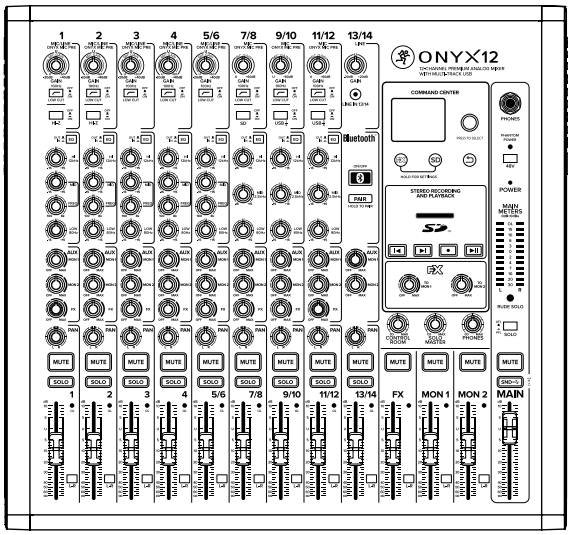
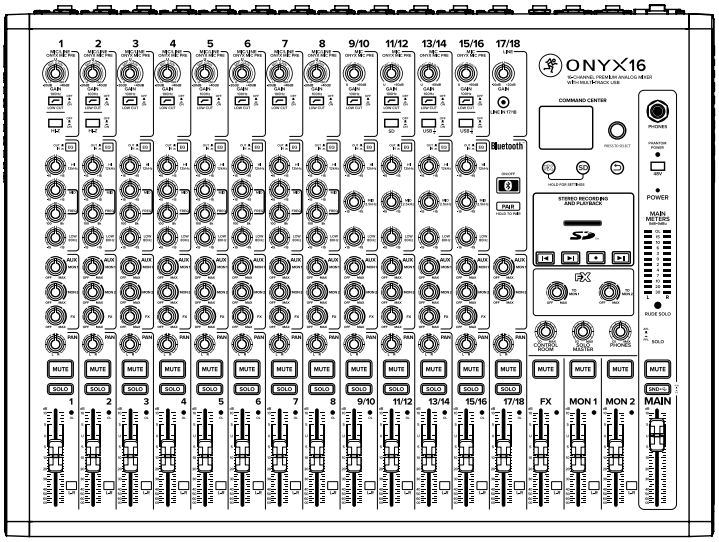
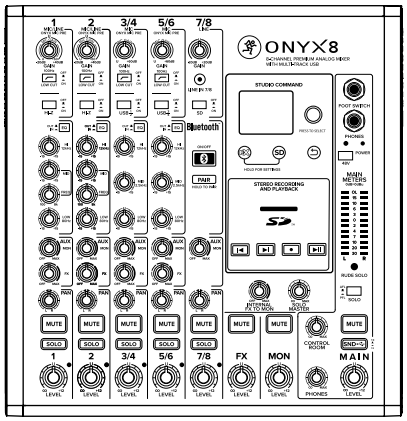
ONYX SERIES

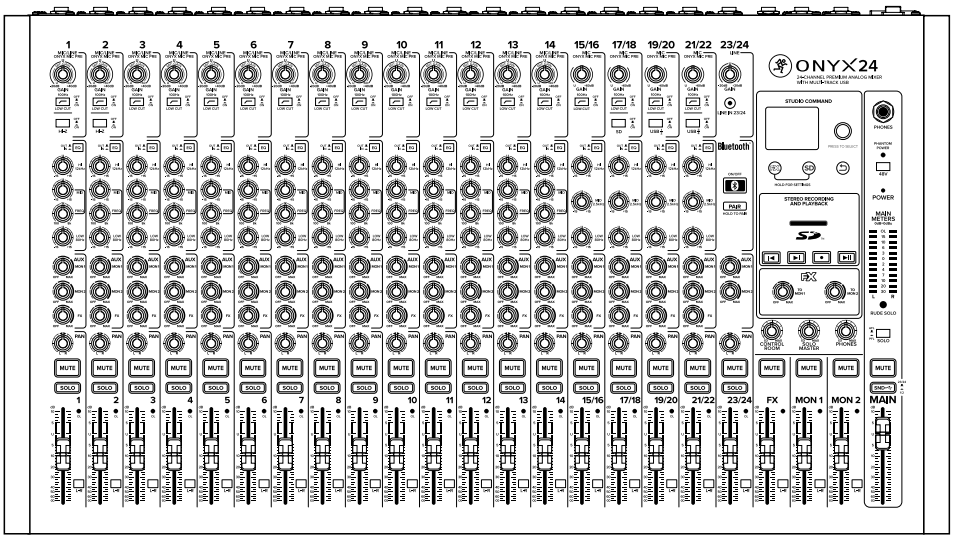
PREMIUM ANALOG MIXERS WITH MULTI-TRACK USB

OWNER'S MANUAL









MACKIE.

Important Safety Instructions

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 a dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Minimum distance (5 cm) around the apparatus for sufficient ventilation. The ventilation should not be impeded by covering the ventilation openings with items, such as newspapers, table-cloths, curtains, etc.
9. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
10. No naked flame sources, such as lighted candles, should be placed on the apparatus.
11. 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 or 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.
12. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
13. Only use attachments/accessories specified by the manufacturer.
14. Use only with a cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.

15. Unplug this apparatus during lightning storms or when unused for long periods of time.
16. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
17. This apparatus shall not be exposed to dripping or splashing, and no object filled with liquids, such as vases or beer glasses, shall be placed on the apparatus.
18. Do not overload wall outlets and extension cords as this can result in a risk of fire or electric shock.

CAUTION

RISK OF ELECTRIC SHOCK! DO NOT OPEN!

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

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

The exclamation point within an equilateral triangle is intended to alert the user of the prescence of important operating and maintaining (servicing) instructions in the literature accompanying the appliance.

WARNING — To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.

Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan.

Apparatet stikprop skal tilsluttes en stikkontakt med jord, som giver forbindelse til stikproppens jord.

Apparatet må tilkoples jordet stikkontakt.

Apparaten skall anslutas till jordat uttag.

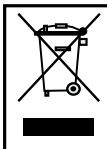
19. This apparatus has been designed with Class-I construction and must be connected to a mains socket outlet with a protective earthing connection (the third grounding prong).
20. This apparatus has been equipped with a rocker-style AC mains power switch. This switch is located on the rear panel and should remain readily accessible to the user.
21. The MAINS plug or an appliance coupler is used as the disconnect device, so the disconnect device shall remain readily operable.
22. The use of apparatus is in moderate climates.
23. This device should be installed and operated with minimum distance 20cm between the radiator & your body.

The product can be sold in all EU countries.
Bluetooth transmitter Power: ≤8dBm
Bluetooth transmitter frequency range: 2.402 – 2.480 GHz

24. **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 LOUD Audio, LLC could void the user's authority to operate the equipment under FCC rules.
25. This apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the radio interference regulations of the Canadian Department of Communications.
Canada ICES-003(B)/NMB-003(B)
26. Exposure to extremely high noise levels may cause permanent hearing loss. Individuals vary considerably in susceptibility to noise-induced hearing loss, but nearly everyone will lose some hearing if exposed to sufficiently intense noise for a period of time. The U.S. Government's Occupational Safety and Health Administration (OSHA) has specified the permissible noise level exposures shown in the following chart.
According to OSHA, any exposure in excess of these permissible limits could result in some hearing loss. To ensure against potentially dangerous exposure to high sound pressure levels, it is recommended that all persons exposed to equipment capable of producing high sound pressure levels use hearing protectors while the equipment is in operation. Ear plugs or protectors in the ear canals or over the ears must be worn when operating the equipment in order to prevent permanent hearing loss if exposure is in excess of the limits set forth here:

Duration, per day in hours	Sound Level dBA, Slow Response	Typical Example
8	90	Duo in small club
6	92	
4	95	Subway Train
3	97	
2	100	Very loud classical music
1.5	102	
1	105	Chaz screaming at Troy about deadlines
0.5	110	
0.25 or less	115	Loudest parts at a rock concert



Correct disposal of this product: This symbol indicates that this product should not be disposed of with your household waste, according to the WEEE directive (2012/19/EU) and your national law. This product should be handed over to an authorized collection site for recycling waste electrical and electronic equipment (EEE). Improper handling of this type of waste could have a possible negative impact on the environment and human health due to potentially hazardous substances that are generally associated with EEE. At the same time, your cooperation in the correct disposal of this product will contribute to the effective usage of natural resources. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, waste authority, or your household waste disposal service.

Features

Classic Sound, Modern Performance

- Award-winning Onyx mic preamps provide up to 60dB of gain
- Premium analog circuitry delivers studio-quality sound and keeps noise to a minimum
- Analog/USB channel strips with flexible routing
- Legendary Perkins "British style" EQ with sweepable midrange offers classic sounds of the 60's and 70's
- Robust digital effect engine, including user-customizable reverbs, delays, and more, with a dedicated FX EQ

Record and Playback via SD Card or USB

- High-resolution 96kHz / 24-bit multi-track recording to Mac/PC via USB
- Direct to SD card stereo recording and playback
- Channel-assignable 4-track USB return (2 stereo pairs)
- Send your Main Mix to USB via a dedicated switch

Studio Command - Powerful and Intuitive Full-Color Display and Single-Knob Interface

- Easy navigation of FX parameters, onboard SD recording and playback
- Visually browse files on the SD card via the built-in display
- Dedicated physical buttons for Previous, Next, Record, and Play/Pause
- Store up to 6 user FX presets for easy recall

Professional High-Resolution FX Processor

- Utilize built-in effects for live performances, streams, and beyond
- Reverb, delay, chorus, and more
- Dial in the perfect sound with adjustable parameters and dedicated EQ

Bluetooth® Streaming – Go Wireless

- Pair your Bluetooth enabled device and stream audio directly to a channel on the mixer
- Streamed audio can be routed to Aux Sends and the Main Mix

Powerful Mixing Toolkit

- 3-band Perkins EQ with On/Off hard bypass switch on all channels
- Hi-Z switches allows direct connection of guitars, basses, and other instruments
- 100Hz low-cut filter and 48V phantom power on all mic channels
- Stereo 1/8" input and Bluetooth streaming
- Stereo line inputs
- Aux/Monitor outputs with dedicated per-channel send control
- Dedicated Control Room outputs
- Headphone output with dedicated level control
- Dedicated L-R Assign switches per channel
- 12-segment stereo meters
- Overload indicators on all channels
- PFL/AFL channel solo
- Footswitch input for FX Mute (footswitch not included)

Hit the Ground Running with Powerful Software and Plugins

- Waveform™ OEM recording software and plugin bundle
  - o DAW Essentials™ Bundle for Waveform™ OEM, with 16 powerful plugins like Equaliser, Compressor, Reverber8, and Limiter

Rugged Chassis and Professional Design

- Backlit Mute and Solo buttons provide a positive tactile feel and clear visual feedback
- Sealed rotary pots resist dust and grime
- Built-Like-A-Tank™ heavy steel chassis
- High-visibility, high-contrast controls
- Rugged, QuickGrip™ side cheeks offer convenient mobility and protection

Introduction

Mackie Onyx Premium Analog Mixers with USB are the ultimate compact solution for live audio, home recording, and content creation.

24-Bit / 96kHz multitrack recording, award-winning, high-gain Onyx mic preamps, and an end-to-end ultra-low-noise design deliver the sound quality professionals demand.

Packed with features including powerful DSP effects, British-style Perkins EQ, full-color display, and integrated recording and playback from an SD card.

Mackie Onyx Premium analog mixers give you the power you need to capture your best performance with pristine fidelity at home or on the go.

How to Use This Manual

After this introduction, a getting started guide will help you get things set up fast. The hookup diagrams show some typical setups, while the remaining sections provide details of the Onyx Series mixers.

This icon marks information that is critically important or unique to Onyx. For your own good, read and remember them.

This icon leads you to in-depth explanations of features and practical tips. They usually have some valuable nuggets of information.

This icon draws attention to certain features and functions relating to the usage of Onyx.

Part No. SW1302 Rev. F 03/23
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Quick Start

We realize that you must be really keen to try out your new mixer. Please read the safety instructions on page 2 for information on hearing protection, then have a look through some of the features and details in this manual.

Setup

Use the mixer in a nice clean and dry environment, free from dryer lint and dust bunnies.

Zero the controls

1. Make sure the power switch is off.

2. Fully turn down all the knobs to minimum, except for the channel EQ and pan controls, which should be at their center detent. Set all faders fully down.

3. Make sure all buttons are in the out [disengaged] position.

Connections

1. Push the power cord securely into the IEC connector on the rear panel, and plug it into a 3-prong AC outlet. The mixer can accept any AC voltage ranging from 100 VAC to 240 VAC.

2. Connect the main outputs of the mixer (either XLR or TRS 1/4") to the line level inputs of your amplifier (with speakers already attached) or to the line-level inputs of powered speakers.

3. Plug signal sources into the mixer, such as:
   - Microphones plugged into the mic inputs. Engage phantom power if your mics need it.
   - Instrument level sources, such as acoustic guitars w/active pickups into the instrument inputs.
   - Line-level sources such as keyboards, drum machines, or CD players plugged into the line-level inputs.
   - Phone or tablet paired and connected via Bluetooth.

4. Several channels have insert jacks that can be used to connect an external effects or dynamics processor into the signal chain.

Set the levels

1. Turn on the mixer by pressing the top edge of the power switch.

2. Play something into the channel input at real-world levels.

3. Raise the channel fader to unity.

4. Engage the channel's LR switch (Onyx12 / Onyx16 / Onyx24).

5. Adjust the channel's gain control until the meters stay around the 0 dB LED mark.

6. Repeat steps 2 to 5 for the remaining channels.

7. Raise the main fader to unity.

8. If needed, apply some channel EQ wisely.

9. Adjust the channel levels to get the best mix. Keep the gain controls and fader levels fully down on unused channels.

10. During the performance, if you notice a channel OL LED turning on during peaks, carefully turn down that channel's gain control until OL does not turn on.

RTC and USB

- Set up RTC before continuing on with anything else. Directions are on the following page.
- The USB driver for PC users is available on the Mackie website (www.mackie.com). Mac OS X contains built-in drivers, so no software installation is required.

Other Notes and Things to Remember

- When shutting down, turn off any power amplifiers or powered speakers first. When powering up, turn them on last. This will reduce the chance of turn-on or turn-off thumps.

- Always turn down the phones level when making connections, pressing solo, or doing anything that may cause loudness in the headphones. This will help protect your hearing.

- Always turn down the main mix level and control room level when making connections to the mixer. Better yet, turn off the power.

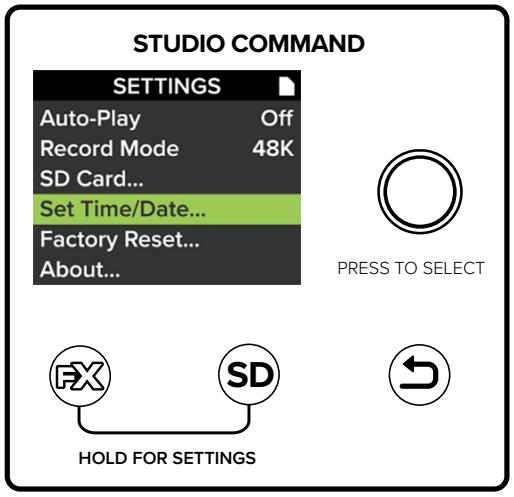
- Save the shipping box and packing materials! You may need them someday. Besides, the cats will love playing in them and jumping out at you unexpectedly. Remember to pretend like you are surprised!

- Save your sales receipt in a safe place.

RTC Setup

RTC is short for 'Real Time Clock'. Recordings require a time stamp, so if the RTC is not set up correctly (or at all), then your SD recordings could be compromised, ruined or just plain unavailable, lost in the ether[1]. We're pretty confident that this would not be your intent when recording[1]. With that said, here are the steps to set up the RTC on your Onyx mixer.

1. Press and hold the FX and SD buttons down simultaneously for one second. Doing so will reveal the Settings screen.



2. Rotate the encoder clockwise until 'Set Time/Date' is highlighted and press the encoder down to select.

3. Now it's time to set the date and time. Rotate the encoder to the current year followed by pressing the encoder down to select. Once the current year has been selected and the encoder pushed down, the next parameter – month – will be highlighted.

4. Follow the same steps to update the month, day and time .

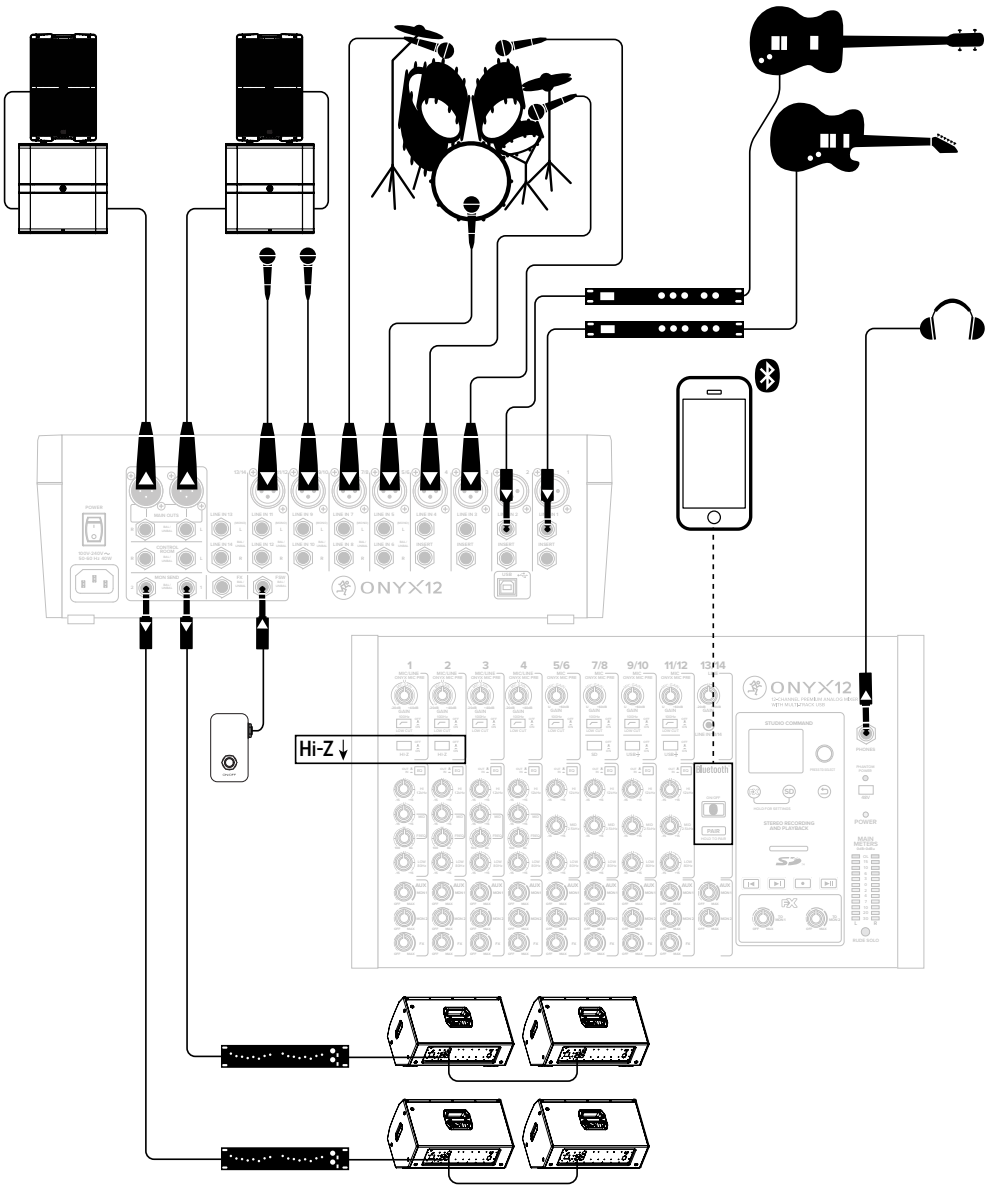
5. Rotate the encoder until 'Confirm' is highlighted and press the encoder down to indeed confirm the changes

See below for a visual representation on how to update the RTC.

NOTE You should only have to do this one time unless you live in a region that observes daylight savings time. Unfortunately, you will also need to update the RTC at the time.

[1] Ok, that's not entirely true... the recordings will still be successful. However, they will be dated 1999 – "2000 zero zero party over oops out of time, so tonight I'm gonna party like it's 1999" – and it will mess up the sorting of the files.

Hookup Diagrams



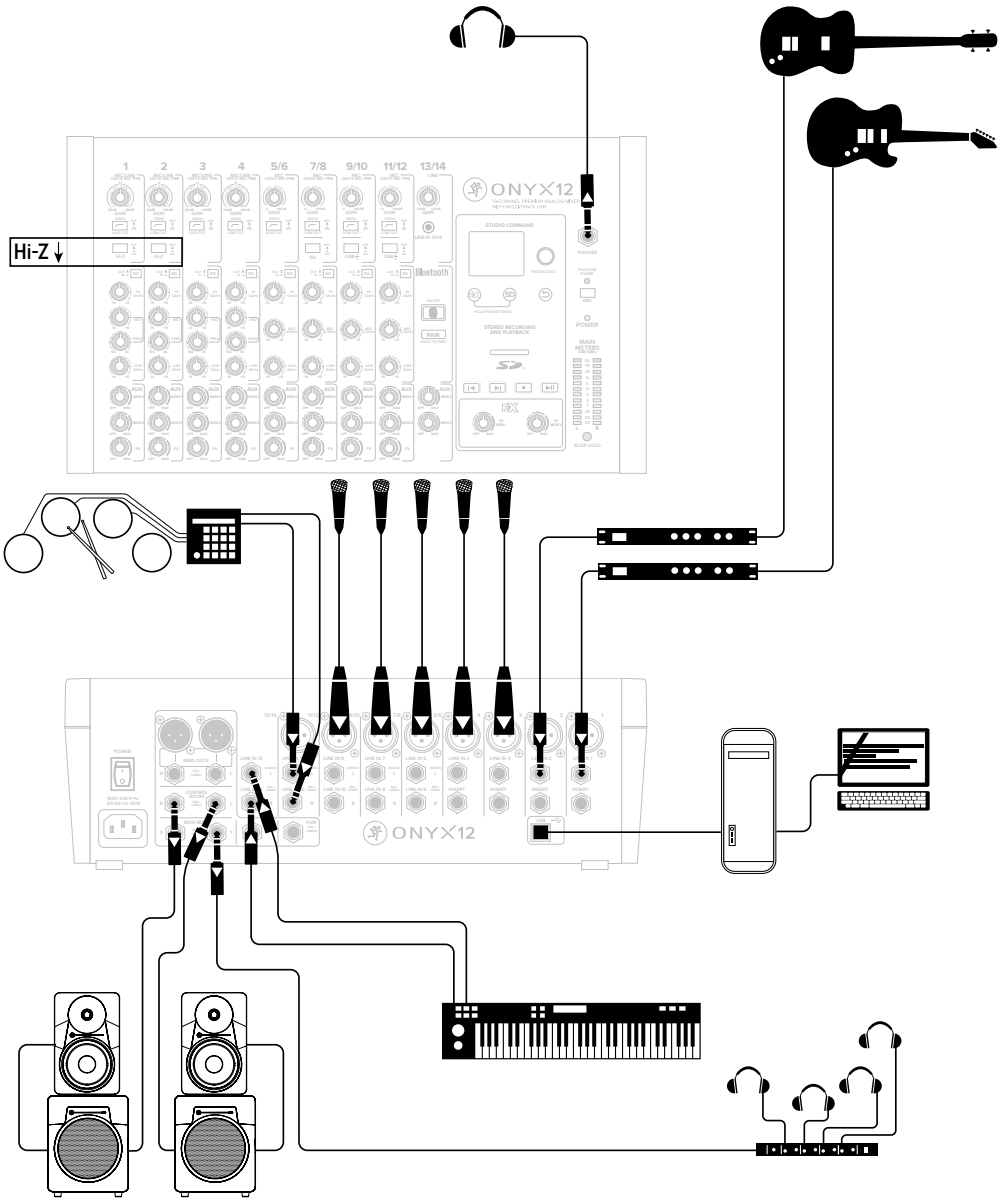
This diagram shows a guitar and bass attached to the channel 1 and 2 line-level inputs, each via a mono effects processor. The Hi-Z switch is engaged on both channels. A mic'd up drum kit utilizes the next four channels of the mixer. Microphones are connected to the following two channels and will handle lead and background vocal duties. A phone is connected to the last channel on the board via Bluetooth.

DRM18S powered subwoofers are connected to the left and right main outputs. Those are then connected to a pair of SRM215 | V-Class loudspeakers to complete the PA. Four SRM212 | V-Class loudspeakers are also set up as stage monitors and connect to the mixer's two aux (monitor) outputs via graphic EQs. The aux mon controls of each channel allow you to create a stage monitor mix as desired. Headphones are used for monitoring and a footswitch allows you to mute/unmute the internal effects as desired.

It's not shown, but a laptop may connect to the USB port on the rear panel of the mixer. It allows the performance to be recorded to a DAW, as well as playback from the computer to the main mix.

Typical Live Sound System

Hookup Diagrams Continued...



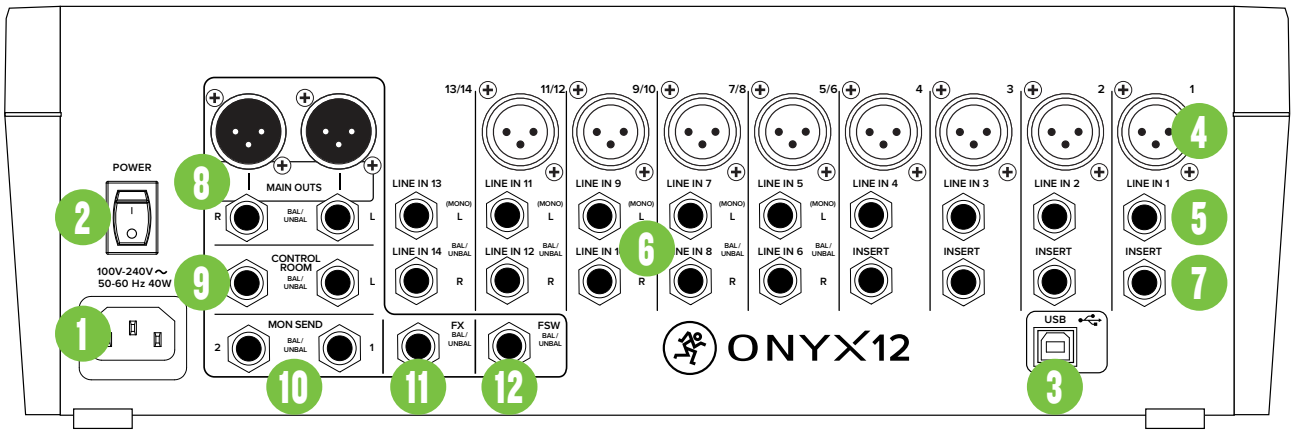
Like the previous hookup diagram, this one also starts with a guitar and bass attached to the channel 1 and 2 line-level inputs, each via a mono effects processor. The Hi-Z switch is engaged on both channels. Microphones are attached to channels 3 through 9/10, an electronic drum kit to stereo channels 11/12 and a keyboard to stereo channels 13/14.

MR Series powered reference subwoofers and monitors are connected to the left and right control room outputs for careful and accurate monitoring of the performance. Headphones connected to aux (monitor) out 1 via a headphone amp are available for the talent to utilize when tracking.

A desktop computer connects to the USB port to record the mix to the DAW, as well as playback from the DAW.

Typical Recording System

Onyx Rear Panel Features



1. Power Connection

This is a standard 3-prong IEC power connector. Connect the detachable line cord (included in the box with your mixer) to the power receptacle, and plug the other end of the line cord into an AC outlet.

Onyx Series mixers have a universal power supply that accepts any AC voltage ranging from 100 VAC to 240 VAC. No need for voltage select switches. It will work virtually anywhere in the world. That's why we call it a "Planet-Earth" power supply! It is less susceptible to voltage sags or spikes, compared to conventional power supplies, and provides greater electromagnetic isolation and better protection against AC line noise.

Disconnecting the plug's ground pin is dangerous. Don't do it.

2. Power Switch

Press the top of this rocker switch inwards to turn on the mixer. The front panel power LED will glow with happiness... or at least it will if you have the mixer plugged into a suitable live AC mains supply.

Press the bottom of this switch to turn the mixer off. It will not work at this point, but makes a handy paperweight.

As a general guide, you should turn on the mixer first, before any external power amplifiers or powered speakers, and turn it off last. This will reduce the possibility of any turn-on, or turn-off thumps in your speakers.

3. USB Input / Output

In addition to being a mixer, the Onyx Series also acts as a high-resolution interface that allows audio to stream to and from the mixer via computer. As seen below, they allow for some powerful and flexible routing.

- Onyx8 – 8x4, 24-bit / 96 kHz
- Onyx12 – 14x4, 24-bit / 96 kHz
- Onyx16 – 18x4, 24-bit / 96 kHz
- Onyx24 – 24x4, 24-bit / 96 kHz

This allows you to record all input channels to the computer via USB and/or return two independent audio streams of stereo playback from a computer.

The USB routing capabilities are as follows:

USB input TO the mixer – playback:

(1) A USB 1-2 switch is located on the third to last stereo channel – the channel directly to the left of the one with the USB 3/4 switch – of each mixer, so one may route the computer's DAW output (such as Pro Tools®, Tracktion®, Cubase®, Reaper®, etc.) to the mixer and blend that signal with the live inputs of the mixer in the headphones for latency-free monitoring.

(2) A USB 3-4 switch is located on the second to last stereo channel – the channel directly to the left of the one with the 1/8" input – of each mixer, so one may route computer output (such as Spotify®, Apple Music®, Pandora®, YouTube®, etc.) down this stereo channel. This stereo signal may then be EQ'd, sent to auxiliaries (i.e. to feed monitors, headphones or effects) and is routable to mains via the fader routing features that are available on all other channels. In short, this signal may be sent to nearly any desired output or pair of outputs.

USB output FROM the mixer – recording, etc:

It is possible to record the main mix to take home a copy of the live show. These levels are pre-main fader. Therefore, levels may be mixed up or down in the DAW later depending on the needs of the recording versus the live show. The end result is that fade-ins and/or fade-outs made during the show do not affect recorded levels.

4. Mic Ins

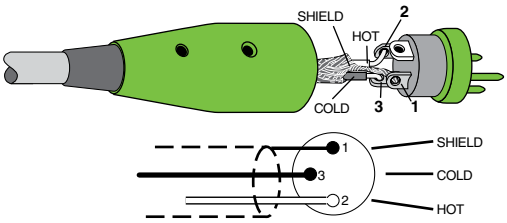
This is a female XLR connector that accepts a balanced mic or line level input from almost any type of source. These Onyx mic preamps feature higher fidelity and headroom rivaling any standalone mic preamp on the market today. These circuits are excellent at rejecting hum and noise.

Professional ribbon, dynamic, and condenser mics all sound excellent through these inputs. The mic / line inputs will handle any kind of level you can toss at them, without overloading.

They are wired as follows, according to standards specified by the AES (Audio Engineering Society).

XLR Balanced Wiring:

Pin 1 = Shield (ground)
Pin 2 = Positive (+ or hot)
Pin 3 = Negative (– or cold)



NEVER connect the output of an amplifier directly to a Onyx's input jack. This could damage the input circuitry and we wouldn't want that now, would we?

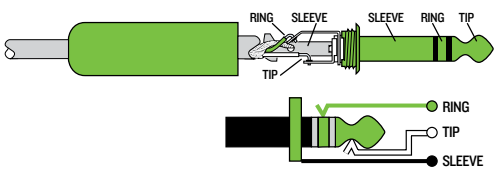
5. Line Ins

These 1/4" jacks share circuitry (but not phantom power) with the mic preamps, and can be driven by balanced or unbalanced sources at almost any level. You can use these inputs for virtually any signal you'll come across.

To connect balanced lines to these outputs, use a 1/4" Tip-Ring-Sleeve (TRS) plug. "TRS" stands for Tip-Ring-Sleeve, the three connection points available on a stereo 1/4" or balanced phone jack or plug. TRS jacks and plugs are used for balanced signals and are wired as follows:

1/4" TRS Balanced Mono Wiring:

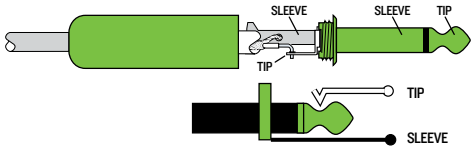
Sleeve = Shield
Tip = Hot (+)
Ring = Cold (–)



To connect unbalanced lines to these outputs, use a 1/4" mono (TS) phone plug, wired as follows:

1/4" TS Unbalanced Mono Wiring:

Sleeve = Shield
Tip = Hot (+)



NEVER connect the output of an amplifier directly to a Onyx's input jack. This could damage the input circuitry and we wouldn't want that now, would we?

6. Stereo Line Inputs

The stereo line inputs are designed for 1/4" TRS balanced or 1/4" TS unbalanced signals. They may accept any line-level instrument, effects device, CD player, etc.

If you are connecting a mono source, use the left (mono) input, and the mono signals will appear on both sides of the main mix.

To connect balanced lines to these inputs, use a 1/4" Tip-Ring-Sleeve (TRS) plug. To connect unbalanced lines to these inputs, use a 1/4" mono (TS) phone plug. Wiring diagrams for both connectors are presented to the left and above.

NEVER connect the output of an amplifier directly to a Onyx's input jack. This could damage the input circuitry and we wouldn't want that now, would we?

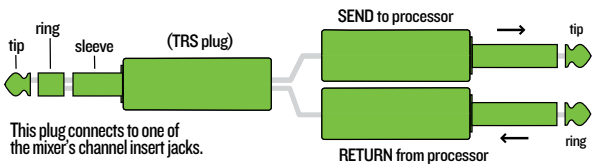
7. Insert Jacks

These unbalanced 1/4" jacks are for connecting serial effects processors such as compressors, equalizers, de-essers, or filters.

The insert point is after the gain control and low cut filter, but before the channel's EQ and level. The channel signal can go out of the insert jack to an external device, be processed and come back in on the same insert jack.

To do this requires a standard insert cable that must be wired thusly:

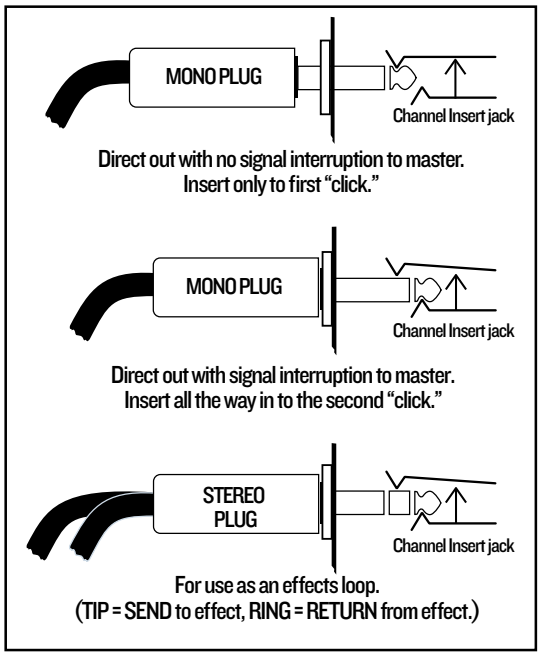
Tip = send (output to effects device)
Ring = return (input from effects device)
Sleeve = common ground



Insert jacks may be used as channel direct outputs; post-gain, and pre-EQ. If you insert a TS (mono) 1/4" plug only partially (to the first click) into an insert jack, the plug will not activate the jack switch and will not open the insert loop in the circuit (thereby allowing the channel signal to continue on its merry way through the mixer). This allows you to tap out the channel signal without interrupting normal operation.

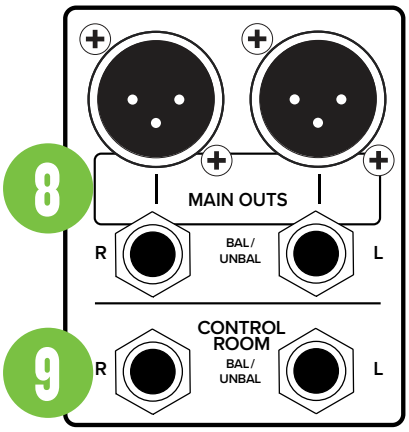
If you push the 1/4" TS plug in to the second click, you will open the jack switch and create a direct out, which does interrupt the signal in that channel. See illustration below.

Do not overload or short-circuit the signal you are tapping from the mixer. That will affect the internal signal.



8. Main Outputs

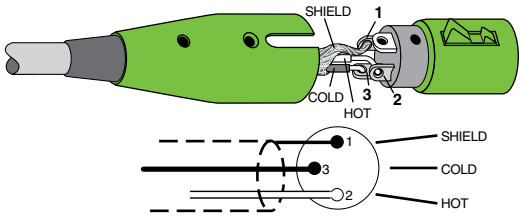
The main outputs provide a line-level signal that represents the end of the mixer chain, where the fully mixed stereo signal enters the real world. Connect these to the left and right inputs of your main power amplifiers, powered speakers, or serial effects processor (like a graphic equalizer or compressor/limiter).



The male XLR connectors provide a balanced line-level signal and is wired as follows, according to standards specified by the AES (Audio Engineering Society):

XLR Balanced Wiring:

Pin 1 = Shield (ground)
Pin 2 = Positive (+ or hot)
Pin 3 = Negative (– or cold)



In addition to accepting balanced XLR connectors, the main outputs may also accept 1/4" connectors driven by balanced or unbalanced sources. Wiring diagrams for both connectors are presented on the previous page.

The XLR outputs are 6 dB hotter than the TRS outputs. So when the meters read "0", the TRS outputs are at 0 dBu.

9. Control Room Out Jacks

These 1/4" jacks are usually patched to the inputs of a control room amplifier, studio monitors or a headphone distribution amplifier.

The control room outputs may also be used for other applications. The sound quality is just as impeccable as the main outputs. It may be used as an additional main mix output and this one will have its own level control. However, be aware that if a solo switch is engaged, the mix will be interrupted:

When a channel's solo switch is engaged, any existing selection is replaced by the solo signal, appearing at the control room outputs and headphones. The audible solo levels are then controlled by the control room knob. The solo levels appearing on the meters are not controlled by the control room knob – you would not want that, anyway. What you do want to see is the actual channel level on the meters regardless of how loud the control room output level might be.

10. Mon Send Jacks

Stage monitors allow the talented musicians in the band to hear themselves clearly on stage. This can be a good thing! The monitor mix may be carefully adjusted in level using the aux mon controls. These tap a portion of each channel's signal to provide a 1/4" TRS output here to feed external stage monitors. These could either be passive stage monitors powered by an external amplifier, or powered stage monitors with their own built-in amplifier.

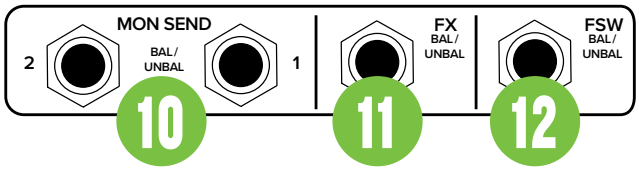
The monitor signal is the sum (mix) of all the channels whose aux mon control is set to more than minimum. If they want "more me and less Brian," you may turn up their channel's aux mon control, and turn down Brian's.

The overall output level may be adjusted with the aux master mon fader. Additionally, you could add an external graphic EQ between this output and your powered monitors. This will allow you to adjust the EQ, and minimize the chance of feedback from nearby microphones.

The monitor output is not affected by the main mix fader or the channel faders. This allows you to set up the monitor mix and level just right, and not have it change when a channel fader or the main mix fader is adjusted. This is known as "pre-fader."

NOTE

There is one mon send jack on the Onyx8 and two mon send jacks on the Onyx12, Onyx16 and Onyx24.



11. FX Send Jack

This 1/4" TRS line-level output may be used to feed an external effects processor (FX), such as a nice sound effect or delay unit. The output from this jack is an exact copy of what goes into the internal FX processor, being the careful mix of all channels whose aux FX control is turned to more than minimum.

(The processed output of the internal FX does not come out of this output, but is added internally to the main mix or monitor mix.)

The overall output level may be adjusted with the aux master FX fader. (This fader also affects the level going into the internal FX.)

The output is "post-fader," so any changes to the channel faders will also affect the level going to the external processor.

The processed output from the effects processor is usually returned to a spare channel, and you may carefully mix the original unprocessed channel (dry) and the processed channel (wet). Altering the original channel fader increases both the wet and dry signals and keeps them at the same delicate ratio. For example, the reverb remains at the same level relative to the original.

12. FX Footswitch

This 1/4" TRS connector is where to connect your favorite footswitch. This allows you to easily mute or un-mute the internal effects at will.

There are two types of footswitches to choose from: latching and momentary:

- Latching – Latching means the switch is either in the on or off position when engaged.
- Momentary – Momentary means the switch is engaged when pressed [and held] down.

Any one-button on/off footswitch will work, although a latching switch is recommended.

If the internal FX have already been muted with the internal FX mute switch, then the footswitch has no effect.

NOTE

The FX footswitch jack on the Onyx8 is located on the top panel just above the headphones jack.

Onyx Front Panel Features

Connections and Channel Strip

13. 1/8" Stereo Input

This stereo input may accept an 1/8" line-level signal from a phone, MP3 player, or other signal source.

Last one! NEVER connect the output of an amplifier directly to an Onyx's input jack. This could damage the input circuitry and we wouldn't want that now, would we?

"U" like Unity gain

Onyx Series mixers have a "U" symbol on many level controls. It stands for "unity gain," meaning no change in signal level. The labels on the controls are measured in decibels (dB), so you'll know what you're doing level-wise if you choose to change a control's settings.

14. Gain Knobs and OL LEDs

If you haven't already, please read the "Quick Start" section on page 5. Setting the gain correctly will ensure that the preamplifier's gain is not too high, where distortion could occur, and not too low, where the quieter, exquisitely-delicate passages might be lost in background noise.

The gain knobs – in conjunction with the OL LEDs – adjust the input sensitivity of the mic and line inputs. This allows signals from the outside world to be adjusted to run through each channel at optimal internal operating levels.

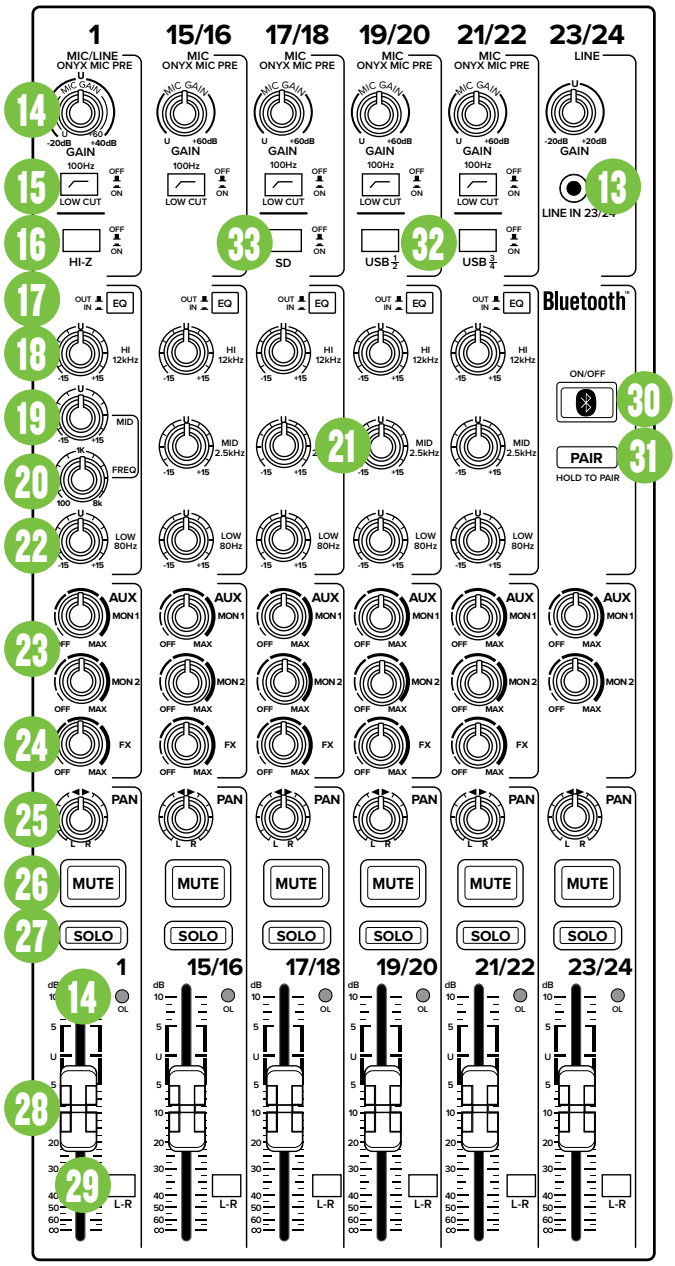
For mono channels (mic input with a mono line input), the gain knob adjusts the input sensitivity of the mic and line inputs.

If the signal originates through the mic XLR jack, there will be 0 dB of gain with the knob fully down, ramping to 60 dB of gain fully up.

Through the 1/4" mono line inputs, there is –20 dB of attenuation fully down and 40 dB of gain fully up, with unity gain "U" at 12:00.

This 20 dB of attenuation can be very handy when you are inserting a hot signal, or when you want to add EQ gain, or both. Without this "virtual pad," there is more chance of channel clipping.

For hybrid channels (mic input and stereo line input), the gain control just affects the microphone input.



Hybrid Channels:

- Onyx8 – Channels 3/4 – 5/6
- Onyx12 – Channels 5/6 – 11/12
- Onyx16 – Channels 9/10 – 15/16
- Onyx24 – Channels 15/16 – 21/22

The gain control on the 1/8" stereo input channel has 20 dB of gain and 20 dB of attenuation.

1/8" Stereo Channels:

- Onyx8 – Channels 7/8
- Onyx12 – Channels 13/14
- Onyx16 – Channels 17/18
- Onyx24 – Channels 23/24

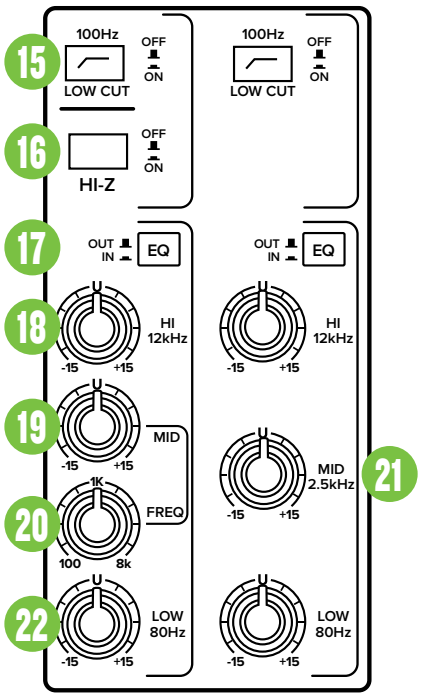
Near the top-right of every channel fader lies an OL LED. These LEDs are used with the gain control to set the channel preamplifier gain just right for each source. If one or more channels are distorting, check the OL LEDs. If they are on continuously, turn down the gain.

15. Low Cut Switches

All channels with a mic input have a low-cut switch (often referred to as a high-pass filter) that cuts bass frequencies below 100 Hz at a rate of 18 dB per octave.

We recommend that you use low-cut on every microphone application except kick drum, bass guitar, or bassy synth patches. These aside, there isn't much down there that you want to hear, and filtering it out makes the low stuff you do want much more crisp and tasty. Not only that, but low-cut can help reduce the possibility of feedback in live situations, and it helps to conserve amplifier power.

Another way to consider low-cut's function is that it actually adds flexibility during live performances. With the addition of low-cut, you can safely use low equalization on vocals. Many times, bass shelving EQ can really benefit voices. Trouble is, adding low EQ also boosts stage rumble, mic handling clunks and breath pops from way-down low. Applying low-cut removes all those problems, so you can add low EQ without blowing the woofers.



16. Line / Hi-Z Switch [Chs. 1 and 2]

To connect a guitar or bass directly to the mixer without using a DI Box, press this switch in first; then connect the output from the instrument to the channel's 1/4" TRS input. The input impedance is optimized for direct connection and high-frequency fidelity is assured.

In the out position, the channel's 1/4" TRS input becomes a line input just like the other mono line inputs.

To use guitars or other instruments on other channels, you will need to use an external DI box first. Without the DI box – or if this switch is not pressed in – guitars may sound dull and muddy.

Channel Equalization (EQ)

All Onyx mixers have 3-band EQ with shelving hi, peaking mid with adjustable mid frequency and shelving low.

Shelving means that the circuitry boosts or cuts all frequencies past the specified frequency. For example, the low EQ boosts bass frequencies below 80 Hz and continuing down to the lowest note you never heard. Peaking means that certain frequencies form a "hill" around the center frequency.

With too much EQ, you can really upset things. We've designed a lot of boost and cut into each equalizer circuit because we know that everyone will occasionally need that. But if you max the EQ on every channel, you'll get mix mush. Equalize subtly and use the left sides of the knobs (cut), as well as the right (boost). If you find yourself repeatedly using a lot of boost or cut, consider altering the sound source, such as placing a mic differently, trying a different kind of mic, a different vocalist, changing the strings, or gargling.

17. EQ In/Out

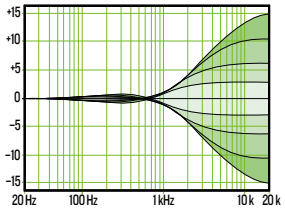
This is a true hardware bypass of the Perkins EQ circuitry to insure that there is no coloration of the signal if the EQ is not needed. When this button is out, the EQ controls have no effect on the signal. You may use this switch to make an A/B comparison between the EQ'd signal and the signal without EQ.

The EQ circuits are based upon the designs of Cal Perkins, an industry-leader in audio engineering for over four decades and a long-time collaborator. This "neo-classic" design provides the sweet musicality of the British EQ sound, while still maintaining 15 dB of boost and cut with optimum Q and minimum phase shift (in other words, it gives you plenty of control and is pleasing to the ear!).

The 3-band equalization has low shelving at 80 Hz, mid peaking, sweepable from 100 Hz to 8 kHz, and high shelving at 12 kHz. "Shelving" means that the circuitry boosts or cuts all frequencies past the specified frequency. For example, rotating the low EQ knob 15 dB to the right boosts bass frequencies starting at 80 Hz and continuing on down to the lowest note you ever heard. "Peaking" means that the frequencies around the center frequency are less affected by the EQ the further away they are.

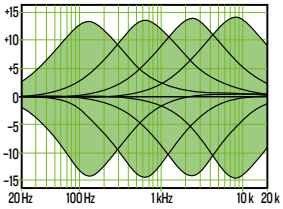
18. Hi EQ Knobs

The hi EQ provides up to 15 dB of boost or cut above 12 kHz, and it is also flat (no boost or cut) at the detent. Use it to add sizzle to cymbals, an overall sense of transparency, or an edge to keyboards, vocals, guitar and bacon frying. Turn it down a little to reduce sibilance or to mask tape hiss.



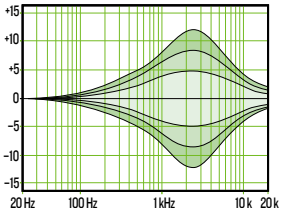
19. Mid EQ Knobs
20. Freq Knobs

Onyx mixers employ a semi-parametric mid-sweep EQ. The gain (up to 15 dB of boost or cut) is set via the mid EQ, and then "aimed" at a specific frequency, from 100 Hz to 8 kHz, via the freq control.



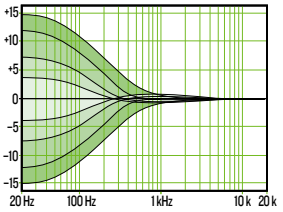
21. Mid EQ Knobs

Short for "midrange," this knob provides up to 15 dB of boost or cut, centered at 2.5 kHz, also flat at the center detent. Midrange EQ is often thought of as the most dynamic, because the frequencies that define any particular sound are almost always found in this range. You can create many interesting and useful EQ changes by turning this knob down as well as up.



22. Low EQ Knobs

The low EQ provides up to 15 dB of boost or cut below 80 Hz. The circuit is flat at the center detent position. This frequency represents the punch in bass drums, bass guitar, fat synth patches, and some really serious male singers who eat raw beef for breakfast.



23. Aux Mon Knobs

These knobs tap a portion of each channel's signal to set up a nice monitor mix feeding stage monitors, independent of the main mix. Adjust these controls on each channel until the band is happy with the stage monitor mix.

The controls are off when fully turned down, deliver unity gain at the center detent, and can provide up to 15 dB of gain turned fully up.

The pan and channel fader do not affect the monitor output, but the other channel controls will. The aux mon is pre-fader.

The overall output level may be adjusted with the master mon controls. Internal FX may also be added to the monitor mix with the FX to mon master knobs.

24. Aux FX Knobs

These knobs tap a portion of each channel's signal to set up a nice FX mix feeding the internal FX processor, and to feed external processors via the FX send.

The controls are off when fully turned down, deliver unity gain at the center detent, and can provide up to 15 dB of gain turned fully up.

The mute, channel fader and other channel controls affect the FX output, but pan does not. The aux FX is post-fader.

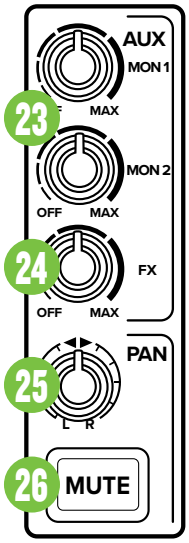
The FX signal reaching the internal FX processor and the FX send output jack is the sum (mix) of all the channels whose aux FX control is set to more than minimum.

The overall output level may be adjusted with the aux master FX fader. FX are then added to the main mix when the FX fader's L-R switch is engaged.

25. Pan Knobs

This control allows you to adjust how much of the channel signal is sent to the left versus the right outputs.

The pan control employs a design called "Constant Loudness." If you have a channel panned hard left (or right) and then pan to the center, the signal is attenuated about 3 dB to maintain the same apparent loudness. Otherwise, it would make the sound appear much louder when panned center.



26. Mute Switches

Mute switches do just what they sound like they do. They turn off the signal by "routing" it into oblivion. Engaging a channel's mute switch (almost) provides the same results as turning the fader all the way down (a pre-aux send is not affected by the channel fader, but it is by the mute switch).

The channel insert will continue to provide a signal when a channel is muted. Mute switches illuminate red when engaged.

27. Solo Switches

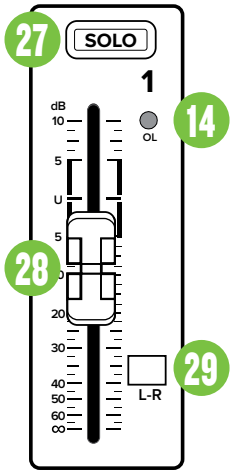
When a channel's solo switch is engaged, any existing selection is replaced by the solo signal, appearing at the control room outputs, phones and at the left meter (left and right meters when in AFL solo mode). The audible solo levels are then controlled by the solo master, control room and phones knobs.

The solo levels appearing on the meters are not controlled by the control room and phones knobs – you would not want that, anyway. What you do want to see is the actual channel level on the meters regardless of how loud the control room and phones output levels might be.

Solo buttons illuminate amber when a channel's solo switch is engaged. Additionally, the rude solo LED will flash red.

A CLOSER LOOK

How solo works is also dictated by the setting of the AFL/PFL solo switch located just below the meters. More information about the AFL/PFL solo switch may be found on page 19.



28. Channel Faders

This is the last control in a channel's signal path, and it adjusts the level of each channel onto the main mix. The "U" mark indicates unity gain, meaning no increase or decrease of signal level. All the way up provides an additional 10 dB, should you need to boost a section of a song. If you find that the overall level is too quiet or too loud with the level near unity, check that the gain control is set correctly.

NOTE

The "Channel Faders" on the Onyx8 are actually "Channel Knobs". But they behave similarly.

29. L-R Assign Switches [Onyx12, Onyx16, Onyx24]

Alongside each channel fader are L-R buttons (also known as channel assignment switches). They are used for routing the channel's signal to the main outputs.

If you are doing a mixdown to a 2-track, for example, simply engage the main mix switch on each channel that you want to hear, and they will be sent to the main mix bus.

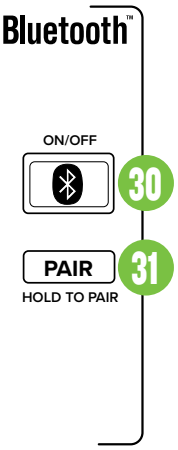
30. Bluetooth On/Off Switch

Mixers can only accept one input per channel and the Onyx Series lineup is no different. As indicated earlier, the last input channel may accept 1/4" TRS or TS connectors, an 1/8" connector or Bluetooth connection.

If the button is up [off], then the mixer will use the analog input signal. However, when this switch is pressed down [on], then you have chosen to use the Bluetooth signal instead. The button will illuminate solid blue when engaged.

31. Bluetooth Pair Switch

This switch will engage the channel's pairing mode, allowing the mixer to be seen by other Bluetooth devices such as a phone or tablet.



Pairing and Connecting – Press and hold the Bluetooth's 'PAIR' button to select it. The button will flash blue when selected. This is to indicate that the Onyx mixer and device are in pairing mode.

While the Onyx mixer is in pairing mode, simultaneously scan for Bluetooth devices on the phone or tablet. You should see Onyx appear in the "available devices" list. Select it. From there, the device should indicate that it is successfully connected. Additionally, the 'PAIR' button on the mixer will be solid instead of flashing.

NOTE

A previously paired device will auto reconnect if both the device and mixer are powered on and in range.

VERY IMPORTANT

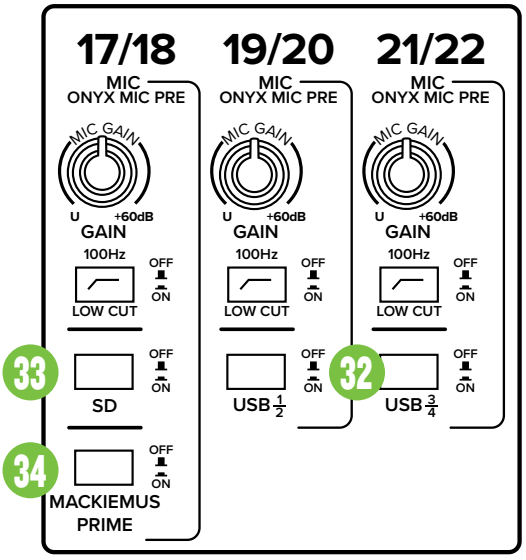
The Bluetooth may disconnect when affected by Electrostatic Discharge [ESD]. Manually reconnect the Bluetooth connection.

32. USB 1/2 and USB 3/4 Switches

When engaged, these switches override their respective inputs and allow the USB return to flow through the signal path instead. Like any other input, these signals may also be EQ'd, sent to monitors, or mixed in with the other signals and assigned to the main outs.

NOTE

There is additional information about the USB 1/2 and 3/4 Return Switches, including setup help and other tips and tricks in Appendix C on page 48.



33. SD Switch

The SD switch is similar to that of the USB 1/2 and 3/4 switches in that it will "mute" the input and allows the SD card return to flow through the channel instead. In short, this is how to hear playback from your SD recordings

The SD switch is located on the front panel near the top of the second stereo channel strip.

NOTE

This switch is located on the last stereo channel strip 7/8 on the Onyx8.

There is a plethora of information regarding SD recording / playback starting on page 29.

34. Mackiemus Prime Switch

The (seemingly) infinite love for Optimus Prime™ created an opportunity for the Engineering team to design something similar. Simply engage the switch to turn Mackiemus Prime on; the mixer will transform into an automobile that will head to the gig, recording session, house of worship venue, rehearsals, etc... wherever it's needed! Once Mackiemus Prime has arrived at the desired location, push the switch again to disengage Mackiemus Prime mode and return it to mixer status.

Onyx Front Panel Features
Master Section

35. Power LED

This LED will illuminate green when the mixer is turned on, as a reminder of how on it really is. If it is not on, then it is off, and the mixer becomes a rather nice weight for keeping your morning newspaper from blowing away in the wind.

If it does not turn on, make sure the power cord is correctly inserted at both ends, the local AC mains supply is active and the power switch is on.

Phantom Power

Most modern professional condenser mics require 48V phantom power, which lets the mixer send low-current DC voltage to the mic's electronics through the same wires that carry audio. (Semi-pro condenser mics often have batteries to accomplish the same thing.) "Phantom" owes its name to an ability to be "unseen" by dynamic mics (Shure SM57/SM58, for instance), which don't need external power and aren't affected by it anyway.

NOTE

The Onyx mixer's phantom power is globally controlled by the phantom power switch (meaning that phantom power for all mic inputs is turned on and off together.)

VERY IMPORTANT

Never plug single-ended (unbalanced) microphones or ribbon microphones into the mic input jacks if phantom power is on. Do not plug instrument outputs into the mic input jacks with phantom power on unless you know for certain it is safe to do so. Be sure the main mix fader is turned down when connecting microphones to the mic inputs when phantom power is turned on to prevent pops from getting through to the speakers.

36. 48V Phantom Power Switch and LED

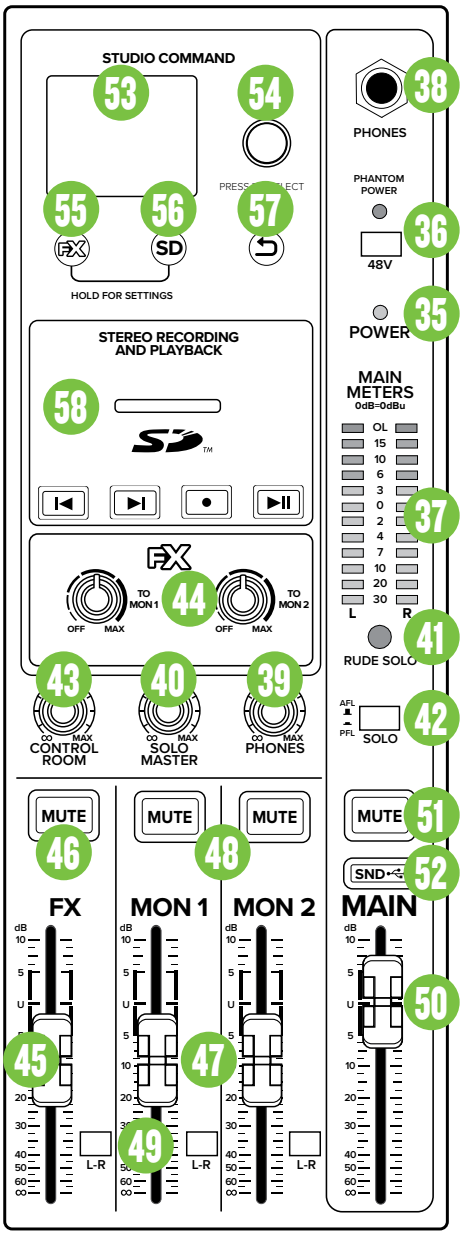
Press this switch in if a microphone requires phantom power. (Always check the position of this switch before connecting microphones.) The accompanying LED will illuminate red to indicate that phantom power is active. This is a global switch that affects all mic channels' XLR jacks at once.

37. Main Meters

These peak meters are made up of two columns of twelve LEDs, with three colors to indicate different ranges of signal level, traffic light style. They range from –30 at the bottom, to 0 in the middle, to OL at the top.

When a channel is soloed (in PFL), the right meter shows no reading, and the left meter shows the level of that channel's signal level, pre-fader.

When not in solo mode, you can get a good mix with peaks flashing anywhere between –20 and +10 dB on the meters. Remember, audio meters are just tools to help assure you that your levels are "in the ballpark." You don't have to stare at them (unless you want to).



38. Phones Out Jack

This 1/4" TRS connector supplies the output to stereo headphones.

The phones volume is controlled with the phones knob located above the main mon 2 fader and mute switch (except for the Onyx8, in which case it's directly to the left of the main mix knob).

Whenever a solo switch is engaged, you will only hear the soloed channel(s) in the headphones. This gives you the opportunity to audition the channels before they are added to the main mix. (PFL solo signals reaching the headphones are not affected by the channel level or main level, therefore turn down the phones level first, as soloed channels may be loud.)

The phones output follows standard conventions:

Tip = Left channel
Ring = Right channel
Sleeve = Common ground

WARNING: The headphone amp is loud and can cause permanent hearing damage. Even intermediate levels may be painfully loud with some headphones. **BE CAREFUL!** Always turn the phones level control all the way down before connecting headphones or pressing a solo switch, or doing anything new that may affect the headphone volume. Then turn it up slowly as you listen carefully.

39. Phones Knob

This knob is used to adjust the volume at the phones output from ∞ (off) to maximum gain (max, +15 dB). Make sure that this knob is fully off [counter-clock-wise] before selecting or adding a new source.

WARNING: The headphone amp is loud, and can cause permanent hearing damage. Even intermediate levels may be painfully loud with some headphones. **BE CAREFUL!** Always turn this control all the way down before connecting headphones, or pressing a solo switch, or doing anything new that may affect the headphone volume. Then turn it up slowly as you listen carefully.

40. Solo Master Knob

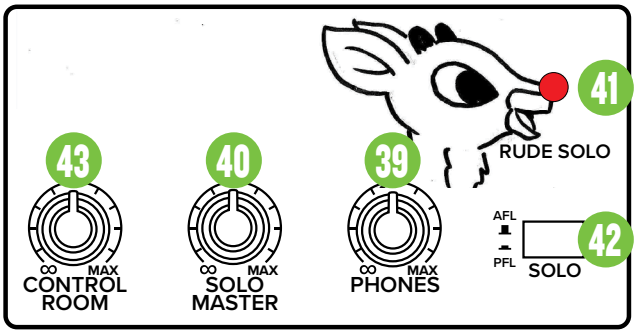
This knob is used to adjust the volume of the soloed signal(s) at it is routed to the control room outputs and phones output from ∞ (off) to maximum gain (max, +15 dB).

Additionally, it is useful for offsetting level discrepancies when going in and out of solo. For example, the phones knob might be cranked to hear the dynamic mix, but when switched to PFL, it blows your eardrums. The solo level helps with this discrepancy. See AFL/PFL Solo Switch below.

This control is independent of, and prior to, the control room and phones level controls. This controls the solo signal level for both PFL and AFL solo modes.

41. Rude Solo LED

This large LED flashes red when one or more solo switches are engaged. While this may be the most obnoxious solo LED allowed under international trade and safety regulations, it also acts as a reminder that what you hear in the control room and headphones is the soloed channel(s). If you forget that you are in solo mode, you can easily be tricked into thinking that something is wrong with your mixer. Hence, the rude solo light. We hope it gets your attention!



42. AFL/PFL Solo Switch

With the solo mode switch in the down position, you are in PFL mode, meaning Pre-Fader Listen (post-EQ). This mode is handy for quick spot-checks of channels, especially ones that have their faders turned down.

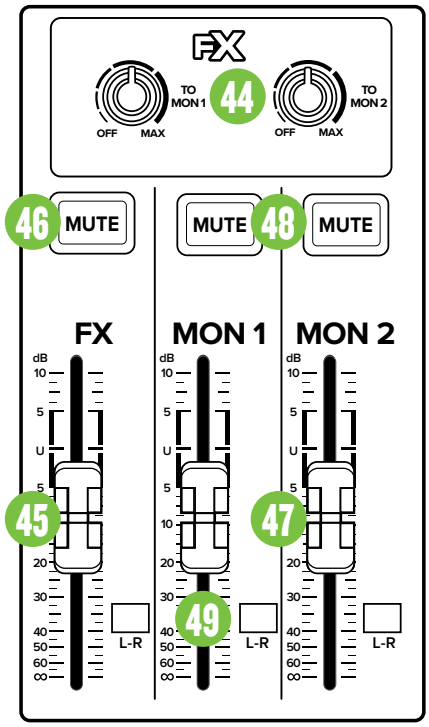
With the solo mode switch up, you are in AFL mode, meaning After-Fader Listen. You will be able to hear the stereo output of the soloed channel – it will follow the channel's gain, EQ, fader and pan settings. It is similar to muting all of the other channels, but without the hassle. AFL mode is typically used during mixdown.

In PFL mode, solo will not be affected by a channel's mute switch position.

Remember, PFL mode taps the channel signal before the fader. If you have a channel's fader set way below "U" (unity gain), solo will not know that and will send a unity gain signal to the control room outputs, phones output and meter display. That may result in a startling level boost at these outputs when switching from AFL to PFL mode, depending on the position of the solo level knob.

43. Control Room Knob

This knob is used to adjust the volume at the control room outputs, from ∞ (off) to maximum gain (max, +15 dB). Make sure that this knob is fully off [counter-clockwise] before selecting or adding a new source.



44. FX to Mon Knobs

These knobs route the pre-fader level of the FX return to the monitor mix. Use the mon controls to provide effects to monitors. Slowly add effects to the monitors by turning the FX to mon knobs clockwise. These range from ∞ (off) to maximum gain (max, +10 dB).

NOTE

Because the Onyx8 has one mon send jack, it also has a single FX to mon knob.

45. FX Master Knob / Fader

Stereo signals come through this FX fader – FX knob on the Onyx8 – and continue on to the outputs. They contain the effects' "wet" signals and are mixed together with the channels' "dry" original signals. This ranges from ∞ (off) to maximum gain (max, +10 dB).

46. FX Mute Switch and LED

When engaged, the internal effects processor is muted, and its output will not appear on the main mix, monitor mix or control room outs. This switch illuminates red when this switch is engaged as a reminder that the effects are indeed muted.

If this switch is not engaged, then the internal effects are set free and may be added as required to the main mix and/or monitor mix.

Additionally, if this switch is not engaged, then the internal effects may be muted or un-muted with a footswitch [on all Onyx Series mixers except the Onyx8].

When power is first applied to the mixer, this LED will illuminate and the FX will be muted for a second or two while the little FX gerbils inside settle down.

47. Mon Send Master Level Knob / Faders

These provide overall control over the mon levels just before they are delivered to the mon outputs. It ranges from ∞ (off) to maximum gain (max, +10 dB).

This is the control you turn up when the lead singer glares at you, points at his stage monitor, and sticks his thumb up in the air. (It would follow that if the singer stuck his thumb down, you'd turn the knob down, but that never happens.)

NOTE

The Onyx8 has a single aux mon master. Additionally, the "Mon Master Fader" on the Onyx8 is actually a "Mon Master Knob". But it behaves similarly.

48. Mon Mute Switches and LEDs

When engaged, the monitor output will be muted and the switch illuminates red as a reminder that the mon outs are indeed muted.

This is the switch you might engage during load-in / load-out, in-between bands (and/or sets) or any other time you don't need the monitors. Then the main outputs would handle the house music for the audience.

49. Master L-R Assign Switches [Onyx12, Onyx16, Onyx24]

Alongside the FX and Mon faders are L-R buttons (also known as assignment switches). They are used for routing the FX and/or monitor signals to the main L/R audio bus.

50. Main Mix Fader

This stereo fader allows you to adjust the levels of the main mix signals sent to the XLR and 1/4" main line-level outputs.

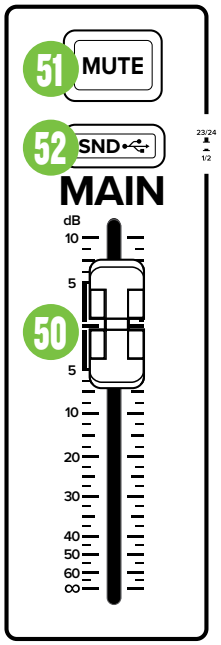
This gives you the ultimate feeling of power and control over the sound levels sent to your audience. Adjust this control carefully, with your good eye on the meters to check against overloading, and your good ear to the levels to make sure your audience (if any) is happy.

The main mix signals are off with the fader fully down, the "U" marking is unity gain, and fully up provides 10 dB of additional gain. This additional gain will typically never be needed, but once again, it's nice to know that it's there. The fader is stereo, as it affects both the left and right of the main mix equally. This is the ideal control to slowly bring down at the end of a song (or quickly in the middle of a song if the need ever arises).

This control does not affect the aux mon send or FX send outputs.

NOTE

The "Main Mix Fader" on the Onyx8 mixer is actually a "Main Mix Knob". But it behaves similarly.



51. Main Mute Switch

This important "take-a-break" switch quickly mutes all the microphones and line-level inputs to the main outs, cr outs and phones when the band is between sets. This will prevent protestors or rogue karaoke singers from storming the stage at the interval.

The monitor send and FX send are not affected. If there is no sound coming out of the system, be sure to check this switch first.

It is possible to play audio coming in from the computer via the USB inputs. For example, a soothing CD may be played while the band is off stage.

This switch will illuminate red as a reminder that all channels are muted.

52. Main USB Send Switch

This small switch is, in effect, a convenient "channel swap". When engaged, the mixer routes the L/R mix to USB input channels 1/2 (the software's default input).

Simply put, it is an easy way to default your DAW and/or virtual meeting (Zoom™, Skype™, Teams™) to channels 1/2. This switch will illuminate white when engaged.

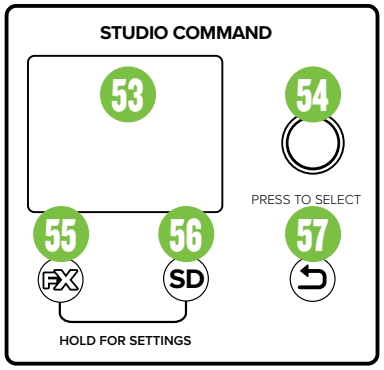
When the switch is up, though, the mixer routes the L/R mix to USB input channels 7/8, 13/14, 17/18 or 23/24. However, you will have to go through and set up the audio software menus.

NOTE

Regradless of the switch's position, the send is pre-main fader.

53. Preset Display

This modern, high-resolution, all-color 128 x 160 px TFT LCD Display is one of the most vital features of the Onyx Series mixers. It displays information including (but not limited to) FX (and FX EQ), presets, SD recordings, settings and other parameters. Additional detail about all of these features may be found by continuing on...



54. Studio Command Control Knob

I wonder why they dismissed my suggestion for calling this the Studio Under Command Knob...? I mean, c'mon, right?! Turn the SUCK up/down to change parameters, push the SUCK in to select. I digress...

While the TFT LCD Display presents the FX (and FX EQ), presets, SD recordings, settings and other parameters, it's the mixer's push-button rotary encoder that allows you to access these fields and change them.

Simply rotate the knob until the parameter you want to change is highlighted, push the encoder in, then make the changes. Again, additional details are coming soon. Please read on...

55. FX Button

When the FX button is pressed and released once, the effects panel and current settings will be presented on the LCD display. If pressed a second time, the list of all 12 FX types are displayed. Press the FX button to switch between the two views.

From here one is able to rotate the endless Studio Command Control Knob to either (1) select one of the 12 preset effects or (2) update and tweak the current effect selection, depending on which screen is currently displayed.

The fun thing about these preset effects is what was mentioned above... they may be updated and tweaked to your heart's content! More on this starting on the following page.

The different available effects presets are shown in the table below and the currently selected effect preset is shown in the display. Only one preset may be selected at a time. Further details of each preset is explained on the following pages.

1	DELAY
2	ECHO
3	SLAPBACK
4	HALL REVERB
5	ROOM REVERB
6	PLATE REVERB
7	CHORUS 1
8	CHORUS 2
9	FLANGER
10	DELAY + REVERB
11	DELAY + CHORUS
12	REVERB + CHORUS

NOTE

Pressing and holding the FX and SD buttons simultaneously for one second before releasing will display the 'Settings'. More about 'Settings' on page 32.

56. SD Button

When the SD button is pressed and released, the track selection will be presented on the LCD display. From here, you are able to select and play back a track, start a new recording and more. Additional information may be found on pages 29-31.

NOTE

Pressing and holding the FX and SD buttons simultaneously for one second before releasing will display the 'Settings'. More about 'Settings' on page 32.

57. Back Button

The back arrow button is used as a navigation tool to exit various screens within 'Settings', throughout the various RTC settings and back and forth between the FX list and the current effect. It is also used to exit the EQ view, the presets view and navigating up folder levels within the SD view. Simply put, press this button to return to the previous screen (if applicable).

There are a few cases where pressing this button does nothing:

- When in settings view, it will not leave settings view.
- When the recording timer is in view
- When playing an audio file, it will not allow changes to the currently viewed folder
- When in the root of the SD view

So if you are in 'Settings', for example, and want to view the FX screen, press the FX button.

FX Section

The Onyx FX engine is incredibly powerful and packed with a ton of features. There are 12 effects to choose from, but each one of those may be manipulated and tweaked to your inclination.

Before diving in, though, let's take a look at a table of the 12 effect types with a description of each preset and some examples.

Note that the effects are presented in four sets of three:

- Effects 1-3 – Delays – Virtual Knob Color = blue
- Effects 4-6 – Reverbs – VKC = red
- Effects 7-9 – Modulations – VKC = purple
- Effects 10-12 – Multi-purpose – VKC = orange

No.	Title	Description	Example of its use
1	Delay	This effect repeats the source signal in even increments, later in time, defined by the time setting. The feedback control increases / decreases the amount of repeats.	This works best with full, up-beat music like rock where the delay needs to cut through the mix.
2	Echo	This type of delay effect repeats the source signal twice. It has a characteristic of a double repeat like a voice reflecting off the walls of a canyon. The timing and amount of repeats are defined by the time and feedback settings.	Also known as Slap Back Echo, use it to make a vocal or guitar stand out in the mix without extra volume.
3	Slapback	This effect provides a single or double, relatively rapid delay of the original signal with minimal repeats through the feedback setting.	Slapback is generally used to mimic vocals – and sometimes drums – on '50s-era rock 'n roll.
4	Hall Reverb	This reverb is characterized by its large, spacious sound, long pre-delay and vibrant tone.	Adds life to acoustic instruments and vocals from solos to full-on symphonies and choirs.
5	Room Reverb	This preset features a medium sized room sound, with just enough enhancement of the lower mids to produce a warm tone.	Useful for any instrument or vocal source to sound like it's in an acoustic space that is like a recording studio. Try running the snare, horn section, or acoustic guitar on this one!
6	Plate Reverb	Plate reverbs emulate vintage mechanical reverberation that is generated with a metal plate. Its sound is characterized by lots of early reflections and no pre-delay.	Perfect for adding a long sustain to percussion like tambourine, hand-claps, and backup vocals.
7 8	Chorus 1 Chorus 2	These presets provide a soft, ethereal sweeping effect that is useful for thickening and for making a particular sound pop out of the mix.	Perfect for enhancement of electric and acoustic guitar and bass, or to add a dramatic effect to vocals, particularly group harmonies and choirs.
9	Flanger	The flange effect is a modulated delay with feedback (and shorter delay times than a chorus), which creates the characteristic "whooshing" sound often used to describe the flange sound.	Check out the electric rhythm guitar on the song "Barracuda" by Heart.
10	Delay + Reverb	Don't choose delay, don't choose reverb! Get the best of both worlds with effects preset #10!	Useful for bands that employ the alternative rock, shoegaze and/or experimental rock sound.
11	Delay + Chorus	Don't choose delay, don't choose chorus! Get the best of both worlds with effects preset #11!	Pink Floyd guitarist, David Gilmour, often used this effect in his setup.
12	Reverb + Chorus	Don't choose reverb, don't choose chorus! Get the best of both worlds with effects preset #12!	Really thicken things up with this preset. The chorus creates a slightly detuned version of the signal blended with the normal signal, while the reverb emulates the bouncing of sound waves across different-sized venues.

Let's start with choosing an effect and then we can go on from there. Press the FX button until the screen looks something like this:

DELAY	CHO 1
ECHO	CHO 2
SLAPBCK	FLANGER
HALL RVB	DLY + RVB
RM RVB	DLY + CHO
PLT RVB	RVB + CHO

Rotate the Studio Command Control Knob to switch between effects, then press in to select the highlighted effect you desire.

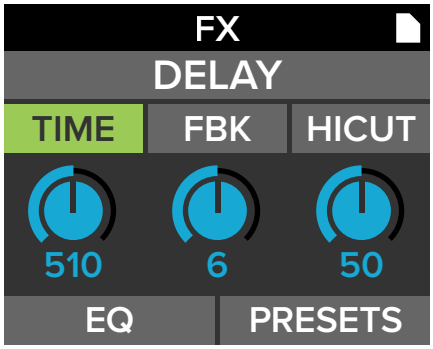
Notice below that 'CHO 2' is highlighted, but 'DELAY' is still in green text. This is because delay is still the currently selected effect. The chorus won't go into effect until the Studio Command Control Knob is pressed in to select.

DELAY	CHO 1
ECHO	CHO 2
SLAPBCK	FLANGER
HALL RVB	DLY + RVB
RM RVB	DLY + CHO
PLT RVB	RVB + CHO

For the time being, though, we will go through the effects one by one, starting with delay. You can either (1) rotate the knob back to delay and push in to select, or (2) push the back button since delay is already selected. Both work!

Delay

The LCD screen should now show the current parameters of the delay effect:

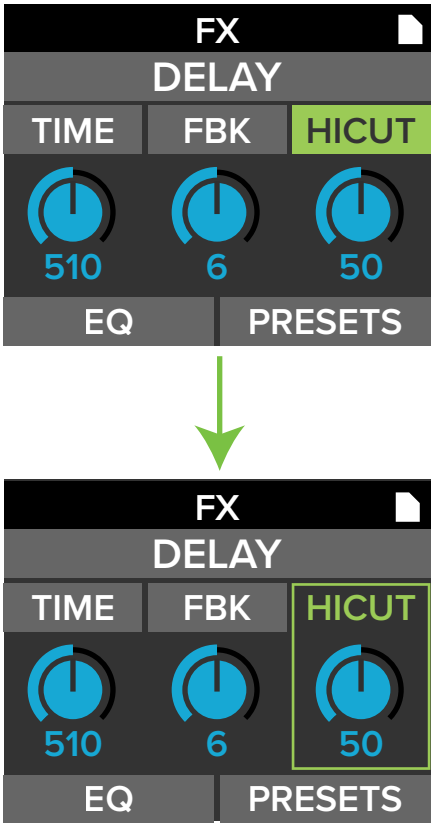


Delay allows adjustment of the delay effect. The Onyx Series mixers come with three delays to choose from: delay, echo and slapback.

The delay parameters that may be changed on each include time, feedback and hi-cut. Additionally, each effect has an EQ section, as well as a spot to save and load custom FX via presets.

Rotate the Studio Command Control Knob between the three selections located above the virtual knobs. When time, feedback or hi-cut is highlighted, simply push the knob in to select the parameter.

Notice how hi-cut is highlighted in the first screenshot below. But in the second screenshot, hi-cut has been selected (by pressing in the Studio Command Control Knob), resulting in the text of the parameter and corresponding border turning green.



From here, rotate the knob again to tweak the selected parameter's value to your liking. Once a desired setting has been reached, push the knob in again to confirm.

Time – This knob sets the current delay time in milliseconds, from 20 ms to 1000 ms.

Feedback – This controls how much of the delayed signal is routed back to the input of the delay section to create multiple echoes. Each time the signal is fed back, the delayed signal becomes quieter (so the echo won't go on forever). It ranges from 0 to 13.

Hi Cut – This applies a low-pass filter to the delayed signal and rolls off the higher frequencies on the output. It ranges from 0 to 100.

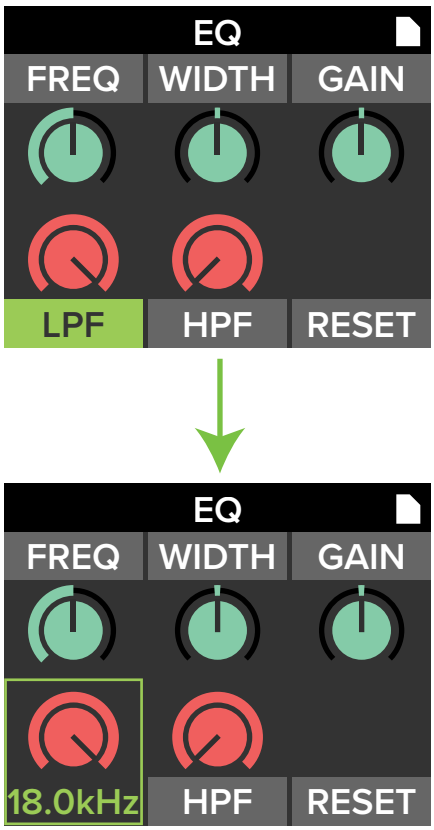
FX EQ

Now let's take a look at the EQ section. As before, rotate the knob until EQ is highlighted, then push in to reveal the EQ screen.

The EQ parameters that may be changed here include frequency, width, gain, LPF and HPF. Now keep in mind that this is the EQ of the selected effect!

As before, rotate the Studio Command Control Knob between the five selections located above the virtual knobs. When frequency, width, gain, LPF or HPF is highlighted, simply push the knob in to select the parameter.

Notice how LPF is highlighted in the first screenshot below. But in the second screenshot, LPF has been selected (by pressing in the Studio Command Control Knob), resulting in the value of the parameter and corresponding border turning green.



From here, rotate the knob again to tweak the selected parameter's value to your liking. Once a desired setting has been reached, push the knob in again to confirm.

Frequency – This parameter's value determines the frequency of the selected effect, ranging from 400 Hz to 16.0 kHz.

Width [aka "Q"] – The Q control adjusts the bandwidth of a filter. However, the Q value itself is dimensionless; it has no unit of measurement. Some equalizers use the fractional bandwidth of the filter, measured in octaves, to express this parameter. The two parameters are inversely related; a high Q value corresponds to a small fractional bandwidth. The following table lists some equivalent Q and fractional bandwidth values. It ranges from 0.5 to 3.

Q	Bandwidth (Octave)
0.7	2
1.414	1
2.145	2/3
2.871	1/2

Gain – This parameter's value determines the amount of gain applied to the selected effect. It ranges from –8 dB to +8 dB.

LPF – Low-pass filters are utilized to cut out high frequencies. It ranges from 6.0 kHz to 18.0 kHz.

HPF – High-pass filters are utilized to cut out low frequencies. It ranges from 80 Hz to 600 Hz.

Before moving on to 'Presets' and 'Reset', let's take a quick peek at the parameters of delay, echo and slapback, as well as their EQ settings.

Delay Parameters and Values

Parameter	Low Value	High Value	Default	Increments
Time	20 ms	1000 ms	363 ms	±~10 ms
Feedback	0	13	2	±1
Hi Cut	0	100	78	±1
EQ				
Frequency	400 Hz	16.0 kHz	7.9 kHz	Variable
Width (Q)	0.5	3.0	0.5	±0.1
Gain	-8 dB	+8 dB	+1 dB	±1 dB
LPF	6.0 kHz	18.0 kHz	6.0 kHz	±0.1-0.2 kHz
HPF	80 Hz	600 Hz	120 Hz	±1-10 Hz

Echo Parameters and Values

Parameter	Low Value	High Value	Default	Increments
Time	140 ms	1000 ms	553 ms	±~10 ms
Feedback	0	17	6	±1
Hi Cut	0	100	77	±1
EQ				
Frequency	400 Hz	16.0 kHz	1.0 kHz	Variable
Width (Q)	0.5	3.0	2.0	±0.1
Gain	-8 dB	+8 dB	±0 dB	±1 dB
LPF	6.0 kHz	18.0 kHz	7.0 kHz	±0.1-0.2 kHz
HPF	80 Hz	600 Hz	100 Hz	±1-10 Hz

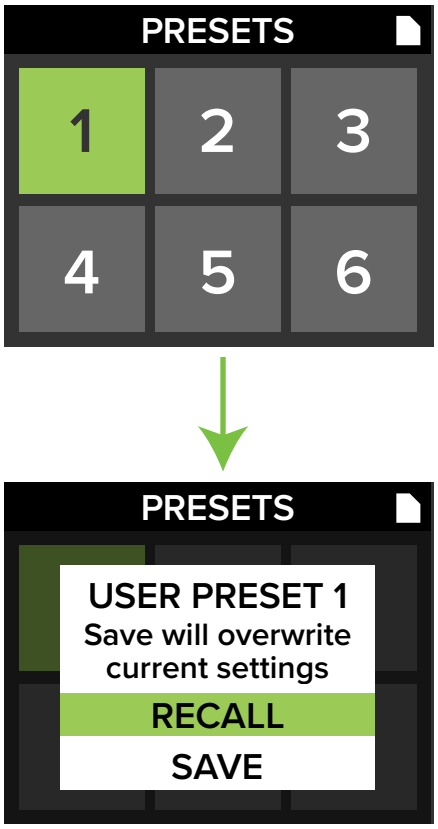
Slapback Parameters and Values

Parameter	Low Value	High Value	Default	Increments
Time	80 ms	400 ms	96 ms	±3-4 ms
Feedback	0	2	0	±1
Hi Cut	0	100	100	±1
EQ				
Frequency	400 Hz	16.0 kHz	1.0 kHz	Variable
Width (Q)	0.5	3.0	2.0	±0.1
Gain	-8 dB	+8 dB	±0 dB	±1 dB
LPF	6.0 kHz	18.0 kHz	12.1 kHz	±0.1-0.2 kHz
HPF	80 Hz	600 Hz	80 Hz	±1-10 Hz

FX Presets

The presets section allows you to save up to six settings to memory that may be recalled at a later time. No more having to reset parameters upon every power-up!

As was done previously, simply rotate the Studio Command Control Knob until 'Presets' is highlighted (first screenshot below). Next, rotate the knob to switch between the six presets followed by pushing the knob in to select it (second screenshot below).



As one might suspect by now, rotating the knob switches between 'Recall' and 'Save' and pushing the knob in chooses the currently highlighted selection.

Save – Select this to save the current settings to the corresponding preset.

Please be aware that the new settings will replace the currently saved settings.

Recall – Select this to recall the settings of the corresponding preset.

The mixer comes factory-shipped with the following six presets (which may be recalled later with a factory reset, see page 32):

1 – Large Hall
2 – Medium Plate
3 – Short Echo
4 – Super-Short Slapback
5 – Alternative Delay + Verb
6 – Large Room

FX EQ Reset

A couple of pages ago, we were looking at the FX EQ section. In addition to the changeable parameters – frequency, width, gain, LPF and HPF – a sixth option (located in the lower-right corner) may also be accessed and selected: Reset

Once 'Reset' is highlighted, push the control knob in to reset all EQ settings. It is a convenient way to start with a fresh slate.

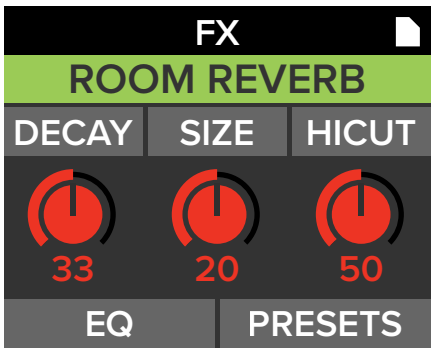
Resetting any FX EQ results in the following parameter values:

- Frequency – 1.0 kHz
- Width – 2.0
- Gain – ±0 dB
- LPF – 18.0 kHz
- HPF – 80 Hz

NOTE

Resetting the FX EQ and doing a factory reset (see page 32) are not the same thing and will result in different settings.

Now that you're familiar with how to select an effect and tweak the parameters' values to your liking, we're going to look at the remaining effects, their settings and their low, high and default values, starting with the three reverbs (Hall, Room and Plate).



Decay – This knob represents the decay time of the reverb. The range will vary depending on the reverb chosen.

Size – This knob represents the amount of desired reverb (or "the size of the room"). While the range will vary depending on the reverb chosen, 0 means no reverb and fully clockwise is max reverb.

Hi Cut – This applies a low-pass filter to the delayed signal and rolls off the higher frequencies on the output. It ranges from 0 to 100.

Hall Reverb Parameters and Values

Parameter	Low Value	High Value	Default	Increments
Decay	0	60	15	±1
Size	0	15	12	±1
Hi Cut	0	100	0	±1
EQ				
Frequency	400 Hz	16.0 kHz	1.0 kHz	Variable
Width (Q)	0.5	3.0	2.0	±0.1
Gain	-8 dB	+8 dB	±0 dB	±1 dB
LPF	6.0 kHz	18.0 kHz	8.7 kHz	±0.1-0.2 kHz
HPF	80 Hz	600 Hz	132 Hz	±1-10 Hz

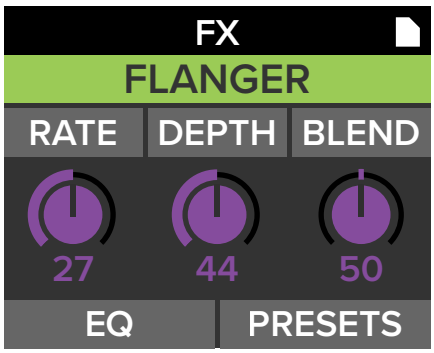
Room Reverb Parameters and Values

Parameter	Low Value	High Value	Default	Increments
Decay	0	52	3	±1
Size	0	25	12	±1
Hi Cut	0	100	0	±1
EQ				
Frequency	400 Hz	16.0 kHz	1.0 kHz	Variable
Width (Q)	0.5	3.0	2.0	±0.1
Gain	-8 dB	+8 dB	±0 dB	±1 dB
LPF	6.0 kHz	18.0 kHz	13.3 kHz	±0.1-0.2 kHz
HPF	80 Hz	600 Hz	190 Hz	±1-10 Hz

Plate Reverb Parameters and Values

Parameter	Low Value	High Value	Default	Increments
Decay	0	65	35	±1
Size	0	40	35	±1
Hi Cut	0	100	20	±1
EQ				
Frequency	400 Hz	16.0 kHz	400 Hz	Variable
Width (Q)	0.5	3.0	2.5	±0.1
Gain	-8 dB	+8 dB	+8 dB	±1 dB
LPF	6.0 kHz	18.0 kHz	8.2 kHz	±0.1-0.2 kHz
HPF	80 Hz	600 Hz	80 Hz	±1-10 Hz

Now a look at the three modulation effects (Chorus 1, Chorus 2 and Flanger).



Rate – This knob sets the speed of the delay modulation. The range will vary depending on the effect chosen.

Depth – This knob sets the depth of the delay modulation, from 1 to 10. The range will vary depending on the effect chosen.

Blend – The Blend knob essentially works as a level control in that you determine how much the sound effect dominates the mix.

Chorus 1 Parameters and Values

Parameter	Low Value	High Value	Default	Increments
Rate	0	54	12	±1
Depth	16	73	28	±1
Blend	0	100	59	±1
EQ				
Frequency	400 Hz	16.0 kHz	1.0 kHz	Variable
Width (Q)	0.5	3.0	2.0	±0.1
Gain	-8 dB	+8 dB	±0 dB	±1 dB
LPF	6.0 kHz	18.0 kHz	10.0 kHz	±0.1-0.2 kHz
HPF	80 Hz	600 Hz	120 Hz	±1-10 Hz

Chorus 2 Parameters and Values

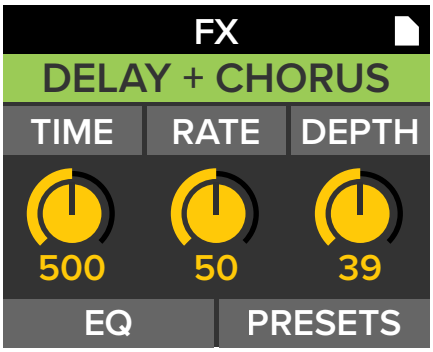
Parameter	Low Value	High Value	Default	Increments
Rate	16	93	16	±1
Depth	30	150	36	±1
Blend	0	100	100	±1
EQ				
Frequency	400 Hz	16.0 kHz	3.0 kHz	Variable
Width (Q)	0.5	3.0	3.0	±0.1
Gain	-8 dB	+8 dB	-8 dB	±1 dB
LPF	6.0 kHz	18.0 kHz	8.7 kHz	±0.1-0.2 kHz
HPF	80 Hz	600 Hz	334 Hz	±1-10 Hz

Flanger Parameters and Values

Parameter	Low Value	High Value	Default	Increments
Rate	0	100	10	±1
Depth	10	150	62	±1
Blend	0	100	100	±1
EQ				
Frequency	400 Hz	16.0 kHz	7.6 kHz	Variable
Width (Q)	0.5	3.0	2.0	±0.1
Gain	-8 dB	+8 dB	-1 dB	±1 dB
LPF	6.0 kHz	18.0 kHz	18.0 kHz	±0.1-0.2 kHz
HPF	80 Hz	600 Hz	90 Hz	±1-10 Hz

The rate (Hz) and depth (ms) determine how many cycles per second the chosen effect oscillates. However, the rate and depth of Chorus 1, Chorus 2 and Flanger is expressed as 0.1x Hz / ms which translates the value that the processor utilizes. An easy way to understand the value is to take the number below the virtual knob and "move" the decimal one point to the left (or multiply by 0.1). For example, if rate is displayed as 37, then it's really 3.7 Hz.

Lastly, onto the final three multi-purpose effects (Delay + Reverb, Delay + Chorus and Reverb + Chorus).



Time – This knob sets the current delay time in milliseconds, from 20 ms to 1000 ms.

Rate – This knob sets the speed of the modulation. The range will vary depending on the effect chosen.

Depth – This knob sets the depth of the delay modulation. The range will vary depending on the effect chosen.

Decay – This knob represents the decay time of the reverb, ranging from 0 to 60.

Size – This knob represents the amount of desired reverb (or "the size of the room"), ranging from 0 (no reverb) to 15 (max reverb).

Delay + Reverb Parameters and Values

Parameter	Low Value	High Value	Default	Increments
Time	20 ms	1000 ms	196 ms	±9-10 ms
Rate	16	73	26	±1
Depth	0	100	8	±1
EQ				
Frequency	400 Hz	16.0 kHz	6.8 kHz	Variable
Width (Q)	0.5	3.0	2.1	±0.1
Gain	-8 dB	+8 dB	+2 dB	±1 dB
LPF	6.0 kHz	18.0 kHz	12.6 kHz	±0.1-0.2 kHz
HPF	80 Hz	600 Hz	88 Hz	±1-10 Hz

Delay + Chorus Parameters and Values

Parameter	Low Value	High Value	Default	Increments
Time	20 ms	1000 ms	196 ms	±9-10 ms
Rate	0	100	12	±1
Depth	16	63	40	±1
EQ				
Frequency	400 Hz	16.0 kHz	1.0 kHz	Variable
Width (Q)	0.5	3.0	2.0	±0.1
Gain	-8 dB	+8 dB	±0 dB	±1 dB
LPF	6.0 kHz	18.0 kHz	6.0 kHz	±0.1-0.2 kHz
HPF	80 Hz	600 Hz	80 Hz	±1-10 Hz

Reverb + Chorus Parameters and Values

Parameter	Low Value	High Value	Default	Increments
Decay	0	60	10	±1
Size	0	15	6	±1
Rate	0	54	33	±1
EQ				
Frequency	400 Hz	16.0 kHz	415 Hz	Variable
Width (Q)	0.5	3.0	2.0	±0.1
Gain	-8 dB	+8 dB	-5 dB	±1 dB
LPF	6.0 kHz	18.0 kHz	10.0 kHz	±0.1-0.2 kHz
HPF	80 Hz	600 Hz	108 Hz	±1-10 Hz

The rate (Hz) and depth (ms) determine how many cycles per second the chosen effect oscillates. However, the rate and depth of the two chorus modulation effects is expressed as 0.1x Hz / ms which translates the value that the processor utilizes. An easy way to understand the value is to take the number below the virtual knob and "move" the decimal one point to the left (or multiply by 0.1). For example, if rate is displayed as 37, then it's really 3.7 Hz.

SD Stereo Recording and Playback

Not only are these great mixers with some pretty amazing features, but here you can also record the gig, band rehearsal, house-of-worship service and more to an SD card!

Formatting – We know you're an eager beaver, all psyched to start recording, but let's take care of something very important first: formatting the SD Card. First, get an SD Card; this could be a brand new one or one you've had for awhile so long as it's Class 10 or better.

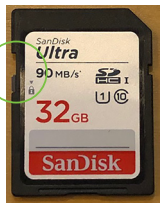
SD Cards need to be Class 10 or better to ensure reliable operation. If using an older SD Card, it's a high possibility that some samples will be dropped because the card is too slow. We are not in the business of suggesting what SD Card to go with, but choosing one with an instantly recognizable, quality, trustworthy name doesn't hurt. Some examples we've heard of:

- SanDisk
- PNY
- Lexar
- Samsung
- Kingston

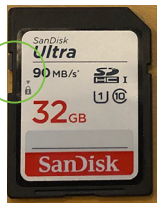
Even if the SD Card has already been formatted via a different source, we highly suggest formatting via the Onyx mixer. In fact, never mind the "highly suggest." DO IT!

Just follow the steps listed below:

These probably goes without saying, but we're going to say them, anyway. In order for the SD Card to be formatted via the Onyx mixer, (1) the card needs to be unlocked [side switch up, default]...



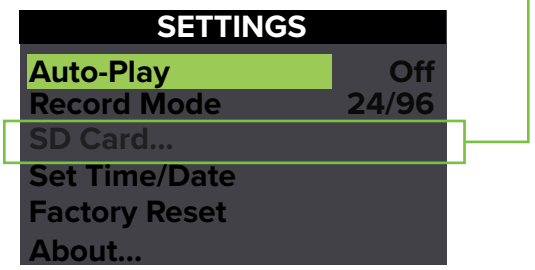
Locked



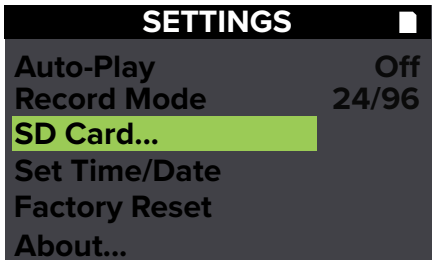
Unlocked

...and (2) the SD Card needs to be connected to the mixer's SD Card slot with the card's electrical contacts down and facing the transport controls (as seen below).

Granted, you might have a difficult time trying to format the SD Card if these conditions aren't yet met. For one, it doesn't easily fit in any other way and for another, the format choice will be grayed out and is not available for selection, as seen in the image below.

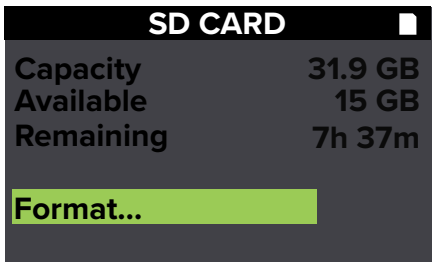


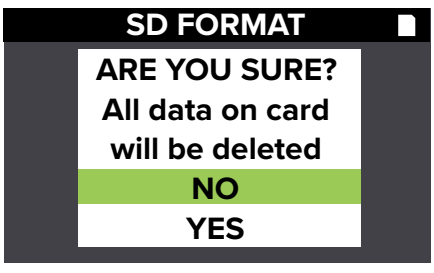
- Step 1 — Enter the 'SETTINGS' screen by pressing and holding down the FX [55] and SD [56] buttons for one second.
- Step 2 — Rotate the Studio Command Control Knob until 'SD CARD...' is highlighted.



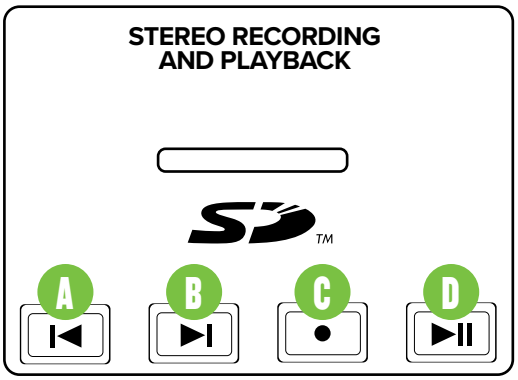
- Step 3 — Press the Studio Command Control Knob in to view the SD Card's information. 'Format...' is the only option that may be highlighted and selected here. Press the Studio Command Control Knob in again to format.

This is a permanent deletion with no undo, so a confirmation dialog helps prevent accidents. Formatting will completely erase the SD Card. Back up any files to a computer before formatting!!





Now let's take a look at the SD transport controls. Left to right, they are:



(A) Returns to the beginning of the current track when pressed once. It will return to previous tracks when pressed repeatedly – the button will illuminate white, but for a moment.

(B) Skips to the next track – the button will illuminate white, but for a moment.

(C) Starts a new recording – the button will illuminate and flash white. Additionally, the play / pause button will illuminate solid white during recording.

VERY IMPORTANT

If the record button is tapped during a recording, the current recording stops and a new one begins immediately.

(D) Starts / pauses playback of the current track – the button will illuminate solid white during playback and flashes while paused. If no track is playing / paused, it will start playback of the highlighted track. If the 'Record' button is active, pressing this button will play or pause the recording process.

VERY IMPORTANT

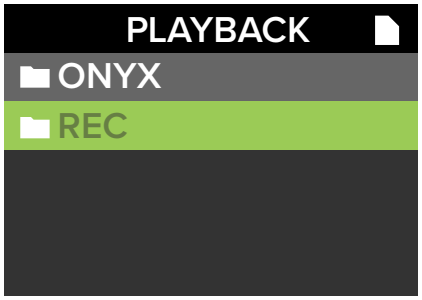
The back and forward buttons function as a stop button when in pause mode. Press one or the other, but not both. If both buttons are pressed simultaneously, the mixer will self-destruct.

Recording – Now that an SD card has been formatted and inserted into the SD card slot, it's time to make a recording... the fun begins!

Let's start with a simple test run. Plug something into the channel 1 input. This could be a mic, instrument (with the Hi-Z switch down), phone, etc.

Make sure the levels are set correctly (see page 5).

Press the SD button to enter SD recording / playback mode. The LCD screen will looks similar to what is displayed below.



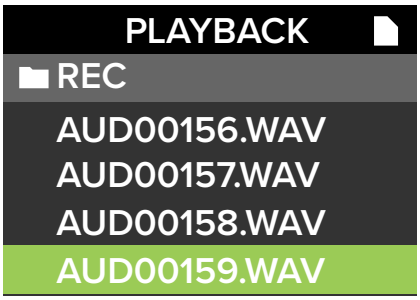
NOTE

"Onyx" is the parent directory and may not be accessed. That said, there are no files that will be needed, anyway.

Press the record button and start talking, singing, yodeling, scatting, playing the instrument or playing a track from the phone. Do this for a good 20 seconds, or so.

Notice below that the LCD screen now displays (1) a recording counter with the elapsed time in the format of HH:MM:SS, (2) the current recording track name and (3) the universal sign for recording – "•" – is presented (not once, but twice!).

Once done, press the play / pause button to stop the recording. Once several recordings have been made, the LCD screen will look similar to what is displayed below.



Notice how each recording has the previous recording name plus one. This is standard, but it may be tailored to your desire. More on that soon.

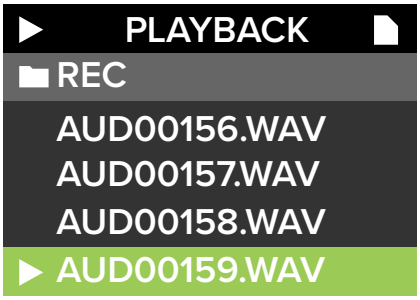
Rotate the Studio Command Control Knob to scroll through all of the different recordings until the one you desire to hear is highlighted: AUD00159.WAV in the example shown above.

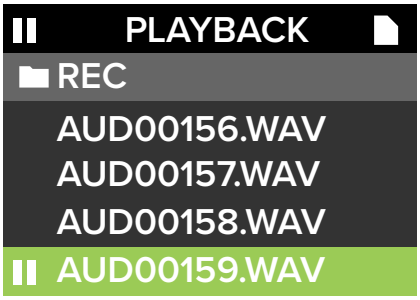
Playback – First things first. Make sure that the SD switch – located on the front panel near the top of the second stereo channel strip – is engaged first. This mutes the input and allows the SD card return to flow through the channel instead.

NOTE

This switch is located on the last stereo channel strip 7/8 on the Onyx8.

The desired track has already been highlighted, so now it's time to hear your masterpiece! You can either press the transport's Play button or press the Studio Command Control Knob (my preference) to start playback and again to pause. Notice the screen difference between playback (top) and pause (bottom).



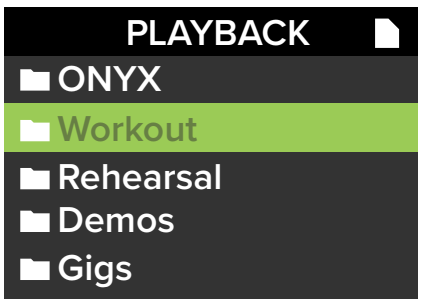


That's it, you made a recording AND played it back... easy peasy, right?!

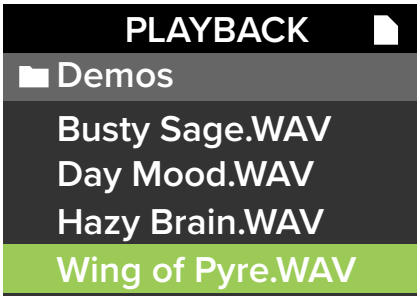
Renaming – There is still one unsettling issue, though. How the heck can you recall which tracks to keep and which ones to dump? Files automatically named 'AUD00xxx.WAV' certainly isn't a good indicator. Additionally, how would it be having some 500+ files like that and having to scroll through all of them? If you answered, "not fun", then you would be correct!

Lucky for you, there is a solution and it's quite simple, really. Turn the mixer off and remove the SD card. Insert the SD card into a computer or SD card reader. From there, the folders and files may be accessed and renamed as different playlists.

Here you can see that we have renamed several folders. Notice that these are listed in the order created, not alpha-numeric. In other words, be sure you create them in the order desired.



Here we decided to check out the files within the 'Demos' folder and you can see that the audio files are listed alpha-numerically.



Final Thoughts – There are only a few final thoughts.

The SD recording signal path is pre-main fader, so the PA system volume may be offset if need be. However, the catch is that the main fader needs to be set to unity so you know how hot the recording signal to SD card is showing on the meters.

Also, when an SD card is in the SD card slot of the mixer, an icon will be displayed in the upper-right corner of the LCD screen regardless of what screen is currently displayed.

The last stereo channel – the Bluetooth channel – may be recorded to an SD card, but not to the DAW.

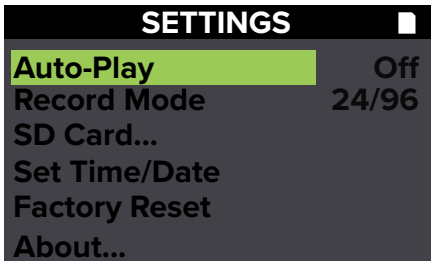
Lastly, please note that while SD files may be played back as either .wav or .mp3, it only records .wav format.

That's about it. Happy recording!

Settings

As mentioned previously, pressing and holding the FX and SD buttons simultaneously for one second before releasing will display the 'Settings' on the LCD screen. Let's take a look...

When the 'Settings' screen is first opened, it will look something like what is shown below.



From here, rotate the Studio Command Control Knob to switch between the different settings and push in to select when the setting you desire is highlighted.

Auto-Play

Auto-Play will either automatically play the recording when selected [Auto-Play ON] or not [Auto-Play OFF, default].

To change, make sure Auto-Play is highlighted and press the knob in to select. Next, rotate the knob between 'On' and 'Off'. Press the knob in again select.

Record Mode

Record Mode allows you to choose the recording bit-depth and sample rate. You may select between the following recording modes:

- 16 bits / 48 kHz
- 16 bits / 96 kHz
- 24 bits / 48 kHz
- 24 bits / 96 kHz [default]

To change, make sure Record Mode is highlighted and press the knob in to select. Next, rotate the knob between the four choices until the bit-depth and sample rate you desire is displayed. Press the knob in again select.

The 'Record Mode' setting is only for SD recording. It does not affect the USB fidelity which is controlled by the PC / Mac drivers or the DAW.

SD Card...

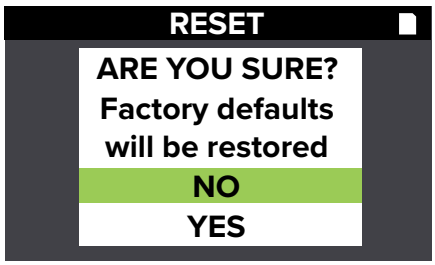
SD Card ellipsis is where to see information about the SD Card. It is also the place where to format it. This has already been discussed on pages 29-31.

Set Time/Date

In order for the SD Card's recording and playback to work correctly, the RTC needs to be set. This is the place to set the time and date. It is so important, that this has already been discussed (with screen shots!) way, way, back on page 5.

Factory Reset

As you might have guessed, when Factory Reset is highlighted and selected, it restores most parameters back to their default. This includes all settings, FX parameters and any stored presets. This will not reset the RTC or affect the SD card. This is a permanent reset with no undo, so a confirmation dialog helps prevent accidents.



Doing a factory reset and resetting the FX EQ (see page 26) are not the same thing and will result in different settings.

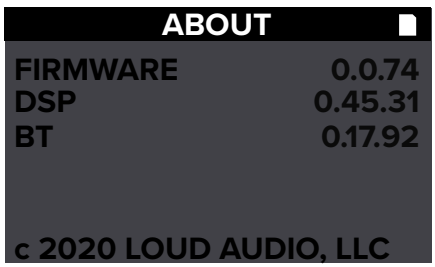
About...

About ellipsis displays the current information about your mixer.

There is really only one reason to ever go here:

(1) If you have been instructed to do so by Technical Support; have this information handy!

This is similar to what you will see after first entering the About settings screen.



The items here display the mixer's firmware, DSP and BT versions. None of these are editable or selectable, but they could come in handy if you need to talk to someone in Technical Support.

Appendix A: Service Information

If you think your mixer has a problem, please check out the following troubleshooting tips and do your best to confirm the problem. Visit the Support section of our website (www.mackie.com) where you will find lots of useful information such as FAQs, documentation and any updated PC drivers etc. You may find the answer to the problem without having to send your mixer away.

Here are some useful tips that could correct any of the issues outlined below (or possibly any other issue that we haven't yet discovered):

Level setting procedure. If you are having any sound (or non-sound) issues, try following the level setting procedure [page 5] to verify that all of the volume controls in the system are properly adjusted.

Troubleshooting

No Power

- Our favorite question: Is it plugged in? Make sure the AC outlet is live [check with a tester or lamp].
- Our next favorite question: Is the power switch on? If not, try turning it on.
- Make sure the line cord is securely seated in the line cord socket and plugged all the way into the AC outlet.
- Is the power LED on the top panel illuminated? If not, make sure the AC outlet is live. If so, refer to "No sound" below.
- The internal AC line fuse may be blown. This is not a user serviceable part. If you suspect the AC line fuse is blown, please see the "Repair" section next.

Hum

- Try disconnecting the cable connected to the input jack. If the noise disappears, it could be a "ground loop," rather than a problem with the mixer.

Try some of the following troubleshooting ideas:

- Use balanced connections throughout your system for the best noise rejection.
- Whenever possible, plug all the audio equipment's line cords into outlets which share a common ground. The distance between the outlets and the common ground should be as short as possible.

Bad Channel

- Try the same source signal in another channel, set up exactly like the suspect channel.
- Is phantom power required for your microphone?

No sound

- Is the level knob for the input source turned all the way down? Verify that all the volume controls in the system are properly adjusted. Look at the level set LEDs and meters to ensure that the mixer is receiving a signal.
- Is the signal source working? Make sure the connecting cables are in good repair and securely connected at both ends. Make sure the master volume level is turned up sufficiently to drive the inputs of the speaker.
- Make sure the input source is not muted or has a processor loop engaged. If you find something like this, make sure the level is turned down before disengaging the offending switch.
- Is the main level turned up?
- Are the EQs set to reasonable levels?
- Are any aux returns maxed out?
- Unplug anything from the other line-level outputs, such as monitor out, just in case one of the external pieces has a problem.
- Make sure that you are not overdriving the amplifiers. Check the loudspeaker average load impedance is not less than the minimum the amplifier can handle. Check the speaker wiring.

Noise

- Turn the channel gains down, one by one. If the sound disappears, it's either that channel or whatever is plugged into it, so unplug whatever that is. If the noise disappears, it's from your whatever.
- Make sure none of the signal cables are routed near AC cables, power transformers, or other EMI-inducing devices.
- Is there a light dimmer or other SCR-based device on the same AC circuit as the mixer? Use an AC line filter or plug it into a different AC circuit.

Bluetooth Blues?

- Restart the device. Completely power it down, then power it back up.
- Restart the mixer. This is especially useful after firmware and software updates where the mixer and device aren't quite on the same page. A simple reboot can sometimes work great wonders.

Need Answers About ASIO?

- There is a lot of great information here, including ASIO driver downloads, FAQs, troubleshooting, a forum and more! Please review before calling Technical Support:
  - o http://www.asio4all.org/

RTC, FX, SD and/or Other Issues

- Please email or call Technical Support if you are having any other issue not listed here:
  - o mackie.com/support-contact
  - o 1-800-898-3211

Repair

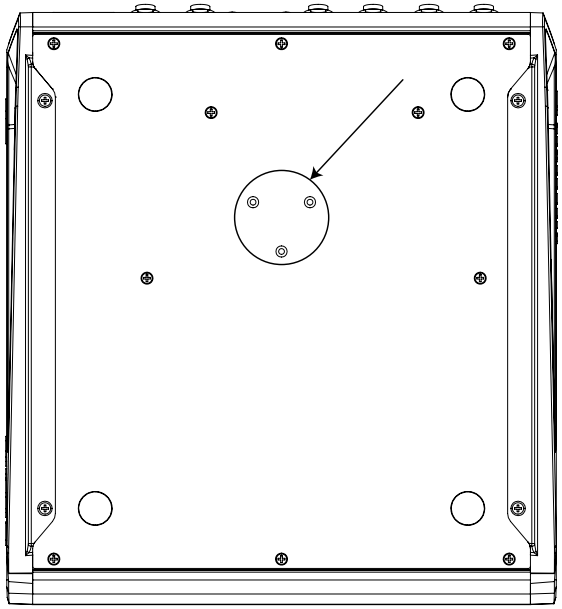
For warranty service, refer to the warranty information on page 49.

Non-warranty service is available at a factory-authorized service center. To locate the nearest service center, visit www.mackie.com/support/service-locator. Service for Onyx Series mixers living outside the United States can be obtained through local dealers or distributors.

If you do not have access to our website, you can call our Tech Support department at 1-800-898-3211, Monday-Friday during normal business hours, Pacific Time, to explain the problem. Tech Support will tell you where the nearest factory-authorized service center is located in your area.

Microphone Stand

The bottom panel of the Onyx8 has three non-threaded holes that allow it to be fitted with an optional microphone stand adapter. This lets you support the mixer on a standard mic stand, and adjust its height and level to whatever suits your strangely-complex set of preferences.



1. Order the Atlas AD-11B mic stand adapter available from many a fine music store. (It is made and distributed by Atlas Sound.)
2. Use three Trilobular thread rolling screws 6-32 x 1/4" long to secure the adapter to the bottom of the mixer [see below].

Do not use screws longer than 1/4" as these could damage the circuit boards. Do not use screws shorter than 1/4" or the adapter will not be securely fixed to the mixer.

Appendix B: Technical Information

Onyx Specifications

Noise Characteristics

Equivalent Input Noise (EIN)
(150 Ω Source Impedance, 20 Hz to 20 kHz)

Mic in to Insert Send out, max gain	–128 dBu
Residual Output Noise	
All outputs, master levels off, all channel levels off	–98 dBu
All outputs, master levels unity, one channel level unity	–88 dBu

Frequency Response

Mic input to any output (gain at unity, +0 dB / –1 dB)
20 Hz to 30 kHz

Distortion (THD+N)

(22 Hz to 80 kHz bandwidth)

Mic in to Main Out (+4 dBu output)	<0.01%

Attenuation and Crosstalk

Adjacent Inputs @1 kHz	–90 dB
Inputs to Outputs @1 kHz	–80 dB
Fader Off @1 kHz	–85 dB
Mute Switch @ I kHz	–90 to –100 dB

Common Mode Rejection Ratio (CMRR)

Mic in to Main out, max gain, 1 kHz	70 dB

Maximum Levels

All inputs	+22 dBu
Main Mix XLR	+28 dBu
All other outputs	+22 dBu

Impedances

Mic in	3.3 kΩ
Channel Insert Return	10 kΩ
All other inputs	≥20 kΩ
Phones out	25 Ω
All other outputs	120 Ω Unbalanced, 240 Ω Balanced

Equalization

All Channels (except 1/8" stereo channel)

Low	±15 dB @ 80 Hz
Mid (Mono channels)	±15 dB 100 Hz – 8 kHz
Mid (Stereo channels)	±15 dB @ 2.5 kHz
High	±15 dB @ 12 kHz
Low Cut Filter	18 dB/octave @ 100 Hz

Digital Effects

Number of Effects Presets	12

Meters

Main L/R Mix

Two columns of 12 segments each:
OL, +15, +10, +6, +3, 0 (0 dBu), –2, –4, –7, –10, –20, –30

USB

Format	USB 2.0
I/O	Multiple Inputs, 2x2 Stereo Outputs
A/D/A	24-bit, 44.1 kHz, 48 kHz, 96 kHz

SD

2 x 2 / 24-bit / 96 kHz

Onyx Specifications continued...

Phantom Power

48 VDC to all mic channels simultaneously

AC Power Requirements

Power Consumption	30 watts (Onyx8) 40 watts (Onyx12) 45 watts (Onyx16) 55 watts (Onyx24)
Universal AC Power Supply	100 – 240 VAC, 50 – 60 Hz
Power Connector	3 Pin IEC Line Cord

Physical Dimensions and Weight

Onyx8		
	Height	4.5 in / 114 mm
	Width	10.5 in / 267 mm
	Depth	11.0 in / 279 mm
	Weight	7.1 lb / 3.2 kg
Onyx12		
	Height	5.4 in / 137 mm
	Width	14.8 in / 376 mm
	Depth	14.0 in / 356 mm
	Weight	13.0 lb / 5.9 kg
Onyx16		
	Height	5.4 in / 137 mm
	Width	18.7 in / 475 mm
	Depth	14.0 in / 356 mm
	Weight	15.6 lb / 7.1 kg
Onyx24		
	Height	5.4 in / 137 mm
	Width	25.2 in / 640 mm
	Depth	14.0 in / 356 mm
	Weight	20.3 lb / 9.2 kg

Options

Onyx8		
	Carry Bag	P/N 2052461-08
Onyx12		
	Carry Bag	P/N 2052461-12
	Dust Cover	P/N 2052462-12
	Rack Ear Kit	P/N 2052504
Onyx16		
	Carry Bag	P/N 2052461-16
	Dust Cover	P/N 2052462-16
	Rack Ear Kit	P/N 2052505
Onyx24		
	Dust Cover	P/N 2052462-24

LOUD Audio, LLC is always striving to improve our products by incorporating new and improved materials, components, and manufacturing methods. Therefore, we reserve the right to change these specifications at any time without notice.

The “Running Man” is a registered trademark of LOUD Audio, LLC. All other brand names mentioned are trademarks or registered trademarks of their respective holders, and are hereby acknowledged.

Please check our website for any updates to this manual: www.mackie.com.

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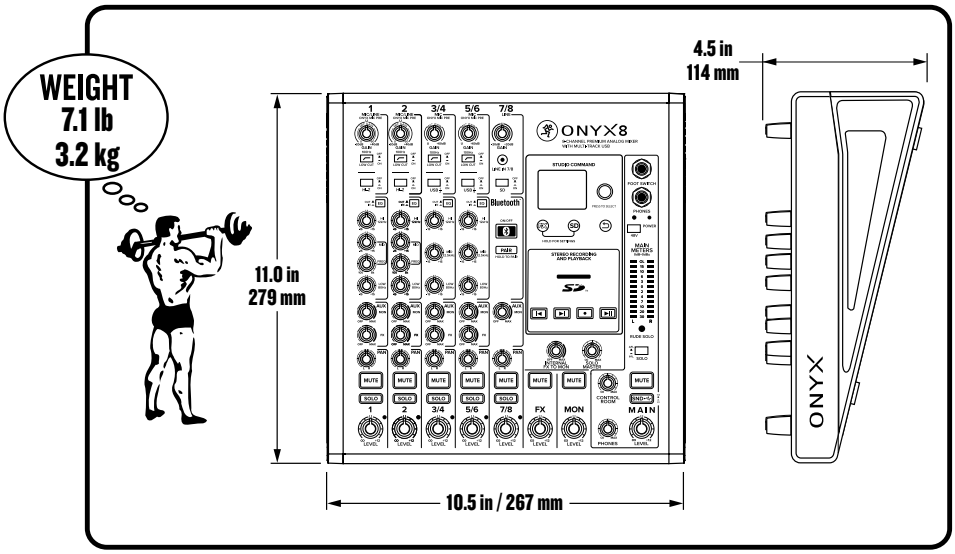
Please write the serial numbers here for future reference (i.e., insurance claims, tech support, return authorization, make dad proud, etc.)

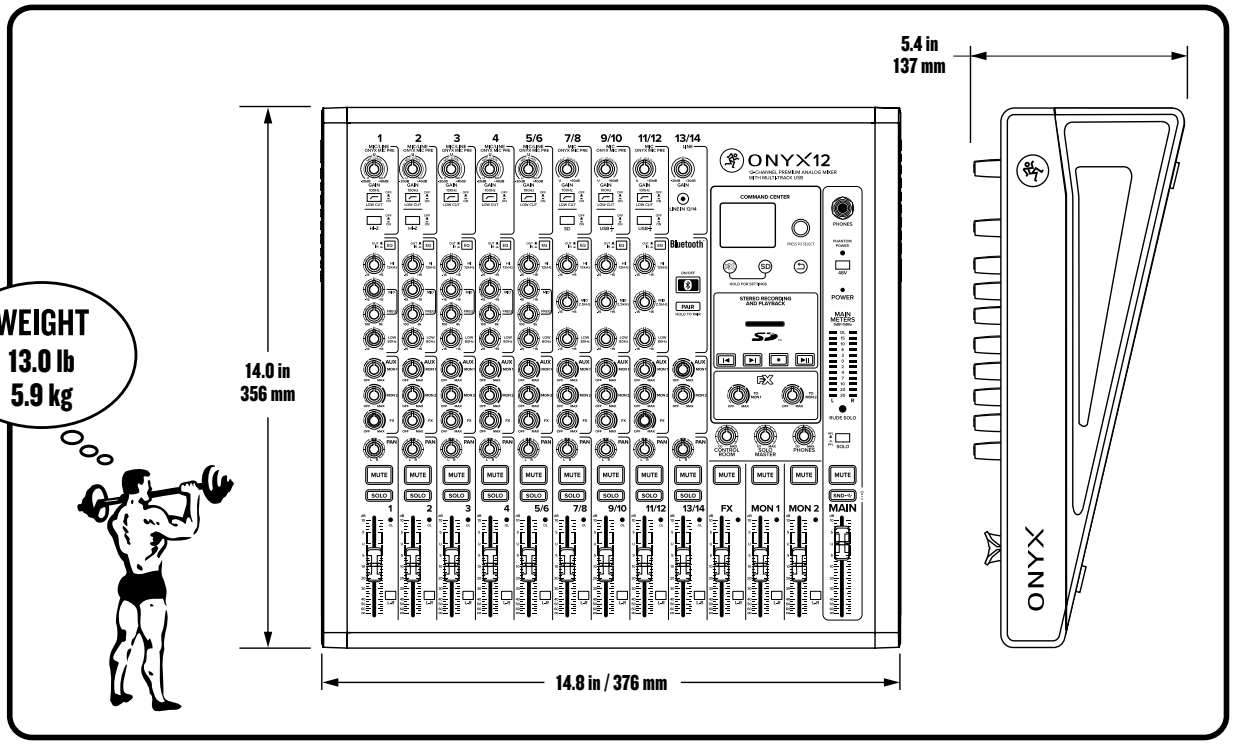
Purchased at:

Date of purchase:

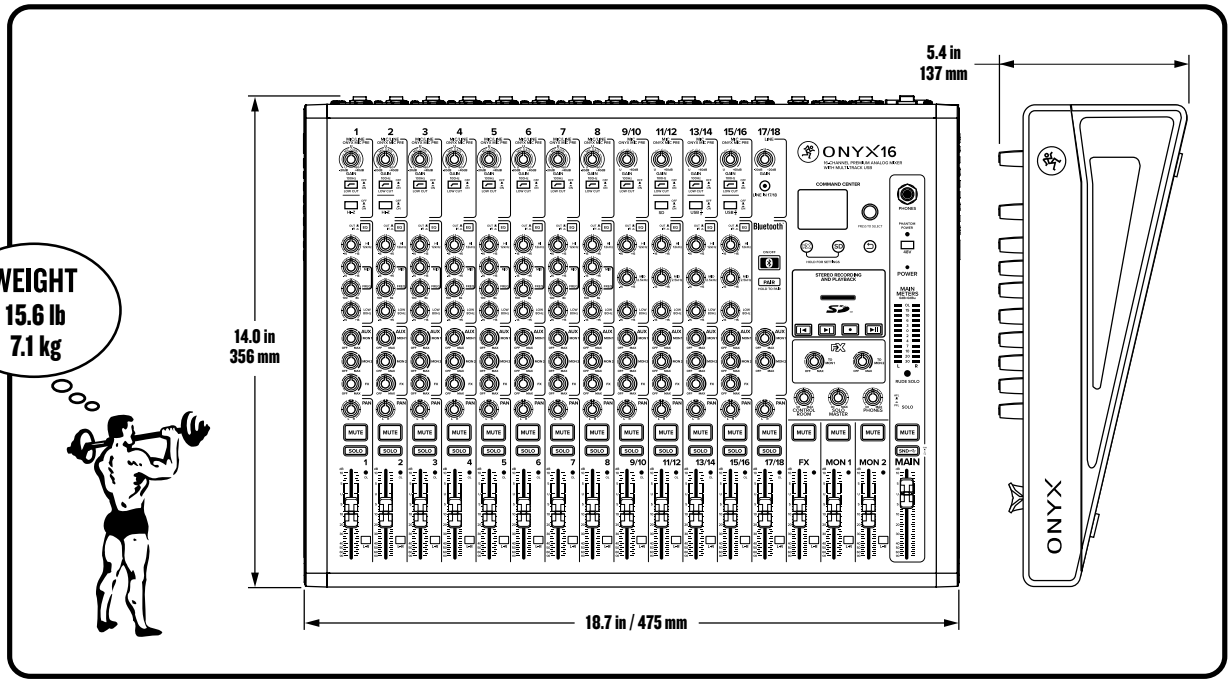
ONYX8 Dimensions



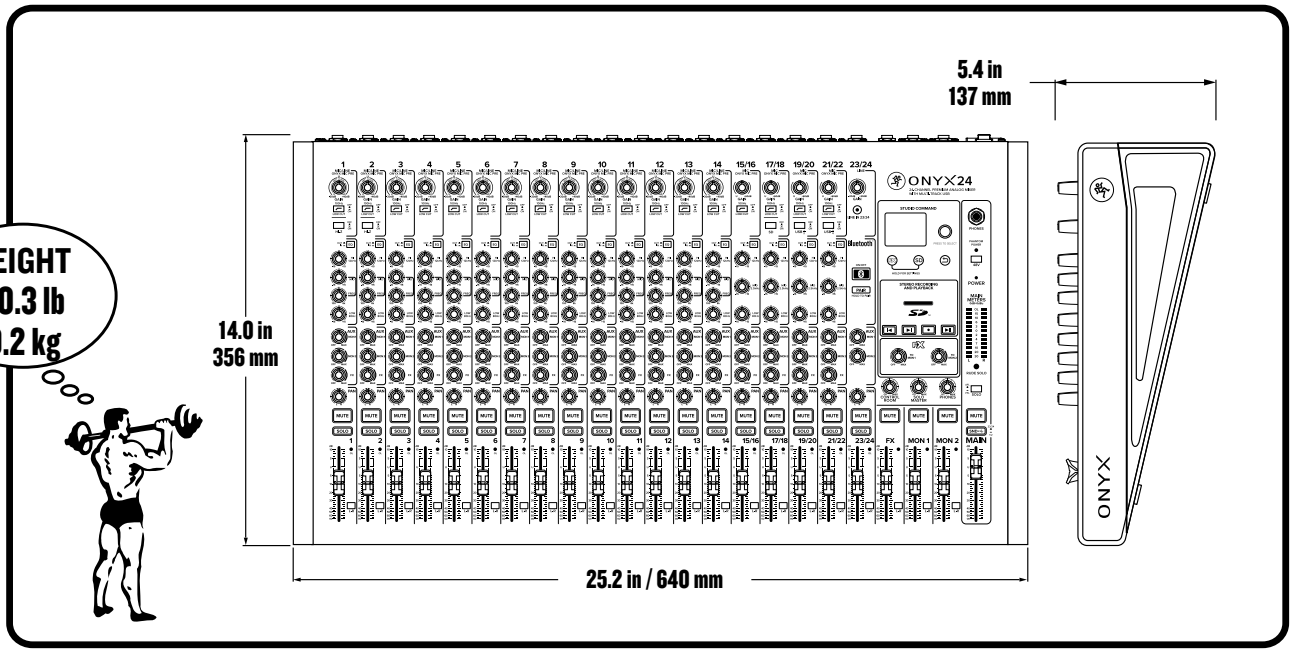
ONYX12 Dimensions



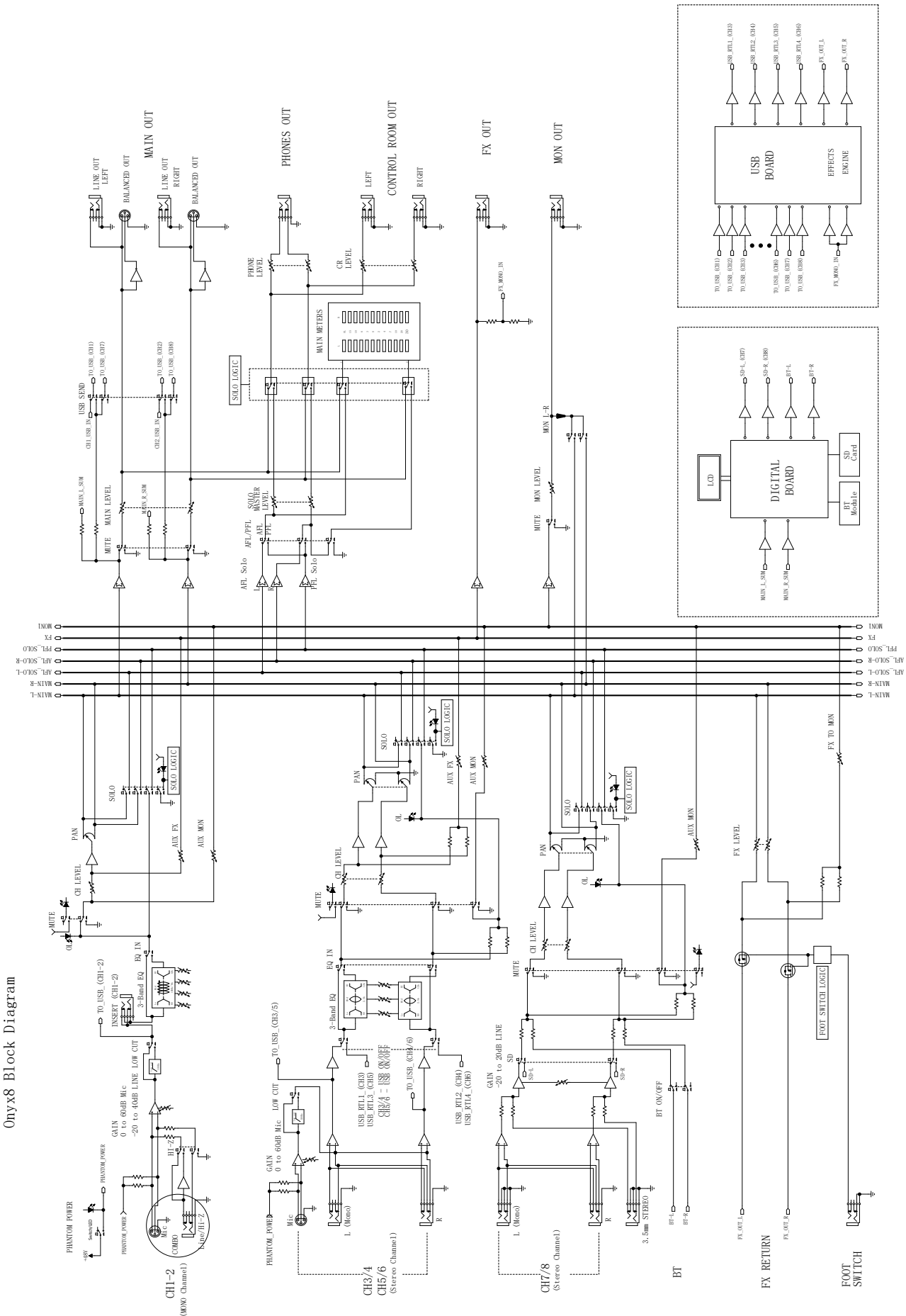
ONYX16 Dimensions



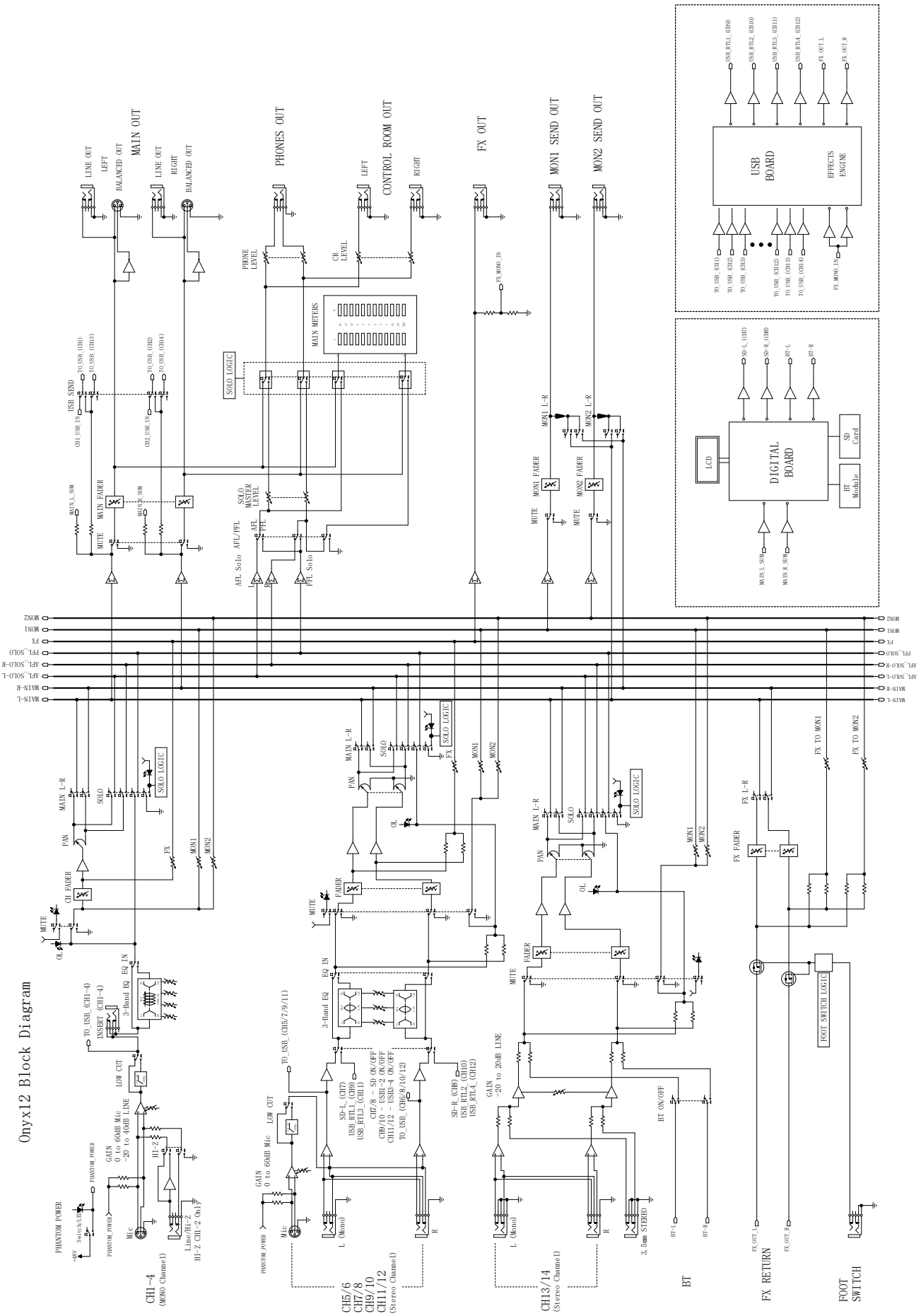
ONYX24 Dimensions



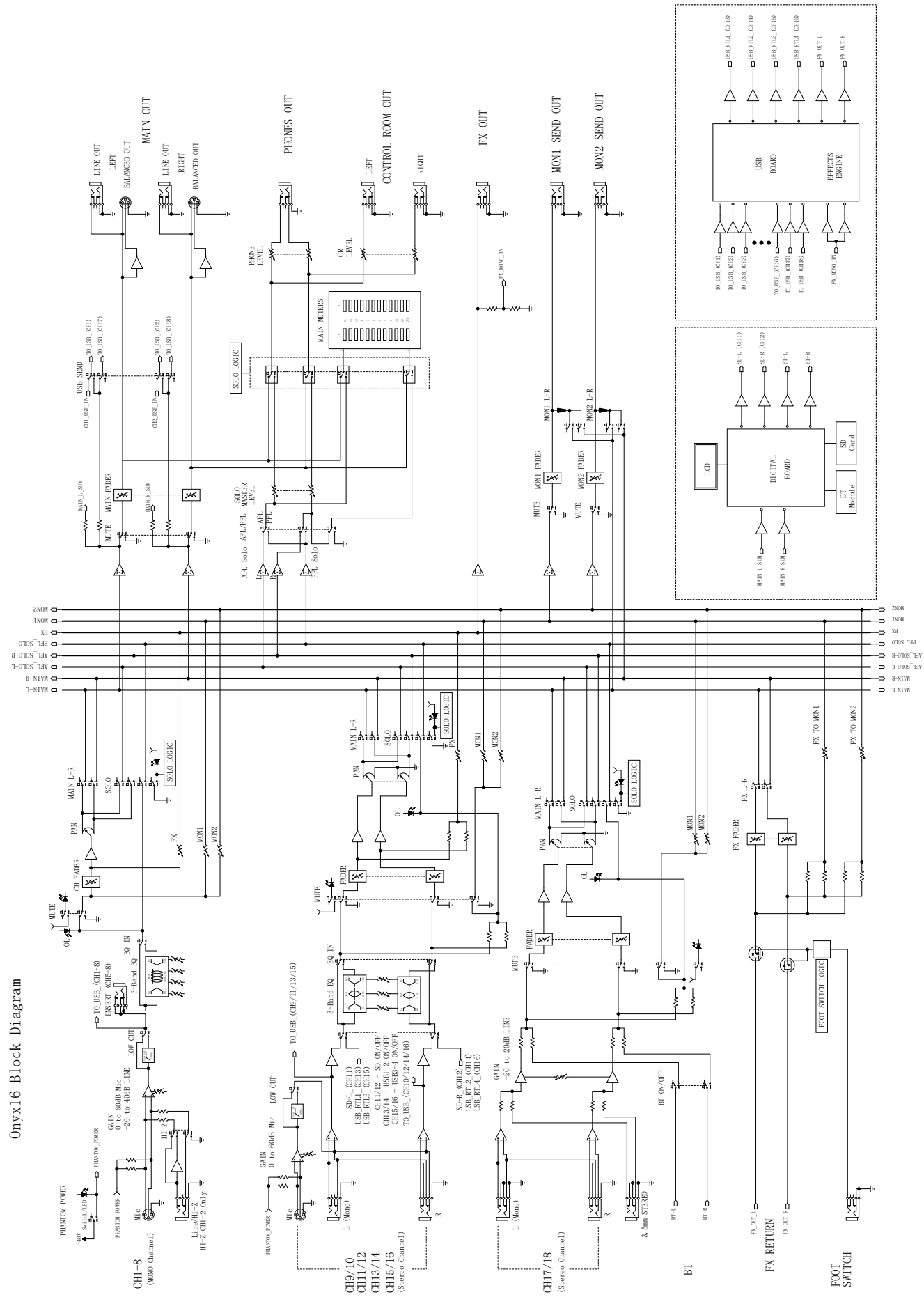
Onyx8 Block Diagram



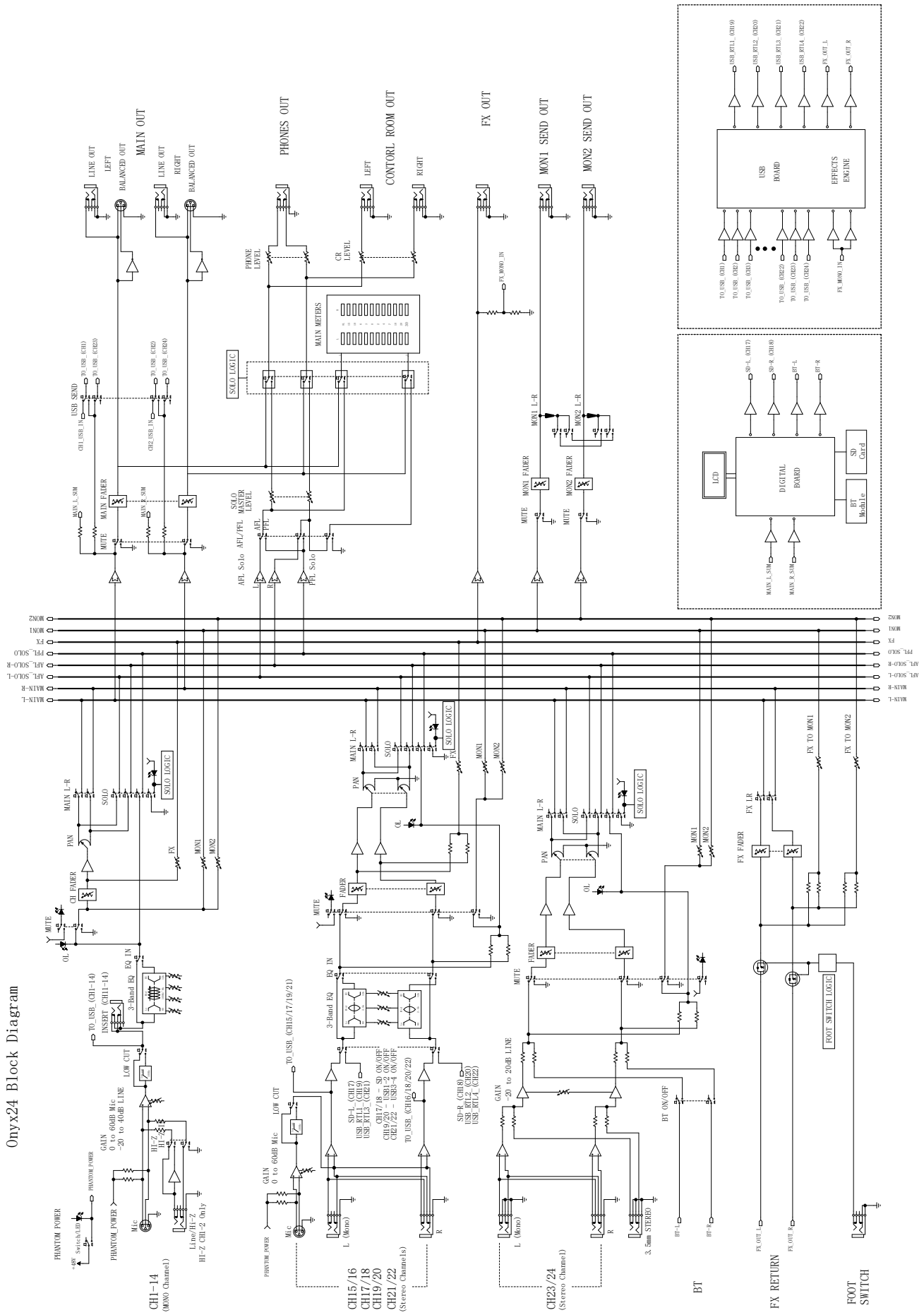
Onyx12 Block Diagram



Onyx16 Block Diagram

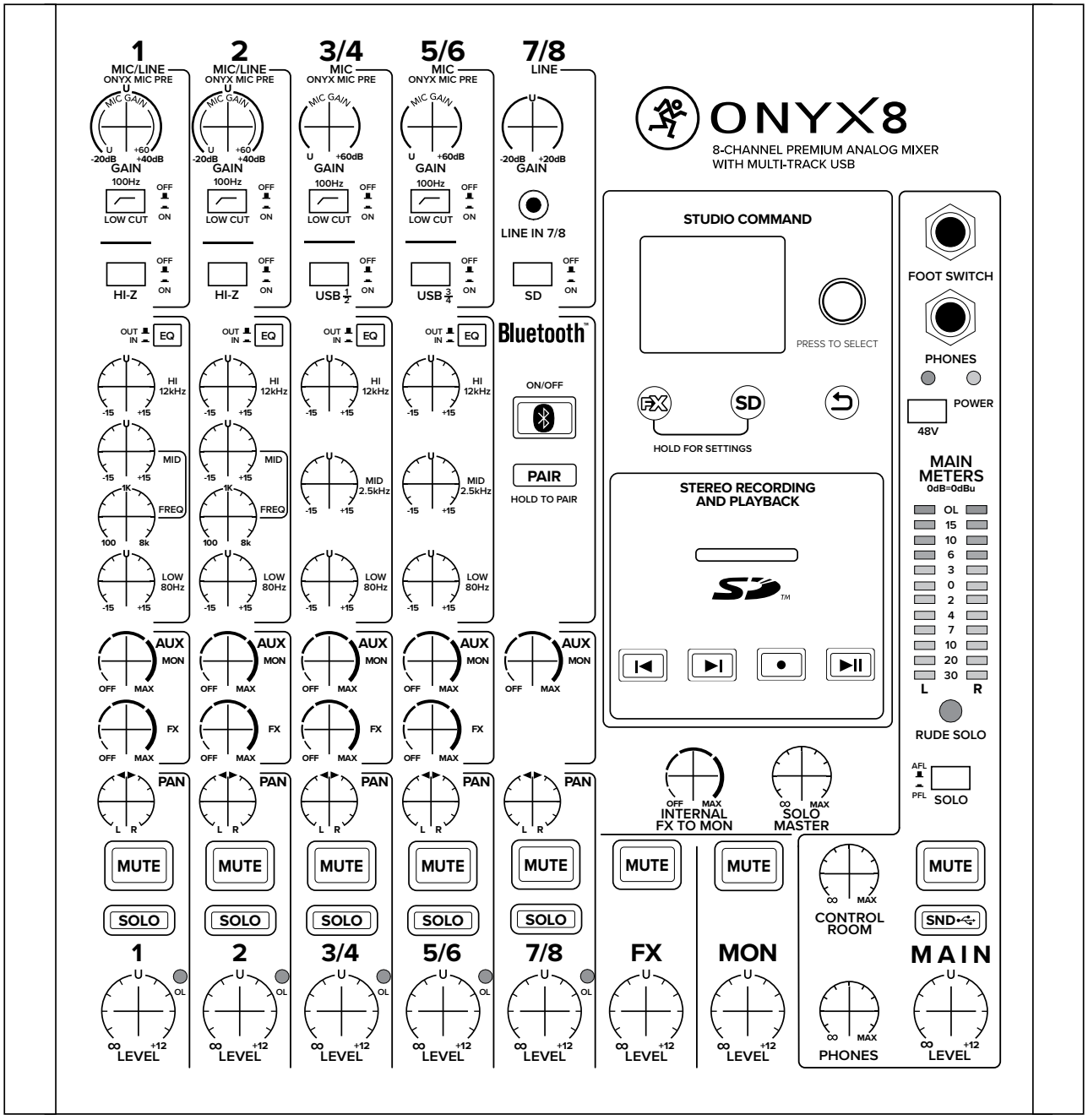


Onyx24 Block Diagram

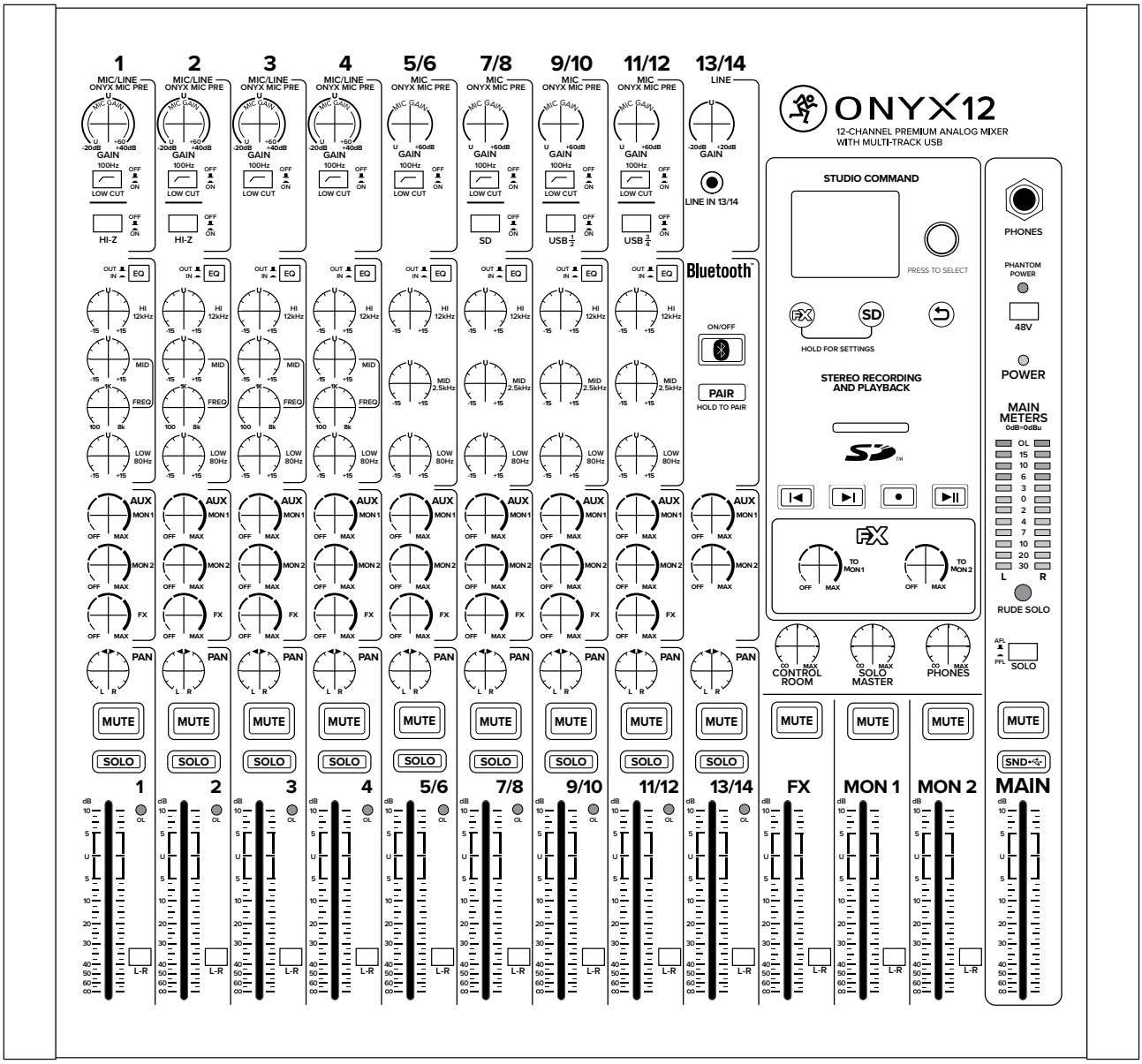


Onyx24 Block Diagram

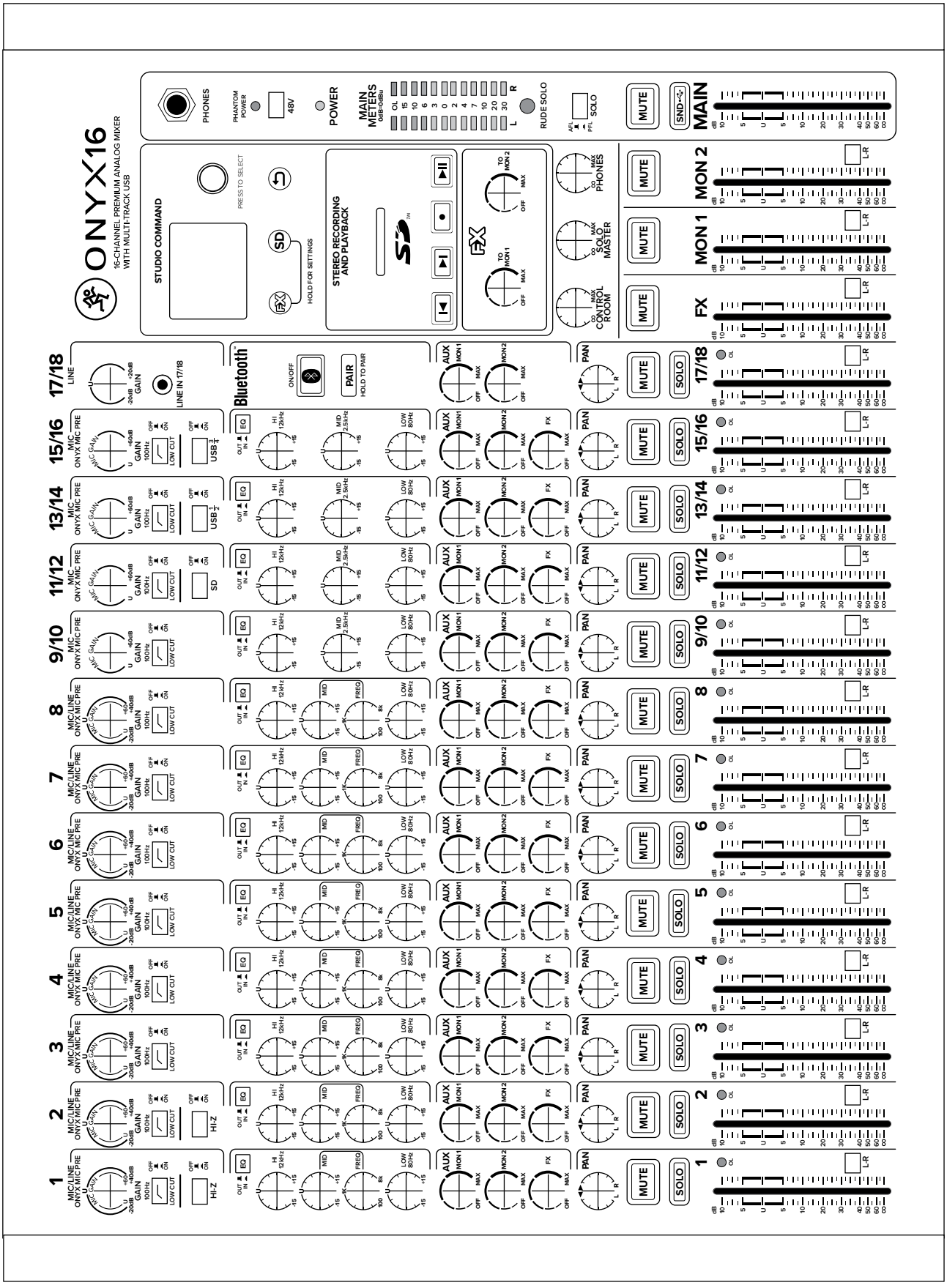
Onyx8 Track Sheet



Onyx12 Track Sheet



Onyx16 Track Sheet



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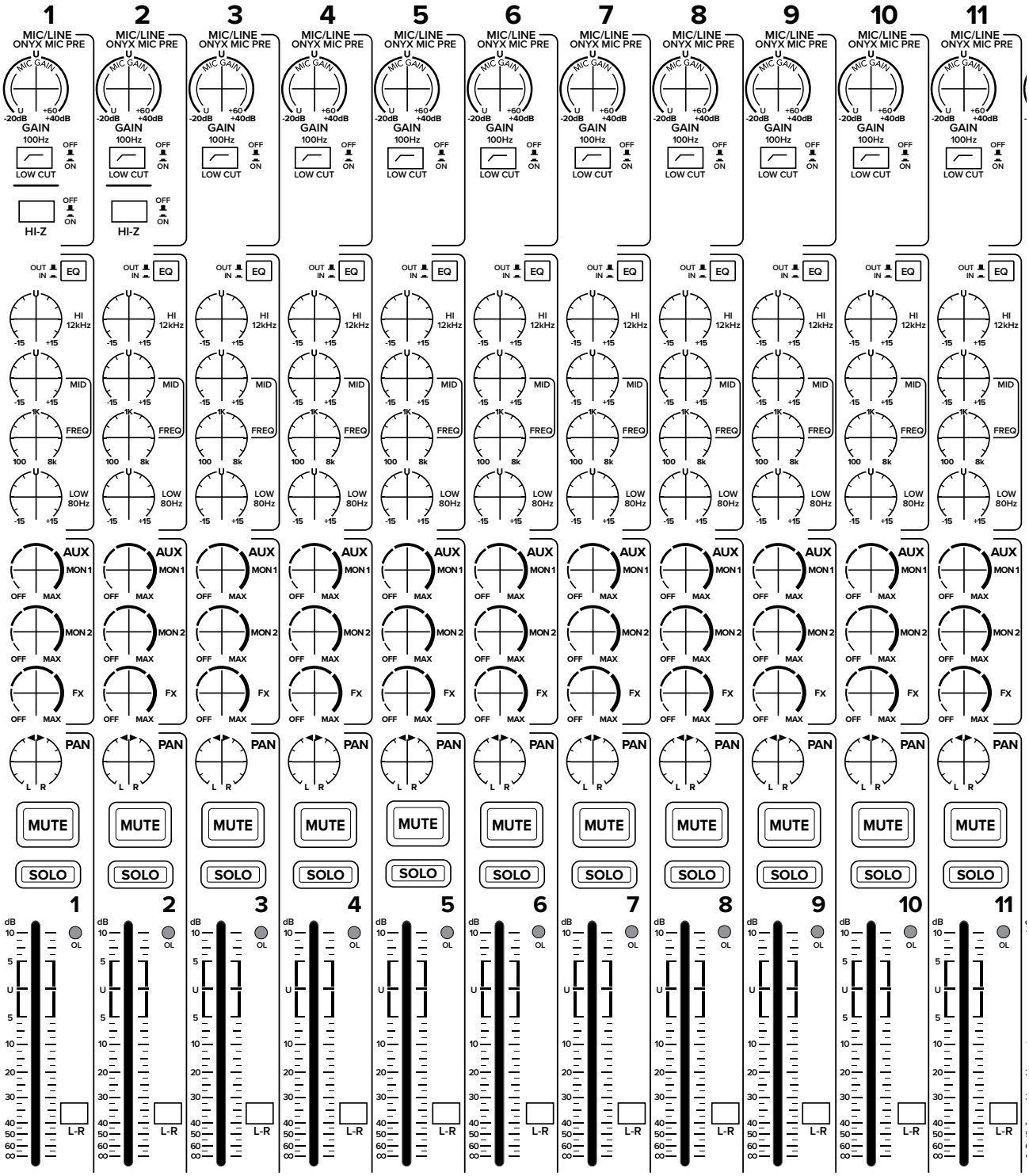

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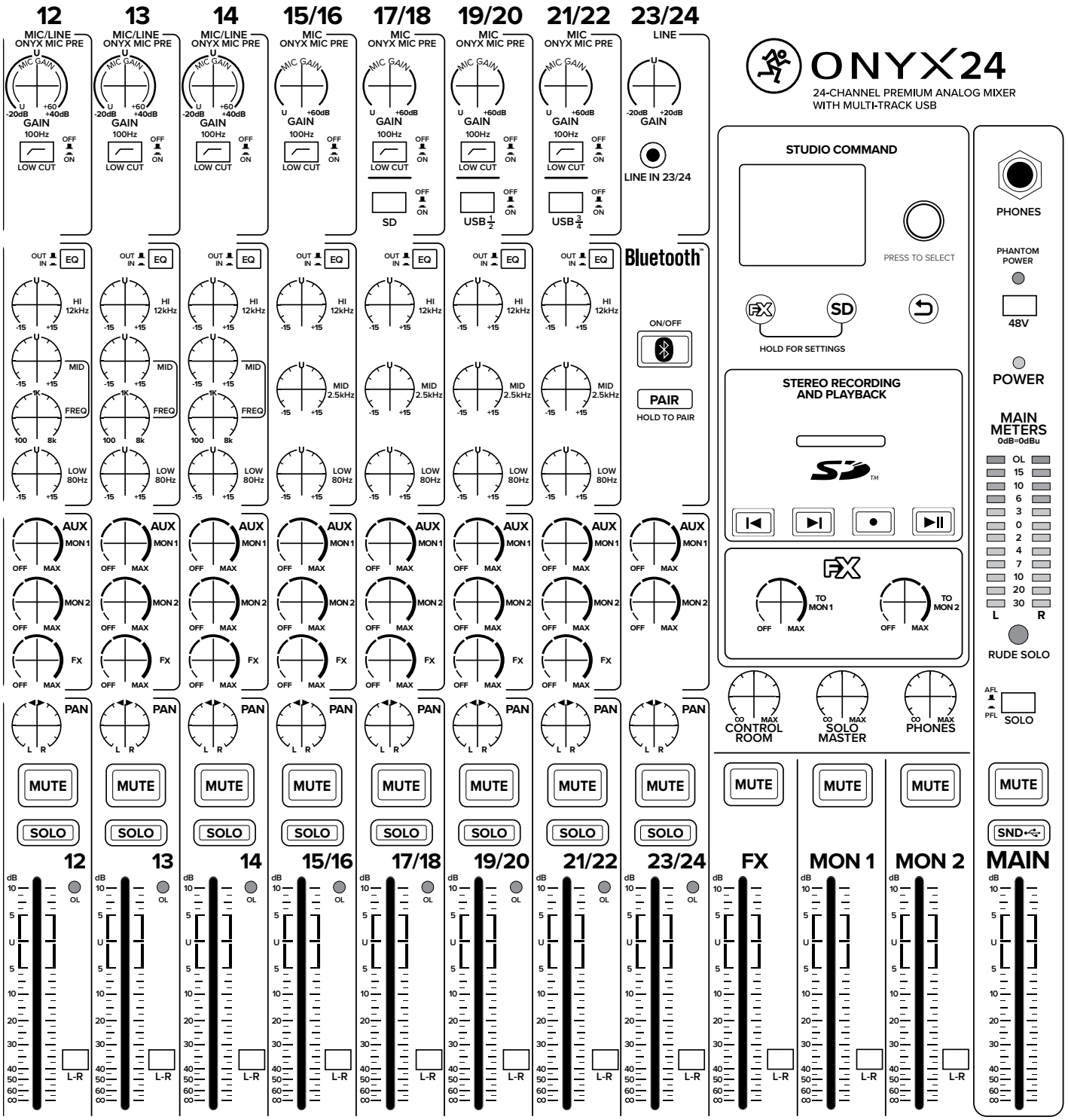

Appendix C: USB 3/4 Return Setup

Introduction

Onyx mixers utilize a digital / analog hybrid channel type that allows audio to be sent from the computer into either the USB 1/2 or USB 3/4 channels.

The flexibility of having two separate channels for headphone mixing is incredible. For instance, USB 1/2 could be set as the DAW's main mix for the pre-recorded tracks from the rhythm section, while USB 3/4 could be set up as the "more me" channel when working on overdubs.

Another example of this flexibility is while tracking a band live in the studio. Mon 1 may be used for the rhythm section headphone mix, mon 2 for the guitar player's mix and the main mix for the singer. In the DAW, the USB 1/2 mix could be used for the rhythm section since the singer would probably be too loud if they shared the same mix. The rhythm section needs to hear the click track and we know how vocalists love their sound drenched in reverb!

Some DAWs and other streaming applications have their own settings that may override system settings. If so, please review their documentation on how to make changes to the DAW / app.

Windows

1. Download the USB driver from the Mackie website.
2. Follow the installation instructions to install the driver.
3. Right-click on the speaker icon located on the task bar.
4. Select Sound Settings.
5. Under "Choose Your Output Device", select Onyx 3-4 from the dropdown menu.
6. On the mixer, be sure the USB 3/4 button is engaged (down) on the second-to-last channel.
7. On the Onyx12 (and larger) mixers, engage the LR routing button located next to the fader. This will send the signal to the main mix.
8. Turn up the channel fader to unity, then slowly turn up the main mix fader.

You will know this worked if the main meters illuminate and you hear PC audio through the device connected to the main outputs.

Mac

A driver download is not necessary on a Mac. However, some parameters will still need to be changed within macOS.

1. Open the Audio MIDI Setup app using the Spotlight search (Command + Spacebar).
2. Right-click on the device and select the Onyx mixer in "Use This Device For Sound Input", as well as "Use This Device For Sound Output".
3. Select the 'Configure Speakers' button and be sure it is set to 'Stereo'.
4. Change the Left and Right options to Analog 3 and 4, then tap 'Apply'.
5. On the mixer, be sure the USB 3/4 button is engaged (down) on the second-to-last channel.
6. On the Onyx12 (and larger) mixers, engage the LR routing button located next to the fader. This will send the signal to the main mix.
7. Turn up the channel fader to unity, then slowly turn up the main mix fader.

You will know this worked if the main meters illuminate and you hear PC audio through the device connected to the main outputs.

Limited Warranty

Please keep your sales receipt in a safe place.

This Limited Product Warranty ("Product Warranty") is provided by LOUD Audio, LLC ("LOUD") and is applicable to products purchased in the United States or Canada through a LOUD-authorized reseller or dealer. The Product Warranty will not extend to anyone other than the original purchaser of the product (hereinafter, "Customer," "you" or "your").

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LOUD warrants to Customer that the product will be free from defects in materials and workmanship under normal use during the Warranty Period. If the product fails to conform to the warranty then LOUD or its authorized service representative will at its option, either repair or replace any such nonconforming product, provided that Customer gives notice of the noncompliance within the Warranty Period to the Company at: www.mackie.com or by calling LOUD technical support at 1.800.898.3211 (toll-free in the U.S. and Canada) during normal business hours Pacific Time, excluding weekends or LOUD holidays. Please retain the original dated sales receipt as evidence of the date of purchase. You will need it to obtain any warranty service.

For full terms and conditions, as well as the specific duration of the Warranty for this product, please visit www.mackie.com.

The Product Warranty, together with your invoice or receipt, and the terms and conditions located at www.mackie.com constitutes the entire agreement, and supersedes any and all prior agreements between LOUD and Customer related to the subject matter hereof. No amendment, modification or waiver of any of the provisions of this Product Warranty will be valid unless set forth in a written instrument signed by the party to be bound thereby.

Need help with the mixer?

- Visit www.mackie.com/support to find: FAQs, manuals, addendums, and other documents.
- Email us at: www.mackie.com/support-contact
- Telephone 1-800-898-3211 to speak with one of our splendid technical support chaps (Monday through Friday, normal business hours, Pacific Time).

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