StudioLive™ 24.4.2 and StudioLive™ 16.4.2

Performance and Recording Digital Mixers

Owner's Manual



PreSonus®

www.presonus.com

English

Important Safety Instructions

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in this manual.

The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous" voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to humans.

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE THE COVER. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED PERSONNEL.

CAUTION: To reduce the risk of electric shock, do not expose this appliance to rain and moisture. The apparatus shall not be exposed to dripping or splashing liquids and no object filled with liquids, such as vases, shall be placed on the apparatus.

CAUTION: These service instructions are for use by qualified service personnel only. To reduce the risk of electric shock, do not perform any servicing other than that contained in the operation instructions. Repairs must be performed by qualified service personnel.

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry a cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources, such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades, with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade and the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Use only attachments/accessories specified by PreSonus.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer or sold with this apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.



13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Servicing is required when the apparatus has been damaged in any way, such as if a power-supply cord or plug is damaged; or liquid has been spilled, or objects have fallen, into the apparatus; or if the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped. All PreSonus products in the USA should be serviced at the PreSonus factory in Baton Rouge, Louisiana. If your product requires a repair, contact **support@presonus.com** to arrange for a return-authorization number. Customers outside the USA should contact their local distributor. Your distributor's contact information is available at www.presonus.com.
15. The apparatus shall be connected to a Mains power outlet with a protective grounding/earthing connection.
16. Where the Mains plug or an appliance coupler is used as the disconnect device, the disconnect device shall remain readily operable.

EU Directives on the Protection of the Environment and Other Euro Stuff

RoHS This product is compliant with the EU Directive 2011/65/EU for the Restriction of the use of Certain Hazardous Substances in Electrical and Electronic Equipment. No lead (Pb), cadmium (Cd), mercury (Hg), hexavalent chromium (Cr+6), PBB or PBDE is intentionally added to this device. Any traces of impurities of these substances contained in the parts are below the RoHS specified threshold levels.

REACh This product is compliant with the European Union Directive EC1907/206 for the Registration, Evaluation, Authorization, and Restriction of chemicals (REACh) and contains none or less than 0.1% of the chemicals listed as hazardous chemicals in the REACh regulation.



WEEE This symbol on the product or its packaging indicates that this product must not be disposed of with other waste. Instead, it is your responsibility to dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city recycling office or the dealer from whom you purchased the product.

CE This product complies with the European Union Council Directives and Standards relating to electromagnetic compatibility EMC Directive (2006/95/EC) and the Low Voltage Directive (2004/108/EC).

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1 Overview

1.1 Introduction





Thank you for purchasing the PreSonus™ StudioLive™ 24.4.2/16.4.2 Performance and Recording Digital Mixer. PreSonus Audio Electronics has designed the StudioLive utilizing high-grade components to ensure optimum performance that will last a lifetime. Loaded with 24/16 high-headroom, XMAX™ microphone preamplifiers; a built-in 32x26/32x18 FireWire recording and playback engine; Fat Channel processing with 4-band EQs, compressors, limiters, and expander/gates; reverb and delay effects; 10/6 aux buses; 4 subgroups; extensive LED metering; mixer save/recall; channel-strip save/recall/copy/paste; talkback; and more, StudioLive breaks new boundaries for music performance and production. All you need is a compatible computer with a FireWire connection, a few microphones and cables, speakers, and your instruments, and you are ready to record in the studio or in front of a live audience!

We encourage you to contact us with questions or comments regarding this product. PreSonus Audio Electronics is committed to constant product improvement, and we value your suggestions highly. We believe the best way to achieve our goal of constant product improvement is by listening to the real experts: our valued customers. We appreciate the support you have shown us through the purchase of this product.

For technical support, please see **Section 7.1: Troubleshooting**.

1.2 About This Manual

We suggest that you use this manual to familiarize yourself with the features, applications, and connection procedures for your StudioLive before trying to connect it to your computer. This will help you avoid problems during installation and setup. This manual covers hardware functions for both the StudioLive 24.4.2 and StudioLive 16.4.2. Whenever there is a difference in channel or bus count, the StudioLive 24.4.2's count will be listed first (24/16 XMAX mic preamps, 10/6 auxes, etc.).

A separate manual, also included with your StudioLive mixer, covers the StudioLive software library, as well as instructions for connecting and using your StudioLive with a computer.

Throughout this manual you will find Power User Tips. These tips provide mixing tricks, some of which are unique to the StudioLive, as well as explanations of various audio terms. In addition, you will find an assortment of audio

tutorials at the back of this manual. These tutorials cover everything from microphone placement to equalizer and compression-setting suggestions and are included to help you get the most from your StudioLive mixer.

Thank you, once again, for buying our product. We are confident that you will enjoy your StudioLive!

1.3 Summary of StudioLive 24.4.2/16.4.2 Hardware Features

- 24-bit/48 kHz sampling rate
- 24/16 Class A XMAX microphone preamplifiers
- 24/16 line-level inputs
- 10/6 auxiliary buses
- 4 subgroups
- High-definition analog-to-digital converters (118 dB dynamic range)
- Unlimited-headroom, 32-bit floating-point, digital mixing and effects processing
- 32x26/32x18 FireWire digital recording interface with two FireWire 400 (IEEE 1394) ports
- Scene automation with load/save/recall of all settings
- Fat Channel with: High-pass filter, Compressor, Limiter, Expander/Gate, 4-band parametric/semi-parametric EQ
- Load/save
- 2 master effects processors (reverb and delay with Load and Save)
- 100 mm long-throw faders
- Military-grade quick-touch buttons
- Fast-acting LED meters
- Talkback communication system
- Rugged steel chassis
- Windows® and Mac® compatible
- Powerful StudioLive software library includes:
    - **Virtual StudioLive** (VSL) advanced editor/librarian/control
    - **StudioLive Remote** (SL Remote) remote control app for iPad® (free from Apple App Store)
    - **QMix**™ remote aux-mix app for iPhone®/iPod touch® (free from Apple App Store)
    - **Capture**™ integrated multitrack-recording software
    - **Studio One**™ Artist digital audio workstation with more than 6 GB of plug-ins, loops, and sounds

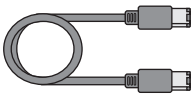
1.4 What is in the Box

In addition to this manual, your StudioLive package contains the following:

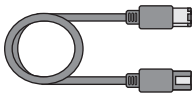




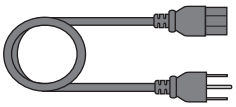
- PreSonus StudioLive 24.4.2/16.4.2 digital recording and performance mixer



- 6' (1.8 m) 6-pin-to-6-pin FireWire 400 cable



- 6' (1.8 m) 6-pin-to-9-pin FireWire 400-to-800 cable



- IEC power cord



- StudioLive Software Library containing:
  - PreSonus Studio One Artist program DVD plus gigabytes of third-party content
  - PreSonus Capture CD with demo sessions
  - PreSonus Universal Control/Virtual StudioLive CD



- StudioLive Software Library Manual

2 Getting Started

Before you begin, here are a few general rules of thumb:

- Always turn the Main fader and both the Monitor and Phones knobs in the Monitor section down before making connections.
- Before plugging or unplugging a microphone while other channels are active, mute the channel to which you are connecting.
- Your faders should be set on or near the "U" mark whenever possible. The "U" indicates unity gain, meaning the signal is neither boosted nor attenuated. If the main output of your StudioLive is too high or too low when your faders are at or near unity, you can use the output-level knob on the rear panel of the StudioLive to adjust the level up or down until you have achieved the optimal volume.
- Do not allow your inputs to clip. Watch the level meters; when the LEDs near the Clip mark, the top LED will illuminate, indicating that the analog-to-digital converters are in danger of being overdriven. Overdriving the converters will cause digital distortion, which sounds terrible. The XMAX™ preamps in your StudioLive provide plenty of headroom; take advantage of it.

Your P.A. and studio equipment should be powered on in the following order:

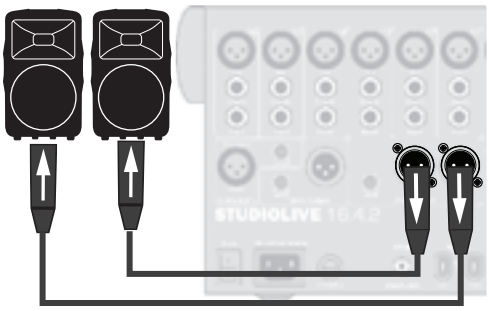
1. Sound sources (keyboards, direct boxes, microphones, etc.) connected to the StudioLive inputs
2. StudioLive mixer
3. Computer (if applicable)
4. Power amplifiers or powered monitors

When it's time to power down, your system should be turned off in the reverse order. Now that you know what not to do, let's get some audio going!

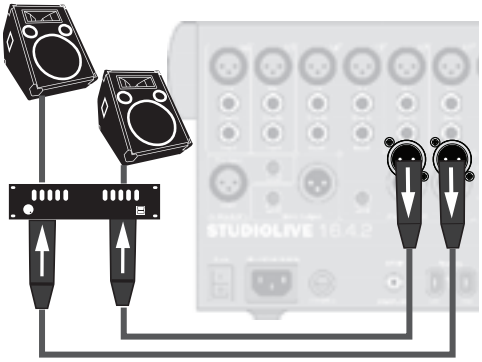
2.1 Level Setting Procedure



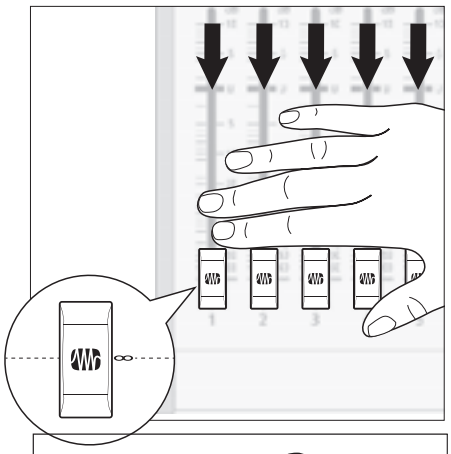
1. Grab a microphone and a mic cable and plug them into the StudioLive's Channel 1 mic input.



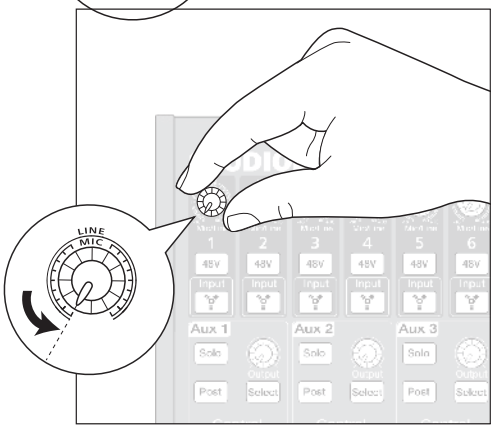
2. Connect the Main outs (TRS or XLR) of your StudioLive to your power amplifier or powered monitors.



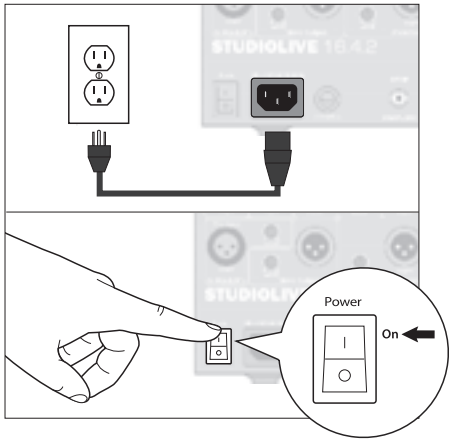
3. If you're using passive speakers, connect them to your power amplifier using speaker cable.



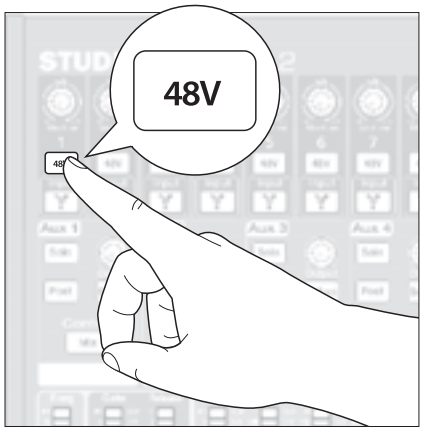
4. Bring down all the faders on your StudioLive to the ∞ setting.



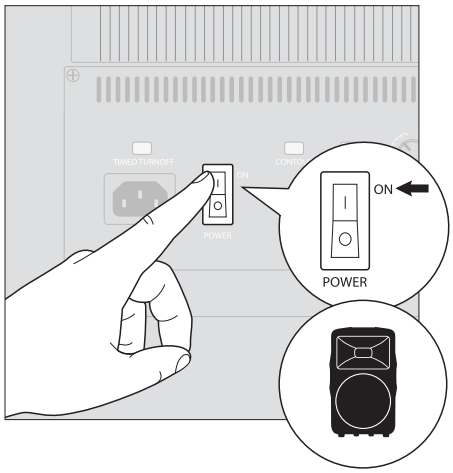
5. Make sure that the Mic/Line knob on Channel 1 is all the way counter-clockwise.



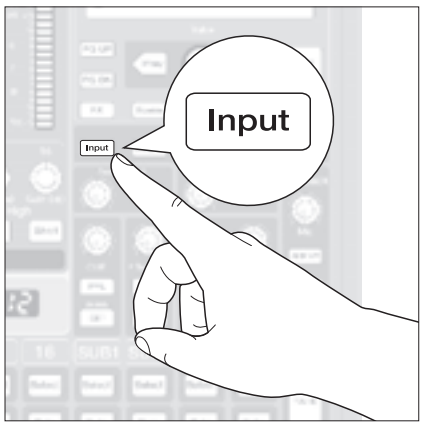
6. Plug your StudioLive into a power outlet and turn it on.



7. If your microphone requires phantom power, engage the 48V button on Channel 1 of your StudioLive.



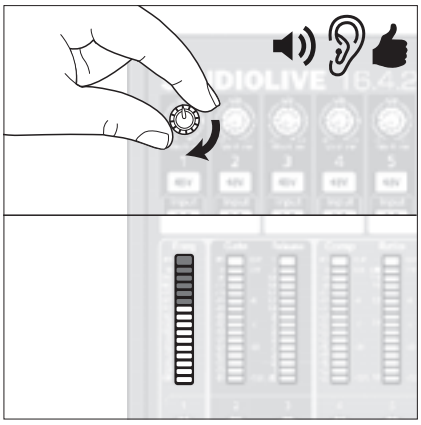
8. Turn on your amplifier or powered monitors.

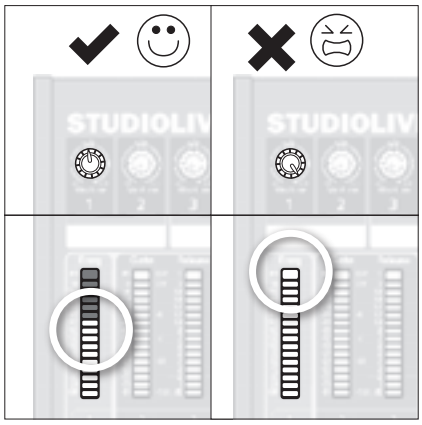


9. Press the Input button in the Meter section.

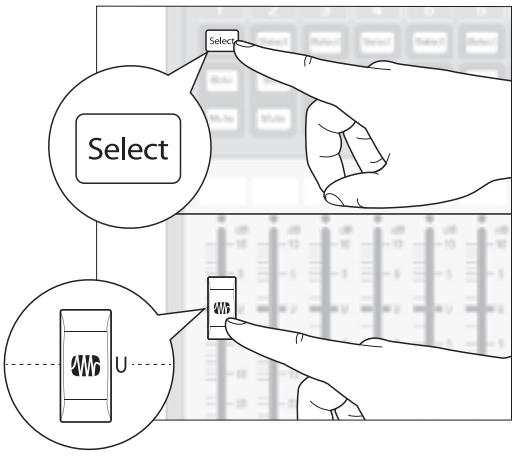


10. Speak or sing into your microphone at approximately the same volume you expect during the performance.

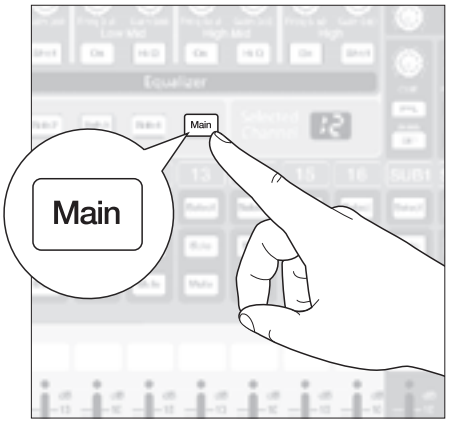




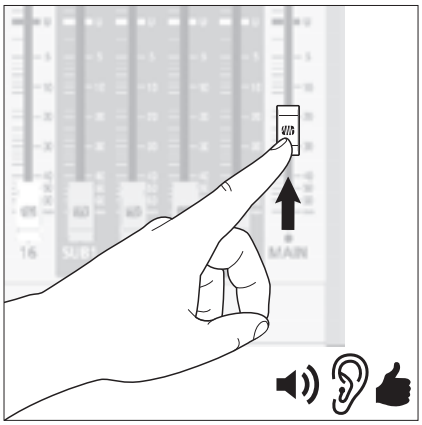
11. Turn the trim knob on Channel 1 clockwise while watching the first meter in the Fat Channel. Adjust the Channel 1 trim knob until a little more than half of the green LEDs are lit. The red LED at the top of the meter should never light up.



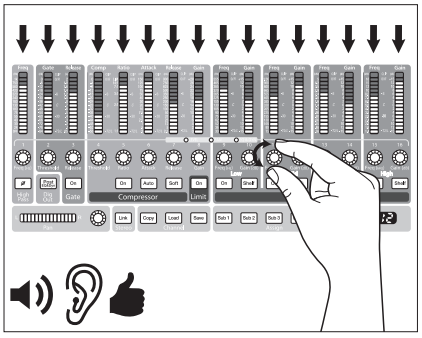
12. Press the Select button on Channel 1 and raise the Channel 1 fader until it reaches "U" (unity gain).



13. Press the Main button in the Assign section of the Fat Channel so that it illuminates. This routes the channel to the main output bus.



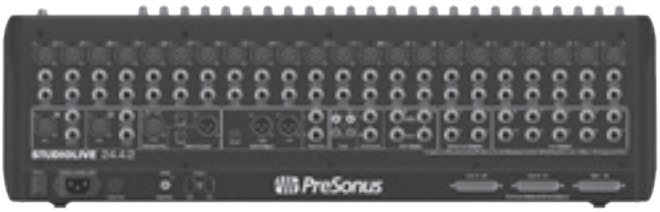
14. Bring up the Main fader until you can comfortably listen to your microphone through your speakers.



15. With Channel 1 selected, you can use the Fat Channel to add dynamics processing and EQ.

3 Hookup

3.1 Rear-Panel Connections





Microphone Inputs. Your StudioLive is equipped with 24/16 PreSonus XMAX microphone preamplifiers for use with all types of microphones. The XMAX preamplifier has a Class A input buffer, followed by a dual-servo gain stage. This arrangement results in ultra-low noise and wide gain control, allowing you to boost signals without increasing unwanted background noise.



48-volt Phantom Power. The StudioLive provides 48V phantom power for the microphone input on each channel. This feature can be individually enabled for each channel using buttons on the top panel.

WARNING: Phantom power is required for condenser microphones but can severely damage some dynamic mics, especially ribbon mics. Therefore, switch phantom power off for all channels where it is not required.

Power User Tip: *Dynamic microphones and ribbon microphones are generally lower-output devices and require no external power source. The most important thing to note about ribbon microphones is that they very rarely require phantom power. In fact, unless a ribbon microphone calls specifically for phantom power, sending phantom power to it can cause severe damage – probably beyond repair. Condenser microphones are generally more sensitive than dynamic and ribbon microphones and typically require external +48V phantom power. Always review your microphone's documentation to ascertain the manufacturer's recommended operating practices.*

XLR connector wiring for phantom power:
Pin 1 = GND **Pin 2** = +48V **Pin 3** = +48V

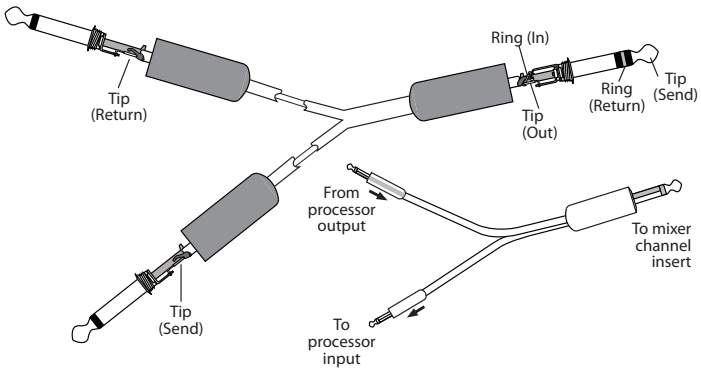


Line-level Inputs. Each channel of the StudioLive has a ¼ inch, balanced TRS connection for line-level input. When these inputs are engaged, the microphone-preamp circuit is bypassed. Typical examples of line-level connections are synthesizer outputs, CD/DVD-player outputs, and (with exceptions) signal-processor inputs and outputs.

Note: *As with any mixer, plugging in a microphone or a line-level input device, or turning phantom power on or off, will create a momentary spike in the audio output of your StudioLive. Because of this, it is highly recommended that you mute or turn down the channel trim before changing connections or turning phantom power on or off. This simple step will add years to life of your audio equipment.*



Insert. Each input channel on the StudioLive has a direct-insert point. These unbalanced, ¼-inch connectors can be used to connect external processors (such as compressors, EQs, de-essers, and filters) to your StudioLive's channel inputs. The insert's send is after the channel's gain control but before the digital bus. The return goes straight to the digital bus. So if you insert a de-esser on your vocalist's channel, you will be sending an unprocessed, amplified signal to the de-esser; the processed signal returned to the StudioLive will then be routed to the digital bus, where it can be sent through the Fat Channel, Aux and FX buses, etc.



Insert-connector wiring:

Tip = send (output to inserted device)
Ring = return (input from inserted device)
Sleeve = common ground



Aux Inputs. The StudioLive offers two auxiliary inputs. While these line inputs are generally used as effects returns, they can also be used for any line-level source (keyboards, amp-modelers, etc). In Section 4.4.6, we discuss using an aux bus to send several channels to an external effects processor; the aux inputs can be used to return the processed signal to the mixer. Each input is balanced stereo. The left input is normalled to the right input, so if you are returning a mono signal to the mix, connect it to the left input, and the signal will be routed to both sides of the mix.



Subgroup Outputs. These are balanced mono outputs for each subgroup.



Aux Outputs. The StudioLive is equipped with 10/6 auxiliary outputs. In Section 4.4.4 and 4.4.5, we discuss in detail how to create aux mixes for monitoring and effects processing. Aux mixes are routed to these outputs.



Talkback Mic Input. The StudioLive does not have an onboard talkback mic; an external mic must be used. Phantom power is always enabled on this microphone preamp, so either a dynamic or a condenser microphone can be used. However, we recommend reviewing the documentation that came with your dynamic microphone to verify that phantom power will not harm it.

Power User Tip: *The Talkback microphone preamp is the same high-quality XMAX preamp that is featured on StudioLive channel mic inputs. The Talkback input can also be selected as a recording input. See Section 2.5.2 in the StudioLive Software Library Manual for details.*

Talkback Mic Level. This is the trim control for your talkback microphone. It adjusts the gain of the talkback input.



Mono Output. This balanced output carries a mono, summed version of the stereo signal from the Main bus.

Mono Output Level. This knob controls the maximum level of the Mono Output signal. The signal can be attenuated to -80 dB and boosted up to +6 dB.



Main Output. The StudioLive features both XLR and TRS main outputs. These outputs are parallel to each other and to the mono output.

Main Output Level. This knob controls the maximum output level of the XLR and TRS main outputs. The signal can be attenuated to -40 dB and boosted up to 0 dB.

Power User Tip: *All main outputs (XLR Stereo, TRS Stereo, and XLR Mono) of the StudioLive are active all of the time. Therefore, you can send your main mix to five speakers at the same time. This can be especially useful when you need to send a mix to another room or add another set of speakers to accommodate a larger venue.*



Tape In/Out. The StudioLive is equipped with stereo RCA inputs and outputs that can be used to connect a tape deck, CD player, or other consumer device. The tape-input level is controlled by the 2 Track In knob on the top panel. The Main bus is routed post-fader to the tape output.

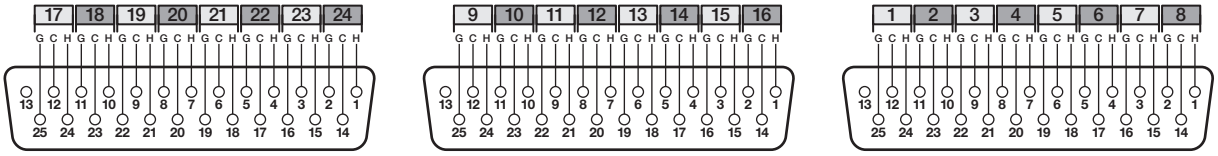


CR Output. These are the balanced control-room outputs. The level is controlled by the Monitor knob in the Monitor section on the top panel.



Pre-Insert Balanced Direct Outputs. These are the balanced, direct analog outputs for the 24/16 channels. The DB25 connectors divide the channels into groups of eight. Balanced DB25 fan-out snakes can be obtained in various configurations at most recording and live-sound retailers. Common fan-outs are DB25 to (8) XLRM and DB25 to (8) TRS.

These outputs are post-gain, pre-insert, and pre-A/D converter. Only the microphone preamps and line-level inputs are available through the direct outputs. The FireWire returns cannot be patched to the direct outputs.



Pre-Insert Balanced Direct Outputs

DB25 pin-outs: **H** = Hot **C** = Cold **G** = Ground



FireWire Ports. There are two standard 6-pin FireWire 400 ports on the back of the StudioLive. Either port can be used to connect the StudioLive to a FireWire port on your computer. If your computer has a 4-pin connector (commonly found on laptops), you will need to purchase a 4-to-6-pin adaptor or cable. These adaptors and cables can be found at your local computer supply store. Use the second FireWire port to connect additional FireWire devices (such as external hard drives) to your computer or to daisy-chain an additional StudioLive mixer. You can connect two StudioLive 16.4.2 mixers to create a 32-channel mixing console with recording or two StudioLive 24.4.2/three StudioLive 16.4.2 mixers to create a standalone, 48-channel mixing console without computer connectivity.

Please Note: *Connecting FireWire 800 devices to the secondary FireWire connection is not supported. While connecting your StudioLive to your computer's FireWire 800 connection using a 6-pin to 9-pin cable is supported, your StudioLive will operate at FireWire 400 bus speed.*



S/PDIF Output. By default, the S/PDIF output receives the same signal as the main outputs, so no activation is necessary. However, any bus can be routed to the S/PDIF output, either through the System menu in the Digital Effects | Master Control section, or in VSL. (See Section 5.4 in this manual or Section 3.7.1 in the StudioLive Software Library Manual for more information.) Because the StudioLive cannot be synced externally, you will need to use it as the master clock and set your S/PDIF-equipped device to receive word clock externally via S/PDIF. Please consult the documentation for your external digital device for instructions.



2 Amp Fuse. This is the StudioLive's fuse housing. The StudioLive uses a 5 mm x 20 mm, 250 VAC, fast-acting fuse.



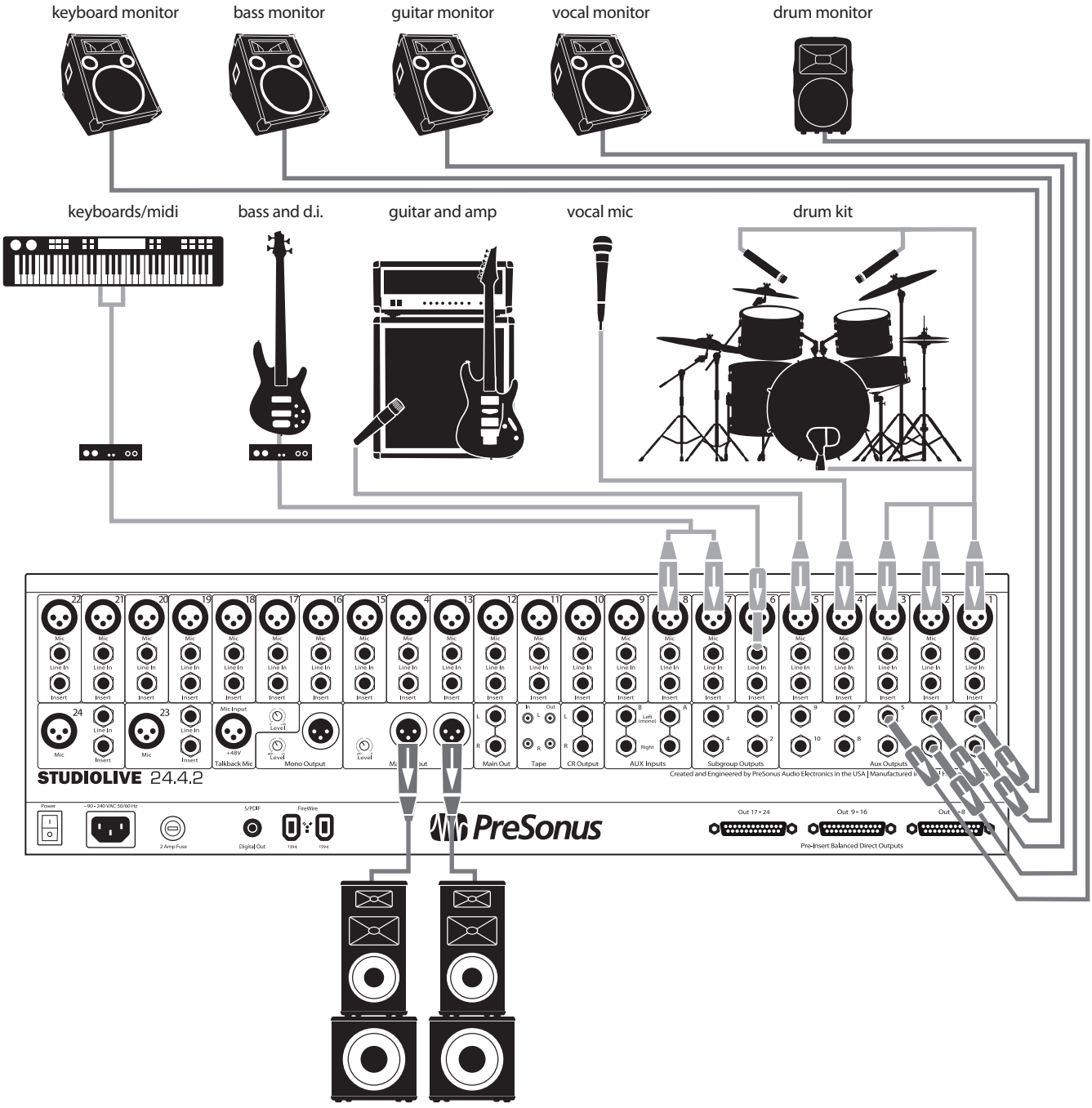
Power-adapter Input. This is where you plug in the provided IEC power cable.



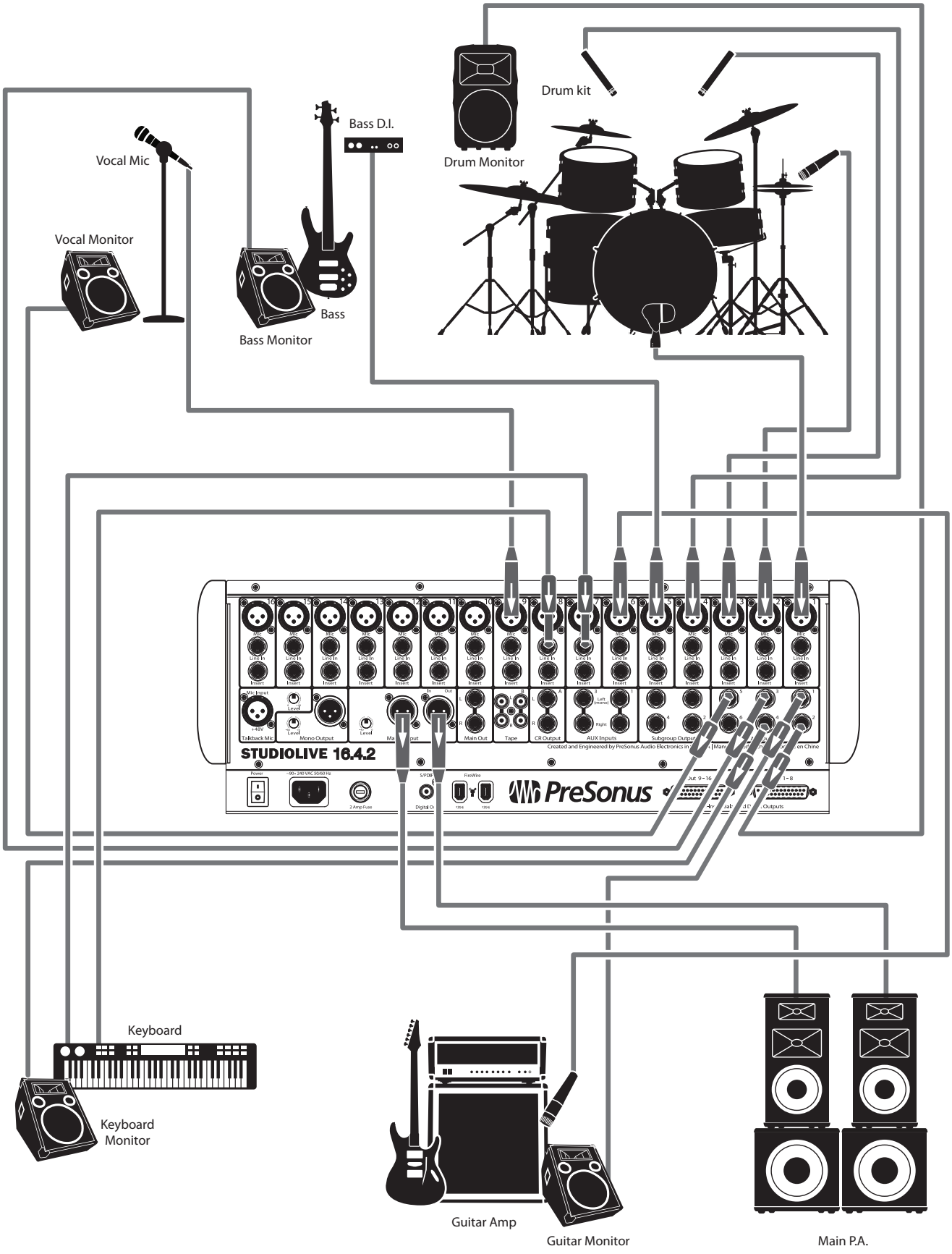
Power Switch. Push the top part of the switch (|) to turn on your StudioLive. Push the bottom part of the switch (O) to turn it off.

3.2 Basic Hookup Diagrams

3.2.1 StudioLive 24.4.2

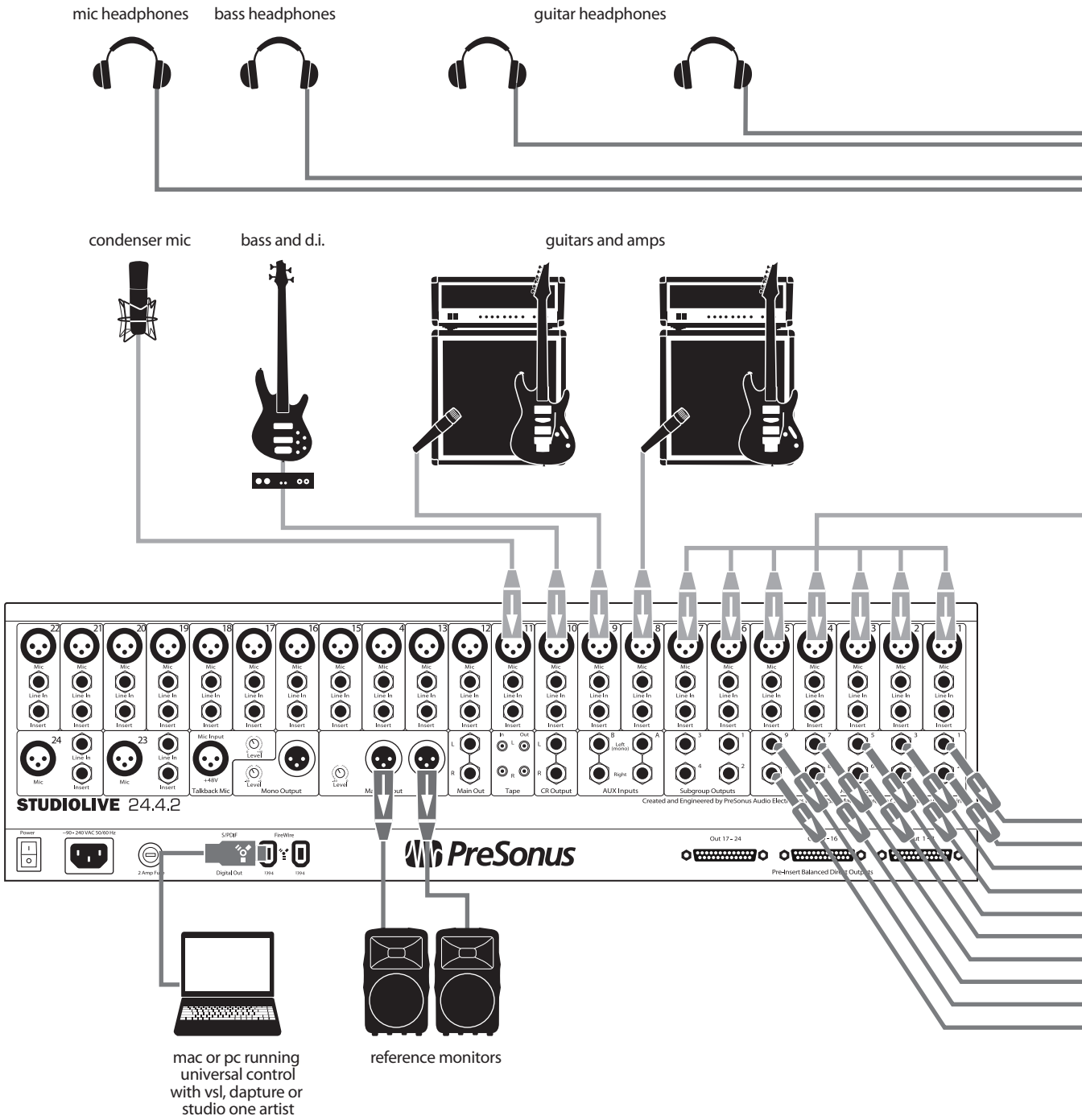


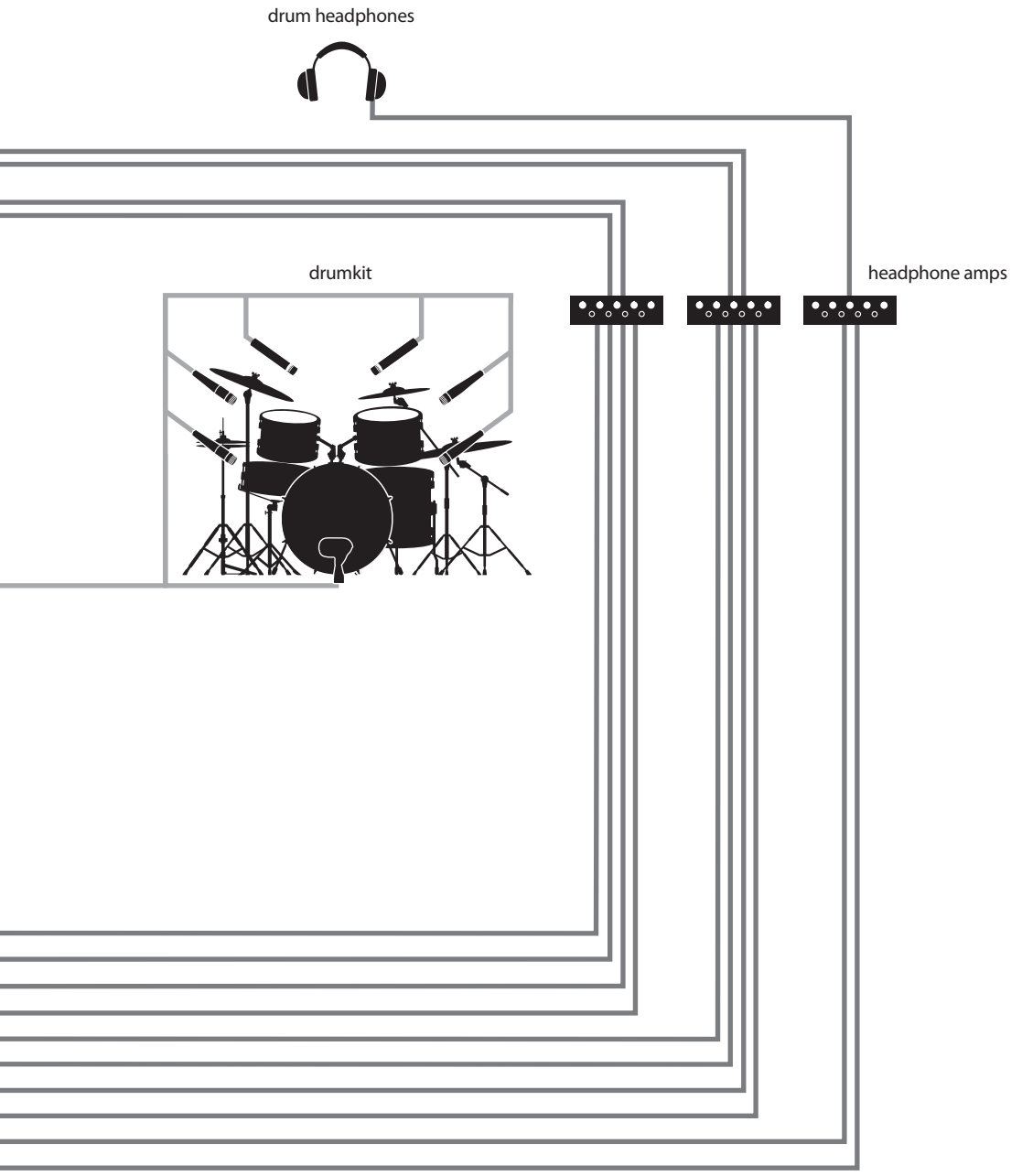
3.2.2 StudioLive 16.4.2



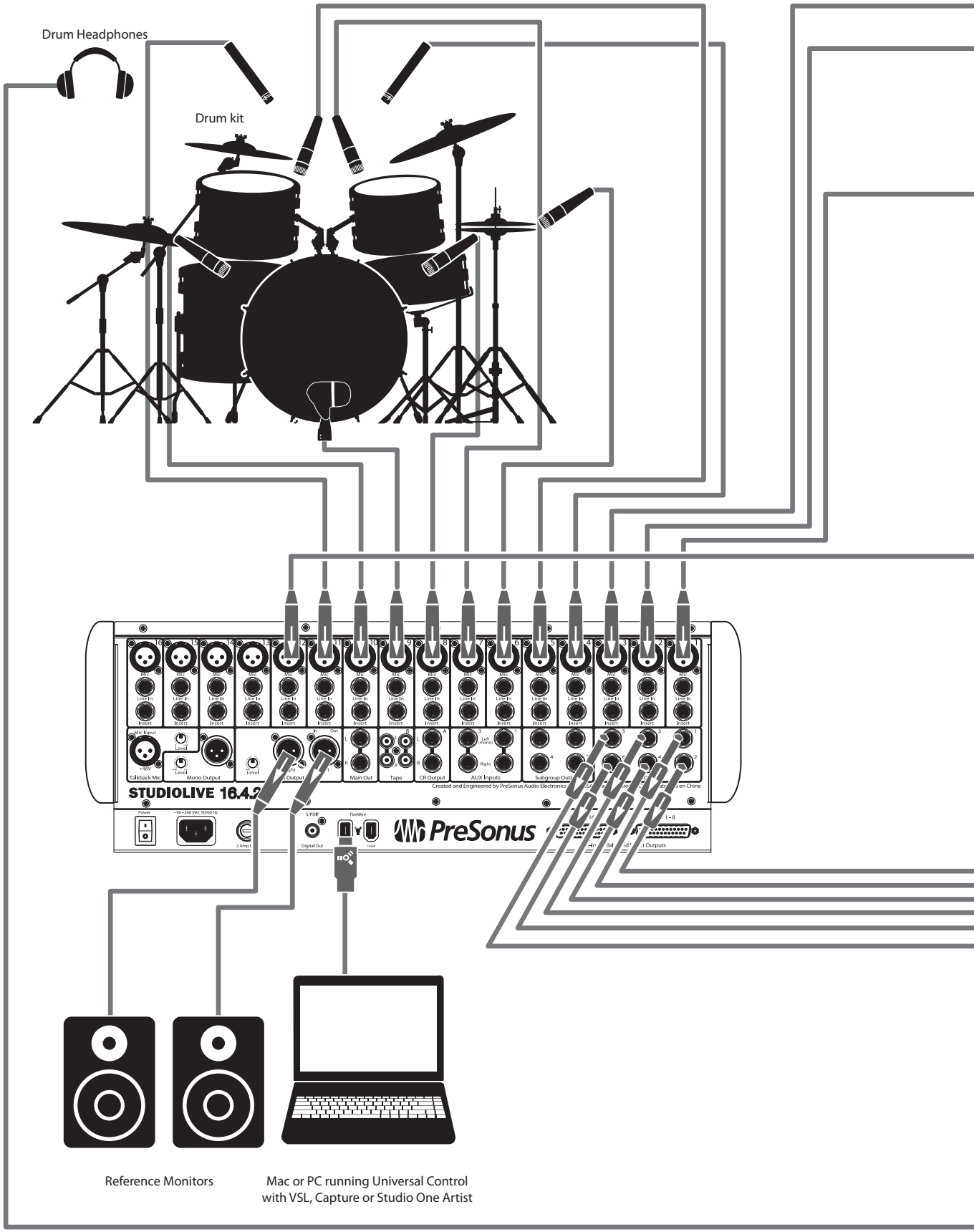
3.3 Basic Recording Diagrams

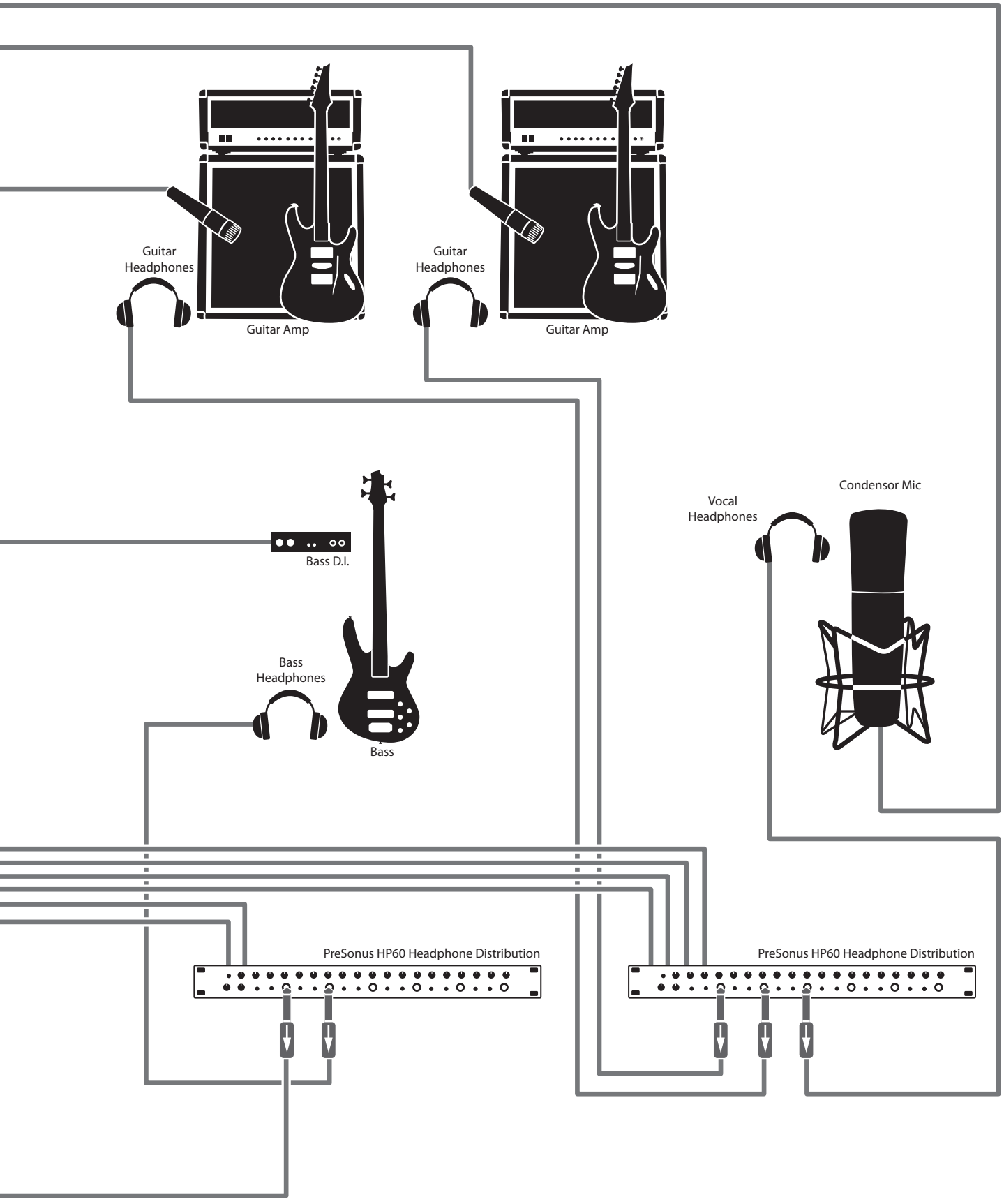
3.3.1 StudioLive 24.4.2




drum headphones
drumkit
headphone amps

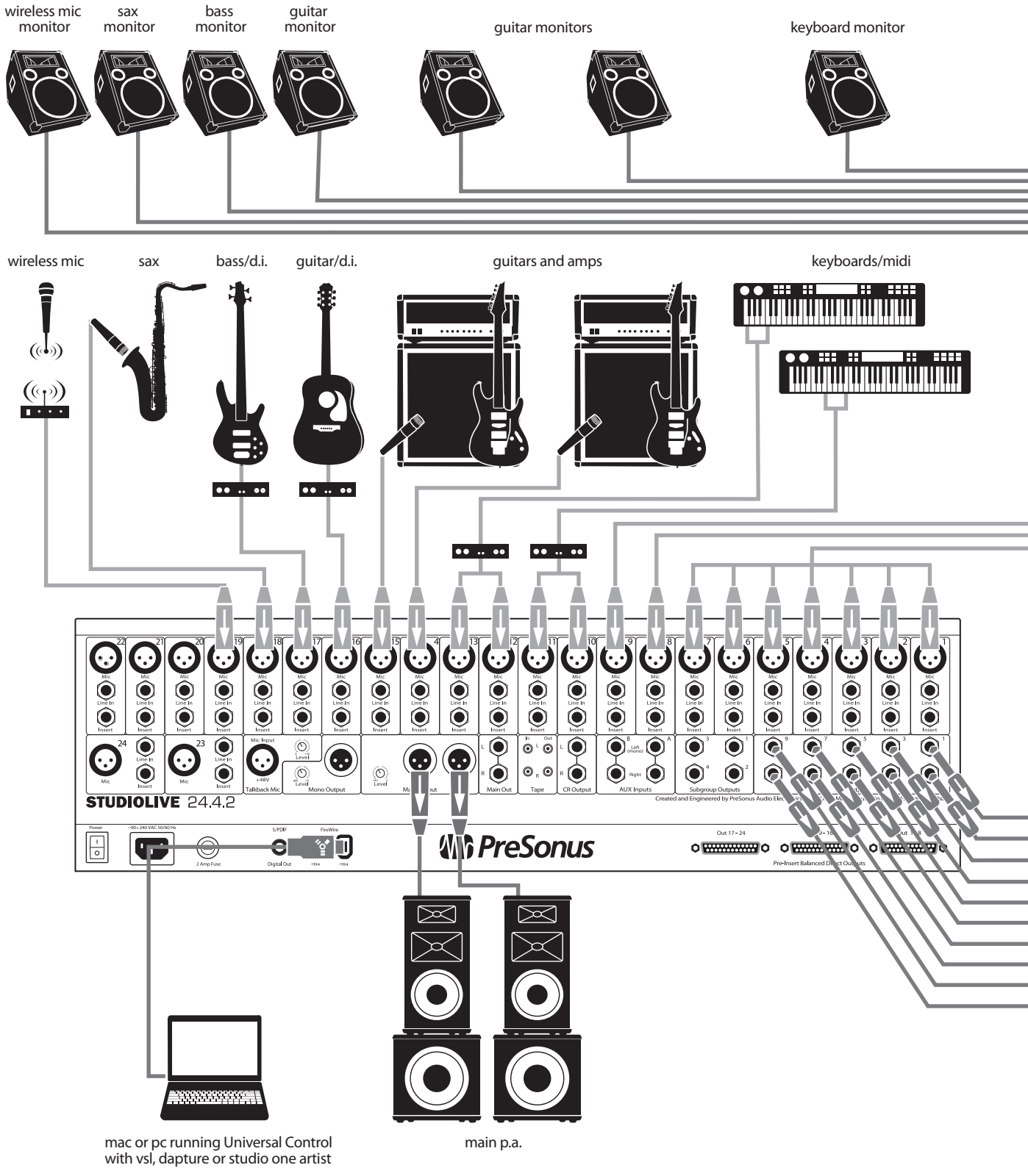
3.3.2 StudioLive 16.4.2

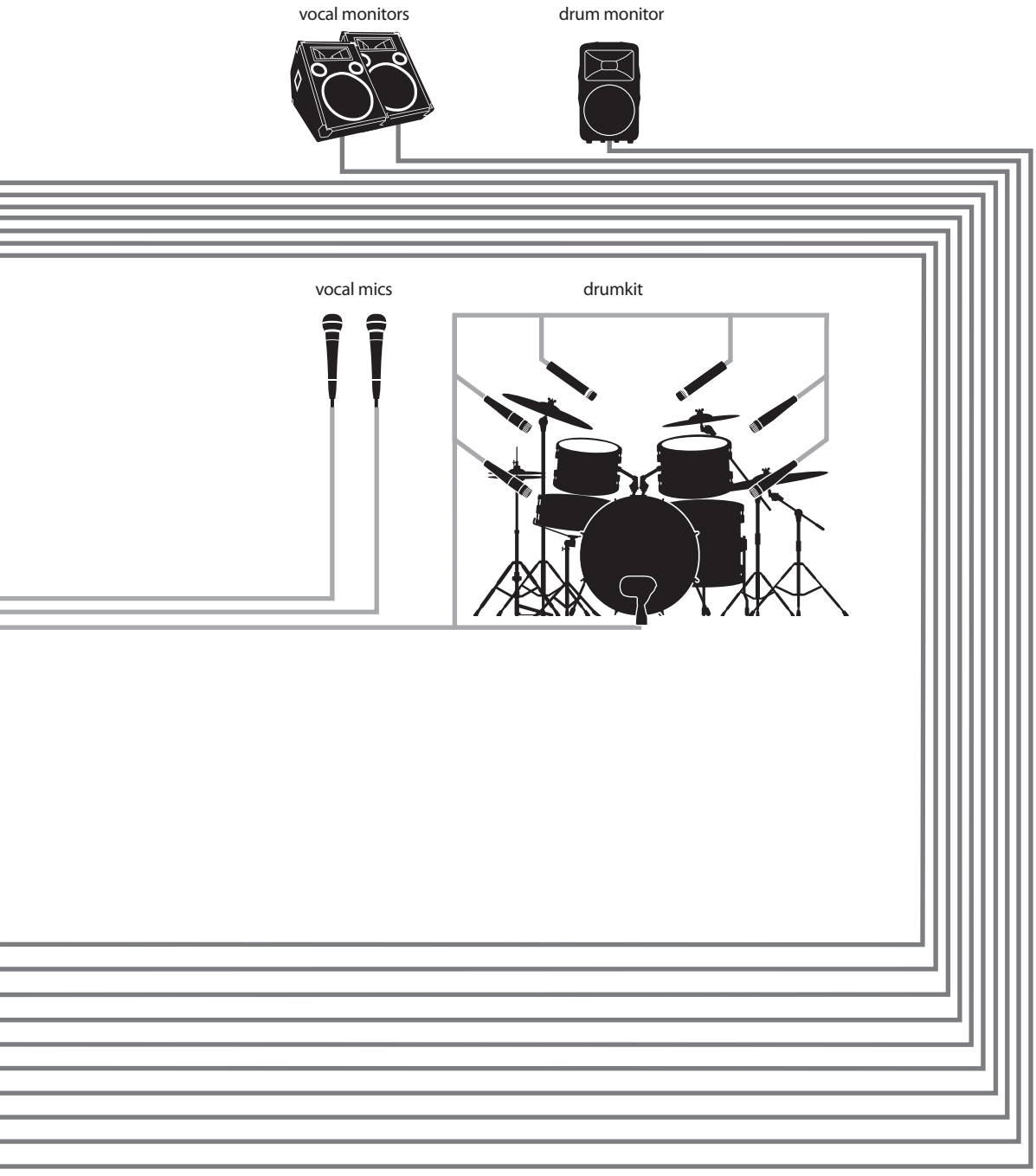



Guitar
Headphones
Guitar Amp
Guitar
Headphones
Guitar Amp
Bass D.I.
Bass
Headphones
Bass
Vocal
Headphones
Condensor Mic
PreSonus HP60 Headphone Distribution
PreSonus HP60 Headphone Distribution

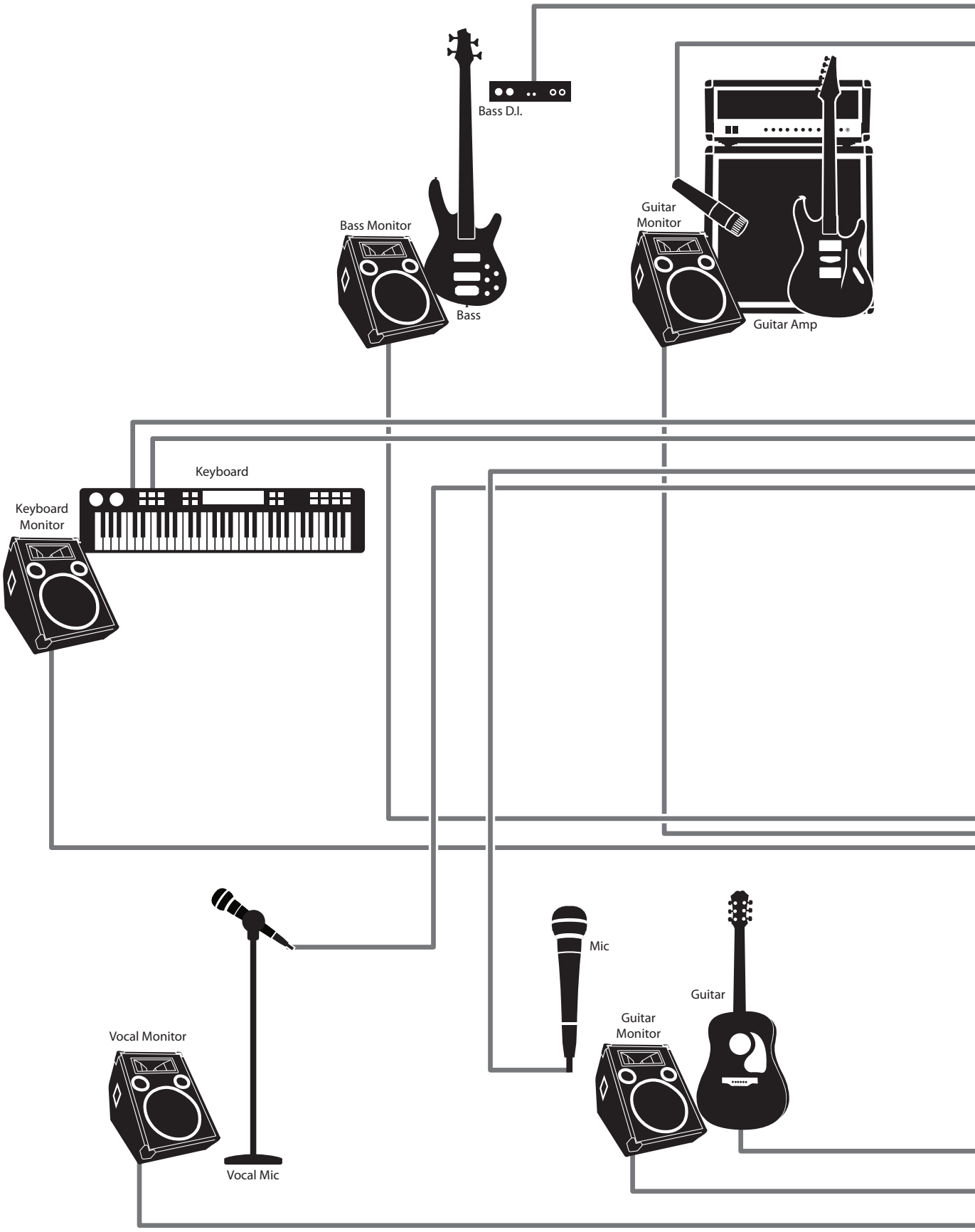
3.4 Typical Band Setup Diagrams

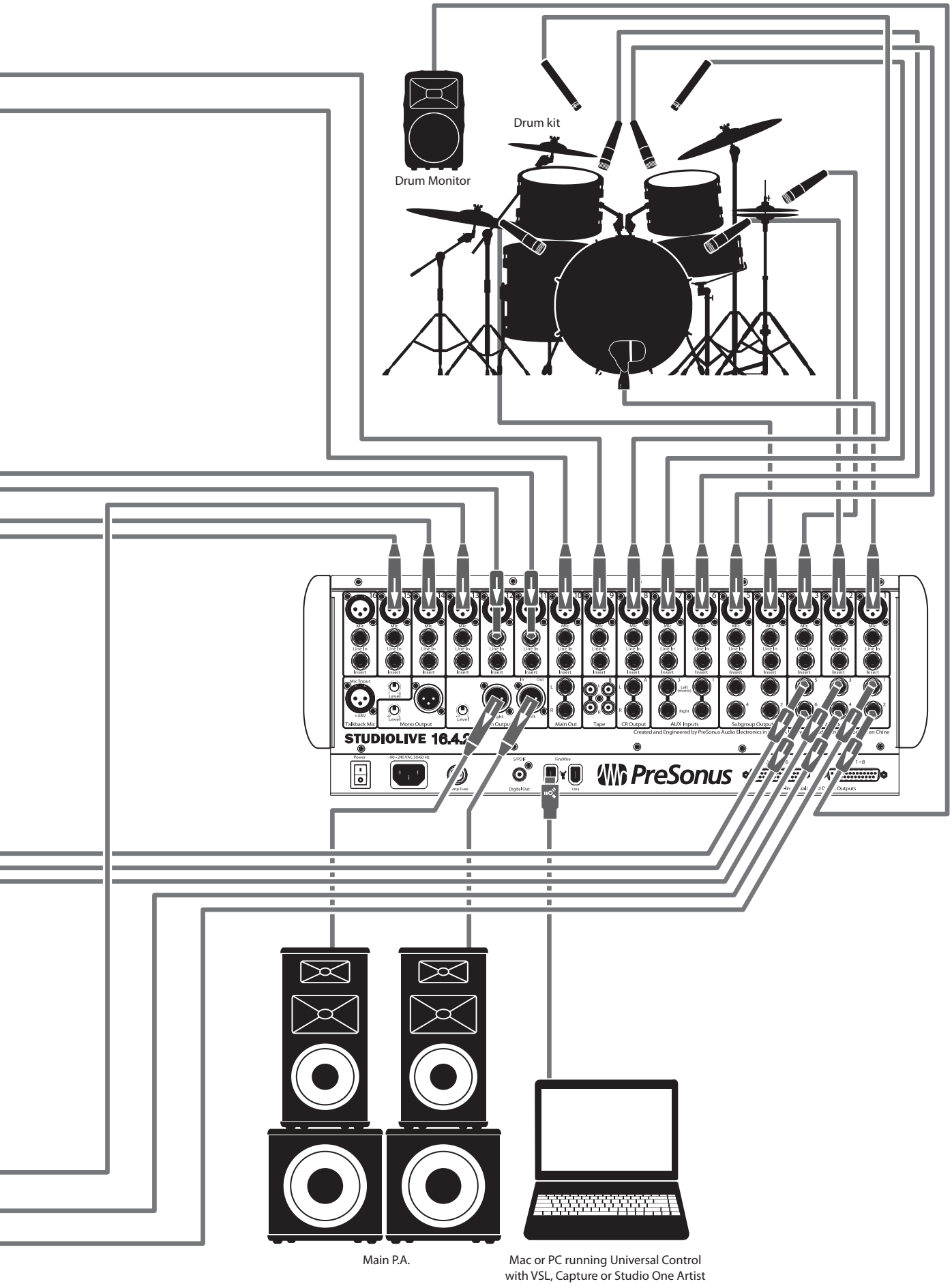
3.4.1 StudioLive 24.4.2




vocal monitors
drum monitor
vocal mics
drumkit

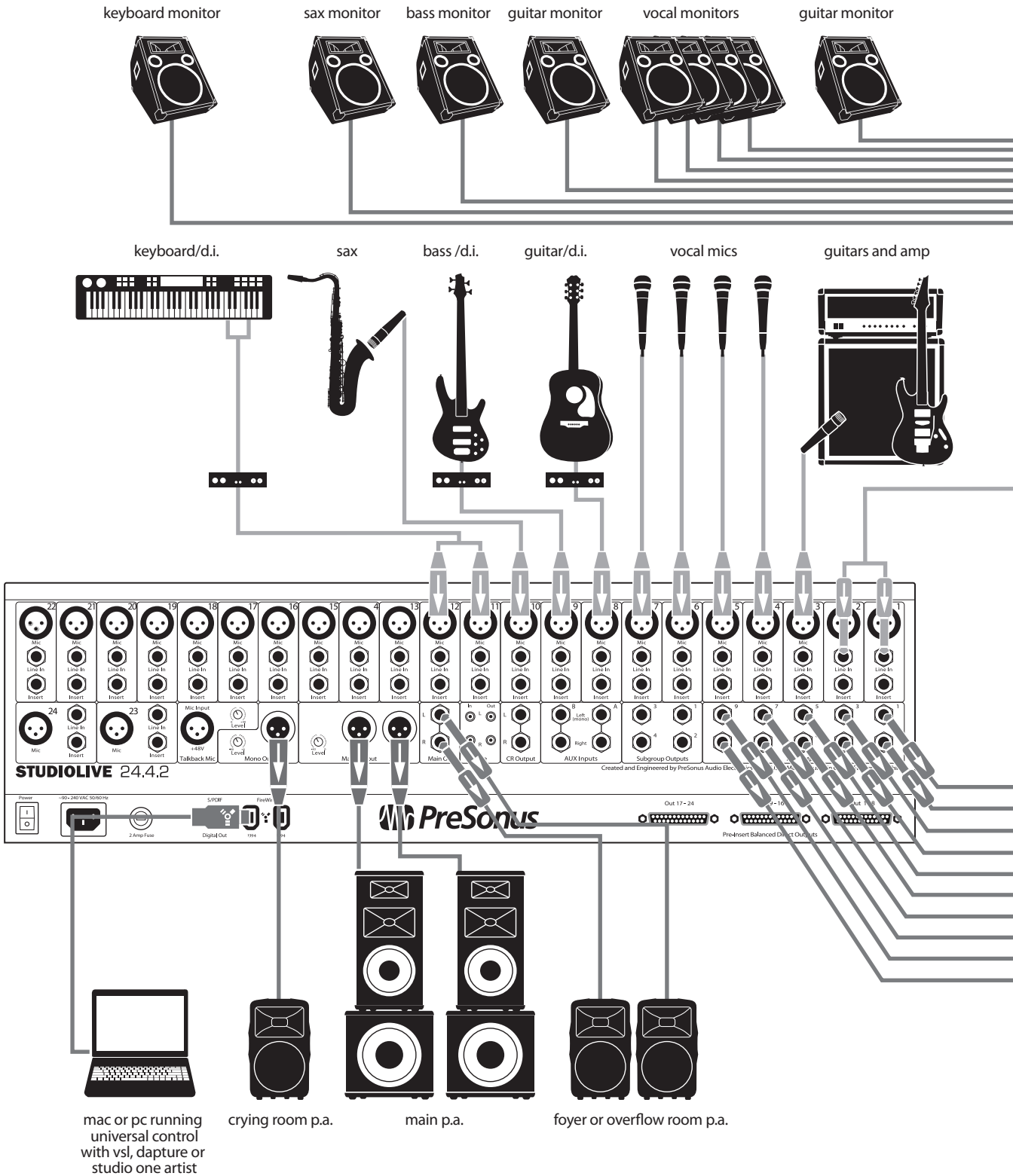
3.4.2 StudioLive 16.4.2

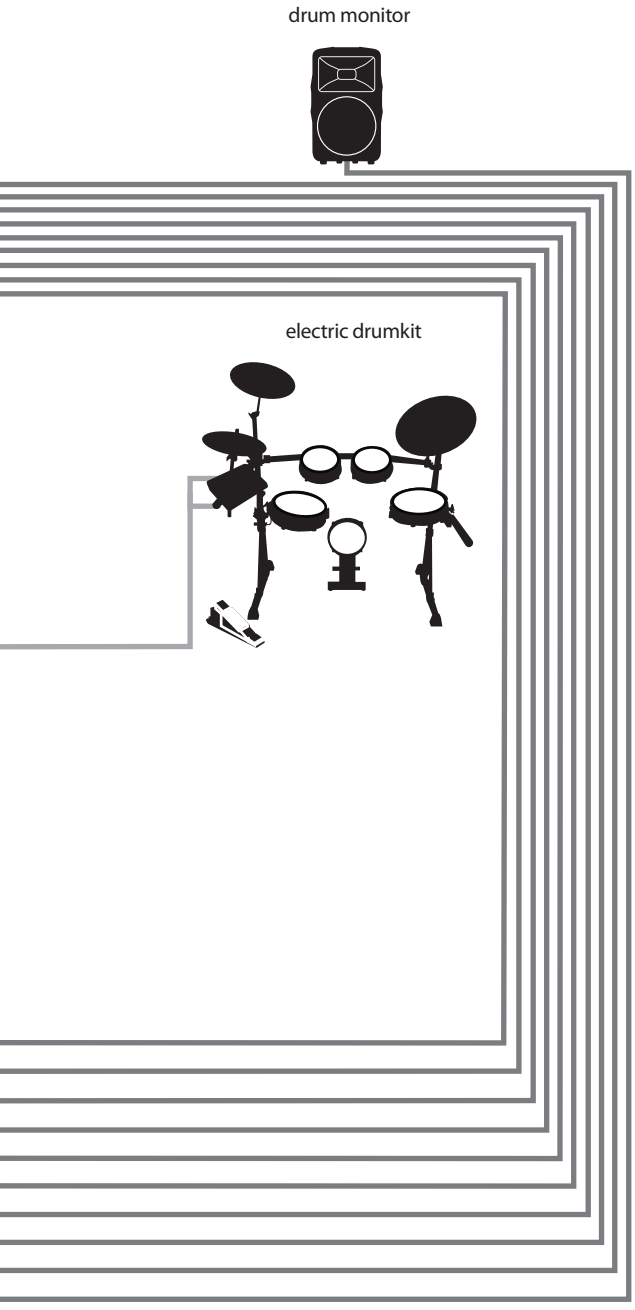



Drum kit
Drum Monitor
STUDIOLIVE 16.4.2
PreSonus
Main P.A.
Mac or PC running Universal Control
with VSL, Capture or Studio One Artist

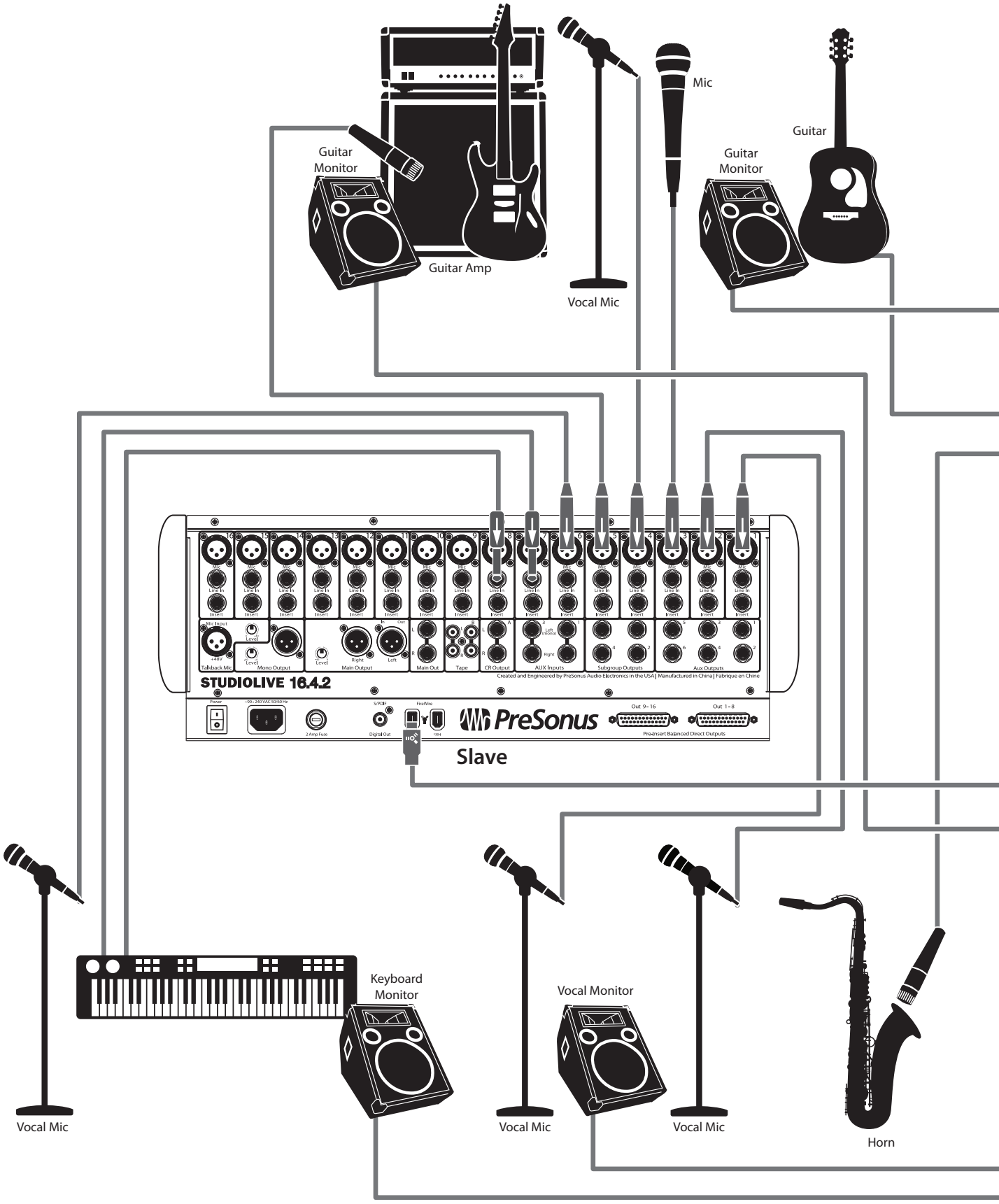
3.5 Typical Church Setup Diagrams

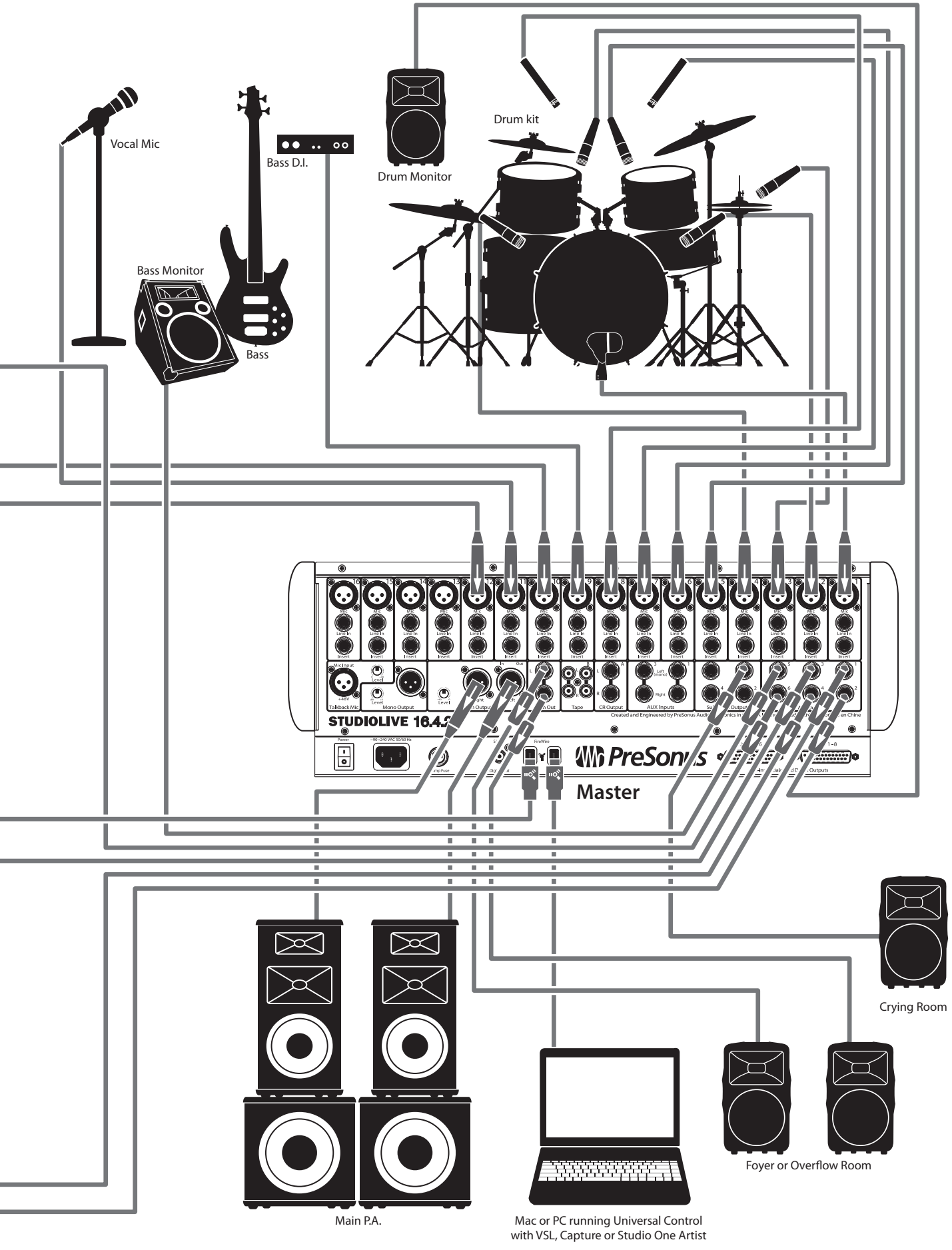
3.5.1 StudioLive 24.4.2




drum monitor
electric drumkit

3.5.2 StudioLive 16.4.2




Vocal Mic
Bass D.I.
Drum Monitor
Drum kit
Bass Monitor
Bass
Master
Crying Room
Foyer or Overflow Room
Main P.A.
Mac or PC running Universal Control
with VSL, Capture or Studio One Artist

4 Controls

4.1 The Fat Channel



The revolutionary Fat Channel is the heart of the StudioLive. The Fat Channel makes dynamics, routing, and panning for every input and output on the StudioLive available at the touch of a Select button. The 24/16 multipurpose knobs and meters located in the Fat Channel control nearly every adjustment you will need to make on your StudioLive. From the Fat Channel, you can:

- Add dynamics processing and EQ to every input and output
- Create sends and effects mixes for every analog aux bus and both internal effects buses
- Assign subgroup and main routing
- Meter inputs, post-dynamics-processing outputs, and gain reduction for every input channel
- Meter aux-send outputs
- Copy, save, and load mix scenes
- Recall your fader position for stored mixes

4.1.1 Select Buttons, Meters, and the Fat Channel



Select Buttons. All around the StudioLive, you will see Select buttons. There is a Select button on each of the input channels, each of the analog aux buses, both of the internal FX (effects) buses, each of the subgroups, both auxiliary inputs, and the main output bus. Each of these buttons serves exactly the same purpose: to access the Fat Channel parameters for its channel or bus.

It should be noted that while the noise gate, compressor, EQ, and limiter are available on every input and bus, the high-pass filter is only available on the input channels, aux buses, and internal FX buses, and Polarity Invert is only available on the input channels.



Selected Channel Display. In the lower right corner of the Fat Channel, you will find an LED readout. The currently selected channel will always be displayed here.

- Input Channels: Channel number
- Subgroup: S1-S4
- Aux Outputs: A1-A10/A6
- FX Buses A and B: FA and FB
- Auxiliary Input A and B: AA and AB
- Main Bus: MA



Selected Channel Meters. In addition, two meters—part of a set of eight meters located in the top right section of the mixer—are dedicated to displaying information about the currently selected channel. The meter on the far left of this section displays the pre-fader input level for the selected channel. The meter to the right of it displays the gain reduction applied to the selected channel. It is important to mention that these meters are only active when one of the input channels or an aux bus is selected.

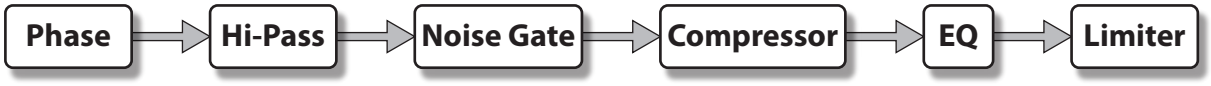
4.1.2 Fat Channel Processing Guide

The following table provides a quick guide to the processing that is available for each bus in the StudioLive. Note that all of these inputs and buses can be recorded. For more information on FireWire sends, please see Section 2.5 in the StudioLive Software Library Manual.

Bus	Phase Reverse	High-Pass Filter	Noise Gate	Compressor	EQ	Limiter	FireWire Send
Inputs (Ch 1-24)	✓	✓	✓	✓	✓	✓	✓
Subgroups			✓	✓	✓	✓	✓
Main Out L/R			✓	✓	✓	✓	✓
Aux Sends 1-10		✓	✓	✓	✓	✓	✓
Internal FX Sends A & B		✓	✓	✓	✓	✓	✓
External FX Returns A & B		✓	✓	✓	✓	✓	✓
Tape Input							✓
Talkback Mic							✓
Solo Bus							✓
Monitor Bus							✓

4.1.3 Fat Channel: Dynamics Processing and EQ

The main function of the Fat Channel is to provide dynamics processing and filtering for every input and output on the StudioLive. The rotary encoders work in conjunction with the meters directly above them to adjust and display the dynamics processing and EQ parameters. The Fat Channel's processing section consists of five parts: High-Pass filter, Noise Gate, Compressor, Limiter, and parametric EQ. Each can be turned on or off and controlled separately. The signal flows as follows:





Polarity Invert. Push this button to invert the polarity of the selected channel's signal (that is, to alter the polarity by 180°). The button will illuminate, indicating that Polarity Invert is active. The Polarity Invert button can be used to correct audio signals that are out of phase and are cancelling/reinforcing each other.

Power User Tip: *When recording with more than one open microphone, use the polarity invert to combat phase cancellation between microphones.*

Polarity Invert is only available on the 24/16 channels of the input bus.



High Pass Filter. Sets the High Pass Filter Frequency Threshold for the Selected Channel or Output Bus.

The High Pass Filter section consists of an encoder and a meter. Frequency range is indicated to the left of the meter. The filter's threshold can be set from 24 Hz to 1 kHz. When the meter is set to its lowest point, the filter is off.

The High Pass Filter's slope is -6 dB/octave.

Power User Tip: *A high-pass filter attenuates all frequencies below the set threshold. Use the Fat Channel High Pass Filter to remove unwanted low-frequencies from your source signal, rather than trying to EQ them out.*

The High Pass Filter is available on the 24/16 channels of the input bus, every aux bus, and both internal FX buses.



Gate On/Off Button. Turns the Gate On and Off for the Selected Channel.

This button engages and disengages the gate for the selected channel. It will illuminate to indicate that the gate has been enabled.

The gate is available for all input and output buses.



Gate Key Listen Button (StudioLive 24.4.2 only). Enables Key Listen in the Solo Bus.

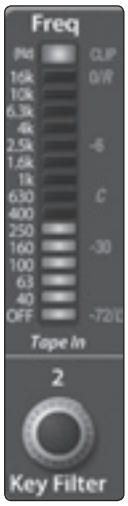
This button engages and disengages the Key Listen function in the solo bus. It will illuminate to indicate that the Key Listen is active. When Key Listen is enabled, and the selected channel is soloed, you can use the Control Room outputs to monitor what the gate is removing.



Gate Expander Button (StudioLive 24.4.2 only). Turns the Noise Gate into an Expander.

The StudioLive allows you to choose between an expander and a noise gate for each channel or output. By default, the Expander button will be enabled.

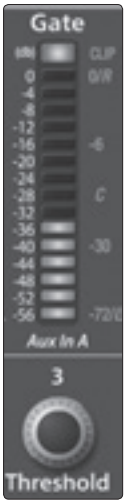
Power User Tip: *In practice, expanders and noise gates are used almost identically. The main difference is that an expander is smoother and more gradual, so that it is easier to set the attack and release times correctly.*



Gate Key Filter (StudioLive 24.4.2 only). Sets and Displays the Frequency at Which the Gate Will Open.

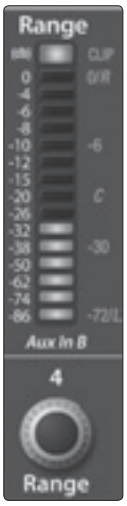
This encoder sets, and the meter displays, the frequency at which the gate will open. Setting a specific frequency, in addition to a specific decibel level, provides more sonic shaping.

Power User Tip: *A properly set Key Filter on a gate can greatly improve the overall sound quality of a mix. For example, if you are miking a bass amp and are picking up a bit of the kick drum from that mic, setting the gate to open at the frequency of the kick drum, combined with a fast attack and release, can tighten the rhythm section. Increase the release time to loosen the feel.*



Gate Threshold. Sets and Displays the Threshold of the Gate for the Selected Channel.

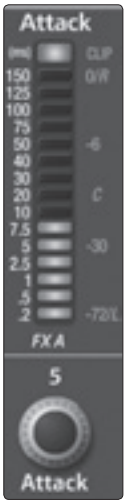
This encoder sets, and the meter displays, the gate threshold for the selected channel. The gate threshold sets the level at which the gate opens. Essentially, all signals above the threshold setting are passed through unaffected, whereas signals below the threshold setting are reduced in level by the amount set by the range control (StudioLive 24.4.2 only). If the threshold is set fully counterclockwise, the gate is turned off (always open), allowing all signals to pass through unaffected. You can set the threshold from 0 to -56 dB.



Gate Range (StudioLive 24.4.2 only). Sets and Displays the Range of the Gate.

This encoder sets, and the meter displays, the amount of gain reduction that the gate will produce. The range can be set from 0 to -86 dB.

Range control is not available when using the Expander.



Gate Attack (StudioLive 24.4.2 only). Sets and Displays the Gate Attack Setting for the Selected Channel.

This encoder sets, and the meter displays, the rate at which the gate opens on the selected channel or output. You can set the attack time from 0.2 to 150 ms.

Power User Tip: *A fast attack rate is crucial for percussive instruments. Slow-rising signals such as vocals and bass guitar require a slower attack; with these signals, a faster attack can cause an audible click. All gates have the ability to click when opening but a properly set gate will never click.*



Gate Release. Sets and Displays the Rate at Which the Gate Closes on the Selected Channel.

This encoder sets, and the meter displays, the rate at which the gate for the selected channel closes. The release time can be set from 0.05 to 2 seconds.

Power User Tip: *Gate-release times should typically be set so that the natural decay of the instrument or vocal being gated is not affected. Shorter release times help to clean up the noise in a signal but may cause "chattering" with percussive instruments. Longer release times usually eliminate chattering and should be set by listening carefully for the most natural release of the signal.*



Compressor On/Off. Turns the Compressor On and Off for the Selected Channel or Output Bus.

This button engages or disengages the compressor for the selected channel or output bus. It will illuminate to indicate that the compressor has been enabled.

The compressor is available for all input and output buses.



Soft Knee Toggle Button. Engages Soft-Knee Compression.

In normal operating mode, the compressor is set for hard-knee compression, meaning that the gain reduction applied to the signal occurs as soon as the signal exceeds the level set by the threshold. When the Soft Knee button is engaged, the onset of gain reduction occurs gradually after the signal has exceeded the threshold.



Auto Mode Button. Enables Automatic Attack and Release Mode.

When Auto mode is active, the Attack and Release controls become inoperative, and a preprogrammed attack and release curve is used. In this mode, the attack is set to 10 ms, and the release is set to 150 ms. All other compressor parameters can still be adjusted manually.



Compressor Threshold. Sets and Displays the Threshold of the Compressor for the Selected Channel or Output Bus.

This encoder sets, and the meter displays, the compressor threshold for the selected channel or output bus. When the signal's amplitude (level) exceeds the threshold setting, the compressor engages. Turning the knob counterclockwise lowers the threshold so that compression begins at a lower amplitude. The threshold can be set from -56 to 0 dB.



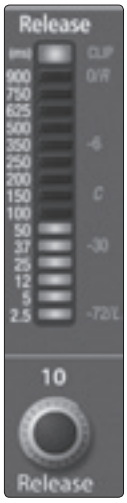
Ratio. Sets and Displays the Compression Ratio for the Selected Input Channel or Output Bus.

This encoder sets, and the meter displays, the compression ratio (or slope) for the selected channel or output bus. The ratio sets the compression slope, which is a function of the output level versus the input level. For example, if you have the ratio set to 2:1, any signal levels above the threshold setting will be compressed at a ratio of 2:1. This means that for every 2 dB of level increase above the threshold, the compressor's output will only increase 1 dB. The ratio can be set from 1:1 to 14:1.



Compressor Attack. Sets and Displays the Compressor Attack Setting for the Selected Input Channel or Output Bus.

This encoder sets, and the meter displays, the compressor's attack setting for the selected channel or output bus. Attack sets the speed at which the compressor acts on the input signal. A slow attack time (fully clockwise) allows the beginning component of a signal (commonly referred to as the initial transient) to pass through, uncompressed, whereas a fast attack time (fully counterclockwise) triggers compression immediately when a signal exceeds the threshold. You can set the attack from 0.2 to 150 milliseconds.



Compressor Release. Sets and Displays the Compressor Release Setting for the Selected Input Channel or Output Bus.

This encoder sets, and the meter displays, the release setting of the compressor for the selected channel or output bus. Release sets the length of time the compressor takes to return the gain reduction back to zero (no gain reduction) after crossing below the compression threshold. Release can be set from 40 to 1,000 milliseconds.

Power User Tip: *Very short release times can produce a choppy or "jittery" sound, especially when compressing instruments that have a lot of low-frequency components, such as bass guitar. Very long release times can result in an overcompressed, or "squashed," sound. All ranges of release can be useful, however, and you should experiment to become familiar with different sonic possibilities.*



Compressor Makeup Gain. Sets and Displays the Amount of Makeup Gain for the Compressor on the Selected Input Channel or Output Bus.

This encoder sets, and the meter displays, the makeup-gain setting of the compressor for the selected channel or output bus. When compressing a signal, gain reduction usually results in an overall attenuation of level. The gain control allows you to restore this loss in level and readjust the volume to the precompression level (if desired). You can adjust Makeup Gain from 0 dB (no gain adjustment) to +28 dB.



Equalizer On/Off Button (StudioLive 24.4.2 only). Globally switches all EQ Bands On or Off for the Selected Input Channel or Output Bus.

This button engages or disengages the equalizer for the selected channel or output bus. It will illuminate to indicate that the equalizer has been enabled.

The equalizer is available for all input and output buses.



Low EQ On/Off Button. Turns the Low Band EQ On/Off for the Selected Input or Output Bus.

This button activates the equalizer's Low band for the selected channel or bus. The button will illuminate to indicate control is active.

The Low EQ band is available for all input and output buses.



Low EQ Frequency Control. Sets and Displays the Center Frequency of the Low EQ Band.

This encoder sets, and the meter displays, the center frequency of the equalizer's Low band. The center frequency is the middle of the passband (the mean) between the lower and upper cutoff frequencies that define the limits of the band.

You can adjust the center frequency from 30 to 555 Hz.



Low EQ Q Control (StudioLive 24.4.2 only). Sets and Displays the Q of the Low Frequency Band.

This encoder sets, and the meter displays, the Q for the Low band. The Q is the ratio of the center frequency to the bandwidth. When the center frequency is constant, the bandwidth is inversely proportional to the Q, so as you raise the Q, you narrow the bandwidth.



Low EQ Gain Control. Sets and Displays the Gain Attenuation or Boost of the Center Frequency.

This encoder sets, and the meter displays, the gain cut or boost at the center frequency for the Low band. The level of the center frequency can be set between -15 and +15 dB.



Low Shelf EQ Button. Turns on the Low Shelving EQ for the Selected Input or Output Bus.

When the Shelf button is not engaged, the Low band is parametric. Enabling the Shelf button turns the Low band into a low-shelving EQ that alters, by a fixed amount, a band of low frequencies at and below a user-selected shelving frequency.

Power User Tip: A Low Shelving EQ is like a bass-control knob on a stereo. In this mode, the Center Frequency control selects the shelving frequency.



Low-Mid EQ On/Off Button. Turns the Low-Mid EQ On/Off for the Selected Input or Output Bus.

This button activates the equalizer's Low-Mid band for the selected input or output. The button will illuminate to indicate control is active.

The Low-Mid EQ is available for all input and output buses.



Low-Mid EQ Frequency Control. Sets and Displays the Center Frequency of the Low-Mid EQ.

This encoder sets, and the meter displays, the center frequency for the Low-Mid band. You can adjust the center frequency from 75 Hz to 1.2 kHz.



Low-Mid EQ Q Control (StudioLive 24.4.2 only). Sets and Displays the Q of the Low Mid Frequency Band.

This encoder sets, and the meter displays, the Q for the Low-Mid band. The Q is the ratio of the center frequency to the bandwidth. When the center frequency is constant, the bandwidth is inversely proportional to the Q, so as you raise the Q, you narrow the bandwidth.



Low-Mid EQ Hi Q Button (StudioLive 16.4.2 only). Enables a Narrow Bandwidth for the Low-Mid band EQ on the Selected Input or Output Bus.

Q is the ratio of the EQ band's center frequency to its bandwidth. With a constant center frequency, higher Q values indicate a narrower bandwidth. By default, the Low-Mid EQ is set to a low Q of 0.55. When the Hi Q button is engaged, the bandwidth will narrow to 2.0 to proved more exact control.



Low-Mid EQ Gain Control. Sets and Displays the Gain Attenuation or Boost of the Center Frequency for the Low-Mid Band.

This encoder sets, and the meter displays, the Gain cut or boost at the center frequency of the Low-Mid band. The level of the center frequency can be set between -15 and +15 dB.



High-Mid EQ On/Off Button. Turns the High-Mid EQ On/Off for the Selected Input or Output Bus.

This button activates the High-Mid band for the selected input or output. The button will illuminate to indicate that the control is active.

The High-Mid EQ is available for all input and output buses.



High-Mid EQ Frequency Control. Sets and Displays the Center Frequency of the High-Mid EQ.

This encoder sets, and the meter displays, the center frequency of the High Mid band. You can adjust the Center Frequency from 380 Hz to 5 kHz.



High-Mid EQ Q Control (StudioLive 24.4.2 only). Sets and Displays the Q of the High Mid Frequency Band.

This encoder sets, and the meter displays, the Q for the High-Mid band. The Q is the ratio of the center frequency to the bandwidth. When the center frequency is constant, the bandwidth is inversely proportional to the Q, so as you raise the Q, you narrow the bandwidth.



High-Mid EQ Hi Q Button (StudioLive 16.4.2 only). Enables a Narrow Bandwidth for the High-Mid Band EQ on the Selected Input or Output Bus.

Q is the ratio of the EQ band's center frequency to its bandwidth. With a constant center frequency, higher Q values indicate a narrower bandwidth. By default, the High Mid EQ is set to a low Q of 0.55. When the Hi Q button is engaged, the bandwidth will narrow to 2.0 to provide more exact control.



High-Mid EQ Gain Control. Sets and Displays the Gain Attenuation or Boost at the Center Frequency.

This encoder sets, and the meter displays, the gain cut or boost at the center frequency of the High-Mid band. The level of the center frequency can be set between -15 and +15 dB.



High EQ On/Off Button. Turns the High EQ On/Off for the Selected Input or Output Bus.

This button activates the High band for the selected channel or bus. The button will illuminate to indicate control is active.

The High EQ band is available for all input and output buses.



High EQ Frequency Control. Sets and Displays the Center Frequency of the High EQ.

This encoder sets, and the meter displays, the center frequency of the High band. You can adjust the center frequency from 1.4 to 18 kHz.



High EQ Q Control (StudioLive 24.4.2 only). Sets and Displays the Q of the High Frequency Band.

This encoder sets, and the meter displays, the Q for the High band.

The Q is the ratio of the center frequency to the bandwidth. When the center frequency is constant, the bandwidth is inversely proportional to the Q, so as you raise the Q, you narrow the bandwidth.



High EQ Gain Control. Sets and Displays the Gain Attenuation or Boost at the Center Frequency of the High Frequency Band.

This encoder sets, and the meter displays, the gain cut or boost at the center frequency of the High EQ band. The level of the center frequency can be set between -15 and +15 dB.



High Shelf EQ Button. Turns on the High Shelving EQ for the Selected Input or Output Bus.

When the Shelf button is not engaged, the High band is a parametric EQ. Enabling the Shelf button turns the High band into a high shelving EQ that alters, by a fixed amount, a band of high frequencies at and above a user-selected shelving frequency.

Power User Tip: *A high shelving EQ is like a treble-control knob on a stereo. In this mode, the Center Frequency control selects the shelving frequency.*



Limiter On/Off Turns on the Limiter for the Selected Input Channel or Output Bus.

When the limiter is engaged the button will illuminate. The ratio is ∞:1.

StudioLive 16.4.2 only: The threshold for the limiter is set to 0 dBFS.

The Limiter is available on all input and output buses.



Limiter Threshold (StudioLive 24.4.2 only) Sets and Displays the Threshold of the Limiter for the Selected Channel or Output Bus.

This encoder sets, and the meter displays, the threshold of the limiter for the selected channel or output bus. When the signal's amplitude (level) exceeds the threshold setting, the limiter is engaged. Turning the knob counterclockwise lowers the threshold, so limiting begins at a lower amplitude. The threshold can be set from -56 to 0 dB.

4.1.4 Fat Channel Panning, Stereo Link, and Link Master



The Pan Control for each Input or Output bus is set on the Fat Channel. The LED display shows the Pan setting, and the encoder to the right of the display controls panning for the selected input or output bus. When two channels are linked as stereo pair, the LED display will automatically change to stereo pan.



Stereo linking is done within the Fat Channel. Input channels, aux buses, and subgroups can be linked to create a stereo pair. The stereo pairs are predefined and cannot be changed. They are as follows:

Channels 1 and 2	Aux 1 and Aux 2
Channels 3 and 4	Aux 3 and Aux 4
Channels 5 and 6	Aux 5 and Aux 6
Channels 7 and 8	Aux 7 and Aux 8 (StudioLive 24.4.2 only)
Channels 9 and 10	Aux 9 and Aux 10 (StudioLive 24.4.2 only)
Channels 11 and 12	Subgroups 1 and 2
Channels 13 and 14	Subgroups 3 and 4
Channels 15 and 16	
Channels 17 and 18 (StudioLive 24.4.2 only)	
Channels 19 and 20 (StudioLive 24.4.2 only)	
Channels 21 and 22 (StudioLive 24.4.2 only)	
Channels 23 and 24 (StudioLive 24.4.2 only)	

A stereo link can be enabled when either channel in the pair is selected. When the Stereo Link button is illuminated, all dynamics settings, subgroup assignments, and main assignments are pasted to the other channel in the pair.

Whichever channel is selected when the Link button is engaged will be the Link Master. When either channel in the stereo link is selected, both channels' Select buttons will illuminate, but the Link Master's ID number will be displayed in the Selected Channel LED readout in the Fat Channel.

Power User Tip: *Note that this is a nondestructive paste; when the Link button is disengaged, the other channel's previous settings will be restored. For instance, if Channel 8 is selected when the Stereo Link button is engaged, all of Channel 8's settings will be copied onto Channel 7. If Channel 7 is selected when the Stereo Link button is engaged, Channel 7's settings will be copied onto Channel 8. Because the settings are copied nondestructively, it is possible to A/B dynamics settings with the touch of two buttons.*

4.1.5 Fat Channel: Subgroup and Main Output Assignments



Output assignments are set within the Fat Channel. It should be noted that the StudioLive prevents you from creating a feedback loop.

Subgroups can only be assigned to the main outs, and the aux buses cannot be assigned to a subgroup or to the main outputs.

Any channel on the input bus can be assigned to any or all of the subgroup outputs, as well as to the main outputs. This includes the 24/16 channels in the input bus and the 2 auxiliary inputs. The internal effects returns can also be assigned to any or all of the subgroups and to the main outputs.



The Fat Channel also gives you the option of sending just the unprocessed audio to your computer or including the Fat Channel settings in the recorded signal. When the **Dig Out button** is enabled, the signal being sent to the FireWire bus is post-EQ and post-dynamics processing; the button will illuminate to indicate this signal flow. When the button is disabled, the signal being sent to the FireWire bus is pre-Fat Channel. The Dig Out button is only available when one of the channel inputs is selected. The subgroups, main output, aux bus, aux inputs, and internal effects returns automatically send their signals post-Fat Channel dynamics and EQ. All FireWire sends are pre-fader except for the subgroups and the main outputs. For more information on using your StudioLive as an audio interface, please consult Section 2 in the StudioLive Software Library Manual.

4.1.6 Copying Fat Channel Settings

In addition to being able to create and save custom Fat Channel presets, every setting in the Fat Channel can be copied from one channel or bus to any other channel or bus.



1. Press the **Copy button** to copy the settings on the selected channel or bus. Every Select button on the StudioLive except the button for the currently selected channel will begin to flash. The Select button for the selected channel will not illuminate. You can copy a Fat Channel setting from any channel or bus to any combination of channels and buses.



2. The **Load button** will also start to flash.



3. To paste the current channel's Fat Channel setting to another channel or bus, simply press that channel's **Select button**. It will stop flashing and will illuminate.



4. After you have selected every channel to which you want the settings pasted, press the **Load button**. The StudioLive will return to its normal state, indicating that the Fat Channel settings have been successfully pasted.

4.1.7 Loading Fat Channel Presets

The StudioLive comes with a suite of channel-strip presets created by professional users of PreSonus products. These presets provide a great jumping-off point to create a mix quickly and easily. The StudioLive also allows you to create your own library of presets.



1. To load a preset to any channel on the StudioLive, first press the **Select button** for the desired channel.



2. From the Fat Channel, press the **Load button**. You will notice that the LCD now displays the Channel Preset Load menu.



3. The **Channel Preset Load menu** always displays the selected channel onto which the preset will be loaded. Use the Value encoder to locate the preset you would like to use.



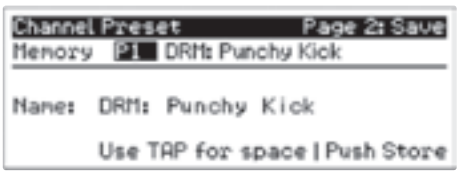
4. Once you have made your selection, press the **Recall button**. If at any time you would like to cancel this operation, simply press the Load button again.

Power User Tip: *Load will stay active until you press the button again to disable it, even if you select another channel. Because of this, you can quickly add a preset to every channel and give yourself a jumping-off point to dial in your mix.*

4.1.8 Saving Fat Channel Presets



If you have created a channel-strip setting in the Fat Channel that you would like to save to the Channel Preset library, press the Fat Channel's **Save button**. You will notice that the LCD will display the Channel Preset Save menu.





1. To begin, use the **Value encoder** to scroll to an empty position in the Channel Preset library.



2. Press the **Next button** to navigate to the category location. Create the category in which your preset would fit (DRM, VOX, GTR, etc.).



3. Press the **Next button** again to navigate to the first letter of the preset name.



4. Turn the **Value encoder** clockwise or counter-clockwise to change the letter. The StudioLive allows you to customize the name with uppercase and lowercase letters, as well as a selection of numerals and punctuation marks. You can insert a space by simply pressing the Tap button.



5. Once you are satisfied with your changes, press the **Store button**. It will illuminate while the Channel preset is being written to the StudioLive's internal memory. Once the Channel preset is saved, the Store button will return to its unlit state.

4.1.9 Channel Presets Library

Your StudioLive comes with 50 Fat Channel presets custom designed by professional PreSonus users. These presets can be altered, renamed, and overwritten; however, there are 49 additional empty storage locations for you to build your own custom library of channel-strip settings.

01	DRM: Kick 1	**27**	GTR: Acoustic Strumming
02	DRM: Kick 2	**28**	GTR: Acoustic Fingerstyle
03	DRM: Kick Funk 1	**29**	KEY: Piano Bright
04	DRM: Kick Funk 2	**30**	KEY: Piano Warm
05	DRM: Kick Hip-Hop	**31**	KEY: Piano Jazz
06	DRM: Kick Jazz	**32**	KEY: Piano Electric
07	DRM: Snare 1	**33**	KEY: Piano Electric 2
08	DRM: Fat Snare	**34**	KEY: Vibes
09	DRM: Snare Crackalak	**35**	HRN: Trumpet
10	DRM: Snare Snappy	**36**	HRN: Trombone
11	DRM: Toms Mid	**37**	HRN: Sax
12	DRM: Toms Low	**38**	HRN: Sax Solo
13	DRM: Toms High	**39**	PRC: Congas
14	DRM: Overhead Rock	**40**	PRC: Bongos
15	DRM: Overhead Jazz	**41**	PRC: Cowbell
16	DRM: High Hat	**42**	PRC: Tambourine
17	BAS: Electric 1	**43**	VOX: Male 1
18	BAS: Electric 2	**44**	VOX: Male 2
19	BAS: Slap	**45**	VOX: Male 3
20	BAS: Upright	**46**	VOX: Female 1
21	GTR: Rock 1	**47**	VOX: Female 2
22	GTR: Rock 2	**48**	VOX: Female 3
23	GTR: Funk	**49**	VOX: Speech 1
24	GTR: Metal	**50**	VOX: Speech 2
25	GTR: Jazz	**51 - 99**	EMPTY LOCATION
26	GTR: Acoustic		

4.2 Metering



The StudioLive offers flexible metering at the touch of a button.
The meters in the Fat Channel section can monitor:

- The post-gain, pre-dynamics/EQ, and pre-fader signal of each input
- The post-gain, post-dynamics/EQ, and post-fader signal of each input
- The amount of gain reduction being applied to each input
- The output volume of each of the aux buses
- The output volume of both of the internal effects buses
- Finally, the meters can be used to recall the fader settings for a saved Scene.

4.2.1 StudioLive Metering Controls



The Meters section of the StudioLive is located below the Master Control section. Each of these buttons are toggle switches; you turn them on and off by pressing them. The meter state can also be changed by pressing another button in the Meter section, or any Select button on the StudioLive, or a Mix or Mix/Pan button in the Aux section.

Power User Tip: *It is important to mention that the meters simply overlay the selected Fat Channel state. For instance, if you have Channel 16 selected and then press the Output button in the Meter section, the knobs and buttons in the Fat Channel section will still be active. The advantage of this is that you can make adjustments in the Fat Channel while monitoring your entire mix.*



Input Metering Button. Turns PFL Input Metering On and Off

Switches the meters to display the pre-dynamics, pre-fader level of the input bus. Meters are one to one (Meter 1 shows the level of Channel 1, etc.).



Output Metering Button. Turns Post-Fader Output Metering On/Off.

Switches the meters to display the post-dynamics, post-fader level of the Input bus. Meters are one to one (Meter 1 shows the level of Channel 1, etc.).



Gain Reduction Metering Button. Turns Gain Reduction Metering On and Off.

Displays the gain reduction of the input bus. Meters have a one-to-one relationship with channels (that is, Meter 1 shows the gain reduction of Channel 1 and so on).



Aux Metering Button. Turns Aux Bus Master Out Metering On and Off.

Displays the output level of each of the aux and effects bus.

Each odd numbered meter displays the output level for the aux bus directly above it (i.e., Meter 1 shows the output level for Aux 1, Meter 3 displays the output level Aux 2, etc.).



Fader Locate Button. Turns Fader-Recall Metering On/Off.

Displays the fader position of the stored scene. When recalling a fader position, adjust the fader until only the center LED is visible in its meter.

4.3 Input Channel Strip

The StudioLive is equipped with all of the standard input controls of an analog mixer. In addition, the StudioLive provides the added flexibility of routing a playback stream from your audio-recording software to the mixer via the FireWire bus, just as if it were an analog input. This lets you incorporate digital audio tracks into the main mix as well as insert plug-in effects and software instruments from your audio program. **See Section 2.6 in the StudioLive Software Library Manual for details.**

4.3.1 Input Channel Controls



Trim Control. Adjusts the Input Gain Level. It is very important to properly adjust this control in order to minimize noise and avoid overload distortion.

The Trim control adjusts the gain of the channel's analog input.

Power User Tip: *It is very important to properly adjust this control in order to minimize noise and avoid overload distortion. Follow the* ***Quick Start level-setting*** *instructions in* ***Section 2.1*** *before operating a channel.*



Phantom Power Button. Turns Phantom Power On/Off.

The StudioLive is equipped with individual phantom power for every microphone input. The 48V button will illuminate when phantom power is activated.

The 48 volts supplied by way of the XLR input provides power for condenser microphones and other devices requiring continuous phantom power. This power is supplied at a constant level to prevent any signal degradation.



FireWire Input Select Switch. Turns FireWire Playback Streaming On/Off.

The FireWire Input button routes a playback stream from your audio software to the StudioLive's channel inputs, where it is routed and processed the same way as analog input signals. For example, if you want a particular recorded track to play on mixer channel 3, simply route that track in your audio software to StudioLive Output 3. This button can also be used to insert a plug-in effect into the mix. For more information on this feature, please review **Section 2.6** in the **StudioLive Software Library Manual**.

Engaging a FireWire Return will mute the analog input on that channel globally to the mix bus, however the signal will still be routed to the FireWire send so that it can be recorded or processed by a plug-in. For more information see **Section 2.5.3** in the **StudioLive Software Library Manual**.



Input-Channel Select Button. Enables Fat Channel Processing and Routing.

As previously described in Section 4.1.1, the Select button routes its channel through the Fat Channel, allowing you to add dynamics processing, EQ, and panning; assign the output routing; and more.



Solo Button. Turns Soloing On/Off.

This button will solo its channel to the main outputs or to the monitor outputs, depending on whether PFL (Pre-Fader Listening) or SIP (Solo In Place) is selected in the Solo bus section. Please review Section 4.8 for details.

When a Solo button is enabled, that channel or bus will automatically be selected, and its Select button will illuminate.



Mute Button. Turns Muting On/Off.

This button mutes its channel. It will illuminate red when the channel is muted. When a mute button is engaged, its channel will be muted in all of its assigned outputs (subgroups, mains, and aux buses).



Channel Fader. Controls the Overall Level of the Channel.

Each input channel features a 100 mm long-throw fader for accurate level adjustment. Unity gain (0 dB) is denoted by a "U."

The white area above the fader can be used as a scribble strip. Use only oil pencils; other types of pens or pencils cannot be wiped off.

To clean the scribble strip, use a lightly damp cloth to remove the writing.

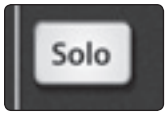
4.4 Aux and FX Buses



The aux bus provides outputs to create auxiliary mixes that are separate from the main and subgroup mixes. Your StudioLive is equipped with 12/8 aux buses: Aux 1 through 10/6, which have physical output jacks, and EFX A and B, which are the internal effects buses. Aux buses can be used for many applications, the two most common of which are creating monitor mixes and inserting external effects processors into the mix. As with the other buses, the StudioLive allows you to add global dynamics processing and EQ to these aux buses, in addition to individual channel processing.

The analog aux buses are mono; however, two aux buses can be linked to create a stereo bus.

4.4.1 Analog Aux Bus Controls



Solo Button. Turns Soloing On/Off.

This button will solo the aux bus to the monitor outputs. Only PFL soloing is available for the aux buses.

When a Solo button is enabled, that channel or bus will automatically be selected, and its Select button will illuminate.



Post-Fader Send Button. Enables and Disables the Post-Fader Send.

When this button is enabled, the send levels to that aux bus will be post-Fat Channel and post-fader and therefore will be affected by fader settings. If the button is disabled, by default, the aux buses use the Pre 1 setting, so that all channels on the StudioLive are sent to the aux bus after the Polarity Invert switch, high-pass filter, and noise gate but before the compressor, EQ, limiter, and fader. However, in the System Menu, you can select the Pre 2 setting, which makes the send occur after all Fat Channel processing but before the fader. Please review Section 5.4 for details.



Output Level Control. Adjusts the Master Level of the Aux Output.

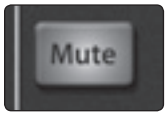
This knob controls the overall output level of the aux mix.



Aux Bus Select Button. Enables Fat Channel Viewing.

As previously described in section 4.1.1, the Select button routes its aux bus through the Fat Channel, allowing you to add dynamics processing and EQ.

4.4.2 Internal FX Bus Controls



Mute Button. Mutes/Unmutes the Internal Effects Bus.

This button will mute or unmute its internal effects (EFX) bus. It will illuminate red when the bus is muted.



Post Fader Send Button. Enables/Disables Post-Fader Send.

By default, this button is enabled, and the send levels to the effects buses are post-EQ, post-dynamics processing, and post-fader and therefore are affected by fader settings. If the button is disabled, by default, the EFX sends use the Pre 2 setting, in which the sends are post-EQ and post-dynamics but pre-fader. However, in the System Menu, you can switch the EFX sends to the Pre 1 setting, in which the sends are pre- fader, EQ and compression, but post- Gain, Polarity Invert, High Pass Filter, and Gate. Please review Section 5.4 for details.



FX Level Control. Adjusts the Master Level of the Effects-Send Mix.

This knob controls the overall output level of the internal effects mix.



Internal Effects Bus Select Button. Enables Fat Channel Viewing.

As described in section 4.1.1, the Select button routes its effects bus through the Fat Channel, allowing you to add dynamics processing and EQ. From the Fat Channel, you can also route each effects bus to the subgroups or mains. By default, both FXA and FXB are routed to the Main bus.



Mix Button. Enables Aux Bus Mixing and Metering in the Fat Channel.

When this button is enabled, the 24/16 encoders in the Fat Channel become the FX-send level controls for each of their respective input channels. The meters will display the send level of each of the input channels.

4.4.3 Aux and FX Bus Channel Sends

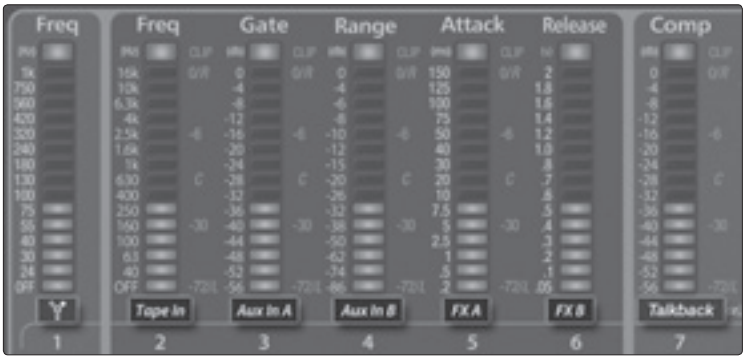
In addition to setting the dynamics for each channel and bus and metering each channel and output, the Fat Channel also allows you to create aux mixes and quickly view the send level for each channel.

The Mix and Mix|Pan buttons for each aux and both FX buses are used for just this purpose. Each one of these buttons allow you to view and set the send level for each channel to that aux or FX mix.



Mix Button. Enables Aux Bus Mixing in the Fat Channel.

When the Mix button is pressed once, the 24/16 encoder knobs in the Fat Channel become the aux-send level controls for each of their respective input channels. The meters will display the send amount for each of the input channels.



Aux Flip Mode. Enables Aux Send Level Control for Main FireWire Return, Tape In, Aux Ins A and B, FXA, FXB, and Talkback **(StudioLive 24.4.2 only)**.

Pressing the Mix button a second time will switch the first seven meters and encoders to become the aux-send level controls for the Main FireWire Return, Analog Tape In, Aux Input A, Aux Input B, the output of FXA and FXB, and the Talkback mic **(Talkback is only available for the StudioLive 24.4.2)**.

While in this mode, the Mix button will remain illuminated, and an LED in the top and bottom half of meters 8-24/16 will also illuminate.

Press the Mix button a third time to disengage Aux Mix mode.



Mix|Pan Button. Enables Pan Control and Metering in the Fat Channel **(Stereo Send Mode Only).**

When two auxes are stereo-linked, and the Mix button is enabled on the even-numbered aux bus (2, 4, 6, etc.), the Fat Channel encoders become the pan controls for their respective input channels. The meters will display the pan setting of each of the input channels. When the Mix button is enabled on the odd-numbered aux bus (1, 3, 5, etc.), the Fat Channel encoders are send controls for their respective channels.

Press the Mix|Pan button a second time to disengage Aux Mix Pan mode.

For more information on stereo linking, please review Section 4.1.4.

Pan control is not available for the additional buses accessed by Aux Flip Mode.

4.4.4 Creating Monitor Mixes

Creating custom monitor mixes is critical. If musicians can't hear themselves or their bandmates, their performance will suffer. A monitor mix can be mono or stereo. Most often, an individual live monitor mix is mono and is sent to a floor-wedge or sidefill monitor. (The obvious exception is in-ear monitor systems.) A studio monitor mix is usually stereo because it is sent to a headphone amplifier which requires both a left- and a right-channel input. In both cases, the function of the aux bus is the same.

As an example, let's create a mono monitor mix on Aux 1.



1. To begin, press the **Mix button** in the Aux 1 section. The Fat Channel meters will display each input channel's send level to Aux 1. The encoders below each meter control the channel's level in the Aux 1 mix. Use these encoders the same way that you use faders to set the output level to your main mix. Ask your musicians what they would like in their monitor mix and use their requests as a starting point.



2. By pressing the **Select button** for Aux 1, you can add dynamics processing and EQ to the overall monitor mix. These are especially useful for eliminating feedback in a monitor. Keep in mind that an equalizer can also be used to increase the presence of an instrument by boosting that particular frequency range without necessarily boosting the volume in the mix. This is great for getting the lead guitar to cut through in the guitarist's monitor mix and to provide that extra rumble in the bassist's mix.



3. Use the **Aux 1 Output knob** to control the level of the entire aux mix.



4. You can listen to the aux mixes you are creating, using your headphones or your control-room monitor, by simply soloing the aux and selecting **Solo** as the source in the Monitor section.

4.4.5 Creating Internal FX Mixes

There are at least two main advantages to creating an FX mix, rather than inserting an effect in a channel. First, several channels can be sent to a single processor. In addition to greatly simplifying the number of parameters you have to control, this can create a cohesive sound in your mix. The second advantage of creating an FX mix is that you can vary the level sent from each channel to the processor, rather than patching the output directly into the effect. This allows you to add a lot or a little of an effect to any given channel.

The StudioLive features two internal effects buses. These are used much in the same way the aux buses are used to create monitor mixes.



1. To begin, press the FXA **Select button** and decide to which outputs you'd like to route your FX mix.



2. To patch your FX mix to any of the subgroups or to the Main outputs, press the desired output's button in the **Assign section** of the Fat Channel.



3. Next, press the **Mix button** in the FXA section. The Fat Channel meters will display the send level of each of the input channels to FXA. The encoders below each meter control the channel's level in FXA's mix. Use these encoders the same way that you use the faders to set the output level to your main mix. The higher a channel's level is in the FX mix, the more processed ("wetter") it will sound.

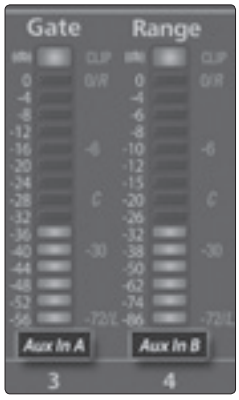
   Let's say that you are using reverb to liven up a relatively dead room. You might send a little bit of each input to the reverb, but you probably will not want much of the drums and bass to be processed, as too much reverb could reduce their impact and leave your mix without a sturdy foundation. So rather than turning the aux-send level for the kick drum channel all the way up, turn it so that the meter reads between 20% and 30% saturation. This way, only a small portion of the kick-drum input will be affected by the reverb.



4. By pressing the FXA **Select button** again, you can add dynamics processing and EQ to the overall monitor mix. These are great for adding sustain, removing too much ring, etc.



5. Use the FXA **Level knob** to increase or decrease the overall FX mix send level.

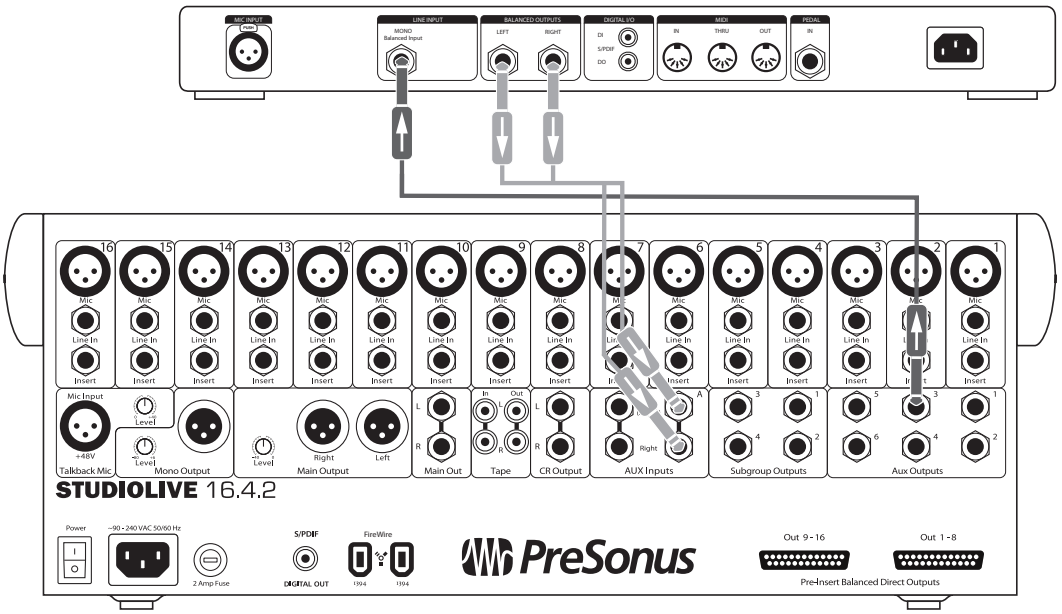


6. To send FXA's mix to a monitor mix, press that aux bus's Mix button twice and use Encoder 3 to dial in the right level. (Encoder 4 controls FXB's send level.)

For information on changing the effects preset, type, or parameters, see Section 5.1.

4.4.6 Using an External Effects Processor

This section will detail how to use an external effects processor with your StudioLive. In this example, we will use Aux 3 to feed an external effects processor.



1. To begin, connect the Aux 3 output to the input your external effects processor and the outputs of your processor to Aux In A of your StudioLive, as illustrated.



2. Turn the **Output knob** in the Aux 3 section to 12 o'clock.



3. Press the Aux In A **Select button**. In the Fat Channel, assign Aux In A to the main outputs.



4. Press the **Mix button** for Aux 3. The Fat Channel meters will display each input channel's send level to Aux 3. The encoders below each meter control the channel's level in Aux 3's mix. You will use these encoders to set the send levels for each channel to the effects processor, the same way you used them to create a monitor mix, only in this case you will decide which channels will be sent to the external processor and how much will be sent. Just like creating an internal FX mix, the higher a channel's level is in the FX mix, the more processed ("wetter") it will sound.



5. Once you have determined your effects mix, you can press the Select button for Aux 3 to add dynamics processing and EQ to the aux mix before it is sent to the external effects processor.



6. The effects processor's output is patched to Aux Input A, so you can use the **Select button** for Aux Input A to add Fat Channel dynamics processing and EQ to the reverb-enhanced signal.



7. The Level knob for Aux Input A controls the level of the aux mix relative to the level of your main mix.

4.5 Subgroups

A subgroup allows you to combine multiple channels into a single bus so that the overall level for the entire group is controlled by a single fader. The StudioLive also allows you to apply the Fat Channel's noise gate, limiter, compression, and EQ to the group as a whole, in addition to the processing available for each channel. Subgroups can be soloed and muted.

You will find many uses for subgroups that will make mixing more convenient and will provide better control of your mix. At the end of this section, we explore two different ways in which subgroups can help you to create a more efficient mixing environment and a more successful live mix. But first, let's go over the subgroup controls.

4.5.1 Subgroup Controls



Subgroup Channel Select Button. Enables Fat Channel Adjustments for a subgroup.

As previously described in Section 4.1.1, the Select button routes its channel through the Fat Channel, allowing you to add dynamics processing, EQ, panning, etc., or to patch a subgroup to the Main bus.



Solo Button. Turns Soloing On/Off for the Subgroup Bus.

This button will solo its subgroup to the monitor outputs, post-fader. PFL and SIP are not available for the subgroups.

When a Solo button is enabled, that channel or bus will automatically be selected and its Select button will illuminate.



Mute Button. Turns Muting On/Off for the Subgroup Bus.

This button mutes its subgroup. It will illuminate red when the channel is muted.



Subgroup Fader. Controls the Level of the Subgroup Bus.

The fader controls the overall volume of the signal on its subgroup output.

The white area above the fader can be used as a scribble strip. Use only oil pencils. Other types of pens or pencils cannot be wiped off.

To clean the scribble strip, use a lightly damp cloth to remove the writing.



Subgroup Meters. Displays the Level of the Subgroups.

In the upper-right corner of the StudioLive are the subgroup meters, which display the levels of the subgroup outputs.

4.5.2 Creating Instrument Subgroups

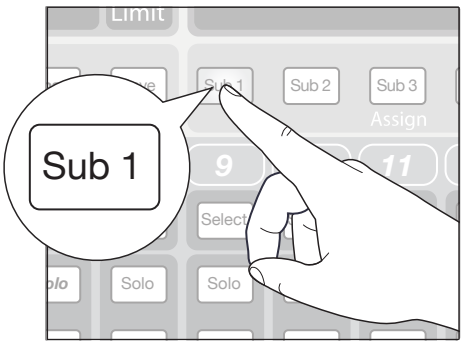
Grouping individual instruments that create a section in your mix has obvious advantages: The entire group can be muted or soloed, brought up or down in a mix, and faded in or out for a more polished intro or outro. Some of the most common submix groups are drums, backing vocals, horn sections, and string sections. Drums are a classic application for subgroup mixing. We will use a drum group in this particular example but these principles can be applied when grouping any type of instrument section in a live mix.

A drum group is especially useful when every piece in the drum kit has a microphone on it. In this example, our drums will be connected to the StudioLive as follows:

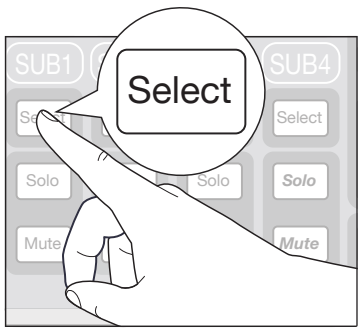
Channel 1: Kick
Channel 2: Snare Top
Channel 3: Snare Bottom
Channel 4: Floor Tom
Channel 5: Tom 1
Channel 6: Tom 2
Channel 7: Overhead Left
Channel 8: Overhead Right
Channel 9: Hi-Hat

We will create a stereo subgroup by linking Subgroups 1 and 2.

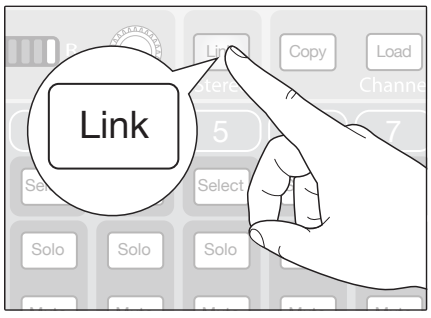
1. The first step in creating a subgroup is to get a good mix of the instruments you are grouping—in this case, the drums. Beginning with Channel 1 (Kick), raise the fader and, with the drummer's assistance, set the input trim, EQ, and dynamics for each drum separately.



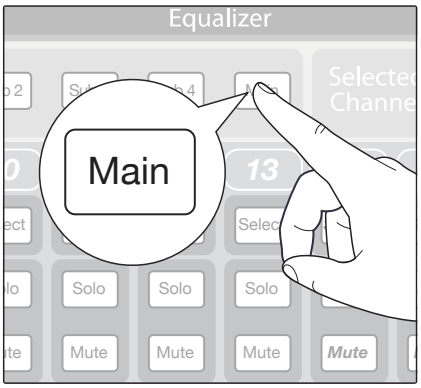
2. As you select each channel and dial in its Fat Channel settings, assign each channel to be routed to **Subgroup 1**. When you are done with each channel, lower the fader before moving on. When you get to Channels 7 and 8 (Overheads), you may want to consider stereo linking them.



3. After you have gone through the entire kit and are satisfied with each channel's level, EQ, and dynamics, have the drummer play the entire kit, and set the relative volume and panning for each mic in the mix. Press the **Select button** above Subgroup 1.



4. In the Fat Channel's Stereo section (to the right of the Pan display), enable **Link**, and turn the Pan knob all the way clockwise to set the stereo pan to hard left and right. Now Subgroups 1 and 2 are linked, with Sub 1 panned hard left and Sub 2 panned hard right. The channel panning is preserved.



5. Now assign Subgroup 1/2 to the **Main** outputs. You can now use the Fat Channel section to add dynamics processing and EQ to the stereo drum group. Subgroup 1's fader controls the level for the left side of your drum mix, and Subgroup 2's fader controls the right side.

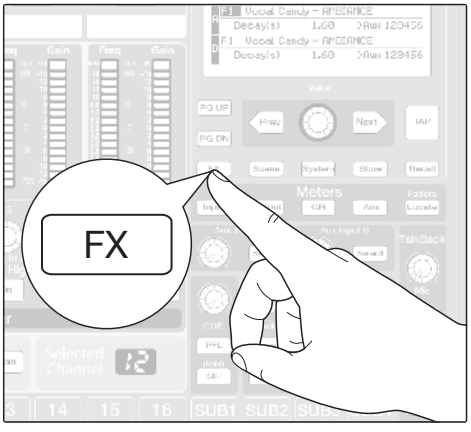
4.5.3 Creating Effects Groups

This is perhaps one of the most creative ways in which a subgroup can be used. By assigning an effects mix to a subgroup, the front-of-house engineer can become, in essence, a member of the band. This is especially useful when employing specialty or signature effects. For instance, a typical vocal mix for an electronic band dramatically trails off in a wash of reverb, whereas a reggae band usually has delay on vocals. The StudioLive allows you to assign either or both of the onboard effects buses to a subgroup.

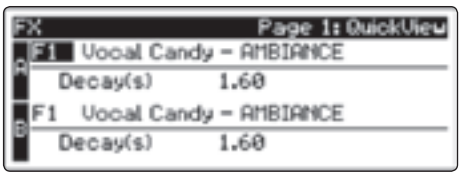
There are several advantages to assigning an effect like delay or reverb to a subgroup rather than simply leaving it on the effects aux bus:

- You can quickly add or subtract the effect by grabbing a fader.
- When using a Subgroup to control the effects level, you are controlling the level of the effects return, whereas the EFX Level controls the overall send mix level.
- The effect can be muted or soloed.
- The performers on stage can have a different amount of the effect in their monitor mix than the audience hears in the main mix, enabling you to reduce the possibility of feedback, while providing the performers with the tools they need for their best performance.

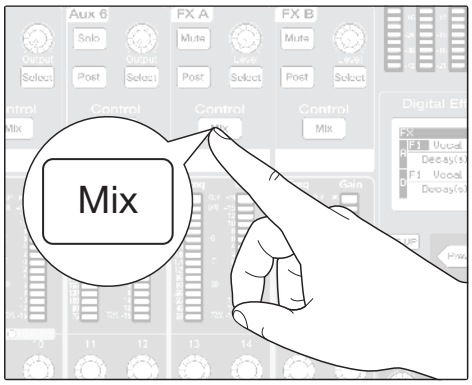
Let's take the example of the reggae band and assign the delay on EFX A to Subgroup 3.



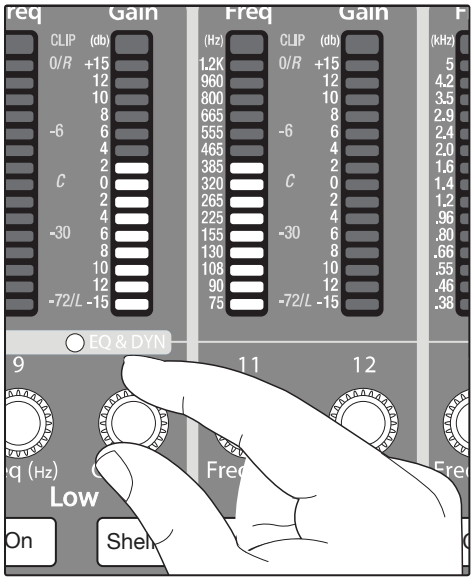
1. Press the **FX button** in the Master Control section to access the Effects menu.



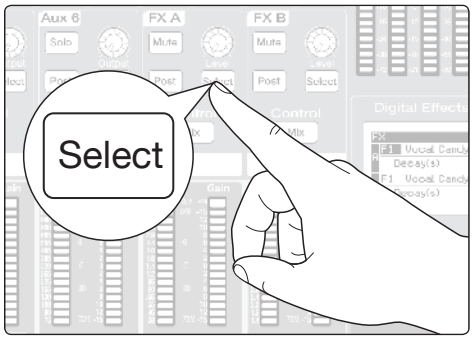
2. In the **EFX A parameters**, use the Value encoder to scroll through the effects library until you find a suitable delay, and adjust its parameters to taste. (See Section 4.8.1 for complete operation instructions.)



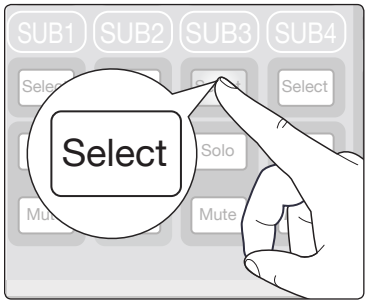
3. Next, decide which channels should be sent to the effects bus. In dub and reggae music, the vocals are most commonly sent to a delay, so let's send our two vocalists on Channels 10 and 11 to that delay. To assign the vocals, select the **Mix button** on EFX A.



4. Using the meter section, locate the **send encoders for channels 10 and 11** and turn them to a little more than 50%.



5. Press the **Select button** for EFX A and assign this bus to Subgroup 3. If you like you can also add some dynamics processing and EQ at this point.



6. Press the **Select button** for Subgroup 3 and assign the group to the Main output. (Because a delay can increase the signal's volume quite dramatically, you may want to experiment with the delay at its most intense setting, with EFX A's output turned up, and use the limiter for Subgroup 3 to keep the level under control.)

The vocal-delay level is now controlled by the Subgroup 3 fader, and you can use it to season the reggae band's performance.



The **Tap button** allows you to go one step further and set the tempo of the delay to match the tempo of the song.

4.6 Main Output Bus



Main Select Button. Enables Fat Channel Viewing.

As previously described in Section 4.1.1, the Select button routes its channel through the Fat Channel, allowing you to add dynamics processing, EQ, panning, etc.



Main Fader. Controls the Level of the Main Output.

The fader controls the overall level of the main stereo and mono outputs.

The white area above the fader can be used as a scribble strip Use only oil pencils. Other types of pens or pencils cannot be wiped off.

To clean the scribble strip, use a lightly damp cloth to remove the writing. Spit works pretty well, too.



Main Bus Meters. Displays the Level of the Main Output.

In the upper right corner of the StudioLive are the Main meters, which display the output levels of the main stereo bus.

4.7 Master Section

The Master section of the StudioLive controls Aux Inputs A and B, the Talkback controls, and the 2 Track Input.

4.7.1 Aux Inputs A and B

The StudioLive features an internal effects processor that allows you to load two different effects at the same time. You also can patch processed return signals from an external effects processor, using Aux Inputs A and B.

Power User Tip: *Aux Inputs A and B can also be used as stereo line-input channels for line-level devices like keyboards, synths, and amp modelers. Because Aux Inputs A and B can be processed by the Fat Channel and sent to any aux mix, they should be used as extra input channels whenever you need them.*



Aux Input Select Button. Enables Fat Channel Viewing.

As previously described in section 4.1.1, the Select button routes its channel through the Fat Channel, allowing you to add dynamics processing, EQ, and panning and to enable output assignments.

Aux Input Level Control. Controls the Signal Level of the Aux Input.

This knob controls the overall volume of the Aux Input signal.

4.7.2 Talkback System

The StudioLive features a Talkback microphone input on the back panel. This can be routed to the aux outputs and to the mains. It is important to note that the aux outputs are grouped in this section. For example, if you are using Aux 1 as a mono monitor send to the bass player's floor wedge and Aux 2 as the monitor send to the keyboard player, the talkback signal will be sent to both monitors—so don't say anything you wouldn't want both to hear!

Power User Tip (StudioLive 24.4.2 only): *While the talkback microphone is patched to aux outputs in groups, you do have independent level control over this input in each of the 10 aux mixes by using Aux Flip Mode. Because of this, you can adjust the talkback signal up or down or even off on a per-aux basis. For more information about Aux Flip Mode, please see Section 4.4.3.*



Talkback Mic Level. Controls the Overall Level of the Talkback Mic.

This knob controls the overall volume of the external Talkback input. The trim for the Talkback mic is located on the back panel next to the input. See Section 3.1 for details.



Output Selector Buttons. Assigns the Talkback Mic to the Aux and/or Main Outs.

These buttons assign the talkback mic to a specified output. These buttons are toggled on/off and will illuminate indicating that the Talkback output is active. The talkback mic can be assigned to every output at the same time.



Talkback Button. Turns the Talkback Mic On/Off.

This latching button turns the talkback mic on and off. It will illuminate to indicate that the talkback mic is active. When illuminated, the talkback-mic signal will be patched to all assigned outputs.

4.7.3 2 Track In

The 2 Track input allows you to patch in an analog input or a playback stream from your audio application. This enables you to compare audio sources during mixdown or patch in intermission music between bands without using any of your input channels. This is a summing bus, so both the external tape input and the two-track FireWire return can be engaged at the same time.



2 Track In Volume Control. Adjusts the Level for the Tape Input.

This knob adjusts the level for both the tape input and the main FireWire return.



Tape Input On/Off Button. Patches the Tape Input to the Main Outputs.

This button patches the Tape input to the main outputs. It will illuminate to indicate that the Tape input is being sent to the mains. To disable the routing, simply press the button again.



FireWire Source On/Off Button. Patches the Main FireWire Return to the Main Outputs.

This button routes the main left/right FireWire returns (StudioLive 24.4.2 Outputs 25-26 or StudioLive 16.4.2 Outputs 17-18) to the main outputs. It will illuminate to indicate that the main FireWire return is being sent to the main outputs of the StudioLive. To disable the routing, simply press the button again. For more information on using the main FireWire return, please consult **Section 2.5.4 in the StudioLive Software Library Manual**.

4.8 Solo Bus

The StudioLive features an independent Solo bus. This feature is extremely useful in setting levels for monitor mixes, dialing in dynamics processing on each channel, and fixing issues during a live show without interrupting the main mix.

The Solo bus has three different modes: AFL (default), PFL, and SIP.

- AFL (After-Fader Listen). AFL sends the channel or subgroup signal to the Solo bus post-fader so that you can control the level of the soloed signal with the fader. This is the StudioLive's default setting.
- PFL (Pre-Fader Listen). PFL sends the channel or subgroup signal to the Solo bus before it reaches the fader so the fader does not affect the soloed signal.
- SIP (Solo In Place). This is also known as "destructive solo." When channels are soloed in this mode, every channel that isn't soloed will be muted, and only the soloed channels will be sent to their assigned outputs. While useful in dialing in dynamics during soundcheck, this mode is dangerous during a live show. We recommend that this mode be turned off when mixing live events.

4.8.1 Solo Bus Controls



Cue Mix Volume Control. Adjusts the Overall Volume of the Solo Bus.

This knob adjusts the overall level for the Solo bus.



PFL/AFL Toggle Button. Enables PFL Solo Mode.

The default setting for the Solo bus is After-Fader Listen (AFL); by pressing PFL, Pre-Fader Listening is enabled. In either mode, pressing Solo on any channel or bus routes that channel to the Solo bus and has no effect on the main or subgroup mixes.

PFL soloing is not available for the subgroups.

Aux bus soloing is always PFL, regardless of whether this mode is engaged.



SIP (Solo In Place) On/Off Button. Enables Solo In Place Mode.

SIP (Solo In Place), or "destructive soloing," mutes every unsoloed channel on the StudioLive. If one of the muted channels is routed to the mains or a subgroup, it will be muted in those outputs. This also applies to soloed channels: The output routing is still active. Note that while you can manually unmute a channel, this mode should be used with extreme caution during a live performance. Only the input channels can be placed in destructive soloing. The subgroups and aux buses are omitted from SIP mode.

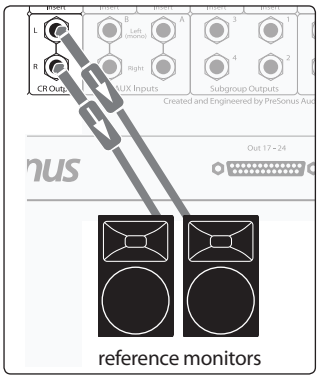
To enable SIP, press and hold the button until it illuminates red. This ensures that you cannot enter into destructive Solo mode by accident.

Power User Tip: *When SIP is engaged, channel mutes will only apply to the subgroup and Main bus assignments. SIP does not mute input channels in aux-bus mixes. Because of this, you can use SIP to dial in a mix in the mains without disturbing the musicians' last-minute rehearsal on stage.*

Destructive soloing is also a great way to tune each channel's dynamics individually in live-mixing situations or do surgical editing in the studio. SIP mode mutes every channel and bus that is not soloed in the Main bus (that is, if Channel 3 is soloed, you will only hear Channel 3 in your mains). This makes a great fine-tuning tool but it can quickly destroy a live mix. We highly recommend that you drop out of this mode once the show has started.

4.8.2 Using the Solo Bus for Monitoring

When mixing live, or when recording multiple musicians at once, it is often necessary to quickly listen to just one instrument or group. The Solo and Monitor buses can be used together for this purpose. It is important to note that if you wish to monitor with speakers, rather than headphones, it is necessary to connect the speakers to the Control Room outputs on the back of your StudioLive, rather than to one of the main output pairs.





1. First decide whether you want to listen to your soloed channels before or after the fader setting. If you'd like to monitor before the fader level, press the PFL button in your Solo bus section.



2. Next, press the Solo buttons on the channels, auxes, and subgroups you want to monitor.



3. Turn the Cue knob in the Solo section to about 12 o'clock.



4. Finally, select the Solo button in your monitor bus and dial in a comfortable listening volume for your headphones or monitors. You can increase the overall volume of the Solo bus using the Cue knob in the Solo section.

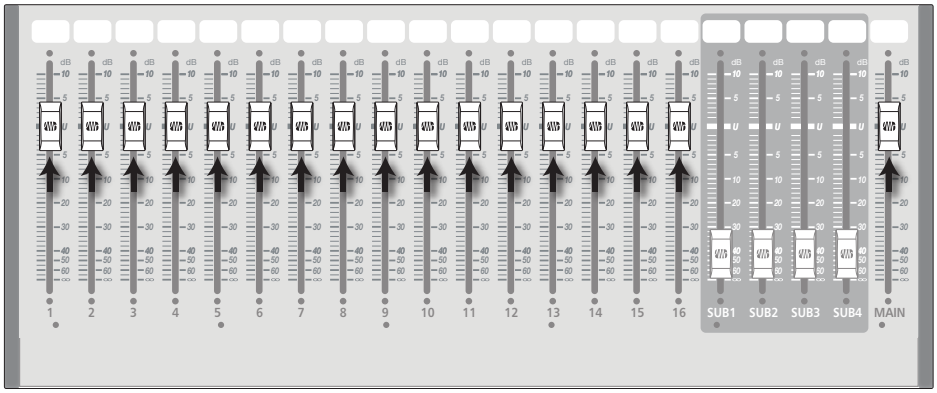
Power User Tip: *This feature can also be used to listen to a monitor mix that is being routed to an aux send. Let's say a vocalist on stage complains that there is too much bass in his monitor but you are confident that no bass is being sent to that particular aux send. You could be mistaken but most likely an open microphone on stage is picking up the bass signal. To determine the cause, solo only the aux send in question and, again, select the Solo button for the monitors/headphones. You can now listen to exactly the same mix as your troubled vocalist and fix his monitor mix quickly. This application is also useful in heading off a feedback problem.*

4.8.3 Using Solo in Place (SIP) to Set Up a Mix

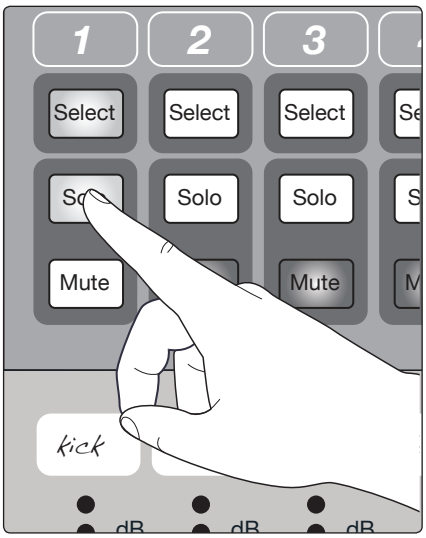
We started this manual with a quick and easy way to set up the input levels for your StudioLive, ensuring that you have the highest possible input level without clipping your analog-to-digital converters. The next step is to set up your mix by dialing in the dynamics, EQ, and fader settings for each channel. Enter Solo In Place (SIP). As previously mentioned, Solo In Place is a great way to dial in your mix without disturbing your musicians' last minute rehearsal or subjecting your audience to that impromptu jam session on stage.



1. To begin, press and hold the **SIP button** in the Cue section until it illuminates.

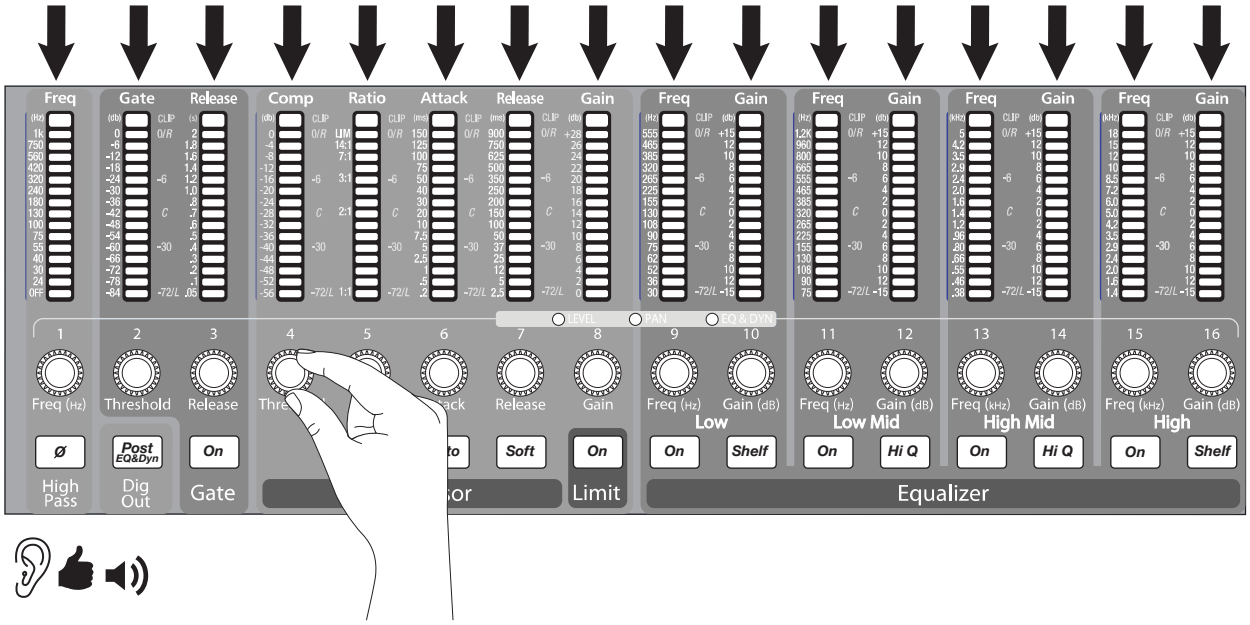


2. Raise all your **channel faders** and your main fader to unity gain.

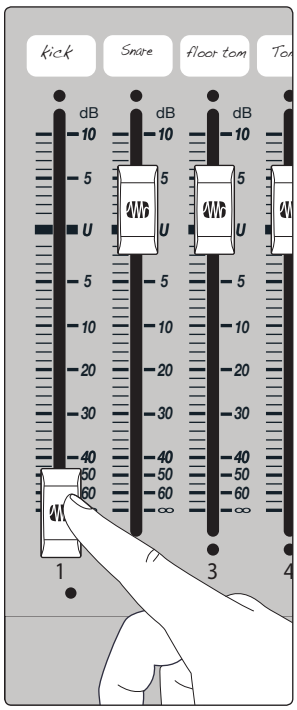


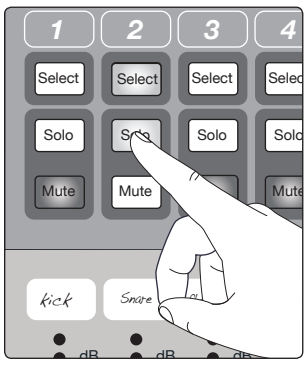
3. Most engineers start with the drums and work from the bottom up, so press the Solo button on your kick-drum mic channel. Notice that all the other channels on your StudioLive have been muted and the kick drum channel is selected.

4. The Fat Channel will display the dynamics processing, EQ, output routing, and pan settings for the kick drum.



5. Using the encoders and meters in the Fat Channel, set up the compressor and EQ for this channel.
6. Once you are satisfied, bring the fader back down.





7. Next, press the Solo button on the snare-mic channel and repeat steps 4 through 6. In this way, continue with each drum mic and then move on to the other instruments that are connected to the StudioLive. When you have finished with all instruments, press the SIP button again and slowly bring up the faders to set up your mix.

4.9 Monitor Bus

The StudioLive features a headphone output and control-room outputs, giving you the ability to monitor multiple sources on the StudioLive. The Monitor bus on the StudioLive allows you to monitor the main outputs, Solo bus, main FireWire return from your computer, and the stereo tape input. Because the Monitor bus is a summing amp, you can even monitor the World Series on your headphones while running sound at a show.



Tape Input Monitor Button. Assigns the Tape-Input Signal to the Monitor Bus.

The Tape monitor button routes the signal from the tape inputs (tape returns) to the monitor bus. The level for this input is controlled by the knob in the 2 Track In section.



Main Mix Monitor Button. Assigns the Main Mix to the Monitor Bus.

The Main Mix Monitor button routes the same signal that is being sent from the main outputs to the Monitor bus. This signal is always pre-fader.



FireWire Monitor Button. Assigns the Main Left/Right FireWire Return to the Monitor Bus.

The FireWire Monitor button patches the main left/right FireWire return (StudioLive 24.4.2 Outputs 25 and 26 or StudioLive 16.4.2 Outputs 17 and 18) to the Monitor bus. The level for this input is controlled first by the level set from the computer application producing the audio (e.g., Studio One) and then by a knob in the 2 Track In section. For more information about the Main FireWire Returns, **please review Section 2.5.4 in the StudioLive Software Library Manual**.



Solo Bus Monitor Button. Assigns the Solo Bus to the Monitor Bus.

The Solo Bus Monitor button patches any soloed channel, subgroup, or aux bus to the Monitor bus. This can be useful in any number of ways. For example:

- Auditioning an aux-send monitor mix
- Dialing in the dynamics processing and EQ on a subgroup
- Creating a better blend for instrumental sections (horns, strings, etc.)

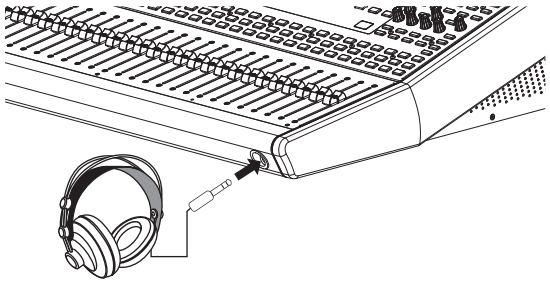
Power User Tip: *Because the Monitor bus is a summing amp, you can listen to the Solo and Main buses at the same time. In this way you can use the Cue Mix Level to bring up a channel's level in just your monitor mix. This is especially useful when trying to determine the source of an odd frequency or tone, mid show.*



Headphone Output Level Control. Adjusts the Overall Level of the Headphone Output.

This knob adjusts the overall level for the Headphone output.

The Headphone output is located on the front of the mixer, below the main fader.





Control-Room Monitor Level Control. Adjusts the Overall Level of the Control Room Monitor Outputs on the Rear Panel.

This knob adjusts the overall level of the control-room monitor outputs.

5 Digital Effects | Master Control

From the **Digital Effects | Master Control** section, you can select and change the parameters of the two internal effects processors, and you can store and recall every setting on the StudioLive. Because almost all of the StudioLive's features are controlled from the mixing surface (rather than using menus and submenus), you will mainly use this section to adjust the internal effects processors and to save and recall presets and Scenes.

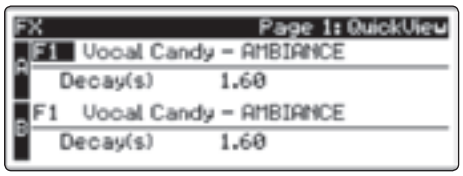
Power User Tip: *With all menus, the StudioLive remembers which page you were on when you navigated away to another menu. To quickly jump to page 1, simply press the menu's button twice (e.g., to return to page 1 of the FX Menu, press the FX button twice).*

5.1 The Digital FX (Effects) Menu

The StudioLive features two internal effects processors. Each processor can access the StudioLive's selection of high-quality reverbs and delays. Each of these effect buses can be routed to any of the subgroups, the aux buses, or the main outputs.



To access the effects library and make adjustments to effect parameters, press the **FX button** in the Master Control section.



The first page of the FX menu is the **QuickView screen**. It displays both of the effects assigned to the internal effects buses and the main parameter for each. Effect A is assigned to EFX A bus, and Effect B is assigned to EFX B bus.



Use the **Next and Prev buttons** to navigate through the screen. To change a parameter, use the Value encoder directly beneath the LCD screen. The color will invert for each parameter when it is selected for modification.



The **Next button** will scroll through this screen in the following order: FX A library selection, FX A main parameter, FX B library selection, FX B main parameter.



When choosing your effects preset, use the **Value encoder** to scroll through the library.



When you have arrived at your selection, press the **Recall button** to load it.



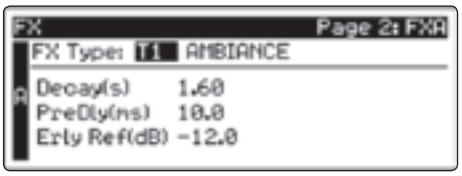
Press the **Page Down button** to move to the next page of the FX menu. Pages 2 and 3 of the FX menu display the rest of the parameters for FX A and FX B, respectively. These parameters will change depending on what type of effect you have chosen. Again, use the Next and Prev buttons to navigate through the screen and use the Value encoder to change the selected parameter.

5.1.1 Creating FX Presets

Page 1 of the FX Menu provides access to your library of effects presets. Pages 2 and 3 provide access to the 13 FX types. An FX preset is made by adjusting the default parameters of an FX type, so one FX type can be the foundation for myriad different presets.

The StudioLive contains a library of 50 custom reverb and delay presets designed by PreSonus. In addition to these presets, there are 49 available locations for your custom effects library. The factory presets can be altered, renamed, and overwritten.

Create an FX preset using a factory preset as a jumping-off point, or start from scratch with an FX type of your choosing. This section describes the latter approach.



1. Navigate to page 2 of the FX menu.



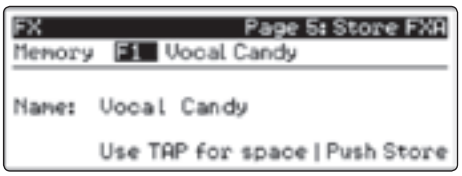
2. Using the **Value encoder**, navigate through the FX Type library until you find the FX type you'd like to use.



3. Press the **Recall button** to load the FX type and its default parameters.



4. Use the **Next button** and the **Value encoder** to dial in your FX Preset to taste.



5. **Pages 4 and 5** allow you to store your changes for FX A and FX B, respectively, to the same location or to a new location, and to customize the name of your creation.



6. To jump to these pages, simply press the **Store button** while you have a field in the desired effect selected.



7. Use the **Value encoder** to change the library location to which you will store your new effects preset, unless you wish to overwrite the currently selected preset location.



8. Press the **Next button** to navigate to the first letter of the preset name.



9. Turn the **Value encoder** clockwise or counter-clockwise to change the letter. The StudioLive allows you to customize the name with uppercase and lowercase letters and a selection of numerals and punctuation marks. Press the Tap button to quickly insert a space.

10. Once you are satisfied with your changes, press the **Store button**, which will illuminate while the effects preset is written to the StudioLive's internal memory. Once the preset is saved, the Store button will return to its unlit status.

5.1.2 Reverb and its Parameters

Reverberation — or reverb, as it is more commonly known—is perhaps the most widely used effect. Natural reverb is created by sound waves reflecting off of a surface or many surfaces. For example, when you walk across the wooden stage in a large hall, thousands of reflections are generated almost instantaneously as the sound waves bounce off the floor, walls, and ceilings. These are known as early reflections, and their pattern provides psycho-acoustic indications as to the nature of the space that you are in, even if you can't see it. As each reflection is then reflected off of more surfaces, the complexity of the sound increases, while the reverb slowly decays.

The reason for the widespread use of reverb in audio recording is fairly self-evident: human beings don't live in a vacuum. Because our brains receive cues about the nature of the space around us based partially on audio reflections, a sense of space makes an audio recording sound more natural and, therefore, more pleasing.

The following parameters are available for the nine reverb types the StudioLive offers:

Decay. Decay is the time (in seconds) required for the reflections (reverberation) to die away. In most modern music production, reverb decay times of between one and three seconds are prevalent. A reverb setting with strong early reflections and a quick decay are a great way to create a stereo effect from a mono source.

Predelay. Predelay is the time (in milliseconds) between the end of the initial sound and the moment when the first reflections become audible. Imagine you're back on that stage in a large music hall. This time you stand on the very edge of the stage and shout "Hello world!" toward the center of the hall. There will be a brief pause before you hear the first noticeable reflections of your voice, because the sound waves can travel much further before encountering a surface and bouncing back. (There are closer surfaces, of course—notably the floor and the ceiling just in front of the stage—but only a small part of the direct sound will go there, so those reflections will be much less noticeable.) Adjusting the predelay parameter on a reverb allows you to change the apparent size of the room without having to change the overall decay time. This will give your mix a little more transparency by leaving some space between the original sound and its reverb.

Note: *Predelay control is not available on every reverb type.*

Early Reflections. Early Reflections are those that reach the listener a few milliseconds after the direct signal arrives. The human brain uses them to identify the size of the room it is in. If you are trying to simulate a specific type of room, this control will be extremely important. This control allows you to set the level (in decibels) of the early reflections. The louder the early reflections, the smaller the room will seem.

Note: *Early Reflections control is not available on every reverb type.*

5.1.3 Delay and its Parameters

A delay essentially creates an echo, although you can often use delays to create more complex time-based effects. The source signal is delayed so that it is heard later than it actually occurred.

The following parameters are available for the four delay types the StudioLive offers:

Time. This is the time (in milliseconds) between the source signal and its echo. The simplest delay effect is a single repeat. A short delay between 30 and 100 ms can be used to create slap-back echo, while longer delay times produce a more distant echo. Delay times that are too short to hear as distinct echoes can be used to create thickening effects. Whether these echoes are timed with the tempo is a matter of stylistic choice.



This is the parameter that is controlled by the Tap Tempo button. Using the **Tap button** on the StudioLive, you can speed up or slow down these repeats or, more commonly, time the repeats to occur with the tempo of the music.

Power User Tip: *While you have to select the Time parameter in order to use the Tap button, you only have to do this the first time you use the Tap button for that effect. Once the Tap button has been used to control the Time parameter on either FX bus, it will always control the time of that particular delay, no matter what page you are currently viewing. To assign the Tap button to control another delay, simply navigate to that delay's Time parameter and use the button to enter the desired delay time.*

Time X. Time X is the value of the beat you are using as a reference for the tempo. The basic unit of measure is a quarter note, so for example, if the beats you are tapping represent quarter notes in the music, you would set Time X to 1.00. If they are eighth notes, you would set Time X to 0.50; half notes would be 2.00, and so on. In this way, you can precisely synchronize or syncopate the delay echoes to the music in real time.

Note: *The Stereo Delay offers two Time X controls. With the Ping Pong delay, the Pong X parameter serves the same purpose.*

Variable Feedback. Variable feedback, or regeneration, produces multiple decaying repeats. Increasing the feedback value increases the number of echoes, as well as the resonance that is created as one echo disappears into another.

F_Frequency. Sets the center frequency in Hz for the Filter Delay.

F_Gain. Sets the boost at the center frequency for the Filter Delay.

F_Q. This sets the Q for the Filter Delay. The Q is the ratio of the center frequency to the bandwidth. When the center frequency is constant, the bandwidth is inversely proportional to the Q, so as you raise the Q, you narrow the bandwidth.

5.1.4 Digital Effects Preset Library

POS.	TYPE	NAME	POS.	TYPE	NAME
F1	AMBIENCE	Natural	F26		Cathedral
F2		Lively	F27		Gymnasium
F3	SMALL ROOM	Closet	F28		Arena
F4		Studio A	F29	PLATE	PlateVerb Shimmer
F5		Studio B	F30		PlateVerb Thick
F6		Bedroom	F31		PlateVerb Drums
F7	BRIGHT ROOM	Kitchen	F32		PlateVerb Vox
F8		Tile Floors	F33	MONO DELAY	M: Short Tail
F9		Tile Bathroom	F34		M: Short Slap
F10		Concrete Floors	F35		M: Long Slap
F11	SMALL HALL	Radio Booth	F36		M: Triplet
F12		Small Club	F37		M: Triplet
F13		Big Club	F38	FILTER DELAY	Analog Slap
F14	BRIGHT HALL	Brick House	F39		Analog Trip
F15		Linoleum Room	F40		Analog 8th
F16		Tile Room	F41	STEREO DELAY	Slap Quick
F17	WARM HALL	Log Cabin	F42		Long Slap
F18		Wood Floors	F43		Spacey
F19		Brick Club	F44		Long Tail
F20		High Ceilings	F45		ST: Triplet
F21	GATED HALL	GateVerb Short	F46	PING-PONG DELAY	Ping-pong Slap
F22		GateVerb Med	F47		Ping-pong Delay
F23		GateVerb Long	F48		Ping-pong Spacey
F24		GateVerb Extreme	F49		Ping-pong Trip
F25	LARGE HALL	Church	F50		Ping-Pong Purple Rain
			F51-99	USER-CREATED PRESETS	

5.1.5 Digital Effects Types

The StudioLive contains 13 different effects types with which you can create custom presets or redesign the included library of presets.

NAME	POS	PARAM (L1)	PARAM (L2)	PARAM (L2)	PARAM (L2)	PARAM (L2)	PARAM (L2)	PARAM (L2)
Ambience	T1	Reverb	**Decay (s) Default:** 0.69 **Range:** 0.29 – 1.09					
Small Room	T2	Reverb	**Decay (s) Default:** 0.79 **Range:** 0.39 ~ 0.59	**Predelay (ms) Default:** 12.0 **Range:** 1.00 ~ 40.0	**Early Reflec (dB) Default:** -15.0 **Range:** -25.0 ~ -8.00			
Bright Room	T3	Reverb	**Decay (s) Default:** 1.00 **Range:** 0.50 ~ 1.79	**Predelay (ms) Default:** 12.0 **Range:** 1.00 ~ 40.0	**Early Reflec (dB) Default:** -16.0 **Range:** -22.0 ~ -10.0			
Small Hall	T4	Reverb	**Decay (s) Default:** 1.39 **Range:** 0.59 ~ 2.19	**Predelay (ms) Default:** 20.0 **Range:** 1.00 ~ 50.0	**Early Reflec (dB) Default:** -22 **Range:** -35.0 ~ -15.0			
Bright Hall	T5	Reverb	**Decay (s) Default:** 1.59 **Range:** 0.79 ~ 2.39	**Predelay (ms) Default:** 24.0 **Range:** 1.00 ~ 60.0	**Early Reflec (dB) Default:** -22.0 **Range:** -35.0 ~ -15.0			
Warm Hall	T6	Reverb	**Decay (s) Default:** 1.59 **Range:** 0.79 ~ 2.50	**Predelay (ms) Default:** 50.0 **Range:** 10.0 ~ 100.0	**Early Reflec (dB) Default:** -30.0 **Range:** -40.0 ~ -20.0			
Gated Hall	T7	Reverb	**Decay (s) Default:** 1.00 **Range:** 0.59 ~ 1.79	**Predelay (ms) Default:** 40 **Range:** 5.00 ~ 80.0				
Large Hall	T8	Reverb	**Decay (s) Default:** 2.39 **Range:** 1.39 ~ 5.00	**Predelay (ms) Default:** 35.0 **Range:** 40.0 ~ 90.0	**Early Reflec (dB) Default:** -30.0 **Range:** -40.0 ~ -20.0			
Plate	T9	Reverb	**Decay (s) Default:** 1.39 **Range:** 0.50 ~ 4.00	**Predelay (ms) Default:** 10.0 **Range:** 1.00 ~ 40.0				
Mono Delay	T10	Delay	**Time (ms) Default:** 645 **Range:** 5.00 ~ 1.28k	**Time X Default:** 1.00 **Range:** 0.25 ~ 2.00	**Feedback Default:** 0.25 **Range:** 0.000 ~ 0.94			
Filter Delay	T11	Delay	**Time (ms) Default:** 645 **Range:** 5.00 ~ 1.28k	**Time X Default:** 1.00 **Range:** 0.25 ~ 2.00	**Feedback Default:** 0.25 **Range:** 0.000 ~ 0.94	**F_Freq (Hz) Default:** 800 **Range:** 100 ~ 3.00k	**F_Gain Default:** 12.0 **Range:** 0.000 ~ 24.0	**F_Q Default:** 0.69 **Range:** 0.19 ~ 2.00
Stereo Delay	T12	Delay	**Time (ms) Default:** 645 Range: 5.00 ~ 1.28k	**Time1 X Default:** 1.00 Range: 0.25 ~ 2.00	**Time2 X Default:** 1.00 Range: 0.25 ~ 2.00	**Feedback1 Default:** 0.25 **Range:** 0.000 ~ 0.94	**Feedback2 Default:** 0.25 **Range:** 0.000 ~ 0.94	**L-R Spread Default:** 0.50 **Range:** 0.000 ~ 1.00
Ping Pong	T13	Delay	**Time (ms) Default:** 645 **Range:** 5.00 ~ 1.28k	**Pong X Default:** 1.00 **Range:** 0.25 ~ 2.00	**Pong X Default:** 1.00 **Range:** 0.25 ~ 2.00	**Feedback Default:** 0.25 **Range:** 0.000 ~ 0.94	**L-R Spread Default:** 0.50 **Range:** 0.000 ~ 1.00	

5.2 Scenes

The StudioLive allows you to create and store a library of Scenes. A Scene is like a snapshot of your mix. It stores each Fat Channel parameter for every input and bus, as well as each fader's position, the aux and effects mixes, channel mutes and solos, and the input selection (analog input or FireWire playback stream).

5.2.1 S1: Zero Out (Board Reset)

Located at position S1 is a scene named Zero Out (Board Reset). This scene cannot be overwritten and returns each parameter to its default setting. All you have to do is lower the faders and return all trim knobs and output volume knobs (Solo bus, 2 Track In, Aux Input A and B, Aux Outputs, FXA&B Output, Phones, and Monitor) to their lowest positions. The StudioLive will be zeroed out as follows:

	SETTINGS							
INPUTS AND BUSES	OUTPUT LEVEL	ASSIGN	PAN	SOLO	MUTE	STEREO LINK	AUX/FX SENDS	MODE
INPUT CHANNELS	NULL	MAINS	C	OFF	OFF	OFF	NULL	N/A
AUX BUSES	NULL	N/A	N/A	OFF	N/A	OFF	N/A	PRE 1
FX A / FX B	NULL	MAINS	N/A	N/A	OFF	N/A	N/A	POST / F1
AUX IN A/B	NULL	MAINS	N/A	N/A	N/A	N/A	NULL	N/A
SOLO BUS	NULL	N/A	N/A	N/A	N/A	N/A	N/A	AFL
MONITOR BUS	NULL	N/A	N/A	N/A	N/A	N/A	N/A	MAIN
TAPE IN	NULL	N/A	N/A	N/A	N/A	N/A	NULL	NULL

The Fat Channel will be restored to the same setting for every input and output on the StudioLive. Each of the dynamics processors and the four EQ bands will be turned off.

Their parameters will be set as follows:

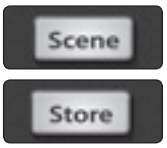
FAT CHANNEL PARAMETERS											
HIPASS	NOISE GATE		LIMIT		COMPRESSOR		EQ	LOW	L.MID	H.MID	HIGH
OFF	KEY (24)	N/A		OFF	THR	0 dB	P/S	PEAK	N/A	N/A	PEAK
	THR	0.05 s	THR (24)	0 dB	RAT	2:1	Q	0.6/0.55	0.6/0.55	0.6/0.55	0.6/0.55
	RNG (24)	N/A			ATK	20 ms	FREQ	130 Hz	320 Hz	1.4 kHz	5 kHz
	ATK (24)	5 ms			REL	150 ms	GAIN	0 dB	0 dB	0 dB	0 dB
	REL	0.7 ms			GAIN	0 dB					
					KNEE	hard					

Power User Tip: *Before beginning any new mixing situation, we recommended you recall the Zero Out (Board Reset) scene. This is the easiest way to ensure that there are no lingering parameter settings that could cause you some trouble in your new mix.*

5.2.2 Creating a Scene

Creating a Scene requires simply dialing in a mix that you would like to use at a later date and saving it. This has obvious benefits for both studio and live sound. For example, in the studio, saving and recalling a Scene allows you to move to another song or project and come back to the current mix later. For live shows with multiple bands, you can set up custom mixes for each band at sound check and recall the mix when that band goes onstage.

You also can save custom mixes for each venue that a band plays repeatedly.



1. To save a Scene, press the **Scene button** and either page down to the second screen or press **Store** to automatically jump to this menu.
2. The memory locations will be selected. Use the **Value encoder** to scroll to a free location in the Scene library.



3. Now name your Scene: Press the **Next button** to navigate to the first letter of the preset name and turn the Value encoder clockwise or counter-clockwise to change the letter.

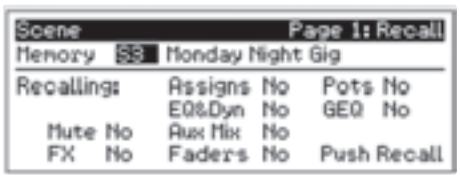
The StudioLive allows you to customize the name with uppercase and lowercase letters and a selection of numerals and punctuation marks.

Press the **Tap button** to quickly insert a space. Continue this process until you are satisfied with your changes and then press the Store button. It will illuminate while the Scene is being written to the StudioLive's internal memory. Once the Scene is saved, the Store button will return to its unlit status.

5.2.3 Scene Recall



1. To recall a Scene, press the **Scene button** and use the **Value encoder** to scroll through the Scene library.
2. When you have found the Scene you wish to recall, press the **Recall button**. By default, the StudioLive will recall all stored parameters (Fat Channel settings, channel muting and soloing, aux mixes, and internal effects parameters) except fader, knob, and graphic EQ positions.



3. If you do not wish to recall a certain set of parameters, simply use the **Next and Prev buttons** to navigate through the screen. When the parameter group that you wish to disable is selected, turn the **Value encoder** counter-clockwise to move it to the No (off) position. Once you have disabled the parameter groups you do not wish to recall, press the **Recall button**.

The StudioLive's recallable parameters are grouped as follows:

Mute: All mute states. This includes input channels, subgroups, and FXA, and FXB.

FX: All parameters for the internal effects assigned to FXA and FXB.

Assigns: All output and bus routing. This includes:

- Channel and bus routing to mains and subgroups
- Stereo linking for all channels and buses
- FireWire returns to inputs
- Channel and bus solo states
- Monitor-bus assignments
- 2 Track In assignments
- Talkback assignments and talkback on/off

EQ and Dyn: All Fat Channel dynamics processing, filter parameters, and pan position for every channel and bus.

Aux Mix: All aux mixes parameters including:

- Channel sends to aux mixes
- Channel sends to FXA and FXB
- Pre1/Pre2 position for each aux and FX bus

Faders: All fader positions.

GEQ: Graphic EQ settings for all eight graphic equalizers.

Pots: All digital knob positions:

- Aux output levels
- FXA and FXB levels
- Cue level
- 2 Track In
- Phones level
- Monitor level
- Talkback level (level, not trim control)
- Aux Input A and Aux Input B level

Power User Tip: *If you enable knob positions (recalling group "pots") as a part of your Scene recall, all of the digital knobs (Aux outputs, FXA and FXB levels, Cue, 2 Track In, Phones, Monitor, Talkback, Aux Input A and Aux Input B knobs) will remain at their stored position until they are moved manually. Once a knob is turned, its value will jump to the value of its current physical position. Therefore, if you intend to save a Scene and recall the "pots" group later, it is highly recommended that you use the recall sheet provided in the back of this manual to note the stored position of these controls.*

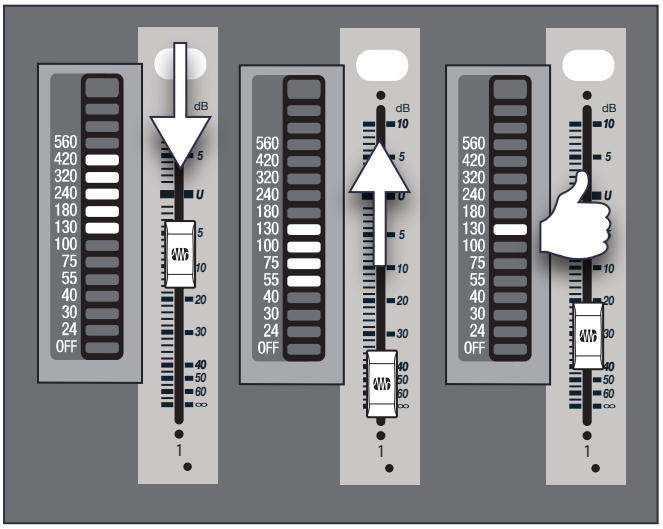
It is important to note that the recall groups have no effect on what parameters are stored with a Scene. All storable parameters are saved with a Scene regardless of what recall groups are enabled.

Note: The following StudioLive global parameters are not recallable:

- Input Trim controls
- Output Trim controls
- Subgroup Delay settings
- LCD Contrast
- LCD Brightness
- Link ID
- Sample Rate
- GEQ bus assignments **(StudioLive 24.4.2 only)**

5.2.4 Fader Locate

If you enable fader positions as a part of your Scene recall, the StudioLive will automatically put the meters in Fader Locate mode after you press the Recall button. The Fader Locate button will illuminate, and the meter section of the Fat Channel will display the recalled fader position.



Move the faders up or down until only the center LED is illuminated in each meter to recall the stored position. The subgroup and main meters at the top right of the StudioLive will display the recalled positions for their respective faders.

Power User Tip: *As long as you remain in Fader Locate mode, the faders on your StudioLive will not be active. The level of the audio passing through them will be set according to the stored fader position, not the current location of the physical fader. Once you have recalled each of the faders to their Scene location, press the Locate button again. This will take you out of Fader Locate mode and reactivate your faders so that they control the level of their channels and buses.*

5.2.5 AutoStore

It is not necessary to create a Scene for your StudioLive in order to preserve its settings when you power it down. Periodically, you will notice the Store button flash once, indicating that the current settings on your StudioLive have been saved to internal memory. The StudioLive will take a snapshot of the current position of every parameter on the mixer whenever no changes have been made for ten seconds. If you wish to ensure that your StudioLive will hold its current settings before you power down, simply wait for a few seconds until the Store button flashes. This is your indication that it is now safe to turn off your StudioLive. The next time you turn it on, all of your settings will be recalled automatically.

Note: *If you make changes to a stored Scene, AutoStore will not save these changes as a permanent part of the Scene. Any changes made to a Scene in the StudioLive's library must be saved using the Scene menu, as described in the first part of this section.*

5.3 Graphic Equalizers

The StudioLive features 4 stereo, 31-band, graphic EQs. A graphic EQ is a multiband equalizer that uses sliders to adjust the amplitude for each frequency band. It gets its name from the positions of the sliders, which graphically display the resulting frequency-response curve. While the GEQ menu is active, the encoders in the Fat Channel are used to make amplitude adjustments, and the meter LEDs display the "slider" positions. The center frequency and bandwidth are fixed; the level (amplitude) for each band is the only adjustable parameter.

Graphic EQs are generally used to fine-tune the overall mix to create the aesthetic that you are trying to achieve. For example, if you are mixing a rock band, you may want to boost some of the low end to get more pummeling kick and toms. In general, you do not want to make drastic amplitude adjustments to any particular frequency band. Making smaller, incremental adjustments over a wider spectrum will round out your final mix for a more polished sound.

To assist you with these adjustments, here is an overview of which frequencies affect different sound characteristics:

Sub-Bass (16 Hz to 60 Hz). The lowest of these bass frequencies are felt, rather than heard, as with freeway rumbling or an earthquake. These frequencies give your mix a sense of power, even when they only occur occasionally. However, overemphasizing frequencies in this range will result in a muddy mix.

Bass (60 Hz to 250 Hz). Because this range contains the fundamental notes of the rhythm section, any EQ changes will affect the balance of your mix, making it fat or thin. Too much emphasis will make for a boomy mix.

Low Mids (250 Hz to 2 kHz). In general, you will want to emphasize the lower portion of this range and de-emphasize the upper portion. Boosting the range from 250 Hz to 500 Hz will accent ambience in the studio and will add clarity to bass and lower frequency instruments. The range between 500 Hz and 2 kHz can make midrange instruments (guitar, snare, saxophone, etc.) "honky," and too much boost between 1 kHz and 2 kHz can make your mix sound thin or "tinny."

High Mids (2 kHz to 4 kHz). The attack portion of percussive and rhythm instruments occurs in this range. High mids are also responsible for the projection of midrange instruments.

Presence (4 kHz to 6 kHz). This frequency range is partly responsible for the clarity of a mix and provides a measure of control over the perception of distance. If you boost this frequency range, the mix will be perceived as closer to the listener. Attenuating around 5 kHz will make the mix sound further away but also more transparent.

Brilliance (6 kHz to 16 kHz). While this range controls the brilliance and clarity of your mix, boosting it too much can cause some clipping so keep an eye on your main meter.

The StudioLive graphic EQ features an innovative design that sets it apart from traditional graphic EQs. Traditionally, a 31-band graphic EQ uses 31 second-order shelving filters with fixed frequencies in order to simulate a curve set by the user via 31 front-panel sliders. A well-designed graphic EQ creates an output frequency response that corresponds as closely as possible to the curve displayed graphically by the sliders.

In an analog EQ, this is achieved by carefully choosing the bandwidth of the filter and deciding how, or if, it varies with the gain and how the filters are summed or cascaded. In general, narrower bandwidth signifies a more precise EQ. But in traditional graphic EQ designs, the center frequency of each band is fixed.

PreSonus took a different approach with the StudioLive. The StudioLive graphic EQ is a pool of shelving filters from which coefficients like cutoff frequency, bandwidth, and gain are extracted through a process of curve-fitting. The curve entered by the user is first oversampled. The system then works with an internal curve made up of 128 bands to find coefficients for the first shelving filter that, when subtracted from the user's curve, will produce the flattest possible response: 0 dB. The resulting response is then used to find coefficients for the

second shelving filter through the same optimization process. Coefficients for all available shelving filters are found through a recursive process.

Unlike conventional designs, the frequency and bandwidth of the "bands" depends on the curve entered by the user. This allows for much tighter matching of that curve. Because of this innovative design, the accuracy of the StudioLive EQ might feel "wrong" at first. The curve fitting process is capable of very steep transitions and, unlike conventional analog graphic EQs, what you see is what you get. With a carefully drawn, smooth curve the StudioLive EQ will have almost no frequency ripple. The StudioLive EQ is also capable of very sharp notches. To widen a notch or a bump on a particular band, just bring the adjacent bands closer to that band's gain, and the bandwidth will change accordingly. Making drastic adjustments too quickly may create an audio artifact as the new curve is redrawn and crosses over an audio peak. If you are hearing audio artifacts while setting up the graphic EQ, try creating a smoother curve.

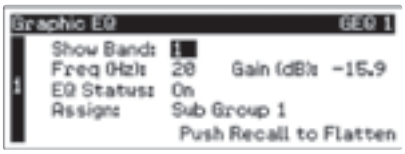
5.3.1 StudioLive 24.4.2 GEQ Menu

The StudioLive 24.4.2 features 4 stereo (dual mono), 31-band, 1/3 octave graphic EQs that can be inserted on the main output bus, the subgroups, or any of the auxes. When the GEQ button is enabled, the meters and encoders of the Fat Channel become the controls for the graphic EQ. As you touch a knob, you will notice that its band number, frequency, and gain are displayed in the System menu. The 31 bands range from 20 Hz to 20 kHz.

The frequency for each band is fixed. Bands 5 through 28 are controlled by encoders 1 through 24, respectively. When Band 4 or 29 is selected in the Show Band field in the GEQ menu, the meters will flip. You will notice that all meters have one LED illuminated to display the current gain position for each band, and the meter for the selected band in the Show Band field is inverted, meaning that all LEDs will be illuminated except the LED displaying the current gain position for that band. The band does not have to be selected in the Show Band field for its encoder to be active. All encoders are active so you can make changes to 24 of the 31 bands at one time.



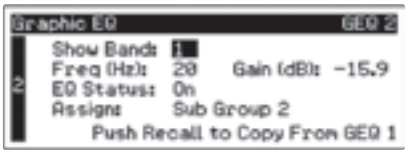
When you press the **GEQ button** on your StudioLive, the Graphic EQ menu will be displayed on your LCD screen. There are four dual-mono (eight channels) graphic EQs in the StudioLive 24.4.2. These graphic EQs are assignable in stereo pairs. Each GEQ can be assigned to the Mains, Subgroups 1-4, or Aux 1-10. The bus assignment can only made from an odd-numbered GEQ. The even-numbered GEQ will automatically be assigned to the other half of the stereo pair. For example, if you assign GEQ 1 to Subgroup 1, GEQ 2 will automatically be assigned to Subgroup 2.





Use the **Page Up and Page Down buttons** to navigate between graphic EQs. Use the **Next and Prev buttons** to navigate through each GEQ screen and the **Value knob** to change a parameter.

Each of the eight channels of graphic EQ can be controlled individually, or odd-even pairs can be controlled as a stereo unit. To copy the left side (odd) GEQ settings to the right side (even), simply page down to the right side and press the Recall button. Pressing the Recall button while using an odd numbered GEQ will flatten it.



Power User Tip: *Select the Show Band field in the GEQ menu, and use the Value knob to scroll through all the bands on the graphic EQ to get a quick overview of the entire curve.*

You will notice that all meters have one LED illuminated to display the current gain position for each band, and the meter for the selected band in the Show Band field is inverted so that all LEDs are illuminated except for the LED that displays the current gain position for that band. The band does not have to be selected in the Show Band field for its encoder to be active. All encoders are active, so you can make changes to 24 of the 31 bands at one time.

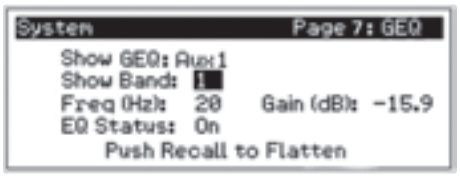
5.3.2 StudioLive 16.4.2 GEQ Menu

The StudioLive 16.4.2 features four dual-mono (eight channels) graphic EQs. Each GEQ is assigned to a specific bus: Main Left, Main Right, and Aux 1 through 6. The bus assignment cannot be changed. When the GEQ menu is active, the meters and encoders of the Fat Channel become the controls for the graphic EQ. As you touch a knob, you will notice that its band number, frequency, and gain are displayed in the System menu. The 31 bands range from 20 Hz to 20 kHz.

The frequency for each band is fixed. Bands 1 through 16 are controlled by encoders 1 through 16, respectively. When Band 16 is selected in the Show Band field in the GEQ menu, the meters will flip. You will notice that all meters have one LED illuminated to display the current gain position for each band, and the meter for the selected band in the Show Band field is inverted, meaning that all LEDs will be illuminated except the LED displaying the current gain position for that band. The band does not have to be selected in the Show Band field for its encoder to be active. All encoders are active so you can make changes to 16 of the 31 bands at one time.



To open the GEQ menu, press the **System button** and navigate to Page 7: GEQ.



Navigate to the **Show GEQ field** and use the Value knob to scroll through the different graphic EQs. Use the Next and Prev buttons to navigate through each GEQ screen and use the Value knob to change a parameter.



Each graphic EQ can be controlled individually. To copy the left side (odd) GEQ settings to the right side (even), simply scroll to the right side and press the **Recall button**. Pressing the Recall button while using an odd-numbered GEQ will flatten it.

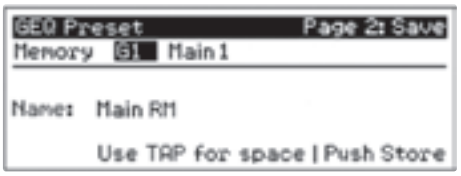
Power User Tip: *Select the Show Band field in the GEQ menu, and use the Value knob to scroll through all the bands on the graphic EQ to get a quick overview of the entire curve.*

You will notice that all meters have one LED illuminated to display the current gain position for each band, and the meter for the selected band in the Show Band field is inverted so that all LEDs are illuminated except for the LED that displays the current gain position for that band. The band does not have to be selected in the Show Band field for its encoder to be active. All encoders are active, so you can make changes to 16 of the 31 bands at one time.

5.3.3 Saving and Loading Graphic EQ Presets



Like all other parameters on the StudioLive, graphic EQ settings can be stored and recalled. If you have created a graphic EQ setting that you would like to save to the GEQ Preset library, press the **Save button** in the Fat Channel while that graphic EQ is active.

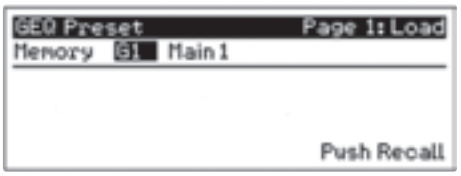


You will notice that the LCD will display the **GEQ Save menu**.

To begin, use the Value encoder to scroll to an empty position in the GEQ Preset library. Press the Next button again to navigate to the first letter of the preset name. Turn the Value encoder clockwise or counter-clockwise to change the letter. The StudioLive allows you to customize the name with uppercase and lowercase letters, as well as a selection of numerals and punctuation marks. You can insert a space by simply pressing the Tap button. Once you are satisfied with your changes, press the Store button. It will illuminate while the GEQ preset is being written to the StudioLive's internal memory. Once the GEQ preset is saved, the Store button will return to its unlit state.



To load a preset to any channel on the StudioLive, first press the GEQ button and page down to the desired GEQ. From the Fat Channel, press the **Load button**.



You will notice that the LCD now displays the **GEQ Load menu**. Use the Value encoder to locate the preset you would like to use.



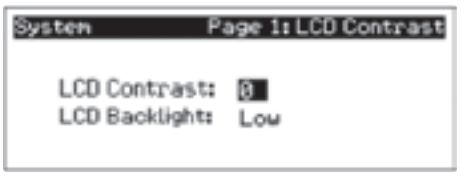
Once you have made your selection, press the Recall button. If at any time you would like to cancel this operation, simply press the Load button again.

5.4 System Menu

In most digital-console manuals, the phrase "System menu" inspires a sense of dread. However, with the StudioLive, you have nothing to fear. The System menu on the StudioLive serves just a few simple functions, most of which have very little to do with mixing a show.

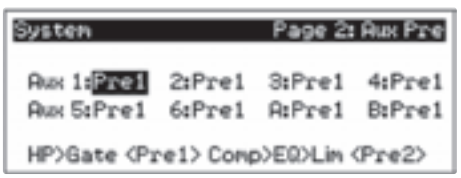
Like the Scene and FX Menus, your StudioLive remembers on which page of the System menu you were when you navigated away. To quickly jump to page 1, simply press the System button.

LCD Contrast and LCD Backlight.



Press the System button to access the **System menu**. The first page allows you to adjust the LCD Contrast and LCD Backlight for optimal viewing in your working environment. These settings are retained when the unit is powered down.

Aux Pre Position.



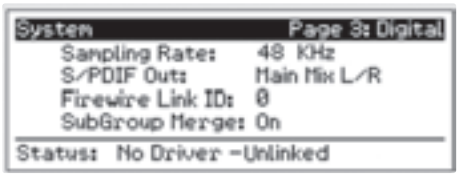
Press the Page Down button to access the **Aux Pre Position page**. By default, all aux buses are set to Pre 1. This places the send of every input channel to each aux bus before the fader, limiter, EQ, and compressor and after the phase-reverse switch, high-pass filter, and noise gate.

The two internal effects buses are set to Pre 2 by default, which routes each of the input channels after all Fat Channel dynamics and EQ but pre-fader. From this menu, you can choose between these two Pre positions for each Aux and FX mix.

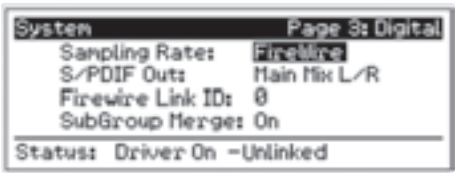
Power User Tip: *Use the Pre 2 position for headphone and in-ear mixes to give your performers a polished "studio" sound. This setting should be avoided for floor wedges, as compression can cause feedback problems!*

If you have two aux buses stereo-linked, you only need to set the Pre position on the Link Master. Remember, the Link Master is the aux that was selected when the link was created. To determine which Aux is the Link Master, simply select either of the aux buses in the pair. The Link Master's ID will be shown in the Select Channel LED readout. Please review Section 4.1.4.

Digital Information.



Press the Page Down button to access the **Digital Information page**. From here, you can change the sample rate, view your FireWire connectivity, route a stereo mix to the S/PDIF output, assign which StudioLive in a cascaded chain is the Master, and merge or unmerge the subgroups in a StudioLive chain.

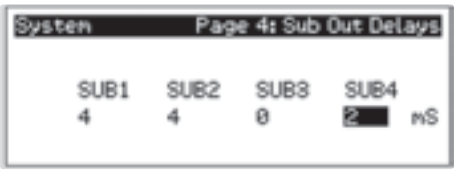


When the StudioLive is connected and synced to a computer via FireWire, Status will read "Driver On" and Sample Rate will read "FireWire." Neither parameter can be adjusted from the StudioLive while it is synced to a computer, in which case you need to use VSL to make your S/PDIF assignments and change your sample rate. **(See Section 3.7.1 in the StudioLive Software Library Manual for details.)** When two StudioLives are cascaded together, Status will read "Linked," and you will be able to see which StudioLive is the Master unit. For more information on using multiple StudioLives, please review Section 5.5.

StudioLive 24.4.2 Users Note: *Changing the FireWire Link ID value to any number other than "0" will disable your StudioLive's ability to connect to a computer. Please carefully review all the information in Section 5.5.1 before making any changes to this field!*

Power User Tip: *To ensure the safety of the audio equipment connected to it, the StudioLive will mute all post-converter outputs for two seconds when the sample rate is changed and while it is connecting to a computer. This includes the main and the control-room outputs, as well as the aux and subgroup outputs. While this offers a good measure of protection to your sound system, it could put the brakes on a live show. Because of this, it very important that the sample rate be selected and locked or your StudioLive be connected and synced to your computer (optional) prior to beginning any recording or performance.*

Sub Out Delay



On **page 4 of the System menu**, you will find the Sub Out Delays. The StudioLive provides the ability to delay the audio from each subgroup output by 2 to 500 ms, in increments of 2 ms. When you correctly set the delay time for these outputs, you ensure that the sound from each speaker in the P.A. system arrives at the listening position at the same time.

The delay should be set for the speakers to which your listener will be closest.

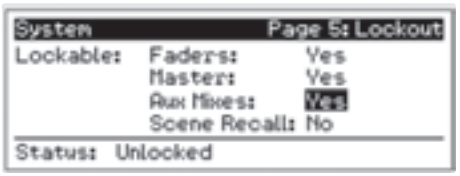
Let's say you are using a StudioLive in a large theater with a balcony, and you have three pairs of speakers: a pair in front of the stage, a pair in the rear of the auditorium, and a pair at the front of the balcony. You will need to delay the rear speakers so that the listeners closest to them will hear the audio from both the rear and stage speakers at the same time. This is also true for the audience in the balcony. While the balcony speakers will provide the loudest source of audio, the balcony audience will still be able to hear the stage speakers, so a delay must be set for the balcony speakers. You will need to calculate

approximately 0.88 ms of delay time per foot. So if the balcony speakers in the above example are 61 feet from the stage speakers, set their delay time to 54 ms.

Speaker delay can also be used to correct off-axis phasing issues in small clubs. Because of space restrictions, you can't always place your main speakers for the best possible sound reproduction. Sometimes your left-side speaker will need to be closer to the audience to make room for a pillar or a staircase or the bathroom, so an audience member standing in the center of the room will not have the best listening experience. By using a pair of subgroups as the source for your mains, you can factor in that 2 to 4 ms delay the left speaker needs so that unbalanced speaker placement is no longer an issue.

Power User Tip: *Virtual StudioLive features the Smaart System Delay Wizard, which is designed to calculate and set this delay automatically by analyzing your main and delay systems with a measurement microphone. For more information on this powerful feature,* ***please review Section 3.8.2 in the StudioLive Software Library Manual.***

Lockout Mode



The StudioLive features a Lockout mode that allows you to create a password and lock the controls. This is especially useful in situations where several people will be running sound but only one or two are knowledgeable enough to set up dynamics processing and the like.

Right out of the box, the StudioLive cannot be locked, so don't worry about hitting the wrong button. To enable the Lockout feature, you must first connect and sync your StudioLive to a computer. **Please review Section 3.7.10 in the StudioLive Software Library Manual** for more information on this feature.

Firmware Version



The last page of the System menu displays firmware version currently loaded on your StudioLive. You normally will only view this screen when performing a system update, in order to confirm that the new firmware was successfully loaded.

5.5 Cascading Mixers

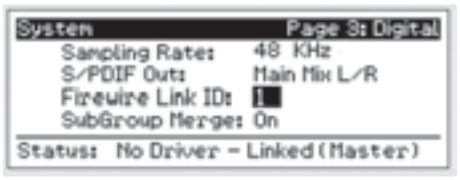
A StudioLive mixer can be expanded to make a larger console. Two StudioLive 24.4.2s or three StudioLive 16.4.2s can be cascaded together, using a FireWire cable, to create a single 48-channel console. Because of the limitations of FireWire, you cannot connect a computer to either of these configurations; however, you can cascade a FireStudio Mobile or FireStudio Project with a single StudioLive mixer to add more recording inputs.

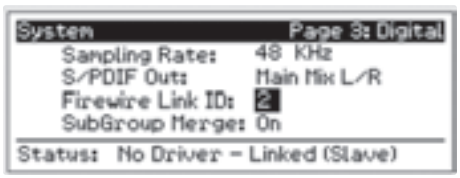
You can also cascade two StudioLive 16.4.2s to create a 32-channel console with full recording capability, playback, and VSL control.

This section will guide you through the syncing process and explain how two or more StudioLives function as one mixer.

Note: *A StudioLive 24.4.2 cannot be cascaded to a StudioLive 16.4.2.*

5.5.1 Configuring Multiple Units





1. To cascade two StudioLives to create a standalone system (without a computer), **connect a FireWire cable** from the first unit to the second unit.
2. Press the System button on the first unit and page down to **Page 3: Digital**.
3. Use the Next button to move to the **FireWire Link ID field**.
4. Use the value encoder to **set the ID to 1**.
5. Press the System button on the cascaded unit and page down to **Page 3: Digital**. Use the Next button to move to FireWire Link ID field and give each unit a unique ID. Any value larger than that of the Master can be used for the cascaded unit.

Power User Tip: *Either unit in the chain can be designated as the Master. Since both units will function as one large console, sending all channels to the Master unit's Main output, aux sends, and subgroups (optional), we suggest that the unit furthest to the right be designated as the Master. The unit with the lowest FireWire Link ID greater than zero is automatically set as the Master.*

StudioLive 24.4.2 Only – IMPORTANT NOTE: *Once a StudioLive 24.4.2's Link ID has been changed from 0 to any other number, it will not connect to a computer. This disables its ability to communicate with the driver, even if it is no longer linked to another mixer. Because of this, it is highly recommended that you do not change the Link ID on your mixer unless you plan on using it exclusively without a computer.*

StudioLive 16.4.2 Only – IMPORTANT NOTE: *If you will be recording with two StudioLive 16.4.2 mixers, take a moment to look at the serial numbers on the bottom of each mixer. The mixer with the lowest serial number will be designated as Inputs and Outputs 1-16 in your recording application. Because of this, it is recommended that the mixer with the lowest serial number be set as the Slave and the unit with the highest serial number be set as the Master.*

5.5.2 Aux Mixing with Cascaded Mixers

Every channel in the mixer chain can be sent to the aux outputs on the Master unit. When you press the Mix button on any of the auxes on either mixer, you will notice that the Mix button for the corresponding aux will illuminate on the other mixer in the chain. For example, if you press the Mix button on Aux 1 on the Master unit, the Mix button on Aux 1 on the slaved units will also illuminate.

Creating an aux mix with multiple mixers works exactly the same way as with one mixer. Each encoder beneath the meters in the Fat Channel controls the send level to the enabled aux for the corresponding channel on that mixer.

To add Fat Channel processing to the aux mix, you must select the aux bus on the Master unit.

Example 1: Two StudioLive 24.4.2s

If you are cascading two StudioLive 24.4.2s, Channels 1 through 24 reside on the Slave, and Channels 25 through 48 will reside on the Master unit.

Let's say that you want to create an aux mix on Aux 3. To begin, press the Aux 3 Mix button on either mixer. The Fat Channel meters and encoders on both mixers will be ready for you to create an Aux 3 mix. You will use the Fat Channel meters and encoders on the Slave to set the Aux 3 send levels for Channels 1-24 and the meters and encoders on the Master unit to set the Aux 3 send levels for Channels 25-48. The resulting mix is then routed from the Aux 3 output on the Master unit. If you would like to add Fat Channel dynamics to the overall Aux 3 mix, simply press the Aux 3 Select button on the Master unit and use the Master unit Fat Channel to dial in your dynamics and EQ settings.

Example 2: Three StudioLive 16.4.2s

If you have three StudioLive 16.4.2 mixers chained together, Channels 1-16 will reside on Slave 2, Channels 17-32 will reside on Slave 1, and Channels 33-48 will reside on the Master unit. Let's say that you want to create an aux mix on Aux 3. To begin, press the Aux 3 Mix button. The Fat Channel meters and encoders on all three mixers will be ready for you to create an Aux 3 mix. You will use the Fat Channel meters and encoders on Slave 2 to set the Aux 3 send levels for Channels 1-16; the meters and encoders on Slave 1 to set the Aux 3 send levels for Channels 17-32; and the meters and encoders on the Master unit to set the Aux 3 send levels for Channels 33-48. The resulting mix is then routed from the Aux 3 output on the Master unit. If you would like to add Fat Channel dynamics to the overall Aux 3 mix, simply press the Aux 3 Select button on the Master unit and use the Master unit Fat Channel to dial in your dynamics and EQ settings.

Power User Tip: *Note that the aux outputs on the slaved mixer are still active but only have access to the local channels. So using Example 1, the Aux 3 mix for Channels 1-24 on the Slave is routed locally to the Aux 3 output and merged with the overall Aux 3 mix on the Master unit at the same time. Only the Master mixer receives the merged signals from all cascaded mixers, in addition to its local channels.*

Because Aux mixes are sent to the Master unit before the Fat Channel (for obvious reasons), if you wish to create a stereo Aux mix, you must link the Aux channels on both of the mixers in the chain in order to control panning for the channels on the slaved mixer.

5.5.3 Internal Effects Buses

Unlike the aux buses, the two internal effects buses on each mixer are independent. Using Example 1 from the previous section, Channels 1-24 can only be routed to EFXA and EFXB on the Slave, and Channels 25-48 are processed using the Master unit's two internal effects buses. The advantage is that you get twice the number effects buses!

Of course, if you'd like to send all channels to the same effect, you can simply load the same effect on both mixers. But with some careful patching, you can take advantage of the extra effects buses at you disposal. The internal effects buses on each mixer can be assigned to the Master unit's main output, or to a subgroup, as usual. Simply select the effects bus and press the desired assignment button in the Fat Channel.

5.5.4 Subgroups: To Merge or Not to Merge



On Page 3: Digital, in the System menu, you will find the **Subgroup Merge field**. The subgroups on each mixer in the chain can be merged or can be local only.

Subgroup merging is determined from the Master unit (i.e., if Subgroup Merge is enabled on the Master, the Slave's subgroups will be merged with the Master's subgroups). The subgroup faders on the Master mixer will control the entire group, and dynamics processing can be added to the entire mix using the Master's Fat Channel.

If Subgroup Merge is turned off, each of the four subgroups on both mixers are locally controlled. So Channels 1-24/1-16 can only be assigned to the subgroups on the Slave and Channels 25-48/17-32 can only be assigned to the subgroups on the Master unit. Because the subgroups on each of the mixers can still be routed to the Main output on the master unit, unmerging the subgroups offers advantages for effects-group mixing. But this can also be useful in any situation where you want 24/16 or fewer channels assigned to the same subgroup; just do a little careful patching!

5.5.5 Scene Store and Recall

Channel strip presets, effects presets, and mix Scenes are stored and recalled locally on each mixer. However, if you are creating a mix Scene, the name that you create on either of the mixers will be transmitted to the entire chain. For example, if you store a scene named "3 Mixer Show" on the Master unit, the name is broadcasted to the Slave units, so when you press the Scene and Store buttons on either Slave, the name you just created on the Master unit is already entered; all you have to do is scroll to an empty location and press the Store button again. For more information on Scene Store and Recall, please review Sections 5.2.2 and 5.2.3.)

5.5.6 Copy and Load

Channel-strip settings from any channel or bus on either mixer in the chain can be copied to any other channel or bus on the other mixer in the chain. For example, if you select Channel 4 on the Slave and press the Copy button, every Select button on both mixers in the chain will begin to flash. To paste the Channel 4 settings to any other channel, simply press that channel's Select button; it will stop flashing and will illuminate. Press the Load button to paste the Fat Channel setting. Please review Sections 4.1.6 through 4.1.8.

5.5.7 Local Versus Merged Buses and Inputs

As discussed earlier, the two internal effects buses on each mixer are controlled from the mixer to which they belong, and they can only accept signals from the channels on their respective mixers.

The following inputs and bus are local only:

Talkback Microphone: The talkback microphone on the Master unit's Master section is the only talkback mic that can be routed to the aux mixes on the Master unit and to its main outputs. While the Talkback section on the Slave is active through its outputs, it cannot be patched into the Master unit. Because of this, you should connect your talkback mic to the Master unit and control it from there.

Tape Input: As described in Section 4.7.3, the Tape input on the StudioLive is patched directly to the Main output using a button in the Master section. The Tape inputs are active on both mixers in the chain, but the Tape In button only routes the associated Tape input to the Main bus on that unit. For example, the Tape In button on the Slave patches it to the Main bus on the Slave only. Because of this, we recommend that you only use the Tape input on the Master unit.

Monitor Bus: You must use the Monitor section on the Master unit to monitor all channels in the chain (by listening to the Solo bus or the Main bus), the Tape input for the Master Main bus, and the Main FireWire return. The Monitor bus on the slaved unit can only receive signals from the mixer it is on.

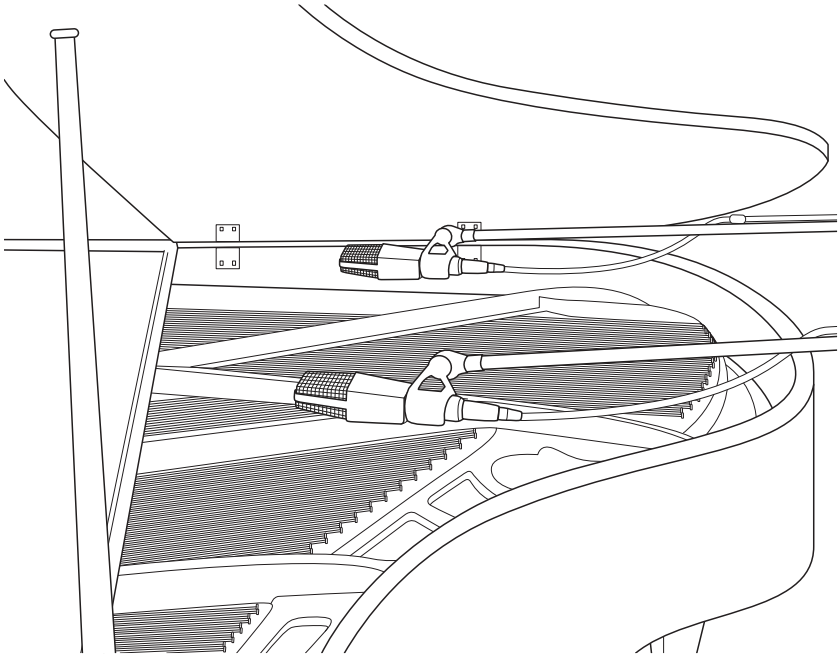
The Solo bus is a merged bus; any channel on any mixer can be soloed and monitored from the Master unit. When either PFL or SIP is engaged on either mixer, both mixers are placed into the same mode at the same time.

6 Resources

6.1 Stereo Microphone Placement

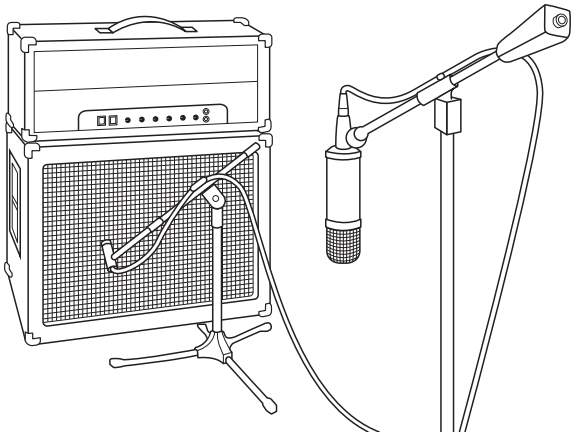
The following are a few recording applications to help you get started with your StudioLive. These are by no means the only ways to record these instruments. Microphone selection and placement is an art. For more information, visit your library or local bookstore, as there are many books and magazines about recording techniques. The Internet is also a great source of recording information, as are instructional videos. Some of these microphone-placement suggestions can be used in live applications, as well as for studio recording.

Grand Piano



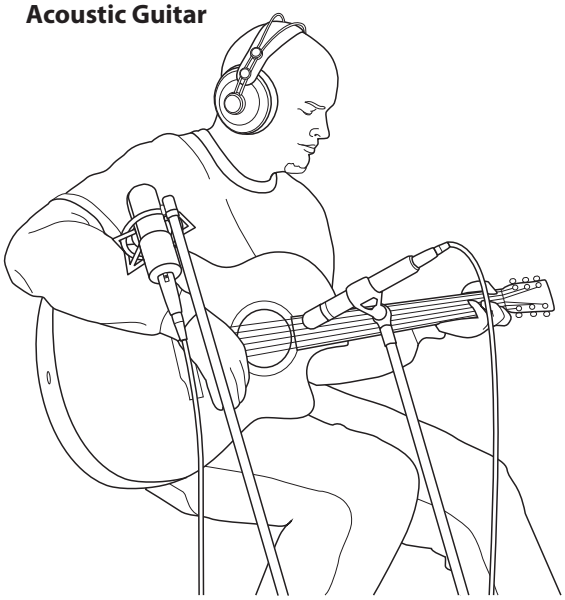
Place one microphone above the high strings and one microphone above the low strings. Experiment with distance (the farther back the more room you will capture). This technique can be used for live and studio applications.

Electric Guitar



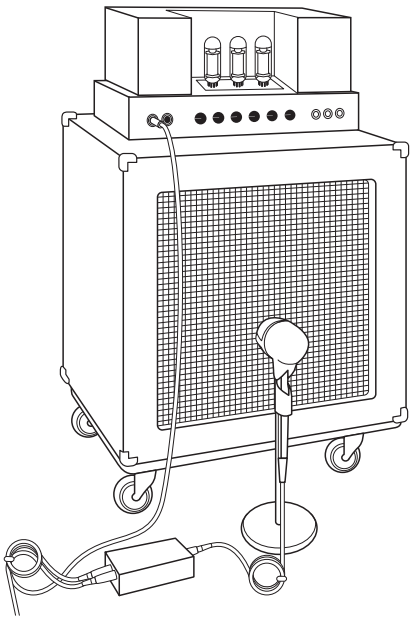
Place a dynamic microphone an inch or two away from the speaker of the guitar amplifier. Experiment with exact location. If you are recording an amp with multiple speakers, experiment with each one to see if one sounds better than the others. Place a condenser microphone approximately six feet away, pointed at the amp. Experiment with distance. Also experiment with inverting the phase of the room microphone to check for phase cancellation and reinforcement. (Select the "fuller"-sounding position.) To use this technique in a live application, omit the condenser microphone.

Acoustic Guitar



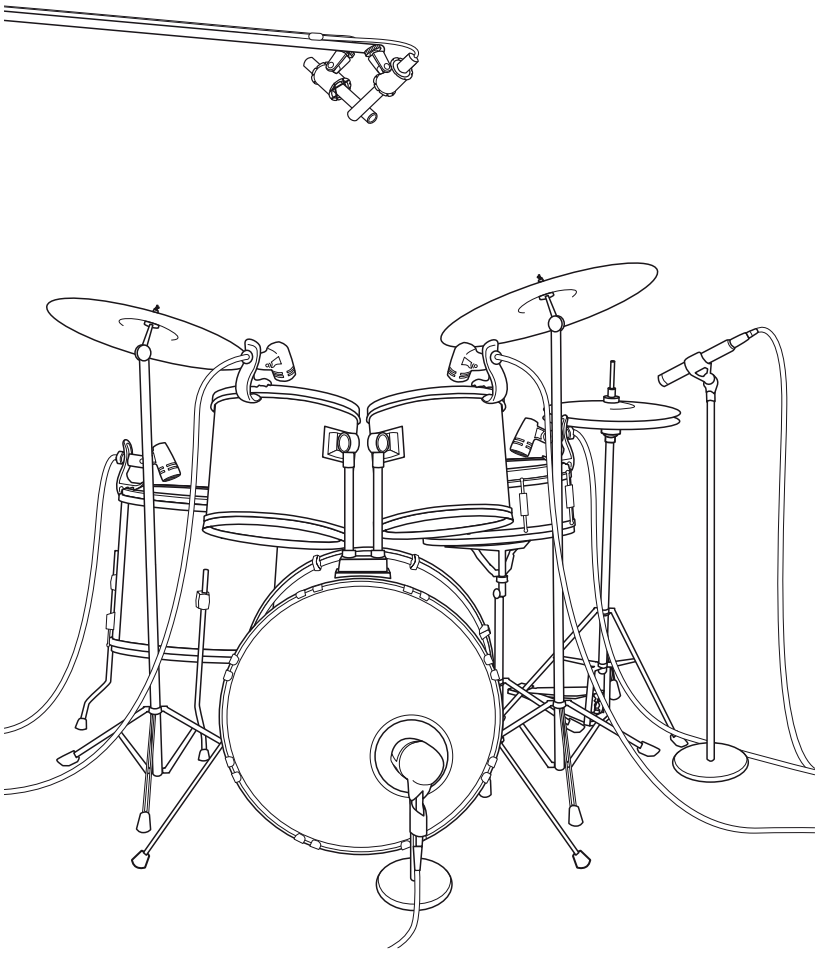
Point a small-diaphragm condenser microphone at the 12th fret, approximately 8 inches away. Point a large-diaphragm condenser microphone at the bridge of the guitar, approximately 12 inches from the guitar. Experiment with distances and microphone placement. Another popular method is using an XY microphone placement with two small-diaphragm condenser microphones. (See drum-overheads photo on the next page.)

Bass Guitar (Direct and Speaker)



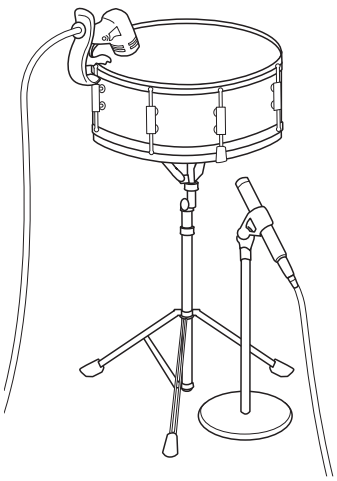
Plug the electric bass guitar into a passive direct box. Connect the instrument output from the passive direct box to a bass amplifier. Place a dynamic microphone an inch or two away from the speaker and connect it to a StudioLive microphone input. Connect the line output from the passive direct box to a line input on a different channel of the StudioLive. For recording, place these signals on separate tracks. During mixing, you can blend the direct and amplifier signal to taste. This technique can also be used in live applications.

Drum Overheads (XY example)



Place two small-diaphragm condenser microphones on an XY stereo-microphone holder (bar). Position the microphones so that each one is at a 45-degree angle, pointed down at the drum kit, approximately 7 or 8 feet above the floor or drum riser. Experiment with height. This technique can be used in live applications as well.

Snare Drum (top and bottom)



Point a dynamic microphone at the center of the snare, making sure it is placed so that the drummer will not hit it. Place a small-diaphragm condenser microphone under the drum, pointed at the snares. Experiment with the placement of both microphones. Also experiment with inverting the phase of the bottom microphone. This technique can be used in live applications.

6.2 Compression Setting Suggestions

The following are the compression presets that were used in the PreSonus BlueMax. We have included them as a jumping-off point for setting up compression on the StudioLive.

Vocals

Soft. This is an easy compression with a low ratio setting for ballads, allowing a wider dynamic range. It's good for live use. This setting helps the vocal "sit in the track."

THRESHOLD	RATIO	ATTACK	RELEASE
-8.2 dB	1.8:1	0.002 ms	38 ms

Medium. This setting has more limiting than the Soft compression setting, producing a narrower dynamic range. It moves the vocal more up front in the mix.

THRESHOLD	RATIO	ATTACK	RELEASE
-3.3 dB	2.8:1	0.002 ms	38 ms

Screamer. This setting is for loud vocals. It is a fairly hard compression setting for a vocalist who is on and off the microphone a lot. It puts the voice "in your face."

THRESHOLD	RATIO	ATTACK	RELEASE
-1.1 dB	3.8:1	0.002 ms	38 ms

Percussion

Snare/Kick. This setting allows the first transient through and compresses the rest of the signal, giving a hard "snap" up front and a longer release.

THRESHOLD	RATIO	ATTACK	RELEASE
-2.1 dB	3.5:1	78 ms	300 ms

Left/Right (Stereo) Overheads. The low ratio and threshold in this setting gives a "fat" contour to even out the sound from overhead drum mics. Low end is increased, and the overall sound is more present and less ambient. You get more "boom" and less "room."

THRESHOLD	RATIO	ATTACK	RELEASE
-13.7 dB	1.3:1	27 ms	128 ms

Fretted Instruments

Electric Bass. The fast attack and slow release in this setting will tighten up the electric bass and give you control for a more consistent level.

THRESHOLD	RATIO	ATTACK	RELEASE
-4.4 dB	2.6:1	45.7 ms	189 ms

Acoustic Guitar. This setting accentuates the attack of the acoustic guitar and helps maintain an even signal level, keeping the acoustic guitar from disappearing in the track.

THRESHOLD	RATIO	ATTACK	RELEASE
-6.3 dB	3.4:1	188 ms	400 ms

Electric Guitar. This is a setting for "crunch" electric rhythm guitar. A slow attack helps to get the electric rhythm guitar "up close and personal" and gives punch to your crunch.

THRESHOLD	RATIO	ATTACK	RELEASE
-0.1 dB	2.4:1	26 ms	193 ms

Keyboards

Piano. This is a special setting for an even level across the keyboard. It is designed to help even up the top and bottom of an acoustic piano. In other words, it helps the left hand to be heard along with the right hand.

THRESHOLD	RATIO	ATTACK	RELEASE
-10.8 dB	1.9:1	108 ms	112 ms

Synth. The fast attack and release on this setting can be used for synthesizer horn stabs or for bass lines played on a synthesizer.

THRESHOLD	RATIO	ATTACK	RELEASE
-11.9 dB	1.8:1	0.002 ms	85 ms

Orchestral. Use this setting for string pads and other types of synthesized orchestra parts. It will decrease the overall dynamic range for easier placement in the mix.

THRESHOLD	RATIO	ATTACK	RELEASE
3.3 dB	2.5:1	1.8 ms	50 ms

Stereo Mix

Stereo Limiter. Just as the name implies, this is a hard limiter, or "brickwall," setting—ideal for controlling the level to a two-track mixdown deck or stereo output.

THRESHOLD	RATIO	ATTACK	RELEASE
5.5 dB	7.1:1	0.001 ms	98 ms

Contour. This setting fattens up the main mix.

THRESHOLD	RATIO	ATTACK	RELEASE
-13.4 dB	1.2:1	0.002 ms	182 ms

Effects

Squeeze. This is dynamic compression for solo work, especially electric guitar. It gives you that glassy "Tele/Strat" sound. It is a true classic.

THRESHOLD	RATIO	ATTACK	RELEASE
-4.6 dB	2.4:1	7.2 ms	93 ms

Pump. This is a setting for making the compressor "pump" in a desirable way. This effect is good for snare drums to increase the length of the transient by bringing the signal up after the initial spike.

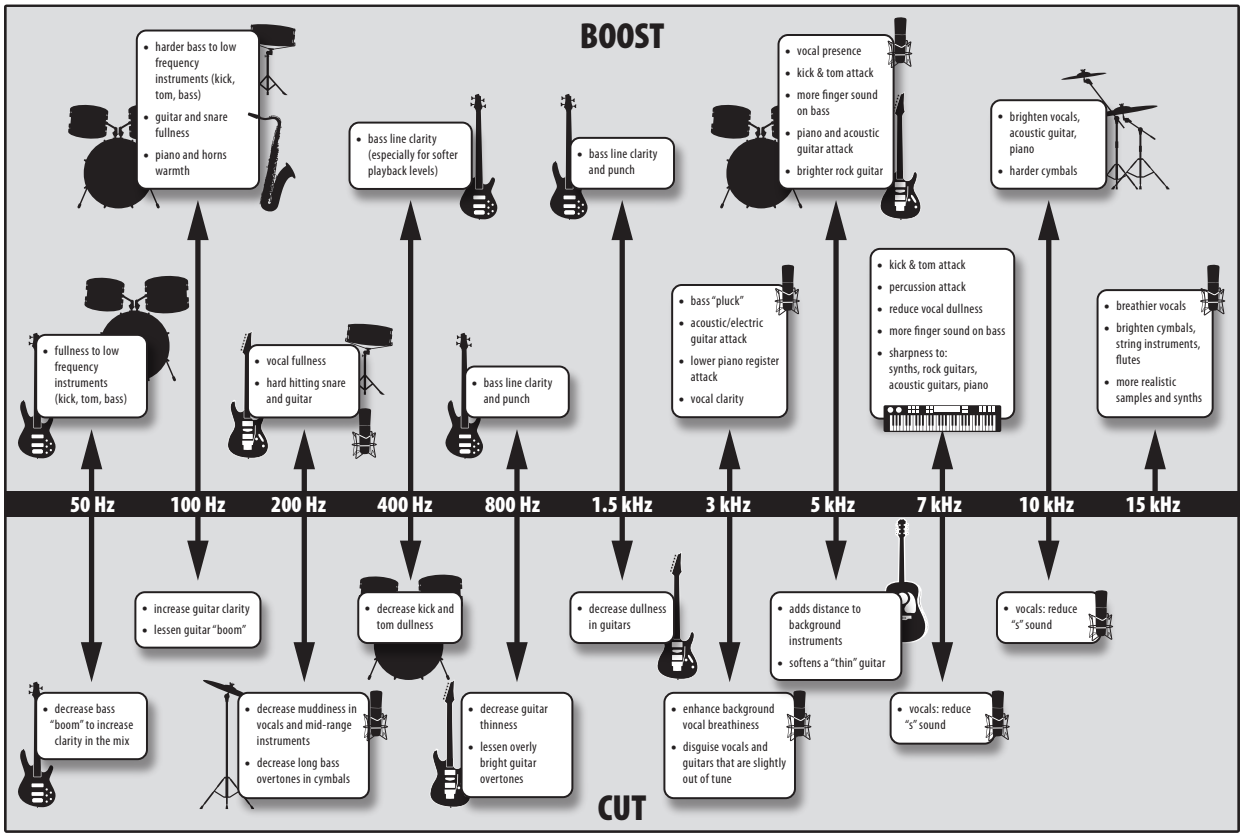
THRESHOLD	RATIO	ATTACK	RELEASE
0 dB	1.9:1	1 ms	0.001 ms

6.3 EQ Frequency Guides

Table 1

Instrument	What to Cut	Why to Cut	What to Boost	Why to Boost
Human Voice	7 kHz	Sibilance	8 kHz	Big sound
	2 kHz	Shrill	3 kHz and above	Clarity
	1 kHz	Nasal	200-400 Hz	Body
	80 Hz and below	Popping P's		
Piano	1-2 kHz	Tinny	5 kHz	More presence
	300 Hz	Boomy	100 Hz	Bottom end
Electric Guitar	1-2 kHz	Shrill	3 kHz	Clarity
	80 Hz and below	Muddy	125 Hz	Bottom end
Acoustic Guitar	2-3 kHz	Tinny	5 kHz and above	Sparkle
	200 Hz	Boomy	125 Hz	Full
Electric Bass	1 kHz	Thin	600 Hz	Growl
	125 Hz	Boomy	80 Hz and below	Bottom end
String Bass	600 Hz	Hollow	2-5 kHz	Sharp attack
	200 Hz	Boomy	125 Hz and below	Bottom end
Snare Drum	1 kHz	Annoying	2 kHz	Crisp
			150-200 Hz	Full
			80 Hz	Deep
Kick Drum	400 Hz	Muddy	2-5 kHz	Sharp attack
	80 Hz and below	Boomy	60-125 Hz	Bottom end
Toms	300 Hz	Boomy	2-5 kHz	Sharp attack
			80-200 Hz	Bottom end
Cymbals	1 kHz	Annoying	7-8 kHz	Sizzle
			8-12 kHz	Brilliance
			15 kHz	Air
Horns	1 kHz	Honky	8-12 kHz	Big sound
	120 Hz and below	Muddy	2 kHz	Clarity
String section	3 kHz	Shrill	2 kHz	Clarity
	120 Hz and below	Muddy	400-600 Hz	Lush and full

Table 2


BOOST
• harder bass to low frequency instruments (kick, tom, bass)
• guitar and snare fullness
• piano and horns warmth
• bass line clarity (especially for softer playback levels)
• bass line clarity and punch
• vocal presence
• kick & tom attack
• more finger sound on bass
• piano and acoustic guitar attack
• brighter rock guitar
• brighten vocals, acoustic guitar, piano
• harder cymbals
• fullness to low frequency instruments (kick, tom, bass)
• vocal fullness
• hard hitting snare and guitar
• bass line clarity and punch
• bass "pluck"
• acoustic/electric guitar attack
• lower piano register attack
• vocal clarity
• kick & tom attack
• percussion attack
• reduce vocal dullness
• more finger sound on bass
• sharpness to: synths, rock guitars, acoustic guitars, piano
• breathier vocals
• brighten cymbals, string instruments, flutes
• more realistic samples and synths
50 Hz
100 Hz
200 Hz
400 Hz
800 Hz
1.5 kHz
3 kHz
5 kHz
7 kHz
10 kHz
15 kHz
• increase guitar clarity
• lessen guitar "boom"
• decrease kick and tom dullness
• decrease dullness in guitars
• adds distance to background instruments
• softens a "thin" guitar
• vocals: reduce "s" sound
• decrease bass "boom" to increase clarity in the mix
• decrease muddiness in vocals and mid-range instruments
• decrease long bass overtones in cymbals
• decrease guitar thinness
• lessen overly bright guitar overtones
• enhance background vocal breathiness
• disguise vocals and guitars that are slightly out of tune
• vocals: reduce "s" sound
CUT

6.4 EQ Setting Suggestions

Included with your StudioLive is a library of Channel Strip presets. Section 4.1.7 discusses how to load these presets onto a channel or bus and how to create your own presets. For an idea of where to start, check out the following generic EQ settings for several different instruments. As with the compression settings in Section 6.2, the right EQ setting for any given instrument will depend upon the room and the tonality of the instrument.

Vocals

Pop Female Vocals

LOW ON/OFF	LOW SHELF	LOW FREQ (Hz)	LOW Q	LOW GAIN	LOW MID ON/OFF	LOW MID FREQ (Hz)	LOW MID Q	LOW MID GAIN
ON	OFF	130	0.6	-2	ON	465	0.6	-2
HIGH MID ON/OFF	**HI MID FREQ (kHz)**	**HIGH MID Q**	**HIGH MID GAIN**	**HIGH ON/OFF**	**HIGH SHELF**	**HIGH FREQ (kHz)**	**HIGH Q**	**HIGH GAIN**
ON	2.4	0.4	+2	ON	OFF	6.0	0.3	+8

Rock Female Vocals

LOW ON/OFF	LOW SHELF	LOW FREQ (Hz)	LOW Q	LOW GAIN	LOW MID ON/OFF	LOW MID FREQ (Hz)	LOW MID Q	LOW MID GAIN
ON	ON	155	N/A	+4	ON	465	0.4	+6
HIGH MID ON/OFF	**HI MID FREQ (kHz)**	**HIGH MID Q**	**HIGH MID GAIN**	**HIGH ON/OFF**	**HIGH SHELF**	**HIGH FREQ (kHz)**	**HIGH Q**	**HIGH GAIN**
ON	1.4	0.6	+6	ON	OFF	4.2	0.5	+2

Pop Male Vocals

LOW ON/OFF	LOW SHELF	LOW FREQ (Hz)	LOW Q	LOW GAIN	LOW MID ON/OFF	LOW MID FREQ (Hz)	LOW MID Q	LOW MID GAIN
ON	OFF	225	0.3	-2	ON	960	0.3	0
HIGH MID ON/OFF	**HI MID FREQ (kHz)**	**HIGH MID Q**	**HIGH MID GAIN**	**HIGH ON/OFF**	**HIGH SHELF**	**HIGH FREQ (kHz)**	**HIGH Q**	**HIGH GAIN**
ON	2.0	0.6	+2	ON	OFF	7.2	0.5	+4

Rock Male Vocals

LOW ON/OFF	LOW SHELF	LOW FREQ (Hz)	LOW Q	LOW GAIN	LOW MID ON/OFF	LOW MID FREQ (Hz)	LOW MID Q	LOW MID GAIN
ON	OFF	155	0.5	+2	ON	265	0.3	-6
HIGH MID ON/OFF	**HI MID FREQ (kHz)**	**HIGH MID Q**	**HIGH MID GAIN**	**HIGH ON/OFF**	**HIGH SHELF**	**HIGH FREQ (kHz)**	**HIGH Q**	**HIGH GAIN**
ON	2.4	0.6	-2	ON	ON	7.2	0.6	+4

Percussion

Snare

LOW ON/OFF	LOW SHELF	LOW FREQ (Hz)	LOW Q	LOW GAIN	LOW MID ON/OFF	LOW MID FREQ (Hz)	LOW MID Q	LOW MID GAIN
ON	OFF	130	0.6	-4	ON	665	0.5	+4
HIGH MID ON/OFF	**HI MID FREQ (kHz)**	**HIGH MID Q**	**HIGH MID GAIN**	**HIGH ON/OFF**	**HIGH SHELF**	**HIGH FREQ (kHz)**	**HIGH Q**	**HIGH GAIN**
ON	1.6	0.3	+4	ON	ON	4.2	N/A	+4

Left/Right (Stereo) Overheads

LOW ON/OFF	LOW SHELF	LOW FREQ (Hz)	LOW Q	LOW GAIN	LOW MID ON/OFF	LOW MID FREQ (Hz)	LOW MID Q	LOW MID GAIN
ON	OFF	108	0.6	-2	ON	385	0.6	-2
HIGH MID ON/ OFF	HI MID FREQ (kHz)	HIGH MID Q	HIGH MID GAIN	HIGH ON/OFF	HIGH SHELF	HIGH FREQ (kHz)	HIGH Q	HIGH GAIN
ON	2.9	0.3	0	ON	ON	8.0	N/A	+4

Kick Drum

LOW ON/OFF	LOW SHELF	LOW FREQ (Hz)	LOW Q	LOW GAIN	LOW MID ON/OFF	LOW MID FREQ (Hz)	LOW MID Q	LOW MID GAIN
ON	OFF	108	0.4	+4	ON	265	2.0	-4
HIGH MID ON/ OFF	HI MID FREQ (kHz)	HIGH MID Q	HIGH MID GAIN	HIGH ON/OFF	HIGH SHELF	HIGH FREQ (kHz)	HIGH Q	HIGH GAIN
ON	1.6	0.6	0	ON	OFF	6.0	2.0	+4

Fretted Instruments

Electric Bass

LOW ON/OFF	LOW SHELF	LOW FREQ (Hz)	LOW Q	LOW GAIN	LOW MID ON/OFF	LOW MID FREQ (Hz)	LOW MID Q	LOW MID GAIN
ON	ON	36	N/A	-8	ON	130	0.4	+4
HIGH MID ON/ OFF	HI MID FREQ (kHz)	HIGH MID Q	HIGH MID GAIN	HIGH ON/OFF	HIGH SHELF	HIGH FREQ (kHz)	HIGH Q	HIGH GAIN
ON	2.0	0.6	+4	ON	ON	4.2	N/A	+1

Acoustic Guitar

LOW ON/OFF	LOW SHELF	LOW FREQ (Hz)	LOW Q	LOW GAIN	LOW MID ON/OFF	LOW MID FREQ (Hz)	LOW MID Q	LOW MID GAIN
ON	OFF	155	0.4	+4	ON	665	2.0	+2
HIGH MID ON/ OFF	HI MID FREQ (kHz)	HIGH MID Q	HIGH MID GAIN	HIGH ON/OFF	HIGH SHELF	HIGH FREQ (kHz)	HIGH Q	HIGH GAIN
ON	2.0	0.3	0	ON	ON	6.0	N/A	+4

Distorted Electric Guitar

LOW ON/OFF	LOW SHELF	LOW FREQ (Hz)	LOW Q	LOW GAIN	LOW MID ON/OFF	LOW MID FREQ (Hz)	LOW MID Q	LOW MID GAIN
ON	OFF	320	0.5	+6	ON	960	0.4	0
HIGH MID ON/ OFF	HI MID FREQ (kHz)	HIGH MID Q	HIGH MID GAIN	HIGH ON/OFF	HIGH SHELF	HIGH FREQ (kHz)	HIGH Q	HIGH GAIN
ON	3.5	1.0	+4	ON	ON	12	N/A	0

Keyboards

Piano

LOW ON/OFF	LOW SHELF	LOW FREQ (Hz)	LOW Q	LOW GAIN	LOW MID ON/OFF	LOW MID FREQ (Hz)	LOW MID Q	LOW MID GAIN
ON	ON	108	N/A	-2	ON	665	0.2	+2
HIGH MID ON/ OFF	HI MID FREQ (kHz)	HIGH MID Q	HIGH MID GAIN	HIGH ON/OFF	HIGH SHELF	HIGH FREQ (kHz)	HIGH Q	HIGH GAIN
ON	2.9	0.4	+2	ON	OFF	7.2	0.6	+4

6.5 Technical Specifications (StudioLive 24.4.2 / 16.4.2)

Microphone Preamp

Type	XLR Female, balanced
Frequency Response to Direct Output (at unity gain)	20 Hz-40 kHz, ± 0.5 dBu
Frequency Response to Main Output (at unity gain)	20 Hz-20 kHz, ± 0.5 dBu
Input Impedance	1 kΩ
THD to Direct Output (1 kHz at unity gain)	< 0.005%, +4 dBu, 20Hz–20 kHz, unity gain, unwtd
THD to Main Output (1 kHz at unity gain)	<0.005%, +4 dBu, 20 Hz-20 kHz, unity gain, unwtd
EIN to Direct Output	+125 dB unwtd, +130 dB A-wtd
S/N Ratio to Direct Output (Ref = +4 dB, 20 kHz BW, unity gain, A-wtd)	-97 dB
S/N Ratio to Main Output (Ref = +4 dB, 20 kHz BW, unity gain, A-wtd)	-94 dB
Common Mode Rejection Ratio (1 kHz at unity gain)	+65 dB
Gain Control Range (±1 dB)	-16 dB to +67 dB
Maximum Input Level (unity gain)	+16 dBu
Phantom Power (±2 VDC)	+48 VDC

Line Inputs

Type	¼"TRS Female, balanced mono
Frequency Response to Direct Outputs (at unity gain)	10 Hz-40 kHz, ± 0.5 dBu
Frequency Response to Main Outputs (at unity gain)	20 Hz-20 kHz, ± 0.5 dBu
Input Impedance	10 kΩ
THD to Direct Output (1 kHz at unity gain)	<0.0007%, +4 dBu, 20 Hz-20 kHz, unity gain, unwtd
THD to Main Output (1 kHz at unity gain)	<0.005%, +4 dBu, 20 Hz-20 kHz, unity gain, unwtd
S/N Ratio to Direct Output (Ref = +4 dBu, 20 kHz BW, unity gain, A-wtd)	-105 dB
S/N Ratio to Main Output (Ref = +4 dBu, 20 kHz BW, unity gain, A-wtd)	-94 dB
Gain Control Range (±1 dB)	-20 dB to +20 dB
Maximum Input level (unity gain)	+22 dBu

Tape Inputs

Type	RCA Female, unbalanced (stereo pair)
Maximum Input Level	+22 dBu

Auxiliary Inputs

Type	¼"TRS Female, balanced (2 stereo pairs)
Maximum Input Level	+22 dBu

Main Outputs

Type	XLR Male, balanced (stereo pair); ?"TRS Female, balanced (stereo pair); XLR Male, balanced (mono)
Rated Output Level	+24 dBu
Output Impedance	10 kΩ

Aux Outputs

Type	¼"TRS Female, balanced (mono)
Rated Output Level	+18 dBu
Output Impedance	51Ω

Subgroup Outputs

Type	¼"TRS Female, balanced (mono)
Rated Output Level	+18 dBu
Output Impedance	51Ω

Tape Outputs

Type	RCA Female, unbalanced (stereo pair)
Rated Output Level	+18 dBu
Output Impedance	100Ω

Control Room Outputs

Type	¼"TRS Female, balanced (stereo pair)
Rated Output Level	+18 dBu
Output Impedance	51Ω

System Crosstalk

Input to Output (Ref = +4 dBu, 20 Hz-20 kHz, unwtd)	-90 dBu
Adjacent Channels (Ref = +4 dBu, 20 Hz-20 kHz, unwtd)	-87 dBu

Noise Gate / Expander

Key Listen Filter (StudioLive 24.4.2 only)	2nd-order resonant bypass; Q=0.7; OFF, 40 Hz - 16 kHz
Threshold Range	-84 dB to 0 dB
Gate Attenuation Range	-84 dB to 0 dB / ∞
Attack Time	0.02s to 500 ms / 0.5 ms
Release Time	0.05s to 2s
Expander Attenuation Range	2:1

Limiter

Threshold	-56 to 0 dB / -28 dBFS
Ratio	∞:1
Attack	20 ns
Hold	10 ms
Release	20 ms

Compressor

Threshold Range	-56 dB to 0 dB
Ratio	1:1 to 14:1
Attack Time	0.2 ms to 150 ms
Release Time	40 ms to 1000 ms
Auto Attack and Release	Attack = 10 ms, Release = 150 ms
Curve Types	hard and soft knee

EQ

Type	2nd-order shelving filter
Q	0.1 to 4 / Low Q= 0.55, Hi Q=2.0
Low (Low-pass or Bandpass)	36 to 465 Hz, ± 15 dB
Low Mid	90 Hz to 1.2 kHz, ±15 dB
High Mid	380 Hz to 5 kHz, ±15 dB
High (High-pass or Bandpass)	1.4 kHz to 18 kHz, ±15 dB

Graphic EQ

31-Band 1/3rd Octave Controls	Curve-fitting algorithm
Gain/Attenuation	±15 dB

Digital Audio

ADC Dynamic Range (A-wtd, 48 kHz)	118 dB
DAC Dynamic Range (A-wtd, 48 kHz)	118 dB
FireWire	S400, 400 Mb/s
Internal Processing	32-bit, floating point
Sampling Rate	44.1, 48 kHz
A/D/A Bit Depth	24 bits
Reference Level for 0 dBFS	+18 dBu

Clock

Jitter	<20 ps RMS (20 Hz - 20 kHz)
Jitter Attenuation	>60 dB (1 ns in ≈ 1 ps out)

Power

Connector	IEC
Input-Voltage Range	90 to 240 VAC (factory-configured for country of destination)
Power Requirements (continuous)	100W

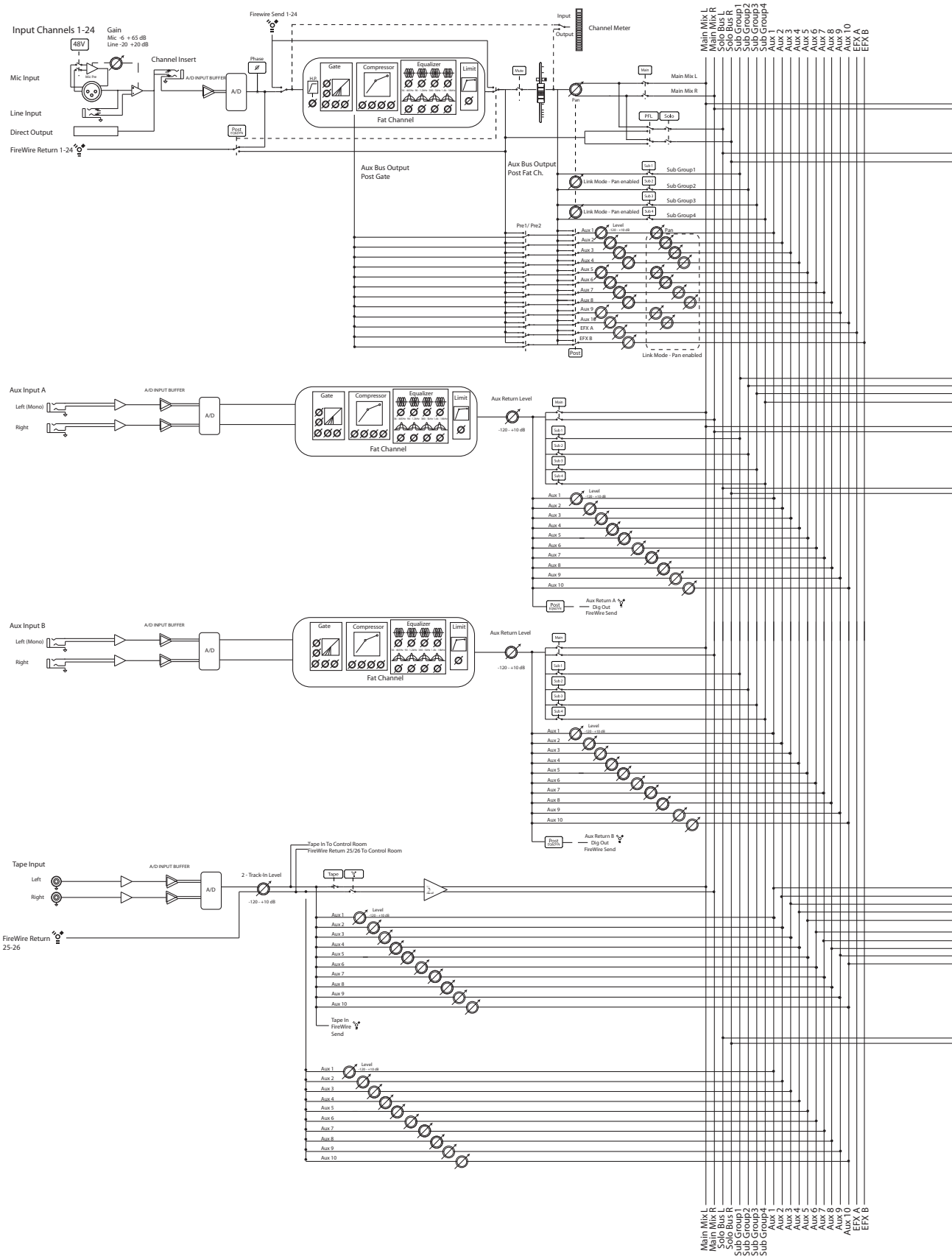
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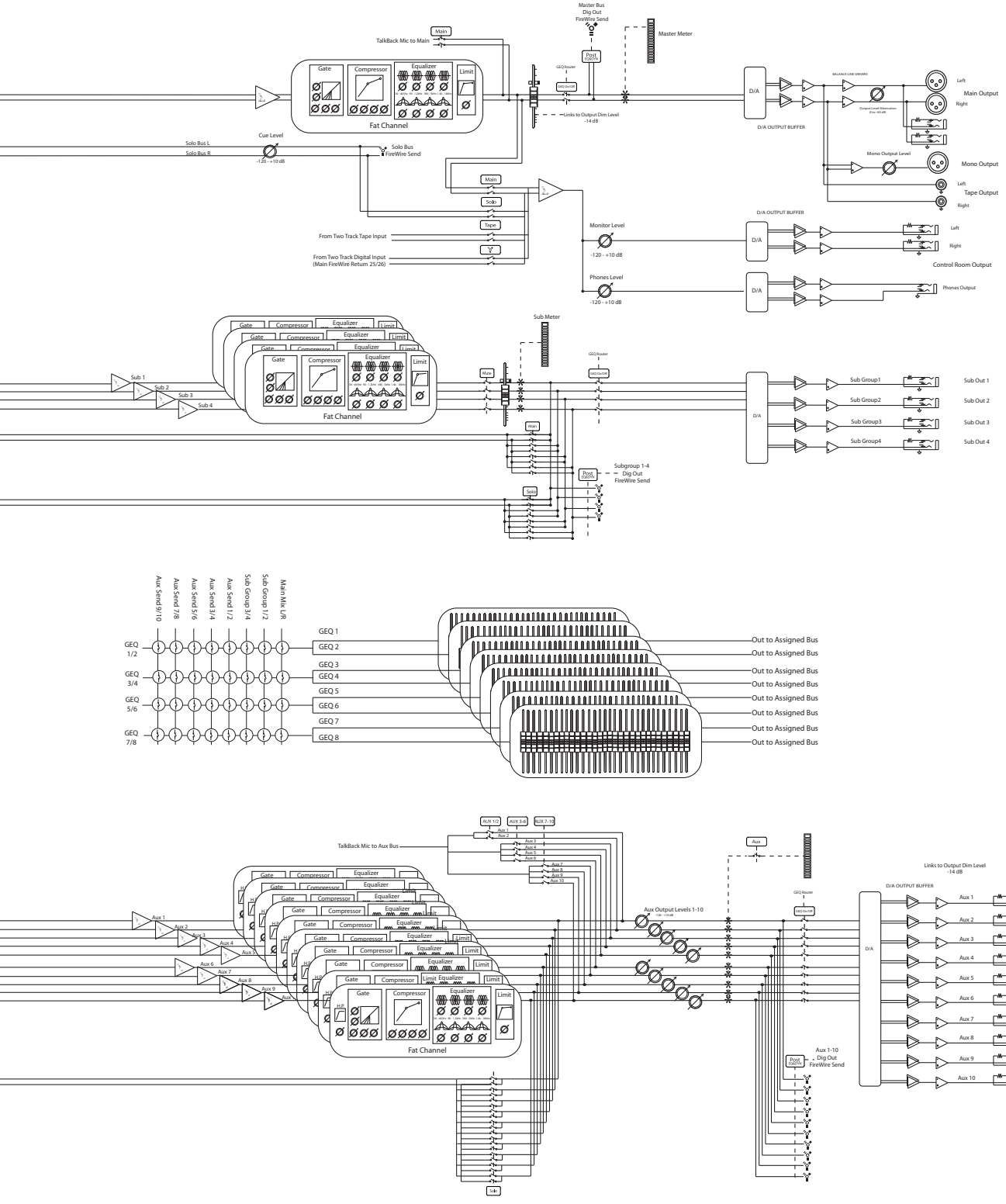
Length	22.35 inches (568.06 mm)
Width (chassis only)	25.5 inches (647.7 mm) / 17.22 inches (437.40 mm)
Width with Rack Ears (StudioLive 16.4.2 only)	19 inches (482.60 mm)
Maximum Height	6.90 inches (175.26 mm)
Weight	51 Lbs. (23.133 kg) / 23 Lbs. (10.433 kg)

Global Warming

Recommended Ambient Operating Temperature	0˚ to 40˚ Celsius / 32˚ to 104˚ Fahrenheit

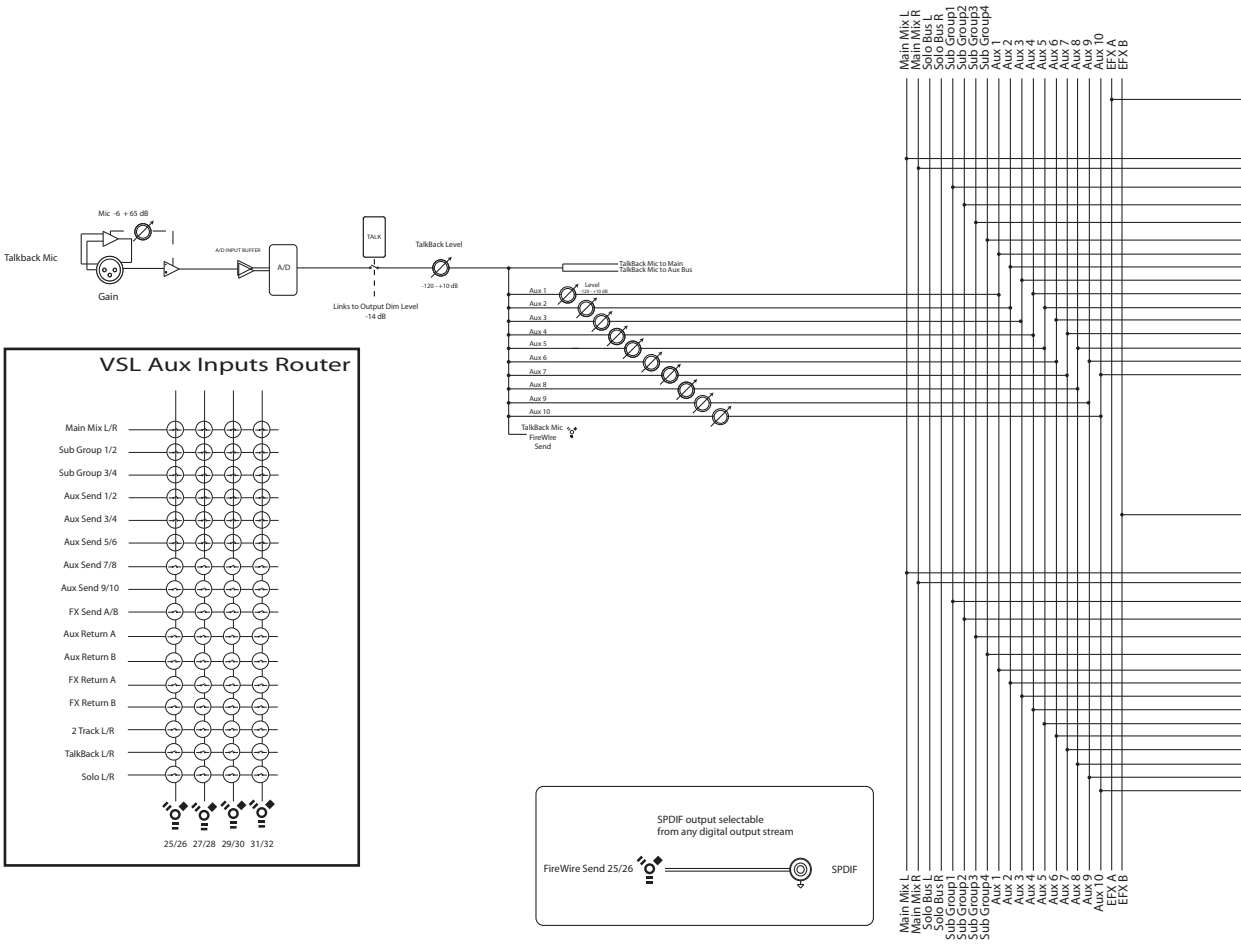
6.6 StudioLive 24.4.2 Block Diagram

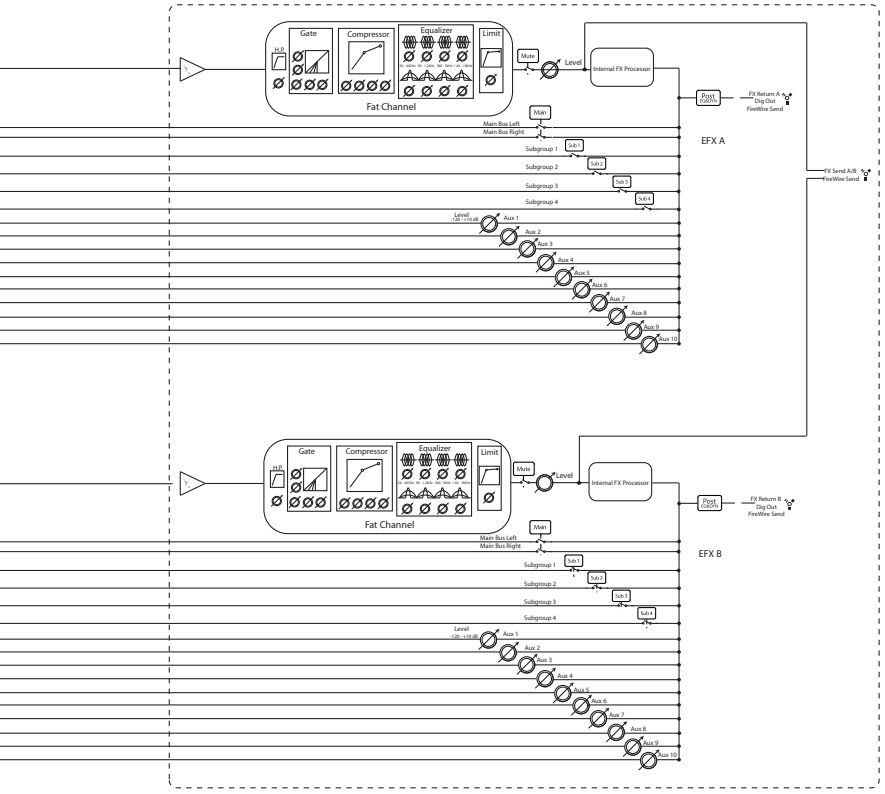




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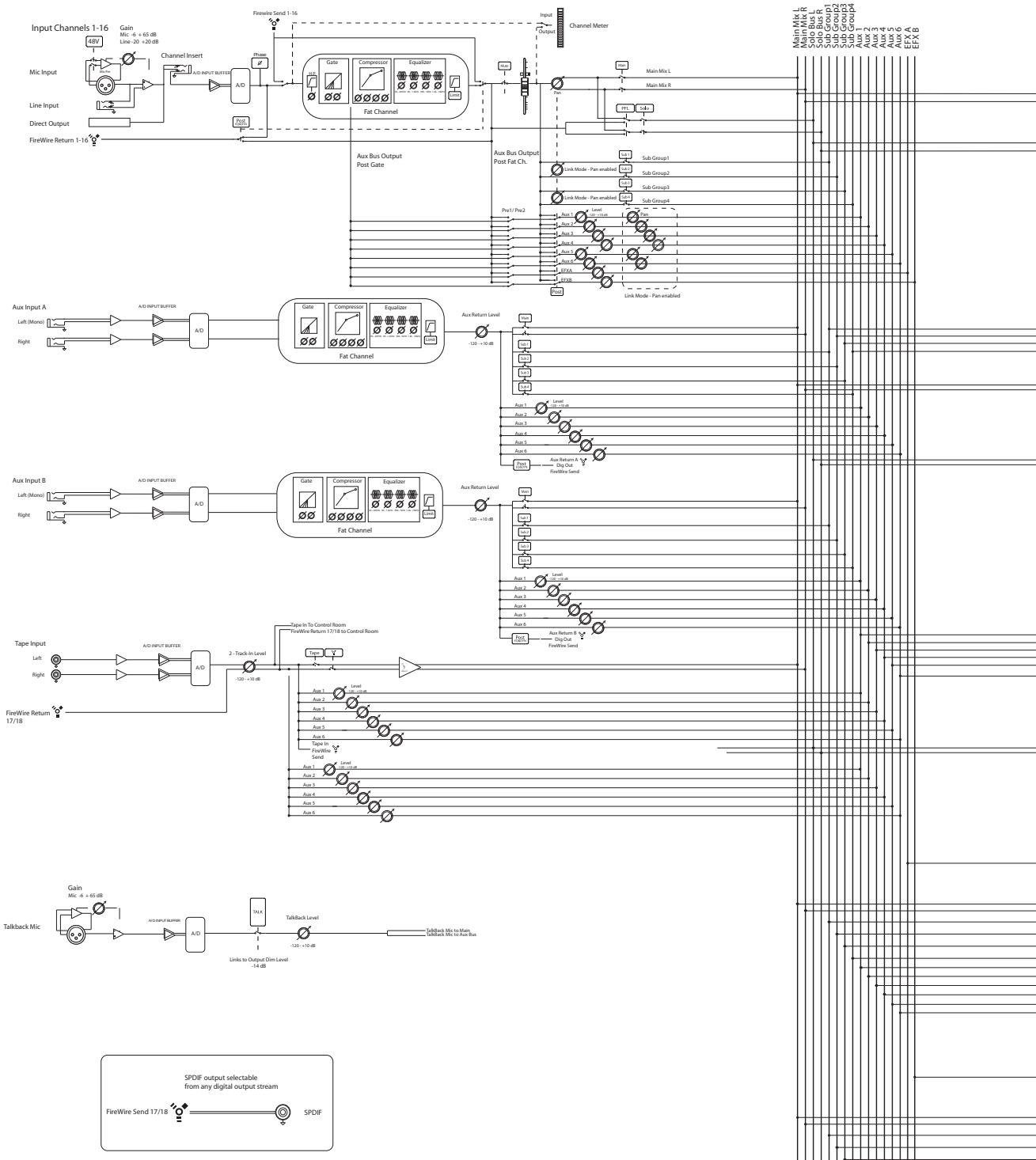
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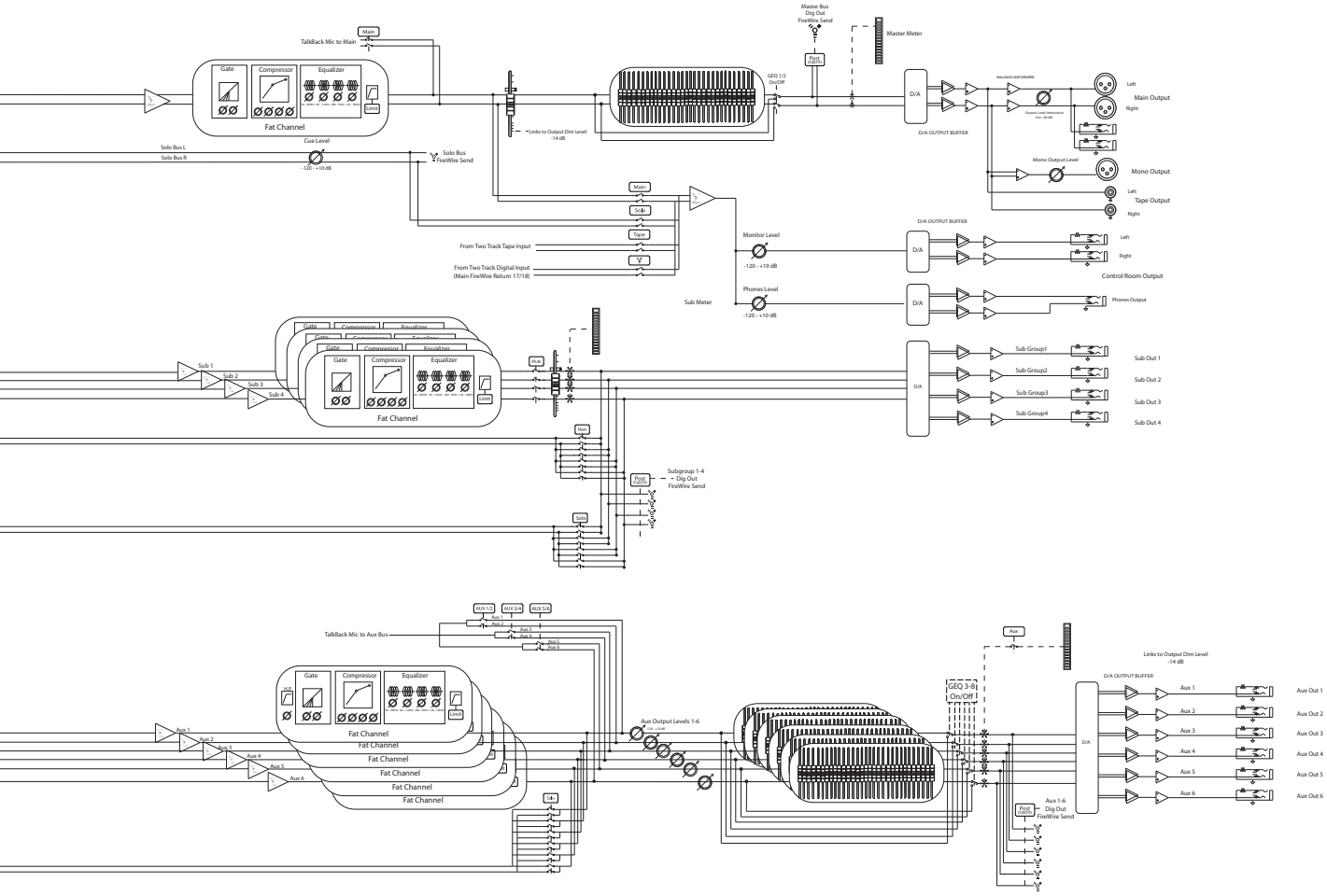


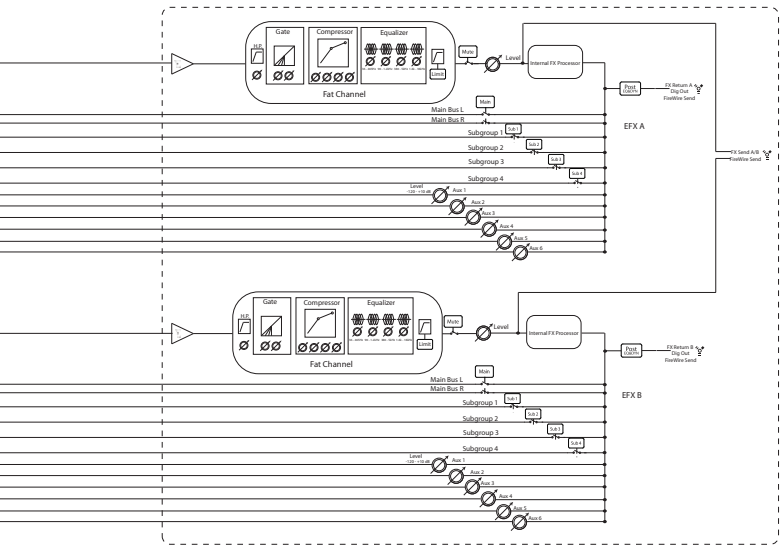


GEQ Inputs Router

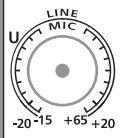
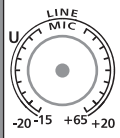
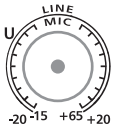
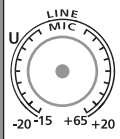
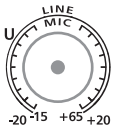
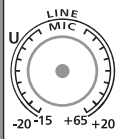
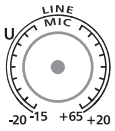
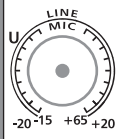
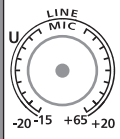
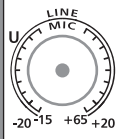
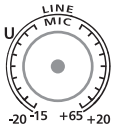
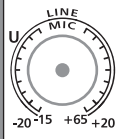
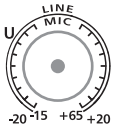
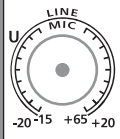
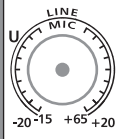
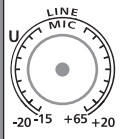
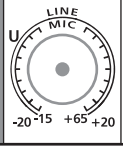
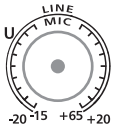
6.7 StudioLive 16.4.2 Block Diagram




Main
TalkBack Mic to Main
Gate
Compressor
Equalizer
Fat Channel
Cue Level
Solo Bus L
Solo Bus R
Solo Bus
FireWire Send
Links to Output Dim Level
-14 dB
GEQ 1/2
On/Off
Master Bus
Dig Out
FireWire Send
Post
100%
Master Meter
D/A
D/A OUTPUT BUFFER
Left
Main Output
Right
Mono Output Level
Mono Output
Tape Output
Main
Solo
Tape
From Two Track Tape Input
From Two Track Digital Input
(Main FireWire Return 17/18)
Monitor Level
-120 - +10 dB
Control Room Output
Sub Meter
Phones Level
Phones Output
Sub 1
Sub 2
Sub 3
Sub 4
Sub Group1
Sub Group2
Sub Group3
Sub Group4
Sub Out 1
Sub Out 2
Sub Out 3
Sub Out 4
Subgroup 1-4
Dig Out
FireWire Send
TalkBack Mic to Aux Bus
AUX 1/2
AUX 3/4
AUX 5/6
Aux 1
Aux 2
Aux 3
Aux 4
Aux 5
Aux 6
Aux Output Levels 1-6
GEQ 3-8
On/Off
Aux
Links to Output Dim Level
-14 dB
Aux 1-6
Dig Out
FireWire Send
Aux Out 1
Aux Out 2
Aux Out 3
Aux Out 4
Aux Out 5
Aux Out 6

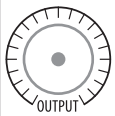
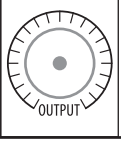

HPF
Gate
Compressor
Equalizer
Fat Channel
Mute
Level
Internal FX Processor
Post
100%
EFX A
EFX B
Main Bus L
Main Bus R
Subgroup 1
Subgroup 2
Subgroup 3
Subgroup 4
Aux 1
Aux 2
Aux 3
Aux 4
Aux 5
Aux 6
FX Send A/B
FireWire Send
Internal FX
Unit

6.8 StudioLive 24.4.2 Recall Sheet

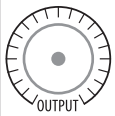
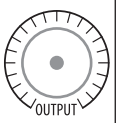
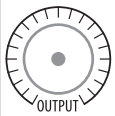
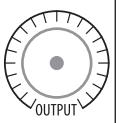
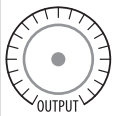
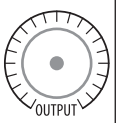
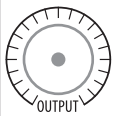
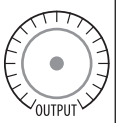
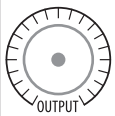
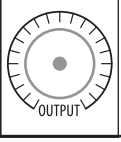
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1		Instrument Mic used Notes	13		Instrument Mic used Notes
2		Instrument Mic used Notes	14		Instrument Mic used Notes
3		Instrument Mic used Notes	15		Instrument Mic used Notes
4		Instrument Mic used Notes	16		Instrument Mic used Notes
5		Instrument Mic used Notes	17		Instrument Mic used Notes
6		Instrument Mic used Notes	18		Instrument Mic used Notes
7		Instrument Mic used Notes	19		Instrument Mic used Notes
8		Instrument Mic used Notes	20		Instrument Mic used Notes
9		Instrument Mic used Notes	21		Instrument Mic used Notes
10		Instrument Mic used Notes	22		Instrument Mic used Notes
11		Instrument Mic used Notes	23		Instrument Mic used Notes
12		Instrument Mic used Notes	24		Instrument Mic used Notes

Artist **Scene** **Date**

AUX INPUTS

AUX	LEVEL	AUX IN A SOURCE	AUX	LEVEL	AUX IN B SOURCE
A		Notes	B		Notes

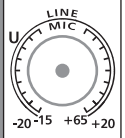
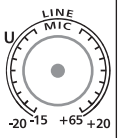
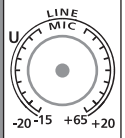
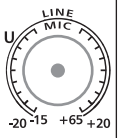
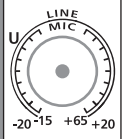
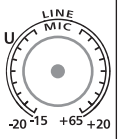
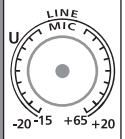
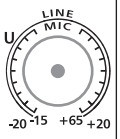
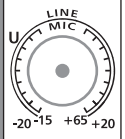
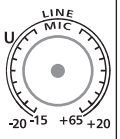
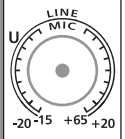
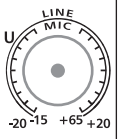
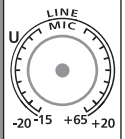
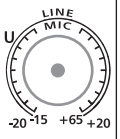
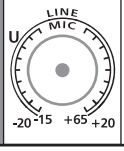
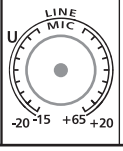
AUX SENDS

AUX	LEVEL	AUX SEND	AUX	LEVEL	AUX SEND
1		Notes Monitor ☐ Send ☐	6		Notes Monitor ☐ Send ☐
2		Notes Monitor ☐ Send ☐	7		Notes Monitor ☐ Send ☐
3		Notes Monitor ☐ Send ☐	8		Notes Monitor ☐ Send ☐
4		Notes Monitor ☐ Send ☐	9		Notes Monitor ☐ Send ☐
5		Notes Monitor ☐ Send ☐	10		Notes Monitor ☐ Send ☐

SUBGROUP / MAIN ASSIGNMENT ROUTING MATRIX

	CH 1	CH 2	CH 3	CH 4	CH 5	CH 6	CH 7	CH 8	CH 9	CH 10	CH 11	CH 12	CH 13	CH 14	CH 15	CH 16	CH 17	CH 18	CH 19	CH 20	CH 21	CH 22	CH 23	CH 24	EFX A	EFX B	AUX A	AUX B
SUB 1																												
SUB 2																												
SUB 3																												
SUB 4																												
MAIN																												

6.9 StudioLive 16.4.2 Recall Sheet

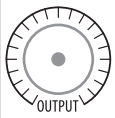
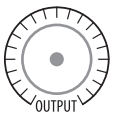
TRACK	TRIM	PRODUCTION NOTES	TRACK	TRIM	PRODUCTION NOTES
1		Instrument Mic used Notes	9		Instrument Mic used Notes
2		Instrument Mic used Notes	10		Instrument Mic used Notes
3		Instrument Mic used Notes	11		Instrument Mic used Notes
4		Instrument Mic used Notes	12		Instrument Mic used Notes
5		Instrument Mic used Notes	13		Instrument Mic used Notes
6		Instrument Mic used Notes	14		Instrument Mic used Notes
7		Instrument Mic used Notes	15		Instrument Mic used Notes
8		Instrument Mic used Notes	16		Instrument Mic used Notes

SUBGROUP / MAIN ASSIGNMENT ROUTING MATRIX

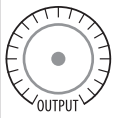
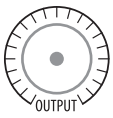
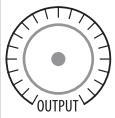
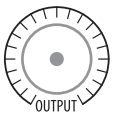
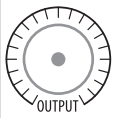
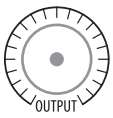
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SUB 1																				
SUB 2																				
SUB 3																				
SUB 4																				
MAIN																				

Artist **Scene** **Date**

AUX INPUTS

AUX	LEVEL	AUX IN A SOURCE	AUX	LEVEL	AUX IN B SOURCE
A		Notes	B		Notes

AUX SENDS

AUX	LEVEL	AUX SEND	AUX	LEVEL	AUX SEND
1		Notes Monitor ☐ Send ☐	4		Notes Monitor ☐ Send ☐
2		Notes Monitor ☐ Send ☐	5		Notes Monitor ☐ Send ☐
3		Notes Monitor ☐ Send ☐	6		Notes Monitor ☐ Send ☐

7 Troubleshooting and Warranty

7.1 Troubleshooting

Please check the PreSonus Web site (www.presonus.com) regularly for software information and updates, firmware updates, and support documentation, including frequently asked questions.

Online technical support is available at www.presonus.com/support/Contact-Technical-Support.

Technical support is available via email at techsupport@presonus.com.

PreSonus telephone technical support is available to customers in the USA on Monday through Friday from 9 a.m. to 5 p.m. Central Time by calling 1-225-216-7887. Customers outside of the USA should contact their national or regional distributor for telephone technical support. A list of international distributors is provided at www.presonus.com/buy/international_distributors.

No Output on a Channel

Press the Input button in the Metering section and verify that there is signal on that channel. If no signal is present, check the cable and the input source. Verify that the trim control is set at an appropriate level. Make sure the channel is not muted. Make sure that if your device requires phantom power, phantom power is engaged for the channel. If you are using an analog input, verify that the FireWire Return button for that channel is not engaged.

If signal is present, press the Select button for the channel in question. Make sure that the channel is assigned to the main output in the Assign section of the Fat Channel.

Fader Movements Have No Effect on Audio

Verify that your StudioLive is not locked by navigating to Page 5: Lockout, in the System menu. Verify that your StudioLive is not in Fader Locate mode. Select Output in the Metering section and verify that your fader movements are affecting the output signal. If so, make sure your channels are assigned to the main outputs.

No Internal Effects in the Main Bus

Press the Aux button in the Metering section and verify the output levels of the internal EFX A and B aux buses. If the level is too low, use the Output knob to increase the master level for the effects mix. Press the Select button for each EFX bus and make sure it is assigned to the main output in the Assign section of the Fat Channel.

No Output on the Solo Bus While Monitoring

Verify that both the Cue volume and the headphone, or monitor, volume is at a reasonable level for comfortable listening. Make sure that you only have Solo selected in the Monitor section of your StudioLive.

Buttons/Knobs Are Not Functioning

If your StudioLive is passing audio but you have no Fat Channel, fader, or menu control, verify that the StudioLive is not locked by navigating to Page 5: Lockout, in the System menu.

Can't Hear Main Mix in Headphones

Verify that the Main mix is enabled in the Monitor bus and that the Headphone output control is at a sufficient level.

Monitor Bus Controls Not Changing Routing

Verify that your monitors are connected to the Control Room outputs on the rear panel of your StudioLive, not the Main outputs.

Main Fader Doesn't Control Mix Level

Verify that your monitors are connected to the Main outputs on the rear panel of your StudioLive, not the Control Room outputs. Verify that StudioLive is not in Fader Locate mode.

7.2 PreSonus Limited Warranty

PreSonus Audio Electronics, Inc., warrants this product to be free of defects in material and workmanship for a period of one year from the date of original retail purchase. This warranty is enforceable only by the original retail purchaser. To be protected by this warranty, the purchaser must complete and return the enclosed warranty card within 14 days of purchase. During the warranty period PreSonus shall, at its sole and absolute option, repair or replace, free of charge, any product that proves to be defective on inspection by PreSonus or its authorized service representative. If you are located in the USA and need warranty repair, please submit an online technical support request at http://support.presonus.com to receive a return-authorization number and shipping information. If you are located outside of the USA, please contact the PreSonus distributor for your region for warranty repairs. All inquiries must be accompanied by a description of the problem. All authorized returns must be sent to the PreSonus repair facility postage prepaid, insured, and properly packaged. PreSonus reserves the right to update any unit returned for repair. PreSonus reserves the right to change or improve the design of the product at any time without prior notice. This warranty does not cover claims for damage due to abuse, neglect, alteration, or attempted repair by unauthorized personnel and is limited to failures arising during normal use that are due to defects in material or workmanship in the product. Any implied warranties, including implied warranties of merchantability and fitness for a particular purpose, are limited in duration to the length of this limited warranty. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. In no event will PreSonus be liable for incidental, consequential, or other damages resulting from the breach of any express or implied warranty, including, among other things, damage to property, damage based on inconvenience or on loss of use of the product, and, to the extent permitted by law, damages for personal injury. Some states do not allow the exclusion of limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights, which vary from state to state. This warranty only applies to products sold and used in the United States of America. For warranty information in all other countries, please refer to your local distributor.

PreSonus Audio Electronics, Inc.

7257 Florida Blvd.

Baton Rouge, LA 70806 USA

1-225-216-7887

www.presonus.com

Declaration of Conformity

Responsible Party: **PreSonus Audio Electronics**

Address: **7257 Florida Blvd., Baton Rouge, LA 70806 USA**

Phone: 1-**225-216-7887**

declares that **StudioLive™ 24.4.2** and the **StudioLive™ 16.4.2** comply with Part 15 of the FCC rules.

Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and;
2. This device must accept any interference received, including interference that may cause undesired operation

Note: *No product support is available when you call the number above. Refer to your Certificate of Warranty in your Owner's Manual for PreSonus' Product Support telephone number.*

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EMC Statement:

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient or relocate the receiving antenna.

Increase the separation between the equipment and the receiver.

Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.

CAUTION: Changes or modifications to this device not expressly approved by PreSonus Audio Electronics could void the user's authority to operate the equipment under FCC rules.

This apparatus does not exceed the Class A/Class B (whichever is applicable) limits for radio noise emissions from digital apparatus as set out in the radio interference regulations of the Canadian Department of Communications.

ATTENTION — Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de classe A/de classe B (selon le cas) prescrites dans le règlement sur le brouillage radioélectrique édicté par le ministère des communications du Canada.

Added bonus: PreSonus' previously Top Secret recipe for. . .

Chicken and Andouille Gumbo

Ingredients:

- 1 C all-purpose flour
- ¾ C vegetable oil
- 1 large onion (diced)
- 1 small onion (quartered)
- 6 celery stalks (diced)
- 1 large green bell pepper (diced)
- 3 cloves garlic (2 minced, 1 whole)
- 1 lb link Andouille sausage
- 4 Chicken leg quarters
- 4 qt water
- 4 bay leaves
- 1 tsp thyme
- 1 tsp Old Bay seasoning
- 1-2 C frozen okra, sliced
- ¼ C fresh parsley, minced
- 6-8 eggs (optional)

Cooking Instructions:

1. In a large pot, combine whole chicken leg quarters, water, quartered onion, Old Bay, 2 bay leaves and 1 whole clove garlic. Cover and bring to a low boil. Simmer stock until chicken is falling off the bone. Remove the chicken and set aside. Discard the onion, bay leaves, and garlic, reserving the liquid.
2. In a heavy saucepan, heat 1 Tbsp of the oil on medium high heat and brown the andouille until it is cooked through. Set aside sausage for later.
3. In the same saucepan, add and heat remaining oil. Slowly add flour 1-2 Tbsp at a time, stirring continuously. Continue cooking and stirring the roux until it is a dark brown (it should look like melted dark chocolate). Be careful to not to get the oil too hot or the flour will burn and you'll have to start over.
4. Once roux has reached the correct color, add diced onion, celery, green pepper, and minced garlic. Cook until vegetables are very tender. Do not cover.
5. Slowly add 1 quart of chicken broth and bring to a low boil, stirring constantly.
6. Transfer roux mixture to a soup pot and bring to low boil. Do not cover, the roux will settle on the bottom of the pot and burn.
7. Add remaining chicken broth, bay leaves, and thyme. Simmer for 30 minutes.
8. While gumbo is simmering, debone and shred chicken and slice the andouille.
9. Add chicken and andouille to gumbo and return to a simmer. Simmer for 30-45 minutes.
10. Stir in frozen okra and parsley and bring to a rolling boil.
11. **Optional:** Crack one egg into a teacup and quickly pour into the boiling gumbo. Repeat with the other eggs being careful not to cluster them too closely. After all the eggs have risen back to the surface, reduce heat and simmer.
12. 12. Correct seasoning with salt and pepper (red, white and/or black) if necessary.
13. Serve over rice with potato salad.

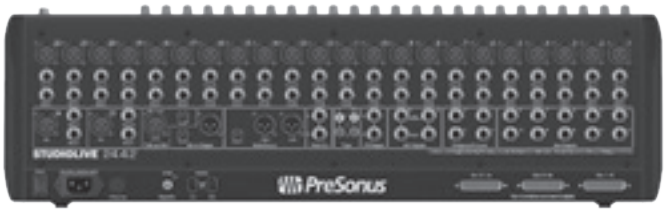
Serves 12

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StudioLive™ 24.4.2 and StudioLive™ 16.4.2

Performance and Recording Digital Mixers

Owner's Manual









PreSonus®

7257 Florida Boulevard • Baton Rouge,
Louisiana 70806 USA • 1-225-216-7887
www.presonus.com

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