



# Zen Studio

Portable Audio Interface



Owner's Manual

**Contents**

1. Safety Notes..... 3

2. Introduction..... 4

3. Features ..... 5

4. Quick Start..... 6

5. Front Panel Explained ..... 7

6. Rear Panel Explained..... 8

7. Side Panel Explained ..... 9

8. Software Control Panel.....10

9. Advanced User Tips..... 16

9.1. Ground Loop Hum and Noise ..... 16

10. Additional Information..... 17

11. In the box..... 17

12. Troubleshooting..... 16

13. Technical Specifications ..... 17

# 1. Safety Notes

*To reduce the risk of electrical shocks, fire, and related hazards:*

- Do not remove screws, cover, or cabinet. There are no user serviceable parts inside. Refer servicing to qualified service personnel.
- Do not expose this device to rain, moisture or spillover of liquid of any kind.
- Should any form of liquid or a foreign object enter the device, do not use it. Switch off the device and then unplug it from the power source. Do not operate the device again until the foreign object is removed or the liquid has completely dried and its residues fully cleaned up. If in doubt, please consult the manufacturer.
- Do not handle the power cables with wet hands!
- Make sure the device is switched off when plugging/unplugging it to/from the power source.
- Avoid placing things on the cabinet or using the device in a narrow and poorly ventilated place which could affect its operation or the operation of other closely located components.
- If anything goes wrong, turn off the device first and then unplug the power. Do not attempt to repair the device yourself: consult authorized service personnel or your dealer.
- Do not install near any heat sources such as radiators, stoves, or other apparatus (including amplifiers) that produce heat.
- Do not use harsh chemicals to clean your unit. Clean only with specialized cleaners for electronics equipment.
- Connect all your devices before powering your unit.
- Your unit should always be un-racked when traveling or in a flight case

## 2. Introduction

Thank you for purchasing the **Zen Studio** from Antelope Audio.

### **Studio quality and functionality in a sleek easy to carry box**

Zen Studio is the professional, portable audio interface with the most competitive analog and digital connectivity. The 12 world-class mic pres, Antelope's signature clocking, the on-board DSP effects with multiple monitor mixers and the proprietary low-latency USB connectivity make Zen a world-class mobile recording system, that can fit easily inside a backpack or gear bag. Zen Studio is designed to meet the needs of the modern day producer or engineer on-the-go, as well as location sound engineers, sound designers, independent bands and musicians in search of greater sound quality and flexibility.

For further information, you can also visit our support area online for the FAQ, Help Desk and to register your product at: [www.antelopeaudio.com](http://www.antelopeaudio.com)

**Enjoy working with the new Zen Studio!**

All the best,  
The Antelope Team

### 3. Features

- The most analog-sounding A/D & D/A conversion
- Comprehensive mic pres, HiZ instrument and line inputs
- Massive parallel DSP and effects processing
- Zero-latency USB audio interface
- Extremely flexible routing and mixing capabilities
- The most acclaimed clocking technology
- 12 Class A mic preamps, with phantom power
  - 8 mic/line inputs
  - 2 mic/line/instrument inputs
- 2 Independently assignable headphone outputs
- 2 DSUB-25 connector (8 channels I/O)
- 1 Stereo monitor out
- 4 ADAT connectors (up to 16 channels I/O)
- 2 SPDIF RCA connectors (I/O)
- 2 Inserts over TRS
- 2 Word Clock BNC connectors (I/O)
- 1 Low-latency high-bandwidth USB 2.0

## 4. Installation Guide

1. Connect to the DC power source via rear panel connector (9) and switch the device on (3), then attach the USB cable to the USB port on your computer.
2. Download and install the Zen Studio software control panel and drivers from <http://www.antelopeaudio.com/en/support/downloads> - This will enable you to control your device from your computer and select all necessary settings.
3. Open your control panel by double clicking and follow the device activation procedure.
4. Connect your choice of inputs and outputs to Zen Studio.
5. The guest operating system will recognize the new output audio device (Zen Studio).
6. If you want to use Zen Studio through USB for playback and recording, please follow these instructions:

Windows:

Go to Downloads in the Support section of the Antelope website.

Download and install the Zen Studio custom ASIO driver.

Open your preferred DAW and make sure the device is selected as an input and output.

Mac OS:

Go to Downloads in the Support section of the Antelope website.

Here you will find the latest information on using Zen Studio for USB audio.

Download and install the Zen Studio custom USB driver.

Open your preferred DAW and make sure the device is selected as an input and output.

Note: Make sure your device has the most recent firmware installed.

## 5. Front Panel Explained



### 1. 4 Instrument/ Mic Preamp/ Line Inputs

4 Class A mic preamps, with phantom power over Combo input with switchable line/ HiZ input.

### 2. 48V Indicator light

Displays when phantom power is enabled at any of the inputs.

### 3. Power button

Toggles standby/operation state. Clicking and holding for two seconds allows you to enter sub-menu of the device.

- Mic Gain Control (rotary controls adjusts Mic Gain)
- Clock Source
- Sample Rate
- Volume Knob Control (allows you to select from the three different monitoring outputs).
- Screensaver Time (allows you to change the time at which the screensaver becomes active)
- Device Info
- Factory Reset

### 4. Rotary control

Large stepped attenuator for headphone volume and main out volume. Clicking-in the large volume control allows you to scroll between three different monitoring options: rear monitor output; headphone output 1 and headphone output 2.

### 5. Display

Multi-function display that can scroll (using the 2 option buttons (6) to the right) through five different option screens:

- Peak Meter displaying up to 32 channels at a time that are adjustable from the software control panel.
- Preferences screen, including:
  - Sync – indicates current clock source
  - SR – indicates current sample rate
  - DAC Vol – displays current volume of the DAC
  - HP1 Vol - displays current volume of the Headphone 1 output
  - HP2 Vol - displays current volume of the Headphone 2 output
- Three subsequent screens display the current input trim state of each of the 12 preamplifiers.

Note: Be aware that there might be a protective film over the display, which dims the illumination – feel free to remove it.

## 6. Option buttons

Two option buttons allow you to scroll up and down between five different option screens. Clicking and holding for two seconds allows you to select options in the sub-menu.

## 7. Headphone indicator lights

These lights are illuminated to indicate which headphone outputs are active. Note: When both lights are off, rear monitor output is selected.

## 8. Headphone outputs

Two independently assignable headphone outputs, selectable and controllable via the main volume control knob

# 6. Rear Panel Explained



## 9. USB High-Speed



Zen Studio uses USB connector Type B and operates up to 192kHz sample rate with Antelope ASIO on Windows & Mac OS X.

## **10. DC Power Connection**

For use with Antelope's DC power supply only.

## **11. D-SUB 25pin TASCAM Analog Outputs (on top)**

A connector enables you to attach breakout cables, each with 8 lines.

## **12. D-SUB 25pin TASCAM Analog Inputs (on bottom)**

A connector enables you to attach breakout cables, each with 8 lines.

## **13. Main Stereo Monitor Outputs**

Assignable unbalanced stereo output (left channel at the top and right channel below).

## **14. S/PDIF Input/Output**

75 Ω S/PDIF inputs for use with compatible equipment

## **15. Word Clock Output**

1 Word Clock Output with a BNC connector

## **16. Word Clock Input**

BNC connector used to accept Word Clock reference

## **17. 8 Line and Mic Preamp Inputs**

8 Class A mic preamps, with phantom power over combo XLR

## **18. AD Inserts**

Two ¼" TRS insert points (L & R) for connecting analog gear such as dynamics processors or EQ's, just before the A/D conversion

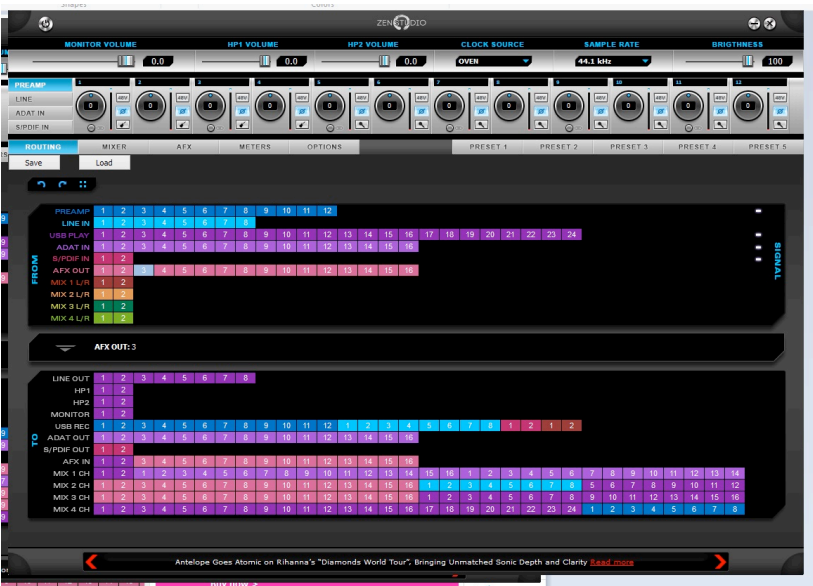
# 7. Side Panel Explained



## 19. ADAT Connectors

2 Inputs & 2 Outputs (up to 8 channels per connector)

# 8. Software Control Panel



## 8a. Routing Tab and Main View options

The universal panel view sits constantly on the upper half of the control panel, allowing for quick access to the most important features.

Main View:

1. Standby button
2. Main DA Volume
3. Headphone 1 Volume Control
4. Headphone 2 Volume Control
5. Clock Source
6. Sample Rate select
7. Display Brightness
8. Input Select View
9. Front 4 x Instrument Preamp HiZ / Line Trims
10. Rear 8 x Preamps Trims

Routing Tab:

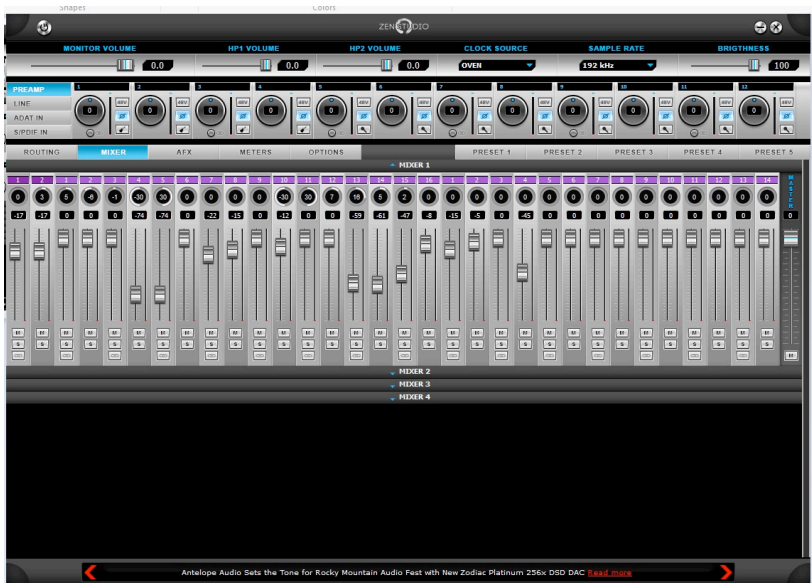
11. 'From' Section
12. Undo/Redo Routing
13. 'To' Section

This panel enables you to select inputs and route them to your chosen outputs by simply dragging and dropping channels. Each input has its own unique color. When routing channels, the input color will be copied from whichever input you select to whichever output you select. In order to select multiple tracks hold 'Shift button' and click on the input channels, then drag and drop. Right clicking on the outputs enables you to either mute a track or output a selected frequency from a choice of two different oscillators that can be adjusted from the Settings tab. Double-clicking on the input channel enables you to name that channel. This name, is then copied throughout the control panel, wherever it is routed.

To the right side of the Inputs & Outputs Router are 4 presence indicator lights, which indicate the presence of a valid signal detected by the Zen Studio.

Once you select the Clock Source and Sample Rate, this will automatically determine the number of channels available to you in the Inputs & Outputs Router.

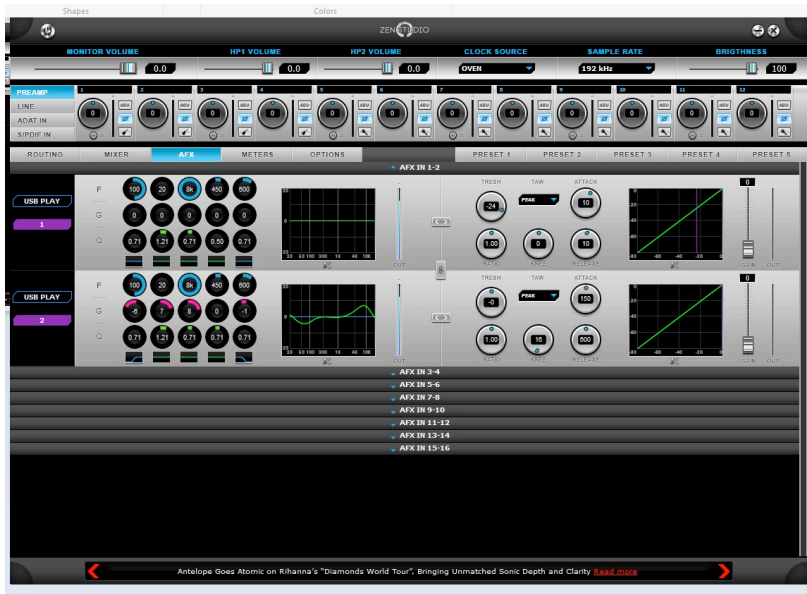
When your Zen Studio is slaved to another clock source i.e. USB, the panel will lock, displaying a "Pad Lock" symbol to the clock source and you also won't be able to change the presets. Presets do not store clock source info or sample rate. This allows you to adjust presets while the device is receiving clock lock.



## 8b. Mixer Tab

Clicking the Mixer Tab reveals the 4 assignable mixers:

1. Channel Name
2. Pan
3. Fader Level indication
4. Fader (double-click to reset to zero)
5. Mute
6. Solo
7. Stereo Link
8. Mixer 1-4 Show/Hide
9. Master Mix Fader
10. Mute Master



## 8c. AFX Tab

Clicking the AFX Tab reveals the 16 AFX Channel Strips:

### 1. EQ

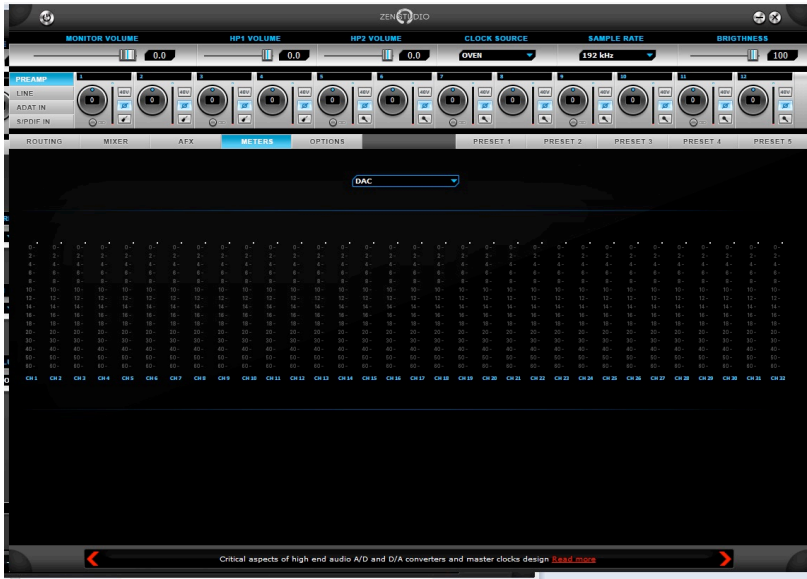
1. Frequency Adjust Dials (double-click to return to default)
2. Gain Adjust Dials (double-click to return to default)
3. Q Adjust Dials (double-click to return to default)
4. Selectable High Pass or High Shelf Filter
5. Bandpass / Notch Filter
6. Selectable Low Pass or Low Shelf Filter
7. Frequency Band Analysis Screen
8. EQ Output Meter

### 2. Compressor

1. Threshold
2. Ratio
3. Knee
4. Attack
5. Release
6. Detector
7. Compression Curve
8. Makeup Gain
9. Compression Meter

### 3. Show or Hide 16 x DSP Channel Strips

Clicking each bar reveals or hides 2 of the total 16 DSP FX channel strips.



## 8d. Meter Tab

Clicking the Meter Tab reveals the Metering panel:

### 1. Meter Source

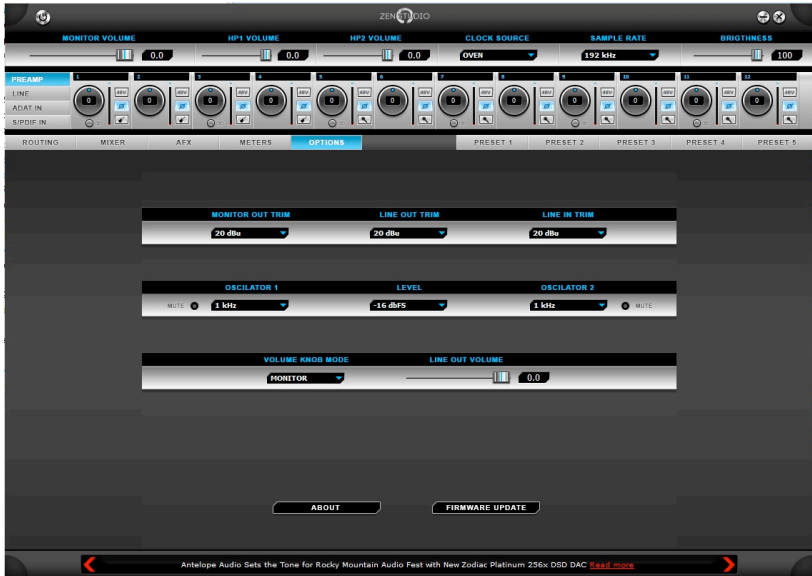
Dropdown tab allows you to select:

Preamp	Mix 3 L/R	S/PDIF Out
Line In	Mix 4 L/R	AFX In
USB Play	Line Out	Mix 1 Ch
ADAT In	HP1	Mix 2 Ch
S/PDIF In	HP2	Mix 3 Ch
AFX Out	Monitor	Mix 4 Ch
Mix 1 L/R	USB Rec	
Mix 2 L/R	ADAT Out	

### 2. 32 Channel Metering – clearly visualizes sources using peak meters.

Precise 32-track peak meters, with a dropdown menu from which you can select the source that you wish to be represented on the displays.

### 3. Clip Light to indicate when you are overloading the input channels.



## 8e. Options Tab

Clicking the Options Tab reveals the Options panel:

1. Monitor Out Trim
2. Line Out Trim
3. Line In Trim
4. Oscillator 1 & Mute
5. Oscillator Level
6. Oscillator 2 & Mute
7. Volume Knob Mode
8. Line Out Volume
9. About
10. Firmware Update

Presets:

Five different presets are available to save your favorite setups for easy access. To save a new preset:

- Hold down Ctrl (PC) or Command (MAC) & mouse-click on the preset button (in the software control panel) or;
- Press Ctrl (PC) or Command (MAC) & press the according number on your keyboard.

You can reset the presets to the factory setting or check device info:

With the Zen Studio in operating mode, press and hold the standby button to bring up Device INFO and Factory Reset options in the front panel display. You can scroll between these, using the Options buttons. To initiate either of these desired options, press and hold the bottom options button.

Clock Source ADAT options: (Note that there is no S-Mux check-box for ADAT as it automatically enabled when you select ADAT 2X or ADAT 4X):

Clock Source Mode	ADAT Configuration	
	Sample Rate	Channels
ADAT	44.1 kHz	8 ch
	48 kHz	8 ch
ADAT 2X	88.2 kHz	4 ch
	96 kHz	4 ch
ADAT 4X	176.4 kHz	2 ch
	192 kHz	2 ch

Maximum Number of Channels per Sample Rate:

Sample Rate	USB	ADAT	S/PDIF
32 kHz	24 ch	16 ch total / 8 ch per line	2 ch
44.1 kHz	24 ch	16 ch total / 8 ch per line	2 ch
48 kHz	24 ch	16 ch total / 8 ch per line	2 ch
88.2 kHz	24 ch	8 ch total / 4 ch per line	2 ch
96 kHz	24 ch	8 ch total / 4 ch per line	2 ch
176.4 kHz	24 ch	4 ch total / 2 ch per line	2 ch
192 kHz	24 ch	4 ch total / 2 ch per line	2 ch



## 9. Advanced User Tips

### 9.1. Ground Loop Hum and Noise

The design of Zen Studio minimizes the possibility of ground loop hum and noise. However, we recommend the use of shorter, shielded cables and balanced connections for all the audio signals of your system. All power cables of the system should be connected to a dedicated outlet box or power conditioner unit to avoid ground current noise affecting the audio signal path. It is also advisable to keep the layout of your signal and power cables separate.

## 10. Additional Information

Additional information regarding operating systems, audio software and media players will be updated through the support area at [www.antelopeaudio.com](http://www.antelopeaudio.com)

## 11. In the box

Zen Studio Portable Audio interface  
Owner's Manual  
Warranty Card  
1 USB Cable  
1 DC Power Adapter

## 12. Troubleshooting

Start up and Sound:

- Are you running the latest control panel and firmware?

If not, please update your control panel and firmware.

- Are you correctly routing the audio signal via the routing panel?

For USB play back, route the USB-play channels to the DAC channel by dragging and dropping from the top section to the bottom. For more info on routing see the "Orion32 - Routing with ease" video from the Antelope Audio You Tube page.

- Have you set the correct sample rates matching your DAW with your computer's sound and the Zen Studio?  
On Mac, first check that the sample rate is correct in the audio midi set up, then proceed to check in the DAW before finally checking the Zen Studio sample rate.

For Windows, first check in play back devices, right click on the Zen Studio then click properties before then moving to the advanced tab. Then repeat the above by checking the DAW's sample as well as the Zen Studio.

Connectivity:

If you believe there is no sound being received to an input or delivered from an output:

- Check your source. Is there a signal being transmitted from the source?
- Is your source in the correct sample rate for the Zen Studio to receive?
- Check what clocking mode you are in. Are you receiving the clock signal from the source?
- Check that the relevant lock light on the control panel of the Zen Studio is lit up.
- Try a different cable and another source if available.
- Check the routing on the control panel. Have you routed the signal path correctly?
- If you have routed signals to the routing mixer, check their corresponding fader is up.
- Check the relevant peak meters of the control panel by selecting them in the drop down menu to see if the relevant signal is being received or is being outputted.

DAW

- What buffer size is your DAW set to?  
If it is significantly low i.e. lower than 128 samples in your buffer size, try increasing it. Try increasing the buffer size from the Zen Studio control panel (Windows Only)
- Have you checked the input and output routing is correct in your DAW?
- Is the Zen Studio device selected in the relevant sound card section of the DAW's preferences?

If the Zen Studio doesn't show up in your DAW, first try unplugging and plugging back the USB cable, then restarting your Computer and finally re-install the firmware, drivers and control panel for the Zen Studio.

## 13. Technical Specifications

### Inputs

<b>Analog Inputs:</b>	4 x Mic / Line Instrument on XLR combos on the front
	8 x Mic / Line on XLR combos on the rear
	8 x Lines on DB25 (8 channels)
<b>Analog Inserts</b>	2 x Inserts on TRS (inputs 1,2)
<b>Digital Inputs:</b>	2 x ADAT
	1 x S/PDIF
<b>Word Clock Input:</b>	1 x Input @ 75 Ohms 3Vpp on BNC 32 - 192kHz

<b>Analog Outputs:</b>	8 x Lines on DB25 (8 channels) 1 x Monitor out on TRS (2 channels) 2 x Stereo Headphone outs on TRS (4 channels)
<b>Digital Outputs:</b>	2 x ADAT 1 x S/PDIF
<b>Word Clock Output:</b>	1 x Outputs @ 75 Ohms 3Vpp on BNC 32 - 192kHz
<b>USB I/O:</b>	USB 2.0 Hi-Speed; Data stream up to 480 Mbits/192kHz, 24 channels I/O, Type B

#### D/A Converter

<b>Dynamic Range:</b>	118dB
<b>THD + N:</b>	-98 dB

#### A/D Converter

<b>Dynamic Range:</b>	118dB
<b>THD + N:</b>	-105 dB

#### Mic Preamp

<b>Gain:</b>	0,10 – 65 dB
<b>THD + N:</b>	-108 dB

#### Clock Specs

<b>Clocking System:</b>	4th Generation Acoustically Focused Clocking 64-bit DDS Oven Controlled Crystal Oscillator
<b>Clocking Stability:</b>	<+/-0.02 ppm, oven controlled at 64.5°C/ 148.1°F
<b>Clock Aging:</b>	< 1 ppm per year
<b>Clock Calibration:</b>	<+/-0.001 ppm
<b>Sample Rates (kHz):</b>	32, 44.1, 48, 88.2, 96, 176.4, 192

#### Additional Information

<b>Operating Temperature:</b>	0-50°C/32- 122°F
<b>Weight:</b>	2kg/ 4.4lb approx.
<b>Dimensions (approx.):</b>	Width: 418 mm/16.5"

Height: 45 mm/1.8"  
Depth: 145 mm/5.7"

**Power Supply:** DC Universal Input 18V

**Power Consumption:** 25 Watts Max

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## 14. Antelope Audio Support Resources

Antelope Audio offers a range of services and support resources for your Antelope hardware, firmware and software control panels.

### FAQ

Several categories of frequently asked questions are available on the website:

<http://www.antelopeaudio.com/en/support>

### Telephone Support

Phone line is for general inquiries and technical support:

**+1 734 418 8661**

Hours of Operation: 7:00 a.m. - 3:00 p.m. (EST)

### Help Desk

A ticketing system ensures a 24-hour response time:

[www.antelopeaudio.com/en/support/help-desk](http://www.antelopeaudio.com/en/support/help-desk)

Please note that the device registration you did for Zen Studio currently does not automatically transfer to our ticketing system and you have to register again on this webpage.

### Live Chat

Connect with a customer support agent directly via the website:

<http://www.antelopeaudio.com/en/support>

### Click on Antelope Tab on the right-hand side of the webpage

Hours of Operation: 7:00 a.m. - 3:00 p.m. (EST)

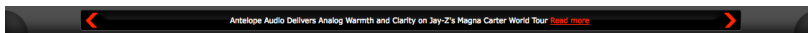
### Support Documents and Software

A web resource with all device manuals, datasheets and software:

<http://www.antelopeaudio.com/en/support/downloads>

### **Control Panel Newsfeed**

The software control panel for Zen Studio incorporates a newsfeed at the bottom, which displays all new updates and relevant information:



### **You Tube Page**

Tutorial videos, interviews, user cases and promos for forthcoming products:

<https://www.youtube.com/channel/UCIO-J9Ik6SdPP-stEaRkNuw>

### **Web Blog**

Regular blog posts will update you on the latest user cases with the Satori:

<http://www.antelopeaudio.com/blog/en/category/blog-summary/>