_MINIFUSE 4

ARTURIA
_The sound explorers

Special Thanks

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Thank you for purchasing the Arturia MiniFuse 4!

This manual covers the features and operation of Arturia's **MiniFuse 4**. MiniFuse 4 is a professional-grade audio interface that empowers the recording and production of music and audio content. Whether in the studio, on the road, or at home, we are confident that the MiniFuse 4 will become an indispensable tool in your kit.

Be sure to register your MiniFuse 4 as soon as possible! There is a sticker on the bottom panel that contains the serial number of your unit and an unlock code. These are required during the online registration process at www.arturia.com. You may want to record these elsewhere or take a photo of the sticker in case it becomes damaged.

Registering your MiniFuse 4 provides the following benefits:

- Access to the latest version of the Arturia Software Center and MiniFuse Control Center applications
- Special offers restricted to MiniFuse owners

As a registered owner, you also have access to an exclusive software bundle that includes:

- Arturia's Pre 1973, Rev PLATE-140, Delay TAPE-201, Chorus JUN-6 audio effects
- Arturia's Analog Lab Intro containing thousands of ready-to-use instruments and sounds
- Ableton Live Lite
- NI Guitar Rig 6 LE
- 3-month complimentary subscription to Splice
- 3-month complimentary subscription to Auto-Tune Unlimited
- Exclusive Ableton Live Lite sessions curated by producers around the globe

MiniFuse 4 is easy to use, so you'll probably start experimenting with it right out of the box. However, please be sure to read this manual even if you are an experienced user, as we describe many useful tips that will help you get the most out of your purchase. We're sure you will find MiniFuse 4 a powerful tool in your setup and we hope you'll use it to its fullest potential.

Happy music making!

The Arturia team

Special Message Section

Specifications Subject to Change:

The information contained in this manual is believed to be correct at the time of printing. However, Arturia reserves the right to change or modify any of the specifications without notice or obligation to update the hardware that has been purchased.

IMPORTANT:

The product and its software, when used in combination with an amplifier, headphones or speakers, may be able to produce sound levels that could cause permanent hearing loss. DO NOT operate for long periods of time at a high level or at a level that is uncomfortable.

If you encounter any hearing loss or ringing in the ears, you should consult an audiologist.

NOTICE:

Service charges incurred due to a lack of knowledge relating to how a function or feature works (when the product is operating as designed) are not covered by the manufacturer's warranty, and are therefore the owner's responsibility. Please study this manual carefully and consult your dealer before requesting service.

Precautions include, but are not limited to, the following:

1. Read and understand all the instructions.
2. Always follow the instructions on the device.
3. Before cleaning the device, always remove the USB cable. When cleaning, use a soft and dry cloth. Do not use gasoline, alcohol, acetone, turpentine or any other organic solutions; do not use a liquid cleaner, spray or cloth that is too wet.
4. Do not use the device near water or moisture, such as a bathtub, sink, swimming pool or similar place.
5. Do not place the device in an unstable position where it might accidentally fall over.
6. Do not place heavy objects on the device. Do not block openings or vents of the device; these locations are used for air circulation to prevent the device from overheating. Do not place the device near a heat vent at any location with poor air circulation.
7. Do not open or insert anything into the device that may cause a fire or electrical shock.
8. Do not spill any kind of liquid onto the device.
9. Always take the device to a qualified service center. You will invalidate your warranty if you open and remove the cover, and improper assembly may cause electrical shock or other malfunctions.
10. Do not use the device with thunder and lightning present; otherwise it may cause long distance electrical shock.
11. Do not expose the device to hot sunlight.
12. Do not use the device when there is a gas leak nearby.
13. Arturia is not responsible for any damage or data loss caused by improper operation of the device.

Table Of Contents

1. INTRODUCTION

Thank you for purchasing our compact audio interface, the MiniFuse 4. We at Arturia are committed to delivering excellent products that satisfy the needs of modern musicians and producers - we are confident that the MiniFuse 4 will be a perfect companion to any computer-based music production and recording setup.

1.1. What Is an Audio Interface and Why Do I Need One ?

An audio interface is an outboard device that handles processing of audio input and output. While all laptop and desktop computers these days come equipped with integrated soundcards, in practice these are only meant for casual use and are, in most cases, insufficient for the demanding tasks of audio production and recording. Our MiniFuse 4 is an affordable, professional-grade dedicated audio interface that offers the following advantages over a typical onboard soundcard:

- Optimized for low-latency performance
- Microphone preamp(s) for crisp, present recording of vocals and instruments
- High-impedance input(s) to directly record your guitar or bass.
- Headphone and speaker system outputs for flexible monitoring
- Loopback recording for recording computer audio without any messy hardware or software configurations.
- Direct Monitoring for monitoring your performance without any processing latency.

1.2. MiniFuse 4 Features Overview

- 2 x combo Mic/Inst/Line XLR inputs with optional 48V phantom power
- 2 x 1/4" TRS balanced line inputs
- 4 x 1/4" TRS balanced line outputs
- 2 x 1/4" stereo headphone outputs
- 1 x 5-pin MIDI input
- 1 x 5-pin MIDI output
- 2 x USB2 type A hubs (low power)
- USB-C interface compatible with PC, Mac, fully USB 2.0 compatible
- Bus-powered
- Up to 192kHZ / 24bits recording and playback sample rate
- Loopback stereo input (at all sample rates)

2. CONNECTION DIAGRAM

1 : Connect guitars/basses or other instruments to these XLR/TRS combo inputs.

2 : Connect headphones to these 1/4" outputs.

3 : Connect line-level audio sources, such as synthesizers and drum machines, to these TRS inputs.

4 : Connect TRS outputs to powered speakers or mixers/amplifiers.

5 : Connect MIDI-compatible devices to these 5-pin MIDI input/output ports.

6 : Connect thumb drives, controllers or other USB devices (500mA maximum power) to these USB ports.

> ▌ To preserve bandwidth for all inputs and outputs, these USB ports will only function while the MiniFuse is powered via the external power supply. The USB ports are disabled while the MiniFuse is powered via USB.

7 : Connect the USB-C port to your computer.

> ▌ We strongly recommend using the cable included with your interface to avoid any connectivity issues. The included USB cable has been specially designed for the Arturia MiniFuse 4. We also advise you to connect the MiniFuse 4 directly to your computer motherboard, and not through a USB hub.

8 : Connect the optional power supply to this port.

> ▌ Power supply connection is needed if you intend to use the USB ports for connecting additional USB devices.

3. FRONT PANEL FEATURES

The front panel of the MiniFuse 4 provides access to most of the essential features on the unit.

1. The **combo jack** for each input accepts two different kinds of connections - XLR and TRS - allowing you to connect a variety of microphones and instruments into the MiniFuse.

> ℹ️ For information on how to set up custom monitoring mixes, including direct monitoring of input signals, please see the Creating Custom Mixes section of the MiniFuse Control Center [p.19] section of this manual.

2. The **Inst switch** toggles the high-impedance circuit for the corresponding input.

> ℹ️ When recording instruments with pickups, like guitar and bass, using the high-impedance setting adjusts the internal circuit so that you can plug the instrument directly into the input without having to first plug into an amp or a direct box. When using other types of inputs, like synthesizers or microphones, leave this switch in the inactive position.

3. The **Gain knob** controls preamp gain of the corresponding input. Use it to adjust the volume of the input to ensure that you are capturing a good signal without overloading. The knob also features a LED indicator to help with setting input gain. When an instrument or microphone source is detected, the LED will illuminate blue. If the input signal overloads, the LED will illuminate red. If this happens, turn down the Gain knob.

> ℹ️ High-resolution input metering is available through the MiniFuse Control Center [p.19] application.

4. **48V switch** turns on phantom power for both inputs. Phantom power delivers a power current to a connected microphone and may be required to get a good signal out of certain types of microphones. Please read the following recommendations regarding when and how to use phantom power:

- Only certain types of microphones, like condenser microphones, require phantom power to function properly. Please check your microphone's user manual to determine which type it is.

- Phantom power may damage some equipment, like certain ribbon microphones. Ensure that you are only using phantom power with microphones that require it.

- Do not connect or disconnect microphones while phantom power is turned on. Turn off phantom power first, then connect or disconnect the microphone.

5. **Monitor Volume knob** controls the volume of Outputs 1 & 2 on the rear panel. Note that the volume of Outputs 3 & 4 can only be controlled through the MiniFuse Control Center [p.19] application.

6. The 1/4" stereo **headphone outputs** can be used for connecting headphones. The headphone outputs mirror the output pairs on the rear - Headphone 1 outputs the same signal as Outputs 1 & 2, while Headphone 2 outputs the same signal as Outputs 3 & 4.

7. **Headphone Volume knobs** adjust the volume of the corresponding headphone output. These knobs control the volume independently of the Outputs that they mirror.

> ℹ Listening to loud music for prolonged durations through headphones can have a negative impact on your hearing. When using headphones, we recommend taking frequent breaks to give your ears a rest and avoiding high volumes for prolonged durations.

8. The **Arturia switch** is a multifunctional switch:

- Press and release quickly to open the MiniFuse Control Center [p.19] software application, where you can access advanced features like high-resolution input metering and custom mixes and routings. If the application is already running in the background, pressing the switch will bring it to the foreground.

- Press and hold to put the interface in Sleep mode. While the device is in Sleep mode, the MiniFuse Control Center application will be deactivated.

> ℹ The Arturia switch will be illuminated white while the MiniFuse is powered via USB, and blue while it is powered via the optional power supply.

4. REAR PANEL FEATURES

The rear panel of the MiniFuse 4 provides access to audio and MIDI connections.
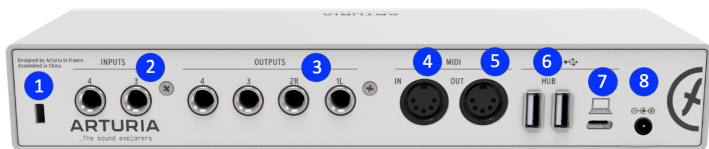
1. **Kensington lock** - this optional security slot can be used for securing the interface using a Kensington lock cable.

2. **Inputs** - these 1/4" balanced inputs can be used for connecting additional line-level equipment, such as synthesizers and drum machines.

3. **Outputs** - these 1/4" balanced stereo outputs can be connected directly to active studio speakers or other devices such as amplifiers and mixers.

> ℹ Outputs 3 & 4 are DC-coupled and may be used for triggering and controlling equipment that supports control voltage input.

4. **MIDI In** - connect MIDI devices to this port using a standard 5-pin MIDI cable. Devices connected to this input can be used to trigger and control software instruments and effects.

5. **MIDI Out** - this output allows you to output MIDI data from your computer to control other MIDI-compatible hardware devices.

6. **Hub** - these convenient USB ports allow you to plug in other USB devices, like thumb drives or MIDI controllers.

> ℹ The USB port is only functional while powering the MiniFuse via the optional power supply. It will not function when the unit is bus-powered via USB only, in order to maintain sufficient bandwidth for the inputs and outputs.

7. **USB** - connect the interface to your computer by plugging the supplied USB cable into this port and your computer. This connection provides power to the interface and enables communication between the interface and your computer.

8. **AC power supply input** - the MiniFuse can optionally be powered via the included power supply instead of the bus-powered USB connection. To use the power supply, attach the adapter for your specific region then plug it into a power outlet.

5. SETUP

The first time you connect the MiniFuse 4 to your computer, it will appear as an external disk drive.

Open the drive to access its contents, and double-click the **Click here to Get Started** link.
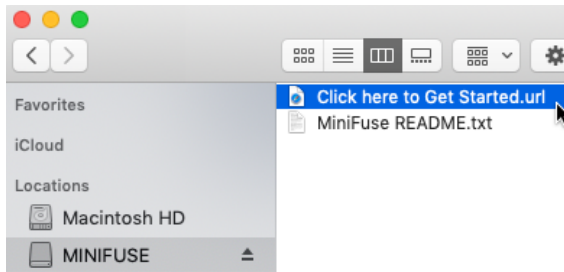
This link will open the MiniFuse registration page in your web browser. Follow the instructions there to register your unit and download the MiniFuse Control Center [p.19] application.

Benefits of registering:

- Free exclusive effects and instruments from Arturia, Ableton, and many more
- Access to tutorials, sound banks, and helpful content to get you started
- Regular free firmware updates
- Exclusive discounts on Arturia products as a registered user

While it is possible to use the MiniFuse 4 immediately without the MiniFuse Control Center application, we highly recommend following the steps outlined in this section to initialize your MiniFuse 4 so that you can take advantage of all of its features. The MiniFuse Control Center installer includes the MiniFuse ASIO driver for Windows, enabling the best performances from your MiniFuse.

Once you have downloaded and installed the **MiniFuse Control Center** application, double-click to start it.

You will see the following pop-up window. Press **Ok** to complete the installation.
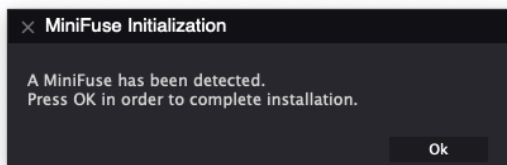
Congratulations, your MiniFuse 4 is now ready to use! For more information and support online, you may visit www.arturia.com/support.

For more information on the features available in the MiniFuse Control Center application, see the MiniFuse Control Center [p.19] section of this manual.

5.1. Changing default system audio input and output

If you would like to use the MiniFuse 4 as your computer's default audio playback and recording device, please follow the instructions below.

> ℹ Most pro audio applications have their own audio preferences where you can select the MiniFuse 4 as the active audio device. If you intend to only use the MiniFuse for playback and recording with these applications, it is not necessary to change the default system audio input and output.
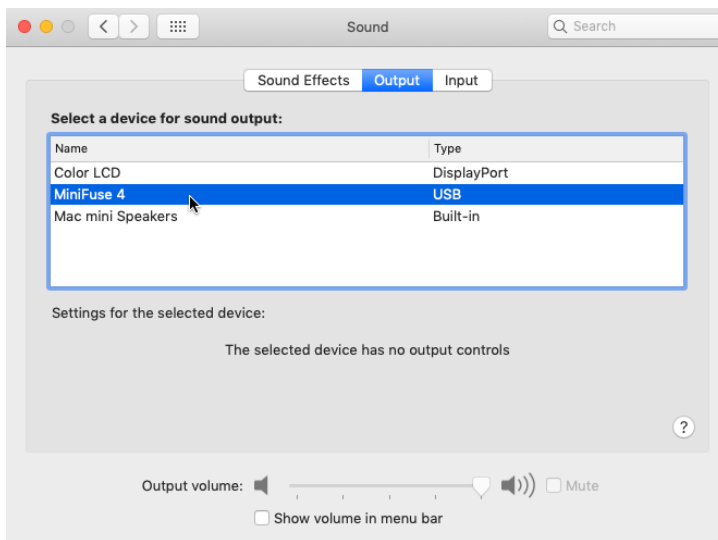
### 5.1.1. MacOS

1. Navigate to your **Applications** folder.

2. Double-click **System Preferences**.

3. Click the **Sound** icon.

4. If you would like all computer audio - such as audio from web browsers and movie players - to be played back through the MiniFuse 4, click the **Output** tab and select the MiniFuse as the default output device.


5. If you would like to use a microphone connected to the MiniFuse 4 as the default sound input into your computer, click the **Input** tab and select the MiniFuse as the default input device.
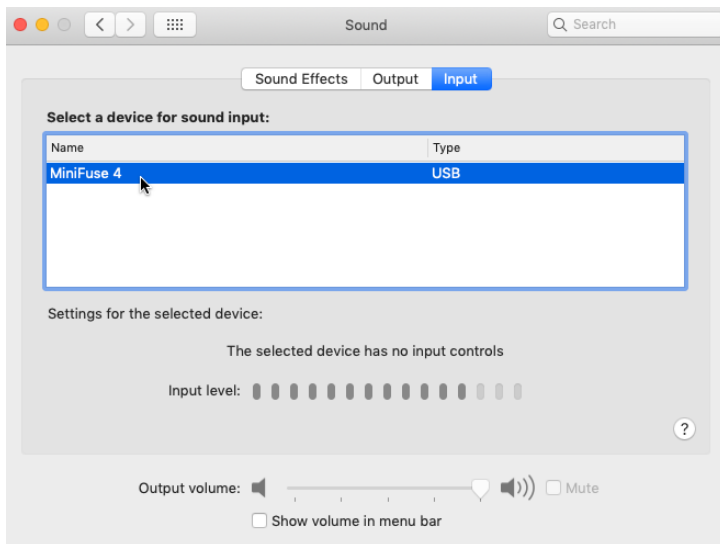
5.1.2. Windows

1. Navigate to **Settings**.

2. Click the **Sound** tab.

3. If you would like all computer audio - such as audio from browsers and movie players - to be played back through the MiniFuse 4, choose "MAIN Left/Right (MiniFuse 4) from the **Output** menu.

4. If you would like to use a microphone connected to the MiniFuse 4 as the default sound input into your computer, choose the input channel from the **Input** menu.
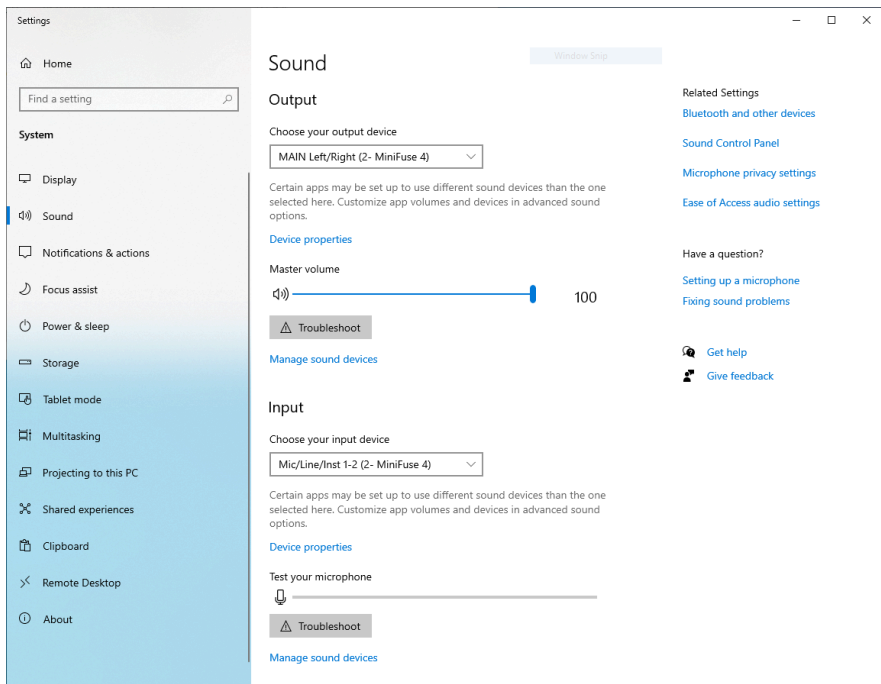
5.2. Using the MiniFuse 4 as an audio device with your DAW

Most audio applications have their own audio settings, where you can select the active audio device. Here we will show you how to configure the MiniFuse 4 with several audio applications. The process will be similar in other audio applications.

> Core Audio is a native Mac audio driver. All audio devices are built on top of this framework. Windows contains several available audio protocols. ASIO is optimized for low-latency and high-fidelity. We recommend using the ASIO driver provided by Arturia for best results.

Regardless of which application you use, you will usually find these two important controls in the application's audio preferences:

- **Buffer Size** determines how quickly the computer will process audio data - the smaller the buffer size the faster it will process audio, resulting in less latency at the expense of higher CPU usage.

- **Sample Rate** specifies the sampling rate at which the MiniFuse 4 converts audio. CD quality sample rate is 44,100Hz.

> For more information on buffer size, sample rate, and their impact on latency, see the A Quick Primer On Digital Audio [p.35] section of this manual.

5.2.1. Configuring audio in Ableton Live

In Ableton Live, go to the Live menu and click **Preferences**.

In the Preferences window, click the **Audio** tab to access the audio device settings.

Select CoreAudio (MacOS) or ASIO (Windows) in the **Driver Type** menu.

Select the MiniFuse 4 in the **Audio Input Device** and **Audio Output Device** menus.
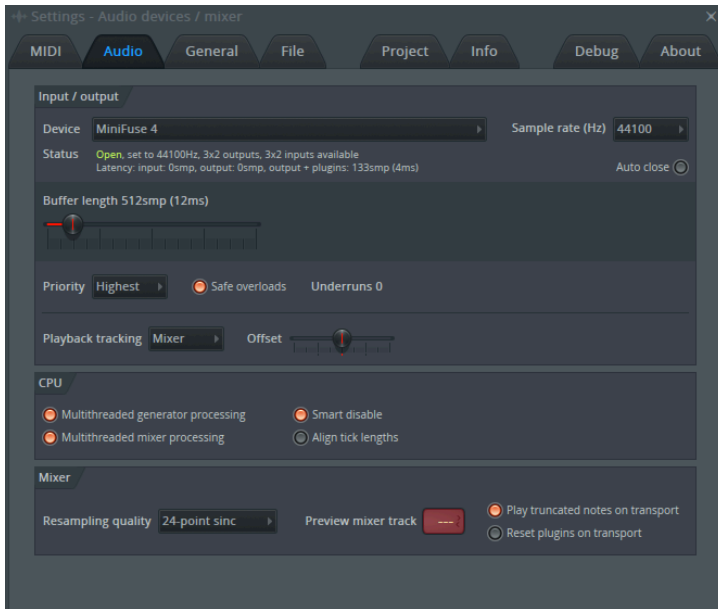
> ℹ️ If you need to enable or disable specific input or output channels, you can click the **Input Config** or **Output Config** buttons.

5.2.2. Configuring audio in FL Studio

In FL Studio, click the **Options** menu, then click **Audio Settings**.

In the **Device** menu select the MiniFuse.

5.2.3. Configuring audio in Analog Lab

Our own Analog Lab software can work in standalone or plug-in mode. When using the standalone application, follow these steps to configure it for use with the MiniFuse 4:

In Analog Lab, click the Menu button at the top left (☰), then click **Audio MIDI Settings**.

In the Audio MIDI Settings window, select CoreAudio (MacOS) or ASIO (Windows) in the **Device** section.

In the menu below, select the **MiniFuse 4**.
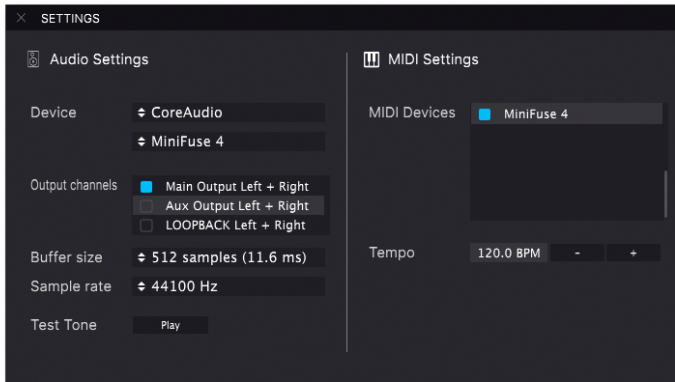
In the **Output Channels** section select Main Output Left + Right; this is the main speaker output from the MiniFuse.

You can press the **Play** button in the Test Tone section - you should hear a short tone played back through the MiniFuse 4.

> ℹ For more tips and in-depth information on how to configure various DAWs, please be sure to visit the MiniFuse FAQ.

5.3. Recording audio into your DAW

Once your DAW has been configured to use the MiniFuse 4 as an input audio device, create a new audio track where you would like to record your performance. Here we will show the process in Ableton Live. It will be similar in other applications.

In the **Audio From** menu, select External Input.

In the menu below, select the input channel where you have connected the instrument or microphone you would like to record.

> **i** If you would like to record a stereo sound source, like a synthesizer or drum machine, select a stereo pair from the menu.

Press the **Record Arm** button on the track - you should now hear the audio input played back through the computer.

> **i** If you do not wish to hear the input, you can turn off the Track Activator button, or change the Monitor setting to Off.

Next, press the **Record** button in your DAW's transport and it will begin playing back the arrangement and recording onto this track.

5.4. Using the MiniFuse 4 as a MIDI device with your DAW

The MiniFuse 4 features standard 5-pin MIDI input and output ports on the rear panel that can be used to connect MIDI-compatible devices to your computer.

> **i** While most MIDI controllers nowadays come with direct MIDI-over-USB connectivity, there are devices like synthesizers and drum machines that only have standard 5-pin MIDI input and output ports. These devices can be connected to your computer and integrated into your workflow through the MiniFuse.

IMPORTANT: Note that MIDI input and output may only work once the MiniFuse Control Center is installed on the computer. If you have not yet installed the MiniFuse Control Center, you can access the installer by clicking the MiniFuse disk in your Finder / Explorer and visiting the link contained inside.

You may need to enable the MiniFuse MIDI ports in your DAW to be able to use them. Here we will show you how to do this in several audio applications. The process will be similar in other audio applications.

5.4.1. Configuring MIDI in Ableton Live

In Ableton Live, go to the Live menu and click **Preferences**.

In the Preferences window, click the **Link MIDI** tab to access the MIDI device settings.

The MiniFuse 4 should be listed in the MIDI ports section.

- To receive MIDI notes from the MIDI IN port on the MiniFuse 4, enable the Track input.

- To transmit MIDI notes to the MIDI OUT port on the MiniFuse 4, enable the Track output.

- To receive continuous control (CC) data from the MIDI IN port on the MiniFuse 4, enable Remote input.

- To transmit continuous control (CC) data to the MIDI OUT port on the MiniFuse 4, enable Remote output.

5.4.2. Configuring MIDI in FL Studio

In FL Studio, select the MiniFuse 4, then click the **Enable** button. You should now receive MIDI signal from the MiniFuse into your DAW
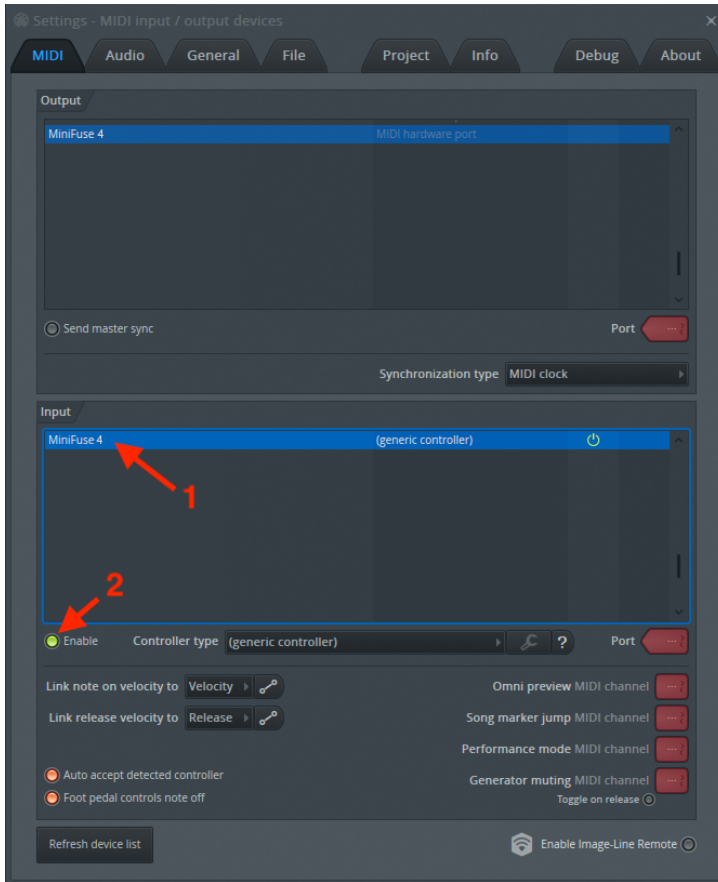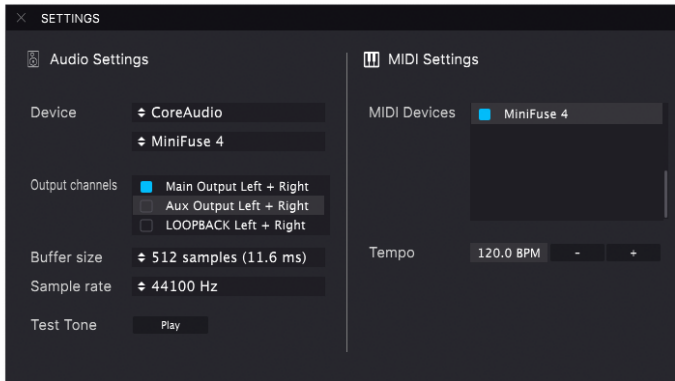
5.4.3. Configuring MIDI in Analog Lab

When using our Analog Lab software in standalone mode, you will need to enable the MIDI ports you want to use:

In Analog Lab, click the Menu button at the top left (☰), then click **Audio MIDI Settings**.

In the **MIDI Devices menu**, enable MiniFuse 4. You should now receive MIDI signal in Analog Lab.

5.5. Recording MIDI from the MiniFuse 4 into your DAW

Once the MiniFuse 4 has been configured as a MIDI device in your DAW's settings, create a new Instrument (MIDI) track.

Place a software instrument like a synthesizer or drum machine on this track.

In the **MIDI From** menu select the MiniFuse 4, or you can leave this menu to **All Ins** to receive MIDI from all connected devices, including the MiniFuse.

Click the channel's **Record Arm** button. Now when you adjust controls or press pads or keys on your connected MIDI device, you should see the MIDI activity bar light up to indicate that this channel is receiving MIDI. Depending on the software device loaded onto the channel, you should also hear sound being produced from it.

Next, press the **Record** button in your DAW's transport and it will begin recording your MIDI performance onto this track.

6. MINIFUSE CONTROL CENTER

Your MiniFuse 4 includes a control center application that provides access to many features on the MiniFuse, as well as additional advanced features like Direct Monitoring and Custom Monitoring Mixes.

The application can be found in:

- Mac: /Applications/Arturia/MiniFuse Control Center

- Windows: C:/Program Files (x86)/Arturia/MiniFuse Control Center
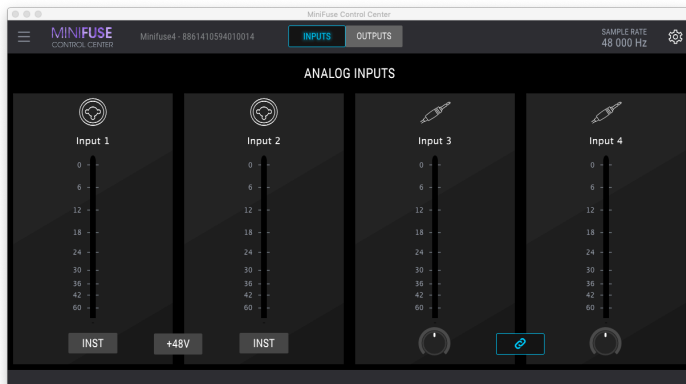
You can either start the application from your computer, or you can press the Arturia switch on the front panel of the interface to bring up the application at any time.

6.1. Top Toolbar

Clicking the Main Menu icon in the upper left corner (☰) provides access to:

- **Resize Window** adjusts the size of the application for optimal viewing.
- **Manual** opens this user manual.
- **About** displays the software version and other information.

> ℹ Window size can be adjusted via keyboard shortcuts Ctrl +/- on Windows and Cmd +/- on MacOS.

To the right of the application logo you can access the Device Selection. If several MiniFuse devices are connected to your computer you can click this area and select a device to access its settings.

The **Inputs** / **Outputs** tab selects what is displayed in the main section of the interface. We will cover Inputs and Outputs features and controls later in this chapter.

> ℹ️ Inputs / Outputs view can be toggled via the Tab key on your keyboard.

The **Sample Rate** displays the currently selected sample rate.

> ℹ️ Sample rate can be changed in your host application or computer settings. It cannot be changed from the MiniFuse Control Center.

The **Gear** button (⚙️) in the upper right displays additional preferences and firmware update information. In the **Preferences tab** you can adjust the behavior of the high-resolution meters and adjust the brightness of the LEDs on the front panel of the MiniFuse. In the **Firmware tab** you can see the current firmware version and perform updates.

> ℹ️ Firmware updates are an important way of offering you continued product support and new features. We recommend checking for updates periodically to ensure that you are getting the most optimal experience with your MiniFuse 4.

On Windows, there is an additional tab in the Gear panel - **ASIO Preferences** - here you can select the **Buffer Size** to be used when running in ASIO mode, and enable or disable **Safe Mode**.

> ℹ️ In some cases, using a lot of processing in a DAW (e.g. effects or plugins), or setting low buffer sizes on an older PC can cause the CPU load to be very high. A high CPU load can increase the risk for audio dropouts (pops) to occur. In these cases, **Safe Mode** can be enabled to avoid the risk of audio dropouts.

When multiple MiniFuse interfaces are connected at the same time, you can set which device will be used by the ASIO driver. From the top toolbar first select the MiniFuse you would like to use as the default device, then click the **Set As Current ASIO Device** button.
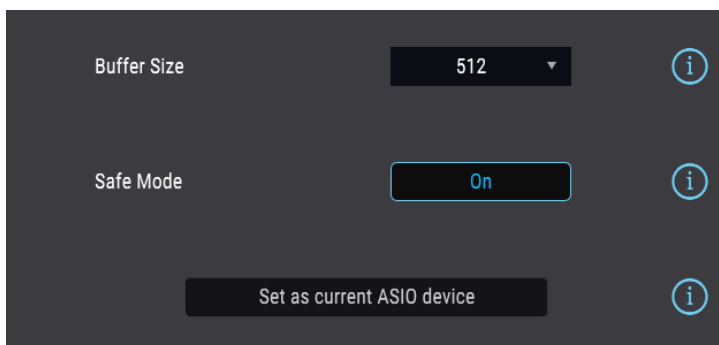
> ℹ️ ASIO is a Windows audio protocol that is optimized for low-latency and high-fidelity. We recommend using the ASIO driver provided by Arturia for best results.

6.2. Input Features

Clicking the **Inputs** button reveals various input features and controls, making it easy to change settings directly from your computer without having to reach for the interface.

ℹ Any settings that you set in the MiniFuse Control Center application are stored in hardware memory and will remain active even after closing the application.

For inputs 1 & 2:

Inst switch toggles the high-impedance circuit for the corresponding input. This setting should be used when plugging instruments with pickups, like guitars and basses, directly into the interface.

48V switch turns on phantom power for inputs 1 & 2. Phantom power delivers a power current to a connected microphone and may be required to get a good signal out of certain types of microphones.

ℹ For more information on the Inst and 48V features, please see the Front Panel Features [p.4] section of this manual.

For inputs 3 & 4:

Trim knob adjusts the input level for the corresponding input.

Link button links the two trim knobs, so that the trim level is the same for both inputs. This is useful when recording stereo sound sources.

Level Meters provide a high-resolution display of input levels for the corresponding input. These can be useful when setting the Gain for the input. The meter features a Clip indicator which lets you know if the input has been overloaded, or "clipped". Once the Clip indicator has been activated, it will remain lit until you click to deactivate it.

The following settings allow you to customize the vu meter display:

- **Orange Color Threshold** determines the volume above which the meter color will turn orange.

- **VuMeter Clip Reset Time** specifies how the red clip indicator resets after clipping has occured. On the Infinite setting, the clip indicator will remain lit until you click to turn it off.

- **VuMeter Peak Reset Time** determines the behavior of the yellow peak indicator. The peak indicator can be configured to reset after a certain amount of time, hold at the highest peak value (Infinite setting), or to reset instantly (None setting)

- **LEDs Intensity** allows you to adjust the brightness of the LEDs on the MiniFuse to suit your preference.

6.3. Output Features

Clicking the **Outputs** button provides access to a flexible mixing and routing environment. Here you can create custom mixes of various computer and input sources, including direct monitoring of input signals.
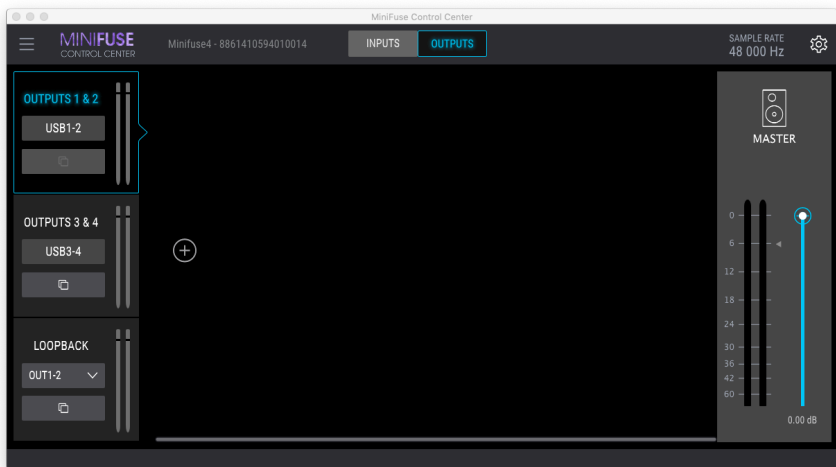
> Any settings that you set in the MiniFuse Control Center application are stored in hardware memory and will remain active even after closing the application. On top of that, even if the MiniFuse 4 is not plugged into a computer, the parameters you have set into the MFCC are saved.

There are three 3 tabs on the left, corresponding to the 3 pairs of outputs on the MiniFuse 4 - two pairs of physical outputs, and a virtual output pair for loopback recording.

Click on a tab header to view the mix settings associated with the corresponding outputs.

For **Outputs 1 & 2** and **Outputs 3 & 4** you have two options:

1. Enable the corresponding USB button to output audio from these software channels directly. For example, channels 1/2 from your DAW will be directly routed to outputs 1/2 on the MiniFuse.

2. Disable the USB button to create a custom mix that will be output on these channels from the MiniFuse. Custom mixes can include various combinations of computer and input sources, with additional panning and volume controls. We will explain how to create custom mixes below.

> ℹ️ Headphone Output 1 mirrors Outputs 1 & 2, while Headphone Output 2 mirrors Outputs 3 & 4.

Unlike the two output pairs above, the **Loopback channel** is a special channel that is only used for routing audio internally. This allows you to record audio from other applications on your computer without the need for additional cables. For more information on Loopback Recording, please see the Loopback Recording [p.28] section of this manual. Instead of a button, the Loopback channel has a pull-down menu that lets you select its behavior:

- USB 5-6 routes channels 5/6 from your software directly into the Loopback input.
- Cue2Mix allows you to create a custom mix of computer and input sources.
- OUT 1-2 routes audio from the Outputs 1 & 2 channel into the Loopback input. *
- OUT 3-4 routes audio from the Outputs 1 & 2 channel into the Loopback input. *

> ℹ️ * Note that any mixing adjustments, like muting and panning, that you do on the Outputs channels will be reflected in the Loopback input when using these OUT options.

6.3.1. Creating Custom Mixes

- To create a custom mix for a MiniFuse output pair, first ensure that the USB button on the corresponding tab on the left is deactivated, or the CueMix option is selected if using the Loopback channel.
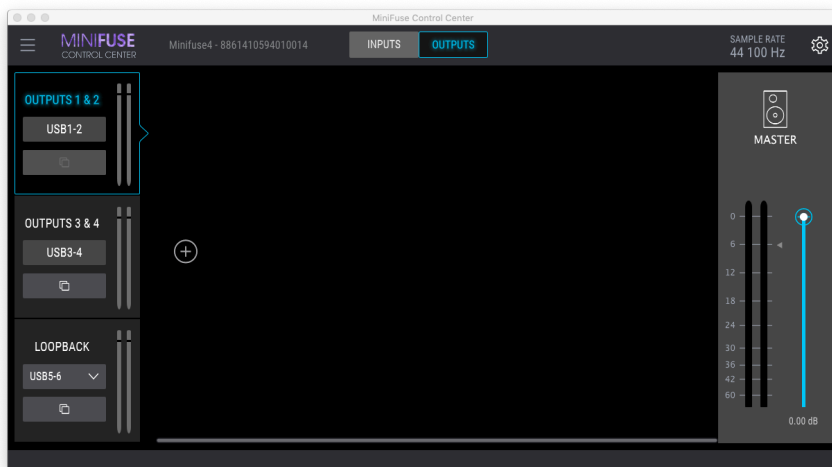
- To add sources to a custom mix, click the + button. You will see a pop up where you can select input and computer sources. You may choose mono or stereo input sources. Click to add the source to the mixer, then click away to return to the mixer view.

- To remove sources from a custom mix, click the **x** button located on the top right of the channel you'd like to remove, or deselect the source from the Add Channels window.

Each channel has the following controls:

- **Pan** knob sets the position of the signal in the stereo field.
- **Mute** button mutes the channel.
- **Solo** button solos the channel, muting all other channels in the mix.
- **Volume** fader sets the volume of the channel.
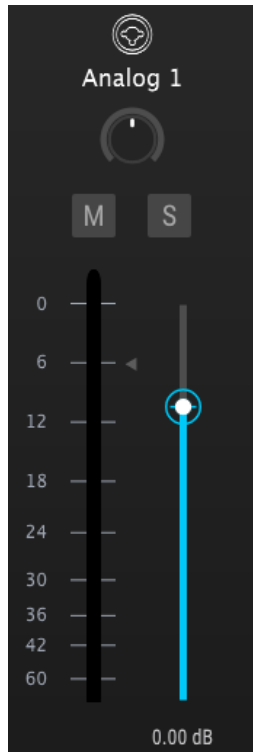
> **i** To reset a control, double-click on the fader to return to its default value.

Each custom mix also has a **Master Volume** fader on the right that can be used adjust the overall volume of the mix.

6.3.1.1. Direct Monitoring

Recording live instruments on a computer can sometimes present challenges, depending on your computer configuration and CPU load. Since your computer processes incoming and outgoing audio in buffer "chunks", this can result in delayed playback of the input signal, which can create distracting echoes that could throw off a performance. To avoid this latency, the MiniFuse 4 gives you the option of using Direct Monitoring.

To use Direct Monitoring, add any input source to a custom mix. When added to a custom mix, input sources are also routed directly to the outputs without incurring any latency that may occur when those inputs are routed and monitored through your DAW.

Let's take a look at a practical example. In this example, a singer / guitar-player would like to record themselves playing to pre-arranged drum parts in their DAW. They would like to hear both their performance and the computer audio in their headphones.

For this situation we can create a custom mix on Outputs 3 & 4. This mix will be send out of Outputs 3 & 4 on the MiniFuse, as well as Headphone 2 which mirrors this output pair.

We've added 3 channels to the mix:

- 1 microphone input
- 1 guitar input
- audio playback from the computer (output channels 1-2 from the DAW)

In this configuration, the microphone and guitar inputs will be monitored directly so that the musician can hear their performance alongside the backing tracks without any software latency.

> ℹ Custom mixes can be very useful for creating specialized feeds to headphones. For example, if you are recording two musicians each may want to have a different mix going to their headphones - perhaps the singer wants less guitars, or the guitar player only wants to hear the drums that have already been recorded in the DAW. The MiniFuse Control Center app makes it easy to create different mix configurations to suit your project.

6.3.1.2. Copying Mix Settings

To copy a custom mix and its settings, first select the channel whose settings you would like to copy. Second, click the **Copy** button (⧉) on the channel where you would like to copy settings to.
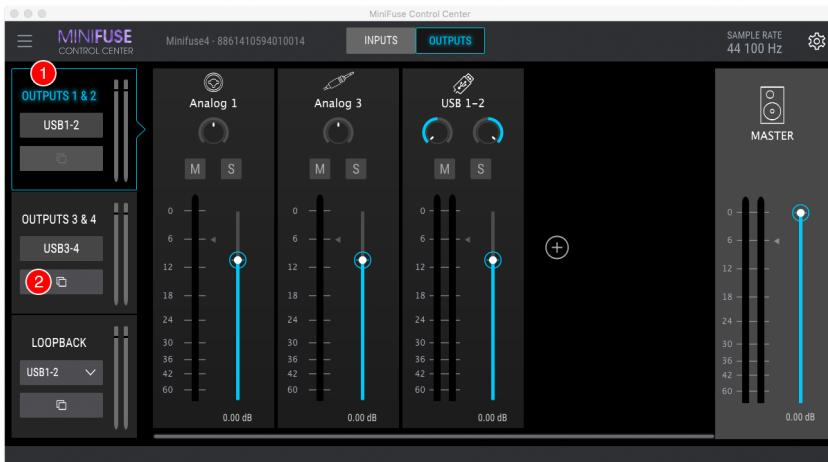
6.3.1.3. Keyboard Shortcuts

There are several keyboard shortcuts to provide quick access to various application views:

Windows	MacOS	Description
Ctrl +	Cmd +	Increases window size
Ctrl -	Cmd -	Decreases window size
Tab	Tab	Switches between Input and Output views
Ctrl Tab	Ctrl Tab	Switches between custom mixes

7. LOOPBACK RECORDING FEATURE

The MiniFuse Loopback Recording feature allows you to record any audio playing on your computer directly into your recording application, without the need for complicated software workarounds or additional cables. Loopback Recording uses a pair of virtual inputs on the MiniFuse into which you can "plug" any computer audio, vastly expanding the types of sound sources available for recording into your projects.

> ℹ Windows: Note that the included MiniFuse ASIO driver needs to be installed and selected in order to use the Loopback feature. For more information please refer to the FAQ web page.

7.1. Routing computer audio to the Loopback output/input

There are two different options available to you, depending on your system and software:

- **Record all computer audio** - all applications playing audio will be recorded. This is usually used to record audio from applications like web browsers and movie players.

- **Record audio from specific applications** - selectively choose which applications get recorded. This depends on whether your application allows you to route its output to a specific destination.

Next, we'll walk you through the steps of setting up each recording scenario.

7.1.1. Recording all computer audio

To record all audio playing from your computer, you will need to change the default system audio output so that it is routed to the MiniFuse's internal Loopback input.

7.1.1.1. Change system audio output on Mac

1. Go to the Applications folder and open **System Preferences**.

2. Click **Sound** and ensure that "MiniFuse 4" is selected in the Output tab.
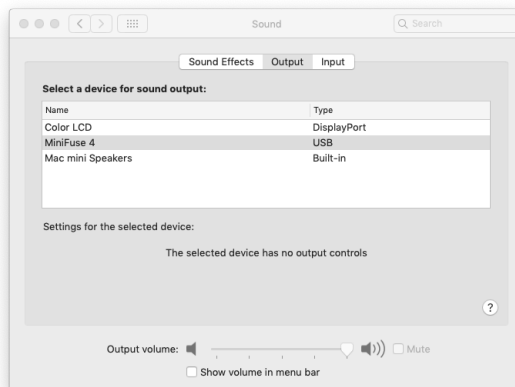
3. Next, go back to the Application folder and open the **Utilities** folder.

4. Open the **Audio MIDI Setup** application.

5. In the Window menu, select **Show Audio Devices**.

6. Click the MiniFuse 4 in the left panel, then click **Configure Speakers**.
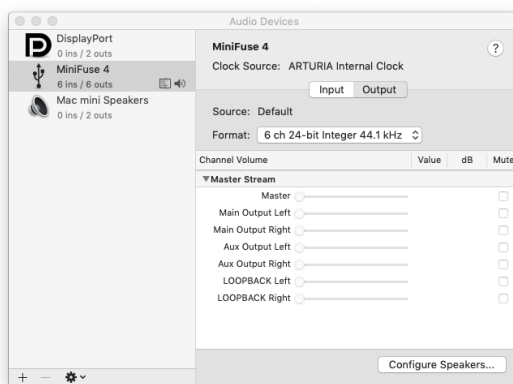
7. Now click the menu for the "Left front" speaker, and change its setting to "**Loopback Left**".

8. Repeat step 7, this time for the "Right front" speaker.

9. Your computer will now play all audio through the Loopback input on the MiniFuse, allowing you to record it into your recording application.

> ℹ Once you change your system output to use the Loopback output, you will not be able to hear any computer audio until you a) record-enable a channel in your recording application, or b) switch the output back to "Main Left/Right" inside the Configure Speakers panel in Audio MIDI Setup.

7.1.1.2. Change system audio output on Windows

1. In the Windows taskbar, click the Speaker icon, then click the arrow to expand the view.

2. You will see a menu of available outputs. By default this will be set to "MAIN Left/ Right", which will route any computer audio through the speaker outputs on the rear of the MiniFuse.

3. To route to Loopback instead, select the "LOOPBACK Left/Right" output.
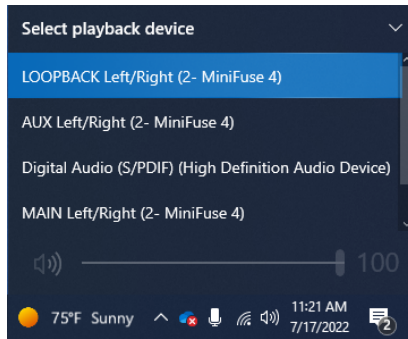
> ℹ Once you change your system output to use the Loopback output, you will not be able to hear any computer audio until you a) record-enable a channel in your recording application, or b) switch the output back to "MAIN Left/Right" from the Speaker icon in the taskbar.

4. To change the output back, select "MAIN Left/Right" output from the menu.
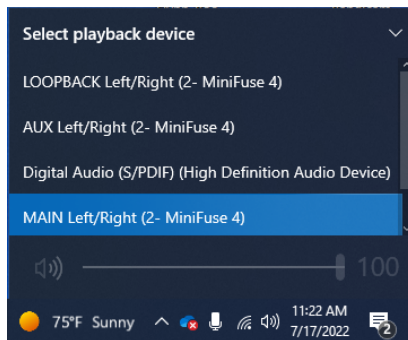
7.1.2. Record audio from specific applications

Some applications allow you to set an audio output independent of the system output. If this is possible in the application you wish to record, you can route its audio output to the MiniFuse Loopback output to record its audio into your DAW.

Here we will show you how to configure Reason to send its audio to the Loopback output. The process will be similar for other applications.

1. In the Reason menu, click **Preferences**.

2. Click the **Audio** tab, and set the Audio Device to MiniFuse 4.
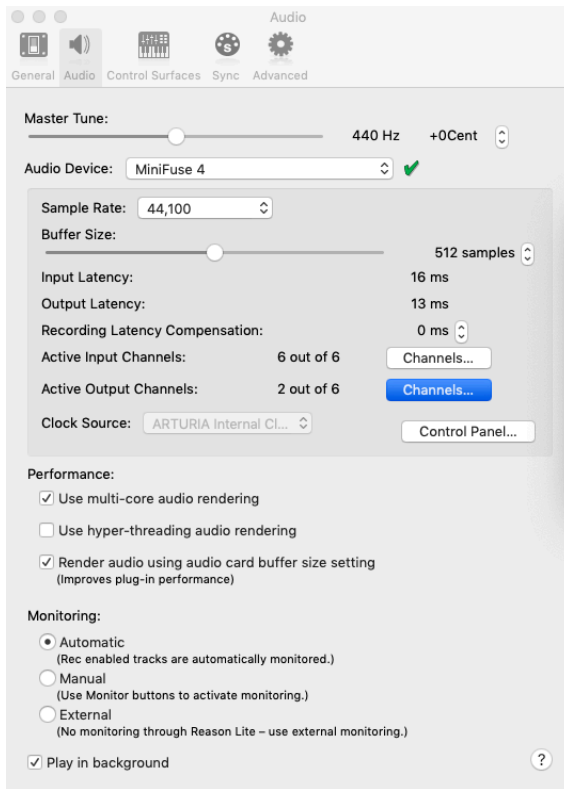
3. Click the **Channels** button next to Active Output Channels.

4. In the pop-up window, enable Output 5 / Output 6. This will send all audio from Reason to the MiniFuse's Loopback feature.
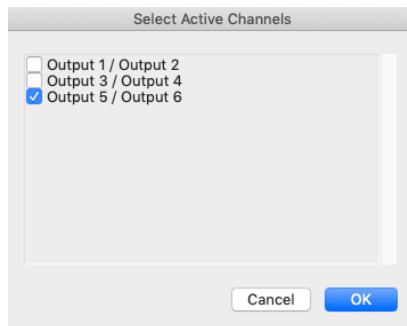
7.1.3. Recording into your DAW

Now that you have configured audio to be sent to the Loopback output, either from the entire system or a specific application, open your preferred audio recording application. Here we will show the process in Ableton Live. The process will be similar in other applications.

  1. In the application's preferences, ensure that the MiniFuse 4 is configured to be used as an input device.
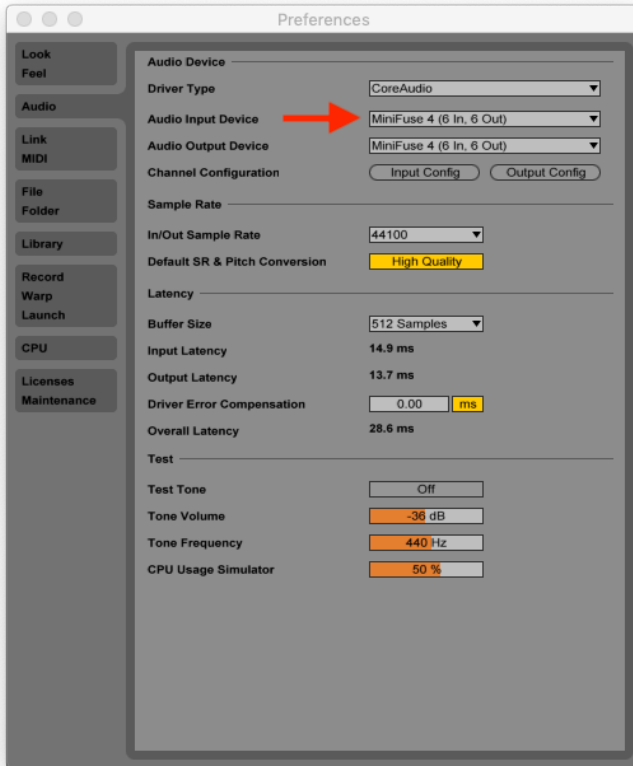
2. Next, create a new audio track in your project.

3. Select Loopback (channels 5 & 6) as the audio input for the track and record-enable the track. You should now hear your computer audio playing through your DAW, and the meter should display an audio level.
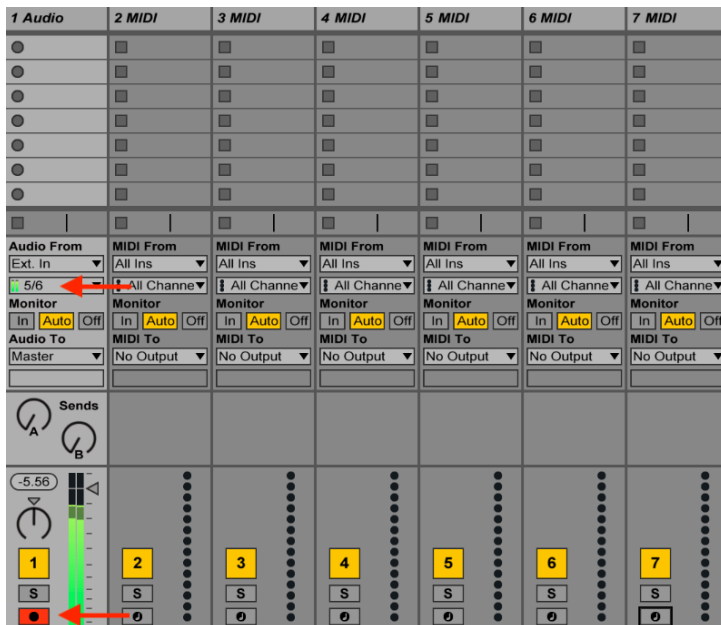
4. You are now ready to record. When ready, press the Record button in your application.

5. Once you are done recording and wish to set your computer system output back to regular operation, return to the system audio preferences and change the system output to use the Main outputs:

- On Mac, go back to the Configure Speakers panel in Applications / Utilities / Audio MIDI Setup, and change the speaker outputs to "Main Left" and "Main Right".

- On Windows, click the Speaker icon in the taskbar, and select "MAIN Left/Right" from the menu.

8. A QUICK PRIMER ON DIGITAL AUDIO

To get the most out of your computer and audio interface, it is important to be familiar with several key concepts in digital audio. We'll explain these quickly below, so that you understand their impact on performance. Once you are familiar with these concepts, you will know how to best calibrate your interface and computer settings to handle different types of audio tasks.

8.1. What is latency?

Latency is the amount of time that it takes your computer to process incoming and outgoing sound. Latency is an important consideration when recording live instruments or MIDI parts, as the delay between the input (audio or MIDI) and the audio output may negatively impact the performance and recording - think of how distracting it can be to hear your own voice with a short echo while on a phone call.

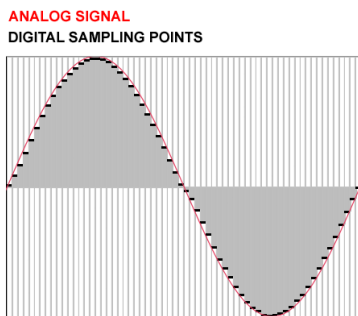Latency is a direct byproduct of sample rate and buffer size settings, so adjusting these settings in your host application or the audio driver will have an impact on latency.

8.2. Sample Rate

In the digital realm, analog audio signals are represented by discrete points in time, or "samples". When played back through a digital-to-analog converter, like those in computer soundcards, the digital samples are reproduced into a smooth audio signal. You can think of it like frames in a movie - each frame is a still snapshot, but when played back at a fast enough rate (24+ frames per second) our eyes perceive the sequence of static frames as continuous motion.

The sampling rate describes the frequency of digital sampling points, or "frames", used to approximate the audio signal over time. This also determines the highest frequency that can be captured or reproduced by the digital representation. The Nyquist–Shannon sampling theorem states that this is equal to 1/2 of the sample rate so, for example, the highest sound frequency that can be reproduced by a sample rate of 48kHz is 24kHz.

The average range of human hearing is 20 to 20,000Hz (or 20kHz). For most audio applications we recommend using a sample rate of 44.1kHz or 48kHz. Sample rate of CD-quality audio is 44.1kHz. Higher sample rates will result in significantly higher CPU usage, without much benefit to be gained in most circumstances.
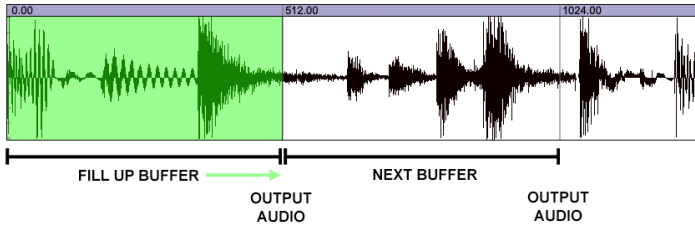
8.3. Buffer Size

Buffer size is expressed in samples and is usually found in your application's audio settings. Think of the buffer like a bucket. As soon as it fills up with samples, it is carried away to the output. So, the smaller the bucket (buffer) the quicker it will get filled up and sent to the output, and therefore will play back with less latency. The trade off, however, is that smaller buffer sizes require your computer's CPU to work harder. Conversely, the bigger the bucket (buffer) the longer it will take to fill up and be sent to the output. This decreases the load on your CPU at the expense of more latency. As you will see below, changing the buffer size depending on the type of audio task being performed is common practice.
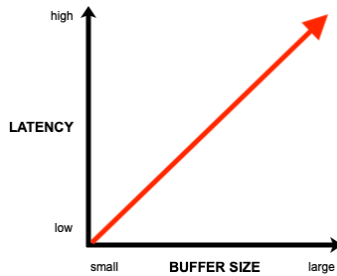
8.4. A red herring

When experimenting with these settings, you may notice that latency decreases noticeably when using higher sample rates at the same buffer size. To go back to the bucket analogy, the sample rate is like water flowing through a hose - if your increase the water flow (higher sample rate), the same bucket will fill up faster and will be carried away to the output sooner. However, keep in mind that high sample rates come at a cost of significantly higher CPU usage, so this is not a recommended way of dealing with latency.

8.5. How to deal with latency

There are several ways to effectively deal with latency depending on the situation. Once you are familiar with the concepts outlined above, you will be able to dynamically adjust your system settings to accommodate various scenarios.

8.5.1. Recording live audio

When recording live audio from instruments and microphones, you probably want to avoid latency altogether. The MiniFuse features **Direct Monitoring** which will route the input(s) directly through the speakers or headphones. This lets you immediately hear what you're recording without incurring any latency from computer processing.

- Direct Monitoring is available in the MiniFuse Control Center application. For more information on how to create custom mixes with direct monitoring, please see the MiniFuse Control Center [p.19] section of this manual.

- When using Direct Monitoring, you may need to turn off monitoring for the recording channel in your DAW to prevent an echo through the speakers or headphones.

- Direct monitoring routes the input(s) directly out of the outputs, so you will not be able to hear any software processing or effects that you may have applied to the recording channel in your application.

- For best results, we also recommend shutting down other CPU-intensive applications while recording live audio.

8.5.2. Recording a MIDI part

Since recording MIDI parts relies on the computer to produce sounds from your playing, Direct Monitoring is not an option in this scenario. When recording MIDI parts, you will most likely want to set a low audio buffer size in your host application's audio settings to minimize the delay between pressing a key and hearing the sound. We recommend buffer sizes of 128-256 samples but you could go lower or may need to go higher, depending on your particular computer system and how much CPU your project is using.

8.5.3. Mixing and mastering

Mixing and mastering are not time-critical tasks, so latency is not as important in these situations. It's also likely that by this stage your project has quite a few tracks and plugins, so your CPU may already be working hard to keep up. For mixing and mastering purposes we recommend buffer sizes of 1024-2048 samples. Again, depending on your specific system and project you may be able to use lower settings.

9. SPECIFICATIONS

9.1. Box Contents

- Audio interface
- USB-C to USB-A cable
- Optional power supply unit
- Regional power supply adapters
- Exclusive software bundle containing:
  - Arturia's Pre 1973, Rev PLATE-140, Delay TAPE-201, Chorus JUN-6 audio effects
  - Arturia's Analog Lab Intro containing thousands of ready-to-use instruments and sounds
  - Ableton Live Lite
  - NI Guitar Rig 6 LE
  - 3-month complimentary subscription to Splice
  - 3-month complimentary subscription to Auto-Tune Unlimited
  - Ableton Live Lite sessions curated by producers around the globe

9.2. Hardware Specifications

Line Inputs	
Input impedance	15.4kΩ
Maximum input Level	+22dBu
Gain range	56dB
Frequency response 20Hz to 20kHz	+/-0.04dB
Dynamic range	114dB typical (A-weighted)
THD+N @ 1kHz	-101dB typical (un-weighted)
Cross-talk @ 1kHz	-121dB

Instrument Inputs	
Input impedance	684KΩ
Maximum input Level	+11dBu
Gain range	56dB
Frequency response 20Hz to 20kHz	+/-0.04dB (min gain)
Dynamic range	114dB typical (A-weighted)
THD+N @ 1kHz	-91dB typical (A-weighted)

Microphone Preamps	
Input impedance	2.5kΩ
Maximum input Level	+9dBu
Gain range	56dB
Equivalent Input Noise (EIN)	-129dB typical (A-weighted)
Frequency response 20Hz to 20kHz	+/-0.04dB (min gain)
Dynamic range	112dB typical (A-weighted)
THD+N @ 1kHz	-102dB typical (A-weighted)
Cross-talk @ 1kHz	-133dB

Speaker Outputs	
Output impedance	98Ω
Maximum output Level	+12dBu
Frequency response 20Hz to 20kHz	+/-0.09dB
Dynamic range	110dB typical (A-weighted)
THD+N @ 1kHz	-103dB typical (un-weighted)
Cross-talk @ 1kHz	-108dB

Phones	
Output impedance	11Ω
Maximum output Level	+11dBu
Frequency response 20Hz to 20kHz	+/-0.09dB
Dynamic range	101dB (A-weighted)
THD+N @ 1kHz	-92dB (unweighted)
Power @ 33ohm	420mW

Various	
Supported frequency rates	44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz, 176.4 kHz, 192 kHz
USB 2 Audio compatibility	Windows, Mac OS

10. DECLARATION OF CONFORMITY

USA

Important notice: DO NOT MODIFY THE UNIT!

This product, when installed as indicated in the instructions contained in this manual, meets FCC requirement. Modifications not expressly approved by Arturia may avoid your authority, granted by the FCC, to use the product.

IMPORTANT: When connecting this product to accessories and/or another product, use only high quality shielded cables. Cable (s) supplied with this product MUST be used. Follow all installation instructions. Failure to follow instructions could void your FFC authorization to use this product in the USA.

NOTE: This product 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 a reasonable protection against harmful interference in a residential environment. This equipment generate, use and radiate radio frequency energy and, if not installed and used according to the instructions found in the users manual, may cause interferences harmful to the operation to other electronic devices. Compliance with FCC regulations does not guarantee that interferences will not occur in all the installations. If this product is found to be the source of interferences, which can be determined by turning the unit "OFF" and "ON", please try to eliminate the problem by using one of the following measures:

* Relocate either this product or the device that is affected by the interference.
* Use power outlets that are on different branch (circuit breaker or fuse) circuits or install AC line filter(s).
* In the case of radio or TV interferences, relocate/ reorient the antenna. If the antenna lead-in is 300 ohm ribbon lead, change the lead-in to coaxial cable.
* If these corrective measures do not bring any satisfied results, please contact the local retailer authorized to distribute this type of product. If you cannot locate the appropriate retailer, please contact Arturia.

The above statements apply ONLY to those products distributed in the USA.

CANADA

NOTICE: This class B digital apparatus meets all the requirements of the Canadian Interference-Causing Equipment Regulation.

AVIS: Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

EUROPE

This product complies with the requirements of European Directive 2014/30/UE.

This product may not work correctly by the influence of electro-static discharge; if it happens, simply restart the product.

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A return of the product due to a failure to accept the terms and conditions of this Agreement, e.g. the product activation, shall not be possible following the assignment of rights.

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The acquisition of an upgrade or update does not in itself confer any right to use the software.

The right of support for the previous or inferior version of the software expires upon the installation of an upgrade or update.

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