Discrete 4 Synergy Core

User Manual

Synergy Core FX Processing and Best-In-Class AD/DA

The Discrete 4 Synergy Core features four 6-transistor discrete preamps for console-grade sound quality. With up to 121dB of dynamic range and sample rates up to 192kHz, its best-in-class AD/DA converters ensure your meticulous performances are captured with the highest signal quality possible. The Antelope Audio acclaimed 64-bit Acoustically Focused Clocking algorithm delivers the kind of artifact-free audio once accessible only to the highest-tier studios. Adding further value to your investment, the Discrete 4 Synergy Core features a compelling library of 36 real-time studio effects, meticulously modeled after their hardware originals.

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 the 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 unplug it from the power source.
- Do not use the device until the foreign object is removed or the liquid has completely dried and its residues fully cleaned up. If in doubt, please consult with the manufacturer.
- Do not handle the power cables with wet hands! Make sure the device is switched off when plugging and unplugging it from the power source.
- Avoid placing any objects on the cabinet or using the device in a narrow and poorly ventilated place. Doing so could affect its operation or the operation of other closely located components. If anything goes wrong, turn off the device first and unplug the power.
- Do not attempt to repair the device yourself: consult authorized service personnel or your dealer.
- Do not install the unit 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.
- 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.

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

2. Panels explained

2.1. Front Panel

1. Two Instrument / Mic Preamp / Line inputs

Two console-grade Class A mic pres with discrete transistor design and individual phantom power. Mic input on XLR connector with switchable Line/Hi-Z input over TRS.

2. Display

Multi-function display that shows various information. Use the three function buttons to navigate menus.

3. Functional Buttons

By pressing the Function buttons, you can cycle through the menus and view various information.

4. Rotary control

Large stepped attenuator for Monitor, Headphone and Line output volume. Pushing-in lets you scroll between menu entries and make adjustments.

5. Headphone outputs

Four independently assignable headphone outputs, selectable and controllable via the main rotary control or the software Control Panel.

2.2 Rear Panel

6. S/PDIF Input/Output

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

7. ADAT Connectors

One input & one output with up to 8 channels per line.

8. Thunderbolt™ port

Connect your interface to a Thunderbolt™ 2 or 3 port using a Thunderbolt™ cable (not included).

Windows users – please read the **Antelope Audio Windows Thunderbolt Driver page**.

9. USB High-Speed

Connect your interface to a USB port on a Windows or Mac computer with the bundled USB cable.

10. Word Clock Outputs

Two Word Clock outputs on BNC connectors for syncing external gear.

11. Stereo Monitor Output

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

12. Line Outputs

Four assignable Line outputs on TRS connectors.

13. Mic/Line Inputs

Two console-grade Class A mic pres with discrete transistor design and individual phantom power. Mic input on XLR connector, Line input on TRS connector.

14. DC Power Connection

Only for use with the Antelope Audio DC power supply!

15. Kensington Lock

Used to lock down the device in demonstration rooms.

2.3 Hardware controls

Function Button 1 (top-most)

- Pressing Function Button 1 cycles through Monitor Volume, Line Out Volume, and Headphone Output (HP) 1 – 4 Volume. Use the rotary control to adjust volume.
- Press and hold Function Button 1 to access the **Discrete 4 Synergy Core System Menu** (explained below). Use the rotary control to select an entry in the menu. Press the rotary control to enter the selected sub-menu. Turn the rotary control left or right to adjust the setting.
- Press the rotary control to toggle Monitor Volume Mute On/Off.
- Press any of the function buttons to exit.

Discrete 4 Synergy Core System Menu

1. Comm. Interface: Switch between USB and Thunderbolt™ mode. Use the appropriate setting for your connection.
2. Device Info: Shows the following information: Serial Number, Hardware Revision, Firmware Version.
3. Scr Save Time: Adjusts the length of time before the screensaver turns on. The following options are available: Off, 2 min, 5 min, 15 min, 30 min, 60 min, 120 min.
4. Scr Save Style: Lets you choose the screensaver style. The following choices are available: Star & Black. Press the rotary control in to confirm.
5. Factory Reset: Lets you restore factory presets. Useful for troubleshooting the Discrete 4 Synergy Core. Be careful, pressing the rotary control activates the function instantly, without asking for confirmation.

3. Software
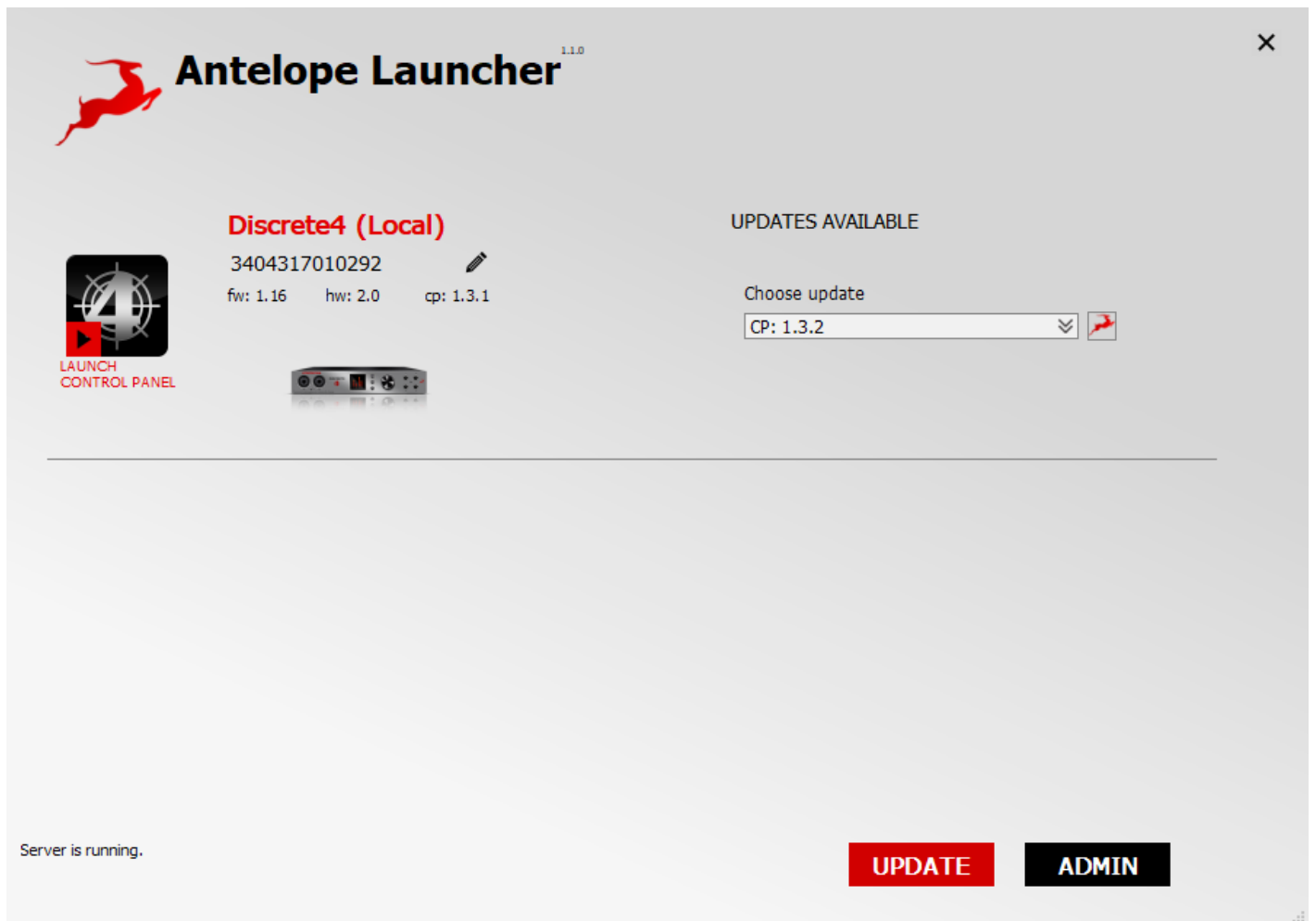
3.1 Antelope Audio Launcher

The Antelope Audio Launcher is a one-stop shop where you get to keep everything up-to-date, access the Control Panel, and create remote connections.

Upon startup, the Antelope Audio Launcher connects to the Internet to check for available updates.

1. Information Panel

Shows the following information about your connected Antelope Audio devices:

- Device name
- Serial number
- Firmware version
- Hardware revision
- Control Panel version

2. Launch Button

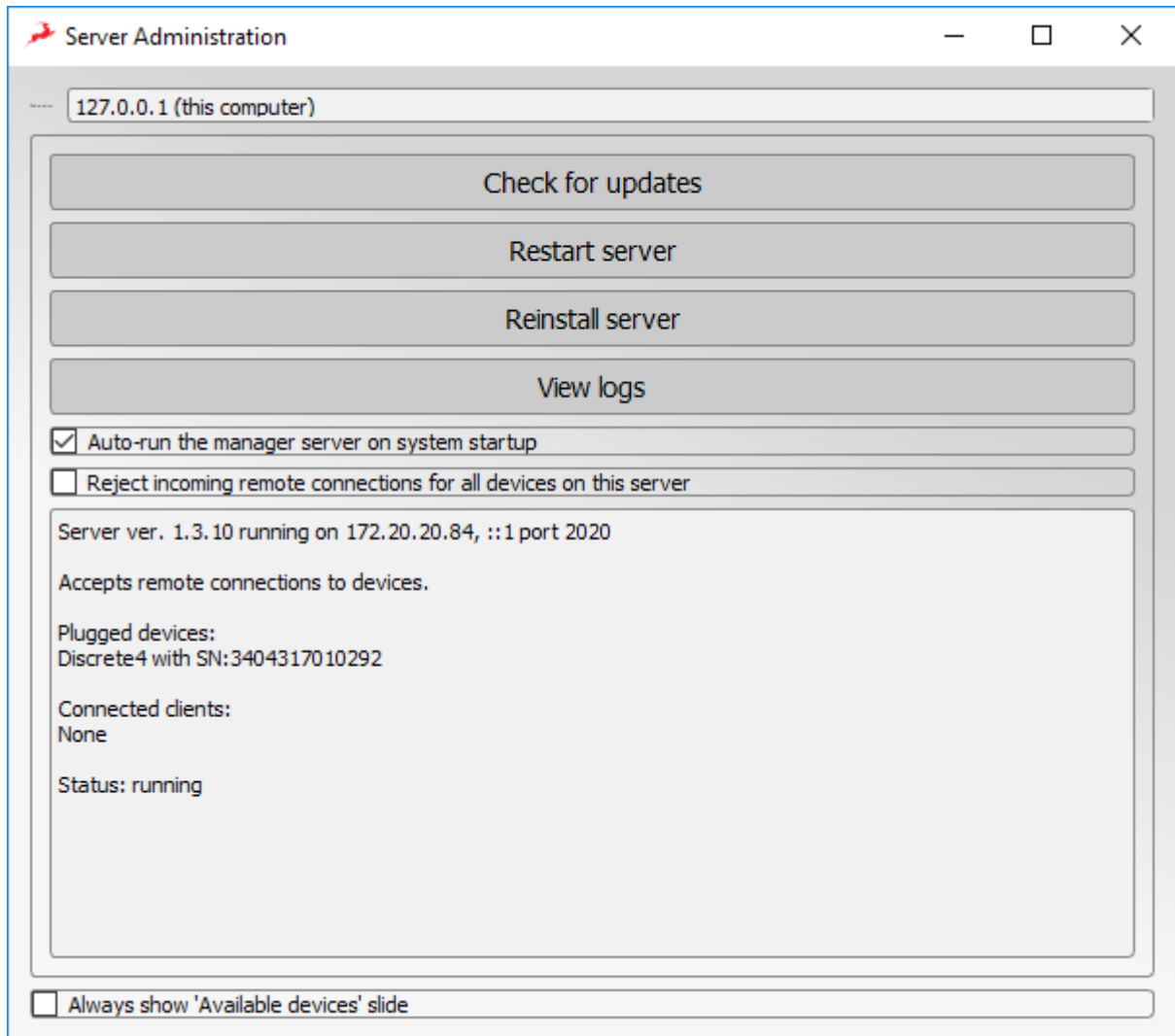Launches the Discrete 4 Synergy Core Control Panel.

3. UPDATE Button

Antelope Launcher will notify you for available updates. When updates are available, press the UPDATE button and follow the on-screen instructions to proceed.

4. ADMIN Button

Opens the Server Administration menu.

Server Administration Menu

1. Server list

Choose which computer to connect to over the audio network. The available computers list is available as a drop-down menu.

2. Check for updates Button

Check for updates to your Discrete 4 firmware and Control Panel software.

3. Restart server Button

Restarts your connection and the Control Panel.

4. Reinstall server Button

Press this button to perform a re-install.

5. View logs Button

Access logs from your network sessions.

3.2 Control Panel

Designed for maximum ease of use, the EasyPanel Control Panel lets you control every aspect of the Discrete 4 Synergy Core, including signal routing, mixing, Synergy Core FX and Microphone Emulations. Following is an explanation of the software.

3.2.1 The Function Strip

The Function Strip has the following buttons and features:

1. Power Button

Switches the Discrete 4 SC hardware unit between Standby mode and Power On mode. Note that Discrete 4 SC remains in Power On mode by default, regardless of whether it's connected to a computer that's switched on or not. There are no Power or Standby buttons present on the unit itself, though you can put it in Standby mode from the System Menu. To turn it off, you must cut the power from the power strip or disconnect the adapter from the grid.

2. Device Selector Menu

Select your device by its serial number from the drop-down menu.

3. Tech Support Button

Opens a window with the following information:

• Control Panel Version
• Hardware Version
• Serial Number
• Firmware Version

Additionally, there's the Administration Button. It launches the Antelope Wizard, which has the following options:

• Register device or assign features
• Unregister device or assign features
• Logout

Pressing the Help Button offers the following shortcuts:
• Watch online video tutorial
• Chat with technical support
• Search for solution at support page
• Contact support team over the phone

4. Minimize Button

Minimizes the Control Panel to your Taskbar (Windows) or Dock (Mac).

5. Close Button

Quits the Control Panel.

6. Clock Source Selector Menu

Lets you choose the Clock Source — Internal, ADAT, ADAT 2x, ADAT 4x, S/PDIF, USB

7. Sample Rate Selector Menu

Lets you choose the device sample rate. Discrete 4 SC supports the following sample rates: 44.1 kHz, 48.0 kHz, 88.2 kHz, 96.0 kHz, 176.4 kHz, 192 kHz

8. Lock Toggle

Locks the Discrete 4 SC sample rate so it doesn't change from your DAW, operating system, etc.

9. Session Recall

Lets you recall a previously saved session. The Control Panel lets you save and export Sessions – pre-defined configurations of inputs, outputs, levels, mixes, effects, and anything else relevant to your project. These sessions can be shared between Discrete 4 SC users and stored for backup purposes.

10. SAVE Button

Opens the Save Session window where you can specify precisely which components of your project you want to include. The Save button saves the current session. The Save As button lets you export the current session to a file for backup & sharing.
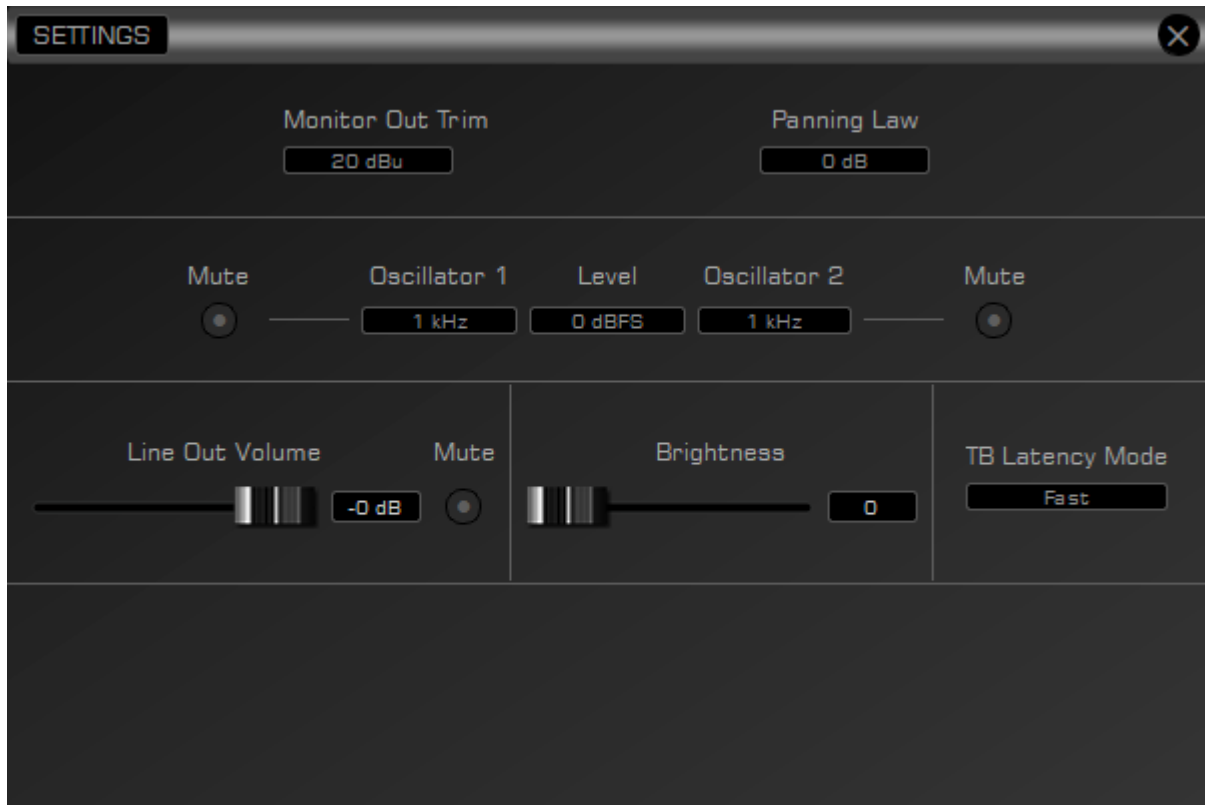
11. LOAD Button

Opens the Load Session window where you can:

• Load a Session file by clicking Browse and navigating to its location on your computer.
• Use the Load Last Session button to quickly recall your most recent work.
• Set Defaults

12. SETTINGS Button

Opens the Discrete 4 SC Control Panel Settings window.

The Settings Panel

1. Monitor Out Trim

Lets you attenuate the Discrete 4 SC's monitor output signal level by 14 to 20dBu.

2. Panning Law *

Lets you specify the Panning Law between 0dB to -4.5dB.

* As the mono signal is panned from center to hard left or right, it will increase in loudness up to 6.02 dB. To ensure perceived loudness stays the same, this has to be compensated for. The Panning Law setting lets you specify the compensation amount in dB.

3. Mute Toggles

Used for muting Oscillators 1 & 2. The Discrete 4 SC has built-in oscillators that generate 440Hz or 1kHz signals (sine waves) for testing the interface outputs during troubleshooting.

4. Oscillator 1

Adjust the Oscillator 1 frequency.

5. Level

Choose between 0 to -18dBFS amplitude for Oscillator 1 & 2 output signal.

6. Oscillator 2

Adjust the Oscillator 2 frequency.

7. Line Out Volume

Set the Line Out volume in dB.

8. Brightness Slider

Set the Discrete 4 SC screen brightness.

9. TB Latency Mode

Lets you set the Thunderbolt™ Latency Mode to Fast, Medium, or Slow.

10. ASIO Control (Windows-only)

This is where you adjust the Discrete 4 SC ASIO driver for best performance on Windows computers.

11. Buffer Size (Samples)

Lets you set the ASIO driver buffer size. Short buffer sizes minimize latency but take more CPU power. Bigger buffer sizes result in lighter CPU load, but generate more latency. We recommend low buffer sizes for live recording & monitoring, and higher buffer sizes during mixdown.

12. USB Streaming Mode

Lets you switch between several latency settings for USB streaming.

3.2.2 PREAMPS

Always visible in the Control Panel, the Preamps section lets you control the Discrete 4 SC Mic Preamps. The following options are available:

1. Gain Knobs

Turn the knobs right to increase gain, or left to attenuate.

2. Link Button

Link Preamps 1 & 2, or Preamps 3 & 4 in pairs. When switched on, adjusting the Preamp 1 gain will also change the Preamp 2 gain, and vice versa. The same goes for Preamps 3 & 4.

3. Mic/Line/Hi-Z Selector Button

Switch between three different modes for each preamp. Which mode to use depends on the instrument that you are recording.

- **Mic mode** is for recording microphones. This mode offers up to 65dB of gain. Additionally, clicking the cog wheel icon launches the Mic Emulations window.
- **Line mode** is for recording line-level sources like synthesizers, keyboards, samplers, effects units, players etc. Up to 20dB of gain are available in this mode.
- **Hi-Z mode** is for recording high-impedance instruments like the electric guitar. It has up to 39dB of gain. Hi-Z mode is only available on Preamps 1 & 2, located on the front panel.

3.2.3 Synergy Core FX

Stack and bypass audio effects. The Antelope Audio FX Rack is explored in detail later in this manual.
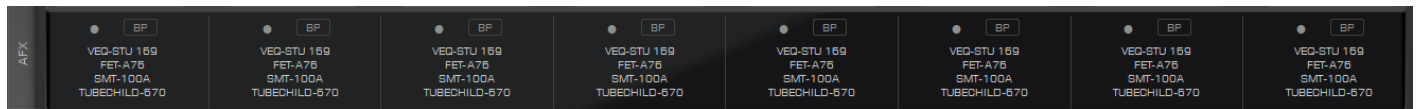
3.2.4 MONITOR/HP1

Contains controls for the Discrete 4 SC monitor outputs and Headphone Output 1.

3.2.5 HEADPHONES 2 - 4

Contains controls for the Discrete 4 SC Headphone Outputs 2-4.

3.2.6 MONITORS & HEADPHONES

This is where you route the Discrete 4 SC analog & digital inputs to the 2 monitor or 4 headphone outputs. In this mode, the following mode-specific controls are provided:

1. FX Button (in 16-channel view)

Opens the FX Rack where you stack and manipulate effects to form a Channel Strip.

2. BP Button

Used to bypass the FX you stacked onto each of the mixer's 16-channels. Useful for A/B-ing between "dry" and processed audio, noting the changes that occur with the application of different effects.

3. Pan Knob

Used for panning the signal to the left or right in the Stereo field.

4. Gain Fader

Lets you adjust the volume level of each channel in dB. Gain meters are provided for monitoring volume level. Ideally, none of the meters should be in the Red. This means the signal is too hot and digital clipping occurs, destroying the audio.

5. DIM Button

Automatically attenuates the output.

6. MUTE Button

Completely mutes headphone output.

7. AuraVerb

Engages the AuraVerb reverb. The effect is covered in detail in the **AFX & Mic Emulations manual**.

8. MIXER Switch

Switches between 8- and 16-channel mixer views.

9. Monitor Gain Knob

Used for adjusting the monitor outputs volume.

10. DIM Button

Automatically attenuates the main output.

11. MUTE Button

Completely mutes the monitor output.

12. Headphones Gain Knob

Used for adjusting the Headphone 1 output volume.

13. DIM Button

Automatically attenuates the output.

14. MUTE Button

Completely mutes headphone output.

15. AuraVerb

Engages the AuraVerb reverb. The effect is covered in detail in the **AFX & Mic Emulations manual**.

16. MIXER Switch

Switches between 8- and 16-channel mixer views.

3.2.7 ANALOG OUTS

This section is dedicated to the Discrete 4 SC analog outputs – Line Out 1 & 2 and ReAmp (Line Out 3 & 4). Simply

use the drop-down menu to choose which channel you want routed to which output. Use the Gain knobs to adjust output volume. Feel free to link the Line Outs for convenience.

3.2.8 DAW

This section is dedicated to the inputs and outputs of your DAW. Inputs Record 1 to 8 go to your DAW. Outputs Play 1 to 8 are routed from the DAW.

3.3 The FX Rack

The FX Rack is where you insert effects into a mixer channel, forming a Channel Strip to process audio with. It's accessible by clicking inside the empty fields below the mixer's BP buttons (in 8-channel view) or clicking the FX button (in 16-channel view).

3.3.1 Loading Effects

The FX Rack has the following buttons and menus to the left, whereas the effects are visualized on the right:

1. SAVE Button

Saves the current preset for future use & sharing.

2. LOAD Button

Loads a previously saved preset.

3. BP ALL Button

Instantly bypasses all effects processing.

4. DEL ALL Button

Instantly removes all effects currently loaded in the rack.

5. Presets Menu

Choose a preset from the drop-down menu.

6. ADD NEW EFFECT Menu

Choose an effect from the various categories and add it to the FX rack.

7. BP Button

Appears next to an effect – used to bypass it.

8. HOW TO Button

Launches a YouTube channel with Antelope Audio video tutorials to help you master the Control Panel & FX.

3.4 Routing System

3.4.1 Inputs and Outputs

In the routing system, the inputs and outputs of the Discrete 4 SC are organized as follows:

- **General**
- **Digital Outs**
- **Analog Outs**
- **DAW**

PREAMP 1-4

These are the 4 Discrete Mic Preamps.

COMPUTER PLAY 1-16

These are your DAW outputs, up to 16 channels.

ADAT IN 1-8

These are the 8 ADAT digital inputs.

S/PDIF IN 1-2

These are the S/PDIF digital inputs.

MUTE M

Enjoy the silence.

Oscillator O1 & O2

The two oscillators in your Discrete 4 SC can be routed to the interface's outputs for testing purposes.

4. Troubleshooting

Having trouble hearing any playback from Discrete 4?

• Head to the Monitor/ HP1 section.
• Go to the Monitors & Headphones tab.
• Route Computer Play channels 1 and 2 to a pair of mixer channels of your choice.
• Pan the channels Left and Right accordingly, adjust the volume level with the fader, and consider linking them for your convenience.
• You should be able to hear playback from your main monitors or headphones. If not, adjust the main HP or Monitor volume.

Ground Loop Hum and Noise

The design of Discrete 4 SC 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.

Start up and Sound

Are you running the latest control panel and driver?
If not, please update your control panel and firmware.

Have you set the correct sample rates matching your DAW with your computer's sound and the Discrete 4 SC?
On Mac, check that the sample rate is correct in the Audio & MIDI Setup, then proceed to check in the DAW before finally checking the Discrete 4 SC sample rate.
For Windows, check in playback devices: right click on the Discrete 4 SC, then click Properties and move to the Advanced tab. Check the DAW's sample and finally, check the Discrete 4 SC.

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 Discrete 4 SC 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 Discrete 4 SC 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.

Is the input and output routing correct in your DAW? Is the Discrete 4 SC device selected in the relevant sound card section of your DAW's preferences?
If the Discrete 4 SC doesn't show up in your DAW, try unplugging and plugging back the USB 2.0/TB cable. Then, try restarting your computer. Finally, try re-installing the firmware, drivers and launcher.