



**Antelope**

# OWNER'S MANUAL

# PURE 2

**AFC CLOCKING TECHNOLOGY**

## MASTERING AD/DA CONVERTER & CLOCK



# Owner's Manual

# Contents

1. Safety Notes .....	5
2. Introduction .....	6
3. Features .....	7
4. Installation Guide .....	8
5. Front Panel Explained .....	9
6. Rear Panel Explained .....	11
7. Software Control Panel .....	12
7.1. Main View .....	13
7.2. Standby/Power On View .....	13
8. Advanced Notes .....	14
9. Ground Loop Hum and Noise .....	14
10. Additional Information .....	14
11. Calibration Mode .....	14
12. In The Box .....	15
13. Technical Specifications .....	15
14. Antelope Audio Support Resources.....	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.
- Check the voltage selector on the power inlet. Ensure that it is properly adjusted to match the Pure2.
- Your unit should always be un-racked when travelling 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 Pure2

Pure2 is a mastering-grade 24-bit 192 kHz AD/DA 2-channel converter and master clock that includes a relay-controlled volume attenuator. It features Antelope Audio's world-renowned Acoustically Focused Clocking (AFC) technology, and also utilizes pristine analog circuitry, driven by a proprietary multi-stage linear power supply for unsurpassed digital clarity and analog realism.

The relay-based stepped attenuator allows for exceptional accuracy when monitoring through speakers, with perfect L/R balance, even at lower volume levels. A superb headphone amp features its own high-quality DA Conversion.

An intuitive software control panel for Mac OS or Windows provides users the ability to manage all facets of the device operation. Pure2 is also configurable via the front panel with user-definable presets.

Several Word Clock outputs ensure Pure2 can be the master clock for an entire studio. For those seeking the highest level of performance, the unit can also be locked to Antelope's legendary 10M Atomic Clock.

A flexible set of connectivity options like S/PDIF, TOSLINK, AES, and USB provide abundant compatibility with other professional equipment.

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 Pure2!**

All the best,  
The Antelope Team

## 3. Features

- A complete palette of inputs and outputs
- Precise stepped relay volume control
- Extremely flexible routing
- A/D converter with optimized overloads handling
- D/A converter with dual DAC architecture
- High-end headphone amp with a dedicated D/A converter
- Relay-based analog volume control for accurate monitoring
- Master clock with 4th generation of Antelope's AFC jitter management
- A user friendly desktop application available for both Windows and OSX

## 4. Installation Guide

It only takes a few moments to harness the benefits of the Pure2 sound. Follow these simple steps to connect the Pure2 to your system setup:

1. Connect to the AC power source via AC Mains Outlet.  
**Check and adjust the voltage selector!**
2. Connect your choice of Analog/Digital Inputs and Outputs on the rear panel of the device and make sure the headphone jack is inserted securely in the front panel input.
3. Turn on the device by pressing the power button on the front panel or in the software control panel once you have opened it.
4. Connect your USB cable to the Pure2 and your computer. The guest operating system will recognize the new output audio device (Pure2). You should redirect sound from the computer to your newly indicated output – Pure2.

### **Mac OS:**

In your **Apple Menu**, go to **System Preferences** and choose **Sound**, Select the **Output** tab and select **Pure2** from the list.

### **Windows:**

Click on your PC's **START** menu, then select:

*SETTINGS / CONTROL PANEL / SOUNDS & AUDIO DEVICES / AUDIO* and ensure that the **Pure2** is selected as default audio device.

5. Install the software control panel and audio driver from the Antelope Audio website.

# 5. Front Panel Explained



## 1. Power button

Toggles standby/operation state

When you press & hold the power button the following 'Options' menu is displayed:

- Device Info
- Brightness
- Input Trim
- Output Trim
- Reset
- Screen Saver
- 10M Calibration

## 2. Oven Clock light

When lit, this indicates Pure2 is clocked by it's own internal clock.

## 3. Lock light

When lit, this indicates Pure2 is locked to an incoming digital signal via rear panel connectors including Word Clock, AES, S/PDIF Toslink (14) and USB playback. The light will flash if there is no valid digital signal.

When your device is in Oven mode and you play a track via USB, the clock is slaved to USB and the display shows: "Clock: USB". The Oven Clock light (2) is lit and the Lock light remains off.

## 4. Atomic Clock light

When lit, this indicates Pure2 is locked to an atomic signal that enters through the 10M input on the rear panel. When an active atomic signal is present, the Oven Clock light switches off and the Atomic Clock light switches on. This only occurs in Oven Mode. If a digital input is selected for sync source the Lock light switches on if there is a valid signal present in the input or blinks when the signal is missing.

## 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.

Press and hold the 'frequency up' button to see the routing table and press and hold to return to the main display view.

## **6. Display**

Multi-function display that shows Sample Rate on the left and volume levels for the inputs on the right. It displays independently assignable sources that are 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. Rotary control**

This large stepped attenuator has the ability to adjust levels for analog outputs (19) and headphone output (10). The level is shown on the display (6) when adjusting, with a range of -95dB to 0dB with 0.05dB steps. By clicking the Rotary control you can mute the currently selected output.

Press the Rotary control to enter the sub-menu and rotate to navigate through the available options.

## **8. Volume Select button**

This allows you to select if the Rotary control is adjusting the monitor outputs or the headphone outputs.

Press and hold for 2 seconds, to enter the device control menu. This button also acts as a cancel selection button when navigating the sub-menus of the device.

## **9. Preset buttons**

Three Preset buttons store and recall your 'favorite' set-ups. Save your presets by clicking and holding for 2 seconds. This can also be done via the software control panel by holding the Command key for Mac / Control key for Windows while clicking on the preset.

## **10. Headphone Output**

A ¼" TRS Stereo Headphone jack for connecting headphones for a wide range of impedances

## 6. Rear Panel Explained



### 11. Mains Power Connection

*Pure2 has a voltage select option and must be adjusted before powering up.*

The IEC connector supports ~110V @ 60Hz/ ~220V @ 50Hz. The user should enable the device to accommodate the appropriate mains voltage for their country.

### 12. WC Input

BNC connector used to accept Word Clock reference

### 13. 10M Input

This BNC Input Connector allows the Pure2 to receive timing reference from an Atomic Clock such as the Antelope 10M, to increase the Oscillator accuracy. The atomic device becomes the primary timing reference, thus providing better sample accuracy, more detailed sound and greater stability.

### 14. Digital Inputs

#### S/PDIF Input

One Coaxial digital input on RCA connector using the S/PDIF connectivity standard

#### TOSLINK Input

One Optical connector using the TOSLINK connectivity standard

#### AES/EBU Input

One XLR connector-type Inputs using the 110  $\Omega$  AES/EBU connectivity standard

### 15. USB Hi-Speed

Hi-Speed USB (up to 480Mbps). The Pure2 uses USB connector Type B and operates up to 192kHz sample rate with custom Antelope drivers on both Windows and OSX.

### 16. De-Jittered Outputs

#### AES/EBU

One 'jitter-free' XLR connector-type output for compatible equipment using the 110  $\Omega$  AES/EBU connectivity standard.

#### S/PDIF Digital Output

One coaxial 'jitter-free' S/PDIF Output on RCA connector

### TOSLINK Digital Output

One optical 'jitter-free' TOSLINK Digital Output for use with compatible equipment

### 17. Word Clock Outputs

Eight Word Clock Outputs with BNC connectors.

### 18. Analog Inputs

A combo stereo pair of balanced XLR / 1/4" TRS Inputs for connecting Analog sources to the Pure2.

### 19. Analog Outputs

A stereo pair of balanced XLR Outputs for feeding your analog chain from the D/A of the Pure2.

### 20. Monitor Outputs

A stereo pair (2x 1/4 TRS) of balanced outputs to connect different pairs of monitors.

## 7. Software Control Panel



## 7.1. Main View

This section of the control panel is used to configure inputs, outputs and also set names for them. The universal panel view sits constantly on the upper half of the control panel, allowing for quick access to the most important features.

### Top bar:

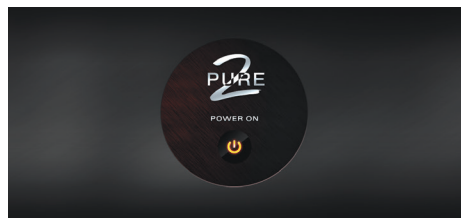
1. Standby button
2. Sample Rate select
3. Clock Source
4. Tab Selection
5. Options Panel, Minimize and Close

### Main View:

6. 2 x VU style level Meters
7. Source drop-down menu for Main Monitor
8. Source drop-down menu for Headphones
9. Main volume attenuator
10. Headphone volume attenuator
11. Mono/ Dim/ Mute buttons
12. Headphone Mono/Mute button
13. Metering Source Selection
14. Highly accurate Peak Meter
15. 3 x Independently assignable Presets

## 7.2. Standby/Power On View

In Standby, the software control panel confirms if the device is connected.



## 8. Advanced Notes

**Proper Digital Audio cables should be used for S/PDIF and AES/EBU:** Avoid using standard analog audio cables for digital signal. Even though they might look the same, they are not designed for digital audio and performance will be compromised.

- AES/EBU use 110  $\Omega$  shielded twisted-pair digital cables.
- S/PDIF use 75  $\Omega$  coaxial (video) cables.
- WC uses 75  $\Omega$  BNC cables. And please do not exceed 6 meters in length.

**As for Analog Cables, please use:**

- Standard high quality cables with XLR connectors;
- Standard high quality cables with TRS connectors.

**Connectivity Chart:** Included in the box.

## 9. Ground Loop Hum and Noise

The design of Pure2 minimizes the possibility of ground loop hum and noise. However, we recommend the use of short 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's also advisable to keep 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. Calibration Mode

The Pure2 can be calibrated periodically in order to calibrate the accuracy of the internal clock by connecting it to the 10M Atomic Clock. This is not something that necessarily needs to be done very often, but if desired please follow these instructions:

- Connect a 10M device to Pure2 via the dedicated 10M input;
- Power on the 10M and wait until it reaches operating temperature;
- With the Pure2 powered up, press and hold the Power button (1)
- Rotate the Rotary control to navigate to the '10M Calibration' option.
- Confirm the selection by pressing the Rotary control (7)
- The Calibration screen appears showing the Oven Temperature and AC Lock status.

- Wait for the sign Locked. Error value will now be displayed at the bottom of the screen
- Wait for the calibration to take place;
- When the Err. Number becomes stable, press the Rotary control (7) again to end the calibration;
- You will see “DONE” displayed on the LCD screen. You may exit the menu pressing the Volume Select button (8).

## 12. In the box

- Pure 2 Converter & Clock
- Owner’s Manual
- Connectivity Chart
- Warranty Card
- 1 USB Cable
- 1 AC Power Cable

## 13. Technical Specifications

### Inputs:

**Analog Inputs:** 1 x Combo Balanced Analog (XLR / ¼ TRS) factory calibrated to +20dBu

**Digital Inputs:** 1 x AES/EBU on XLR (32kHz to 192kHz) @ 110 Ohms terminated  
 1 x S/PDIF on RCA (32kHz to 192kHz) @ 75 Ohms terminated  
 1 x TOSLINK on optical fiber: up to 96kHz

### Outputs:

**Analog Outputs:** 1 x Stereo pair of Balanced XLR Outputs from D/A Converter (Main Output) is factory calibrated to 20dBu and user adjustable from 8dBu to 26dBu

1 x Stereo pair Balanced Outputs for monitors (2 x ¼ TRS)  
 1 x ¼ TRS Front Headphones 20dBu

**Digital Outputs:** 1 x AES/EBU on XLR (32kHz to 192kHz) @ 110 Ohms terminated  
 1 x S/PDIF on RCA (32kHz to 192kHz) @ 75 Ohms terminated  
 1 x TOSLINK on optical fiber: up to 96kHz

**USB I/O:** USB 2.0 Hi-Speed; Data stream up to 480Mbps/192kHz,  
 4 channels I/O playback/record, Type B

**External Reference Clock:** 1 x 10M Atomic Clock Input @ 75 Ohms 1Vpp on BNC  
1 x Word Clock Input @ 75 Ohms 3Vpp on BNC 32 - 192kHz

**A/D Converter:** Dynamic Range 122dB  
THD+N -105dB

**D/A Converters** Main DAC Dynamic Range 127dB  
THD+N -107dB  
Monitor DAC Dynamic Range 120dB  
THD+N -103dB  
Headphones DAC Dynamic Range 120dB  
THD+N -100dB

**Clock Specifications** <+/-0.02 PPM, oven controlled at 64.5°C/ 148.1°F

**Clock Aging:** < 1 ppm per year

**Clock Calibration:** < +/-0.001 ppm

**Atomic Clock Input:** 10MHz @ 1Vpp, BNC

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

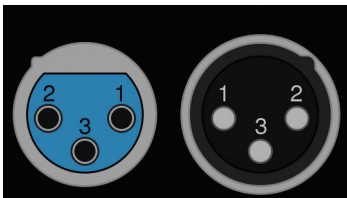
**Operating Temperature:** 0-50°C, 32-122°F

**Weight:** 3 kg, 6.6 lb approx.

**Dimensions (Approx):** 483mm(W) x 44mm(H) x 220mm (D)  
19"(W) x 1.75"(H) x 8.66"(D)

**Power Supply:** ~110/220V 50/60Hz selectable

**Fuses:** 2 x 0.8A 250VAC 5mm x 20mm Type T (or Time delay)



Pin layout:

- Pin 1 – Ground
- Pin 2 – Hot
- Pin 3 - Cold

# 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)

## 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

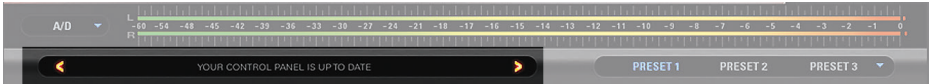
Hours of Operation: 7:00 a.m. - 3:00 p.m. (EST)

## 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 Pure2 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 Pure2:  
<http://www.antelopeaudio.com/blog/en/category/blog-summary/>





# Antelope

## OWNER'S MANUAL

# PURE

AFC CLOCKING TECHNOLOGY

## MASTERING AD/DA CONVERTER & CLOCK



[WWW.ANTELOPEAUDIO.COM](http://WWW.ANTELOPEAUDIO.COM)

Version 2.0 / 18.03.2015