

THEATRE SOUND SYSTEM

Basic Design of Sound System

- Our amplifier for the whole theatre is in the tall box (the sound rack) on stage right (stage right is the right side as you are looking out into the audience from the stage).
- You need two keys for the sound rack - one for the door (it sticks! Put your hand on the side of the door to the left of the key and push the door toward its hinges while you turn the key counterclockwise to unlock). There is a second key for the drawer where we store mics, mic clips and cables.
- A third key opens the lock on the file cabinet - mics and cables are stored here
- A snake (a group of cables wrapped together into one unit) runs from the wall input behind the sound rack, through the walls, and to a group of output jacks on the side wall, at the end of the house right runway - near the last row of main seats and near the house lights switch.
- Mics on stage get plugged into these snake inputs (1-7) and the signal runs through the snake to the side wall outputs on the runway wall. (#8 is an output - more later on that)
- We run another snake across the house floor (taped down) from that set of outputs to the mixer board. This external snake has 8 XLR plugs: 7 are female and marked 1-7. The 8th is the output from the mixer and is male.
- The mixed sound then runs from the direct output on the mixer (via the 1/4" male phono plug on line 8 of our snake) back along the 8th line of the snake, to the side wall and to the 8th jack on the panel behind the sound rack (line 9 is an XLR at the wall, even though the same line had a 1/4" phono on the mixer end).
- Back at the sound rack, an XLR cable runs from the 8th jack in the wall behind the sound rack, to the input of the amplifier in the sound rack (note an input in the lower back corner on the left side of the sound rack).
- Mics can also be plugged in directly to the sound rack on the side, but a sound tech in the back of the auditorium has no control over those mics - they must be controlled from the sound rack on stage. ~~Likewise, the hand-held and lavalier wireless mics that the school owns have their receivers in the sound rack and can only be controlled from the rack on stage.~~ (The cafeteria mic has its receiver on stage in the caf and does not run on the same system.)

Components in the Sound Rack from top to bottom:

1. ~~Wireless system power bar (leave power button on) — two antennae screw into the right and left upper corners of this component. (Antennae is the plural of antenna)~~
2. ~~Wireless Handheld receiver (should be on channel 11) (leave power button on)~~
3. ~~Wireless Lavalier receiver (should be on channel 12) (leave power button on) — A lavalier mic is one that clips onto your clothing or other part of your body — it is often just called a "lav" (say "la" and add a "v")~~
4. The above is the old wireless system & no longer works. The new system is not yet permanently installed.
5. Amplifier Controls (dials from left to right)
 1. ~~Wireless handheld mic volume~~
 2. ~~Wireless lavalier mic volume~~
 3. Mic 3 volume (for a mic plugged into the side of the rack in the mic-3 input)
 4. Mic 4 volume (for a mic plugged into the side of the rack in the mic-4 input)
 5. CD volume
 6. Tape player volume
 7. (empty)
 8. (empty)
 9. (two more empty ones on the bottom row left)
 10. two LARGER dials on the right side
 1. top one is master volume for the front house speakers (over the edge of the stage)
 2. Bottom one is the master volume for the rear house speakers (over the pullout seats)
 3. In general, we have the main speakers two notches higher than the rear speakers
 11. Power button - (leave on)
6. Tape Deck and CD Player (leave power button on)
 1. CD player is on the left side with its controls under the tray. The tray open/close button is just to the left of the tray - it is slightly raised
 2. The tape player door is on the right side and its controls are in the middle of the component, right under the digital display. The eject button for the tape door is in the top right corner of the component.
7. Drawer for mics, cables, mic clips, wireless mic antennae... Has its own key - not the same as the door. Most equipment is now stored in the file drawers.
8. EQ box (Sabine) - no access from the front. All EQ controls are in the rack, accessible only from the back door.
9. Power box -- the bottom left corner has the **main power switch** that powers the rack up and down -- this is the only switch we turn on and off. It is

orange when lit

10. EQ box (Bose) - no access from the front. All EQ controls are in the rack, accessible only from the back door.
11. Rear House speakers amplifier (leave power button on) - blue light when on
12. Front House speakers amplifier (leave power button on) - blue light when on

Power Up Sound System (and therefore the amplifiers)

- If using a mixer board, power that up first, then power up the rack/amplifiers (if the amplifiers are already on and you turn on the mixer, the speakers pop)
- Likewise, turn on all external (not in the sound rack) wireless transmitters that will be used before powering up the amp.
- Be sure all volume sliders are off before turning on the mixer.
- If using the wireless mics screw in the antennae
- Be sure all volume knobs are at zero before turning on the sound rack.
- Except for the master switch, all power switches on rack should be left on at all times, so to power up, you flip only one switch.
- Turn on the sound rack (and therefore the amplifiers) with a single switch, about knee high, on the right side. (next to the Audio Associates label); it is marked "MASTER"
- When powering up, the blue amplifier lights come on and the red ones flash until the amplifiers are ready. All other components should just come on and show their lights.
- Turn up the main volume. If using the rear house, turn the rear house speakers to two notches less than the main speaker volume.

Powering Down the System

- Turn down the volume knobs.
- DO NOT turn off individual units (tape deck, amp, CD player...); use the single master power switch, about knee high, on the right side. (next to the Audio Associates label).
- Turn off the sound rack first, then the mixer board & external wireless transmitters if used -- be sure to turn down the volume on the mixer before turning it off.
- When everything is put away, lock file cabinet and lock the sound rack door. If only using the sound rack and no extra mixer, all mics and mic cables go in the file drawers.

Running a Sound Check & Setting Gain Levels

- DO NOT EVER tap on or blow into a mic to see if it is on!!!! Both are bad for the membrane in the mic and can ruin it. Speak into it; you can say:
 - Test, test, test...
 - Recite the alphabet

- Tell a story
- Sing a song
- Instruct any helpers in the above procedures/precautions and have the person speak in a fairly loud voice, but not shouting.
- Check that the helper is the correct distance from the mic.
- To begin a sound check (for loudness only, no EQing here), turn the master volume to where you think it is correct
- As the helper is speaking, gradually turn the channel volume up to the desired volume.
- On the mixer board
 - put the channel volume and the main volume at the zero line
 - turn up the gain switch until feedback occurs
 - turn the gain switch down to just below feedback
 - This way you can just move the slider up to the zero line and know that it will be correct for most cases with this person
 - If the performer is singing/speaking extra loud in one section, you can move the slider down
 - Do not change the gain back and forth in a performance, use the slider
 - If more than one person is using the same mic/channel, write down the gain setting for each person and change it before the next person picks up that mic.

Connecting Cables for Computers, DVD Players, Slide Show Device, etc.

- A direct box is most commonly used with guitars because guitar cables are not shielded as well as microphone or speaker cables and running a guitar cable over a long distance tends to pick up interference (noise, radio stations!). So instead, you run a short guitar cable into the direct box (DI) and run a better shielded XLR mic cable out of the direct box, over the long distance to the mixer/amplifier. Below is a picture of our DI:

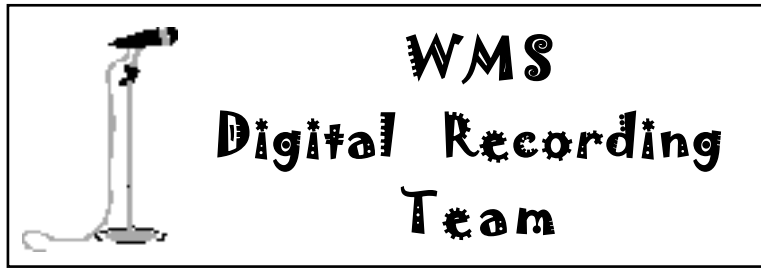


- If you are getting a lot of noise or interference, try moving the "Gnd-Lift" switch to the other side.

- The attenuator boosts or cuts the signal if it is way too loud or soft
- There are three connecting cables that go from external equipment to our theatre sound system via a direct box:
 - An XLR cable runs from the output (right side, "out") to the MIC3 or MIC4 input on the sound rack (or to a snake input in the wall). We usually keep the XLR cable with the DI.
 - The inputs (left side, "in") are for male mono quarter inch phono plugs coming from the external device (guitar, computer, slide show device, DVD player, etc.)
 - A computer uses the adaptor cable that is one male stereo mini-phono to one male mono quarter inch phono. The mini-phono end plugs into the sound output of the computer.
 - When we run our slide shows, the Fostex Multitracker tells the slide projectors when to move and it has a tape recorder for sound. Use the adaptor cable that goes from two male RCA plugs to one male mono quarter inch phono. The RCA plugs go into the outputs on the Fostex that are labeled "Line L" and "Line R".
 - We also have an adaptor cable that has two male mono mini-phono plugs running to one mono male quarter inch phono in case we have a sound device that uses separate mono channels with mini-phono plugs.
 - These three cables are stored in the drawer with the mics
 - There is one more adaptor in the drawer; it is a male mono 1/4" phono plug, labeled, "mixer unbal output" to a female mono 1/4" phone input, labeled, "trs bal input". Our theatre mixer board has a "balanced" output. If any other board is used with the theatre system check to see if the output is balanced or unbalanced; if unbalance, get the "Mixer unbal output" adaptor from the drawer of the sound rack. The adaptor goes between the unbalanced board output and the snake output line 8 (quarter inch phono plug) running to the side wall.

Some General Definitions:

- Proscenium: the wall on stage, just in front of where the curtain runs.
- Stage apron: the section in front of the proscenium.
- Runway: the area that is level with the stage, but runs along by the seats on house left and house right.
- House: the audience section of the theatre.
- House left: the left side of the audience section as you face the stage,
- House right: the right side of the audience section as you face the stage.
- Stage left: the left side of the stage as you stand on stage and face the audience.
- Stage right: the right side of the stage as you stand on stage and face the audience.



THEATRE LIGHTING SYSTEM-Basics

The lighting system is computerized and very complex. There are only a few things that can be run by us mere mortals.

House Lights & Work Lights

- The house lights are the lights that are on in the audience area (house). In our theatre, the house light switches turn on all of the house lights to full power (including those in the back room where the pullout seats are) and most of the work lights on the stage.
- There are house light switches in three places:
 - Back of the house, on the wall, on both the right and left side, directly opposite row N
 - Back stage (stage left) on the back side of the proscenium wall, about half way between the double doors and the curtain
- Press the top button to turn the house lights on - a small light (LED) will show on the button to show that the house lights switch is active
- When the house lights switch is on, the lighting computer can not control the house lights
- Press the bottom button to turn the house lights off and to allow the computer system to have control of the house lights - no LED shows on the buttons
- During the day, if there is a class in the back part of the theatre, do not turn the house lights off, or the class will be in the dark!!!
- There is one row of stage work lights that is not on the house light switch - it can only be turned on in the light box. The switch is near the bottom and marked with tape.

Look Box

- The look box is a simple way to control the look of the stage lights, without having to turn on the computer lighting board -- Mr. Large presets what lights come on for each switch
- There are eight switches, so that there can be eight preset lighting combinations
- The switches are numbered from top to bottom - top is 1, bottom is 8.

- Press the left side of the switch (it is square) to turn that lighting combination on
- When it is on, you will see a red light on the square button and a line going over to the right
- Press it again and it turns off
- Do not press more than one button at a time
- DO NOT EVER PRESS AND HOLD THE BUTTON!!!!!! Press & hold resets the button in the same way you set the station on a car radio
- If the Look Box is on (any switches lit), the computer no longer has control of the lights
- To turn off the Look Box, turn off any switch that is on so that no lights show on the Look Box

Computer Lighting Board Basics

- In general, don't mess with it at all unless told to do something specific! It is very fussy and you can really mess things up and it can take a very long time to figure out what is wrong!
- To turn on the computer lighting board, press P14 and wait - it takes a fairly long time to power up so don't worry or get impatient. (P14 is the upper right button.)
 - DO NOT use the green start button on the computer! It only turns on the computer, not the lighting board, and then you can't turn it off!
- To turn off the board, DO NOT press the power button and do not press P14
 - Turn on the house lights switch so you won't be left in the dark when the computer lighting board system powers down
 - Press the "report" button (center, just under the row of P# buttons)
 - Look at the LED message on the mini-screen
 - Press the arrow that points to the word "exit" on the mini-screen
 - Press that arrow again (it now points to "shut down").
 - Lights will go down after a bit -- it takes a while to power down
 - You will know it is off when the stage lights fade out and go dark (the work lights will remain on if the house lights switch is on)
 - Cover the computer with the sheet after you see that the lights have faded out on stage.
- If the computer is not controlling the lights:
 - Be sure the house lights are off
 - Be sure the Look Box switches are off
- If the house lights switch is on, the computer can control the stage lights, but can not control the house lights
- GoX1 (pronounced "Go times one") -- this key gradually fades out the lights that are on at the moment and fades into the next setting (preprogrammed)

- Stop/Back -- this key immediately takes you back to the previous setting, but it doesn't fade - it is abrupt!

Running Lights

- The lights on the house floor along the aisles are called running lights. They are controlled by a switch just under the lip of the stage, in the front of the house.

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