



# **D-09**

## **“Pebble”**

USB & S/PDIF D/A Converter

## **User Manual**

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Rev.A, December 2011

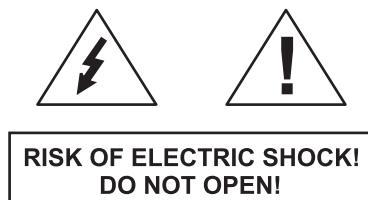
Audial d.o.o Belgrade, Serbia  
[www.audialonline.com](http://www.audialonline.com), [info@audialonline.com](mailto:info@audialonline.com)



## IMPORTANT PRECAUTIONS

1. Do not expose this device to rain or moisture, excessive heat or mechanical force.
2. Use this device exclusively with specified mains voltages.
3. Unplug the device from the wall outlet during a lighting storm.

To prevent the risk of electric shock, do not remove the cover!  
This device contains no user serviceable parts inside.  
Refer servicing to qualified servicing personnel only.



The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

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Thanks for choosing D-09 D/A converter.

This User Manual comprises introducing information on use and performance of this device. For more information please refer to the Audial site, [www.audialonline.com/html/d09/](http://www.audialonline.com/html/d09/), or send your questions to [info@audialonline.com](mailto:info@audialonline.com).

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# Package content

Other than the D/A converter itself, a packing box should comprise:

1. Mains cable
2. Printed copy of this manual
3. Invoice (only if unit was sold directly by Audial).

## Connectors, switches and indicators

All the D-09 connectors, along the mains switch and PLL mode selector switch, are located at unit back plate. The input selector, along the LED indicators, is located at front plate.

Mains connector is standard IEC C14 (cable is supplied, as stated above).

D-09 comprises four inputs.

Two inputs are electrical S/PDIF inputs (true 75 Ohm BNC, and RCA), and the third S/PDIF input is Toslink optical. All these inputs accept sampling rates up to 192kHz.

USB input uses a standard USB B connector for peripheral USB devices, and is intended for use with USB host, which is most often a personal computer with adequate USB port (either 1.1 or 2.0). This input supports sampling rates up to 48kHz. Higher sampling rates can be normally played via this input too, but they will be however automatically down sampled.

By connecting PC to D-09 for the first time, installation wizard will appear, and it will guide you through the process. The D-09 uses native Windows and Mac OS drivers, so no additional drivers are required.

Once the D-09 is properly connected to PC, a “USB ACTIVE” LED indicator will light.

Upon the power up, a BNC input is set by default. The other inputs are selected by pressing the input selector button. The input in use is indicated by matching LED indicator.

“LOCK” diode indicator confirms proper lock to actually used source. Usually, this diode will light only once the playback is actually started, however with some sources it may light permanently.

Along the regular set of unbalanced RCA outputs, a D-09 DAC comprises an S/PDIF output too (BNC connector used). Input selector affects the same both the analog and S/PDIF outputs.

## PLL

A Phase Locked Loop of D-09 DAC can operate in two modes. A PLL mode of operation directly affects D-09 jitter performance.

PLL mode is set by the switch at the back plate. Classic PLL mode is marked as “D” (stands for “data”), and PLL set to lock on preamble is marked as “PA”.

Firstly, if PLL mode is set to “D”, the D-09 PLL works classic way, using an S/PDIF data to lock. This mode provides low intrinsic jitter of the DAC itself, but is also more susceptible to the incoming data related jitter, caused by S/PDIF Biphase Mark data coding. In most cases however we recommend using this PLL mode, for its lower intrinsic jitter, and usually more natural sonic properties.

If PLL mode is to “PA”, a PLL will lock onto the S/PDIF frame preamble. Since S/PDIF frame preamble is constant, and it doesn't depend on the actual data, this mode provides excellent data related jitter attenuation. On the other hand, it produces a higher intrinsic DAC jitter. Still, this mode can be preferred if DAC is used with less than optimal S/PDIF sources.

The DAC senses the PLL mode set by the PLL switch during the power up sequence (about a half a second after the power up). Hence, to switch between two PLL modes, it is necessary to reset the DAC, by turning it off and again on. When changing the PLL mode, please reset the DAC by leaving it turned off for ten seconds, so the capacitors can fully discharge, before turning it on again.

PLL switch affects performance of all the inputs of the D-09 DAC. It however affects performance of analog output only. It doesn't affect performance of S/PDIF output. The S/PDIF output is passing through the selected input signal, and it includes the line driver, however it does not include jitter attenuation.

## Everyday use

D-09 requires no special maintenance.

D-09 achieves claimed technical performance (distortion, frequency response etc.) right from the start, however it normally needs a couple of weeks of burning-in to perform its best in subjective sonic terms, mostly due to the Black Gate output coupling capacitors.

D-09 can be normally powered on for long time periods, however due to relatively high bias current of the output stage, it is rather not recommended to leave it powered on constantly, nor is it really needed.

## Ground loop

D-09 chassis is connected to safety earth. For the safety reasons, use of connection to safety earth is always recommended, and this connection is achieved by three prong mains cable (as is the one regularly supplied with the D-09).

The D-09 USB front stage uses its own supply, that is galvanically separated from the rest of the unit and coupled to it by internal coupling transformer. A source PC thus gets galvanically isolated from the audio chain, and no ground loop associated to D-09 connection to PC can occur. Hence both source PC and D-09 should use their own connection to the safety earth.

BNC S/PDIF input is transformer coupled, with S/PDIF line ground capacitively coupled to the DAC, via 100nF capacitor. Hence the source plugged to this input also may/should use its own connection to safety earth.

Toslink optical input normally provides galvanic isolation, and source plugged to this input again may/should use its own connection to safety earth.

The only input with ground galvanically coupled to the DAC is the RCA S/PDIF input. Also, both D-09 digital S/PDIF and analog outputs are galvanically coupled. Hence, if other devices connected to this input and outputs also use a safety earth, a ground loop may occur. A ground loop makes the current between two devices earth connections flow through their interconnecting cable ground conductor, possibly deteriorating system performance, and sometimes producing audible buzz and hum. Should your system suffer from such an issue, you can contact us for further information.

# Warranty

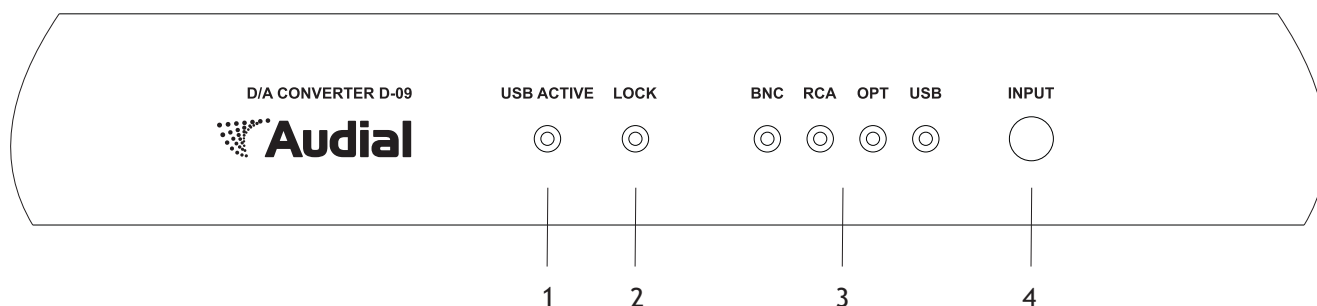
Audial claims proper working of this product for **two years**. Audial is obliged to correct any malfunction within this period, at no charge, either by competent repair service, or by swapping the sold unit by the new one.

For the units sold directly by Audial, invoice is also guarantee certificate. Since Audial maintains own data base of directly sold units, the original buyers in most cases won't need it. Warranty is still fully transferrable from original to subsequent owner(s), however in this case we will probably ask for the invoice.



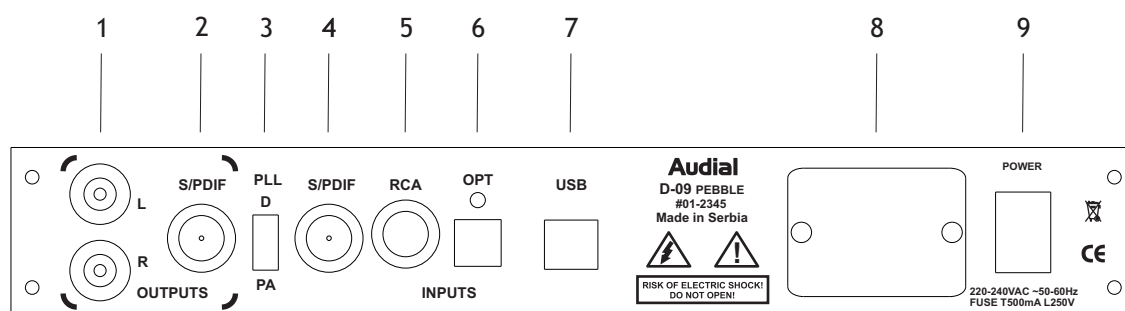


# Front Panel



- 1 - USB activity LED indicator
- 2 - Signal lock LED indicator
- 3 - Input LED indicators
- 4 - Input selector

# Rear Panel



- 1 - Analog stereo output (RCA)
- 2 - Digital S/PDIF output (BNC)
- 3 - PLL mode selector
- 4 - S/PDIF 75 Ohm BNC input
- 5 - S/PDIF RCA input
- 6 - S/PDIF Toslink optical input
- 7 - USB input
- 8 - Mains connector (IEC C14) with fuse
- 9 - Mains switch

# D-09 Specifications

## INPUTS:

S/PDIF electrical, true 75 Ohm BNC

S/PDIF electrical, RCA

S/PDIF optical, Toslink

USB 1.1, standard B connector

## SAMPLING FREQUENCY:

S/PDIF:  $\leq 192\text{kHz}$

USB:  $\leq 48\text{kHz}$

## OUTPUTS:

Analog: RCA unbalanced

Output voltage: 1.7V RMS

Output impedance:  $\leq 150\text{ Ohm}$

Digital: S/PDIF electrical, true 75 Ohm BNC

## FREQUENCY RESPONSE:

Sin(x)/x equivalent:

@ fS=44.1kHz: -3.2dB @ 20kHz

@ fS=88.2kHz: -0.8dB @ 20kHz

@ fS=176.4kHz: -0.2dB @ 20kHz

## TRANSIENT RESPONSE:

Clean with no overshoot or ringing

## ABSOLUTE PHASE:

Inverted

## HARMONIC DISTORTION (@ 1kHz):

0.008% @ 0dBFS

## INTERMODULATION DISTORTION (CCIR):

0.01%

## MAINS VOLTAGE:

220-240VAC / 50-60Hz

110-120VAC / 50-60Hz is also available

## OUTER DIMENSIONS (W x D x H):

290 x 185 x 55 mm

## WEIGHT:

Approx. 1.7 Kg



