

Solid State Logic

O X F O R D • E N G L A N D

SSL 1 User Guide



Introduction to SSL 1

What is SSL 1?

SSL 1 is a USB audio interface that enables you to get studio-quality audio into and out of your computer with minimal fuss and maximum creativity. On Mac it's class-compliant - this means that you don't need to install any software audio drivers. On Windows you'll need to install the SSL USB Audio ASIO/WDM driver which you'll find on our website - see the Quick-Start section of this guide for more information on getting up and running. Once you've done this you'll be ready to start connecting your microphone and musical instrument. The signals from these inputs will be sent into your favourite music creation software/DAW (Digital Audio Workstation). The outputs from the tracks in your DAW session (or indeed your favourite media player) can be sent out of the monitor and headphone output so you can hear your creations in all their glory, with stunning clarity.

Features

- **1 x SSL-designed microphone preamp input** (CHANNEL 1), with class-leading EIN performance and huge gain range
 - **+48V** phantom power
 - **Legacy 4K** analogue colour enhancement, inspired by the 4000-series console
 - **High-pass filter** for removing low-end rumble
- **1 x Instrument (DI) / LINE** input(CHANNEL 2), with class-leading Dynamic Range and THD+N performance
- **1 x professional-grade headphone output**, with plenty of power and class-leading all round performance
- **Mobile-recording friendly** – bus-powered or power externally via the additional 5V USB connection
- **32-bit / 192 kHz AD/DA Converters** - capture and hear all the detail of your creations
- **Easy-to-use Monitor Mix Button** - provides near-zero latency input signal monitoring mixed with USB playback for critical monitoring tasks
- **Balanced monitor outputs** with ruler flat frequency response. The outputs are DC-coupled, making them suitable for controlling CV input instruments & FX
- **3 x Stereo Loopback virtual inputs** for podcasting, content creation and streaming
- **SSL Production Pack Software Bundle**: including SSL Native Vocalstrip 2 and Drumstrip DAW plug-ins, plus much more!
- **Mac/Windows** compatible
- Compatible with **Mobile Devices** (phones and tablets) supporting USB Audio Class 2.0 (UAC2).
- **K-Lock** Slot for securing your SSL 1

Get-Started

Unpacking

The unit has been carefully packed and inside the box, you will find the following items:

- SSL 1
- Safety Guide
- 1.5m 'C' to 'C' USB Cable

USB Cables

Please use the provided USB 'C' to 'C' cable to connect SSL 1 to your computer via the port labelled 'USB'. The USB connector on the rear of SSL 1 is a 'C' type. The type of USB port available on your computer will determine whether you need to use the included 'C' to 'C' cable or a 'C' to 'A' cable (not included). Long USB cables (especially

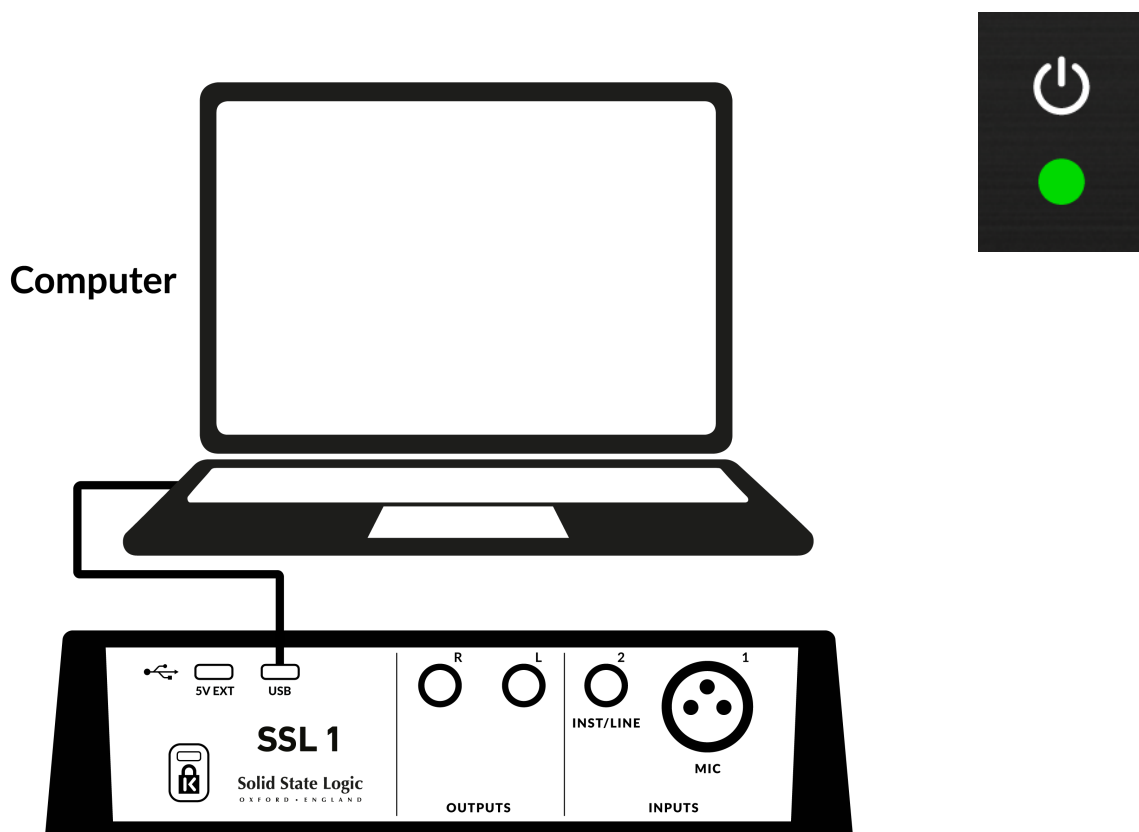
3m or more) should be avoided, as they can suffer from inconsistent performance and may not provide stable, reliable power to the unit.

USB Hubs

Wherever possible it is best to connect SSL 1 directly to a spare USB port on your computer. This will give you the stability of an uninterrupted supply of USB power. However, if you do need to connect via a USB 2.0 compliant hub then it is recommended that you choose one of high enough quality to provide reliable performance - not all USB hubs were created equally. With SSL 1 we've pushed the limits of audio performance on a USB bus-powered interface and as such, some low-cost self-powered hubs might not always be up to the task. Usefully you can check out our FAQs at solidstatellogic.com/support to see which hubs we've successfully used and found to be reliable with SSL 1.

Power

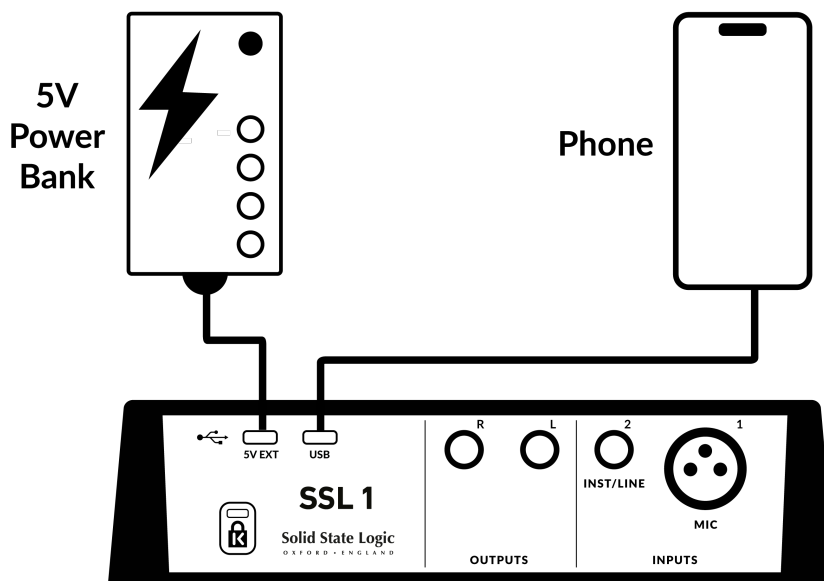
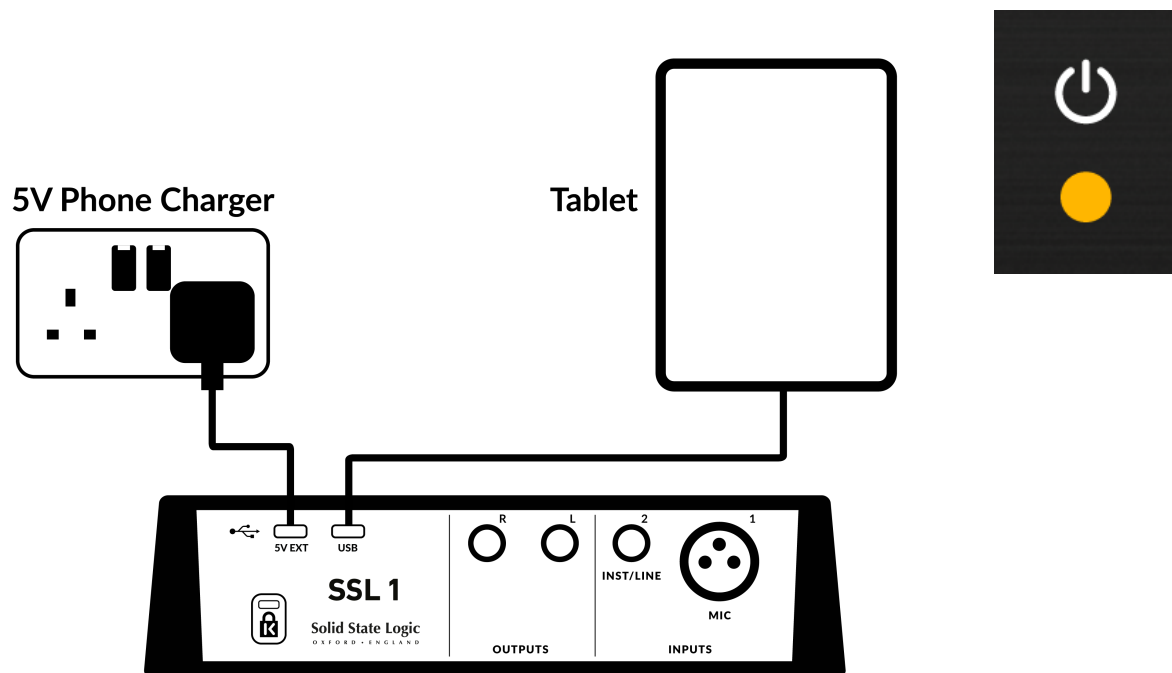
Powering SSL 1 via the port labelled 'USB' is the simplest setup, as **a single cable provides both USB bus power and audio**. When powered this way, the front panel power LED will show a steady green light.



SSL 1 bus-powered

Alternatively, **SSL 1 can be powered by connecting a 5V power source** (such as a

phone charger or power bank) to the '5V EXT' port. When powered this way, the front panel power LED will show a steady amber light. This is particularly useful when recording with a mobile device, as it no longer needs to supply power to SSL 1 via the 'USB' port, helping to reduce battery drain. Please note that SSL 1 does not provide charging power to the connected device.



SSL 1 with 5V External Power Source

System Requirements

Mac and Windows operating systems and hardware are constantly changing. Please search for 'SSL 1' Compatibility' in our online FAQs to see if your system is currently supported.

Registering Your SSL 1

Registering your SSL USB audio interface will grant you access to an array of exclusive software from us and other industry-leading software companies - we call this incredible bundle the '**SSL Production Pack**'

<http://www.solidstatellogic.com/get-started>



To register your product head to www.solidstatellogic.com/get-started and follow the on-screen instructions. During the registration process you'll need to input the serial number of your unit. This can be found on the label on the base of your unit.

XX-XXXXXX-XXXXXXXXXXXXX
SERIAL NUMBER

Please note: the actual serial number begins with the letters 'SL1'

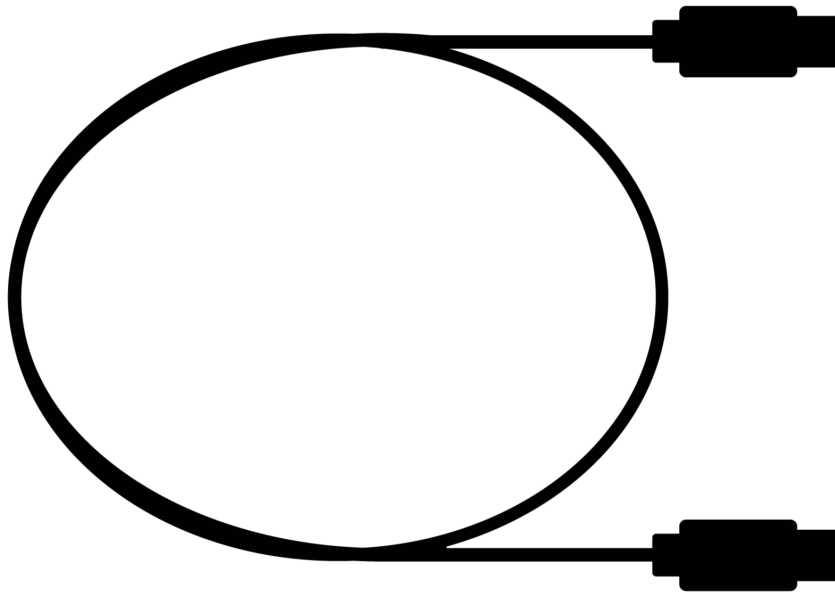
Once you have completed registration all of your software content will be available in your logged-in user area. You can return to this area at any time by logging back into your SSL account at www.solidstatellogic.com/login should you wish to download the software another time.

What is the SSL Production Pack?

The SSL Production Pack is an exclusive software bundle from SSL and other third-party companies. To find out more please visit the SSL 1 product pages on the website.

Quick-Start / Installation

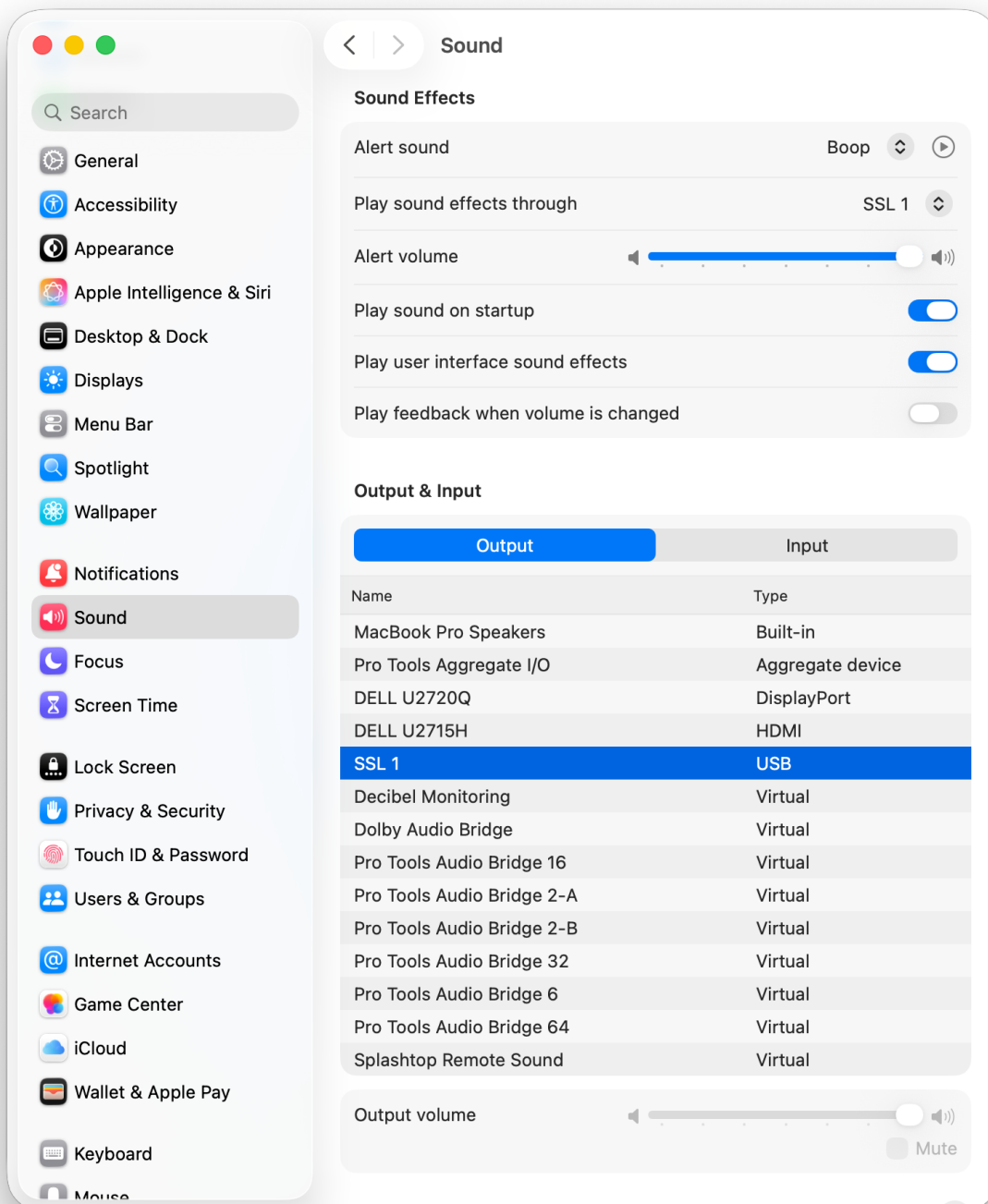
Connect your SSL USB audio interface to your computer using the included USB cable. For these setup steps, make sure to connect using the 'USB' port on SSL 1, not the '5V EXT' port.



Apple Mac Installation

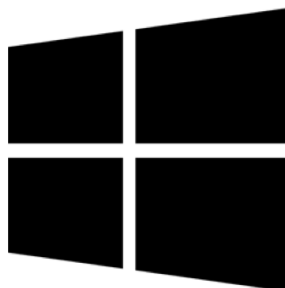


Go to 'System Preferences' then 'Sound' and select 'SSL 1' as the input and output device (drivers are not required for operation on Mac)



Open up your favourite media player to begin listening to music or open up your DAW to begin creating music.

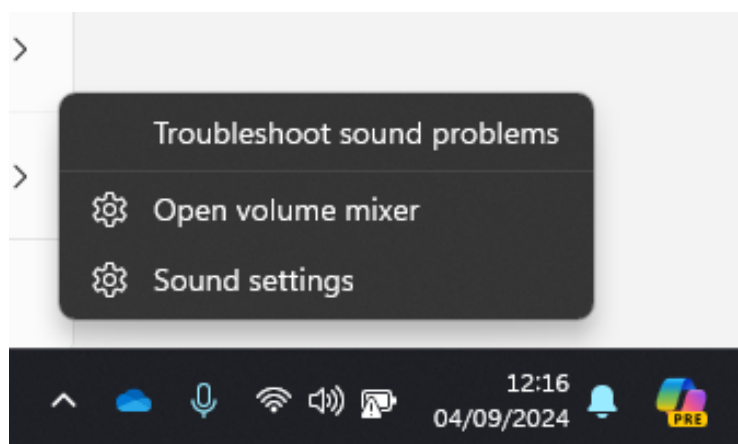
Windows Installation

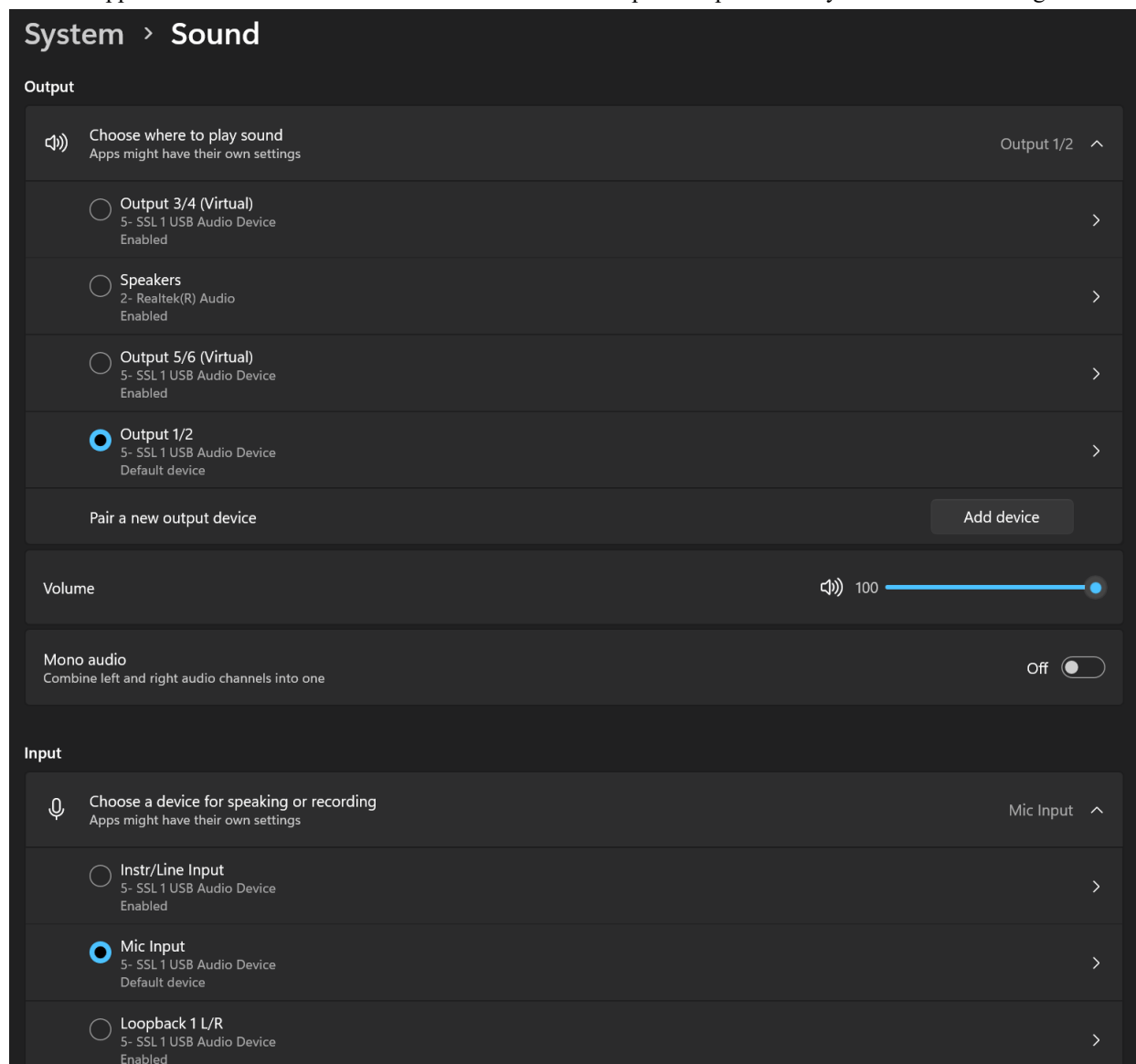


Download and install the SSL USB ASIO/WDM audio driver for your SSL 1.

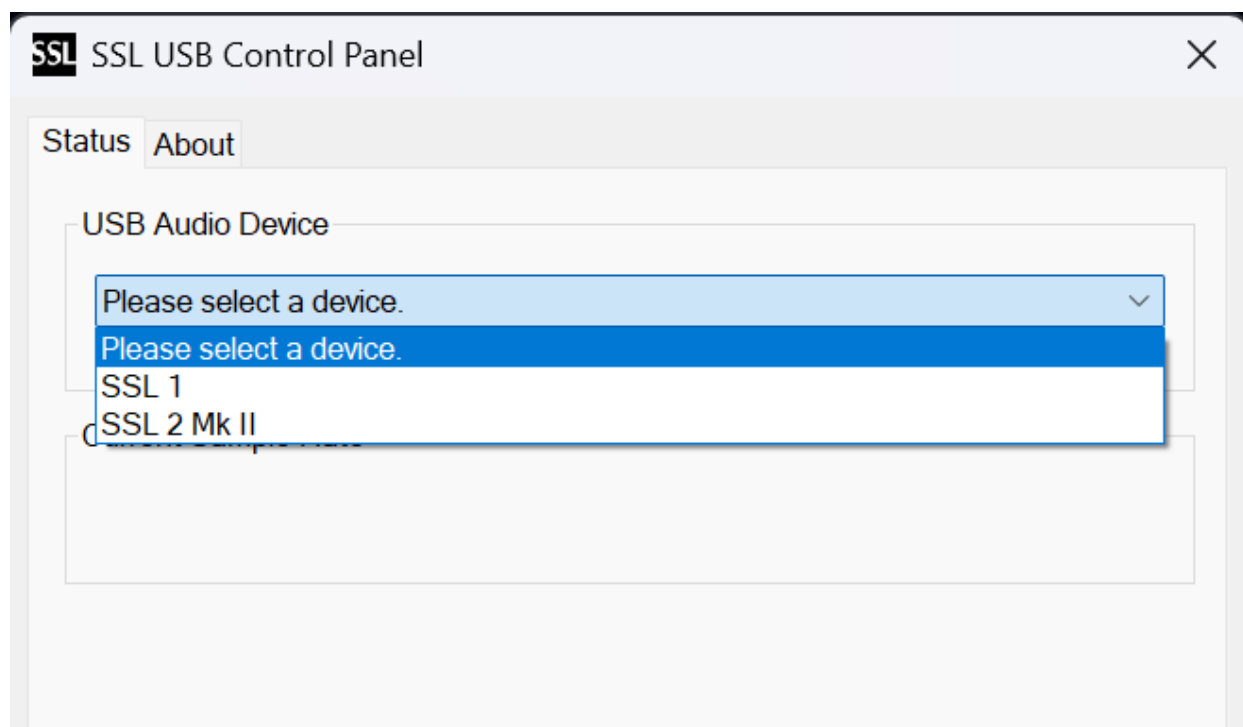


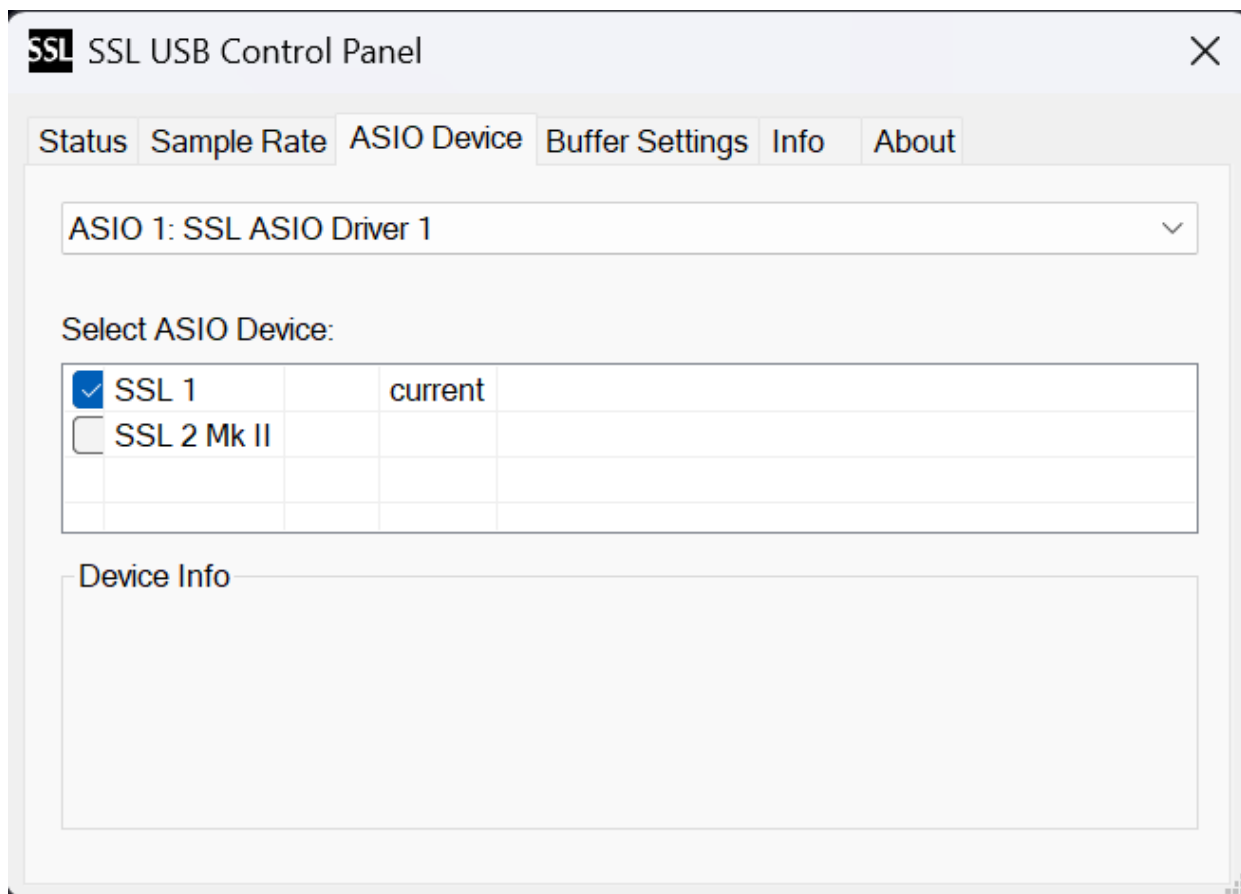
Go to 'Control Panel' then 'Sound Settings' and select 'SSL 1 USB' as the default device on both the Input and Output sections.



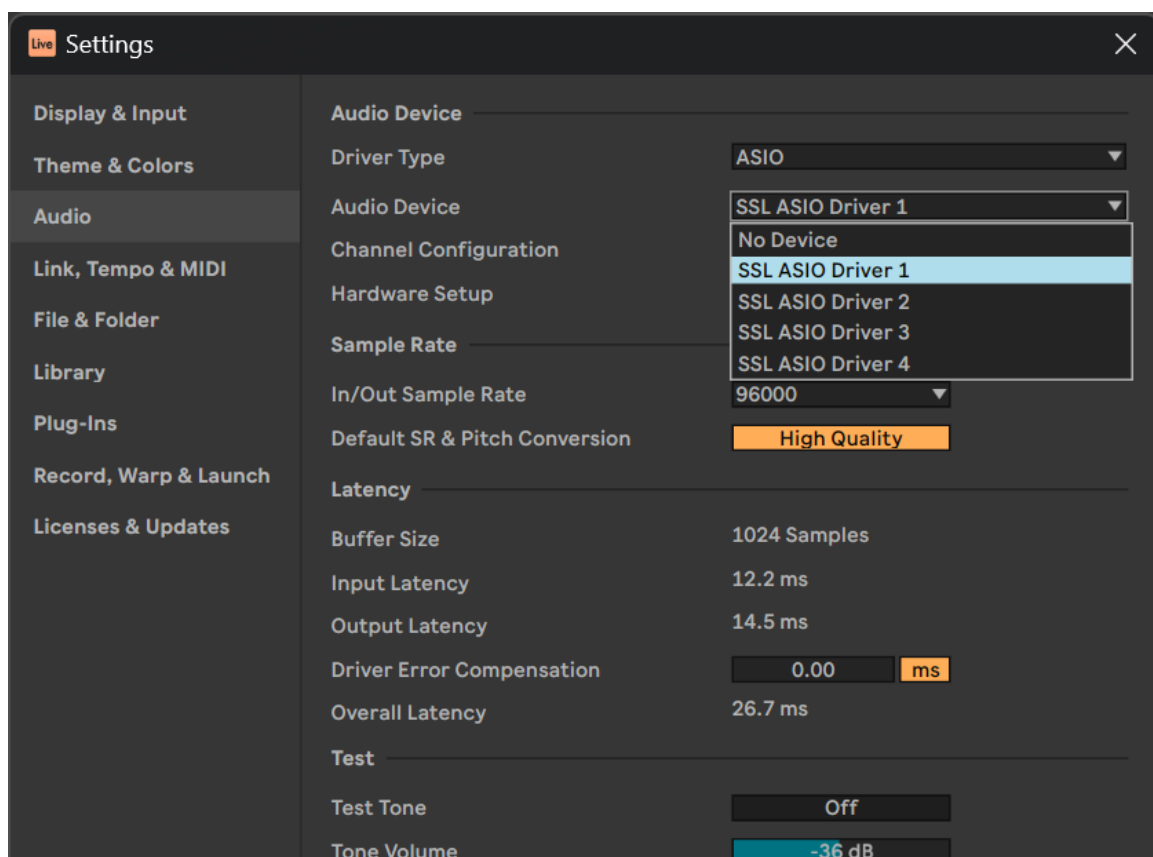


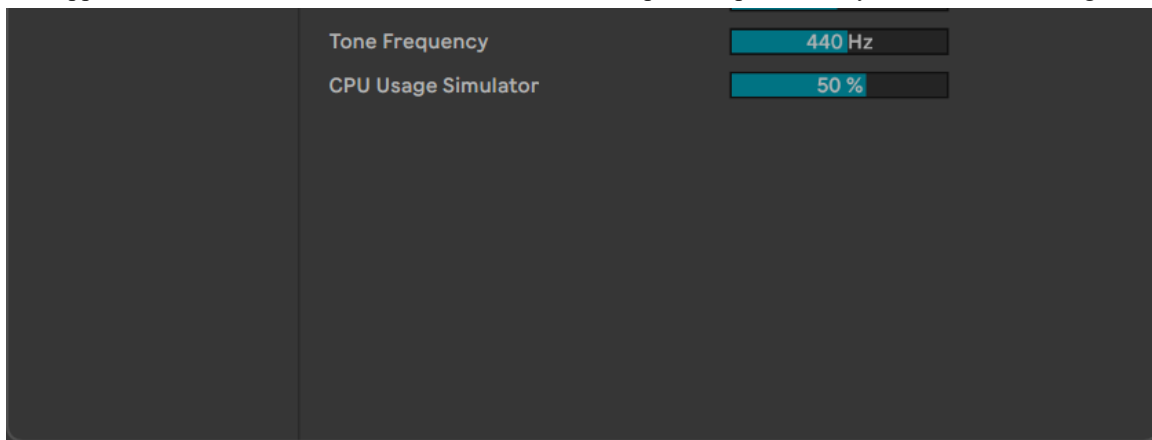
Open the SSL USB Control Panel application & select your SSL 1 Interface & assign it to SSL ASIO Driver 1.





Go to your DAW's Audio preferences panel and select SSL ASIO Driver 1.





The SSL USB ASIO/WDM driver supports multiple ASIO instances. This means that you can have multiple ASIO applications working with multiple SSL USB devices. For more information on this, please visit the [SSL Windows ASIO Driver setup Page](#).

Selecting SSL 1 As Your DAW's Audio Device

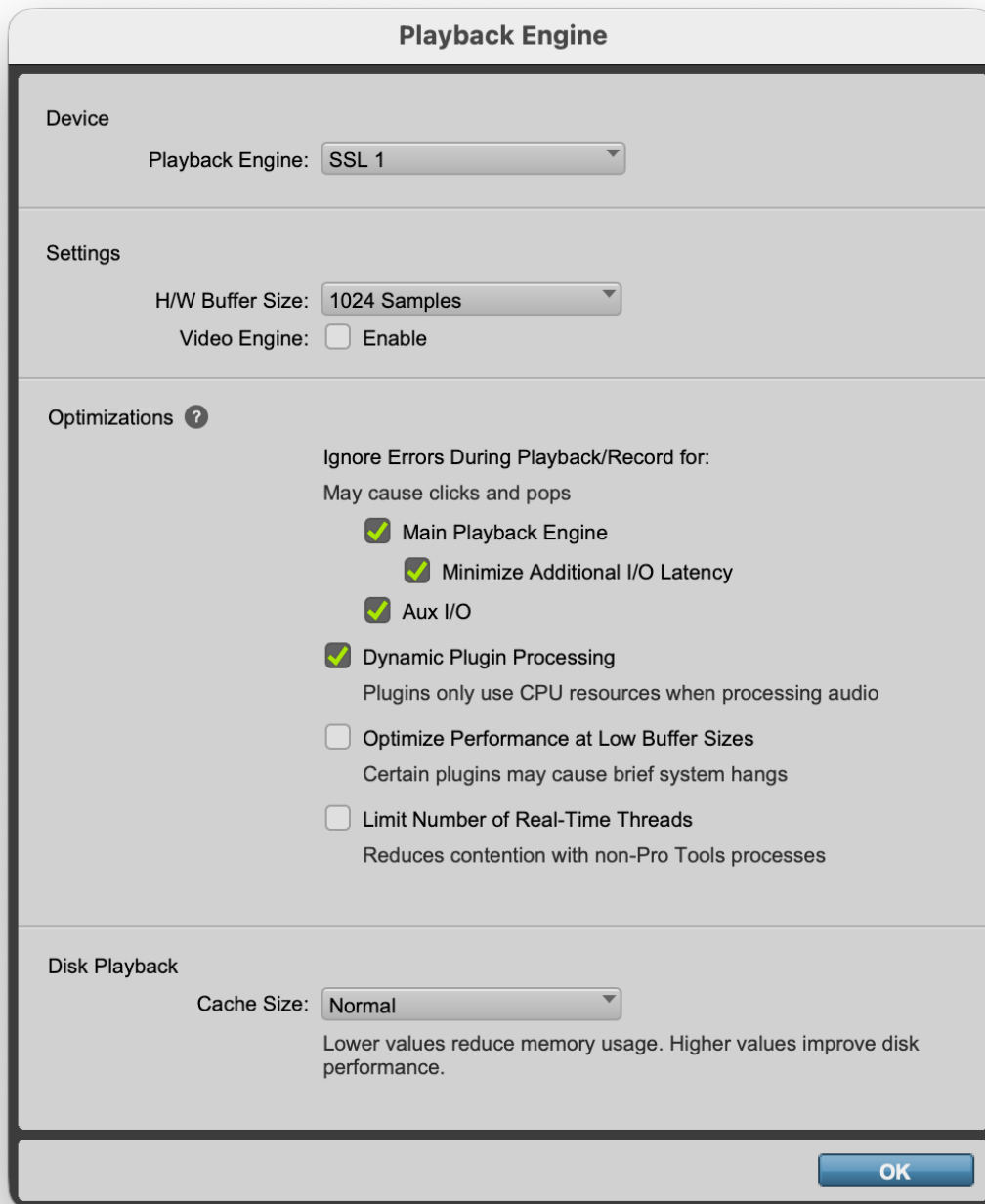
If you have followed the Quick-Start / Installation section then you are ready to open up your favourite DAW and start creating. You can use any DAW that supports Core Audio on Mac or ASIO/WDM on Windows.

No matter which DAW you are using you need to ensure that SSL 1 is selected as your audio device in the audio preferences/ playback settings. Below are examples in Pro Tools and Ableton Live Lite. If you are unsure please refer to your DAW's User Guide to see where these options can be found.

Pro Tools Setup

Open Pro Tools and go to the 'Setup' menu and choose 'Playback Engine...'. Make sure that SSL 1 is selected as the 'Playback Engine' and that 'Default Output' is Output 1-2 because these are the outputs that will be connected to your monitors.

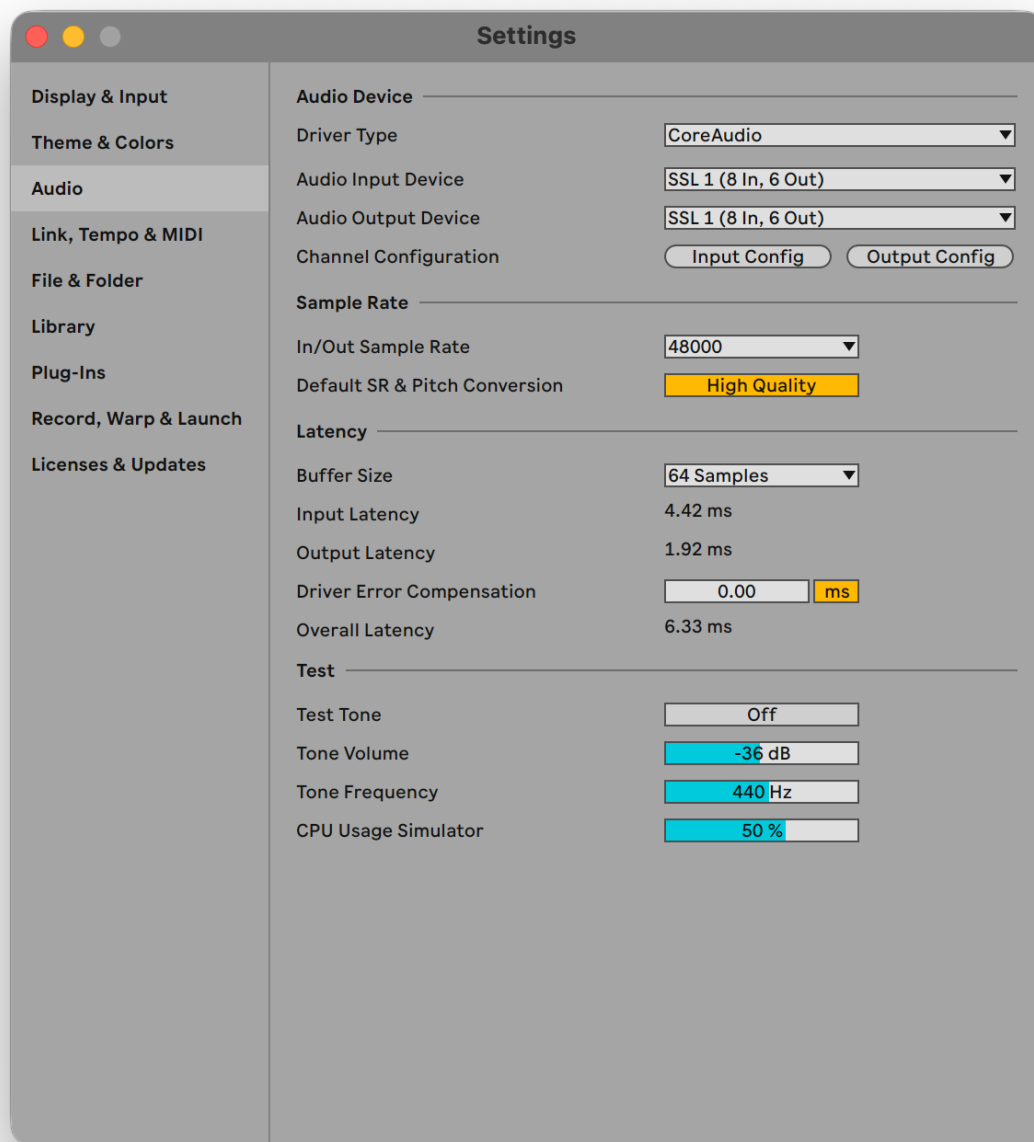
Note: On Windows, ensure that 'Playback Engine' is set to 'SSL 1 ASIO'.



Ableton Live Lite Setup

Open up Live Lite and locate the 'Preferences' panel. Make sure that SSL 1 is selected as the 'Audio Input Device' and 'Audio Output Device' as shown below.

Note: On Windows, ensure that the Driver Type is set to 'SSL 1 ASIO'.



Front Panel Controls



Input Channels

Channel 1 - Microphone Input

+48V

This switch enables phantom power on the XLR connector, which will be sent down the XLR microphone cable to the microphone. Phantom power is required when using Condenser or Active Ribbon microphones. **BE AWARE! Dynamic & Passive Ribbon microphones DO NOT** require phantom power to operate and can damage some microphones if engaged.

LEGACY 4K - ANALOGUE ENHANCEMENT EFFECT

Engaging this switch allows you to add some extra analogue 'magic' to your input when you need it. It injects a combination of high-frequency EQ-boost, together with some finely tuned harmonic distortion to help enhance sounds. We have found it to be particularly pleasant on sources such as vocals and acoustic guitar.

This enhancement effect is created completely in the analogue domain and is inspired by the kind of extra character the legendary SSL 4000-series console (often referred to as '4K') could add to a recording. The 4K was renowned for many things, including a distinctive 'forward', yet musical-sounding EQ, as well as its ability to impart a certain analogue 'mojo'. You will find that most sources become more exciting when the 4K switch is engaged!

'4K' is the abbreviation given to any SSL 4000-series console. 4000-series consoles

were manufactured between 1978 and 2003 and are widely regarded as one of the most iconic large-format mixing consoles in history, due to their sound, flexibility and comprehensive automation features. Many 4K consoles are still in use today by the world's leading mix engineers.

HI-PASS FILTER

This switch engages the Hi-Pass Filter with a cut off frequency at 75Hz with a 18 dB/Octave slope. This is ideal for removing unwanted low-end frequencies from an input signal and cleaning up unnecessary rumble. This is suitable for sources such as Vocals or Guitars.

LED METERING

5 LEDs show the level at which your signal is being recorded into the computer. It is good practice to aim for the '-20' mark (the third green meter point) when recording. Occasionally going into '-10' is fine. If your signal is hitting '0' (top red LED), that means it is clipping, so you'll need to lower the GAIN control or output from your instrument. Scale markings are in dBFS.

GAIN

This control adjusts the pre-amp gain applied to your microphone. Adjust this control so that your source is lighting all 3 green LEDs most of the time whilst you are singing/playing your instrument. This will give you a healthy recording level into the computer.

Channel 2 - Instrument/Line Input

LINE

Switches the 1/4" input jack on channel 2 to accept a Line-level input, instead of an instrument input. Line input mode is active when the LED is beneath the button is green. The **INST/LINE** input connector is found on the rear of the unit.

- Instrument input (LED not lit) offers a 1 MΩ impedance, which is desirable for sources such as a bass guitar.
- Line input (LED lit) offers a 10 kΩ impedance, suiting a wide range of line-level sources such as keyboards and line-level synths.

LED METERING

5 LEDs show the level at which your signal is being recorded into the computer. It is good practice to aim for the '-20' mark (the third green meter point) when recording. Occasionally going into '-10' is fine. If your signal is hitting '0' (top red LED), that means it is clipping, so you'll need to lower the GAIN control or output from your instrument. Scale markings are in dBFS.

GAIN

This control adjusts the gain applied to your instrument/line input. Adjust this control so that your source is lighting all 3 green LEDs most of the time whilst you are playing your instrument. This will give you a healthy recording level into the computer.

Monitoring Section

This section describes the controls found in the monitoring section. These controls affect what you hear through your monitor speakers and the headphone output.



MIX

The **MIX** button sums the near-zero latency input signals with the USB playback from

your DAW/media player, allowing you to monitor your inputs in real-time, whilst also hearing playback.

Use the master volume in your DAW/media player to balance the playback against your input sources.

When the **MIX** button is disabled, only USB playback is heard through the monitors and headphones.

POWER LED

Illuminates solid green to indicate that the unit is successfully receiving power over 'USB'.

Illuminates solid amber to indicate that the unit is successfully receiving power over '5V EXT'.

MONITOR Level (Large Black Control)

This control directly affects the level sent out of **OUTPUTS L** (Left) and **R** (Right) to your monitors. Turn the knob to make the volume louder. Please note the **MONITOR LEVEL** goes to 11 because it's one louder...

PHONES

This control adjusts the level for the **PHONES** headphones outputs.

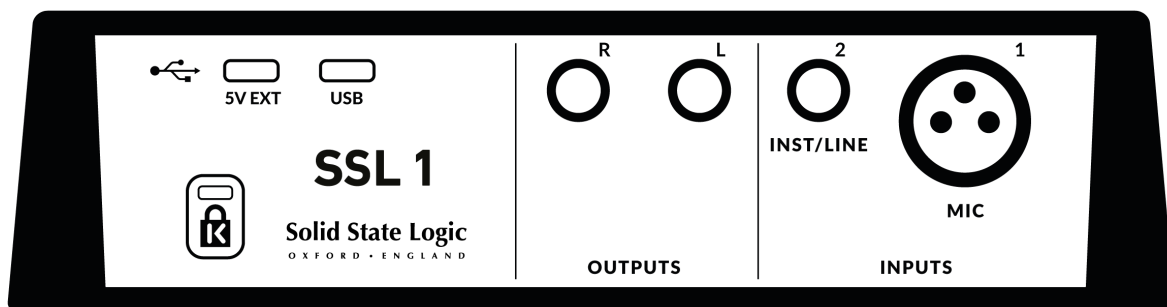
Front Panel Connections

PHONES 1/4" Output Jack

Headphones output with level control from the top panel control.



Rear Panel Connections



INPUT 1 : Female XLR Input Socket

This is where you connect your microphone source to the unit using an XLR cable.

INPUT 2 : 1/4" Jack Input Socket

Connect your Instrument or Line level source using a TS or TRS Jack cable.

BALANCED LINE OUTPUTS L & R : 1/4" TRS Jack Output Sockets

Outputs L & R are primarily to be used for your main monitors and the physical volume is controlled by the Monitor Knob on the front of the Interface.

All outputs are also **DC-coupled** and able to send +/-5v signal to allow CV control to Semi & Modular Synths, Eurorack and CV-enabled outboard FX.

Please Note: More information is available in the **CV Control via Ableton® Live CV Tools** section in this User Guide.

When using outputs 1-2 for CV output, remember the Monitor Control Knob is still affecting the signal. Some experimentation on finding the best level for your connected CV controlled synth/FX unit may be required.

USB 2.0 Port : 'C' Type Connector

Use a USB cable to connect this to a USB port on your computer for USB audio.

5V EXT : 'C' Type Connector

To power SSL 1 from an external 5V power source (such as a phone charger or power bank) connect the external power source device to port labelled '5V EXT'.

K : Kensington Security Slot

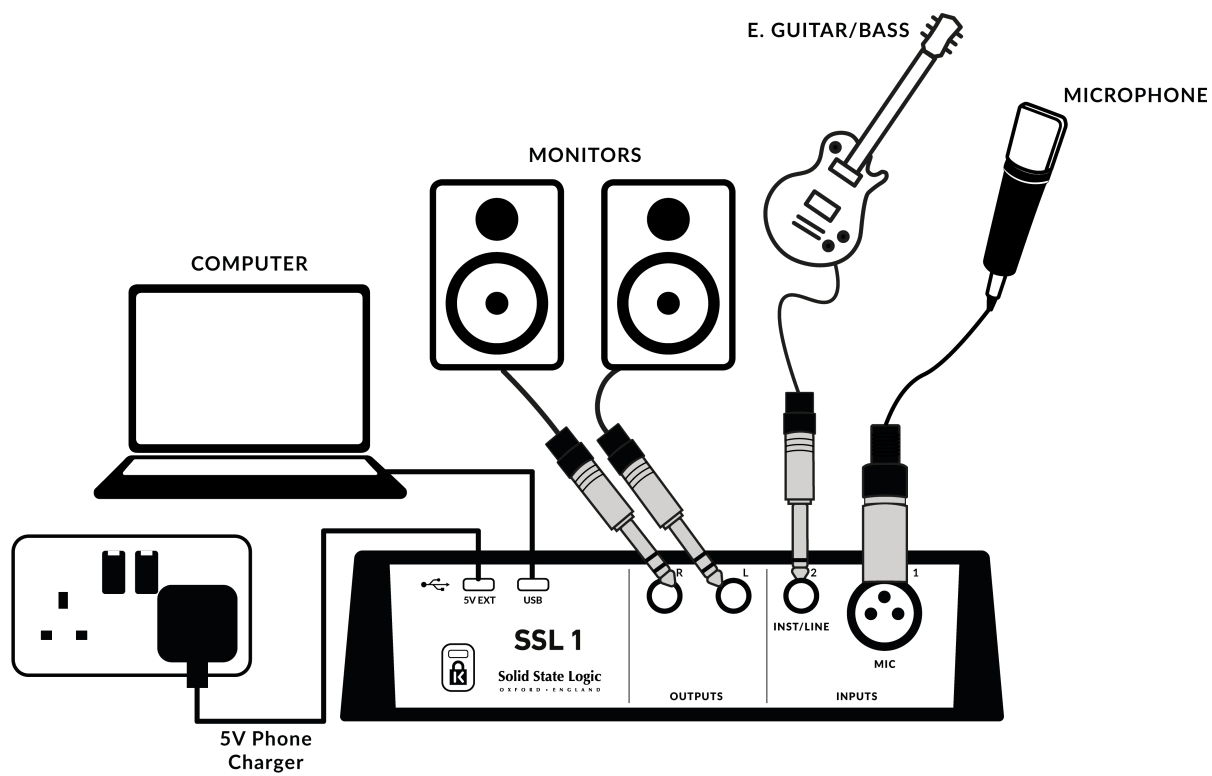
The K slot can be used with a Kensington Lock to secure your SSL 1.

How-To / Application Examples

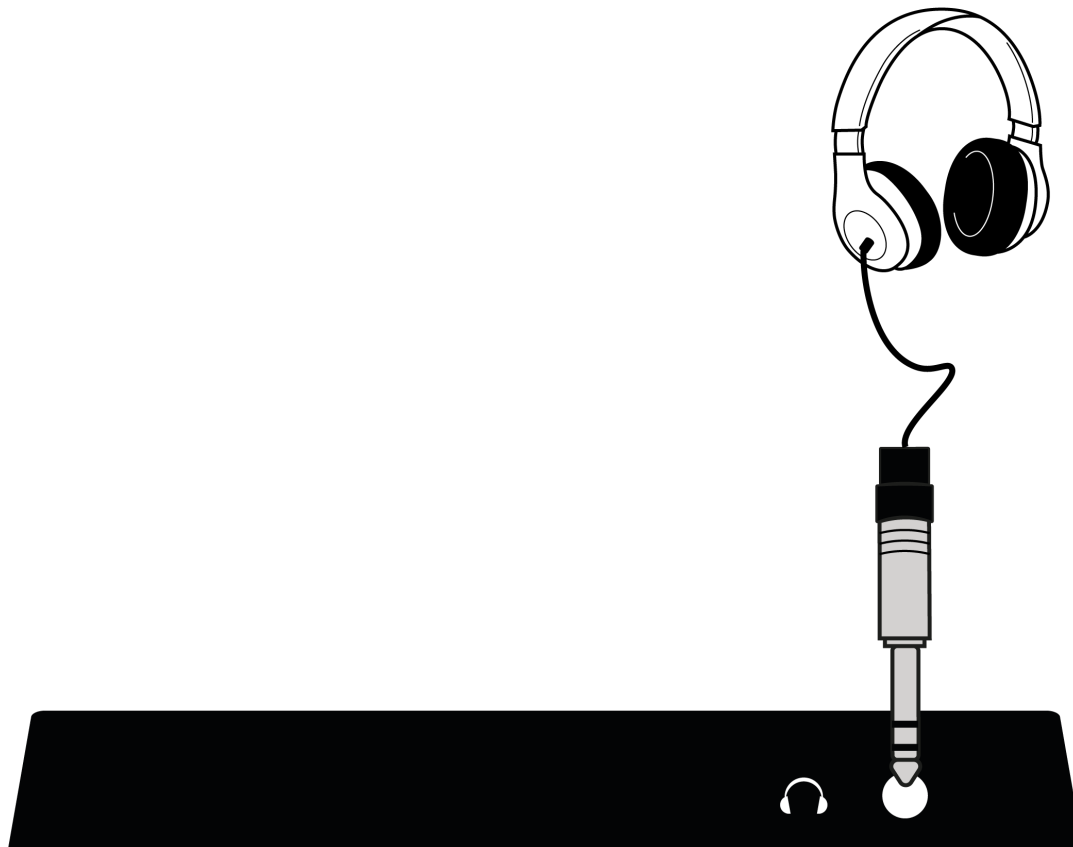
Connections Overview

The diagram below illustrates where the various elements of your studio connect to

SSL 1.



HEADPHONES



This diagram shows the following:

- A microphone plugged into **INPUT 1 (MIC)**, using an XLR cable
- An electric guitar/bass plugged into **INPUT 2 (INST/LINE)**, using a TS jack cable (standard instrument cable)
- Monitor speakers plugged into **OUTPUT L** (Left) and **OUTPUT R** (Right), using TRS jack cables (balanced cables)
- A pair of headphones connected to **PHONES**
- A computer connected to the USB 2.0, 'C' Type port
- A 5V Phone Charger connected to the 5V EXT port

Selecting Your Input and Setting Levels

Dynamic & Passive Ribbon Microphones

Plug your microphone into **INPUT 1 (MIC)** on the rear panel using an XLR cable.

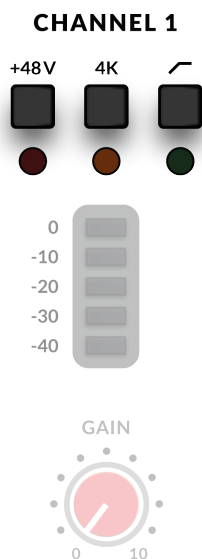
1. On the front panel, make sure **+48V** is not engaged.

2. Whilst singing or playing your instrument that has been mic'd up, turn the **GAIN** control up until you consistently get 3 green lights on the meter.

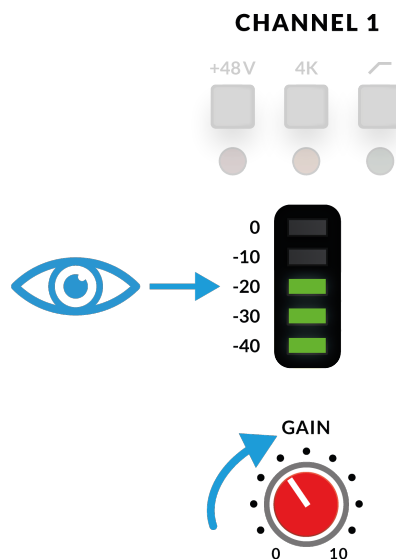
This represents a healthy signal level. It's OK to light up the **amber LED** (-10) occasionally but make sure you don't hit the top **red LED**. If you do, you'll need to turn the **GAIN** control down again to stop clipping. Engage the **High Pass Filter** switch to remove unwanted subsonic rumble, if you need it.

3. Push the **4K** switch to add some extra analogue character to your input, if you need it.

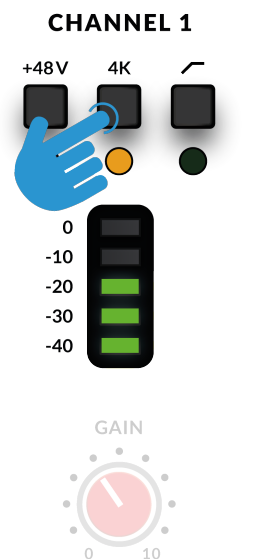
STEP 1



STEP 2

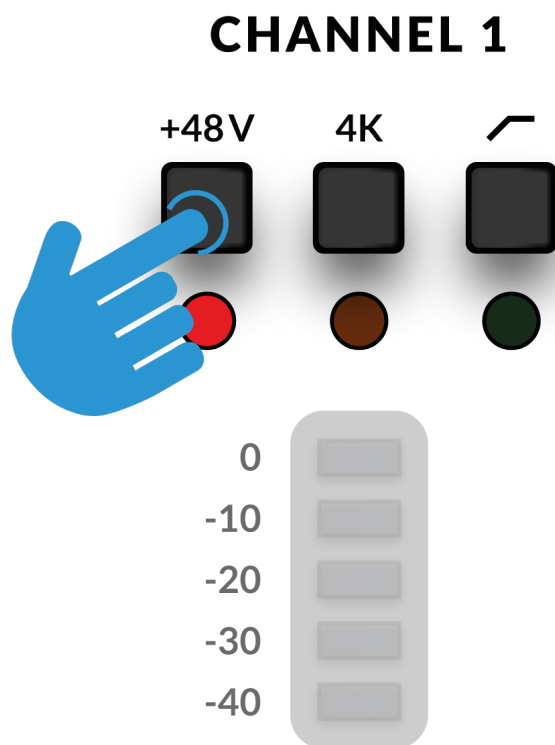


STEP 3



Condenser & Active Ribbon Microphones

Condenser & Active Ribbon microphones require phantom power (**+48V**) to work. If you're using a condenser or Active Ribbon microphone, you'll need to engage the **+48V** switch. You will notice the top red LEDs blink whilst phantom power is applied. The audio will be muted for a few seconds. Once phantom power has been engaged, proceed with steps 2 and 3 like before.

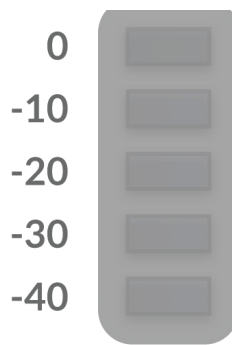


Electric Guitars and Basses (Hi-Impedance Sources)

- Plug your guitar/bass into **INPUT 2 (INST/LINE)** on the rear of SSL 1 using a TS jack cable.
- Make sure the **LINE** switch is **not** engaged.
- Turn the **GAIN** control up until you consistently get 3 green lights on the meter.

CHANNEL 2

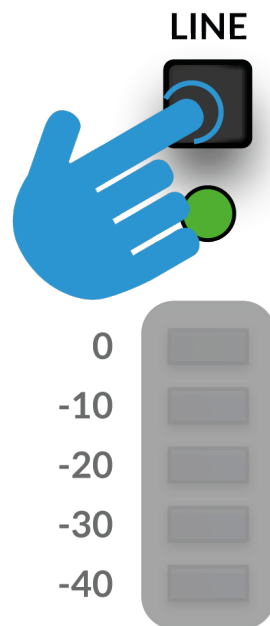




Keyboards and Other Line-Level Sources

- Plug your keyboard/line-level source into **INPUT 2** on the rear panel using a jack cable.
- Engage the **LINE** switch.
- Turn the **GAIN** control up until you consistently get 3 green lights on the meter.

CHANNEL 2



Monitoring Your Inputs

Once you have selected the correct input source and have a healthy 3 green LEDs of signal coming in, you're ready to monitor your incoming source.

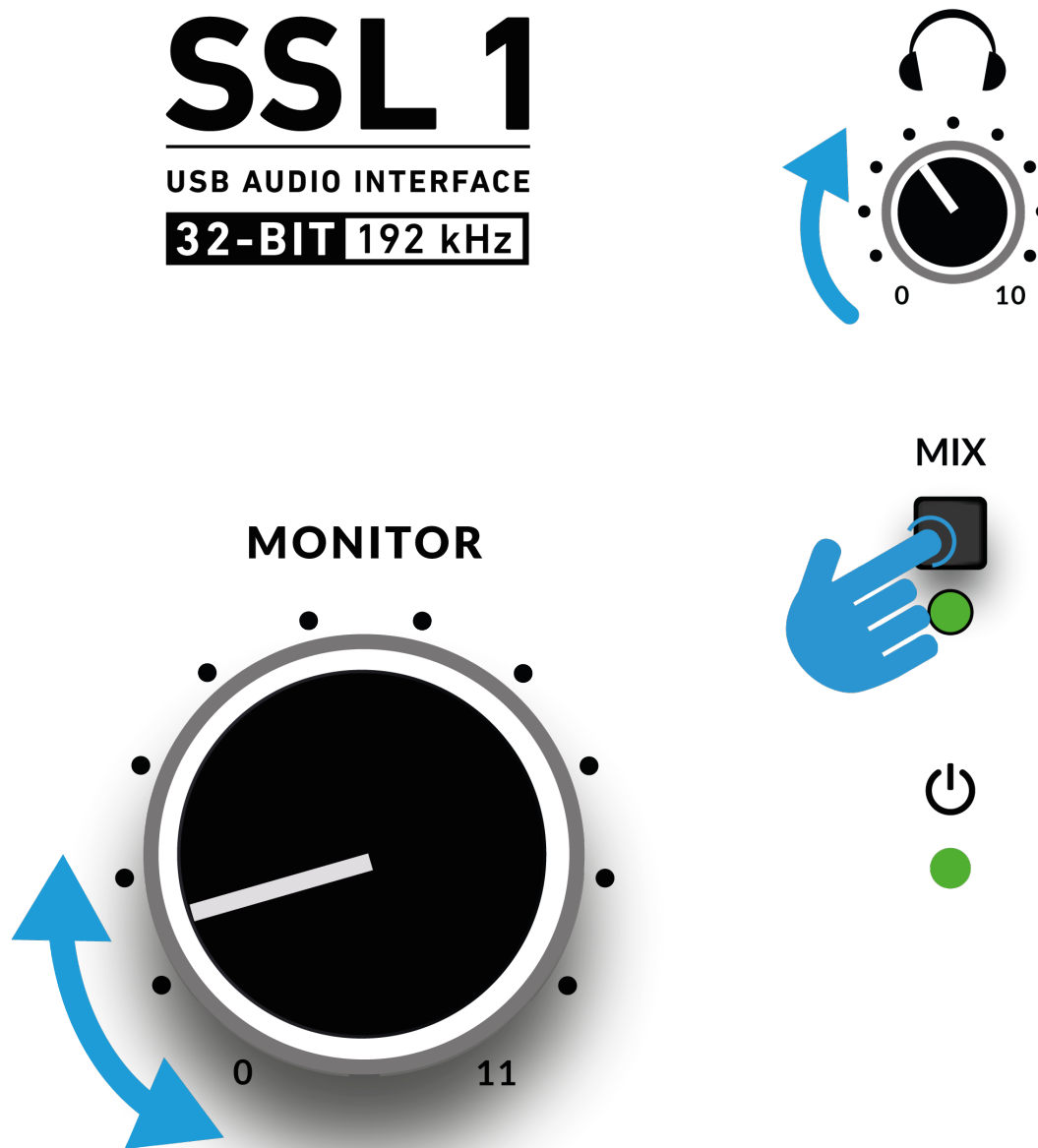
1. First, ensure that the **MIX** button is engaged.

The **MIX** button sums your near-zero latency input signals (microphone and instrument/line input) with the USB playback, allowing you to monitor both your input signals and

DAW/Media player playback at the same time.

*When the **MIX** button is disabled, only USB playback is heard through the monitors and headphones.*

2. Secondly, turn up the **PHONES** control to listen on headphones. If you want to listen through your monitor speakers, turn up the **MONITOR LEVEL** control.



CAUTION! If you are using a microphone, be careful about turning the **MONITOR LEVEL** control up because this can cause a feedback loop if the microphone is close to your speakers. Either keep the monitor control at a low-level or monitor through headphones.

Setting Up Your DAW To Record

Now that you have chosen your input(s), set the levels and can monitor them, it's time to record into the DAW. The following image is taken from a Pro Tools session but the same steps will apply to any DAW. Please consult your DAW's User Guide for its operations. If you have not already done so, please ensure that SSL 1 is the selected Audio Device in your DAW's audio setup.



Setting Up Your DAW Tracks

- Set up new audio track(s) in your DAWs.
- Set the appropriate input on your DAW track(s): Input 1 = Channel 1, Input 2 = Channel 2.
- Record Arm the tracks you are recording.
- You are ready to hit record and do a take.

Low Latency - Using The Mix Control

What is Latency in relation to recording sound?

Latency is the time it takes for a signal to pass through a system and then be played out again. In the case of recording, latency can cause significant issues for the performer as it results in them hearing a slightly delayed version of their voice or instrument, sometimes after they played or sung a note, which can be very off-putting when trying to record.

The main purpose of the **MIX** button is to provide you with a way of hearing your inputs before they pass into the computer, with what we describe as 'near-zero/low latency'. It is, in fact, so low (under 1ms) that you will not hear any perceivable latency when playing your instrument or singing into the microphone.

How To Use The MIX Button When Recording

When recording, you'll need to balance the inputs (microphone/instrument) against the tracks playing back from the DAW. The **MIX** button sums together both the inputs (near-zero latency) and playback from your DAW into the monitors and headphones.

To get a good balance of input signals against USB playback, adjust your DAW's Master Output 1-2 fader up/down until you are happy with the blend. Getting this 'right' will help enable either yourself or the performer to produce a good take.

Hearing Double?

When using the **MIX** to monitor the live input(s) you will need to mute the DAW tracks you are recording onto so that you do not hear the signal twice. When you want to listen back to what you have just recorded you'll need to un-mute the track you have recorded onto, to hear your take.



Record Tracks Muted

DAW Buffer Size

From time to time you may need to alter the Buffer Size setting in your DAW. Buffer Size is the amount of samples stored/buffered before being processed. The bigger the

Buffer Size, the more time the DAW has to process the incoming audio, the smaller the Buffer Size the less time the DAW has to process the incoming audio.

Generally speaking, higher buffer sizes (256 samples and above) are preferable when you have been working on a song for some time and have built up several tracks, often with processing plug-ins on them. You'll know when you need to increase the buffer size because your DAW will start producing playback error messages and is unable to playback, or it will play back audio with unexpected pops and clicks.

Lower buffer sizes (16, 32 and 64 samples) are preferable when you want to record and monitor processed audio back from the DAW with as little latency as possible. For instance, you want to plug an electric guitar directly into your SSL 1, put it through a guitar amp simulator plug-in (like Native Instruments Guitar Rig Player) and then monitor that 'affected' sound whilst you record, instead of just listening to the 'dry' input signal.

Sample Rate

What is meant by Sample Rate?

All musical signals coming into and out of your SSL 1 USB audio interface need to be converted between analogue and digital. Sample rate is a measure of how many 'snapshots' are taken to build a digital 'picture' of an analogue source being captured into the computer, or deconstruct a digital picture of an audio track to play back out of your monitors or headphones.

The most common sample rate that your DAW will default to is 44.1 kHz, which means that the analogue signal is being sampled 44,100 times per second. SSL 1 supports all major sample rates including 44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz, 176.4 kHz and 192 kHz.

Do I need to change the Sample Rate?

The pros and cons of using higher sample rates are beyond the scope of this User Guide but in general, the most common sample rates of 44.1 kHz and 48 kHz are still what many people choose to produce music at, so this is the best place to start.

One reason to consider increasing the sample rate you work at (e.g. to 96 kHz) is that it will lower the overall latency introduced by your system, which could be handy if you need to monitor guitar amp simulator plug-ins or lots of virtual instruments through your DAW. However, the trade-off of recording at higher sample rates is that it requires more data to be recorded onto the computer, so this results in much more hard-drive space being taken up by the Audio Files folder of your project.

How do I change the Sample Rate?

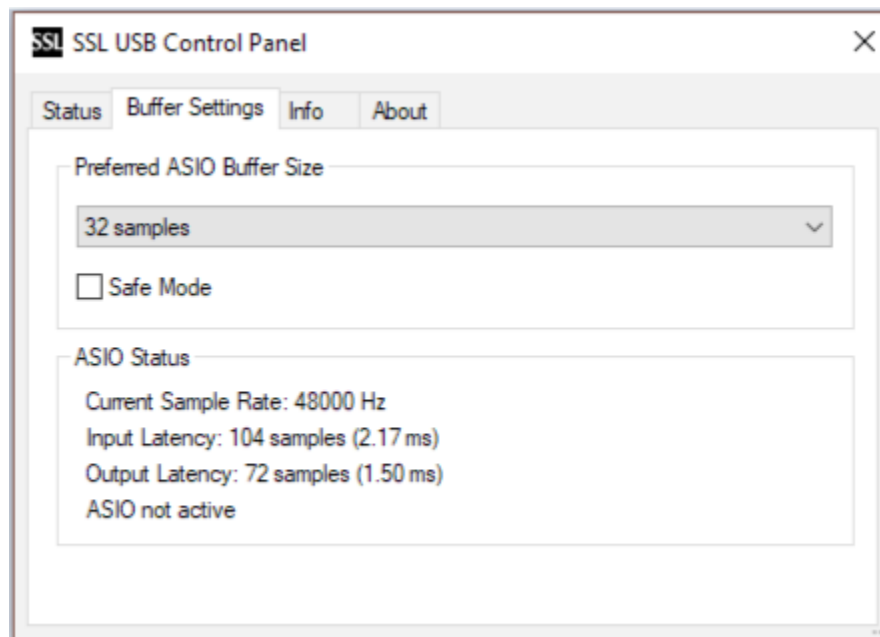
You do this in your DAW. Some DAW's allow you to change the sample rate after you have created a session - Ableton Live Lite for instance allows this. Some require you to set the sample rate at the point at which you create the session, like Pro Tools.

SSL USB Control Panel (Windows Only)

If you're working on Windows and have installed the USB Audio Driver required to make the unit operational you will have noticed that as part of the installation the SSL USB Control Panel will be installed onto your computer. This Control Panel will report details such as what Sample Rate and Buffer Size your SSL 1 is running at. Please note that both Sample Rate and Buffer size will be taken control of by your DAW when it is opened.

Safe Mode

One aspect you can control from the SSL USB Control Panel is the tickbox for Safe Mode on the 'Buffer Settings' tab. Safe mode defaults to ticked but can be unticked. Unticking Safe Mode will reduce the overall Output Latency of the device, which may be useful if you are looking to achieve the lowest possible roundtrip latency in your recording. However, unticking this may cause unexpected audio clicks/pops if your system is under strain.



Loopback

SSL 1 features integrated loopback functionality allowing audio signals from SSL 1's outputs to be routed **internally (virtually)** back into the input channels without the need for any physical cables. This enables convenient recording, streaming and capture of system or software audio entirely within the interface.

Loopback Outputs

Three stereo output pairs can be used as loopback sources:

- Output 1–2 (*also feeds the Monitor Outputs and Headphone Output 1–2*)
- Output 3–4 (*virtual*)
- Output 5–6 (*virtual*)

Any audio sent to these outputs within your DAW or operating system can be captured via the corresponding loopback input channels.

Because Output 1–2 is also used for monitoring, any audio you hear on your speakers or headphones (assigned to Output 1–2) will also be present in the loopback signal.

Loopback Inputs

SSL 1 provides a total of eight input channels, divided into **analogue inputs** and **loopback inputs**.

Analogue Inputs (physical)

Inputs 1–2: Mic & Instrument/Line inputs on SSL 1.

Loopback Inputs (internal):

- Inputs 3–4: Loopback from Output 1–2
- Inputs 5–6: Loopback from Output 3–4
- Inputs 7–8: Loopback from Output 5–6

Inputs 1–2 are direct physical inputs and are not affected by loopback routing.

Loopback Use Cases

- Recording system audio (e.g. media players, web browsers)
- Live streaming with simultaneous microphone and application audio
- Capturing DAW playback into another recording application

Example Workflow (Single Loopback)

To record system audio alongside a microphone:

1. Connect your microphone to the Microphone Input on SSL 1
2. Route system or DAW audio to Output 1–2
3. In your recording or streaming software, select:
 - Input 1 for the microphone input
 - Input 3–4 for loopback audio (from Output 1–2)
4. Adjust levels as required within your DAW

Example Workflow (Content Creation with Multiple Loopbacks)

This example demonstrates a typical content creation workflow using a DAW and

streaming/recording software:

1. Connect your microphone to the Microphone Input on SSL 1
2. In your DAW, create separate stereo busses for:
 - Main stream mix (e.g. mic + core audio)
 - Music or backing tracks
 - Additional audio (e.g. sound effects or auxiliary sources)
3. Assign each bus to a different output pair:
 - Main Mix --> Output 1–2
 - Music --> Output 3–4
 - FX / Aux --> Output 5–6
4. In your recording or streaming software, assign inputs as follows:
 - Input 1 --> Microphone
 - Input 3–4 --> Main Mix
 - Input 5–6 --> Music
 - Input 7–8 --> FX / Aux

This allows multiple independent stereo sources to be captured simultaneously, each with its own level, processing and mute control in the streaming software.

Many consumer applications only support a single stereo output (typically Output 1–2). Using a DAW or dedicated mixing software enables full use of the SSL 1's multiple loopback channels.

SSL 1 DC-Coupled Outputs

The SSL 1 Interface allows the user to send out a **DC** Signal from any output on the interface. This allows **CV-enabled** equipment to receive the signal to control parameters.

What is CV?

CV is an abbreviation of "**C**ontrol **V**oltage"; an analogue method of controlling synthesizers, drum machines and other similar equipment.

What are CV Tools?

CV Tools is a free pack of CV-enabled instruments, synchronisation tools, and modulation utilities that enable users to seamlessly integrate Ableton Live with various devices in the Eurorack format or Modular Synthesizers & Analog effects units.

Setting Up Ableton Live CV Tools





- Open your **Ableton Live** session
- First set up a new **Audio Track** that you'll use to send out the CV Signal.
- Then insert onto the Audio track a **CV Utilities Plug-In** from the packs menu.
- Once the CV Utility Plug-In is Open, set the **CV To** to your designated **Output**. In this example, we've set this to **Output 1/2** from the **SSL 1**.
- Set up a second Audio track with the input signal from the Effect/Instrument and record arm to monitor the input back into Ableton Live.
- Now using the **CV Value** knob on the CV Control channel, you can automate the **CV** signal sent out of Ableton to your External Instrument/FX unit. This can then be mapped to a MIDI controller to control in realtime, record the Automation into your session, or like here assign the CV to an LFO.
- Now you can record the audio back into your Ableton Session, or other DAW you may be using to record your Audio back onto your system.

Requirements for CV Tools

- Live 10 Suite (version 10.1 or later)
- Live 10 Standard + Max for Live (version 10.1 or later)
- A DC-coupled audio interface (for CV hardware integration) such as the **SSL 1**
- Some understanding of Ableton Live Packs
- Some understanding of how to use CV-enabled hardware with Live

Best Practices & Safety

- **Never** send **CV** directly to your speakers (direct voltage can cause damage to your speakers).
- The CV Instrument device is only capable of calibrating oscillators that use bipolar voltage (+/-5V) for 1v/oct. tuning. However, some digital oscillator modules exclusively use unipolar signals (+5V or above) for tuning. As a result, CV Tools will be incompatible with these modules. If you are unsure whether this applies to the modules in your system, please consult the user manual for the device.
- Remember - Eurorack signals are up to 5x louder than line-level audio! Before connecting your modular system to a digital audio interface, be sure to reduce the signal down to line-level using a dedicated output module.

Specifications

Audio Performance Specifications

Unless specified otherwise, default test configuration:

Sample Rate: 48kHz, Bandwidth: 20 Hz to 20 kHz

Measurement device output impedance: 40 Ω (20 Ω unbalanced)

Measurement device input impedance: 200 k Ω (100 k Ω unbalanced)

Unless otherwise quoted all figures have a tolerance of ± 0.5 dB or 5%

Microphone Inputs

Frequency Response: ± 0.03 dB

Dynamic Range (A-Weighted): 113 dB

THD+N (@ 1kHz): -100 dB / < 0.001 % @ -8 dBFS

EIN (A-Weighted): -130.5 dBu

Maximum Input Level: +10 dBu

Gain Range: 63 dB

Input Impedance: 1.2 k Ω

Line Inputs

Frequency Response: ± 0.02 dB

Dynamic Range (A-Weighted): 114 dB

THD+N (@ 1kHz): -108 dB / < 0.0004 % @ -1 dBFS

Maximum Input Level: +24.5 dBu

Gain Range: 34 dB

Input Impedance: 10 k Ω

Instrument Inputs

Frequency Response: ± 0.02 dB

Dynamic Range (A-Weighted): 114 dB

THD+N (@ 1kHz): -108dB / < 0.0004 % @ -1 dBFS

Maximum Input Level: +14 dBu

Gain Range: 34 dB

Input Impedance: 1 M Ω

Monitor Outputs (Balanced)

Frequency Response: ± 0.02 dB

Dynamic Range (A-Weighted): > 116 dB

THD+N (@ 1kHz): -108 dB / < 0.0004% @ -1 dBFS

Maximum Output Level: +14 dBu

Output Impedance: 300 Ω

Headphone Outputs

Frequency Response: ± 0.015 dB

Dynamic Range: 116 dB

THD+N (@ 1kHz): -106 dB / < 0.0005% @ -1 dBFS

Maximum Output: Level +11 dBu

Output Impedance: < 1 Ω

Digital Audio

Supported Sample Rates: 44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz, 176.4 kHz, 192 kHz

Clock Source Internal

USB 2.0

Low-Latency Monitor Mix Input to Output: < 1ms

Roundtrip Latency at 96 kHz, 32 sample buffer in REAPER: Windows: < 3.5 ms (Safe Mode Off). Mac: < 5.9 ms

Physical Specifications

Analogue Inputs 1&2

- Connectors Female XLR: 'MIC' for Microphone on rear panel
- 1/4" TRS/TS Jack: "INST/LINE" for Instrument or Line on rear panel
- Input Gain Controls: Via front panel
- Phantom Power: Via front panel
- 4K Analogue Enhancement: Via front panel
- High Pass Filter: Via front panel
- Line Switching: Via front panel

Analogue Outputs

- Connectors: 1/4" (6.35 mm) TRS jacks: on rear panel
- Stereo Headphone Output 1/4" (6.35 mm) TRS jack: on front panel
- Monitor Outputs L/R Level Control: Via front panel
- Monitor Mix: Via front panel
- Headphones Level Control: Via front panel

Rear Panel Miscellaneous

- USB 2.0, 'C' Type Connector
- 5V Ext 'C' Type Connector
- Kensington Security Slot 1 x K-Slot

Front Panel LEDs

Input Metering Per Channel - 3 x green, 1 x amber, 1 x red

Status LEDs

+48V red, 4K amber, HPF green, MIX green

Power 1 x green/amber

Weight & Dimensions

Width: 196.8 mm / 7.7 inches

Height: 73.6 mm / 2.9 inches

Depth: 130.4 mm / 5.1 inches

Boxed Dimensions

Width: 250 mm / 9.8 inches

Height: 185 mm / 7.3 inches

Depth: 105 mm / 4.1 inches

Weight

0.64 kg / 1.4 lbs

Boxed Weight

0.94 kg / 2.1 lbs