StudioLive™ Series III Rack Mixers

Rackmount Digital Mixing and Remote I/O System with AVB

Owner's Manual



PreSonus® www.presonus.com

English

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1 Overview

1.1 Introduction



Thank you for purchasing a PreSonus® StudioLive™ Series III rackmount digital mixer. PreSonus Audio Electronics, Inc., has designed the StudioLive 32R, StudioLive 24R and StudioLive 16R utilizing high-grade components to ensure optimum performance that will last a lifetime. PreSonus Audio Electronics has built your StudioLive mixer with high-grade components to ensure optimum performance for many years to come. Loaded with 32, 24, or 16 high-headroom XMAX™ microphone preamplifiers, a built-in multitrack USB recording and playback interface, powerful Fat Channel signal processing, high quality effects, extensive routing, stereo SD recording, and more, StudioLive Series III rack mixers break new boundaries for music performance and production. All you need is a compatible computer with a USB connection or an SD card, 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.

1.2 About This Manual

We suggest that you use this manual to familiarize yourself with the features and correct connection procedures for your mixer before trying to use it. This will help you avoid problems during installation and setup. Throughout this manual you will find Power User Tips. These tips provide useful hints on how to best use your StudioLive mixer and take advantage of unique workflow functions and features.

When frame size differences occur, the StudioLive 32R will be called out first, followed by the StudioLive 24R, and then the StudioLive 16R.

This manual only covers the hardware and basic setup. Complete information regarding Universal Control, UC Surface, QMix-UC, and Capture as well as a Quick Start Guide for Studio One Artist can be found in StudioLive Software Library Reference Manual, available as a download from www.PreSonus.com.

For more information on using Series III rackmount mixers as stageboxes and remote monitor mixers for Series III console mixers, please review the StudioLive Series III Stagebox Mode Addendum, available as a download from www.PreSonus.com as well.

1.3 Features

- 34/26/18 total analog inputs
- 32/24/16 mic/line channel inputs plus 2 RCA inputs
- 16/12/6 TRS FlexMix outputs
- 2 XLR (Left/Right) Main outputs
- Stereo headphone output
- 32/32/16 input channels
- 32R and 24R: 2 stereo aux inputs (AVB or USB)
- 1 stereo digital return (SD Card, AVB, or USB)

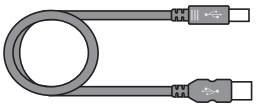
- 26/26/10 buses:
  - 16/16/6 FlexMixes
  - 4/4/2 internal effects buses
  - 32R and 24R: 4 dedicated subgroups
- 24/24/8 Filter DCAs
- 1 Ethernet control network port with Dynamic, Self Assigned, and Manual IP address modes
- 1 Ethercon AVB audio network port
- Onboard stereo SD recorder
- 38x38 (32R and 24R) / 18x18 (16R) USB recording interface
- 55x55 (32R and 24R) / 32x32 (16R) AVB recording interface
- Studio-quality converters with 115 dB dynamic range
- 48 kHz operation with 24-bit resolution (44.1 kHz option coming soon)
- UC Surface touch control software for Mac®, Windows®, iPad®, and Android™ available free from Apple App Store, Google Play, and Amazon App Store
- Studio One® Artist digital audio workstation software for Mac and Windows
- Capture™ multitrack recording software for Mac and Windows
- QMix®-UC aux-control software for iOS® and Android™ available free from Apple App Store, and Google Play

1.4 What is in the Box

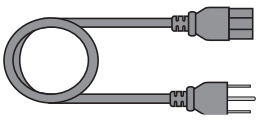
Your StudioLive Series III rackmount mixer package contains the following:



PreSonus StudioLive 32R, StudioLive 24R, and StudioLive 16R digital recording and performance mixer



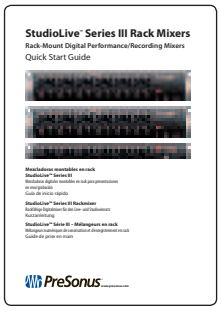
USB cable



IEC power cord



Product registration and software authorization card



StudioLive Series III Rackmount mixer Quick Start Guide



PreSonus Health Safety and Compliance Guide

What is not in the box:

- This manual
- StudioLive Software Library Manual
- StudioLive Software Library
- StudioLive Series III Stagebox Mode Addendum

Once you've registered your mixer, you can download UC Surface for macOS and Windows, Capture, and Studio One Artist from your My PreSonus account.

UC Surface for iPad and QMix-UC for iPhone/iPod touch can be downloaded from the Apple App Store.

UC Surface and QMix-UC for Android can be downloaded from the Google Play Store.

More details on the StudioLive Software Library can found in the Reference Manual at www.presonus.com.

1.5 What You Will Need

The following items are not included with your StudioLive Series III rackmount mixer, but are needed to complete your new mixing system:

- LAN network with Internet access or an SD or SDHC card with at least 2 GB capacity for firmware updates.
- Wireless router. Visit www.PreSonus.com for recommended routers.
- UC Surface running on a computer (macOS or Windows), Android device, or iPad connected either wired or wirelessly to the same LAN network as your mixer.

2 Getting Started

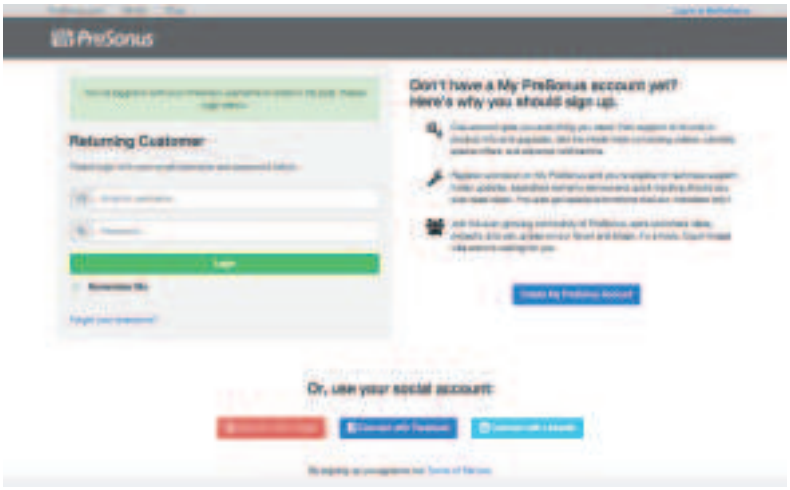
This section will guide you through registering your mixer, updating its firmware and connecting it to a network. ***Please review the brief networking tutorial located in Section 2.2*** to familiarize yourself with networking best practices. Visit www.presonus.com for the latest system requirements and an updated list of compatible hardware.

In general, you will need the following:

- LAN network connection and router
- Internet connection for registration and firmware download.
- A device running UC Surface

2.1 Step 1: Register Your StudioLive Series III Rackmount Mixer

1. Go to my.presonus.com and log in or create a new user account, if you don't have one.



2. Once you have logged into your my PreSonus account, click the Register a Product button at the top of the page.



3. Select "Hardware" from the drop-down menu in the dialog, enter the information for your mixer, and check the box stating you have read and agree to the license agreement. Click/tap the Register button when you are done to register your controller.



2.2 Step 2: Add a Control Device

Control and Audio Data Connections

You can connect your mixer to UC Surface as follows:

- Wired to a standard LAN network (control only).
- Wired to a computer via USB (control and audio).

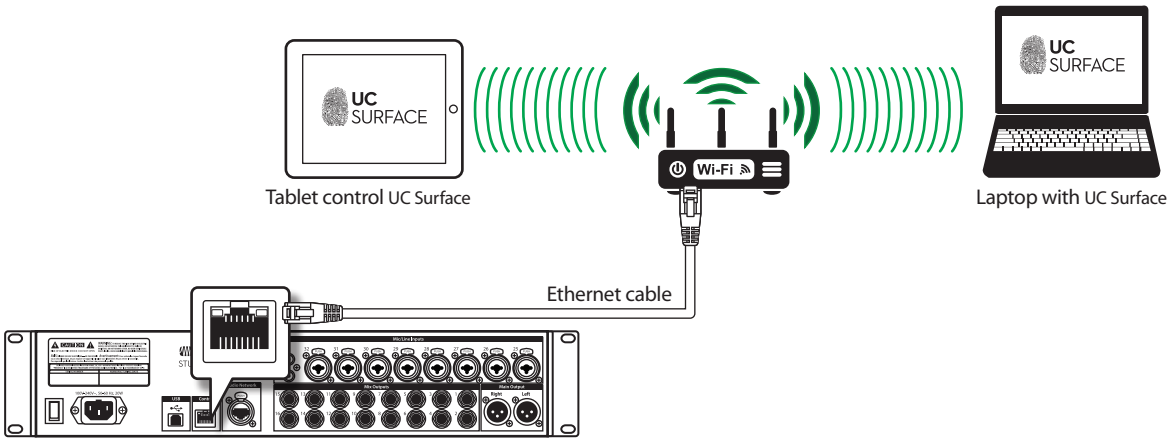
In the sections that follow, we will describe all these configurations in detail.

Power User Tip: *WPA and WPA2 are protocols created to make wireless networks secure. WPA stands for "Wi-Fi Protected Access," and WPA2 is a later version that conforms to the IEEE 802.11i networking standard. Most routers have settings that manage their security protocols; consult the documentation for your router to learn how to change these settings.*

2.2.1 Wired LAN Networking (Ethernet)

The easiest way to configure your control network is to connect your mixer and devices (computer, iPad, or Android) to a wireless router. This allows you to quickly connect devices for remote control using UC Surface and QMix-UC.

1. Connect your StudioLive Series III Rackmount mixer to a wireless router with an Ethernet cable.



2. Power on the router and then power on the mixer.
3. Connect your computer, Android and iOS device to the wireless network. You can also connect your computer directly to the wireless router using an Ethernet cable if you prefer.



4. The Control LED on the front of your StudioLive mixer will turn blue once it is connected and communicating properly to the network.

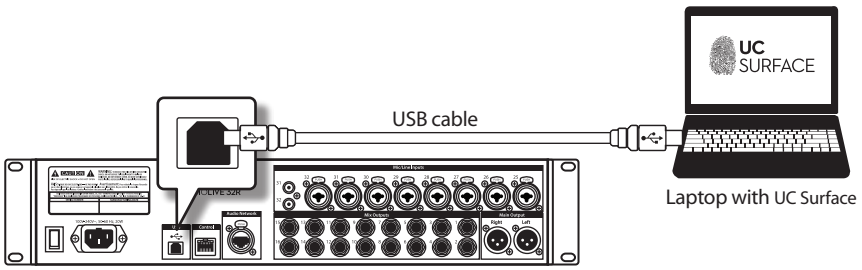
2.2.2 Wired to a Computer (USB)

Your StudioLive Series III rackmount mixer can be connected directly to UC Surface running on a computer using USB.

Please note: *In this configuration, you can only use one device – your computer – to control your StudioLive mixer.*

To begin, you have to install Universal Control and UC Surface on your computer. Please review the StudioLive Software Library Reference Manual for complete details.

Once Universal Control has been installed, connect your StudioLive mixer using USB and launch Universal Control.





The Control LED on the front of your StudioLive mixer will turn blue once it is connected and communicating properly to the computer.

2.3 Step 3: Update Firmware

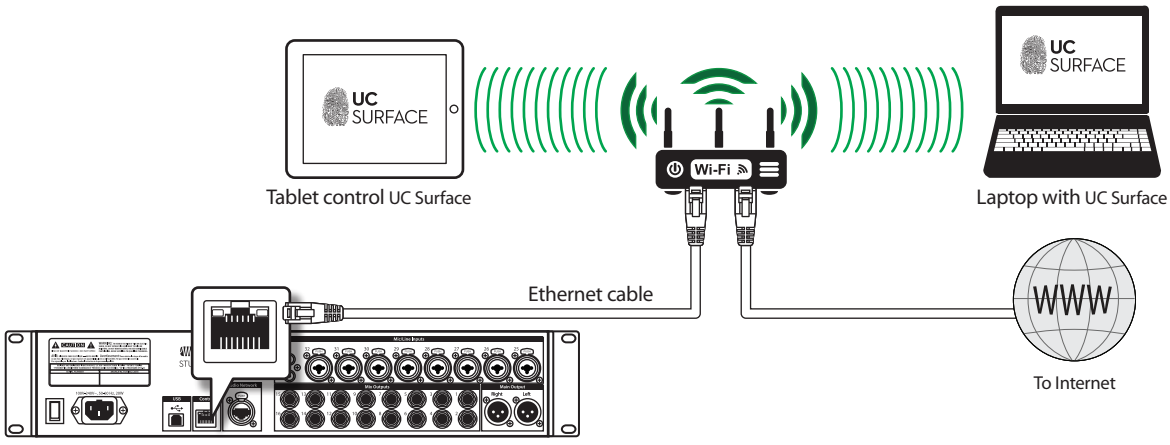
2.3.1 Direct Updating over the Internet

The easiest way to update your StudioLive Series III rackmount mixer firmware is to connect your mixer to a device running UC Surface that also has Internet access

Power User Tip: *Because direct updating from the Internet is the safest and fastest method of updating your mixer's firmware, it is highly recommended that you use this method whenever possible.*

IMPORTANT: *To use Internet updates, your PreSonus hardware must be registered to your My PreSonus account.*

From UC Surface



1. Connect both your mixer and your UC Surface device to a network with Internet access (wired or wireless).
2. Open UC Surface and connect to your mixer.



3. Click or touch the Settings icon at the top right of the UC Surface window.

4. On the Device Settings tab, click "Check Firmware Update."



5. You will be asked if you would like to proceed with the firmware update. Click "OK."

6. A progress bar will be shown in UC Surface during the first part of the firmware update. Once it is complete, UC Surface will inform you that it is finished and will ask you to power-cycle the mixer.

7. When you restart your mixer, verify that the last four digits of the firmware version on it are the same as the firmware files you downloaded.

For more information, ***see the StudioLive Software Library Reference Manual***.

2.3.2 Manual Firmware Updates

To manually update your mixer's firmware, you will need a computer with Internet access and a method to transfer the file from one computer to another (USB Thumb drive, SD card, etc.).

1. Log in to your my.presonus.com account.



2. Once you have logged in, click the My Products button at the top of the page.



3. Click on the Hardware tab to view your registered hardware products.



4. Find your mixer model on the page and click the View More Details link.



5. Click on the update Firmware button to download the files to your computer.

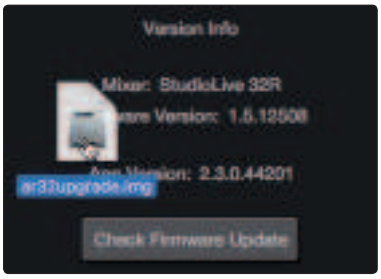


6. When the download completes, open your Downloads folder. Depending on your computer's system preferences, the firmware **.zip** archive file might not automatically decompress. If it doesn't, double-click the file, and it will decompress. You will find a single **.img** file inside. Drag it to your removable media.



7. On the computer connected to your mixer, launch UC Surface and click on the Settings page button.

8. Drag the **.img** file into the Firmware Update section.
The firmware update will start automatically.



2.4 Step 4: Set Up an AVB Network

The StudioLive Series III Rackmount mixers can be used as a stagebox for the StudioLive Series III console mixers over an AVB network with or without DSP processing engaged.

While connected to a console mixer either directly or over an AVB network, a Series III rackmount mixer supports sending and receiving audio as well as remotely controlling preamp levels and phantom power.

For complete information on using your StudioLive Series III Rackmount mixer as a stagebox or remote I/O for a StudioLive Series III console mixer, ***please review the StudioLive Series III Stagebox Mode Addendum***.

3 Hookup

3.1 Front Panel





Power/Status LED. This displays the current state of your StudioLive Series III rackmount mixer:

- **Off.** The mixer is not turned on.
- **Blue.** The mixer is powered on and operating normally.
- **Flashing Red.** There was an error booting the mixer.
- **Flashing Yellow.** The mixer is in the process of updating firmware.
- **Green.** The mixer has completed loading new firmware.



Control LED. This displays the status of the LAN network you are using to control your mixer.

- **Off.** The mixer is not turned on.
- **Blue.** The mixer is powered on and a control device is connected.
- **Red.** The mixer is powered on and no control device is connected.



SD Card Record Indicator. This LED displays the recording status of the SD recorder. When the SD Card is recording, this LED will illuminate Red. When it is not, it will be off.



SD Card Playback Indicator. This LED displays the playback status of the SD recorder. When the SD Card is recording or playing back, the LED will illuminate green. When it is not, it will be off.



Headphones. This ¼-inch TRS connection is for use with headphones. The Phones knob controls the level.



Mute All. Mutes all inputs and mix outputs. This button is linked with the Mute All button in the Global Settings view of UC Surface software.

Power User Tip: *The Mute All button is both latching and momentary. When the button is pressed and immediately released, it will latch in the "on" state. When the button is pressed and held it, will turn on while held and off when released.*

Power User Tip: *The mute state of each channel and bus is retained while Mute All is active. In this way, if a channel was muted before Mute All was enabled, it will still be muted when Mute All is turned off*



Mic/Line Inputs. These inputs use TRS-XLR combo jacks that can accept both XLR and balanced or unbalanced 1/4" cables. The ¼-inch TRS connectors bypass the gain stage and are scaled to accept line-level signals up to +18 dBFS.

Power User Tip: *When the line inputs are engaged, the microphone preamp circuit is bypassed completely, and no trim control is available. Typical examples of line-level connections are synthesizer outputs, signal processors, and stand-alone mic preamps and channel strips. Use the output level control on your line-level device to adjust its level.*

Note: *As with many audio devices, plugging a microphone or line-level device, or enabling/disabling phantom power can create a momentary noise spike in the audio output of your StudioLive mixer. It is highly recommended that you mute or turn down a channel's fader before changing connections or toggling phantom power on or off.*

3.2 Rear Panel





Mic/Line Inputs (StudioLive 32R and 16R). On the StudioLive 32R and 16R, the first 24/12 inputs are located on the front panel, the last 8/4 inputs are located on the rear panel. These inputs use TRS-XLR combo jacks that can accept both XLR and balanced or unbalanced 1/4" cables. The ¼-inch TRS connectors bypass the gain stage and are scaled to accept line-level signals up to +18 dBFS.



RCA Inputs. The last two inputs on the StudioLive Series III rackmount mixers also feature RCA inputs for connecting consuming line level devices like DVD players. These inputs are summed with their mic/line counterparts.

Mix Outputs. Your StudioLive features 16/12/6 Mix Outputs.



These Mix Outputs may be used to output Aux, Subgroup, or Matrix mixes depending on how you configure their dedicated mix buses. More information about configuring FlexMixes can be found in the ***StudioLive Software Library Reference Manual***.



Main Outputs. The StudioLive features stereo main outputs on XLR jacks.



Audio Network. This connection accepts both Ethercon and RJ-45 connections and is used for AVB audio networking.



Ethernet Port. This RJ-45 port is used to connect your StudioLive to a standard LAN network for control applications only.

More information about AVB and control networking can be found in ***Section 2.4.***



USB Port. This female USB-B jack provides connection to a computer for audio interfacing, control, and file transfer duties.

Power Input and Switch. Connect the provided IEC power cable to this input. Push the top of the switch to power your StudioLive on, and the bottom to switch power off.



4 Connecting Your Audio System

Before you begin, here are a few rules to get you started:

- Always turn down the Main and Mix faders in UC Surface as well as the Phones level before making connections. Conversely, you can also enable Mute All.
- Before plugging or unplugging a microphone while other channels are active, mute the channel to which you are connecting.
- Your faders in UC Surface should be set on or near the "U" mark whenever possible. The "U" indicates unity gain, meaning the signal is neither boosted nor attenuated.
- Do not allow your inputs to clip. Watch the level meters; when signal nears Clipping, the channel LED illuminates red, indicating that the analog-to-digital converters are in danger of being overdriven. Overdriving the converters will cause digital distortion, which has a negative effect on sound quality.

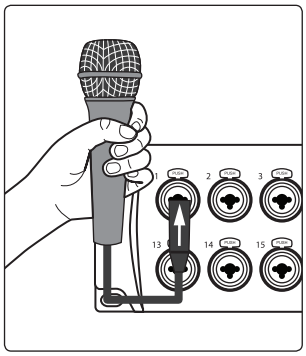
Your P.A. and studio equipment should be powered on in the following order:

- Sound sources (keyboards, direct boxes, microphones, etc.) connected to the StudioLive inputs.
- StudioLive mixer
- Computer (if applicable)
- Power amplifiers or powered loudspeakers

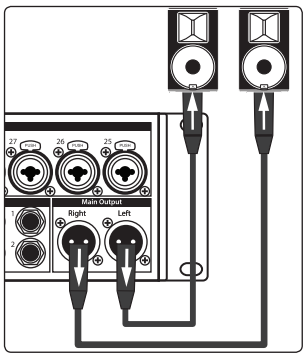
When it is time to power down, your system should be turned off in the reverse order. Now that you know what not to do, let's get started!

4.1 Level Setting Procedure

Note: *This section assumes that you've already installed and configured your mixer to work with UC Surface on your computer, iPad, or Android device.* ***Please review Section 2.***



1. Plug a microphone into a mic cable and plug the cable into the StudioLive Channel 1 mic input.



2. Connect the Main Outputs of your mixer to your power amplifier or powered monitors.

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

3. Plug your mixer into a power outlet and turn it on.
4. Power on your powered speakers or speaker amplifier.



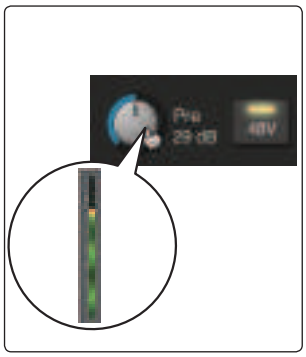
5. Select Channel 1 in UC Surface.



6. If your microphone requires phantom power, engage +48V button.



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



8. Adjust the input trim in UC Surface while watching the input meter. Adjust the input gain until the meter reaches a little more than halfway up. The meter should never turn red.



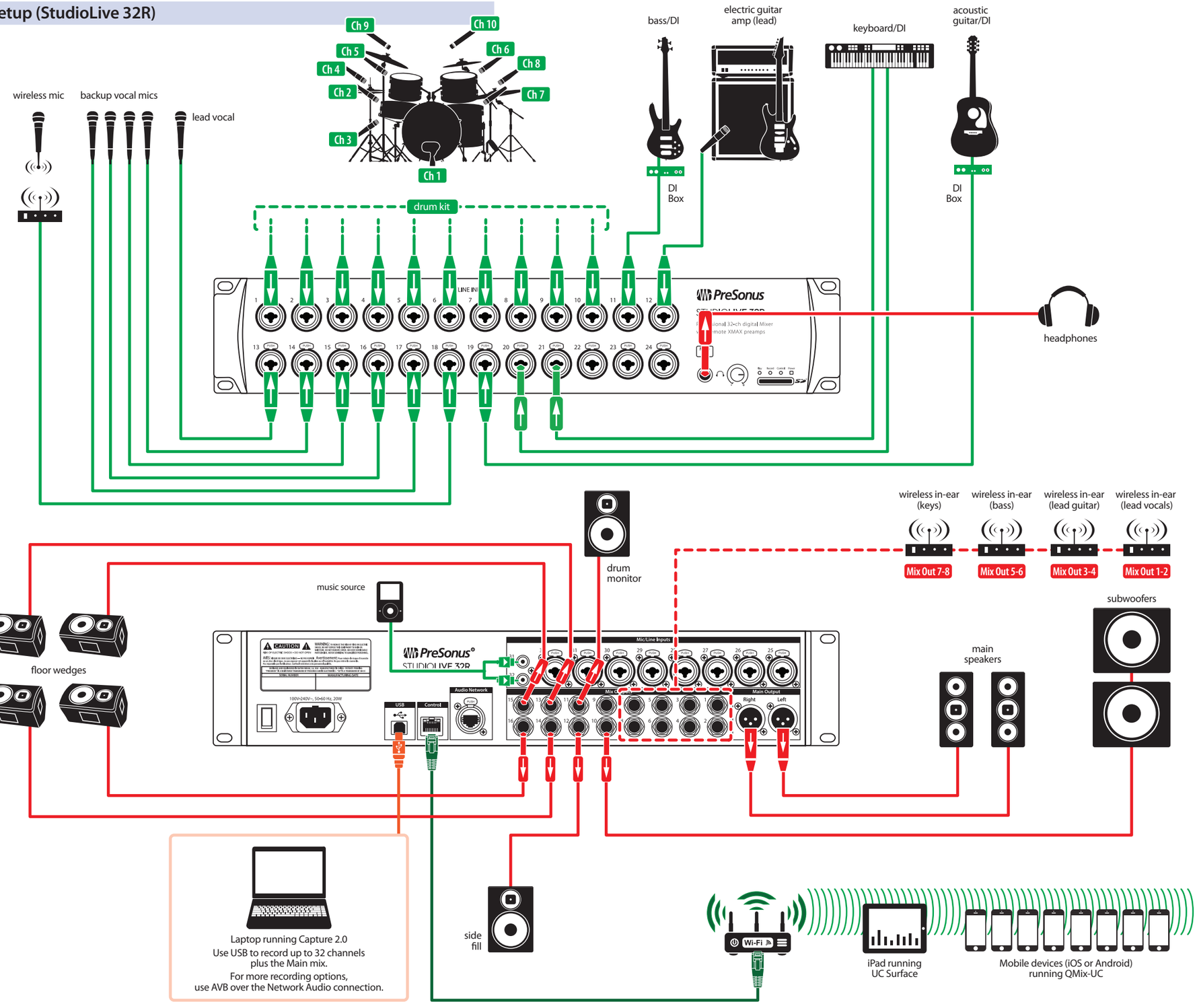
9. Raise the Channel 1 fader in UC Surface until it reaches 0 dB (unity gain).

10. In UC Surface, bring up the Main mix level fader until you can comfortably listen to your microphone through your speakers.

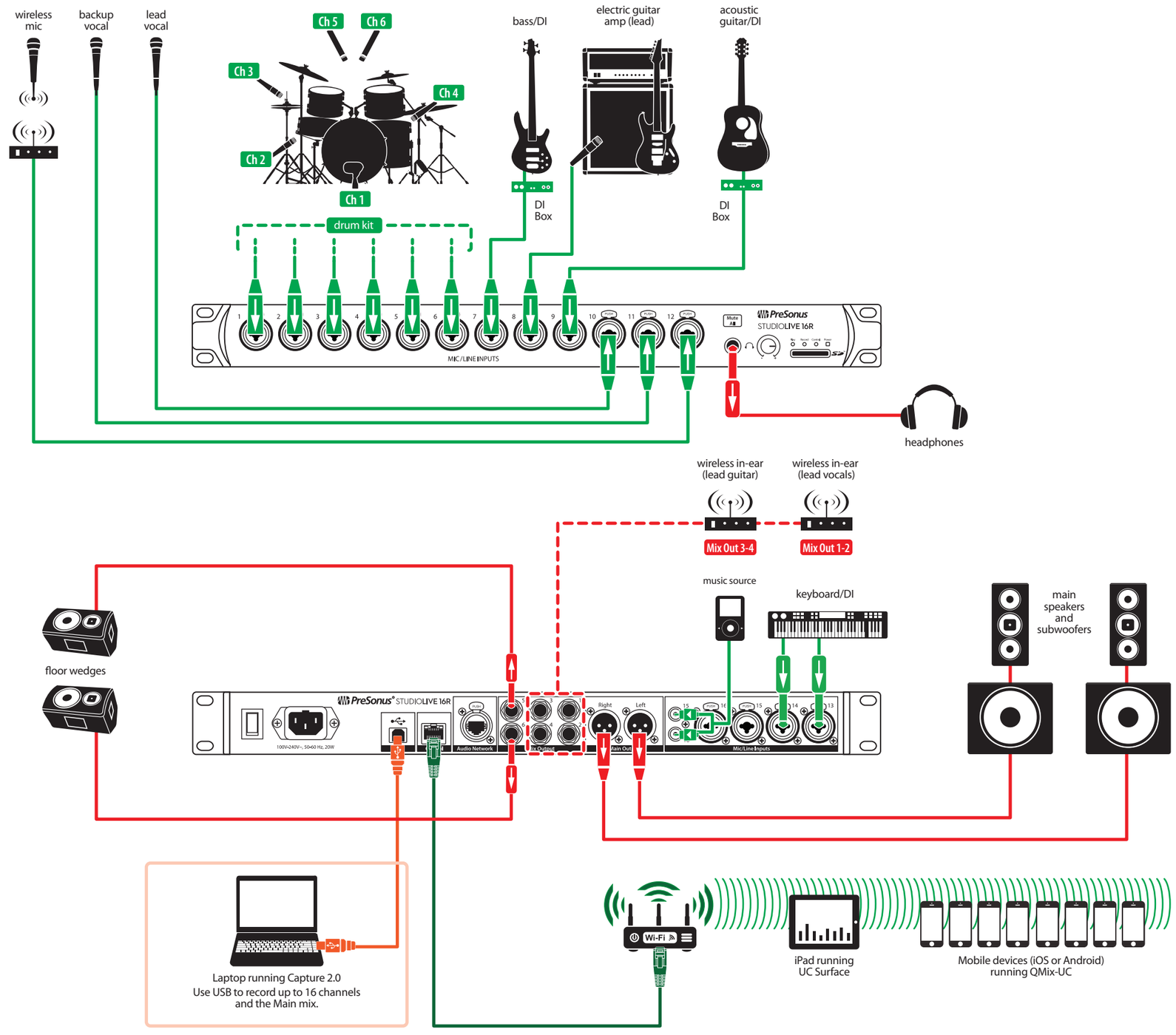
From this point, you can use the Fat Channel to add dynamics processing and EQ as needed. For details on using the Fat Channel ***see the StudioLive Software Library Reference Manual***.

4.2 Typical Setup Diagrams

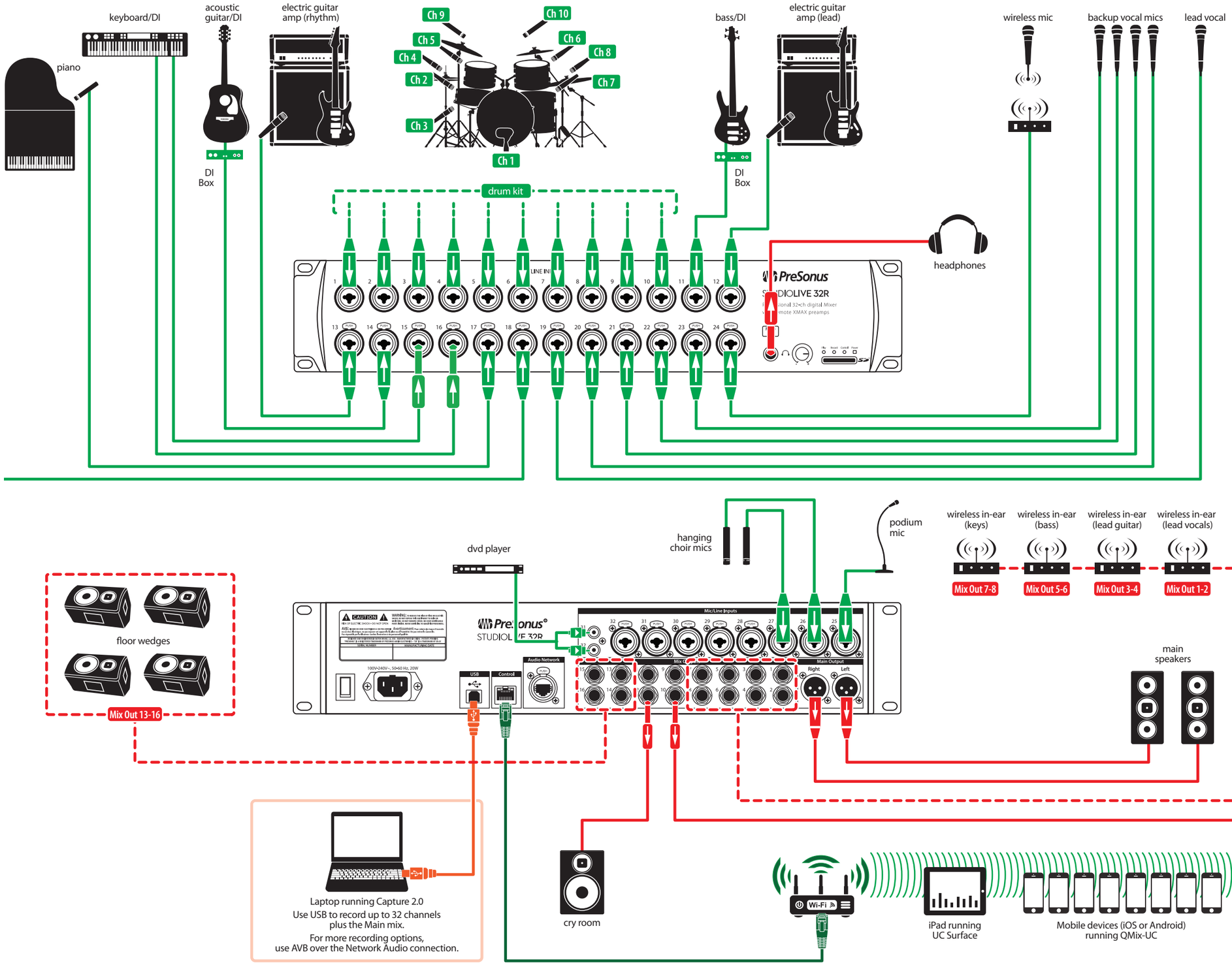
4.2.1 Typical Band Setup (StudioLive 32R)



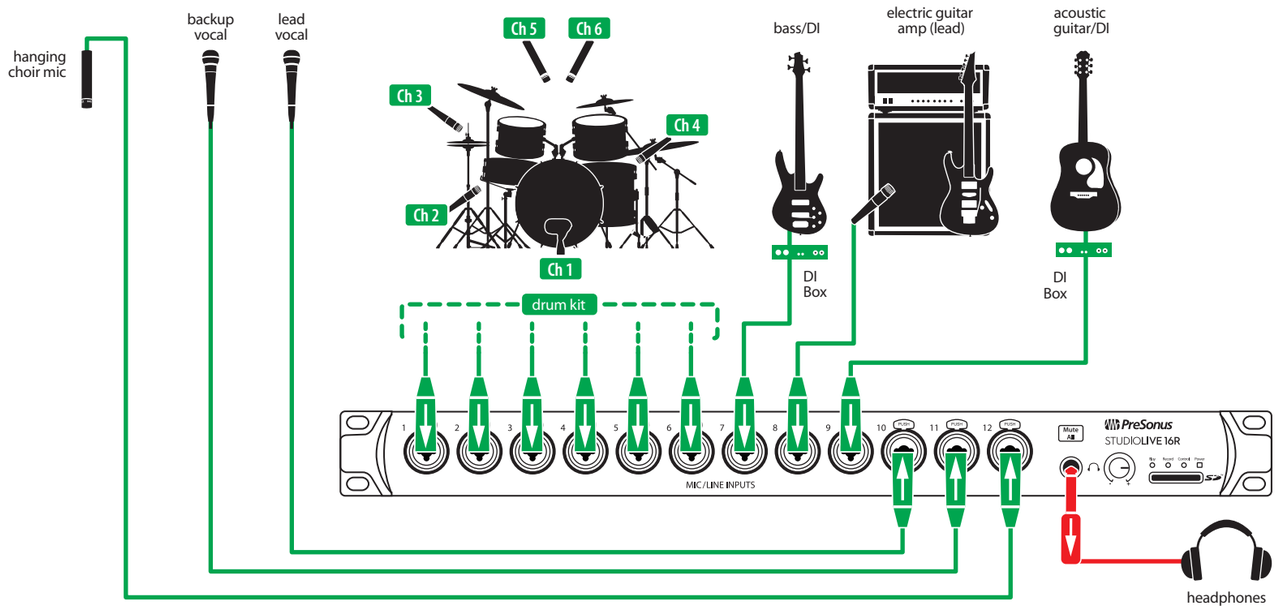
4.2.2 Typical Band Setup (StudioLive 16R)

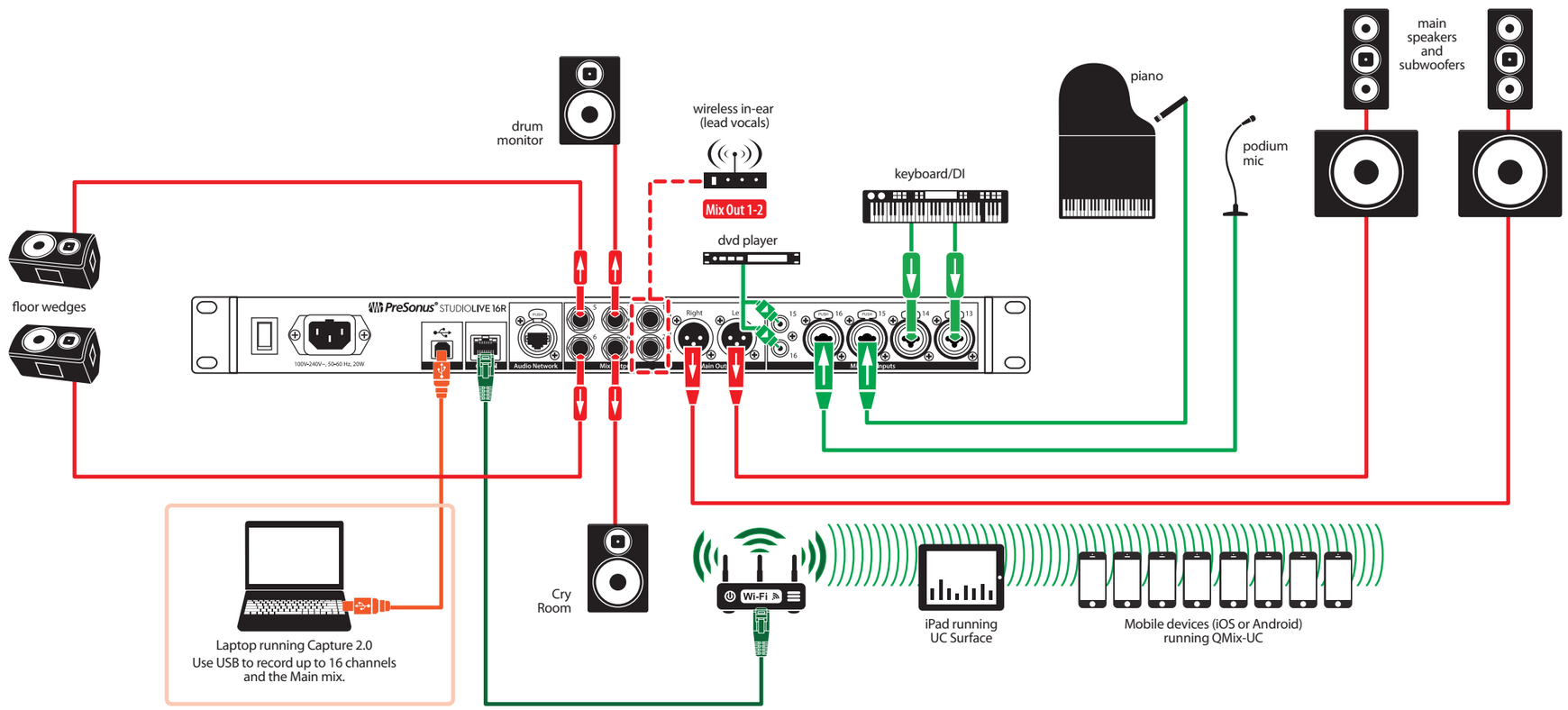


4.2.3 Typical Church Setup (StudioLive 32R)



4.2.4 Typical Church Setup (StudioLive 16R)



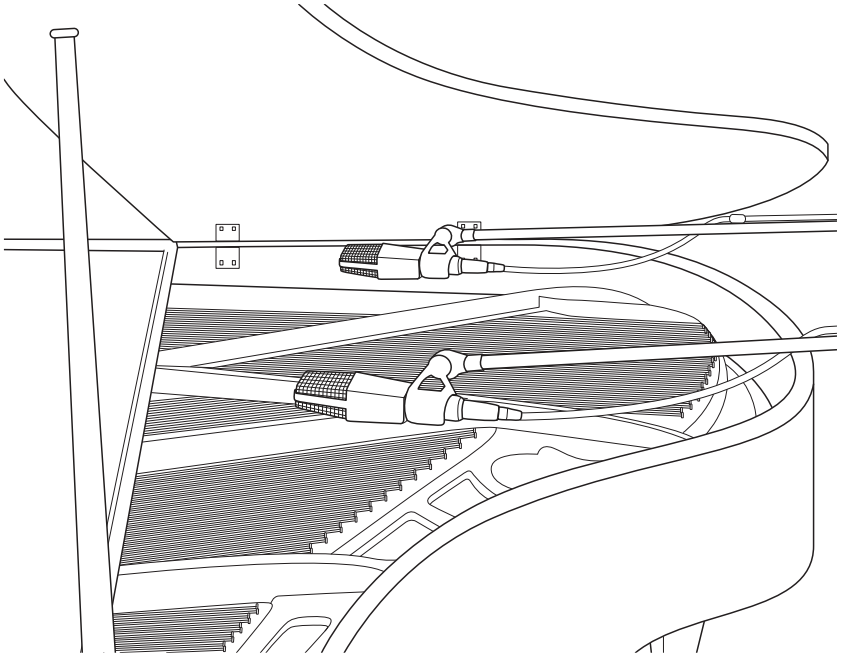


5 Resources

5.1 Stereo Microphone Placement

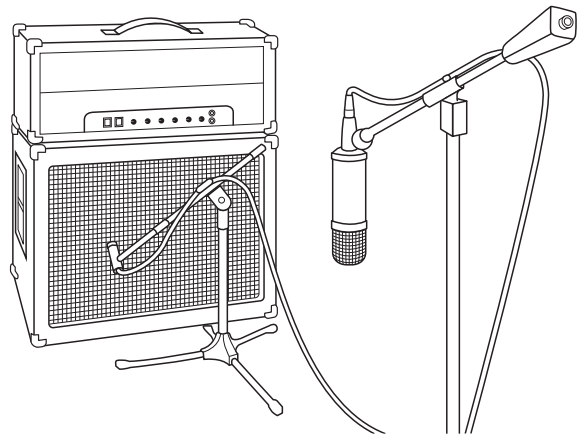
The following are a few recording applications to help you get started with your StudioLive. These are by no means the only ways to record these instruments. Microphone selection and placement is an art. For more information, visit your library or local bookstore, as there are many books and magazines 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



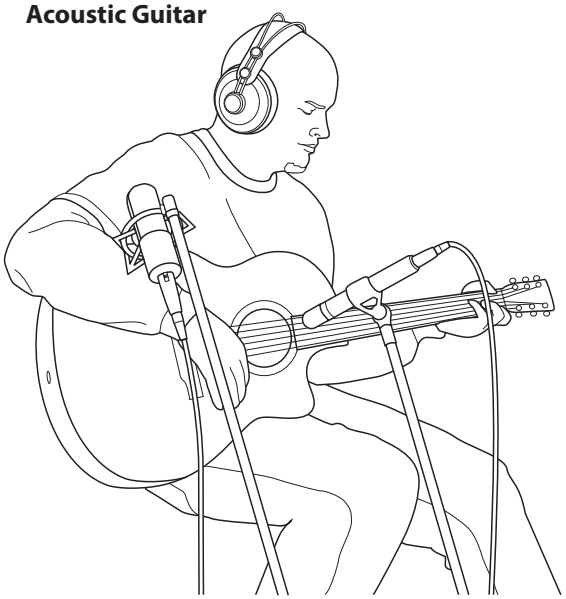
Place one microphone above the high strings and one microphone above the low strings. Experiment with distance (the farther back the more room you will capture). This technique can be used for live and studio applications.

Electric Guitar



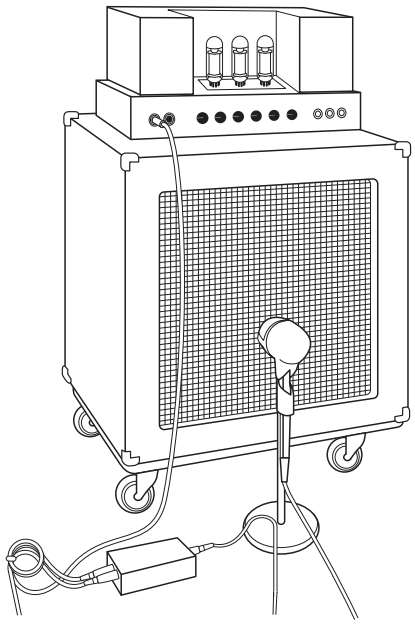
Place a dynamic microphone an inch or two away from the speaker of the guitar amplifier. Experiment with exact location. If you are recording an amp with multiple speakers, experiment with each one to see if one sounds better than the others. Place a condenser microphone approximately six feet away, 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



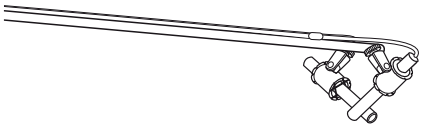
Point a small-diaphragm condenser microphone at the 12th fret, approximately 8 inches away. Point a large-diaphragm condenser microphone at the bridge of the guitar, approximately 12 inches from the guitar. Experiment with distances and microphone placement. Another popular method is using an XY microphone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

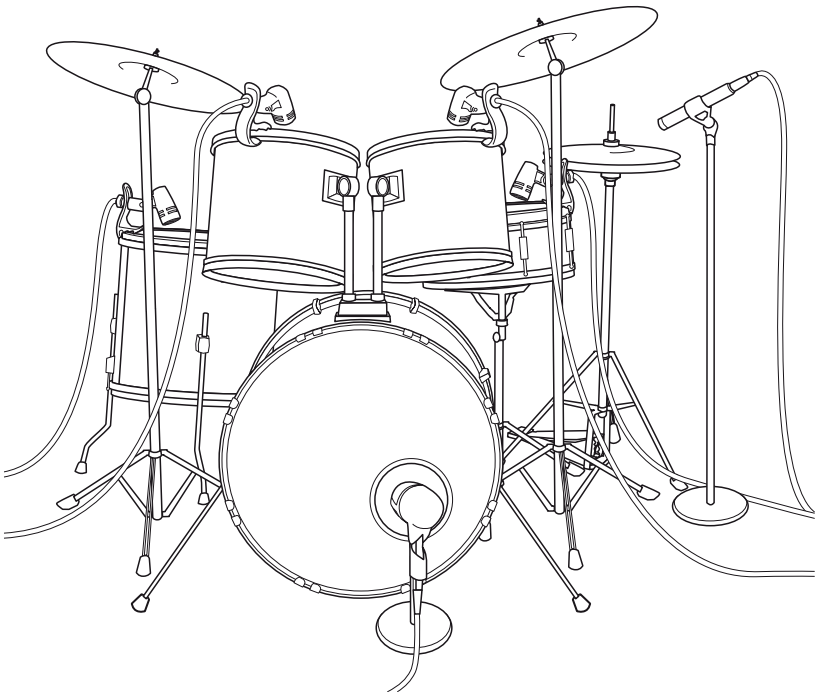
Bass Guitar (Direct and Speaker)



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.

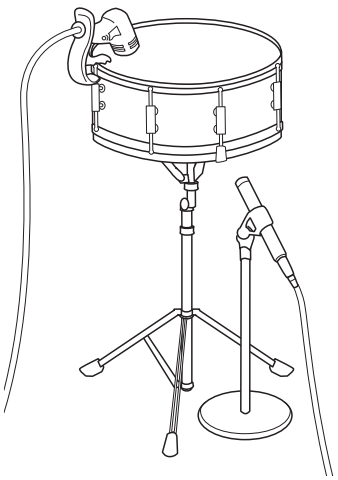
Drum Overheads (XY example)





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.

5.2 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.

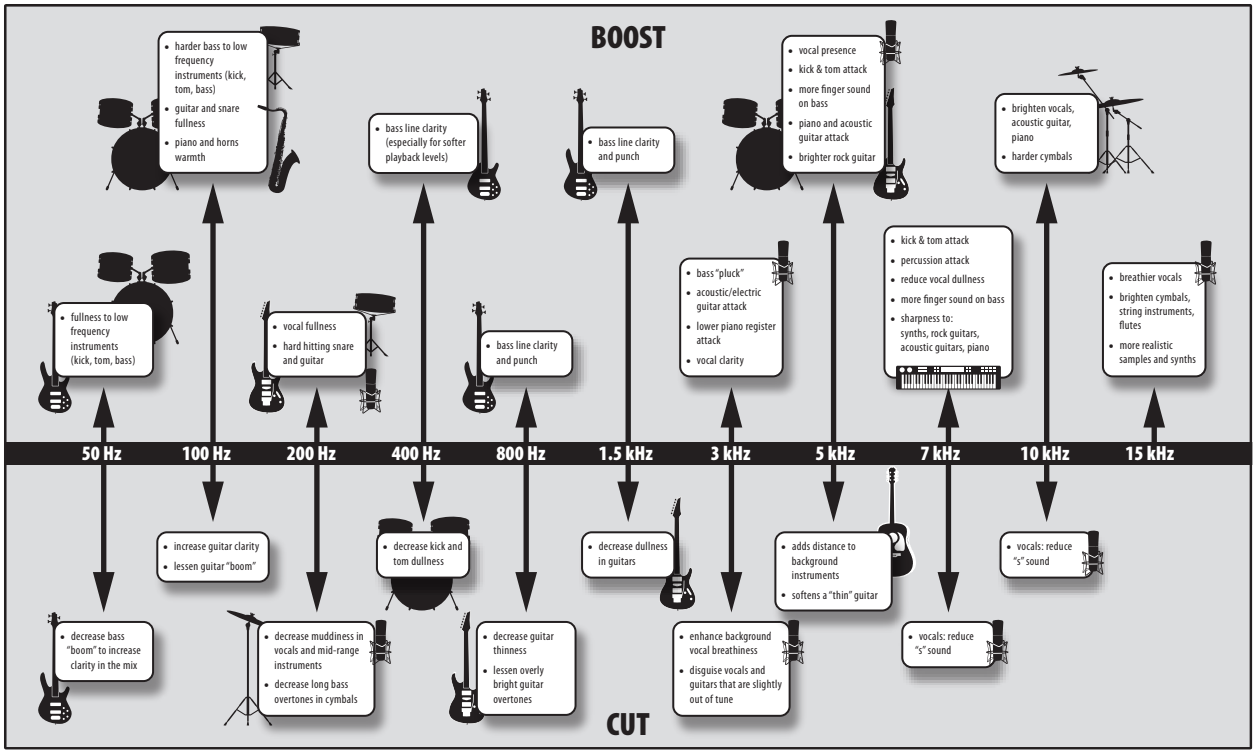
THRESHOLD	RATIO	ATTACK	RELEASE
0 dB	1.9:1	1 ms	0.001 ms

5.3 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



5.4 EQ Setting Suggestions

As with the compression settings in ***Section 5.2***, 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

5.5 Technical Specifications

Microphone Preamplifier

Input Type	XLR Female, balanced
Frequency Response to Main Output (at unity gain)	20-20 kHz, ±0.5 dBu
Input Impedance	1 kΩ
THD to Main Output	<0.005%, +4 dBu, 20-20 kHz, unity gain, unwtd
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)	0 dB to +60 dB
Maximum Input Level (unity gain)	+12 dBu
Phantom Power (±2 VDC)	48 VDC, switchable per channel

Line Inputs

Type	¼"TRS Female, balanced
Frequ¬ency Response to Main Output (at unity gain)	20-20 kHz, ±0.5 dBu
Input Impedance	10 kΩ
THD to Main Output	<0.005%, +4 dBu, 20-20 kHz, unity gain, unwtd
S/N Ratio to Main Output (Ref = +4 dB, 20 kHz BW, unity gain, A-wtd)	94 dB
Maximum Input Level	+18 dBu

RCA Inputs

Type	RCA Female, unbalanced (stereo pair)
Maximum Input Level	+12 dBu, ±0.5 dBu

XLR Outputs

Type	XLR Male, balanced
Maximum Output Level	+24 dBu, ±0.5 dBu
Output Impedance	100Ω

FlexMix Line Outputs

Type	¼"TRS Female, balanced
Maximum Output Level	+18 dBu, ±0.5 dBu
Output Impedance	100Ω

Headphone Output

Type	¼"TRS Female, active stereo
Maximum Output	100 mW/ch. @ 60Ω load
Frequency Response	20 Hz – 20 kHz (± 0.5 dB)
THD+N	0.01%, 1 kHz, max gain, 20 Hz BW, unwtd
S/N Ratio 96 dB, 1 kHz, max gain, 20 Hz BW, unwtd	

System Crosstalk

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

Digital Audio and Control

ADC Dynamic Range	115 dB (A-wtd, 48 kHz)
DAC Dynamic Range	115 dB (A-wtd, 48 kHz)
USB Recording Port	USB 2.0, Type-B
AES/EBU Output	XLR Male
Network Control Port	RJ-45
AVB Audio Network Port	Ethercon
Internal Processing	32-bit, floating point
Sampling Rate	48 kHz (44.1 kHz coming soon)
A/D/A Bit Depth	24
Reference Level for 0 dBFS	+18 dBu
Total System Latency	1.9 ms (local routing, analog in-analog out, all processing active)

Clock

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

Power / Environmental

Connector	IEC
Input-Voltage Range	90 to 230 VAC (±10%)
Power Requirements (continuous)	85W
Recommended Ambient Operating Temperature	0˚ to 40˚ Celsius / 32˚ to 104˚ Fahrenheit

Physical

	StudioLive 16R	StudioLive 24R	StudioLive 32R
Dimensions (HxWxD)	1.75" x 19" x 12"	3.5" x 19" x 12"	3.5" x 19" x 12"
	(45 mm x 483 mm x 305 mm)	(90 mm x 483 mm x 305 mm)	(90 mm x 483 mm x 305 mm)
Product Weight	8.6 lbs. (3.9 kg)	10.8 lbs. (4.9 kg)	11.2 lbs. (5 kg)

5.6 StudioLive Series III Rackmount Mixer Block Diagrams

We've finally made block diagrams too large for our printed manuals. Please visit the downloads page for each model on our Web site for the latest block diagrams of the StudioLive Series III rackmount mixers, provided in Adobe PDF format.



6 Warranty

6.1 Warranty Information

PreSonus's warranty obligations for this hardware product are limited to the terms set forth below:

How Consumer Law Relates To This Warranty:

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY HAVE OTHER RIGHTS THAT VARY FROM STATE TO STATE (OR BY COUNTRY OR PROVINCE). OTHER THAN AS PERMITTED BY LAW, PRESONUS® DOES NOT EXCLUDE, LIMIT OR SUSPEND OTHER RIGHTS YOU MAY HAVE, INCLUDING THOSE THAT MAY ARISE FROM THE NONCONFORMITY OF A SALES CONTRACT. FOR A FULL UNDERSTANDING OF YOUR RIGHTS YOU SHOULD CONSULT THE LAWS OF YOUR COUNTRY PROVINCE OR STATE.

PreSonus Products And EU Statutory Warranty:

When you purchase PreSonus products, European Union consumer law provides statutory warranty rights in addition to the coverage you receive from the PreSonus limited warranty. A summary of the EU Statutory Warranty and the PreSonus Limited Warranty is below:

	EU Consumer Law	PreSonus Limited Warranty
Repair or Replacement Coverage For	Defects present when customer takes delivery	Defects arising after customer takes delivery
Warranty Period	2 years (minimum) from original date of purchase (unless superseded by PreSonus)	1 year from original date of purchase (unless superseded by PreSonus)
Cost of Coverage	Provided at no additional cost	Included at no additional cost
Who to contact to make a claim	The seller	PreSonus technical support for your region

What This Warranty Covers:

PreSonus Audio Electronics, Inc., ("PreSonus") warrants defects in material and workmanship in PreSonus-branded products under normal use. This Limited Warranty applies only to hardware products manufactured by or for PreSonus that can be identified by the PreSonus trademark, trade name, or logo affixed to them.

Exclusions and Limitations:

This warranty does not cover the following:

1. Damage caused by accident, abuse, improper installation, failure to follow instructions in the applicable owner's manual or improper operation, rental, product modification, alteration, or neglect.
2. Damage from improper grounding, faulty wiring (AC and signal), faulty equipment, or connection to a voltage range outside published specifications (see applicable owner's manual).
3. Damage to drivers or diaphragm assemblies found to have burnt voice coils from over/under driving or signal surge from another device.
4. Damage occurring during shipment or improper handling.
5. Damage caused by repair or service performed by persons not authorized by PreSonus.
6. Products on which the serial number has been altered, defaced, or removed.
7. Products purchased from an unauthorized PreSonus dealer (products that have transferable warranties are excluded from this provision, provided the customer and the product are registered with PreSonus).

Who This Warranty Protects:

This Warranty protects only the original retail purchaser of the product (products that have transferable warranties are excluded from this provision provided the customer and the product are registered with PreSonus).

How Long This Warranty Lasts:

The Warranty begins on the original date of purchase from the retail purchaser, and the duration is as follows:

1-Year Limited Warranty		
Product Category	**Model**	**Transferable**
Recording Interfaces	AudioBox® iOne, AudioBox iTwo, AudioBox Stereo, AudioBox Studio, AudioBox USB, AudioBox VSL (1818, 44, 22), FireStudio™ Project, FireStudio Mobile, FireStudio Mobile Studio, Studio 192, Studio 192 Mobile	No
Preamplifiers	ADL600, ADL700, BlueTube DP V2, DigiMax D8, DigiMax DP88, Eureka, RC500, Studio Channel, TubePre V2	No
StudioLive® Mixers	16.0.2, 16.4.2AI, 24.4.2AI, 32.4.2AI, AR8, AR12, AR16, RM16AI, RM32AI	No
Monitoring & Controlling	Eris®, Central Station PLUS, FaderPort™, HP4, HP60, Monitor Station, Monitor Station V2, R-Series, Sceptre®, Temblor®	No
Accessories	Covers, Dolly, PRM1 mic, Sub Pole, breakout cables, power supplies, M10 Kit	No
3-Years Limited Warranty		
Product Category	**Model**	**Transferable**
Live Sound	StudioLive AI 328, 312, 315, 18S, ULT12, ULT15, ULT18, AIR10, AIR12, AIR15, AIR15S, AIR18S	Yes

What PreSonus Will Do:

PreSonus will repair or replace, at our sole and absolute option, products covered by this warranty at no charge for labor or materials. If the product must be shipped to PreSonus for warranty service, the customer must pay the initial shipping charges. PreSonus will pay the return shipping charges.

How to Get Warranty Service (USA):

1. You must have an active user account with PreSonus, and your hardware must be on file with your account. If you do not have an account, please go to: http://www.presonus.com/registration and complete the registration process.

2. Contact our Technical Support Department at (225) 216-7887 or log a support ticket at: http://support.presonus.com. TO AVOID THE POSSIBILITY OF SENDING IN A PRODUCT THAT DOES NOT HAVE A PROBLEM, ALL SERVICE REQUESTS SHALL BE CONFIRMED BY OUR TECH SUPPORT DEPARTMENT.

3. The return authorization number as well as shipping instructions shall be provided after your service request is reviewed and confirmed.

4. The product should be returned for service in the original product packaging. Products may be shipped in a manufactured "flight"- or "road"-style cases but PreSonus will NOT cover any shipping damage to these cases. Products that are not shipped in the original product package or a manufactured case may not receive a warranty repair, at PreSonus's sole discretion. Depending on the product model and the condition of your original packaging, your product may not be returned to you in the original packaging. The return shipping box may be a generic box that has been fitted for that model tested if the original gift box is not available.

How to Get Warranty Service (outside of USA):

5. You must have an active user account with PreSonus and your hardware must be on file with your account. If you do not have an account, please go to: http://www.presonus.com/registration and complete the registration process.

6. Contact the Technical Support/Service Department for your region at http://www.presonus.com/buy/international_distributors and follow procedures provided by your PreSonus contact.

Limitation of Implied Warranties:

ANY IMPLIED WARRANTIES, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO THE LENGTH OF THIS WARRANTY.

Some states, countries, or provinces do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

Exclusion of Damages:

PRESONUS'S LIABILITY FOR ANY DEFECTIVE PRODUCT IS LIMITED TO THE REPAIR OR REPLACEMENT OF THE PRODUCT, AT PRESONUS'S SOLE OPTION. IF PRESONUS ELECTS TO REPLACE THE PRODUCT, THE REPLACEMENT MAY BE A RECONDITIONED UNIT. IN NO EVENT WILL PRESONUS BE LIABLE FOR DAMAGES BASED ON INCONVENIENCE, LOSS OF USE, LOST PROFITS, LOST SAVINGS, DAMAGE TO ANY OTHER EQUIPMENT OR OTHER ITEMS AT THE SITE OF USE, AND, TO THE EXTENT PERMITTED BY LAW, DAMAGES FOR PERSONAL INJURY, OR ANY OTHER DAMAGES WHETHER INCIDENTAL, CONSEQUENTIAL OR OTHERWISE, EVEN IF PRESONUS HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Some states, countries, or provinces do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

If you have any questions about this warranty or service received, please contact PreSonus (USA) at +1 (225) 216-7887 or one of our authorized international distributors at: http://www.presonus.com/buy/international_distributors.

Product features, design, and specifications are subject to change without notice.

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. 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™ Series III Rack Mixers

Rackmount Digital Mixing and Remote I/O System with AVB

Owner's Manual



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