



Antelope

OWNER'S MANUAL

ORION³²+



32-CHANNEL AD/DA INTERFACE
WITH AFC™ CLOCKING TECHNOLOGY



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 the Orion32+ from Antelope Audio.

Orion32+ is a 32-channel AD/DA converter and audio master clock, supporting Thunderbolt™, MADI and USB interfaces, clocked by Antelope's renowned 64-bit Acoustically Focused Clocking (AFC) technology.

Orion32+ allows up to 192 kHz I/O streaming of up to 32-channels of I/O digital audio through Thunderbolt™ or its custom-built USB chip. The converter also provides up to 64 channels through its Fiber Optic MADI I/O connections.

Orion32+ supports ADAT protocol as well, offering up to 16 I/O channels. The multi-channel converter inputs and outputs pass the analog signal through 8 D-SUB 25 I/O connectors.

In addition to being an extremely high quality audio converter, Orion32+ is also an audio master clock. The two word clock outs, together with the 10 MHz input, make Orion32+ ideally suited to be in the center of any project or high-end studio.

With its seamless digital routing options, the Orion32+ offers extended flexibility. The device is managed through a desktop application available for both Windows and OS X. Moreover, it is equipped with multiple monitor mixers with on-board DSP effects such as EQ, compressor and reverb.

Connected with MP32, a 32-channel console-grade microphone preamp, Orion32+ ensures a full transparency of the sound and complete integrity of the signal via the whole chain, from the mic pres through the conversion, recording and playback, all of them characterized by the signature Antelope sound.

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.

Enjoy working with the new Orion32+!

All the best,

The Antelope Team

3. Features

- Antelope Audio precise AD/DA conversion technology
- 64 channels I/O Fiber Optic MADI
- 32 channels at 192 kHz I/O via Thunderbolt™ or custom-built USB chip
- 32 channels AD/DA
- 16 channels I/O via Fiber Optic ADAT
- 2 channels I/O via S/PDIF
- 1 x Monitor Out on TRS (2 channels)
- Antelope's renowned 64-bit Acoustically Focused Clocking Technology
- Antelope's proprietary Oven Controlled Oscillator for supreme clocking stability
- 2 Word Clock Outputs, 1 Word Clock Input and 1 Atomic Clock Input
- Five presets for fast and easy recall of favorite setups
- 1U rack size device consuming only 20 Watts keeping the heat low
- A user friendly desktop application available for both Windows and OS X
- Ergonomic software control panel
- Extremely flexible routing and mixing capabilities
- Massive parallel DSP and effects processing

4. Installation Guide

Windows:

1. Connect the USB cable to the USB port on your computer.
2. Download and install the Orion32+ software control panel and drivers from 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 Orion32+.
5. The guest operating system will recognize the new output audio device (Orion32+).
6. If you want to use Orion32+ through USB for playback and recording, 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.

Mac OS:

Important Note

A Mac is compatible with Orion32+ only if it has the Thunderbolt™ logo.

Mini DisplayPort



Thunderbolt Port



1. Connect the Thunderbolt™ cable to the Thunderbolt™ port on your computer.
2. Download and install the Orion32+ software control panel and Thunderbolt™ driver from 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 Orion32+.
5. The guest operating system will recognize the new output audio device (Orion32+).
6. If you want to use Orion32+ through Thunderbolt™ for playback and recording, 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. Check this by selecting the Options panel and clicking on the Firmware Update button. See picture:



5. Front Panel Explained



1. Power button

Toggles standby/operation state

Hold down the Power button to access the System Menu of the device, which allows you to access the following sub-menus:

1. Comm. Interface (allows you to choose between, Thunderbolt™, USB connectivity)
2. Device Info
3. Brightness
4. Scr Save Time
5. Scr Save Style
6. Factory Reset
7. 10M Calibration

To scroll up and down, use the Frequency up/down buttons.

To enter each one of the sub-menus, press the Frequency down button.

To confirm a chosen setting, press and hold the Frequency down button.

2. Oven Clock light

When lit, this indicates Orion32+ is clocked by its own internal clock.

3. Lock light

When lit, this indicates Orion32+ is locked to the signal that enters through the digital inputs on the rear panel (except Thunderbolt™ and USB).

4. Atomic Clock Lock light

When lit, this indicates Orion32+ is locked to an atomic signal that enters through the 10M input on the rear panel. This overrides the Oven Clock lock light as soon as it is plugged in and the Oven Clock lock light will automatically go off.

5. Frequency buttons

These two arrow buttons allow you to increase and decrease the sample rate, selecting from:

32kHz, 44.1kHz, 48kHz, 88.2kHz, 96kHz, 176.4kHz, 192kHz. The current frequency is indicated on the display (6) when adjusting.

6. Display

Multi-function display that shows Sample Rate on the left and volume levels for each individual input levels on top meter, and output levels on lower meter. It displays 64 channels at a time that are software adjustable from the software control panel.

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

7. Antelope button

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

1. Clock Source
2. Peak Meter
3. Monitor Trim
4. Line Out Trim
5. Line In Trim
6. SR Conversion
7. S-MUX In
8. S-MUX Out

To scroll up and down, use the Frequency up/down buttons.

To enter each one of the sub-menus, press the Frequency down button.

To confirm a chosen setting, press and hold the Frequency down button.

Note: To Restore Factory Defaults:

1. Unplug the power cable,
2. Hold down the Frequency Up and Down buttons, and plug the power cable back in.

8. Preset buttons (1-5)

Five Preset buttons store and recall your 'favorite' set-ups. For more information see page 14, section 8 (Reference to Software Control Panel).

1. Save Preset

- 1. From Control Panel
- 1. Ctrl(Win) / Cmd(Mac) + Click on Preset Button
- 2. Ctrl + Number 1 to 5 from Keyboard

-2. Recall Preset

1. Simply click on your choice of preset.

6. Rear Panel Explained



9. Mains Power Connection

The IEC connector supports a range from ~95-245 V. This enables the device to automatically accommodate mains voltage in every country.

10. Word Clock Input

BNC connector used to accept Word Clock reference.

11. 10M Input

This BNC Input Connector allows the Orion32+ to receive timing reference from an Atomic Clock such as the Antelope 10M and 10MX, to increase the Oscillator accuracy. If the device is in Oven mode, plugging in the atomic clock causes the "Atomic LED" light to illuminate on the device front panel and the atomic device becomes the primary timing reference, thus providing better sample accuracy, more detailed sound and greater stability.

12. Word Clock Outputs

Two Word Clock Outputs with BNC connector.

13. S/PDIF Input/Output

75 Ω S/PDIF connectors for use with compatible equipment.

14. ADAT Connectors

2 Inputs & 2 Outputs (up to 8 channels per line).

15. MADI Input/Output

1 x MADI I/O Connector providing 64 tracks input and 64 tracks output.

16. Thunderbolt™ port

Enables you to connect your Orion32+ to a Thunderbolt™ port on a Mac computer using a Thunderbolt™ cable (not included).

17. USB High-Speed

Orion32+ uses USB connector Type B and operates up to 192kHz sample rate with

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. Connectivity display (indicates how your Orion32+ is connected to your computer - via Thunderbolt™ or USB)

Antelope ASIO on Windows & Mac OS X.

18. Monitor Outputs

A stereo pair (2 x TRS) of balanced outputs to connect a pairs of monitors.

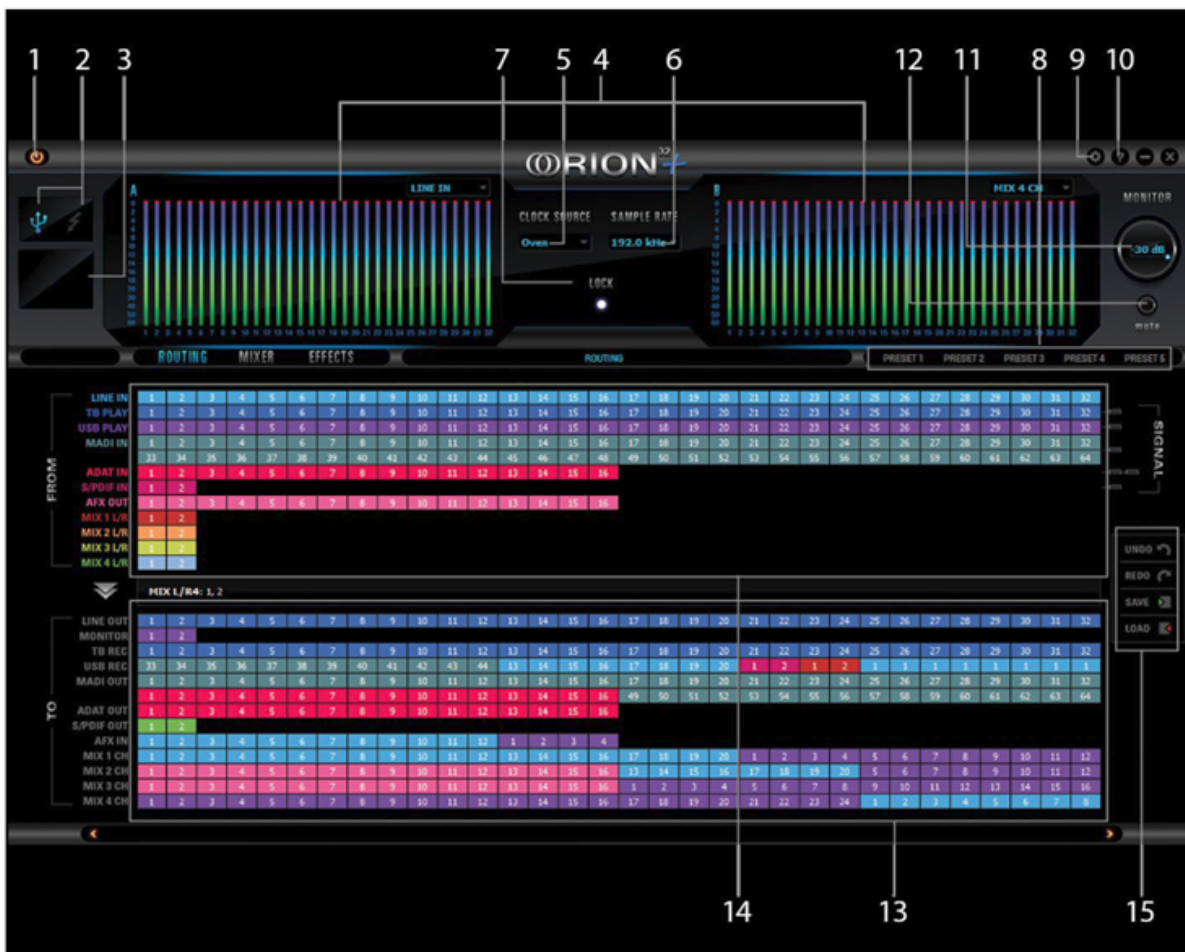
19. D-SUB 25pin Analog Outputs (on top)

Four connectors enable you to attach breakout cables, each with 8 lines.

20. D-SUB 25pin Analog Inputs (on bottom)

Four connectors enable you to attach breakout cables, each with 8 lines.

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19. D-SUB 25pin Analog Outputs (on top)

Four connectors enable you to attach breakout cables, each with 8 lines.

20. D-SUB 25pin Analog Inputs (on bottom)

Four connectors enable you to attach breakout cables, each with 8 lines.

3. 'MP32 detected' display (indicates if an MP32 unit is connected to your Orion32+)

4. Meter Source display (dropdown tab allows you to select different sources to preview)

5. Clock Source

This dropdown menu allows you to select how the Orion32+ is to be synchronized. Select Oven/10M for internal sync (with or without atomic clock reference), W.C. (Word Clock) to sync the Orion32+ to an external device through the Word clock input, or MAD1, ADAT, S/PDIF for syncing with incoming digital signals.

Once Atomic Clock is connected it replaces 'Oven' in the Clock Source dropdown menu.

Orion32+ supports sample rates higher than 48kHz for MAD1 and ADAT and also supports S-Mux.

The following tables show what the various options for MAD1 and ADAT implement in order to be consistent with the input/output of your other devices connected via MAD1 or ADAT.

Clock Source MAD1 Options (with or without the S-Mux option selected in Settings):

Clock Source Mode MAD1 Configuration

Sample Rate Channels

MAD1 44.1 kHz 64 ch

48 kHz 64 ch

MAD1 2X 88.2 kHz 32 ch

96 kHz 32 ch

MAD1 4X 176.4 kHz 16 ch

192 kHz 16 ch

Clock Source ADAT options: (Note that there is no S-Mux check-box for ADAT as it is 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

6. Sample Rate select

7. Lock light

8. Presets

9. Settings

14

10. Info

11. Monitor Volume knob

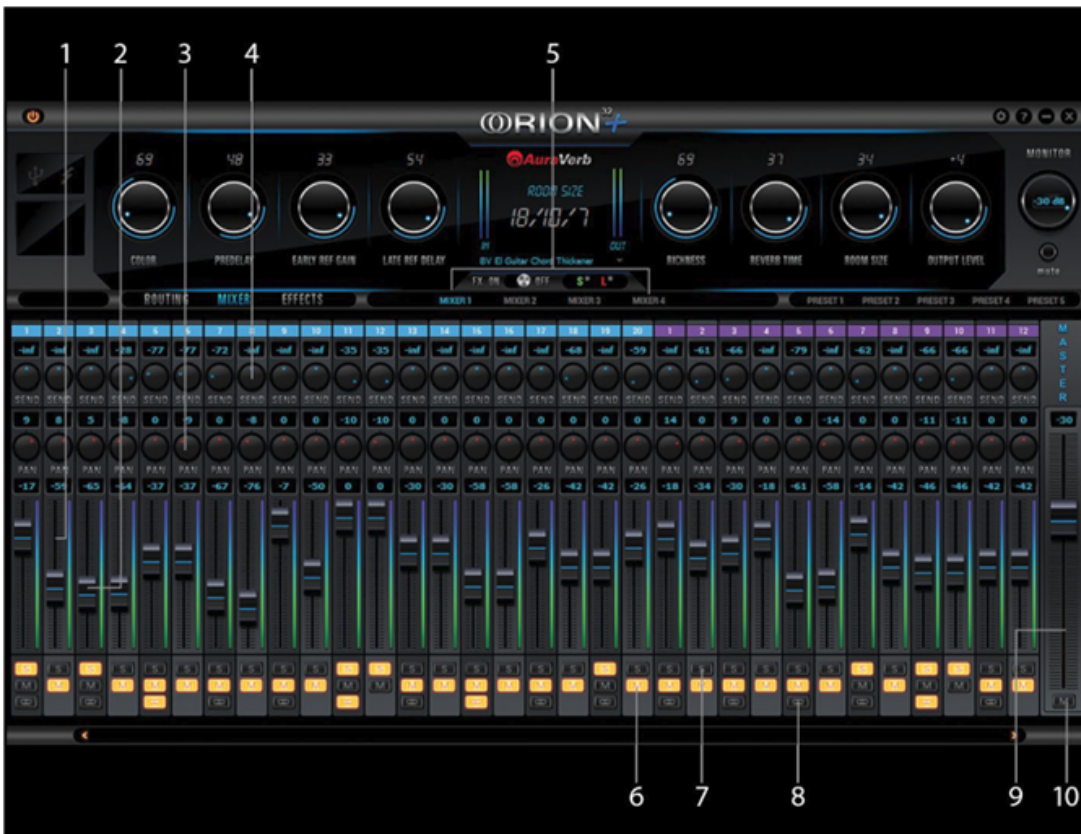
12. Mute button

Routing Tab:

13. 'To' Section

14. 'From' Section

15. Undo/Redo Routing; Save/Load Set Up Files



7.2. Mixer Tab

1. Fader Level indication
 2. Fader (double-click to reset to zero)
 3. Pan
 4. Send
 5. Mixer 1-4 Show/Hide
 6. Mute
 7. Solo
 8. Stereo Link
 9. Master Mix Fader
 10. Mute Master
- 15

Orion32+ 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 Orion32+ allows a low latency mix to be distributed to any output.

For example, you can drag all of the thirty-two 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 DSP effects.

Maximum Number of Channels per Sample Rate:

Sample Rate MADI Thunderbolt™ USB ADAT S/PDIF

32 kHz 64 ch 32 ch 32 ch 16 ch total / 8 ch per line 2 ch

44.1 kHz 64 ch 32 ch 32 ch 16 ch total / 8 ch per line 2 ch

48 kHz 64 ch 32 ch 32 ch 16 ch total / 8 ch per line 2 ch

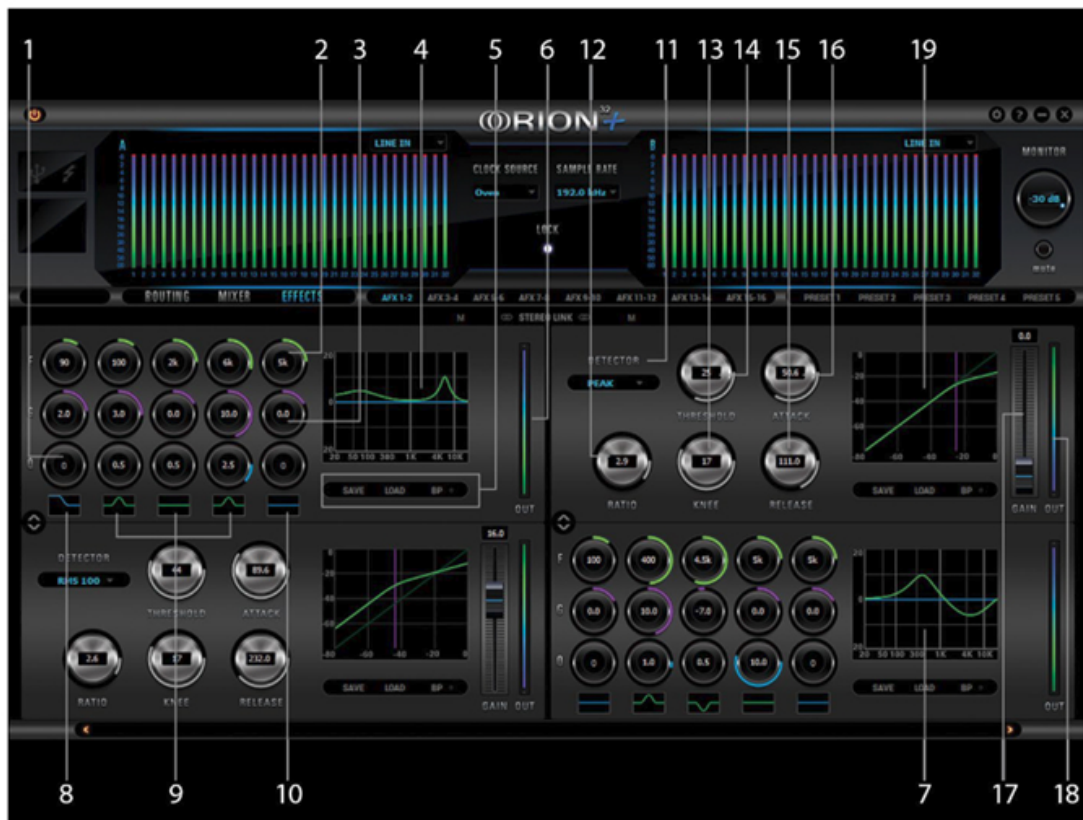
88.2 kHz 32 ch 32 ch 32 ch 8 ch total / 4 ch per line 2 ch

96 kHz 32 ch 32 ch 32 ch 8 ch total / 4 ch per line 2 ch

176.4 kHz 16 ch 32 ch 32 ch 4 ch total / 2 ch per line 2 ch

192 kHz 16 ch 32 ch 32 ch 4 ch total / 2 ch per line 2 ch

7.3. AFX Tab



Clicking the AFX Tab reveals the 16 AFX Channel Strips:

EQ

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

Compressor

11. Detector
12. Ratio
13. Knee
14. Threshold
15. Release
16. Attack
17. Makeup Gain
18. Compression Meter
19. Compression Curve

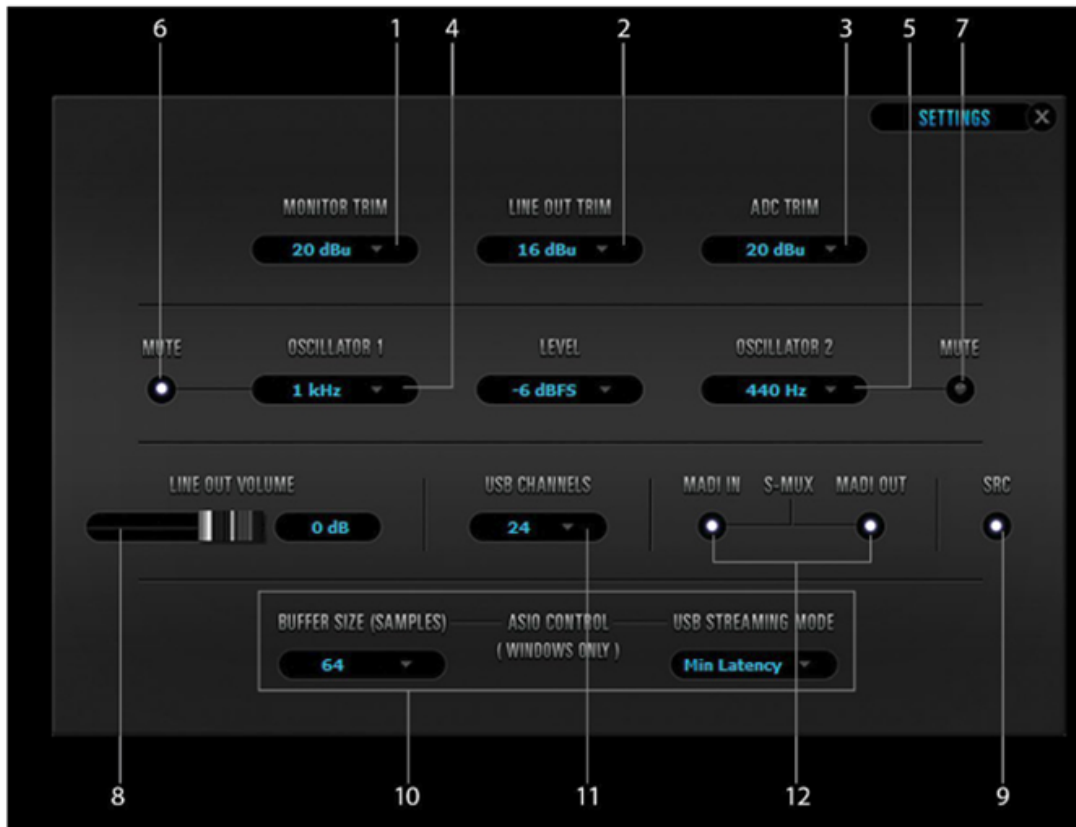
Show or Hide 16 x DSP Channel Strips

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

18

7.4. Options Tab

Click on the 'Settings' gear icon to open the 'Settings' window:



1. Monitor Trim
 2. Line Out Trim
 3. ADC Trim
 - 4 & 6. Oscillator 1 and Mute
 - 5 & 7. Oscillator 2 and Mute
 8. Line Out Volume
 9. SPDIF SRC
 10. Windows, only: ASIO Control – Buffer Size & USB Streaming Mode
 11. USB Channels Selector
 12. MADI In S-Mux / MADI Out S-Mux
8. Advanced User Tips

Ground Loop Hum and Noise

The design of Orion32+ 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

- Orion32+ 32-channel AD/DA Interface with AFCTM Clocking Technology
- Owner's Manual
- Warranty Card
- Power cable
- USB cable

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 Thunderbolt™ or USB playback, route the Thunderbolt™ or USB-play channels to the Line Out channels 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 YouTube page.

- Have you set the correct sample rates matching your DAW with your computer's sound and the Orion32+?

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 Orion32+ sample rate.

For Windows, first check in play back devices, right click on the Orion32+ then click properties before then moving to the advanced tab. Then repeat the above by checking the DAW's sample as well as the Orion32+.

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 Orion32+ to receive?

11. Technical Specifications

Inputs:

Analog: 4 x D-SUB 25 (32 channels), +20 dBu max, 11.2 kOhms

Digital: 1 x Fiber Optic MADI

2 x ADAT

1 x S/PDIF

Word Clock: 1 x Input @ 75 Ohms 3Vpp on BNC 32 – 192kHz

Atomic Clock: 1 x 10M Input @ 75 Ohms 1Vpp on BNC

Outputs:

Analog: 4 x D-SUB 25 (32 channels), +20dBu, 56 Ohms

2 x Monitor Outs on TRS ¼ Jacks

Digital: 1 x Fiber Optic MADI

2 x ADAT

1 x S/PDIF

Word Clock: 1 x Input @ 75 Ohms 3Vpp on BNC 32 – 192kHz

Atomic Clock: 1 x 10M Input @ 75 Ohms 1Vpp on BNC

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Analog: 4 x D-SUB 25 (32 channels), +20dBu, 56 Ohms

2 x Monitor Outs on TRS ¼ Jacks

Digital: 1 x Fiber Optic MADI

2 x ADAT

1 x S/PDIF

Word Clock: 2 x Outputs @ 75 Ohms 3Vpp on BNC 32 - 192kHz

USB I/O:

USB 2.0 Hi-Speed; Data stream up to 480 Mbits/192kHz,

32 channels I/O, Type B

Thunderbolt™: 1 x Thunderbolt™

- 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 Orion32+ 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 Orion32+ control panel (Windows Only)

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

- Is the Orion32+ device selected in the relevant sound card section of the DAW's preferences?

If the Orion32+ doesn't show up in you DAW, first try unplugging and plugging back the

Thunderbolt™ cable (or the USB cable), then restarting your Computer and finally reinstall

the firmware, drivers and control panel for the Orion32+.

D/A Monitor Converter

Dynamic Range: 127 dB

THD + N: -108 dB

D/A Converter

Dynamic Range: 118 dB

THD + N: -98 dB

A/D Converter

Dynamic Range: 118 dB

THD + N: -105 dB

Clock Specs

Clocking System: 4th Generation Acoustically Focused Clocking

64-bit DDS

Oven Controlled Crystal Oscillator

Clocking Stability: ± 0.02 ppm, oven controlled at 64.5°C/ 148.1°F

Clock Aging: <math>< 1</math> ppm per year

Clock Calibration: ± 0.001 ppm

Sample Rates (kHz): 32, 44.1, 48, 88.2, 96, 176.4, 192

Operating Temperature: 0-50°C/32-122°F

Weight 3kg/ 6.6 lbs approx.

Dimensions (approx.) Width: 483 mm/19"

Height: 44 mm/1.75"

Depth: 220 mm/8.66"

Power Supply: AC Universal input ~95-245 V

Power Consumption: 20 Watts Max

10. Contacts

Having difficulties with the Discrete 8 or anything else Antelope? Get in touch with us by the following means:

European Direct Support Line

+44 1925933423

10:00 a.m. – 10:00 p.m. (EET), Monday – Friday

USA Direct Support Line

+1 (916) 238-1643

7:00 a.m. – 6:30 p.m. (EST), Monday – Friday