CHAPTER 3:

HOOKING IT UP

Unpacking and Inspection

Your Studio 32 was packed carefully at the factory, and the container was designed to protect the unit during shipping. Please retain this container in the highly unlikely event that you need to return the Studio 32 for servicing.

Upon receiving the Studio 32, carefully examine the shipping carton and its contents for any sign of physical damage that may have occurred in transit. If you detect any damage, do not destroy any of the packing material or the carton, and immediately notify the carrier of a possible claim for damage. Damage claims must be made by you. Contact your Alesis dealer.

The shipping carton should contain the following items:

- This instruction manual and a quick reference sheet
- Alesis Studio 32 with the same serial number as shown on shipping carton
- A pair of rack rails with screws to mount them to the side panels
- AC Power Cable
- Alesis warranty card and other literature

It is important to register your purchase; if you have not already filled out your warranty card and mailed it back to Alesis, please take the time to do so now.

Installing in a Rack

The Studio 32 may be simply set on a table, or installed in a standard 19” audio equipment rack. To rack mount the Studio 32, simply attach the provided rack ears to each side using the screws provided. If you wish to save rack space, you may remove the hand rest below the faders:

1. Remove the screw holding the plastic end caps to the sides of the hand rest. Remove the end caps.
2. Remove the four screws attaching the hand rest to the front panel.

Make sure you leave enough space at the top of any rack installation for the cables which must be plugged into the back panel. By using right-angle plugs, this may be kept to a single rack space if needed.

Power

Make sure you read the initial Important Safety Instructions chapter at the front of this manual.

The Studio 32 works with a single standard line voltage and comes with a detachable AC line cord suitable for the destination to which the mixing console is shipped. Units sold in the United States are designed for use with 110 to 120 volt AC power only (nominal 60 Hz).

The line cable cable is a IEC-spec AC power cable (do not substitute any other AC cord), which is designed to be connected to an outlet that includes three pins, with the third, round pin connected to ground. The ground connection is an important safety feature designed to keep the chassis of electronic devices such as the Studio 32 at ground potential. Unfortunately, the presence of a third pin does not always indicate that an outlet is properly grounded. You may use an AC line tester to determine this. If the outlet is not grounded, consult with a licensed electrician. When AC currents are suspected of being highly unstable in VAC and Hz, a professional power conditioner should be used.

To connect power to the Studio 32:

1 Attach the female end of the AC power cord to the Studio 32's back panel and the male end to a good quality, noise-free AC power source of the proper rating.

2 To apply power to the Studio 32, switch on the POWER switch on the back panel, so that it is in the | (on) position.

Do not operate any electrical equipment with ungrounded outlets. Plugging the Studio 32 into an ungrounded outlet, or "lifting" the unit off ground with a three-to-two wire adapter, can create a hazardous condition.

Alesis cannot be responsible for problems caused by using the Studio 32 or any associated equipment with improper AC wiring.

Avoiding ground loop noise

In today's studio, where it seems every piece of equipment has its own computer chip inside, there are many opportunities for ground loop problems to occur. These show up as hums, buzzes or sometimes radio reception and can occur if a piece of equipment "sees" two or more different paths to ground. While there are methods to virtually eliminate ground loops and stray radio frequency interference, most of the professional methods are expensive and involve installing a separate power source just for the sound system. Alternatively, here are some easy helpful hints that a professional studio installer might use to keep those stray hums and buzzes to a minimum.

1 KEEP ALL ELECTRONICS OF THE SOUND SYSTEM ON THE SAME AC ELECTRICAL CIRCUIT. Most stray hums and buzzes happen as a result of different parts of the sound system being plugged into outlets of different AC circuits. If any noise generating devices such as air conditioners, refrigerators, neon lights, etc., are already plugged into one of these circuits, you then have a perfect condition for stray buzzes. Since most electronic devices of a sound system don't require a lot of current (except for power amplifiers), it's usually safe to run a multi-outlet box or two from a *SINGLE* wall outlet and plug in all of the components of your system there.

2 KEEP AUDIO WIRING AS FAR AWAY FROM AC WIRING AS POSSIBLE. Many hums come from audio cabling being too near AC wiring. If a hum occurs, try moving the audio wiring around to see if the hum ceases or diminishes. If it's not possible to separate the audio and AC wiring in some instances, make sure that the audio wires don't run parallel to any AC wire (they should only cross at right angles, if possible).

3 TO ELIMINATE HUM IF THE ABOVE HAS FAILED:

A) Disconnect the power from all outboard devices and tape machines except for the Studio 32 mixer and control room monitor power amp.

B) Plug in each tape machine and outboard effects device one at a time. If possible, flip the polarity of the plug of each device (turn it around in the socket) until the quietest position is found.

C) Make sure that all of the audio cables are in good working order. Cables with a detached ground wire will cause a very loud hum!!

D) Keep all cables as short as possible, especially in unbalanced circuits.

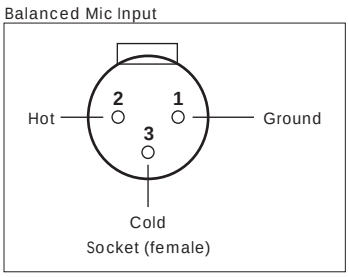
If the basic experiments don't uncover the source of the problem, consult your dealer or technician trained in proper studio grounding techniques. In some cases, a "star grounding" scheme must be used, with the Studio 32 at the center of the star providing the shield ground on telescoping shields, which do NOT connect to the chassis ground of other equipment in the system.

Channel Inputs and Outputs

Each of the 16 channel modules on the Studio 32 contains an XLR balanced MIC IN connector, a 1/4" TRS balanced LINE IN jack, a 1/4" TRS balanced TAPE IN jack, a balanced 1/4" TRS DIRECT OUT jack, and a 1/4" TRS INSERT jack. Here are more detailed descriptions of each of these, and what they should be connected to.

Mic Inputs

The MIC IN of each channel is a standard female XLR-3 connector. The cable wiring is illustrated below:



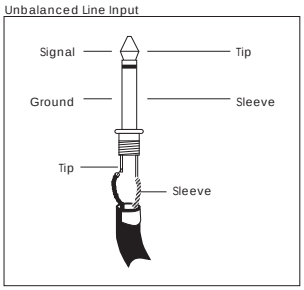
The MIC Input is designed to accept a wide range of balanced or unbalanced low impedance input signals. Each input can provide the +48 volts necessary for phantom-powered microphones on pins 2 and 3; this may be turned on and off with the PHANTOM switch.

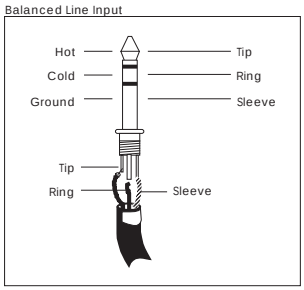
Avoid connecting a mic while the fader is up and phantom power is on. Do not connect a microphone and a line input to the same channel.

Line Inputs

The LINE IN of each channel is a 1/4" jack which will accept balanced or unbalanced line-level sources.

"Line level" means that signals are typically in the 1/3 of a volt to 2-volt range, such as the output of synthesizers, keyboards, CD players, etc. This is in contrast to the much lower levels usually output by microphones (measured in millivolts).





Unlike the low impedance microphone input, this connection provides a high impedance (>10kΩ) to the input signal, enabling most instruments to be plugged straight in without direct boxes or external preamplification. While the output of a standard synthesizer (or other equipment) can be plugged in using a 2-conductor

1/4" plug, balanced line sources may also be connected here using a “stereo” TRS plug as shown above. Line inputs may also be used for connecting additional effects returns, where additional post-effect equalization is required.

Do not connect a line input and a microphone to the same channel.

Tape Inputs

The TAPE IN jacks area 1/4" balanced TRS connectors which will accept either balanced or unbalanced inputs. Usually, you’ll connect the outputs of your multitrack tape machine here. There is no TRIM control for the tape input; it is designed to work with +4 dBu (balanced high level) or -10 dBV (unbalanced medium level) line signals.

Depending on the position of the source switches of a channel, you can hear the tape input in the main channel, the monitor, or both at once.

Tip: If you don’t have a 16-track studio, you may use extra TAPE IN jacks to connect to the outputs of any line-level unit such as synthesizers or effects devices.

Direct Outputs

The DIRECT OUT jack on each channel is a balanced 1/4" connector which provides a direct output of the post-fader channel signal. It is set for a unity-gain output, so it can drive either +4 dBu or -10 dBV devices depending on the setting of the TRIM control and the fader. If you want to record a single source to a track of tape, connect this to the inputs of your multitrack tape recorder, or for any other application where you need a direct output. (The other option is to connect the Group Out jacks to the recorder, as explained on page 31.)

Insert

The INSERT connector is a TRS 1/4" jack which consists of an insert send (the tip of the TRS plug) and an insert return (the ring of a TRS plug), and is used to insert an outboard effects device (such as a compressor, EQ, or chorus) directly into the signal path of only one channel: the channel it is connected to (as opposed to the Aux system, which combines many different channels into an effect). For details on this, see page **Error! Bookmark not defined.**.

Master Inputs and Outputs

Along the top of the back panel above the master section of the Studio 32 you'll find most of the connectors that provide the outputs of the console: two 1/4" MAIN OUT connectors (plus two MAIN INSERT jacks), and four 1/4" GROUP OUT connectors. The CONTROL ROOM OUT jacks are under the power connector. See the next chapter "Effects and Signal Processing" for information about the Auxiliary Outputs.

Main Outputs

The left and right MAIN OUT jacks are two balanced TRS 1/4" jacks which provide the primary stereo mix of the Studio 32. These are normally connected to the inputs of a mixdown tape machine or a PA system amplifier.

Main Inserts

These are two TRS 1/4" jacks, each of which consists of an insert send (the tip of the TRS plug) and an insert return (the ring of a TRS plug). One is for the left channel and one is for the right channel of the stereo mix. They are used to insert a outboard stereo effects device (such as a compressor, limiter, reverb or EQ) directly into the main signal path, before the fader. A special Y-cable (stereo 1/4" plug to two mono 1/4" plugs, as shown on page **Error! Bookmark not defined.**) is required.

Group Outputs

The GROUP OUTPUTS are balanced 1/4" connectors which are usually connected to the inputs of a multitrack tape machine. If you want to send a mix of several channels to a single track, you'll use a Group Output. (The DIRECT OUT jacks can only send one source to one track.)

Other uses for Group Outputs: In certain applications, such as video post-production, a pair of Group Outputs may be used to provide a different mix than the Main Outputs, such as a mix containing music and effects but minus the dialog. Group Outs may also be used as a feed to an effect device, a separate section of a PA system, or for a surround sound encoder.

Using four groups for eight tracks: Alesis ADAT recorders have normalling input features, which allow you to record on tracks 5-8 without repatching, even when the mixer output is connected only to tracks 1-4. There's more about this later in this manual, and in the ADAT manual as well.

Control Room Outputs

These outputs consist of two balanced TRS 1/4" jacks for the left and right signals coming from the Control Room Select switch. Normally, you'll connect these to the inputs of the amplifier for your control room monitor speakers. The signal level is controlled by the CONTROL ROOM knob.

2 Track Inputs

These balanced 1/4" jacks are intended for the outputs of a mixdown tape machine, so you can hear it in the control room output without using up an input. This allows you to playback your mix without repatching.

Stereo Aux Returns

The STEREO AUX RETURNS are eight balanced 1/4" line input jacks that are most often used to connect to the stereo outputs of four external effect units. However, these may also be used as additional inputs for stereo sound modules, samplers or synthesizers, if desired.

Monitor and Auxiliary Outputs

The MONITOR and AUXILIARY OUTPUTS are six balanced 1/4" jacks which feed the signals from Monitor 1/2 and Aux 3-6. MON 1 and 2 are pre-fader, and are ideal for feeding a headphone amp for musicians in the studio to monitor themselves and other tracks already recorded onto tape. However, depending on your studio hookup, you may find it more flexible to connect headphones to the jacks on the top panel, which may be switched to receive the MONITOR 1/2 signal or the Control Room mix. Aux 3 - 6 are post-fader, and are normally connected to the inputs of outboard effects devices, like reverbs and digital delays.

Headphones

The headphone connectors (found on the upper right side of the console) are stereo 1/4" jacks which can drive most headphones. The signal level is controlled by the PHONES knob. The wiring scheme is shown below; most headphones label which side is left and right.

Headphones

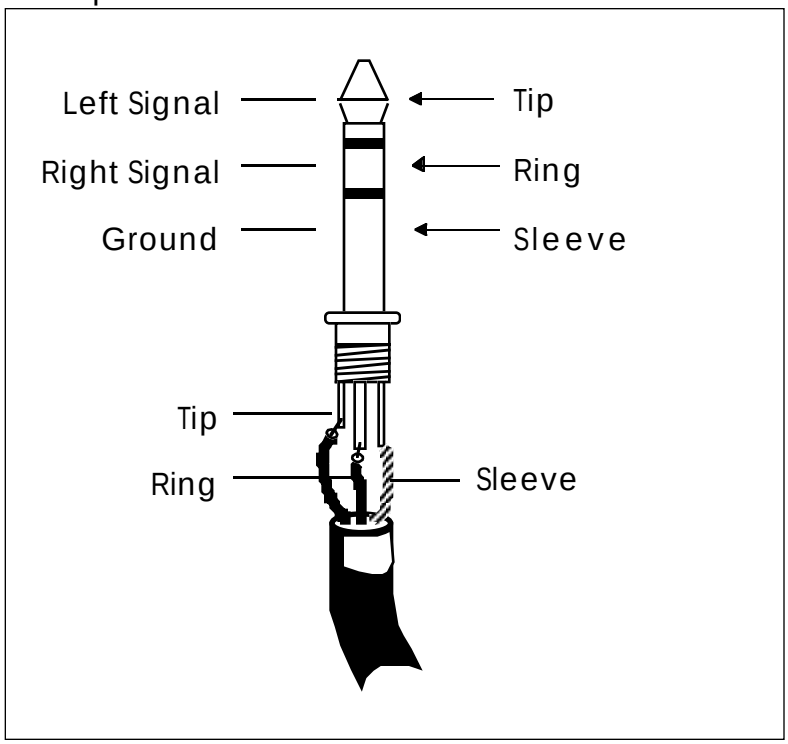


Chart of Connections

The Studio 32 may be easily interfaced with most other professional recording and audio equipment. All inputs and outputs, with the exception of the microphone inputs, use 1/4" jacks, and may be used with balanced or unbalanced circuits. The microphone inputs are standard balanced XLR type jacks.

Input	Connector	Type
Mic Inputs	XLR	Balanced
Line Inputs	1/4" TRS	Unbalanced or Balanced
DIRECT OUT (Direct)	1/4" Mono	Unbalanced or Balanced
Tape In	1/4" TRS	Unbalanced or Balanced
Inserts	1/4" TRS	Unbalanced
Aux Sends	1/4" Mono	Unbalanced or Balanced
Aux Returns	1/4" Mono	Unbalanced or Balanced
Group Outs	1/4" Mono	Unbalanced or Balanced
Main L/R Outs	1/4" TRS	Unbalanced or Balanced
Main Inserts	1/4" TRS	Unbalanced
Control Room Outs	1/4" TRS	Unbalanced or Balanced
2 TRACK IN	1/4" Mono	Unbalanced or Balanced
Headphone	1/4" TRS	Unbalanced

Connecting to an Unbalanced -10 dBV Multitrack Recorder

Interfacing the Studio 32 with a typical multitrack recorder using semiprofessional unbalanced phono or 1/4" phone jacks is a simple process. Alternatively, if you are using one or more ADATs, it is recommended that you use the balanced inputs and outputs using the ELCO-type connector on the ADAT (see next page).

To interface with a typical unbalanced multitrack recorder:

1 Connect any microphones or instruments to be recorded into the MIC or LINE INPUTS of channels 1 through 16.

2 Connect the four GROUP OUTs to the corresponding tape tracks by using either 1/4"-to-RCA cables or 1/4"-to-1/4" cables. Alternatively, you may decide to connect individual channel DIRECT OUT jacks to the track you want to record, but this will require you to repatch every time you want to record a different channel on that track of the recorder.

3 Connect the tape machine's outputs to the TAPE IN jacks of the same-numbered channels of the Studio 32. Whenever you want to hear the playback of the machine, track 1 will appear at the FADER SOURCE and MONITOR SOURCE switches of channel 1, track 2 will appear at channel 2, and so on.

Connecting your recorder(s) at the -10 dBV unbalanced level can yield good results, provided that the cables between the multitrack and the Studio 32 are no more than 20 feet long. If cable runs must be longer than that, or if your studio has noise and grounding problems, we recommend a +4 dBu balanced hookup if possible (see next page).

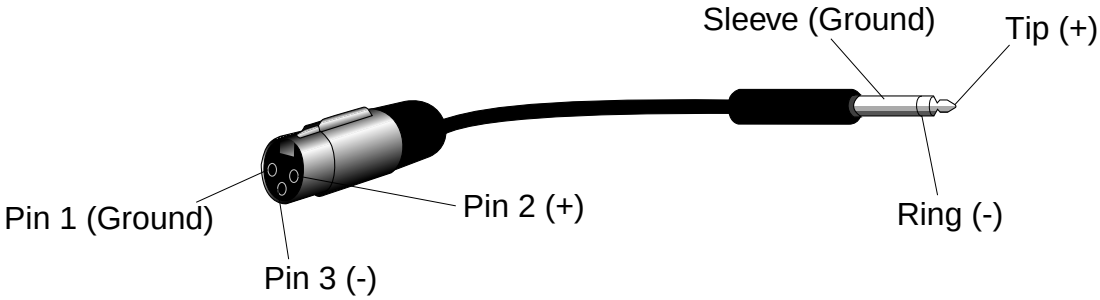
Connecting to a Professional +4 dBu Multitrack Recorder

Professional recorders typically feature 3-pin XLR connectors on their inputs and outputs. ADATs feature a multipin ELCO connector that takes care of all the channels (8 inputs, 8 outputs) on a single connector. The nominal signal level of these units is +4 dBu (1.23 volts). In either case, connect these decks to the TAPE IN jacks, not the MIC IN XLR jacks.

ADAT: The best method for connecting an ADAT is to purchase an ELCO-to-TRS multipair cable, available from many different cable manufacturers. This will connect from the ELCO-type connector on the ADAT on one end, fanning out to sixteen tip-ring-sleeve quarter-inch phone plugs (labeled INPUT 1, OUTPUT 1 and so on) on the other end. This method assures full-balanced outputs from the ADAT to the TAPE IN jacks. The connection from the Studio 32's GROUP or DIRECT OUT jacks to the ADAT's inputs will also be balanced. The GROUP and DIRECT OUTS have plenty of headroom, with a maximum balanced output of +27 dBu before mixer distortion (although the ADAT's own maximum is +19 dBu). Balanced cables between the recorder and the mixer can be very long, if necessary, without adding noise.

XLRs: If you have a video or old analog deck with XLR inputs and outputs, you will need:

- An XLR female to 1/4" TRS cable for each output of the tape recorder; and,



- An XLR male to 1/4"TRS cable for each send to the tape recorder.

This arrangement will give you a balanced connection for recording and playback in most cases. However, some recorders with XLRs may not be truly balanced, with pin 2 or 3 (depending on vintage) tied to ground, which may cause a ground loop. Also, depending on the characteristics of the deck, metering levels may not match between the deck and the Studio 32.

You may need to increase the Studio 32's fader level in order to get enough level on the multitrack's meters. Some multitracks have high/low level input switches; follow the manufacturer's instructions on setting these properly.

Connecting to a 2-Track Mixdown Deck

The mixdown deck is where everything comes together: the final mix. This is your stereo master recording of the finished project (or a rough mix of a work in progress). A special pair of inputs of the Studio 32 are provided to hear the mixdown deck in the Control Room mix only. If you connect the mixdown deck to regular line inputs, you run the risk of feedback by accidentally recording the output of the 2-track to itself.

To connect the mixdown deck to the Studio 32:

Unbalanced connection:

1 Connect the Studio 32's MAIN OUTS Left and Right to the inputs of the Mixdown Deck using the appropriate cables (usually 1/4" phone to "RCA" phono).
Note that the nominal output of the MAIN OUT in unbalanced operation is -2 dBu, about 6 dB "hotter" than the nominal level of an unbalanced mixdown deck. Lower the input level controls of the mixdown deck to achieve the desired signal level, or lower the L/R master fader a little to compensate.

2 Connect the Mixdown Deck's outputs to the Studio 32's 2 TRACK IN Left/Right Inputs using 2-conductor cables (usually phono-to-phone cables) or adapters.

Balanced connection:

If the mixdown deck has XLR outputs, make or purchase XLR-to-TRS phone plug adapters or cables, with pin 1 connected to the sleeve, pin 2 connected to the tip, and pin 3 to the ring. The phone plugs will always be male; 2 XLRs will be female and 2 will be male. (The convention is that XLRs always point in the direction of signal flow, so the mixdown deck's outputs are male and the inputs are female).

1 Connect a 1/4" TRS (3-conductor) -to-XLR male cable from the MAIN OUT L/R jacks to the XLR inputs of the mixdown deck.

2 The 2 TRACK IN jacks of the Studio 32 are TRS balanced, and will accept +4 dBu balanced sources. Connect the output of the mixdown deck to these jacks.

In the rare event that the 2-track has balanced 1/4" jacks, use TRS-to-TRS cables in place of XLRs.

Connecting to a Control Room amplifier

Connect the Studio 32's Control Room L & R Outs to the inputs of the amplifier used for the control room monitor speakers. The CONTROL ROOM knob on the Studio 32 controls the level of the control room monitor speakers.

Note: These jacks are also TRS balanced. You may use unbalanced 2-conductor cables if the power amp doesn't have balanced inputs. If the amp features XLR inputs, use a TRS 3-conductor phone-to-XLR-male cable.

Connecting to a Headphone Amp

Monitor 1 and 2 may be used to set up a separate cue mix for musicians to overdub to while listening to headphones. Connect the AUXILIARY OUTPUTS MON 1 and 2 to a suitable headphone amplifier, if you will use the monitor section separately.

Tip: If you'd like your studio headphones to switch between MONITOR 1/2 and the Control Room mix, the HEADPHONE OUTS may be connected to an amplifier's inputs using a tip-ring-sleeve stereo splitter cable (the same type used for Insert cables). This also may be used for a second set of Control Room or studio playback monitors. Just keep the PHONES level control at 2 o'clock or less.

Connecting to a Patchbay

It may be easier in some installations to access everything by the use of a patchbay, which is several rows of jacks that are permanently connected to both the inputs and the outputs of the Studio 32, the multitrack tape machine, and all of the outboard equipment. This is much more convenient, but a more expensive method than described in the last section, and is not absolutely necessary for operation. In this case, the patching is the same as in the previous example except that it is now done on the patchbay instead of at the rear of the console and multitrack tape machine.

With a patchbay, it is also easier to make use of the AUX SENDS and RETURNS of the Studio 32. Different effects may be repatched to receive signal from whatever Aux Send the session requires.

For information on connecting to effects, see the next chapter.