CHAPTER 4:

EFFECTS AND SIGNAL PROCESSING

Connecting Aux Sends and Returns to Outboard Effects

Aux Sends 3 through 6 are derived post-fader, which means that any changes in level in the fader will also cause a change in level at these as well. The Auxiliaries are normally used as effects sends and are connected to whatever outboard effects that are available (reverbs, chorus, multi-effects processors, delays) to be blended into the mix.

Before you connect the Aux Sends, consider where you want the signals to come from:

- All Auxes can receive signal from the channel fader if desired.
- Alternatively, Auxes 3 and 5 can receive signal from the Monitor.
- Auxes 3 and 5 can receive signals from Faders and Monitors from different channels simultaneously, if desired.

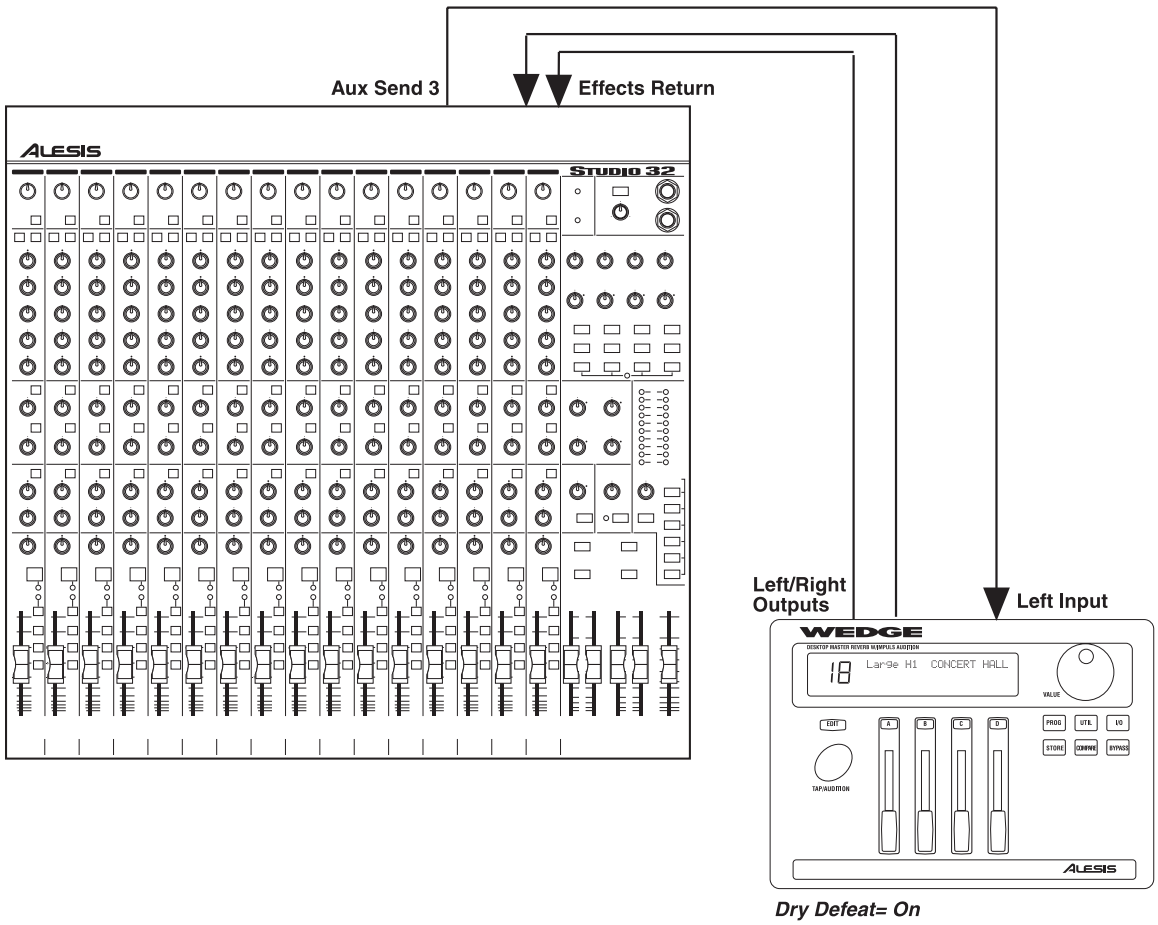
Note: If you want to use a separate effect on each channel, use the INSERT jacks, not the Aux Sends (see next section).

To connect the Aux Sends and Stereo Aux Returns to outboard effects:

1 Connect the Aux Sends (AUX 3, AUX 4, AUX 5, AUX 6) to the input or inputs of your outboard effects devices (like the Alesis QuadraVerb 2 or Midiverb 4). See the next page for more information about using stereo inputs (or not).

2 Connect the Outputs of these effects devices back into the Studio 32's dedicated inputs, called STEREO AUX RETURNS. There are eight 1/4" STEREO AUX RETURN connectors (labeled in pairs as A, B, C, D as on the front panel), enough for 4 stereo, 8 mono, or any combination of mono and stereo devices.

You can use any Aux Returns you wish; but most people connect the outputs of the unit being fed by Aux Send 3 into Stereo Aux Return A, plug the unit fed by Aux Send 4 into Stereo Aux Return B, and so on. The only difference between the Returns is what groups they can be assigned to. Returns A and B may be assigned to Groups 1/2, and Returns C and D may be assigned to Groups 3/4. All Aux Returns can be sent to the L/R Main mix, which is the most common assignment for effect returns.



Dry Defeat= On

Should you use one or two inputs to effects?

If your effect unit has two inputs, in most cases you only need to connect from ONE Aux Send to the LEFT (mono) INPUT of the effect unit, but you will still connect both the LEFT and RIGHT OUTPUTS of the effect to the Stereo Aux Return.

You may not need to connect anything to the right input of the effect, since many effect units use it only if the effect is connected directly between an instrument and an amplifier. In most mixing applications, you will set the effect's wet/dry balance all the way to wet. The effect device will generate an artificial stereo output from the signal input. Check the manual for your effect device for more information. On the other hand, true dual-channel effects processors (such as the Alesis Wedge and QuadraVerb 2) should be connected to two different sends to take advantage of the dual processing capability.

Using MONITOR 1/2 as effects sends

Note that Mon 1 and 2 can also be used as extra effect sends while mixing. Although Mon 1 and 2 are pre-fader, and normally used for monitoring while recording, they are perfectly suitable as effect sends, especially during mixdown, when you will want to maximize your ability to add effects to independent channels. Just remember that when you move a FADER up or down you won't be changing the level going to the effect via MON 1/2, since "pre-fader" means that they are independent of fader movement (the signal is not affected by the

Channel's MUTE button, either). As you change fader levels, you may need to make corresponding adjustments to MON 1 and 2 in order to maintain the desired balance between dry and effected signal.

Using Aux Returns for extra line inputs
The four Stereo Aux Returns also serve well as additional inputs, in case you run out of Channels. These are especially good for connecting the outputs of stereo keyboards, many of which provide on-board signal processing and do not require any equalization.

Using Effects

Effects such as reverb, chorus and delay are typically wired in a loop from an Auxiliary Send to a Stereo Aux Return (see the illustration on page **Error! Bookmark not defined.**). There are two basic stages to getting a low-noise, distortion-free signal flow from an effect device:

SEND

Adjust the send level from the Studio 32 to the effect device using the channel Aux Sends, the AUXILIARY MASTER, and the input controls of the effect device itself. This level should be as strong as possible without clipping the effect device, and without extreme settings on either the mixer or the effect.

RETURN

Assign the Stereo Aux Return to the destinations you want:

- **To hear effects in the headphone mix**, raise the purple MON 1/2 controls in the Stereo Aux Return section.
- **To hear effects in the control room or record them onto the mixdown deck**, press the L/R assignment switch.
- **To record effects onto the multitrack tape deck,** press a GRP switch. Aux Returns A and B can send to GRP 1/2, and Aux Returns C and D can send to GRP 3/4.

Most complaints of "noisy effects" are due to send levels that are too low and return levels that are too high. You must structure the gain properly between the Studio 32 and the effect device.

Selecting an Aux Send:

First, you must decide which Auxiliary Sends to use. There are four post-fader sends from the Studio 32, labeled Aux 3 through Aux 6 because MON 1/2 is considered a special type of auxiliary send.

- **To send a signal to the effect device from the monitor section**, press the AUX SOURCE button down. This selects the post-monitor fader signal as the source of the AUX 3(5) knob directly below the switch. In a typical installation, Aux 3 is used for effect sends from the monitor.
- **To send a signal to the effect device from the channel**, use AUX 4 or AUX 6. The signal source for the lower AUX control always comes from the channel fader.

In a typical installation, Aux 4 is used for effect sends from the channel.

- **To send signal from the monitor and the channel to the same effect device(s)**, press the AUX SOURCE button down and press the TO 5/6 switch. Use AUX 5 and 6 for a combined effect send.

To set the level going to the effects device:

1 Set the Aux Send(s) in the input module to about "2 o'clock."

2 Start the signal source(s); i.e., play the tape or instrument at typical levels.

3 Raise the appropriate AUXILIARY MASTER to about "2 o'clock."
To check the output level, select AUX 3/4 or AUX 5/6 as the Control Room Source, and set the Aux Master to a setting that gives an average meter reading of "0 dB" on the L/R meter.

4 Raise the input control of the effects device until its meter or clip LED shows peak level, then lower the input control a bit. Consult the manual for the effect device for more information.
Some effect devices have level setting switches on the back; these should be set so that a peak level can be reached with reasonable settings (neither too high nor too low) of the input control.

To set the level coming FROM the effects device:

In most cases, the output level of the effect device itself should be set relatively high, at nominal or maximum. Lower the output of the device only if the meter keeps the +10 LED on when the Stereo Aux Return is soloed, or if the effect levels are too loud even at low settings of the Stereo Aux Return LEVEL controls.

To hear effects in the control room monitors:

It's possible to put effects into the monitor or headphone mix without recording them to the multitrack.

1 Press the L/R switch of the Stereo Aux Return.
Make sure the GRP 1/2 or GRP 3/4 switches are in the up position. Otherwise, the signal will be assigned to the group and effects may be sent to the multitrack recorder.

2 Raise the Stereo Aux Return's LEVEL control until you hear the desired volume of effect return.

Remember that you can SOLO the Aux Return to make adjustments to the sound, if desired, as long as the master solo select switch is in SIP (solo in place) mode (green solo master LED). You will be hearing the output of the effects device only, without any "dry" signal coming from the channel.

To hear effects in the headphone/cue mix:

Often while recording, musicians would like to hear some reverb or delay in their headphone mix. It is possible to meet this need without actually recording the effect. *If you're using L/R as the cue feed, follow the steps for "control room monitors" above.* If the headphone mix's source is MON 1/2:

1 Select MON 1/2 as the Control Room source so you can hear what the studio is hearing.

2 Raise the MON 1/2 control (the purple knobs) of the Stereo Aux Return(s) until the desired balance is heard.

To record effects onto the multitrack:

In most cases, effects are added at mixdown instead of during tracking and overdubbing. However, you can "record wet" (with effects) in order to use the same device for some other effect at mixdown, or because the effect is essential to the part. To do this, you simply:

1 Assign the Stereo Aux Return to the Group that you're recording, by pressing the GRP switch. Returns A and B can be sent to Groups 1 and 2, and Returns C and D can be sent to Groups 3 and 4. (If this doesn't fit your needs, you will have to repatch.)

2 To make sure you're hearing what's actually going to tape, make sure the L/R switch is up, and follow the procedure earlier in this section under "Recording Multiple Sources."

If the effect is stereo, it must be recorded onto two tracks. The left Aux Return input will go to the odd-numbered group (1 or 3) and the right Aux Return input will go to the even-numbered group (2 or 4).

To record effects onto the mixdown deck:

This procedure is the same as for hearing effects in the control room monitors described earlier: assign the STEREO AUX RETURNS to L/R and adjust the LEVEL controls.

Connecting Signal Processors to Insert Jacks

Inserts are used to connect signal processing devices directly into the signal path of a Channel. Normally, the device connected would be one that shapes the dynamics or tone of a signal (such as a compressor, gate, or EQ), rather than an effects device (such as a reverb). It is also possible to insert a stereo signal processor into the signal path of the MAIN L/R OUTS, using the MAIN INSERT jacks. This is desirable when either a group of instruments, or the entire mix, needs to be processed.

All INSERT jacks on the Studio 32 are TRS jacks containing both an output (send) and an input (return). The *tip* of the plug is the *Send* and will be connected to the Input of the effects device or processor, and the *ring* of the plug is the *Return* and will be connected to the Output of the effects device or processor.

A special Y-cable consisting of a TRS 1/4" plug on one end and two mono 1/4" plugs on the other end is required. See the illustration below.

Insert Jack