ZeroUno DAC-HPA

DAC & High Power Digital Preamplifier & HEADPHONE amplifier
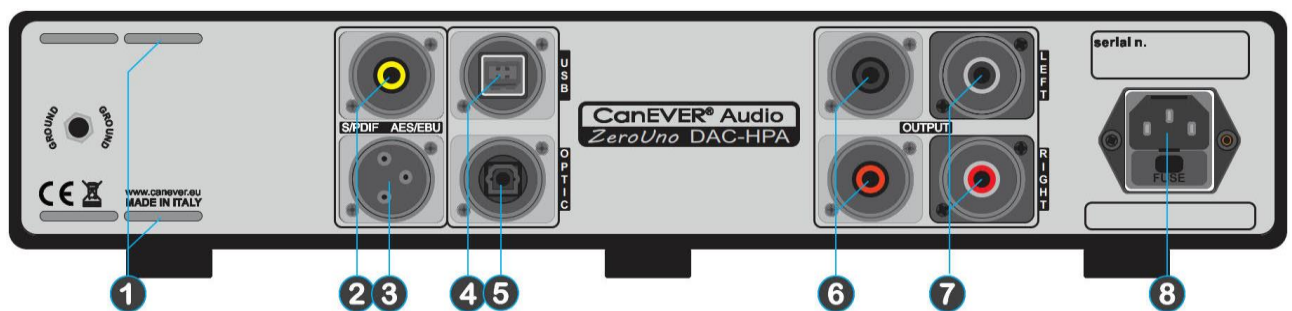
OPERATING INSTRUCTIONS

**CanEVER AUDIO®**

FRONT and REAR view

0	ON/OFF (on the downside)	**4**	LCD Display
1	HEADPHONE outputs (30 to 600 Ohms)	**5**	INFRARED RECEIVER - do not cover
2	SETUP button (if pressed for at least 2 sec) or	**6**	INPUT SELECTOR button
	RESTORE button (if pressed for more than 10 sec)	**7**	VOLUME/PARAMETER knob
3	Status LED		

1	VENT DOOR – DO NOT COVER	**5**	OPTICAL input
2	S/PDIF 75Ω RCA input (BNC optional)	**6**	Raw DAC Outputs - Left & Right Unbalanced
3	AES/EBU 110Ω XLR input (BNC optional)	**7**	Powered Outputs - Left & Right Unbalanced RCA Output Level 0dB ÷ +24dB adjustable
4	USB AUDIO 2.0 input	**8**	230Vac (110Vac in alternative) IEC socket

ON /OFF
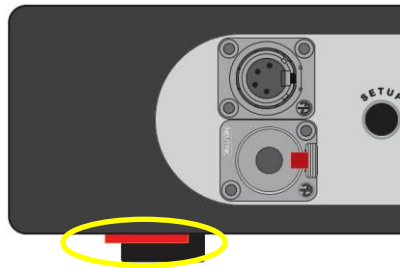
The ON/OFF Switch is located at the lower left side on the downside in the BOTTOM PLATE.
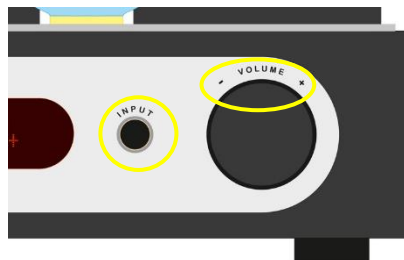
VOLUME
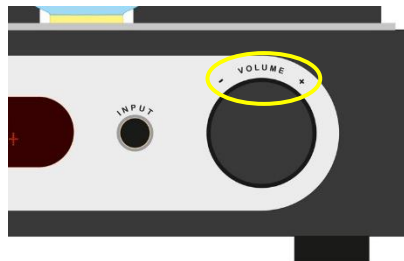
In PLAY mode turning the knob on the right side clockwise or counter clockwise changes the **VOLUME** (up/down) in steps of 1 dB.

While rotating the volume knob, the volume level is shown at the display.

Volume range is -70dB ÷ 0dB.

LEVEL ADJUST

DIRECT LEVEL ADJUSTMENT

While in PLAY mode, to adjust the level:
- Press the INPUT button and *keep it pressed*.
- Then rotate the VOLUME knob left or right to adjust the LEVEL between 0dBu and +24dB.
- The level adjustment is shown at the display.
- It is convenient an indication of 0dB VOLUME at the maximum wanted listening level.

INPUT BUTTON
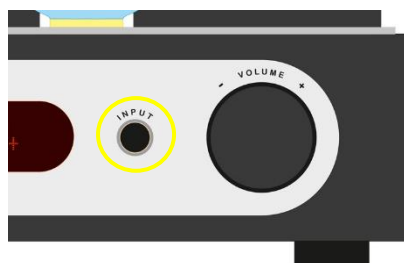
Press the **INPUT** button to switch from one input to another in the following order:

- RCA SPDIF
- XLR AES/EBU SPDIF
- OPTICAL SPDIF
- USB (i²S or DoP with auto detection)

The de-emphasis filter will be automatically activated if the signal at the input was recorded with emphasis.

DISPLAY

In PLAY mode the display reports the status of the *ZeroUno* _{DAC}:

- The first row at the display shows the LOCK on the incoming signal.
- The second row shows the VOLUME (really the attenuation) in dB.
- The third row shows the BALANCE and the ABSOLUTE PHASE.
- The fourth row shows the active INPUT.

Once MUTE is displayed, there is no signal locked at the selected INPUT and the *ZeroUno* _{DAC} has switched to MUTE.
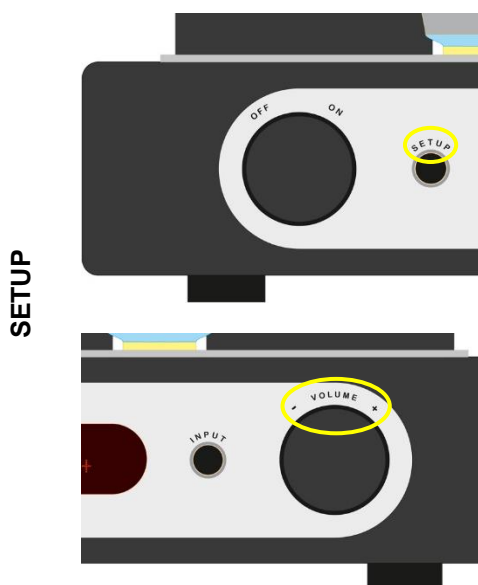
SETUP

Press the **SETUP** button for at least 2 seconds and LESS than 10 seconds to enter SETUP Mode.

The value of each parameter is visible on the display.

Press the SETUP button again to skip to the next parameter.

Rotate the right volume knob to change the parameter values.

If no button is pressed, or the right knob is not turned within 10 seconds, the *ZeroUno* DAC automatically stores the values shown at the display and switches back to the PLAY/MUTE mode.

All selected parameters are stored in a non-volatile memory, to keep the setup information after the unit is switched off.

INFRARED REMOTE CONTROL
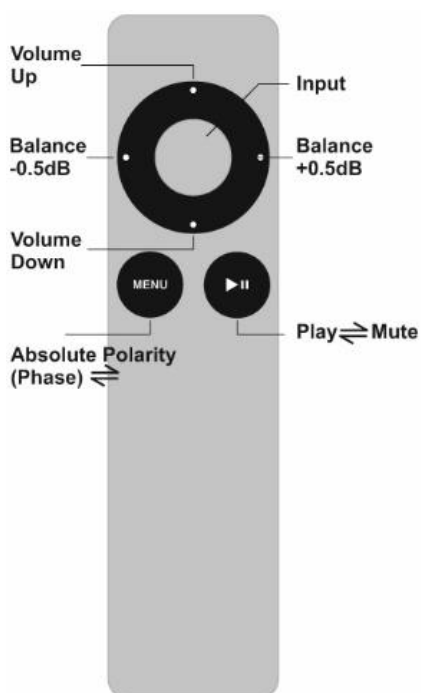
Button	Value
Balance	*Left to Right in steps of 0.5dB each. Range is 0-5dB*
Volume	*Up and Down steps of 1.0dB. Range is -60dB to 0dB*
Phase	*Absolute Polarity < toggle > Inverse Absolute Polarity*
Mute	*Mute < toggle > Play*
Input	*Skip to the following active INPUT*

How to pair the remote control (RC):

The RC coming with each *ZeroUno* DAC has been paired to the unit already in the factory by selecting one of 256 possible pairing codes.
The remote control's code can be changed at any time if it interferes with other electronics in the household.

If you need the pair the remote control and the *ZeroUno* DAC do the following:
Move the RC in front of the *ZeroUno* DAC (about 1 meter).
- To start the pairing process, push at least one button on the RC right in front of the IR receiver to transmit the code of the individual RC.
- Enter in in SETUP mode by pressing the SETUP button for at least 2 seconds and less than 10 seconds.
- When in SETUP Mode, keep the INPUT button pressed.
- Keep the INPUT button pressed and press the SETUP button again
- Release both buttons (INPUT & SETUP) and the RC is paired.

If there is still interference with other RC´s in the household, please restart the process above described to generate another code.

NOTE: Each time the RC communicates with the ZeroUno DAC***, a dot appears at the lower-right corner of the display. If this dot does not appear, check the battery inside the RC (battery type: CR2032B)***

To get instant feedback about the *ZeroUno* DAC status, every time a button is pressed at the RC, the display shows the value in large digits for 5 seconds.
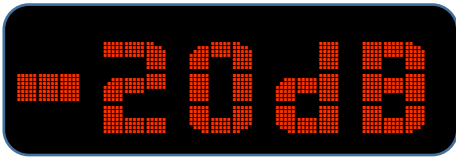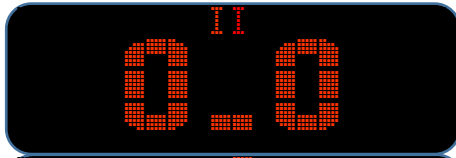
When the **VOLUME** buttons are pressed, the attenuation changes in steps of 1.0dB.
The range is -60dB to 0dB.
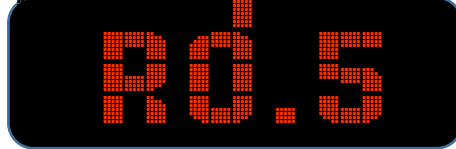If the key is pressed constantly, the attenuation changes quickly.
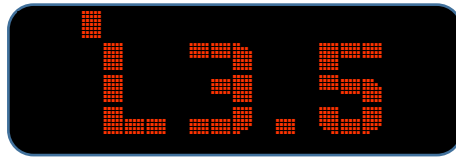
When the **BALANCE** buttons are pressed, the balance changes in steps of 0.5dB.

The range is LEFT -5.0dB to RIGHT +5.0dB.

The first row of the display reports a bar showing the position of the balance value in the range of -5.0dB to 5.0dB.

When the balance is set to 0.0dB the display clearly shows the condition.

When the **MUTE** button is pressed, the *ZeroUno* DAC is muted and the display *never* switches back to the standard size view until the MUTE key is pressed again.

After the MUTE button is pressed again, the *ZeroUno* DAC is un-muted. The display returns to normal operation.

When the **INPUT** button is pressed, the *ZeroUno* DAC switches between the INPUTs.

In the last row of the display the selected INPUT is shown.

```
LOCK DSD 11.2 MHz
Volume : -20dB
Balance: R0.5 PHASE+
INPUT  : USB
```

```
LOCK SPDIF 44.1 MHz
Volume : -20dB
Balance: R0.5 PHASE+
INPUT  : RCA
```

```
LOCK SPDIF 96.0 MHz
Volume : -20dB
Balance: R0.5 PHASE+
INPUT  : XLR
```
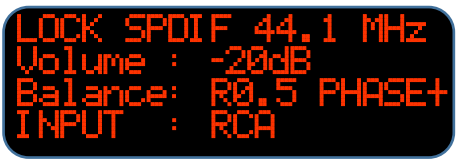
When the **MENU** key is pressed, the value switches between absolute polarity listening (PHASE+) and inverse absolute polarity listening (PHASE-).

NOTE: *During the mastering and production process, the absolute polarity of the music program changes many times. The final digital master file can be stored in inverted polarity. Some listeners are very sensitive to this, so the ZeroUno DAC gives the customer the option to change the absolute polarity of the music file by pushing the MENU button at the remote control.*
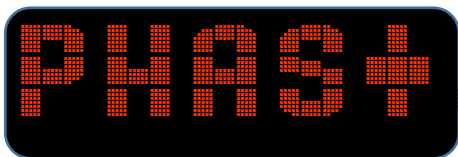
If no button is pressed within 10 seconds, the *ZeroUno* DAC automatically stores the values shown at the display and switches back to the PLAY/MUTE mode.
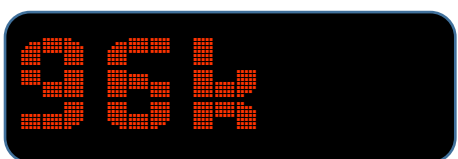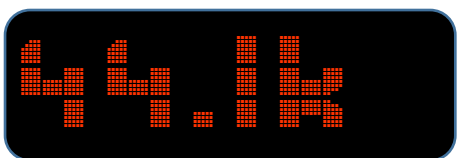
When there is a change in the sampling rate of the incoming music file the locked frequency is shown in big digits.

The function of the BIG SAMPLING RATE parameter can be toggled on and off.

RESTORE OF FACTORY SETTINGS
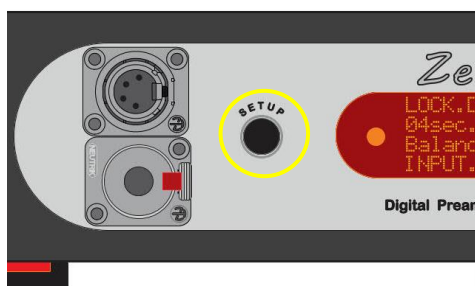
The *ZeroUno* DAC is completely configured by the factory for top performance.

To **RESTORE** the factory setup, press the SETUP button at the front panel of the *ZeroUno* DAC for at least 10 seconds.

The *ZeroUno* DAC will RESTORE, including set parameter when the SETUP button is released.

A countdown will appear on the second row of the display, when the *ZeroUno* DAC has engaged the RESTORE command.

Once engaged, it is not possible to stop the RESTORE command.

PARAMETERs SETUP

To enter the PARAMETERs SETUP mode, press the SETUP button for at least 2 seconds, but less than 10 seconds.
Press the SETUP button again to skip from one parameter to the next.

LEVEL ADJUST

LEVEL ADJUST

1 sec to EXIT&STORE

SETUP:Level Adjust
-1.5dB

Display example

Turning the volume knob to change the ATTENUATION for the specific INPUT, only.
Initial value is 0.0dB (no attenuation).

After 10 seconds without interaction at the right knob, the display returns to normal operation and the parameter is stored.
The countdown on the first row helps to control the time left.

SELECT INPUT

9 sec to EXIT&STORE

SETUP:Select INPUT
Optic YES

Display example

MUTE of unused INPUTS
Press the INPUT button to select & configure the INPUT.
Turn the VOLUME knob to select if this INPUT is in use or not.
You will see "YES" or "NO" on the display.

After 10 seconds without interaction at the right knob, the display returns to normal operation and the parameter is stored.
The countdown on the first row helps to control the time left.

PHASE SETUP

5 sec to EXIT&STORE

SETUP:PHASE
> Absolute Polarity

Display example

ABSOLUTE POLARITY (PHASE)
Turn the volume knob to toggle the listening polarity: absolute polarity versus inverted absolute polarity.

After 10 seconds without interaction at the right knob, the display returns to normal operation and the parameter is stored.
The countdown on the first row helps to control the time left.

BALANCE SETUP

7 sec to EXIT&STORE

SETUP:BALANCE
RIGHT 1.5dB

Display example

BALANCE
Turn the volume knob to change the the BALANCE value.
The BALANCE value ranges from 5.0dB left to 5.0dB right in steps of 0.5dB.

After 10 seconds without interaction at the right knob, the display returns to normal operation and the parameter is stored.
The countdown on the first row helps to control the time left.

LCD DIMMER

9 sec to EXIT&STORE

SETUP:sec LCD ON
30 sec

Display example

LCD DIMMER
Turn the volume knob to change the displays ON time.
The timer settings are: 10, 20, 30, 40 and 50 seconds. It can also be set to always on.

After 10 seconds without interaction at the right knob, the display returns to normal operation and the parameter is stored.
The countdown on the first row helps to control the time left.

LCD BRIGHTNESS

8 sec to EXIT&STORE

SETUP:brightness
90%

Display example

LCD BRIGHTNESS
Turn the volume knob to change the display brightness.
The brightness values are: 50, 60, 70, 90 and 100 %.

After 10 seconds without interaction at the right knob, the display returns to normal operation and the parameter is stored.
The countdown on the first row helps to control the time left.

SAMPLING RATE

4 sec to EXIT&STORE

SETUP:SAMPLING RATE
Show changes in BIG

Display example

SAMPLING RATE changes in BIG digits
Turn the right volume knob to set the display to show the sampling rate of the music file playing. You can select between: "Show changes in BIG" or "Do not show BIG digit."

After 10 seconds without interaction at the right knob, the display returns to normal operation and the parameter is stored.
The countdown on the first row helps to control the time left.

USE FRONT LED

> 2 sec to EXIT&STORE
>
> SETUP: Use front LED
> YES
>
> *Display example*

STATUS LED

RED   non MQA (Master Quality Authenticated) track is playing
BLUE   MQA studio track is playing
GREEN   MQA track is playing

Turn the volume knob to choose, if you want to turn on the STATUS LED at all.

After 10 seconds without interaction at the right knob, the display returns to normal operation and the parameter is stored.
The countdown on the first row helps to control the time left.

NAME

> 6 sec to EXIT&STORE
>
> SETUP: NAME 4USB
> STREAMER
>
> *Display example*

RENAME of INPUTS

Turn the volume knob to change the NAME of an specific INPUT. The following names are available: USB, OPTIC, AES/EBU, SPDIF, STREAMER, PC, CD, DVD, SAT, DAT and MD.

After 10 seconds without interaction at the right knob, the display returns to normal operation and the parameter is stored.
The countdown on the first row helps to control the time left.

Technical data

- The circuit of the *ZeroUno* **DAC-HPA** is based on the ESS SABRE[32] ES9018S DAC chip plus a proprietary hybrid filter design and encapsulation against external noises.
- For optimum performance the SABRE chip runs on a proprietary implementation of special developed firmware
- One motherboard is based on a four-layer PCB with extra thick copper traces to achieve ultra-short signal paths with minimal wiring to avoid electromagnetic induction of noise and to insure perfect grounding
- Discrete power supplies built for the digital and the analogue sections using six toroidal transformers - the last generation of ultra-low noise rectifier diodes and high quality – low noise regulators
- Audio-grade resistors and capacitors
- Comprehensive noise regulation for all digital circuits
- Jitter free operation by patented high performance algorithm
- Integrated 32 bits volume control with a residual noise below -130dB for the best performances even at very low output levels
- On board output level setup to match different sensitivity levels of the direct connects power amplifies
- Voltage-compensated, ultra-low phase noise and low jitter crystal oscillators (clock) acts as master clock
- Two separated clocks for sampling families of 44.1, 88.2, 176.4, 352.8 kHz and 48, 96, 192, 384 kHz
- DAC output stage with the shortest possible signal path based on custom made amorphous audio transformers produced by Lundahl, with first order discrete analogue filter for the best THD and digital noise suppression
- True Class A discrete built analog output stage with zero negative global feedback
- Separately powered USB chip by a "quasi battery power supply" to avoid any distortion induced by the connected computer (no connection to the +5V powerline of the USB cable)
- USB input based on XMOS xCore audio chip with bit perfect transfer for 16bit, 24bit or 32bit data in PCM format up to 384 kHz, including support for native DSD/DoP and MQA.
- 4 Digital-Inputs: 1x USB 2.0; 1x true S/PDIF 75 Ohm BNC or true AES/EBU 110Ohm XLR; 1x S/PDIF RCA; 1x S/PDIF optical
- USB input compatible with following audio formats via PC and MAC:
  - PCM: 44.1; 48; 88.2; 96; 176.4; 192; 352.8 and 384 kHz up to 32 bits
  - DSD (DoP): 2.822 MHz / DSD64, 3.072 MHz, 5.644 MHz / DSD128
  - MQA all formats
- SPDIF inputs (AES/EBU, BNC, RCA) compatible with PCM signals from 44.1, 48, 88.2, 96, 176.4 and 192 kHz, up to 24 bits. The optical input accepts music files with a resolution up to 24/96 kHz
- LCD Display with variable brightness and letter size for better reading from listening position
- Infrared remote control with direct function keys for volume, balance, absolute polarity, mute and input channel
- No drivers required for LINUX or MAC OSx
  USB Audio 2.0 driver available for Windows XP/Vista/7/8/10
- Gain = 26dB (x20);
- Zout < 1 ohm;
- Vo max = ±17V (24dBu)
- Pre-gain between 0dB to +24dB in step of 1dB
- Pout = 2.5Wrms onto 30ohm
- Headphone load within 30 to 600 ohm
- Power amplifier input impedance ≥ 600ohm
- Distortion with 1KHz, 1Vrms, into 30ohm load: 2nd harmonic below -102db; 3rd harmonic below -100dB 4th harmonic below -125dB; 5th harmonic below -120dB