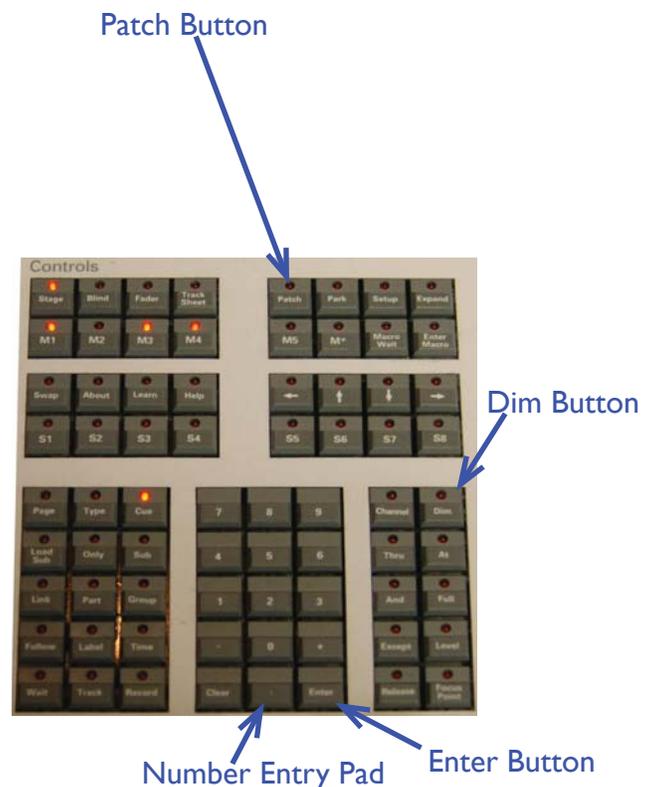
LIGHTS

Dimmer Check

Dimmer check lets you run through the dimmers one by to see what comes on when the dimmer is on. It's useful for finding out what lights are plugged into what dimmers.

1. Press "Dim." Enter the number you would like to start dimmer check at. Press "At" then press "Full."

2. Press "Enter" to enter Dimmer Check. A dialog box will pop up telling you what dimmer you're currently on.

3. Use the "+" and "-" buttons to move between dimmers. "+" advances to the net dimmer, and "-" backs up one dimmer.

4. Press a button such as "Channel" to exit Dimmer Check.

Figure 3-5 Dimmer Check Controls

At Button

Full Button

- Button

+ Button
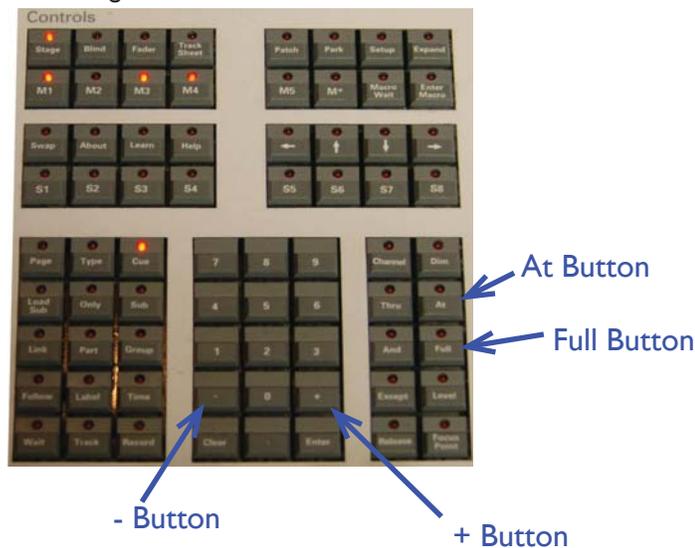
LIGHTS

3.4 Turning Lights On

Selecting Channels

To turn on lights, you first have to select the channels containing the lights you wish to turn on. The board has a pretty simple system to "capture" channels so that you can turn them on.

If you want one channel, press "Channel" and then enter the number of the channel you want.

If you want a range of channels, press "Channel," type the number of the channel you want to start at, then press "Thru" and enter the last number in your desired range. If you want all channels in a range except one, select the range as described, then press "Except" and enter the channel number to exclude. If you want two non-consecutive channels, press "Channel," enter the first channel number, then press "And" and enter the second channel you want. You can add as many channels as you want using the "And" key, just keep pressing "And" after each number you want.

You can construct more complicated queries with this system. For example, let's say you want channels 1-10 and 40-45 except 9. You would enter "Channel 1 Thru 10 And 40 Thru 45 Except 9" into the board. It's entered exactly how you would read it.

LIGHTS

Channel Button

Thru Button

And Button

Except Button
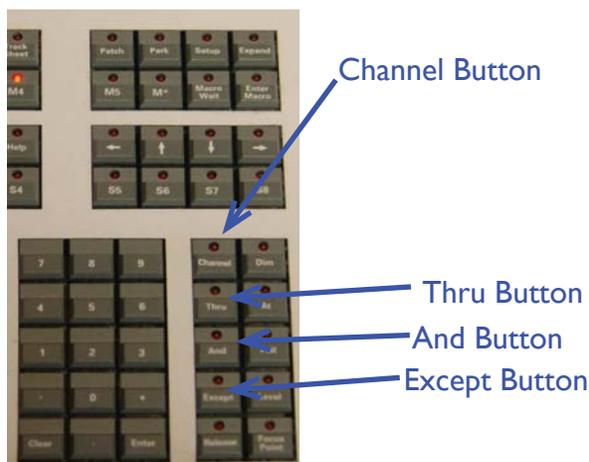
Figure 3-6 Selection Keys

Turning Channels On

Now that you can select channels, it's a simple matter to turn them on.

1. Select the channels you want on.

2. Press "At." Enter a level you want the lights to turn on at, as a percentage of full. Press "Enter" So if you want all the lights to turn on at 50%, you would select your lights and press "At 50 Enter." If you wish to have all of your lights on at full, select the lights and press "At" and then press "Full."
Alternately, you can spin the wheel up to turn the lights on.
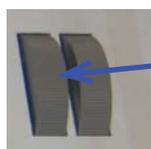
Spin up to increase light level
Spin down to decrease light level

Figure 3-7 Wheel Control

The levels under the channel numbers you selected will show up in red on the light board display.

Turning Channels On With Submasters

All you have to do is slide the submaster up to turn on its group of channels. You can press the button under the submaster to bump up the lights it controls to full.

Turning Lights Off

You may have noticed that the lights you turned on have red numbers under the channel number. This means that the channels have been "captured." You cannot modify the level unless you directly select the light or use the Grandmaster to bring it down. This means that you can't control the captured channels with submasters. To fix this, select the channels you want to release and press "Release." If you want to release all captured channels, press "Release" twice.

3.5 Cues

Cues allow you to save what lights are on stage at any given point. Moving from cue to cue makes your lights fade in and out as the lighting changes. They are used to create the lighting effects for shows. You can have up to 600 in the board.

Creating Cues

1. Turn the lights you want in a particular cue on.

2. Press "Record." Type in the number of the cue you want to save. Press "Enter."

Figure 3-8 Writing Cues

Finally, press Enter.

2. Press Record first...

Then type in the number of the cue you wish to record...

Using Cues

1. After you have come cues written, press "Cue." Then enter the cue number you want to start at. Press "Go."

2. While in a Cue, press "Go" to move to the next cue in ascending numerical order.

Shows next cue number

Shows current cue number

To use a cue, first press the "Cue" button.
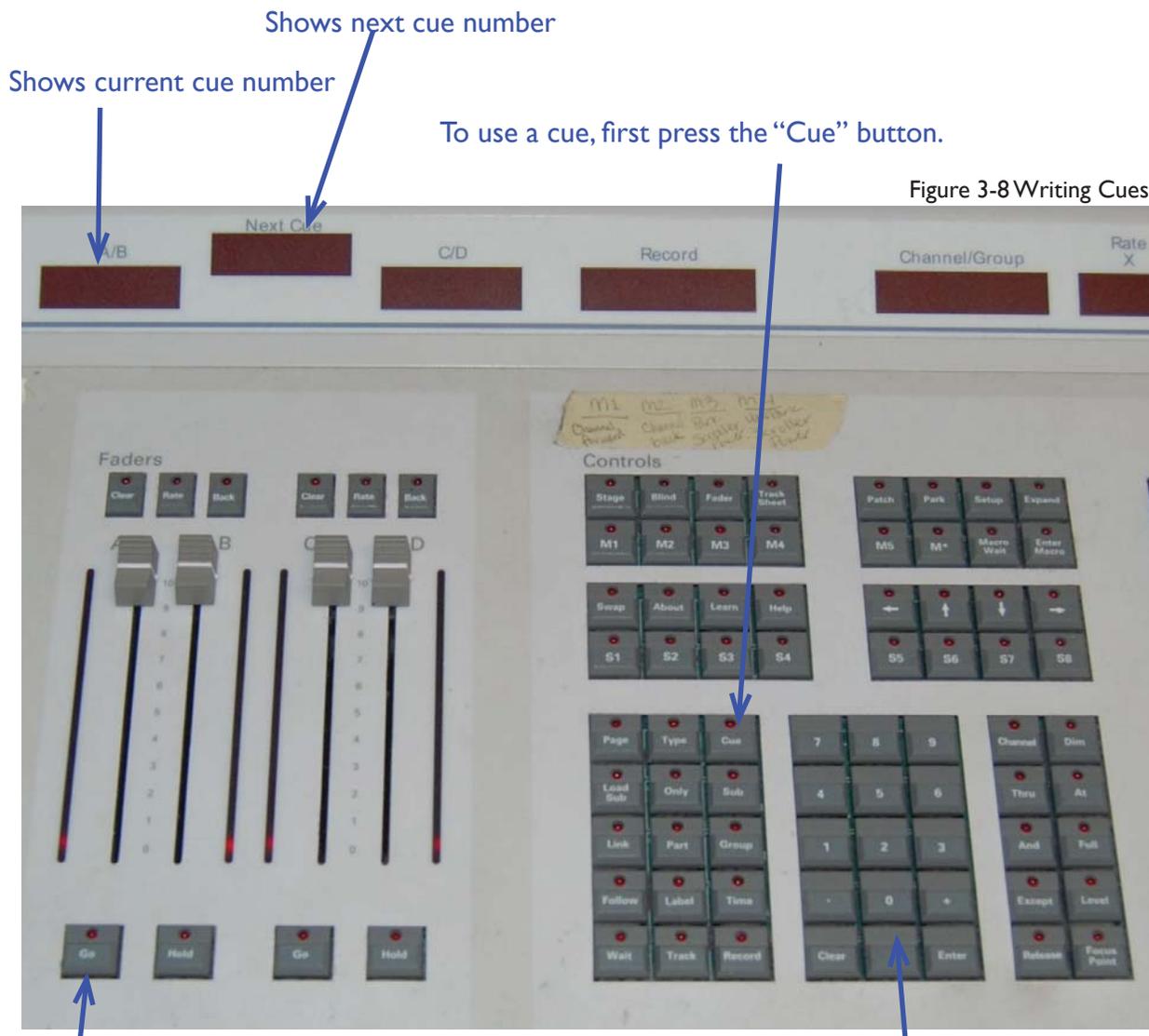
Figure 3-8 Writing Cues

LIGHTS

Press Go on this set of faders to enter the Cue.
Press Go while in a Cue to go to the next cue in
numerical order. The Cue list screen shows you what's
next as will the "Next Cue" box above.

Then enter the number of the
cue you want to start at.

Cue List Screen
Shows a list of all cues after the current cue. Note that
it only shows upcoming cues, not previously used cues.

Arrow and highlight shows next cue.
This is what will activate when you next press "Go."
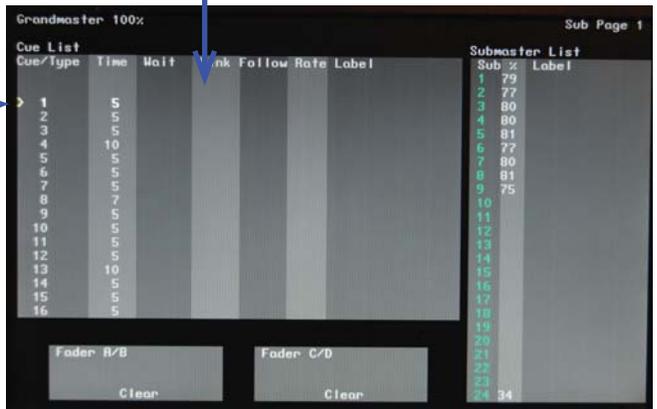
3.6 The Grandmaster and Submasters

The Grandmaster is able to control the volume of all channels on the board, even captured channels can be controlled with the Grandmaster. It is usually left at the top, and the lights are usually controlled with the Submasters. Before using the board, make sure the Grandmaster is all the way up and that the blackout button is not activated.

You already know how to use submasters, so here we'll talk about creating submasters.

Creating Submasters

1. Turn on the group of channels to the way you want them to appear *when the submaster is at full.* This last part is important to note. A submaster at full will only raise the channels to the levels they were at when they were recorded into the submaster. So if you recorded a channel at 50 into a submaster, the submaster will only raise that channel up to 50 when it is pushed all the way up.

2. Push "Record." Now press the button under the submaster you want to record in. Submasters with something already recorded in them will have a green light on in their button. That's it! The submaster is now ready for use.

*Note: If the submaster already has something in it (signified by a green light) and the submaster is up, recording over that submaster will cause the light to blink. Move the submaster all the way down and back up to make it reflect the new arrangement of lights.

Arrange the lights how you want them in the submaster, then press "Record."

Figure 3-9 Writing Submasters

Then press the button under the submaster you wish to record.

3.7 Common Board Functions

The board has a few functions that you might find yourself in need of.

Reset Patch to One-to-One

If the board is not set to one to one after a show, you can do it yourself. **Make sure that it is ok for you to reset the patch before you proceed with this.**

1. Press "Setup."

2. Press "4" then press "Enter."

3. You should be in the Clear Functions Menu. Press "9." This should highlight the option labeled "Reset Patch 1-to-1." Press "Enter." Press "Enter" again if it asks for confirmation.

Clearing Cues

If there are leftover cues from a show and you need to write new ones, use this option. **Make sure that it is ok for you to delete all cues before you proceed.**

1. Press "Setup."

2. Press "4" then press "Enter."

3. Press "2" which highlights the "Clear Cues" option. Press "Enter." If it asks for confirmation, press "Enter" again.

LIGHTS

3.8 Troubleshooting

3.8.1 The Light Does Not Turn On

- First check that the Grandmaster is up.
- Check that the light board is plugged into the right DMX jacks.
- Check that the dimmer you're using is patched to the channel you think it's in.
- Plug the light into a dimmer that you know works and see if the light turns on. If it does not, you may need to put a dimmer in the circuit. Talk to Mr. Matthes to gain access to the dimmer room, 377 E, so that you can put a dimmer into the circuit.
- If the light does not come on after plugging it into a working dimmer, you should try replacing the bulb. Talk to a light tech to learn how to do this.

3.8.2 The Submaster Isn't Working

- See if you have any captured channels. Release them by pressing "Release" twice.
- Make sure the Grandmaster is up.
- Make sure the Submaster is actually controlling lights and that the lights haven't been unpatched.
- Remember that you can always write a new submaster to fit your needs.

3.8.3 The Houselights Don't All Turn Off

- If there is a house light submaster on the board, it may not be patched to all house lights. To easily fix this, on one of the house panels press "House Out." Now use the stage lights as needed.
- The house lights are in dimmers 228-242. You can write a new submaster to control all the house lights.

3.8.4 Why Is That Light On?

- If there's a light that should be off but is on, double check your patch.
- Make sure the Snapshot is off and disabled.
- Use the dimmer check to figure out where the light is located and what dimmer to use to control it.

LIGHTS

3.9 Appendix

3.9.1 Dimmer List

The following table lists dimmer numbers and their locations.

Dimmers	Location
1-24	First Electric
25-44	Second Electric
45-64	Third Electric
65-84	Fourth Electric
85-96	0th Catwalk (The one with no catwalk closest to stage)
97-120	First Catwalk
121-140	Second Catwalk
141-144	House Right Side Tab 1 (closest to stage)
145-148	House Right Side Tab 2 (farther from stage)
149-152	House Left Side Tab 1 (closer to stage)
153-156	House Left Side Tab 2 (farther from stage)
157-160	Stage Left Down Stage Wall
161-164	Stage Right Down Stage Wall
165-170	Stage Left Up Stage Wall
171-176	Stage Right Up Stage Wall
177-179	Stage Lip House Right and Pit Wall House Side Right
180-182	Stage Lip House Left and Pit Wall House Side Left
183-185	House Right Upper Landing
186-188	House Left Upper Landing
189-200	Catwalk Gallery Stage Right
201-212	Catwalk Gallery Stage Left
213-227	Work Lights (Circuit numbers are red panels)
228-242	House Lights

Table 3-1 Dimmer List

LIGHTS

3.9.2 Dimmers, Channels and Cues

This diagram visually represents the relationships between dimmmers, channels and cues.

Plug Lights into Dimmers

Dimmer
Allows light to dim.

Multiple Dimmers can be put in one Channel

Put Dimmers into Channels to control them (This is called Patching).

Channel
Control Dimmers with this.

You will have multiple channels on in one cue

Cues are written when you want to save how the stage is lit for use in a scene. Channel Levels are saved in cues.

Cue

LIGHTS
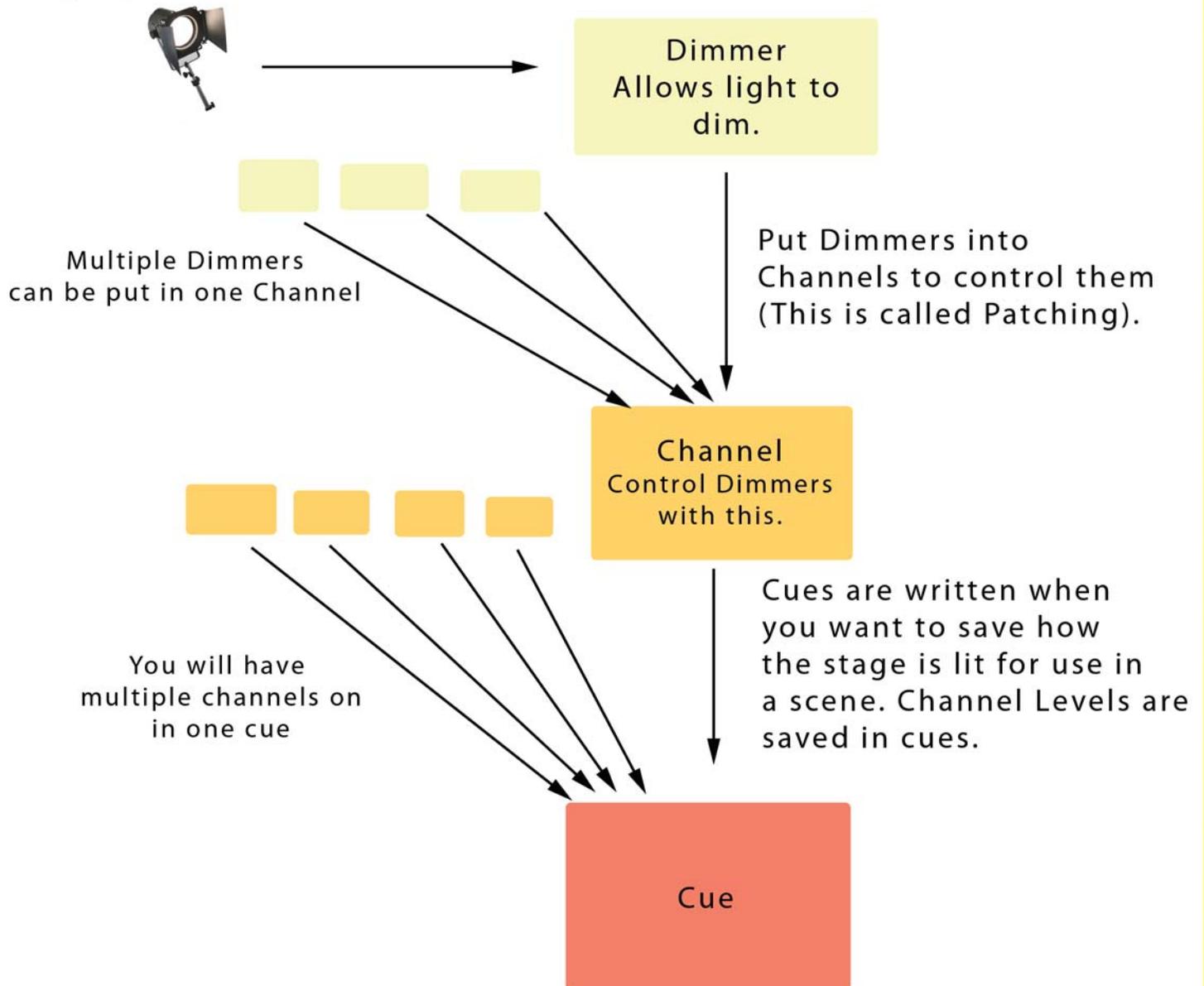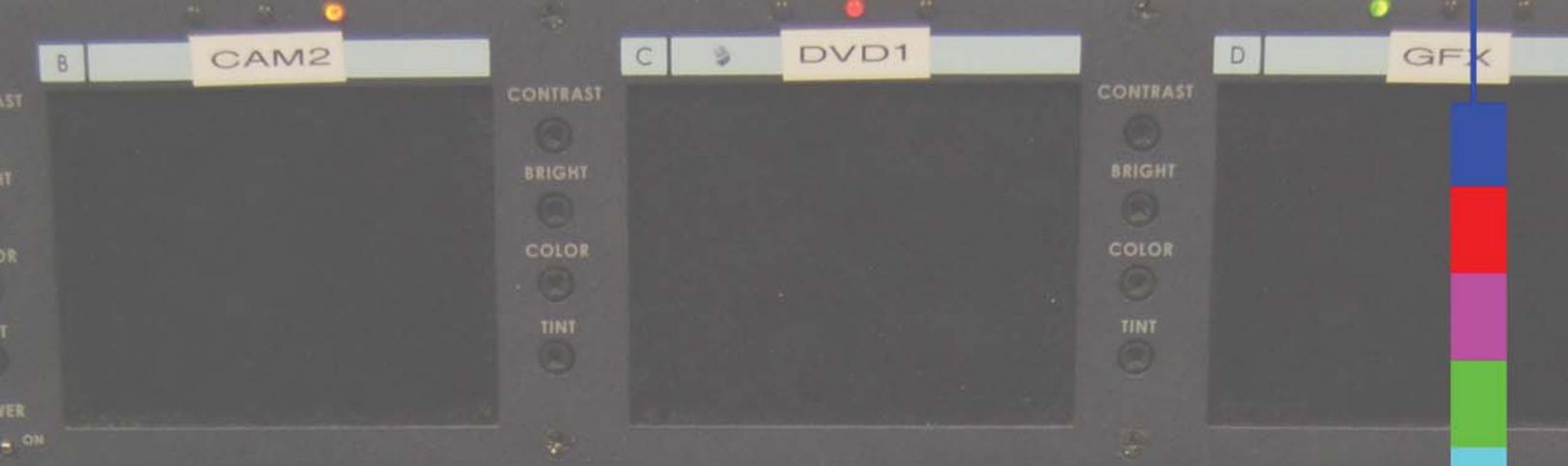
4 VIDEO

4.1 Video Setup Guide

The following section contains step-by-step instructions for the use of Bloom Studio (the video room) with cameras in EPAC.

4.1.1 Create Audio Feeds

Instructions for creating audio feeds for the video room can be found in Section 2.3.4.

Summary of Audio Feeds for Video Recording
Vocal Feed - All vocal channels at 0 dB post-fader. Sent to Audio Tie A67.
Pit Feed - Special Mix of Pit for Video using pre-fader levels. Sent to Audio Tie A68.
SFX Feed - Send of all sound effects and extra channels at 0dB post-fader. Sent to Audio Tie A69.
Hanging Mic Feed - Send of Hanging Mics (Channel 48) sent at 0dB pre-fader. Sent to Audio Tie A70.

A Note On Delay

Make sure that the Omnis you are using to send video feeds have a 29ms delay on them (with the exception of the hanging mic send). This synchronizes the video and audio. To learn how to set the delay on an Omni, see Section 2.4.2.5.

4.1.2 Camera Setup

There are three standard points where cameras are setup in EPAC. There is a lockdown camera in the booth, a camera on the left side of the house mid wall and a camera on the right side of the house mid wall. A fourth camera can be placed anywhere the video director desires.

Mr. Matthes has the connectors and adapters for all of the cameras. You will need to setup the cameras on their respective tripods and connect them to a power supply. You do not need a tape in the camera. Connect the AV cord (the one with the yellow, red and white plugs) to the camera. Put a RCA to BNC adapter on the yellow plug. Do not worry about the red and white audio plugs. Get some BNC cable ready for the next step. If you cannot find enough BNC adapters, you can borrow them from the Bloom Studio cameras as long as your return them to the place you got them from.

BNC Cable ends look like this

RCA to BNC adapter.

Figure 4-1 Adapter

Figure 4-2 BNC Cable

VIDEO

If you are using a camera from Bloom Studio, first disconnect it from the cables at the wall. Find the right cables to unplug by following the camera's snake back to the wall and finding the cables connected to that snake. You are then free to wheel the camera out of the studio.

These cords have the name of the camera and what component it is supposed to be written on them. When disconnecting them, make sure you disconnect the cords running to the camera you want.

When reconnecting them, make sure the cord names match. So don't plug "Cam 1 Red" into "Cam 2 Green."

Figure 4-3 Studio Camera Cords

When you get to the location where the camera will stay, you then have to know what cord to connect to the wall. You need to find the long BNC cord that does not have a camera number and color written on it. This is the composite cord. You will need it to send a signal to the video switcher. You also have to unplug the component out cord so that the video signal runs through the composite output instead.

Component Out
Unplug when using in EPAC.
Plug it back in when you are done.

Figure 4-4 Bloom Camera

VIDEO

4.1.3 Video Patch

Once you have the cameras setup, you can grab some BNC cable and plug the cameras into the wall panels. You then have to patch the cameras if they are not plugged into the standard patch, or if the standard patch was modified.

Connecting to the Standard Patch

There are three Video Tie Lines that always go to Bloom Studio. Plugging cameras into these tie lines will allow their video to display on the corresponding screen on the video switcher.

Tie Line	Function
V36	Camera 1 - House Floor Stage Right
V46	Camera 3 - House Floor Stage Left
V86	Camera 2 - Lockdown

Table 4-1 Standard Patch

Modifying the Standard Patch

If you need to use different tie lines, you have to modify the standard patch. Usually this means that you only modify the cords in the costume shop rack. They are labeled with what cord goes to what camera. You will not find a patch cord for the lockdown camera down there because the video tie goes straight to Bloom Studio. To repatch a camera, first plug in the camera to the video tie of your choice in EPAC. Then go downstairs and take the cord corresponding to the input you would like to run the camera to and plug it into your new video tie. Do not unplug the patch cord from the tie going to the video room. One end of the corresponding cord should stay in the listed tie lines.

Tie Line	Function
V76	Camera 1 Input
V77	Camera 3 Input
V78	Camera 4 Input

Table 4-2 Ties to Video Room

You may notice that Camera 2's input is not listed in the table above. That is because Camera 2, the lockdown camera, goes straight to the video room wall and no additional patch is necessary. If you want to change the input of Camera 2, you have to go to the Bloom Studio panels and move the cord labeled "Camera 2" to the tie line you are using.

Patching Tips

If this ever gets confusing (and I know it always does), write down where each cord is going. Doing this allows you to see if you are directing the signal to the right place. The numbers should form a chain to the cord going into the video switcher.

VIDEO

4.1.4 Com

Like the video patch, connecting coms can be really easy if you use the standard connections. Grab some XLR cords and get patching! The video coms are usually stored in the cabinet in the video room, but any com pack and headset will work.

Connecting to the Standard Patch
There are two Audio Tie Lines that always go to Bloom Studio. Plugging a com into these lines will automatically allow you to talk to people in the video room on com.

Tie Line	Function
A33	Com Line
A41	Com Line

Table 4-3 Com Standard Patch

Modifying the Standard Patch
If you need to use different tie lines, you have to modify the standard patch. Usually this means that you only modify the cords in the costume shop rack. The com lines run from Audio Ties A59 and A60. The patch cords should not be unplugged from these inputs. You can redirect the com line to different tie lines and if you need more than two coms in EPAC, you can plug in a cord running from the tie line getting com to a new tie line. Theoretically, you could chain together all of the audio ties on to this one com channel.

4.1.5 The Video Switcher and Sound Mixer

After you've got everything patched, it's time to setup the video switcher and some other video room components. Turn on the cameras when you do this.

Setting Up the Switcher
You have to tell the switcher to see video from a specific input.

1. Turn the switcher and the four camera video display on. The switcher should be on, but it it's not, there is a power switch in the back left. You'll have to feel around a bit because the board is connected to so many cords that it's hard to move.

Power Switch for Four Camera display

Power Switch for the video switcher is somewhere back here.

Figure 4-5 The Video Switcher

VIDEO

VIDEO

2. Find the Input Format buttons. Press the button under the lights labeled "A B C D." A red light will light up under the "A" label. Under that button, a different set of light will light up. These lights indicate what input "A" is displaying on the screen of the four camera viewer.

3. Press the button under the lights labeled "V S YUV DV" until the light under "V" is lit up. This tells the switcher to display the video coming from the "V" input into the video source selected above.

4. Repeat steps 2 and 3 until all four inputs (A through D) are set to "V." Reset all of these inputs to "YUV" when you are done. Press the top button until all lights are off to exit Input Format selection.

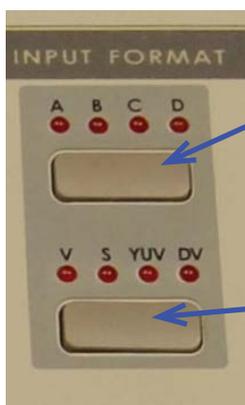Camera 1
Video Source A

Camera 2
Video Source B

Camera 3
Video Source C

Camera 4
Video Source D

Input Format
See Below for details

Figure 4-6 Video Inputs

Press to select what source you are modifying. Press until all lights are off to exit Input Select.

Press to select what is displayed in the selected source. Press until the light under "V" is highlighted.

Using the Switcher

The switcher allows you to see the four different cameras and choose which one to display for recording using a variety of different transitions. For plays, the crossfade is used exclusively.
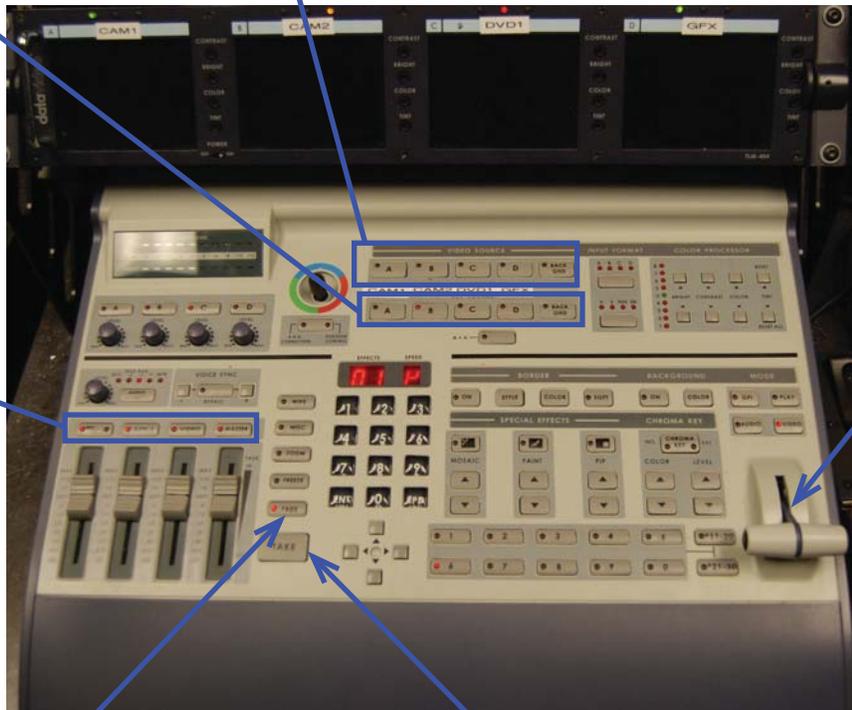
Current Video Source
A red light on one of these sources indicates that it is the source chosen for display on the TV and for recording. Press one of these to instantly change the video shown. This is called a "cut." They are not used often while recording a show; crossfades are preferred instead

Next Video Source
A red light indicates the video source that will be displayed when the switcher is moved or when the "Take" button is pressed.

Audio Mixer
All of these buttons should have a red light on. Press them to turn the light on. Keep the faders where they are, since mixing is done by the separate sound mixer

The Switcher
Moving this lever displays the next video source according to the selected transition. Fade is selected by default, so moving this fades in the next video source at a rate proportional to how fast you move the switcher.

Figure 4-7 The Video Switcher

Selected Transition
A Red light indicates what transition is selected. Fade should be selected. Press a button to select it.

Take
Moves to the next video source at a set rate according to the selected transition.

The video that is being recorded will be displayed on the TV sets if they are on.
You can always play around with the switcher when not recording. That's the best way to learn about how the switcher works.

VIDEO

VIDEO

The Sound Mixer

The Mixes you sent to the video room in an earlier step come through this board.

To test them, have someone play a sound through each of the channels and make sure that you can hear it in the video room.

If you can't hear it, make sure the amp feeding the video room speakers is on and on the right input.

Gain
These red knobs at the top control the gain of each channel. They are equivalent to Head Amp, if you're familiar with the EPAC sound board. Turn these up if you're having trouble hearing the sound even when the fader is turned all the way up.

Volume Indicator
These small green lights will light up if there is sound coming through the channel. A brighter light indicates a louder noise. If the red light lights up, the sound is too loud and the gain should be decreased (turn to the right).

Meter
Shows output level of audio. Keep it in the green light range.

Masters
Controls overall volume. Put them close to 0dB as shown.

Figure 4-8 Sound Mixer

Vocals
From A67

Pit
From A68

SFX
From A69

Hanging Mic
From A70

Located under the mixer, this device controls the speakers in the video room. Set the input to TV and adjust the volume so that you can hear the sound coming from EPAC.

Power
Press if the Amp is off to turn it on.

Volume Knob
Turn to adjust volume.

Input Select Knob
Turn to select input. TV should be selected.

Figure 4-9 Video Room Amp

4.1.6 Recording

You usually record to two places in the video room. You record to Mr. Matthes's DVD recorder and to the computer using Adobe Premiere Pro.

DVD Recorder
Connect the DVD recorder to the proper cords shown below. They are located under the DV tape recorder under the desk near the center of the video room. If there is a DV recorder in that spot, you can take it out and put it on the floor when you need to use the DVD recorder.

Figure 4-10 Connecting the DVD Recorder
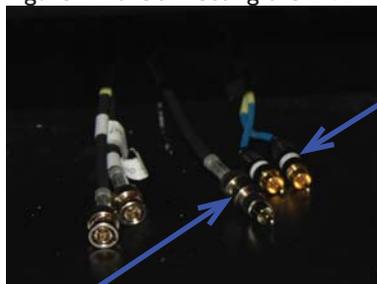
Audio
Plug these into the Audio In plugs of the DVD recorder. The sound mixer outputs a mono signal, so it does not matter what plug goes into what side.

Video
Plug into Video In. Do not use the video cords with the white tags.

Once connected, plug in the power supply for the recorder and insert a disc. You will have to format it for recording. Then choose the menu item that says "Video -> DVD." When asked for an input, choose "Video In." You should then be able to see the video on the screen of the recorder. Press the big red Record button to start recording. A red light will surround it. Press it again to pause recording, press Stop to stop recording completely.

When you are done recording, go back to the main menu and press "Setup." Scroll down until you see the "Finalize" option. Select this and press OK to finalize the disc. This allows other DVD players and computers to play the disc when you're done.

Computer
First have Mr. Matthes or a teacher log on to the computer in the video room next to the mixer. Premiere won't open unless a teacher is logged in. Once logged in, open premiere. If you are taping a new show, select new project, and select DV NTSC Widescreen 48kHz as the project default, and save it in its own folder. If you are taping a different night of the same show, you can open the project you created earlier. Once you have your project open, go to "File -> Capture" or press F5. The capture dialog will open. The video to be recorded will be displayed on the screen. Press the round record button below the video to start recording. Press it again or press the stop button to stop recording. When you stop, it will ask for a file name. Type in something descriptive; don't leave it untitled.

Premiere has the ability to create DVDs from inside a project. You can add titles and transitions and credits within Premiere and then export to disc. To do this, create a sequence with your video in it. Make your edits. Consult the Premiere help for more information. Then go to "File -> Export -> To DVD" (or similar command). Follow the directions given. Consult the Premiere help files for more information.

VIDEO

4.1.7 Cleanup

When you are done, put everything back where you found it.

If you modified the patch while filming, please reset to the default patch as specified in the Audio Appendix (Section 2.6) and the Video Appendix (Section 4.3).

If you used a camera from Bloom Studio, bring it back and plug all cords back into their proper positions. Plug the Component out cord back in to the camera and connect the component cords to the matching cords at the wall.

Change the Input Format on the video mixer back to YUV for each video source. See Section 4.1.5.

VIDEO

4.2 Troubleshooting

4.2.1 No Video Shows Up

- Check the power on all devices. Turn cameras on, turn the switcher on, turn the four camera display on and turn the TVs on.
- Make sure the input format on the video switcher is set to "V" for all inputs.
- Check the connections on the video cameras.
- Check your patch. Make sure that there is a path for the video signal to follow to the switcher.

4.2.2 There is No Sound

In the Video Room
- Turn on the speaker Amp and put it on the TV input.
- There might not be any sound coming from EPAC. Have someone make some noise.
- Setup the mixes.
- Check the patch. Make sure the mixes are being sent to A67-70.
- Make sure the faders on the sound mixer are up.
- Make sure that the channels on the mixer are not muted. The mute button is labeled and is a small rectangular white button above the fader. Make sure it is not pressed down.

On Video
If you do not hear sound on a recorded DVD:
- Make sure the audio faders on the video switcher have red lights on above them. Press the buttons above each fader to turn the red light on.
- If you are using the DVD recorder, make sure the audio cables are plugged all the way in.

4.2.3 Switcher Does Not Connect to Computer

- Unplug and replug the DV cable in the computer.
- Try a different DV port.

DV cable in back of computer under the desk

Figure 4-10 DV Cable

4.2.4 Video is a Weird Color

- Use the color corrector. Press the Input Select button until the video source that is a weird color is selected. Press the "RGB Corrector" button under the control stick next to the video source selectors. Move the stick to modify the color of the video. When you are done, press the "RGB Corrector" button again until the lights turn off. Press the Input Select button until all lights turn off.

VIDEO

VIDEO

V1-V5 Downstage Right

V6-V10 Downstage Left

V11-V15 Upstage Right

V16-V20 Upstage Left

V21-V25 Pit House Side Wall

V26-V30 House Left Floor Panel

V31-V35 House Right Floor Panel

V36-V40 House Mid Wall Stage Right

V41-V45 House Mid Wall Center

V46-V50 House Mid Wall Stage Left

V51-V55 House Left Upper Landing

V56-60 House Right Upper Landing

V71-75 On Panel TP-A29

Video Tie Map

V96-V100 House Mid Floor Panel

Key

To EPAC Costume Shop Rack	(blue)
To EPAC Booth	(green)
To Bloom Studio (Video Room)	(red)
Default Patch Connections	(purple)
To Green Room	(yellow)

This chart maps out the video ties and where they go along with the default patch connections.

V36 is the default patch
for Camera 1 (V76)

Camera 4 does not
have a default connection
except that one end
stays plugged into V78

V41 is the default patch
for Camera 3 (V77)

V1-V85
Costume Room Rack

Camera 1 V76
Camera 3 V77
Camera 4 V78

V76-V95
Bloom Studio (Video Room)

Camera 2
Lockdown - V86

V61-70
V86-100
Green Room Video
Sound Booth

To Green Room TV

VIDEO