![Antelope logo]

Owner's Manual

∞RION
Studio HD

HDX and USB 3.0
AD/DA Interface with 12 mic pres

Owner's Manual

Contents

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.

- This unit is connected via its power cord to the mains safety earth.

- Never operate the unit without this earth connection.

- AC power supply cable should be routed so that it is not likely to be walked on or squeezed by items placed upon or against it.

- To completely turn off the device, unplug the power cable first from the outlet and then from the rear panel of the unit.

- Both, occasional and continued exposure to high sound pressure levels can cause permanent ear damage via headphones and monitors.

- Your unit should always be un-racked when traveling or in a flight case.

- The device is designed to operate in a temperate environment, with a correct Operating Temperature of: 0-50 °C, 32-122 °F

2. Introduction

Thank you for purchasing Orion Studio HD from Antelope Audio.

Orion Studio HD is the newest star in an already established line of top audio interfaces. Now with HDX connectivity it's a preferred choice for the higher level Pro Tools setups. With extended analog I/O, 12 Class A Mic Pres and enhanced conversion, Orion Studio HD can fit any DAW workflow and recording and producing environment thanks to a fast USB 3.0 port.

It comes fully equipped with our full library of Real-Time Field-Programmable Gate Array (FPGA) FX. Not only is that vast array of EQs, compressors, guitar amps and cabinets plus AuraVerb reverb coming to you for free, but also features 40+ authentic models of legendary units from BAE, Grove Hill, Gyraf Audio, Lang and more are yet to come.

Orion Studio HD is using best in class AD converters, which are boosted to dynamic range to spectacular 124 dB. The audio world's favorite clocking accuracy is also a part of Orion Studio HD package as well. Powered by our acclaimed 64-bit Acoustically Focused Clocking (AFC) jitter management technology it's a guarantee for incomparable stability, sonic accuracy and audio detail. We're talking high-end pro studio language here so expect OCX HD and Trinity style clocking perfection here.

Beside connectable via the Pro Tools friendly HDX port, Orion Studio HD offers USB 3.0 connection making the device compatible with any DAW in business. The interface comes with a plethora of analog and digital I/O options among which 12 high-end mic pres, a pair of mastering grade monitor outs, 16 analog outs, 2 transformer reamp outputs, plus 8 channels I/O via ADAT and 2 channels I/O on S/PDIF. Like everything Antelope Audio, Orion Studio HD allows for fast device control via multiple computers via OS & Windows compatible desktop app. Functionality highlights include switching between two routing matrix view modes and Full Session Saving functionality. Yes, Orion Studio HD allows you to quickly save, load and share any routing, monitoring, and FX settings. These presets can be then easily exchanged between studio facilities, which are part of the global Antelope Audio family.

Control and use as many Orion Studio HD devices as you want via the S/N selector inside the software control panel or open multiple panels on the same computer. Orion Studio HD is suitable for large studio facilities and offers flexible device management from various access points.

Want even greater freedom? An iOS / Android mobile app gives you full mic pres control from a smartphone or tablet.

For the latest information and updates visit:
www.antelopeaudio.com

Enjoy working with the new Orion Studio!
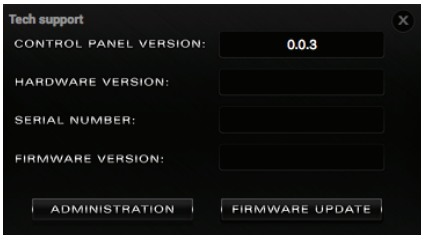
All the best,
The Antelope Team

3. Features

- HDX port for Pro Tools & Native setups compatibility

- Now 40+ FPGA FX including Compressors, EQs, Guitar Amps & Cabinets

- Best in class AD converters with dynamic range boosted to 124 dB

- Fast USB 3.0 connectivity compatible with both MAC OS & Windows

- New Black Faceplate

- 12 Class A mic preamps with individual phantom power

- 2 Reamp outputs

- A/B Mastering-grade Monitor Outputs

- 2 Independently assignable headphone outputs

- Digital I/O on ADAT and S/PDIF

- Talkback functionality

- Flexible routing and mixing with real-time FPGA vintage effects

- Antelope's renowned 64-bit Acoustically Focused Clocking

- Antelope's proprietary Oven Controlled Oscillator for supreme clocking stability

- 1 Word Clock output and 1 Word Clock input

- 5 Presets for fast and easy recall of favorite setups

- 1U rack size device consuming only 25 Watts keeping the heat low

- Controllable via user-friendly desktop and mobile apps

4. Quick Start

Connect the DC power source on the rear panel.

1. Connect the USB 3.0 cable to the USB 3.0 port on your computer.
2. Download the Orion Studio HD launcher from http://www.antelopeaudio.com/products/orion-studio-hd/
3. Start the application, the launcher will automatically download the Software Control Panel.
4. Open your Control Panel by double clicking and follow the device activation procedure.
5. Connect your inputs and outputs of choice to Orion Studio HD.
6. Open your preferred DAW and ensure the device is selected as an input and output.

Note: Make sure your Orion Studio HD has the most recent firmware installed. Check this by selecting the Info panel and clicking on the Firmware Update button.

Orion Studio HD System Requirements:

Computer:
USB 3.0 equipped Mac or PC

Processor:
Core 2 Duo minimum,
Core i3/i5/i7/E5 recommended

Memory:
4 GB RAM minimum,
8 GB RAM recommended

OS X:
10.9.3 or greater

5. Activation Guide

It is essential to activate Orion Studio HD before using it. Once the DC power source is plugged and the device is connected to your computer via USB 3.0 and follow the steps below:

7. Navigate to http://en.antelopeaudio.com/support/download/.
8. Download the Orion Studio HD Launcher.
9. Start the application (If you are on a PC install the launcher). The launcher will automatically download the Software Control Panel.
10. You will be greeted by an Activation Screen. If you already have an Antelope Audio account click on "Use existing Antelope ID". Enter your information and click Continue.

If you don't have an Antelope Audio account please enter a user ID, e-mail and password, then click Done.

Check your email for the activation link mail and click on it. If the email does not appear in your Inbox, please check your Spam folder.

11. Go back to the launcher and enter the required information. Click Done.
12. You're good to go!

6. Front and Rear Panels Explained

6.1 Front Panel Explained

1. **Power button**
   Toggles standby/operation state

2. **4 Instrument/Mic Preamp/Line Inputs**
   4 Class A mic preamps, with phantom power over XLR Mic input with switchable Line/HiZ input over TRS.

3. **Talkback button**
   Press the Talkback button to activate the talkback microphone. This can be distributed to your selected headphones and/or monitors using the software control panel.

4. **Rotary control**
   Large stepped attenuator for the volume of Monitor, Headphone, Line and Reamp outputs. Clicking-in the large volume control allows you to scroll between the different options.

5. **Gain, HP & A/B**
   By clicking on those 3 buttons you can control the Orion Studio HD the following ways:

   Gain takes you to the gain section so you can apply the required gain to any of the 12 pre amp inputs from the rotary encoder

   HP cycles thru the two Headphone outpus so you can adjust the volume level from the rotary encoder.
   A/B cycles thru the 2 monitor outputs that can be adjusted from the rotary controller

6. **Display**
   Multi-function display that displays various information when used from the 3 functional buttons below.

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

7. **Functional buttons**
   By pressing the top and middle Function buttons you can cycle thru the display and view various information

   By holding down the Top Function button you can access the System Menu of the device, which allows you to access the following sub-menus and confirm them by pressing the rotary control:

   - Device Info: Displays the serial number of the device, the hardware revision and the firmware version.

   - Scr Save Time: Sets the time that the screen saver will appear on the Orion Studio HD display.

   - Scr Save Style: Changes the style of the screen saver.

   - Talk Back HP1: Sets weather the talk back mic will be outputted by the Headphones 1 output.

   - Talk Back HP2: Sets weather the talk back mic will be outputted by the Headphones 1 output.

- Talk Back MON: Sets weather the talk back mic will be outputted by the monitor outs.

- Factory Reset: Performs a factory reset on the unit. Please note that by doing so all presets, mixer and FX settings will be lost.

To scroll up and down, use the Rotary Control.

To enter each one of the sub-menus, press the Rotary Control.

To confirm a chosen setting, press and hold the Rotary Control.

Hold down the second Function button to access the Control Menu of the device, which allows you to adjust:

- Clock Source: Sets the clocking source for the Orion Studio HD.

- Sample Rate: Changes the sample rate of the Orion Studio HD.

- SR Conversion: Sets weather or not the the S/PDIF input is sample rate converted to match the sample rate of the Orion Studio internal clock (eg. If you want the clock to run at 192 kHz and your S/PDIF input is at 44.1 kHz, simply press this button to match the sample rate frequency of the Orion Studio HD internal clock).

- Peak Meter: Selects what is being displayed on the Meter screen of the Orion Studio HD.

- Monitor Trim: Sets the trim levels for the monitor outs

- Line Out Trim: Sets the trim levels for the line outs

- Brightness: Sets the brightness for the units display Screen

To scroll up and down, use the Rotary Control.

To enter each one of the sub-menus, press the Rotary Control.

To confirm a chosen setting press the Rotary Control.

8. **Headphone outputs**
   Two independently assignable headphone outputs, selectable and controllable via the main volume control knob. The lights next to the outputs are illuminated to indicate which headphone output is currently controlled.

9. **Re-amp outputs**
   These outputs are direct outputs that should be used with guitar amplifiers for re-amping.

6.2 Rear Panel Explained

10. **DC Power Connection**
Only for use with Antelope's DC power supply!

11. **USB 3.0 Port**
Orion Studio HD uses USB 3.0 connector and supports up to 192kHz sample rate.

12. **HDX Port**
Enables you to connect your Orion Studio HD to an HD system (cable not included).

13. **ADAT Connectors**
1 Inputs & 1 Output (up to 8 channels per line).

14. **D-SUB 25pin TASCAM Analog Outputs**
A connector enables you to attach breakout cables, each with 8 lines.

15. **Two Stereo Monitor Outputs (Monitor A and Monitor B)**
Assignable balanced stereo output (left channel at the top and right channel below).

16. **S/PDIF Input/Output**
75 Ω S/PDIF inputs for use with compatible equipment.

17. **Word Clock Input**
BNC connector used to accept Word Clock reference.

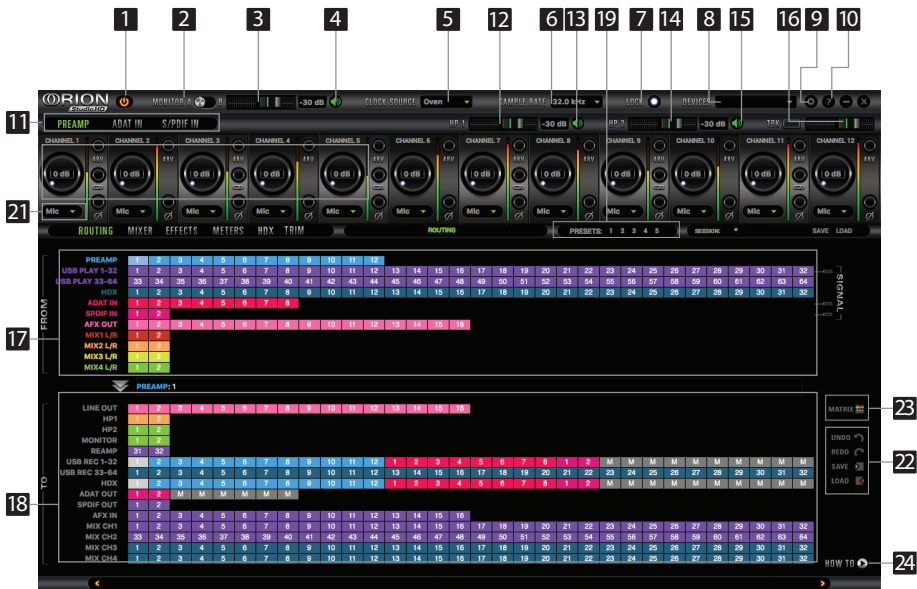18. **Word Clock Output**
One Word Output on BNC connector.

19. **8 Line and Mic Preamp Inputs**
8 Class A mic preamps, with phantom power over combo XLR. For line please use the TRS connection.

20. **AD Inserts**
Two ¼″ TRS insert points for connecting analog gear such as dynamics processors or EQ's, just before the A/D conversion. For channels 1 & 2 on the front panel.

7. Software Control Panel

7.1. 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. Power/Standby button
2. Monitor A/Monitor B select button
3. Monitor A/Monitor B volume slider
4. Monitor A/Monitor B 'Mute' button
5. Clock Source select

This dropdown menu allows you to select how the Orion Studio HD is to be synchronized. Select Oven for internal sync, W.C. (Word Clock) to sync the Orion Studio HD to an external device through the Word clock input, or ADAT, S/PDIF for syncing with incoming digital signals.

Orion Studio HD supports sample rates higher than 48kHz for ADAT and also supports S-Mux. The following table shows what the various options for ADAT implement in order to be consistent with the I/O of your other devices connected via ADAT.

6. Sample Rate select

7. Lock light

8. Devices

9. Settings

10. Info

11. Preamp / ADAT IN / S/SPDIF IN Gain Selection

12. Headphone (HP 1) volume slider

13. Headphone (HP 1) 'Mute' button

14. Headphone (HP 2) volume slider

15. Headphone (HP 2) 'Mute' button

16. Talkback active button/Indicator light & Talkback volume fader

17. 'From' Section (from Routing)

18. 'To' Section (from Routing)

19. Presets

20. Undo/Redo Routing; Save/Load Set Up Files (from Routing)

21. Mic, Line and HiZ (1, 2, 3 & 4, only) modes selectable via dropdown menu (please ensure that your selection in the drop-down menu matches the type of signal being inputted).
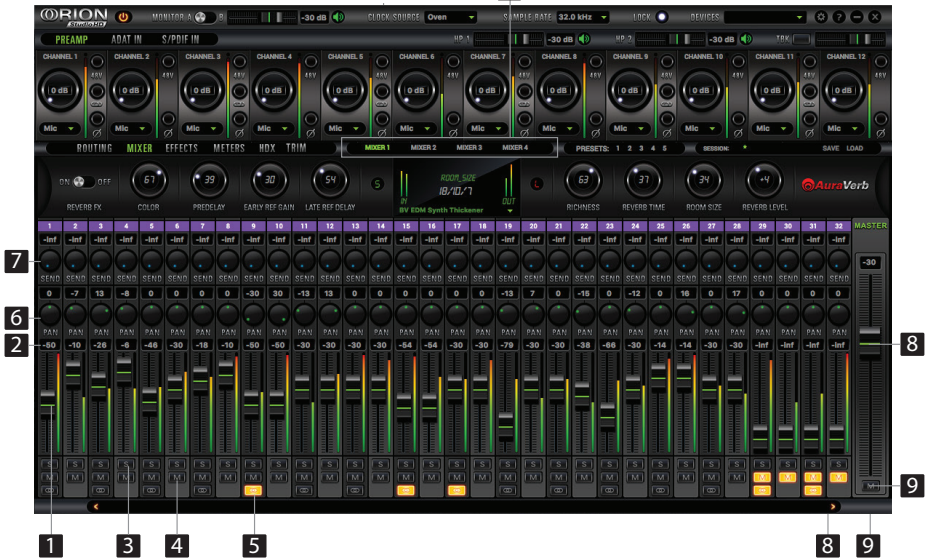

22. Session Save / Load

All control panel options can now be saved and recalled with one mouse click. You can restore Gain levels for every input and output, clock modes, ASIO driver settings plus the AFX and AuraVerb settings with every parameter included. The full session saving function will also let you save and load Mixer and Routing adjustments. Even personalized window positions can be recalled.

23. Alternative Routing Matrix View

24. "How To..." Video Tutorials

7.2. Mixer Tab

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

Orion Studio HD comes with four software low latency mixers which provide near zero latency mix and monitoring that can be distributed using the control panel. The new Orion Studio allows a low latency mix to be distributed to any output.

For example, you can drag all of the twenty-four USB play channels to Mixer 1 channels and then drag and drop MIX 1 L/R to LINE OUT 1&2 providing a stereo bus mix to LINE OUT channels 1 and 2.

The low latency mixers provide the basic functions of a real mixer such as: Solo, Mute, Pan, Link channels, Volume Level controlled by faders and a Master Fader, so you can easily make a stereo mix, plus an Auxiliary send in order to use the FPGA effects.

AuraVerb is a powerful and flexible algorithmic reverb effect powered by the Orion Studio HD Custom FPGA. It provides near zero-latency effect monitoring without taxing your CPU. AuraVerb can also be used as a hardware effect from your DAW. That way you can take advantage of its rich and unique sound while mixing or mastering.

By default the effect is switched off.

Quick Start

AuraVerb appears as a pre-fader send effect on the Orion Studio HD's Mixer 1. To send a signal to the reverb, turn up the send control on a mixer channel and use the reverb output level to adjust the return to the mixer's master channel. To hear the reverb, route the mixer output to your monitors by clicking and dragging MIX 1 [1] [2] to MONITOR [1] [2] on the routing matrix. Fine tune the reverb mix by balancing between the dry signal on the mixer channel's fader and the reverb Output Level knob.

AuraVerb Parameters

● **Color**

AuraVerb's Color control allows you to adjust the overall tone of the reverb. On "0" the space created is darker, like a lushly carpeted area. On "100" the reverb sounds the brightest, which can add some sizzle to a lead vocal, for example.

● **PreDelay**

PreDelay is a common function on most reverb effects and allows you to create a bit of space between the source and the onset of reverb by controlling the amount of delay time that precedes the initial reverberated sound. This parameter is used to place the reverberated signal later in time with respect to the unprocessed signal. Natural settings for this are based on the size of the environment and range from 0 to 32 milliseconds. Fine adjustment of this parameter with respect to the tempo of the song or dramatic timing of the piece can help set the feel of the reverb within the mix.

● **Early Reflection Gain**

This is the linear gain value for all early reflections. These reflections are perceptually grouped with the direct sound when set at lower levels and can nicely thicken a track when increased.

● **Late Reflection Delay**

Among other things, AuraVerb calculates reflected energy from the side walls and ceiling of the virtual space. Late Reflection Delay controls the delay of these these late bursts of reflections, either to create dedicated echoes or to support the spatial impression of the simulated acoustic space.

AuraVerb allows you to fine tune several other parameters for even deeper control of the acoustic environment you are designing.

● **Richness**
● **Reverb Time**
● **Room Size**
● **Reverb Level**

AuraVerb offers 24 presets suitable for a variety of genres and instruments.
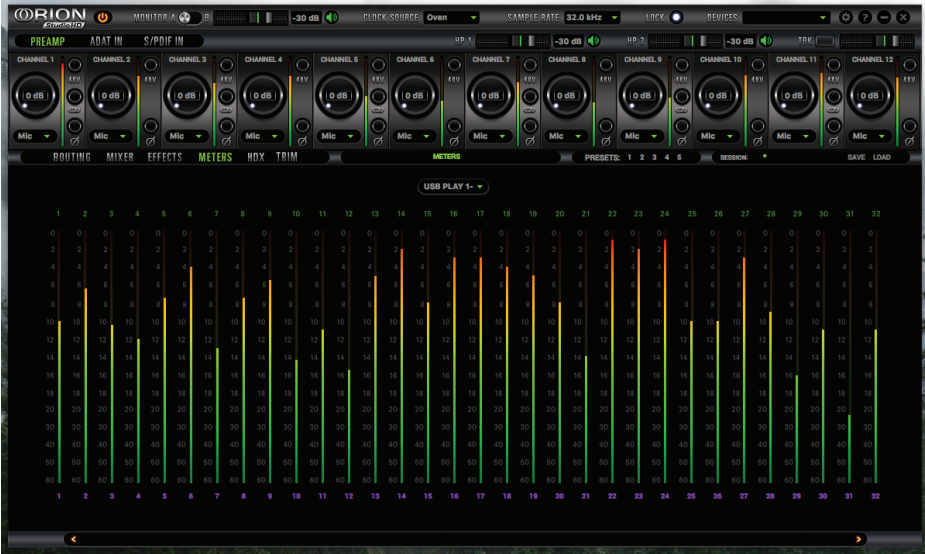The S & L icons stand for saving and loading your own AuraVerb presets.

7.3. Effects Tab

Click on the Effects Tab to reveal the 16 AFX Channel strips. Orion Studio HD Effects tab allows you to stack up to 8 effects (viewable in pairs) on each channel strip. You can choose between EQs and Compressors from the free, integrated and ever-growing Antelope Audio library of hardware-based vintage FX modeling legendary studio gear.

7.4. Meters Tab

The Meters tab allows you to measure the volume levels of all audio signals coming from and to the Orion Studio HD. A dropdown menu allows you to easily switch between the routing matrix sections, whose signal levels you want to visualize.
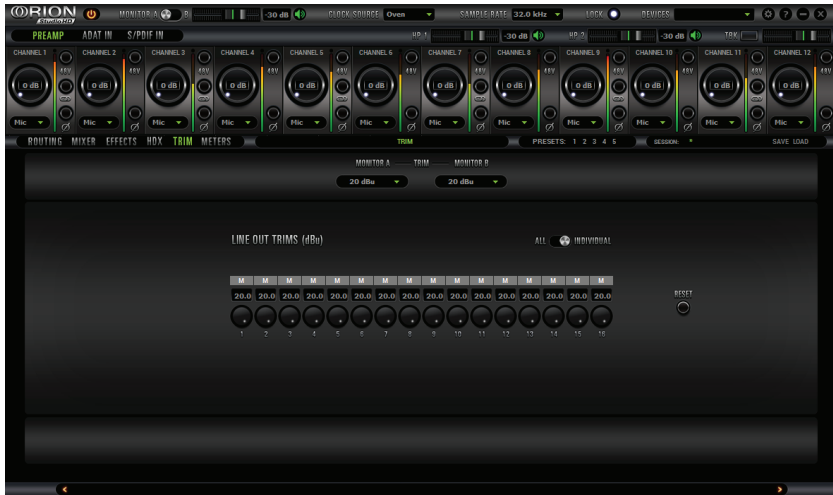
7.5. HDX Settings Tab

The HDX Tab allows you to select between the HDX Delay Compensation modes and control all HDX audio channels.

1. HDX Compensation Mode Dropdown Menu
2. HDX 1 Device Dropdown Menu
3. Reset Button
4. HDX 1 Channels
5. Loop Sync In
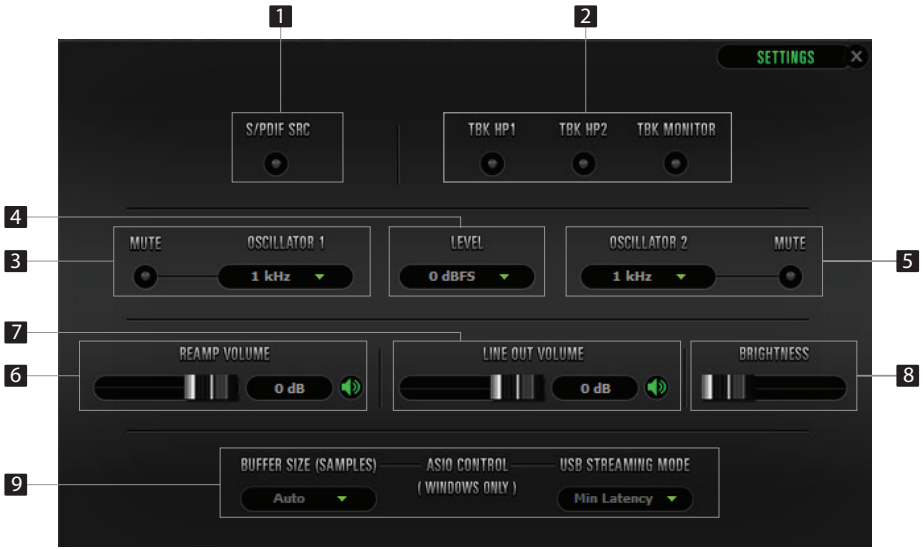**6. Loop Sync Enable / Master Indicators**
7. Loop Sync Out

7.6. Trim Tab

The Trim Tab allows you to adjust Monitor Trim levels and apply Line Out trims.

7.7 Settings Tab

Clicking the Settings Tab reveals the Settings panel.

1. S/PDIF SRC Indicator
2. TBK HP1 / HP2 / Monitor Indicator
3 Oscillator 1 & Mute
4. Oscillator Level
5. Oscillator 2 & Mute
6. Reamp Volume
7. Line Out Volume
8. Front Panel Brightness
9. Windows only: ASIO Control – Buffer Size & USB Streaming Mode

8. Advanced User Tips

Ground Loop Hum and Noise

The design of Orion 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.

9. In The Box

- Orion Studio HD Portable Audio interface
- Owner's Manual
- Warranty Card
- 1 USB 3.0 Cable
- 1 DC Power Supply

10. 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 playback, 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 Antelope Audio You Tube page.
- Have you set the correct sample rates matching your DAW with your computer's sound and the Orion Studio HD?
- 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 Orion Studio HD sample rate.
- For Windows, first check in playback devices, right click on the Orion Studio HD then click properties before then moving to the advanced tab. Then repeat the above by checking the DAW's sample as well as the Orion Studio HD.

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 form the source?
- Is your source in the correct sample rate for the Orion Studio HD to receive?
- Check what clocking mode you are in. Are you receiving the clock signal from the source?

- 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 form the source?

- Is your source in the correct sample rate for the Orion Studio HD 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 Orion Studio HD 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 Orion Studio HD control panel (Windows Only)

- Have you checked the input and output routing is correct in your DAW?

- Is the Orion Studio HD device selected in the relevant sound card section of the DAW's preferences?

If the Orion Studio HD doesn't show up in you DAW, first try unplugging and plugging back the USB 3.0 cable, then restarting your Computer and finally re-install the firmware, drivers and control panel for the Orion Studio HD.

11. Technical Specifications

Analog

Analog Inputs

• 4 x Mic / Line / Instrument on XLR combos on the front

• 8 x Mic / Line on XLR combos on the rear

Analog Inserts

• 2 x Inserts on TRS (inputs 1,2)

Analog Outputs

• 2 x DB25 (16 channels)

• 2 x Stereo Monitor out on TRS (4 channels, only 1 pair active at a time)

• 2 x Stereo Headphone outs on TRS (4 channels)

• 2 x ReAmp outs on TRS (2 channels)

D/A Monitor Converter

Dynamic Range: 129 dB

THD + N: -108 dB

A/D Converter

Dynamic Range: 124 dB

THD + N: -112 dB

D/A Converter

Dynamic Range: 120 dB

THD + N: -107 dB

Mic Preamp

Gain: 0,10 – 65 dB

THD + N: -108 dB

Digital

Digital Inputs

• 1 x ADAT (up to 8 channels)

• 1 x S/PDIF

Digital Outputs

• 1 x ADAT (up to 8 channels)

• 1 x S/PDIF

USB I/O

• 1 x USB 3.0 Hi-Speed; 32 – 192 kHz, 64 channels I/O, Type B

HDX

• 1 x HDX, 32 channels I/O

Clocking

Word Clock Input

• 1 x Input @ 75 Ohms 3 Vpp on BNC 32 – 192 kHz

Atomic Clock Input

N/A

Word Clock Outputs

• 1 × Outputs @ 75 Ohms on BNC 32 –192kHz

Clocking System

• 4th Generation Acoustically Focused Clocking

• 64-bit DDS

• Oven Controlled Crystal Oscillator

Clock Stability

<+/-0.02 ppm, oven controlled at 64.5ºC/ 148.1ºF

Clock Aging

< 1 ppm per year

Clock Calibration

< +/-0.001 ppm

Sample Rates (kHz)

32, 44.1, 48, 88.2, 96, 176.4, 192

Other

Operating Temperature

0-50°C, 32-122°F

Weight

3.1 kg / 6.83 lbs (approx)

Dimensions (approx)

• Width: 483 mm / 19"

• Height: 44 mm / 1.7"

• Depth: 226 mm / 8.6"

Electrical specs

DC Universal input: 18V

Power Consumption: 25 Watts Max

12. 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

Direct Support Line
+1 734 418 8661
7:00 a.m. – 6:30 p.m. (EST), Monday – Friday

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. – 6:30 p.m. (EST), Monday – Friday

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 Orion Studio HD 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:
http://goo.gl/yfOmZf

Web Blog
Regular blog posts will update you on the latest user cases with the Orion Studio:
http://www.antelopeaudio.com

NOTES

NOTES

NOTES

Correct Disposal of This Product
(Waste Electrical & Electronic Equipment)

(Applicable in the European Union and other European countries with separate collection systems)

This marking shown on the product or its literature, indicates that it should not be disposed with other household wastes at the end of its working life. To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate this from other types of wastes and recycle it responsibly to promote the sustainable reuse of material resources.

Household users should contact either the retailer where they purchased this product, or their local government office, for details of where and how they can take this item for environmentally safe recycling.

Business users should contact their supplier and check the terms and conditions of the purchase contact. This product should not be mixed with other commercial wastes for disposal.

Antelope

Owner's Manual

◯◯RION
Studio HD

HDX and USB 3.0
AD/DA Interface with 12 mic pres