USER MANUAL

_AUDIOFUSE X8 IN

ARTURIA

_The sound explorers

Special Thanks

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Thank you for purchasing AudioFuse X8 IN!

AudioFuse X8 IN allows for easy expansion of your studio's input count, while retaining the same superior sound quality found in the entire Arturia Fuse lineup.

This manual covers the features and operation of the AudioFuse X8 IN.

Important Safety Instructions

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 and DC 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's 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. When rackmounting the device, allow air circulation space above and below it for heat dissipation, and use caution when installing in the rack to avoid damage to the rack ears and mounting screws.
8. Do not open or insert anything into the device that may cause a fire or electrical shock.
9. Do not spill any kind of liquid onto the device.
10. 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.
11. Do not use the device with thunder and lightning present; it may cause electrical shock.
12. Do not expose the device to hot sunlight.
13. Do not use the device when there is a gas leak nearby.
14. Arturia is not responsible for any damage or data loss caused by improper operation of the device.

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.

Introduction

Dear musician,

We'd like to thank you for purchasing the AudioFuse X8 IN, a simple and affordable input expansion solution for your studio. Because the AudioFuse X8 IN can be configured for tabletop or rackmount operation, it will serve you well whether you're just getting started or expanding your existing setup with the very best equipment. This manual will help you make the most of the AudioFuse X8 IN.

As with the other interfaces in our Fuse lineup, the AudioFuse X8 IN has been constructed using components of the utmost quality so as to achieve recordings of the utmost quality. It offers high-quality analog-to-digital (A/D) conversion and up to 24-bit/96 kHz audio transmission, with internal or external clock sync.

Be sure to visit arturia.com website for information about all of our other great hardware and software instruments. They have proven time and again to be the go-to solutions for musicians around the world.

Wishing you all the best in your musical endeavors,

The Arturia team

Table Of Contents

1. WELCOME TO THE AUDIOFUSE X8 IN!

The AudioFuse X8 IN

When Arturia released the AudioFuse USB audio interface in 2017, its features and design were a revelation to the pro audio world. Every part of its analog and digital signal paths provided world-class quality, from high-performance preamps to premium A/D and D/A converters. Even with all these features, it fit into a compact, beautifully-engineered design that set a new price/performance standard.

Since then, Arturia has expanded its Fuse lineup with other rackmount and desktop interfaces – from specialized AudioFuse products to smaller MiniFuse interfaces perfect for smaller studios. All of these products continue our commitment to maximum features for the money, all with uncompromising sound quality.

The AudioFuse line is designed to grow with you as your interface needs change. Our newest Fuse units, the AudioFuse X8 IN and X8 OUT, have been created to help with one of the most common growing pains that electronic musicians face: running out of analog inputs and outputs. What do you do if you love your current interface (and if it's an AudioFuse, who *wouldn't*?) but you wish it had more ins or outs?

The AudioFuse X8 IN is a half-rackspace unit with 8 balanced line-level inputs on 1/4" TRS, each with a world-class analog-to-digital (A/D) converter. Output is provided on a pair of Toslink optical ports using the ADAT digital audio standard, which run at 24-bit resolution and can operate at sample rates up to 96 kHz. These will provide data to any audio interface with ADAT inputs. Each input can have a switchable 12 dB Pad for loud input signals, and pairs of adjacent odd and even inputs can be Linked for easy stereo operation.

In addition to these features, the AudioFuse X8 IN can send clock signals over the ADAT outputs or receive Word Clock signals via a rear-panel BNC input with switchable termination. This lets you synchronize your audio interface to the AudioFuse X8 IN directly, or integrate it with a larger digital audio system using a common Word Clock.

The AudioFuse X8 IN comes in a convenient half-rackspace chassis, complete with one rack ear and one connector plate. These stay out of the way when using the AudioFuse X8 IN as a tabletop unit, and can be removed and put into use when attaching it to a second AudioFuse X8 IN or an AudioFuse X8 OUT 8-channel ADAT-to-line digital-to-analog (D/A) converter unit. The result is a conventional single-rackspace processor that can be added to any standard rackmount system.

Simple to set up and seamless to use, the AudioFuse X8 IN is the easiest way to add more inputs to your audio interface rig – so you can always add that new synthesizer you've had your eye on! (And then another, and another...!)

1.1. Features of AudioFuse X8 IN:

- 8 balanced line-level analog input channels on TRS
- Pad switch for each input channel
- Stereo Link switching for odd/even pairs of adjacent channels (1/2, 3/4, 5/6, 7/8)
- Dual ADAT output ports for 8 channels of input at 44.1, 48, 88.2, or 96 kHz
- BNC Word Clock input with impedance switching
- Robust metal chassis in a half-rackspace form factor
- built-in feet for tabletop use plus attached hardware for rackmount configuration
- Operates standalone with no computer needed

1.2. Diving in (suggestions on using this manual)

In this manual, you'll be introduced to all of the AudioFuse X8 IN's functions, step by step. The Table of Contents is laid out by section, with some general information at the beginning and end. Inside each section, you can click on topic and page references to quickly find what you need.

This isn't a complex machine, but knowing its features ahead of time will help you set it up quickly and use it without headaches. Take some time to read through this manual so you know how to get what you need.

And above all: have fun! That's what music is all about.

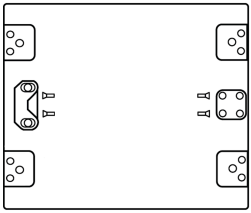
2. HARDWARE SETUP AND REGISTRATION

Setting up the AudioFuse X8 IN isn't difficult, but there are a few instructions to follow, especially if you plan to rackmount it with another X8 IN or with an X8 OUT.

2.1. What's in the box?

- The AudioFuse X8 IN
- Rack ear and connecting plate with screws (attached to the bottom of the unit)
- Power supply with adapters for worldwide use
- Registration card with serial number
- Quick Start Guide

2.2. Rackmounting the AudioFuse X8 IN

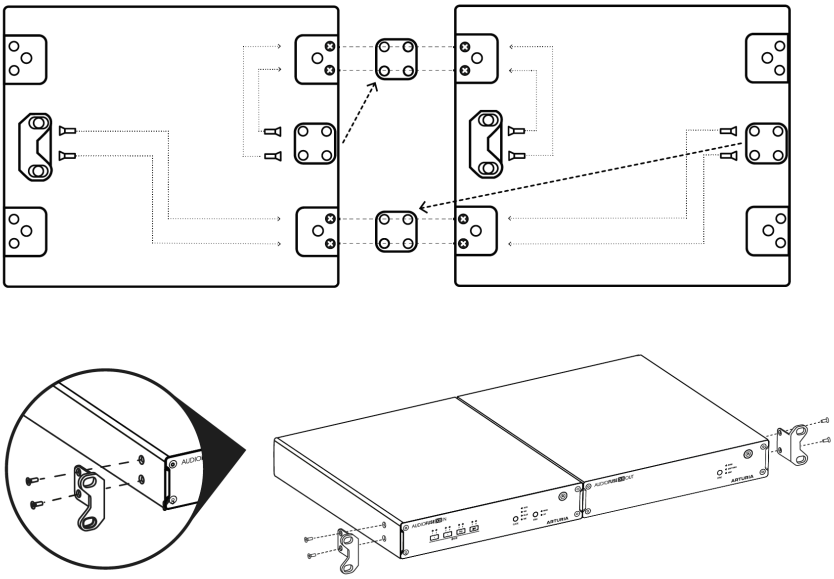


Rackmounting components stored under the AudioFuse X8 IN

The bottom of the unit has a pair of recessed storage positions, one for a single orange rack ear and one for a square connecting plate. Each has two mounting screws of the appropriate size.

Note that the connecting plate has four screw holes but only two screws. The extra holes are used to connect to a second unit using its supplied screws.

The unit comes with mounting screws especially chosen for this purpose. Don't use other screws, and carefully follow the directions in this manual. You don't want your new converter to fall out of your rack, do you?



AudioFuse X8 IN configured for rackmounting

Attach the rack ears and connection plates in the configuration shown above, and the AudioFuse X8 IN and its companion X8 IN or X8 OUT are ready to slot into your rack.

> We recommend rackmounting the AudioFuse X8 units with an open rackspace above or below them, to assist with keeping them cool during operation.

2.3. Registration

Once you've set up your hardware, the next part of the process is to register it with Arturia. Registration will help you if you should need technical support; it's always a good idea to take a moment and do this before you get started.

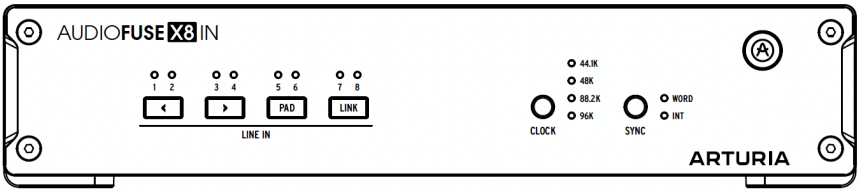
Follow the instructions you'll find in the box with your unit to log onto the Arturia website and register it. You will need a serial number and unlock code, which you will find on the bottom of the unit.

Registering your AudioFuse X8 IN gives you access to current documentation (including this User Manual).

3. GETTING TO KNOW THE AUDIOFUSE X8 IN

Before we get started using it, let's take a tour around the AudioFuse X8 IN.

3.1. The Front Panel



The AudioFuse X8 IN front panel

The front panel has the following features:

3.1.1. Channel LEDs

The eight **LINE IN** channels have LEDs that act as either level meters or as indicators in Edit Mode [p.9].

3.1.2. Channel selection and function buttons

Under each pair of channel LEDs is one button for a total of four:

- **LEFT Arrow**: moves control to the previous channel
- **RIGHT Arrow**: moves control to the next channel
- **PAD**: turns the Pad function on and off for the selected channel
- **LINK**: turns the stereo Link function on and off for a pair of adjacent channels

3.1.3. Clock/Sync function buttons

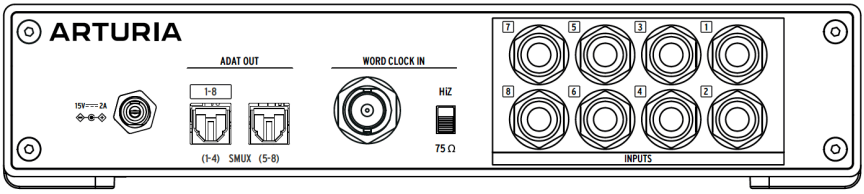
- **CLOCK**: selects the clock rate (44.1, 48, 88.2, or 96 kHz)
- **SYNC**: selects whether the AudioFuse X8 will accept BNC Word Clock on the rear panel (**WORD**) or send its internal clock to your interface over the ADAT Outputs (**INT**)

3.1.4. Power button

The round button with the Arturia logo at the far right powers the unit on or off when held for two seconds. It glows white when the unit is on.

> When you power the unit on, all of the front panel LEDs will cycle from left to right. This is the unit's bootup sequence, and should only take one or two seconds.

3.2. The Rear Panel



The AudioFuse X8 IN rear panel

The AudioFuse X8 IN's rear panel has the following sets of connections.

3.2.1. Power Input

The AudioFuse X8 IN has a locking power connector for the provided 15V / 2A DC power supply.

> Use only the provided supply! Other supplies might damage or destroy the unit, and will void your warranty.

3.2.2. ADAT Outputs

The two Toslink ADAT optical outputs are used to provide 8 channels of digital audio to your interface.

- When running at 44.1 or 48 kHz, the left port carries data for all 8 channels.
- When running at 88.2 or 96 kHz, each port carries data for four channels, 1–4 and 5–8.

3.2.3. Word Clock Input

This is a standard BNC connector for Word Clock data provided by an external clock source. The **HiZ** switch determines the termination of the connection.

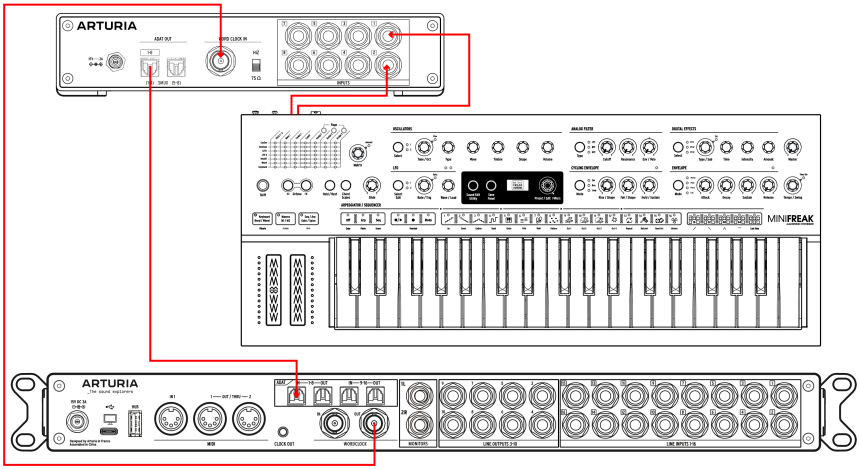
3.2.4. Inputs

These eight 1/4" TRS jacks carry balanced line-level signals into the AudioFuse X8 IN. They can be used in mono, or configured as up to four stereo pairs per the front-panel **LINK** button.

4. USING THE AUDIOFUSE X8 IN

Hooking up your AudioFuse X8 IN and configuring its inputs is a simple process.

4.1. Device connections



Hooking up the AudioFuse X8 IN to your system

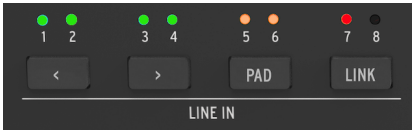
1. Connect your analog devices to the rear-panel inputs. If any device has stereo outputs, be sure to connect them to adjacent odd/even pairs of inputs (1/2, 3/4, 5/6, 7/8). Any other configuration won't work properly with the front-panel Link buttons.
2. Connect your ADAT optical cables from the ADAT outputs on the AudioFuse X8 IN to the ADAT inputs on your audio interface.
3. If you're using external Word Clock, attach the BNC cable from your master clock source. Set the HiZ switch accordingly, as explained in the chapter on synchronization [p.11].
4. Make sure your interface recognizes the presence of the ADAT inputs and be sure that its clock/sync settings match how the AudioFuse X8 IN is sending or receiving clocks. Consult the chapter on sync [p.11] for more details.
5. Consult your device's user manual if things don't seem to be connecting properly.

You're now ready to configure your inputs.

4.2. Input configuration

4.2.1. Channel metering

Each Line In has an LED that operates as a basic signal level meter.



LED meter colors

These LEDs have four color states:

Color	Status	Value
Off	Signal absent	below -60 dB
Green	Signal present	between -60 dB and -6 dB
Orange	Signal hot	from -6 dB up to 0 dB
Red	Signal clipped	0 dB and above

The LEDs act as meters whenever the unit is not in Edit Mode.

Ideally, you should set the input level of your line signals so that the LEDs turn orange on the highest peaks and never turn red. This assures that your interface is receiving a signal that's loud but not clipping.

> Red clip LEDs will reset after 1.5 seconds. They will register clipping even while you're in Edit Mode.

4.2.2. Edit Mode

Pressing any of the four **LINE IN** function buttons enters Edit Mode. While Edit Mode is active, you can use the buttons to control the Pad and Link status of each channel.

> If you don't touch any button for 3 seconds or longer, the LEDs will revert to their level meter function.

Use the **LEFT Arrow** and **RIGHT Arrow** buttons to select inputs. Press to move by one channel; long-press to cycle through them. The selected input's LED will flash white.

4.2.2.1. PAD

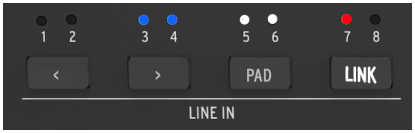
Edit Mode: PAD is set for Line In 1 and 5. Note Line In 7 still shows clipped status.

Press the **PAD** button to activate the 12 dB Pad for a given input. The **PAD** button will light bright blue and the selected input's LED will flash blue and white.

When you move to another input, the **PAD** button will return to dim white lighting, but the previous input's LED will remain blue to show its Pad status.

> While in Edit Mode, you can long-press the **PAD** button to toggle the Pad on and off for all 8 inputs at once.

4.2.2.2. LINK



Edit Mode: Line IN 3/4 are already linked, Line in 5/6 are selected and linked. Line In 7 shows clipped status.

Press the **LINK** button to pair adjacent channels (1/2, 3/4, 5/6, 7/8). The **LINK** button will light bright white and the two inputs' LEDs will flash blue and white. Press again to unlink the channels.

- You can select either input of a given pair, odd or even, to use the Link function.
- When you select or apply the Pad to Linked inputs, both LEDs will flash and indicate Pad status together.

> You can't Pad only one channel of a Linked pair.

> While in Edit Mode, you can long-press the **LINK** button to toggle Link on and off for all 8 inputs at once.

5. SYNCHRONIZATION

The **CLOCK** and **SYNC** buttons are used to determine how the AudioFuse X8 IN is synchronized with other digital audio devices in your studio.

5.1. Why synchronize?

If you've never used two or more devices with digital inputs or outputs before, you might not understand why sync is such an important issue. Actually, good sync is of critical importance to good sound.

Every digital audio device has an internal clock that determines where certain audio events occur in time. The clock runs much faster than the sample rate of the audio you're recording or playing back, and its precision is vital to the quality of the audio signal. If a clock isn't very precise, an audible artifact called *jitter* will become part of the signal. Every digital audio clock network strives to have the lowest jitter.

When multiple clocked devices are connected, only one can be the master clock generator, and the other devices must tightly follow its clock signals. It is vital to make sure that all digital audio devices in a studio are clocked from the same source, so you don't introduce clicks, pops, and other audio artifacts that can arise from slightly mismatched and competing clocks. Generally you'll choose whichever device has the most stable clock signals to control the others.

When connecting only two devices (e.g. the AudioFuse X8 IN and your interface), the clock signals can be sent over the ADAT cable connecting them. If more than two devices are in a network, they must share a Word Clock signal that is transmitted between them on a BNC cable with a locking connector. One Master unit provides the clock signals for all other units. In very high-end studios with a lot of digital devices, there will be a standalone Master Clock box to give the best possible clocking throughout the studio.

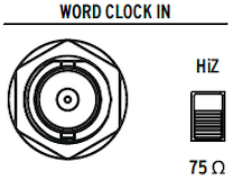
BNC cables can be chained from unit to unit in various ways, but they are very sensitive to pulses that reflect back down the cable from its far end. To prevent this, clock cables must be *terminated* with a proper resistance value.

5.2. Internal Sync

Digital audio signals always have some kind of sync data included with them. It's part of the ADAT optical data stream. When using it, the **SYNC** button must be set to **INT** (indicated with a white LED).

> If no BNC cable is connected to the rear panel **WCLOCK** input, the **SYNC** button doesn't do anything – the unit defaults to Internal sync and can't be changed.

5.3. Word Clock Sync



The rear panel BNC **WCLOCK** port is used to connect the AudioFuse X8 IN to multiple devices in a digital audio network. The **HiZ** switch determines how the connection is "seen" by other devices that are cabled together.

- When the **HiZ** switch is in the down position, the connection's input impedance is 75 Ohms. This is used when the AudioFuse X8 IN is at the end of a chain of word clock cables.
- When the **HiZ** switch is in the up position, the connection has a very high impedance, which prevents reflections in all other hookup configurations.

5.3.1. Switching between ADAT and Word Clock

If the AudioFuse X8 IN has a BNC connection, you can switch between it and the ADAT clock with the **SYNC** button.

5.3.2. Use case : Sync two AudioFuse X8 IN units with an AudioFuse 16 Rig

Word clock is a clock signal used to synchronize devices together and can be used as an alternative to ADAT Sync depending on the devices, setup and needs.

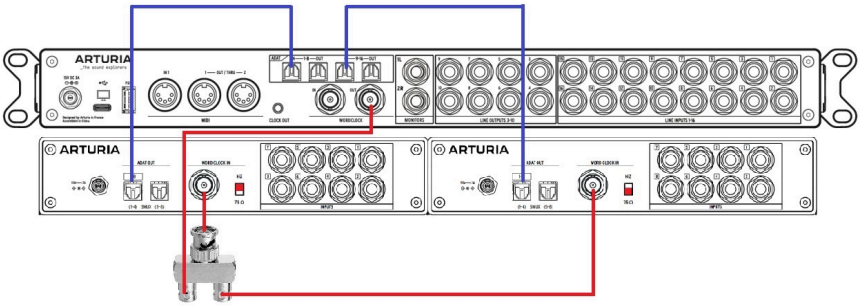
In fact, Word Clock can be used to synchronize as many digital devices in your studio as devices can be easily chained together.

AudioFuse X8 IN provides a standard BNC connector for Word Clock data coming from an external clock source.

- In the example below, two AudioFuse X8 IN units have been connected from their ADAT 1 OUT ports (In 44.1 or 48Khz) to an AudioFuse 16Rig ADAT INs 1 & 2 with the help of ADAT (Toslink optical) cables to retrieve all their 8 channels.

- A BNC cable has to be connected from the AudioFuse 16Rig Word Clock Output to the First AudioFuse X8 IN Word Clock Input and from there connected to the second Word Clock Input with the help of a "T" BNC connector to chain them together (Doing so will require a "T" along with two BNC cables).

As you can see on the first unit, Word Clock termination switch will have to be set to "HiZ" and on the second unit, will have to be set to "75 Ohm".



Here's an example of "T" connector used for such kind of purpose:

Of course, in such kind of setup, the main interface (here AudioFuse 16Rig) will have to be set to Internal clock source and the other interfaces (here AudioFuse X8 INs) set to External Word clock source with the help of the SYNC button located on the front panel:

If no BNC cable is connected to the rear panel WORD CLOCK input, the SYNC button doesn't do anything – the unit defaults to Internal sync and can't be changed.

5.4. Sample rates and CLOCK

The **CLOCK** button selects between four possible sample rates for the audio stream. Press the button repeatedly to cycle through the options.

- At 44.1 or 48 kHz, all 8 channels can be transmitted down a single ADAT cable.
- At 88.2 or 96 kHz, channels 1–4 are sent down one ADAT cable and channels 5–8 are sent down the other. This operating mode is called S/MUX.
- The sample rate is determined by external Word Clock, and the LED for the old sample rate will flash if that sample rate changes. Press the **CLOCK** button to accept the new sample rate.
- If for some reason the Word Clock signal is lost, the AudioFuse X8 IN will instantly switch to Internal clock. The Word clock LED will flash. Press the **SYNC** button to accept the change in clock source.
- If the Word Clock signal is restored after being lost – for example if the Word Clock cable is disconnected and then reconnected – Word Clock sync will automatically be re-established.

5.5. A final note

If all this seems a bit overwhelming, just remember that using multiple Word Clock devices is a scenario you won't run into very often… at least until your studio has grown to the point where you'll have experience with these issues. For most small studios, a simple ADAT connection between the AudioFuse X8 IN and your audio interface, using Internal sync, will do the job just fine. Consult your interface's user manual to determine how to sync it to the AudioFuse X8 IN.

6. SPECIFICATIONS

Line Inputs	
Type	Balanced TRS
Line input impedance	20 kΩ (balanced), 10 kΩ (unbalanced)
Maximum Input Level (min. gain, 1 kHz @ 0.5% THD+N)	+24 dBu
Pad Attenuation	-12 dB
Frequency Response (A/D) 20 Hz to 20 kHz	±0.06 dB typical
Dynamic Range	119 dB (A-weighted)
THD+N	-112 dB (A-weighted)

Clock	
Supported Frequency Rates	44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz

Power Supply	
Connector Type	IEC 60320 C14
Power Input	100 V to 240 V AC, 50 or 60 Hz
Power Output	15 V DC, 2.0 A, 30 W

7. DECLARATION OF CONFORMITY

7.1. FCC

WARNING: DO NOT MODIFY THE UNIT!

Any modifications or other changes to this unit not approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

Responsible Party in USA: Zedra, 185 Alewife Brook Parkway, #210, Cambridge, MA 02138, United States T: +1 857 285 5953

Trade Name: ARTURIA, Model Number: AudioFuse X8 IN

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

• Reorient or relocate the receiving antenna.

• Increase the separation between the equipment and receiver.

• Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

• Consult the dealer or an experienced radio/TV technician for help.

7.2. CANADA

This class B digital apparatus meets complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada

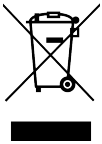
7.3. CE

This device has been tested and found to comply with the limits of the European Council Directive on the approximation of the laws of the member states relating to Electromagnetic Compatibility according to 2014/30/EU.

7.4. ROHS

This device has been produced with lead free solder and fulfills the requirements of the ROHS directive 2011/65/EU.

7.5. WEEE



This symbol indicates that the electrical and electronic equipment should not be disposed of as general household waste at its end-of-life. Instead, the products should be handed over to the applicable collection points for the recycling of electrical and electronic equipment for proper treatment, recovery, and recycling in accordance with your national legislation and the Directive 2012/19/EU (WEEE – Directive on Waste Electrical and Electronic Equipment). For more information about collection points and recycling of these products, please contact your local municipal office, your household waste disposal service, or the shop where you purchased the product.