

Chapter 14

Installation

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Introduction

This document covers hardware and setup of the Audicy. Please read it before you install the system. Refer to Chapter 15 for troubleshooting.

We've assumed that the user doesn't want to be bothered by things like DOS commands, so there is no initialization or computer setup necessary. Installing an Audicy is about as complex as installing a tape recorder, and requires just a screwdriver and the appropriate audio cables.

Since the Audicy handles audio as digital data, periodic tuning or tweaking isn't required. The only recommended maintenance is keeping the unit clean.

System Components

The Audicy hardware includes four main components:

- Console (with hidden keyboard)
- System Unit
- Video Monitor
- Workstand

A six-foot Console connecting cable, Console Power Supply, external keyboard cable, and three power cords, are also shipped with the system. The Audicy Workstand comes with separate assembly instructions, and houses these system components.

Each Audicy system is shipped with an Active SCSI Terminator. To prevent damage in shipping, terminators are not attached to the rear of the System Unit during transit. **Before first powering up, you must attach the SCSI terminator** provided with the system to the rear of the System Unit, or to the last device on the SCSI chain if you are using the optional Multi-track DAT Backup System, and/or external Jaz drive.

If you're setting up a new Audicy, save the packing materials. They've been designed to protect the system during shipment, and will come in handy if you ever want to move or ship the system.

If you've purchased a Multi-track DAT Backup System or Jaz drive with your Audicy, you will need to plug it into the SCSI port on the System Unit. Again, the last SCSI device on the chain must be properly terminated. See installation instructions with your DAT or Jaz drive.

Location

Audicy is designed to work in control rooms. Like any precision equipment, it shouldn't be subjected to extreme temperature or humidity. As a rule of thumb: If you are comfortable, the system will be comfortable.

Heat

Heat kills electronic devices (or considerably ages them). When you're planning an installation, consider the comfort levels of both the System Unit and the Console: Putting the unit in an unvented closet with a couple of heat-generating amplifiers and power supplies is almost sure to cause trouble.

It's a good idea to check the System after five or six hours in a new location. The cabinet shouldn't feel hot to the touch (and a thermometer left near it shouldn't read higher than 100°F).

Dust

Dust is a special enemy of computing equipment. The fan on a computer can force dust in, coating components and impairing their ability to throw off excess heat. If installing the System Unit in a cabinet or enclosed space, it's a good idea to vacuum the area first to reduce dust.

If you've put the System Unit in a potentially dusty environment, you should open up the case once a year and gently vacuum the dust out. Miniature vacuum cleaners, available at computer shops and some electronics dealers, are good for the job. Compressed air may also be used to blow dust off components, but be careful not to blow into the floppy, DAT or Jaz drives — this may force dust into them.

R. F. I.

Audicy is much less sensitive to RF interference than analog equipment. You can keep it at least as close to the transmitter as any console or cart machine. Audicy meets all FCC and EC specifications and regulations on RF generation.

Vibration

Audicy, like any computer, *is* sensitive to physical shock.

Computer hard disk drives can be damaged by excessive vibration. They are especially vulnerable while the system is running: Any time the computer is turned on, the hard disk head could be positioned over important data. Bouncing the disk drive could cause the head to crash into the magnetic surface, making the disk useless.

To protect against head crashes, don't ever move the Audicy System Unit while it's turned on.

When you turn off the system, the hard disk head is automatically moved to a “safe area,” where vibration-caused crashes aren’t as likely to cause damage.

Even so, you should avoid excessive shock when moving the system¹.

Access

For sites that don’t use the roll-around Workstand, it is recommended you provide some accessibility to the front panel of the System Unit so you can get at the power switch, and so you have access to the floppy drive for software upgrades.

Stereo Imaging

If you’re installing an Audicy in an existing production room, pay attention to speaker placement. A typical “U-shaped” layout puts the prime stereo monitoring position at the production console, rather than the Audicy Console.

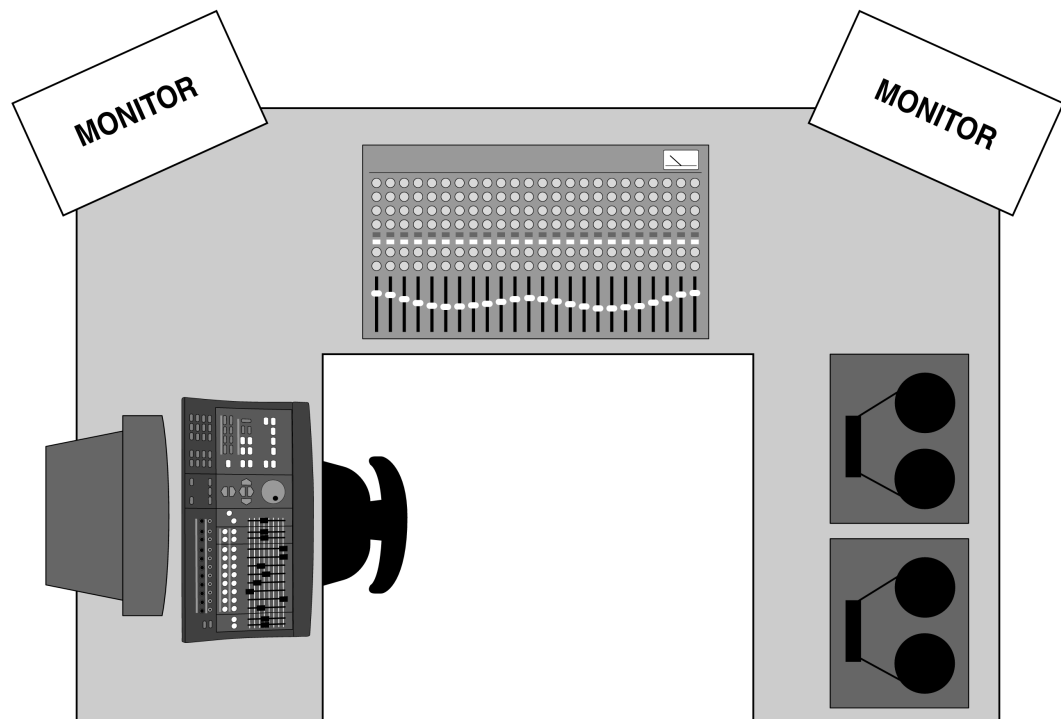


Figure 14-1: Typical Layout of Existing Production Room with Audicy
(Note awkward stereo speaker placement for digital mixing.)

This arrangement is far less than ideal, as it places the operator off axis with the speakers.

¹Be especially careful of doorway thresholds when rolling the Workstand from room to room.

Since there are so many advantages to mixing digitally within Audicy, we recommend relocating the speakers or adding a pair of high-quality auxiliary speakers on both sides of the Audicy's video monitor.

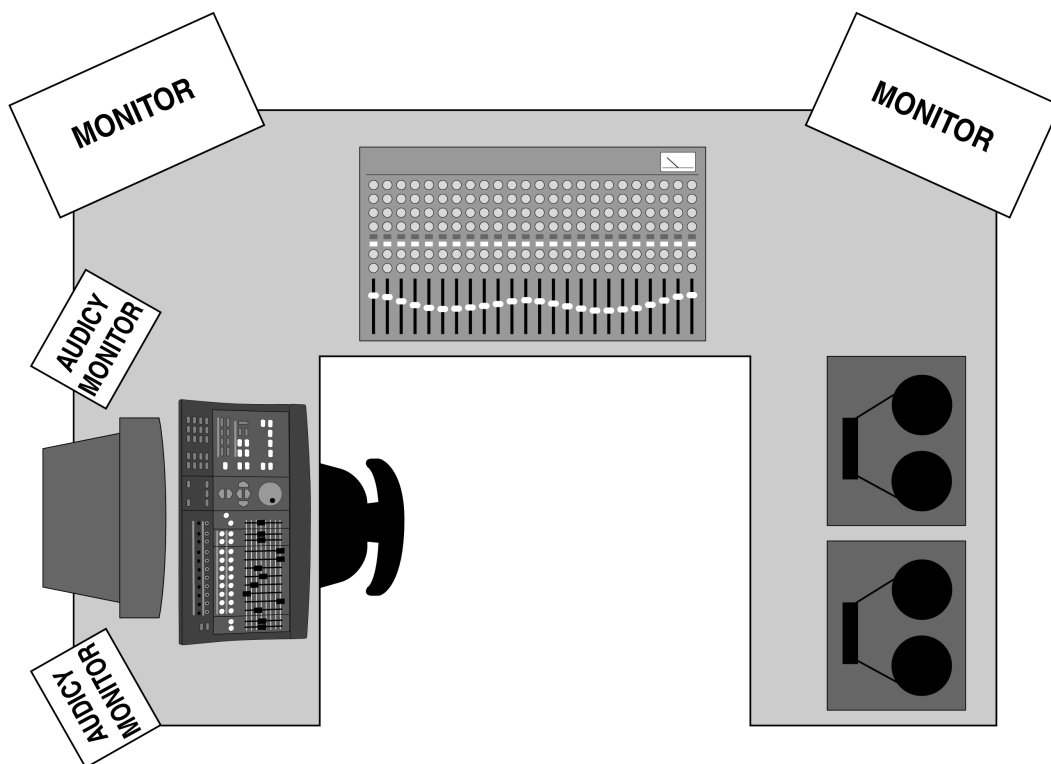


Figure 14-2: Auxiliary Speakers Allow Stereo Monitoring While Mixing.

The large magnets in good speakers may cause color shifts if they're too close to the Video Monitor. If this happens, simply move the speakers a little. You can also get high-quality "Shielded" speakers from your dealer or a good video supply house. We don't recommend the shielded a/v monitor speakers typically sold by computer stores: while their shielding is more than adequate, the sound quality often leaves a lot to be desired.

Installation

Workstand

The Audicy Workstand is shipped with specific assembly instructions. Refer to these if you are installing the Workstand in your facility.

Conventional Installation

Four plastic feet are provided to help keep the System Unit upright when it's not used with the Custom Workstand. They're packed with the unit, and can be easily installed with the screws provided. The Console can rest on any flat surface. Make

sure the keyboard drawer is unobstructed if you are using Audicy's built-in keyboard.

System Connections

After you've placed the components, attach the cables. The connectors fit only one way, and all the jacks are labeled. Refer to the figure below.

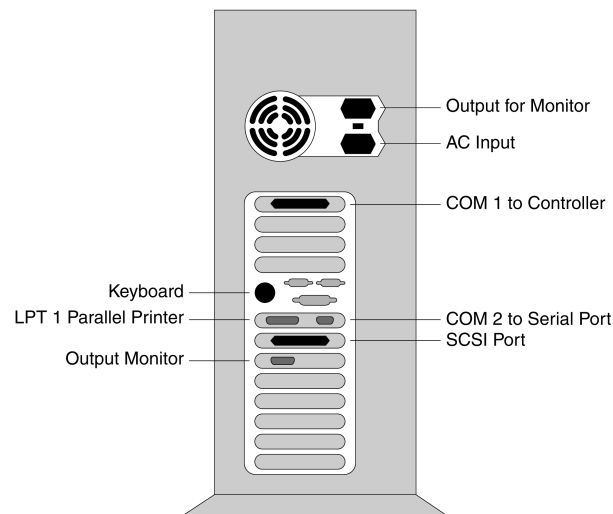


Figure 14-3: Audicy System Tower and Cabling

Disconnect power before attaching or removing cables.

The Console cable is six feet long. Its 9-pin connector plugs into the back of the Console, while the 25-pin connector plugs into the back of the System Unit.

Depending on monitor type, the video cable may already be attached at the monitor. Verify this connection, then plug in the other end near the base of the bottom of the System Unit.

Tighten the screws that hold these data plugs in! This is important for system shielding, as well as to keep things from being unplugged.

An extension cable for the keyboard plugs into the back of the System Unit and Audicy Console. This is simply a through cable which attaches to the mini keyboard in the Console's keyboard drawer. You may use any standard PC keyboard if you prefer.

Use the switched AC monitor cable provided, so the monitor powers on/off when you press the System Unit power switch.

SCSI Connections



Important: Systems are shipped requiring external SCSI termination. Terminator plugs are provided, but not attached to prevent damage in shipping. External SCSI terminators must be attached before the system is run!

Attempting to run these systems without proper termination can damage the hardware and software.

Look for a small black or putty-colored connector with an LED on its back, and connect it to the SCSI connector on the rear of the System Unit. Secure it to the SCSI connector with the clips provided. The LED should come on when power is supplied.

If you're using one External DAT or Jaz drive, you'll plug its cable into the System Unit's SCSI connector and the terminator into the second connector on the back of the external drive. If you have more than one external drive, connect them in a "daisy chain": Audicy to Drive 1, Drive 1 to Drive 2, and so on. The terminator must be connected to the second connector on the last drive in the chain.

The point is, each Audicy system should have a single Active Terminator connected at all times — either to an external drive, or to the System Unit itself. If you're sharing a single DAT or Jaz drive with multiple Audicys, make sure each system remains terminated even when the drive is moved. You may need to get additional Active Terminators from Orban.

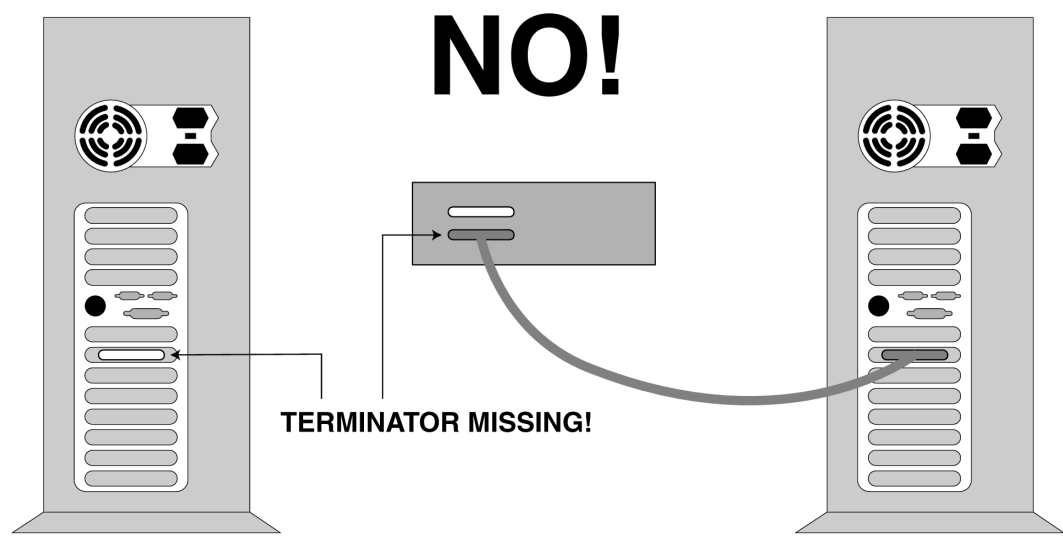
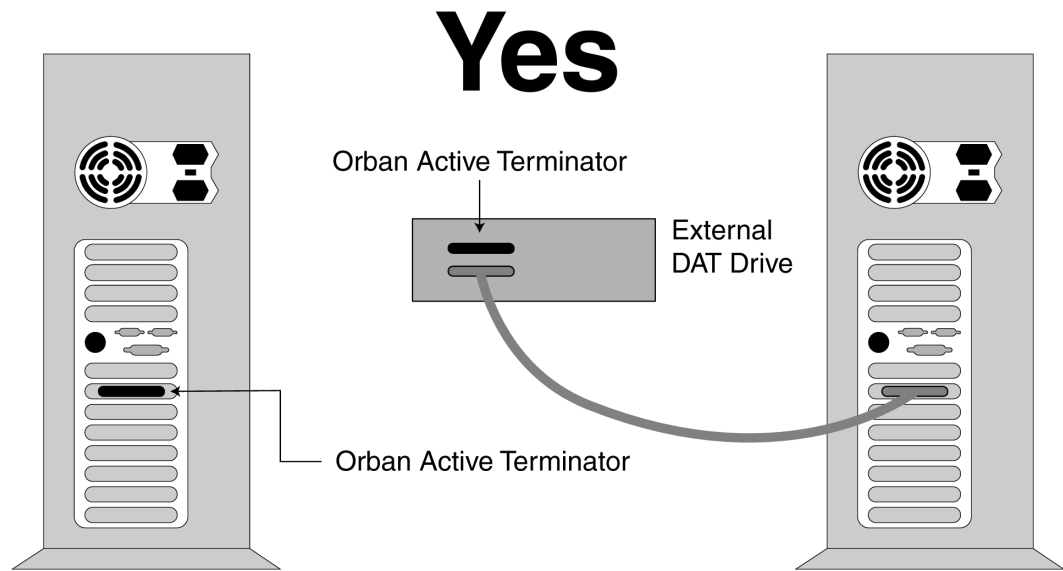


Figure 14-4: Connecting Terminator to System Tower



Important! Always turn both the Audicy and the external drive **OFF** before changing SCSI connections. Failure to do so can cause serious hardware damage.

You must use the Orban Terminator supplied. The terminators

shipped with Audicy have been specially selected and tested to work in the Audicy context. Other terminators — including the one built into Iomega-brand external Jaz drives — may not work properly².

Extending Cables

The data, keyboard and video cables supplied are long enough for a standard installation. Keyboard and video cables can be extended up to 25', with some care about current and video equalization. Audicy Console cables may be extended short lengths using serial extension cables. Buy the highest quality cables you can find at a computer dealer.

Make sure any extension you attach to the Console is wired “all pins through.” Some cables short a few pins together at the connector, and will not properly pass control signals.

Orban offers 100'/30M or 150'/45M Console cable extensions (Part Number: AD/CTLRCL) for installations requiring long cable runs. This part number does not include an active cable extension system for the keyboard and monitor, which must be purchased separately. Orban recommends the Cybex Extender, available from Cybex / USA, many computer supply houses, and many Orban dealers.



Do not attempt to extend external SCSI cables more than 6 feet! If a SCSI cable is too long, you might start losing important audio and computer data! As a rule, the shorter your SCSI bus length, the less risk of something going wrong.

Important! The SCSI cable supplied with the external DAT or Jaz drive has been tested in the Audicy context. Orban uses only the highest quality SCSI cables. Replacing it with a cheap or low grade SCSI computer cable can damage your system, and is bound to cause problems.

Audicy handles a lot more data, a lot faster, than most personal computers. Using unqualified SCSI equipment can cause data errors and possibly damage the disk control circuits. If a data error happens at the wrong time, it can destroy the system software.

Power Requirements



Audicy is equipped with a grounded, three-prong power plug. **Don't attempt to defeat this ground.** This is for performance as well as safety: Proper shielding of the data lines requires good system grounding³.

² For reliability reasons, we do not support non-Orban Jaz drives.

³ Some engineers habitually clip the ground pins off of power plugs to isolate their equipment and avoid ground loops. We don't recommend this. If you're having trouble with ground loops, try the alternative grounding arrangements suggested under “Analog Wiring,” below.

Audicy can be operated on AC power supplies virtually anywhere in the world, with a simple adjustment. Set the voltage switch next to the power connector for the appropriate range. Make sure it's correctly set before you supply power.



Failure to set the voltage switch properly can permanently damage the Audicy.

Use 115 for any voltage between 85V - 135V

Use 230 for any voltage between 170V - 270V.

Make sure your local electricity is alternating current, between 47 and 63 Hertz. Power consumption, depending on the amount of memory installed, is approximately 220 watts.

U.P.S.

The Audicy is a computer, and may lose data if the power suddenly fails. We strongly recommend using an Uninterruptable Power Supply or U.P.S.

A U.P.S. is a special AC supply that senses power disruptions and quickly switches to an internal battery. It plugs into the wall, and you plug the Audicy into it. It should be connected to an "always-on" outlet, rather than one that is switched to control equipment.

If you're using a U.P.S. and a power failure occurs, immediately quit your production from the System menu. Shadowing will continue until your production is saved.

If your U.P.S. hasn't been properly charged and you're worried about it running out of power, you may still be able to protect your work:

- A) Use the arrow buttons to select Quit and press *Enter*.

Audicy will now Shadow any remaining audio.

- B) Turn off the video monitor's power switch. This will reduce the current draw so your U.P.S. can run longer.
- C) Keep an eye on the Console's buttons. When all of them turn off except for *Mute*, Shadowing is complete.
- D) Wait five seconds for the Job Controller to finish loading. You can now turn off Audicy safely.

Your dealer can provide a U.P.S. matched to your workstation. If you get one from another source, it should provide at least fifteen minutes' reserve at 220 watts and have a true sine wave output.

Signal Routing

Audicy has more functions than most audio gear. Since it'll be used for editing, recording, and mixing, you should give some thought to where it appears in the audio chain.

There are three recommended ways to install your system to make fullest use of its capabilities:

- terminating just at a patchbay;
- connected to a console; or
- with an input switcher.

Patchbay-Based Installations

Bringing all Audicy connections to a patchbay provides the most flexible installation. Any source or effect in the studio can be used as an Audicy input, and the outputs can be routed either as stereo pairs or as four separate feeds. Most recording studios will probably use this configuration.

If you're wiring Audicy to a patchbay, it's a good idea to bridge the main outputs to two sets of jacks: one set to feed a tape deck (for your final mixes), and the other for monitors.

Radio stations frequently avoid patchbays in the production room. Your system can be wired directly to an existing console, or without a console at all.

Console-Based Installations

An existing console can be used as an input controller for your Audicy.

The simplest way is to insert the Audicy between the console and any subsequent tape recorders or cart machines. Be sure to provide some way to monitor the Audicy, either as an "external monitor" input or by moving the connections to the monitor amplifier.

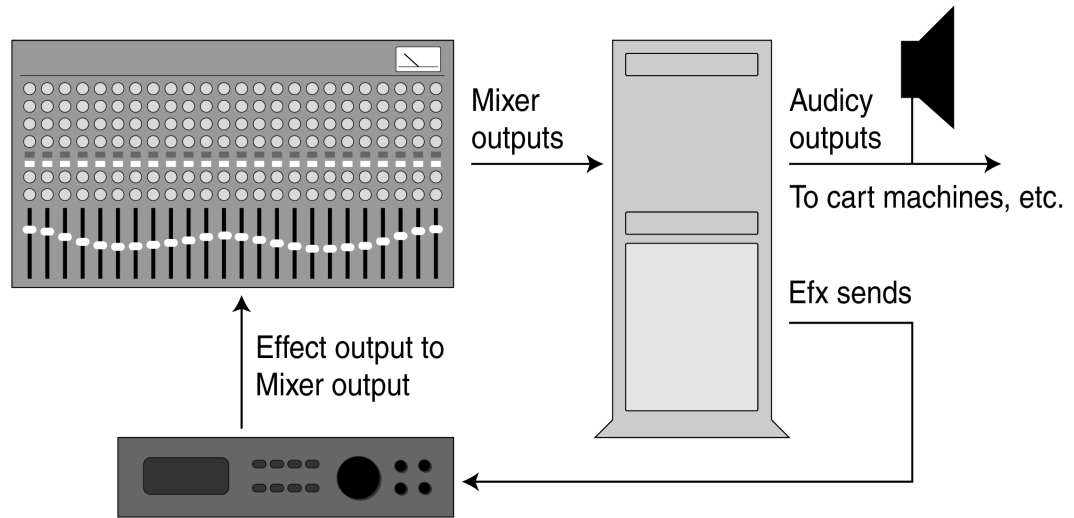


Figure 14-5: In-line Wiring with Existing Console

The advantage to this wiring scheme is simplicity: Any operator can easily understand how to move signals through it.

The disadvantage is every signal has to pass through your workstation. This won't hurt the signal, but the system will have to be kept in Production mode⁴ with the *Left* and *Right Input* faders fully on to dub tapes onto carts.

It's much better to bridge the console outputs⁵, or feed the Audicy through a Distribution Amplifier.

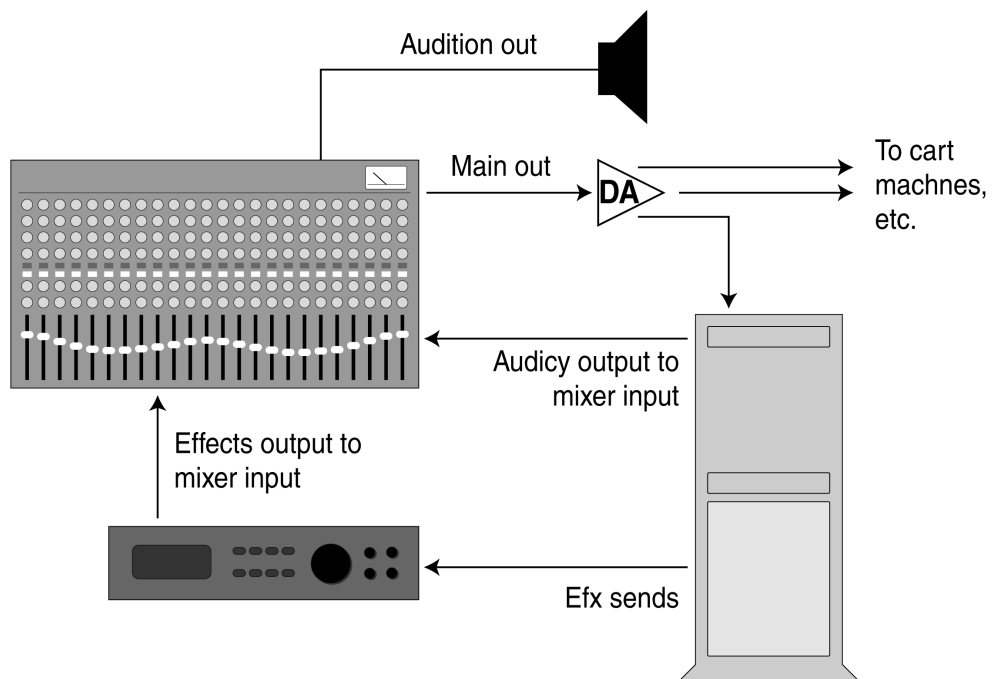


Figure 14-6: Multiple-Output Wiring with Existing Console.

⁴The Audicy won't pass signal when the Job Controller is showing.

⁵Bridging requires appropriate isolation resistors. Consult a good engineering reference, or see your dealer.

Again, you'll need to provide an easy way to monitor. The operator should hear the Audicy outputs, not the console outputs, even when recording a signal from CD or tape through the console.

Most radio consoles have Audition and Program busses. We recommend leaving Audicy routed to the Audition bus, and monitoring that signal whenever working on a production.

Recording-style consoles don't have Audition busses. In this case, you'll have to wire the Audicy outputs to a "tape return" for monitoring, as well as to input channels for dubbing the mixed production. Bridging resistors might be required; check the console's manual.

Audicy's digital conversion and processing introduces a tiny delay, on the order of a few milliseconds. If an Audicy's output is routed through the console and then back into itself, you'll hear a metallic howl or flanging instead of traditional "feedback."

Switcher-Based Installations

An Audicy production room doesn't have to use a console. All you need is an input switch, and possibly an input level control.

Your dealer can recommend a number of good, reasonably-priced active or passive input switchers. It's a good idea to also provide a means of bypassing the Audicy, for direct dubbing between input sources and cart or tape.

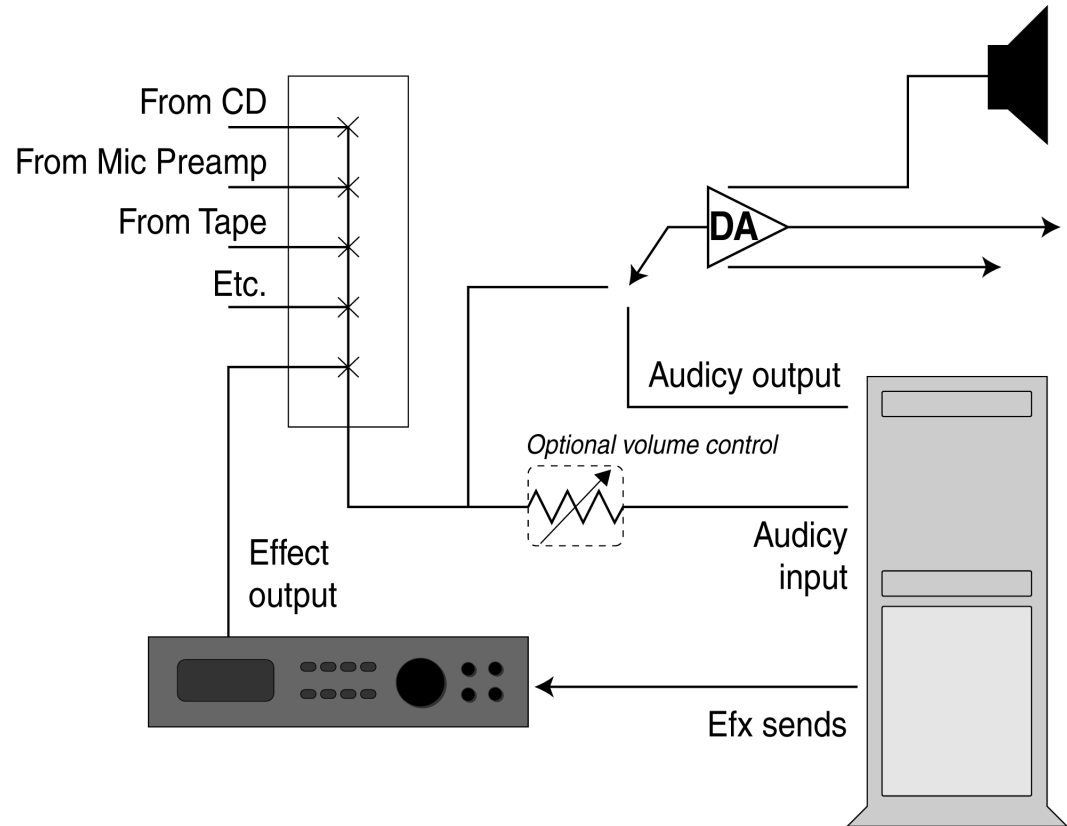


Figure 14-7: Audicy Hookup with an Input Switcher

Digital Inputs And Outputs

Digital signals may be routed independently. For example, you can connect the s/pdif inputs to the output of a CD player, and the AES/EBU ins and outs to a DAT recorder at the same time.

Very short AES/EBU interconnections may work with ordinary microphone cable, but 110 Ω balanced cable is recommended. S/pdif connections should use a 75 Ω cable such as RG-59, or pre-made high quality home video dubbing cables. Using standard phono cables for digital connections is just asking for trouble.

More complicated installations may require a digital switcher or patchbay. Analog patchbays aren't suitable for high-frequency serial connections, and corrupt the signal. Audicy can compensate for many of these problems, but other equipment might not be so forgiving.

Audicy's word clock connections use BNC connectors, and the inputs are high impedance (non-terminating). The video reference input on the Intelligent Digital Module uses a BNC connector and is also high-impedance.

Analog Wiring

The Audicy input and output circuits are versatile, and can be wired balanced or unbalanced, with a variety of grounding schemes.

Inputs

There are two ways to connect the Audicy to a balanced source. Use this wiring if the source equipment doesn't share a common ground with the Audicy (or if you're not sure if there's a common ground). This wiring will pass signal under all conditions:

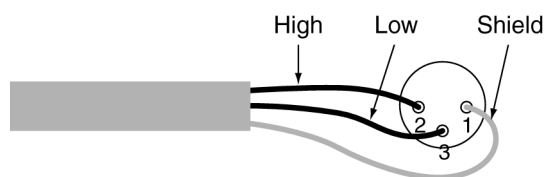


Figure 14-8: Common Wiring Diagram, Balanced Input

If there is a common ground, you might encounter some hum with the above wiring. In this case, disconnect the shield at the Audicy's input plug:

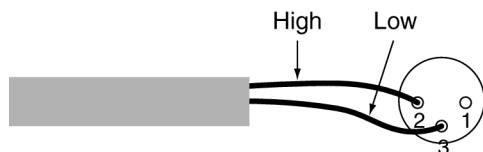


Figure 14-9: Wiring Diagram, Balanced Input

In either of the above wiring diagrams, you can reverse the two signal wires if your studio uses a "pin 3 HI" standard.

This is the most common way to connect the Audicy to an unbalanced source⁶:

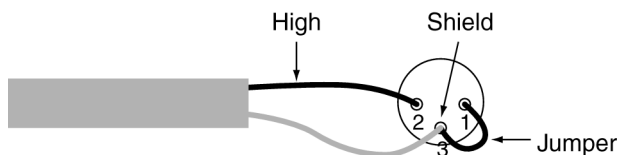


Figure 14-10: Common Wiring Diagram: Unbalanced Input

Note the jumper between pins 1 and 3. This jumper must be wired at the Audicy's input connector, not at the other end of the cable.

Again, if you encounter hum because of common grounding, eliminate the connection to pin 1 (omitting the jumper):

⁶Unbalanced sources also frequently run at a reduced level. See the section on "Input Sensitivity," below.

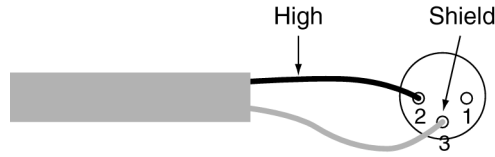


Figure 14-11: Wiring Diagram, Unbalanced Input

Outputs

All four of Audicy’s output jacks are wired the same way, with an active differential circuit. Source impedance is 100Ω , the recommended load is 600Ω or higher, and the output level is +20dBu maximum (+14 dB headroom over a nominal “+4” line).

This means the system will work quite happily in just about every balanced or unbalanced line-level situation⁷.

For Mono Installations

The low source impedance means each output will load each other output.

Never wire the Audicy outputs in parallel to get a mono signal. Use just one output, and set the appropriate pan pots instead.

There are two ways to connect the Audicy outputs in a balanced system. The first way will always work, but may produce ground loops (especially through the AC power supply):

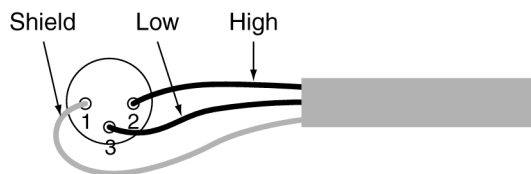


Figure 14-12: Wiring Diagram, Balanced Output

The second way requires a good separate ground connected to the Audicy chassis and a common studio ground point (usually the console):

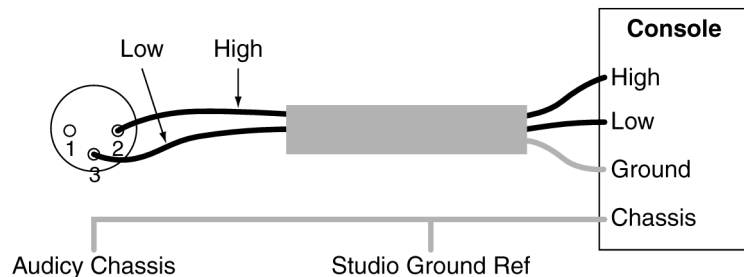


Figure 14-13: Wiring Diagram, Balanced Output

⁷ If you need a different level output, you’ll have to add a resistive pad or (in very rare cases) a buffer amplifier. Consult your dealer.

This arrangement is a bit more work, but almost always insures against ground loops.

For unbalanced output, tie pins 1 and 3 together at the Audicy end of the cable:

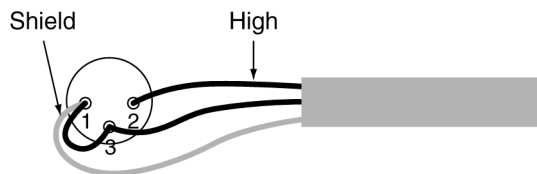


Figure 14-14: Wiring Diagram, Unbalanced Output

There is a variation on these unbalanced input and output wiring schemes that can sometimes do wonders for reducing hum and noise pickup. Use two-conductor shielded cable (the type normally used for balanced wiring), tie the shield and the black wire together at one end of the cable run, and *don't connect* the shield at the other end. This way, no current flows through the shield itself.

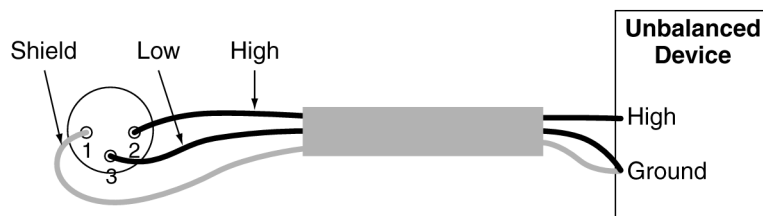


Figure 14-15: Wiring Diagram, Unbalanced Output

Input wiring can use a similar arrangement.

These XLR drawings apply to the six analog connections on the top module of your Audicy only. If your system has a digital module, you should use only 110Ω balanced wiring for the AES/EBU connection.

Input Sensitivity

The Audicy inputs can be used at a number of different levels, by setting internal switches. To change input sensitivity, you'll have to get to the shielded converter box inside your System Unit. This procedure is the same for Audicys equipped with the Intelligent Digital Module.



Important Warning! There are dangerous voltages inside the System Unit which can present a hazard when the cover is removed.

Be sure to disconnect the power before beginning this procedure, and replace the cover before reconnecting the power.

- A) Unplug all connectors.

- B) Remove the three combination Hex-head/Phillips-head screws that secure the left side panel to the rear of the tower case, using either a 1/4" nutdriver or a #2 Phillips screwdriver. Note that the left side is the side closest to the rear panel line cord. Gently remove the tower cover, taking care not to snag any wires.

The inside of a typical System Unit looks like this:

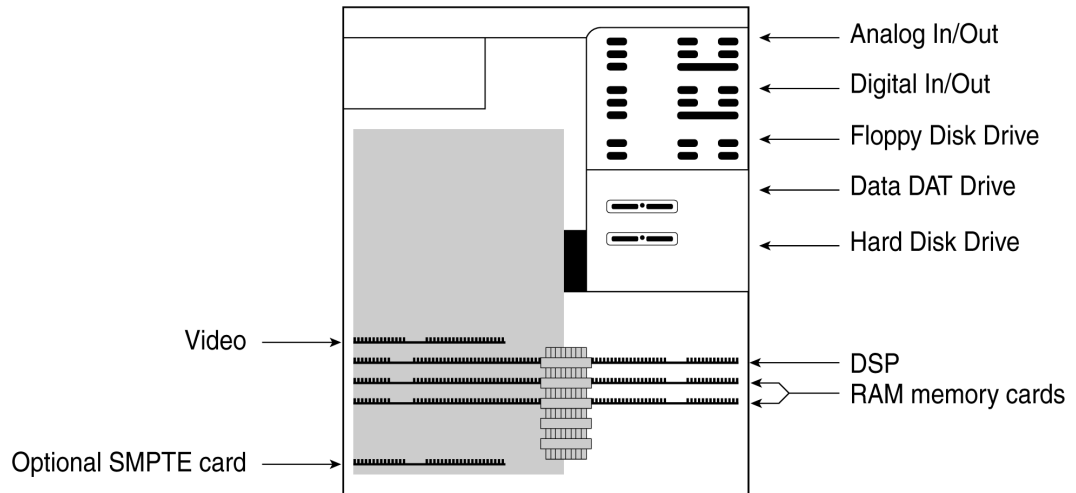


Figure 14-16: System Unit Interior

Most internal components not shown, for clarity.

Depending on the type of CPU tower used, you might not need to do any more disassembly. Look down into the top of the System Unit, at the Audio Module.

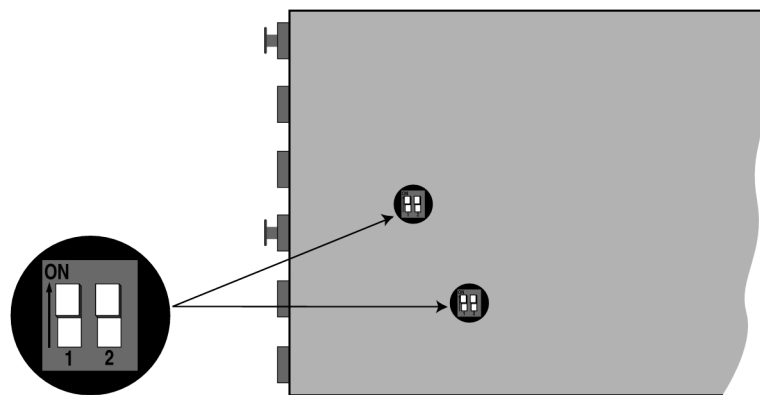


Figure 14-17: Input Switches

If you can see the switches by looking down into the System Unit, skip ahead, and set your input switches. If the tower case construction blocks these switches from view, you will need to remove the Audio Module to gain access.

- A) If necessary, remove the four screws holding the Audio Module. Now, carefully unplug the two connectors from the back of the Module while you slide the module forward and out of the frame.

If the Module doesn't move easily, it may be necessary to loosen the screws holding the Power Module/Digital IO module below it.

- B) With a small screwdriver or ballpoint pen, flip the switches to the desired sensitivity.

Sensitivity (Absolute dBu)	Rough "VU" Equivalent ⁸	Switch 1	Switch 2
+2	-10 dBm	ON	ON
+4	-8 dBm	OFF	ON
+12	0 dBm	ON	OFF
+20	+8 dBm	OFF	OFF

- C) Put everything back together.

Analog Calibration

If you're feeding your Audicy from a console and Distribution Amplifier, you'll probably want to adjust the D.A. so the console and Audicy meters agree.

First, set the input switches described above to a level closest to the D.A.'s rated output. Then, feed a constant tone through the console, at nominal "0" level on the console V.U. meter.

Now, *depending on your typical production material*, adjust the D.A. output for a reading around -15 on the Audicy's input meters. If you normally produce with highly compressed material (rock music and pre-compressed voices), you can go as high as -12 or -8. If you normally use uncompressed material (sound effects, library music, and unprocessed voices), you should adjust the D.A. output for a reading of -18 on the Audicy.

Run some typical production material through the D.A. and the Audicy to check how well the meters correspond, and trim if necessary.

What you're doing is finding the best balance between the absolute peak-reading characteristic of the digital Audicy meter, and the averaging ballistics designed into a mechanical V.U. meter.

Don't be scared by a "-12" or "-18" reading on the Audicy: This is not the same thing as "-18 VU." The Audicy's meters read instantaneous *decibels below*

⁸Remember, digital devices are concerned with absolute peak voltages, not normal studio "average" levels.

absolute peak: The loudest sound a digital circuit can make⁹. V.U. meters, on the other hand, respond to a relatively slowly-changing average level.

⁹All bits are set to “1”: Any louder a sound going in will result in absolutely no louder a sound coming out, and it will probably start to cause distortion.