PreSonus StudioLive 24 Series III
Archictectural and Engineering Specifications

1. GENERAL CONFIGURATION.
The mixer shall be a digital mixer and shall accommodate 24 total inputs, including 16 microphone signals, channels 1-16, configured as 8 microphone inputs and 8 mic/line inputs. The mixer shall also include 1 stereo pair of RCA-type phono Tape inputs; 2 stereo Aux inputs; Bluetooth™ 4.1 wireless tape input; 1 Talkback microphone input; 16 Mix (FlexMix) outputs; 1 balanced stereo pair of Main mix outputs; 1 balanced summed mono Main mix output; 4 balanced subgroups outputs; stereo AES/EBU digital output; 2 balanced monitor outputs; 1 stereo Headphone output; one USB 2.0 Type B port that can connect to a Mac or Windows PC for recording and control; 1 locking XLR Ethernet AVB audio network port; and 1 Ethernet control network port. The mixer shall be fitted with 1 rocker-type Power switch; 1 3-pin IEC power receptacle that accepts 100-240 VAC; and 1 BNC socket, providing 12 VDC at 0.5A, for fitting an external lamp (not included); and shall be entirely self-contained.

2. MIXER INPUTS.
CHANNELS 1–8: Each channel shall include an electrically balanced, mono microphone input, using an XLR-3-F-type connector that shall accept nominal levels from -30 dBu to +16 dBu.
CHANNELS 9-16: Each channel shall include an electrically balanced, combination XLR microphone/¼" line-level input, accepting recallable, nominal levels from -30 dBu to +16 dBu.
CHANNELS 1-16: Each channel shall include one recallable XMAX Class A solid-state microphone preamplifier. Phantom power shall be individually enabled/disabled for each channel. In addition, each channel shall accept an input signal from the digital return bus. The input of each channel shall be switchable between the analog inputs, the digital (USB 2.0 or AVB) input, and the digital SD recorder returns. Each channel and auxiliary bus shall have a Solo switch and a Mute switch.
OTHER INPUTS: The mixer shall include 4 balanced Aux inputs, forming 2 stereo pairs, using ¼" TRS phone jacks, accepting nominal levels from -10 dBV to +4 dBu and maximum input levels of +18 dBu; a Talkback microphone input that shall include one recallable XMAX Class A solid-state microphone preamplifier with 48V phantom power always present; stereo Bluetooth 4.1 wireless Tape input; and 1 stereo pair of Tape input jacks, using unbalanced RCA-type phono jacks, accepting nominal levels from -10 dBV to +4 dBu. The Tape input source shall be switchable between the analog Tape input, the digital (USB or AVB) input, and the SD Recorder returns, using a button-type switch. The Tape input level shall be controllable using a rotary encoder.
CHANNEL STRIP METERING: Each input channel strip shall include a 3-LED level meter, including a red LED indicating Overload.

3. MIXER OUTPUTS.
MAIN OUTPUTS: The mixer's Main mix-bus stereo outputs shall be fitted using balanced XLR jacks, delivering a maximum output of +24 dBu. Each pair of Main mix-bus stereo outputs shall have an output impedance of 100Ω. Output level shall be controllable using a single rear-panel knob. The Main mix-bus summed Mono output shall be fitted with one balanced XLR jack, delivering a maximum output of +24 dBu, and with an output impedance of 100Ω; and it shall include a rear-panel rotary level control.
MIX (FLEXMIX) OUTPUTS: Mix Outputs 1-6 shall be fitted using balanced XLR jacks, delivering a maximum output of +24 dBu with an output impedance of 100Ω. Mix Outputs 7-10 shall be fitted with balanced TRS ¼" jacks, delivering a maximum output of +18 dBu with an output impedance of 100Ω. Each Mix Output shall be individually configurable as Aux (selectable pre- or post-fader), Subgroup, or Matrix mix outputs.
OTHER OUTPUTS: The mixer shall have 4 dedicated Subgroup outputs, which shall be fitted with balanced TRS ¼" jacks, delivering a maximum output of +18 dBu with an output impedance of 100Ω; and 2 Monitor outputs, which shall be fitted with balanced TRS ¼" jacks, delivering a maximum output of +18 dBu with an output impedance of 100Ω. The mixer shall also include 1 stereo Headphone output, using an unbalanced TRS F phone jack (tip=left, ring=right, sleeve=ground), and with a maximum output level of 100 mW per channel.

4. MIX SELECT SECTION.

The mixer shall include 16 color-coded Mix Select buttons, which shall select the mix shown on the faders. Four additional buttons shall enable selection of FX buses A, B, C, and D. An additional button shall select the Main mix bus.

5. DYNAMICS PROCESSING, PARAMETRIC EQ, AND BUS ASSIGNMENT.

All input channels, aux buses, and the Main bus shall be routed to a section called the "Fat Channel" when their associated Select buttons are pressed. The Fat Channel shall provide eight digital "Scribble Strip" displays that shall show pertinent data about the settings. Each Scribble Strip shall have a dedicated rotary encoder for adjusting settings, as well as a multipurpose button.

The Fat Channel shall provide the following digital signal processing: polarity invert (input channels only), highpass filter (input channels and aux buses only), low pass filter (Main channels only), switchable gate/expander, compressor, limiter, and fully parametric equalizer (EQ). The gate/expander shall include a side-chainable Key Filter, Key Listen, Threshold, Range, Attack, and Release parameters. The compressor shall have a side-chainable Key Filter, Key Listen, sweepable Threshold, Ratio, Attack, Release, and Gain; shall include an Auto Attack and Release feature; and shall be switchable between hard and soft knee. The limiter shall have a sweepable Threshold.

The mixer shall provide 4-band parametric EQ for each input and 6-band parametric EQ for each bus output. Each band shall offer a frequency range from 20 Hz to 20 kHz and shall be capable of being individually enabled/disabled. It shall also be possible to enable/disable the EQ globally. The parametric EQ shall have a separate switch that provides access to the equalization settings for the currently selected channel or mix. The Fat Channel shall provide three EQ modes, each with its own controls, including a standard EQ; a passive program EQ (input channels only) that shall be a model of a tube-based EQ; and a model of a vintage 1970s EQ (input channels only). The standard EQ shall be equipped with a Real Time Analyzer (RTA) for analysis of frequency content of channels and buses. The RTA shall be displayed on the mixer touchscreen (see section 8, "Master Control Section").

The mixer shall be able to store two complete sets of Fat Channel EQ and dynamics-processor settings for every channel and bus. It shall be possible to A/B compare the two sets for a given channel or bus.

In addition, the Fat Channel shall enable assignment of the input source—Analog, AVB Network, USB, or SD Card—for the selected channel; shall enable signals to be assigned to the subgroups, FlexMixes, and Main bus; shall enable adjacent odd-even channels (Channels 1-2, 3-4, etc.) to be linked in stereo; shall enable toggling of polarity invert and +48V phantom power on/off; and shall provide a pan control. The Fat Channel also shall provide button switches that enable channel settings to be copied, loaded, and saved to and from onboard memory.

The Fat Channel also shall incorporate a User Mode in which it is possible to assign user-selectable functions to an encoder and its adjacent button.

6. GRAPHIC EQUALIZER

The mixer shall include eight 31-band, 1/3-octave graphic equalizers, which shall be assigned to the Main mix bus, subgroups, and selectable FlexMix buses. Gain shall be ±15 dB for each frequency band. The touchscreen display (see section 8, "Master Control Section") and the faders shall provide access to all graphic EQ settings. A GEQ button shall be provided to enable/disable the graphic EQ. It shall be possible to save GEQ settings as presets.

7. MASTER FADER SECTION.

The Master fader section shall supply 1 stereo fader for the Main bus, providing up to 10 dB gain and marked at ∞, -40, -30, -30, -20, -10, -5, Unity (0) , +5, and +10 dB. Other controls shall include a Select button, GEQ button to open the graphic equalizer screen, and Mute button.

8. MASTER CONTROL SECTION.

The mixer shall provide a Master Control section that shall include the following:

TOUCHSCREEN DISPLAY: The Master Control section shall provide a digital touchscreen that shall display, and enable editing of, the controls for the currently selected mixer function, such as mix send levels, processor parameters, and send assignments.

MAIN METERING: The Master Control section shall provide individual level meters for the left and right channels of each Main mix bus. Each meter shall include a red indicator representing Overload. The meter shall be calibrated so that a 0 dBu signal at the Main output shall be indicated as -18 dBFS on the meters, ±1 dB.

OTHER CONTROLS: The Master Control section shall provide transport controls for the onboard SD recorder, including Return to Zero, Stop, Play, and Record. The Master Control section also shall provide buttons for accessing the DCA Groups and for editing, storing, and recalling mix scenes; a UCNET button for configuring control-network settings; a DAW button that shall enable the mixer to act as a control surface for computer-based digital audio workstation software (coming soon); a Bluetooth button for pairing Bluetooth devices for playback on the Tape input; and controls for the SD recorder's Virtual Soundcheck feature. A Home button shall cause the touchscreen to display a Home screen that provides access to system configuration and troubleshooting settings and functions.

9. SOLO AND MONITOR BUSES.

The mixer shall have a Solo bus that shall be controlled with a Solo level control; Solo options that shall be available from the Solo Edit page; and a Solo-In-Place (SIP) mode. The following Solo modes shall be provided: Latching, Radio, and CR.

The mixer shall have separate Monitor and Headphone buses, each independently sourced from the Tape input, Digital input, Solo bus, or any other mix bus. Each shall have a delay. The mixer shall enable switching the Headphone output between the available sources, and dedicated rotary encoders shall control the Headphone and Monitor bus output levels.

10. EFFECTS MASTER SECTION.

The mixer shall include four programmable stereo, 32-bit effects processors that shall provide reverb and delay effects and shall include an onboard library of effects presets. The Effects Master section shall provide 4 Mute buttons, one for each processor, as well as a Tap button, the primary purpose of which is setting tempo for the delay effects. It shall also be possible to use the Tap button to "null" any Fat Channel parameter.

The mixer shall provide a programmable, convolution-style reverb that emulates an acoustic space; a programmable software emulation of a classic 1980s-style digital reverb; a programmable software emulation of a mechanical plate reverb; and programmable mono, stereo, and ping-pong delay effects.

11. MEMORY AND GENERAL SETTINGS.

The mixer shall provide digital memory (storage) for the status of all digital mixer parameters, including the channel trims. The mixer shall enable storage of global scenes, channel-strip scenes, and effects presets. The mixer shall provide factory channel-strip presets and factory effects presets. The mixer shall permit settings to be copied between channels and buses.

12. SD RECORDER AND AUDIO INTERFACE.

The mixer shall provide a built-in recording section that shall utilize onboard, preconfigured recording software to record up to 34 audio streams and play back up to 34 audio streams. The recording medium shall be a Class 10 U3 SD Card. The recording software shall offer a Virtual Soundcheck feature.

In addition, the mixer shall be capable of serving as an audio interface that can send audio streams to, and return audio streams back from, a Mac or Windows computer. In this capacity, the mixer shall be able to operate as a 38 x 38 USB 2.0 interface or as a 55 x 55 AVB recording interface. The interface shall support digital audio with up to 24-bit bit depth and 48 kHz sample rate (44.1 kHz coming soon).

13. DAW CONTROL MODE.

The mixer shall be capable of acting as a control surface for digital audio workstation software running on a connected Mac or Windows computer. This mode shall be accessed using a DAW button (see section 8, "Master Control Section"). Note that this feature will not be implemented when the mixer first ships and will be added in a later firmware update.

14. ADDITIONAL CONTROLS AND PORTS.

Previous and Next navigation buttons shall enable switching between banks of input channels, output buses, DCA Groups, and so on. A Talk button shall activate the Talkback feature..

The mixer shall include an RJ45 Ethernet control port that shall provide networking capability to a standard wireless or wired router. The mixer shall also provide a locking XLR Ethernet AVB networking port for transferring audio. In addition, the mixer shall provide a USB 2.0 Type B port for recording and playing back audio to and from a computer and for control from a computer.

16. BUNDLED SOFTWARE.

The mixer shall ship with at least three software packages, which shall include:

• A complete mixer-control/editor/librarian application for Mac, Windows, iPad, and Android that provides preset- and scene-management features and enables real-time adjustment and recall of all mixer settings. This application shall support Windows 8/10 and iPad touchscreens.

• A multitrack audio-recording application for Mac and Windows that shall be primarily intended for recording live events and remote-controlling the mixer for virtual soundchecks.

• A digital audio workstation application for Mac and Windows that shall enable recording, editing, and playback of both MIDI data and audio.

• Using software, the mixer Aux buses shall be controllable from an Apple iPhone, iPod touch, or Android device when networked via Wi-Fi (802.11) directly to the mixer, using a router.

17. FIRMWARE UPDATES.

The mixer shall be field-updatable via firmware. Mixer firmware shall be updated using an SD Card or a connected device running the mixer control/editor/librarian application (see section 15, Bundled Software).

18. PHYSICAL CONFIGURATION.

The mixer shall be made of steel and shall weigh 23.15 lbs (10.5 kg). Dimensions of the mixer shall be 6.51" (16.53 cm) in height, 17.6" (44.67 cm) in width, and 23" (58.4 cm) in depth.