LA-200

LEAD AUDIO

DAC AMP

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LA-200, Its astonishing features

The LA-200 is a “DAC AMP” for connecting speakers directly to a PC with the highest possible sound quality. The connection is purely digital (USB) and hence no noise, low power - Just clean music. Furthermore the LA-200 is a “hybrid” where you also can connect other music sources such as an IPOD , CD/DVD, FM tuner etc. The LA-200 is based on more than 25 years of Danish High end audiophile experience and the newest production technology. Also the compact form of the LA-200 is possible due to the use of surface mount devices and external power adapter. The LA-200 is a pleasure to operate. Just connect it to your PC and speakers and start playing. Simplicity is of utmost importance. The LA-200 electrical circuitry has been designed with sound quality as a priority.

- Power amplifier is digital with noise shaping and 400KHz sample rate
- The VERY important passive output low-pass filter is a modified 4th order, specially designed for real speakers.
- Professional grade of sample rate converter to remove jitter
- Low phase noise of Collpitz Oscillator reference with AT cut Crystal
- The output signal is DC coupled, resulting in no capacitors in series with the digital signal path
- High efficiency Power Supply design for saving the environment

Input Sources

The LA-200 is first of all designed for use with a PC's USB port or as an startling upgrade for other digital players(CD Mini disc etc) and has 4 digital inputs

- USB 2.0 compatible
- 2xS/PDIF RCA 75 ohm input (Coax)
- S/PDIF Toslink input (optical)

But LA-200 is also designed for analog inputs, so you can connect all kind of audio sources like personal music players, and we also provide connection for the iPod through an external docking station. The iPod will also be charged from the LA-200, so it is very convenient.

Perfect Jitter free DAC



There are reasons why you need a carefully designed high end D/A converter with USB. USB AUDIO is sent with fixed time interval (based on the PC's 1mS clock!), and it is not time true. This means there can be a lot of jitter, depending on PC load, USB communication, USB clock circuitry and more.

Although you can depend on the audio data to be true, the timing can be terrible, resulting in wrong analog data.

In the LA-200 USB, audio data is captured in a USB buffer, with its own Adaptive clock generator as a reference. This clock cannot be used for the D/A converter because it has a very high level of jitter (It has to follow the USB data). To remove jitter, the signal is therefore sent to an Asynchronous Sample Rate Converter, which main function is to clean up the timing jitter. The ASRC is a true state of the art, with better than 140 dB range and to keep this astonishing number, a Clock reference of highest quality is needed.

So by using these techniques the USB Audio is jitter free perfect audio! Not an easy task. Reference clock.

The Clock circuitry uses a discrete Collpitz oscillator as a basis with an AT cut fundamental crystal and a 2 step buffering to isolate the loading. The output is a theoretical perfect 50% duty cycle clock and because the power supply is very low noise ,the resulting jitter is very low.

Amplifier from cutting edge of Digital Technology



The Amplifier is based on advanced digital signal processing techniques with noise shaping and 400khz sampling frequency. This means the DAC is built into the power amplifier and also the volume control is done in the digital domain. The output stage is a balanced type (not single ended), and though it is more expensive, its advantages are important. Amongst other advantages, distortion is lower and power output is higher. But also power supply rejection is better and this is important in digital amplifiers, because they switch ON and OFF directly to the power supply.

This design also has feedback from the output, thereby also improving the power supply dependence.

The (passive) output low-pass filter is a modified 4th order, specially designed for real speakers different from normally used 2nd order filter. Components used here are first classes: Wima Capacitors and High Saturation shielded inductors.

We made one compromise with this amplifier, and that is output power. The LA-200 is rated at 30W/8 ohm, but at 4 ohm it is reduced to 15W. This is adequate for normal use, but if you have a large room we recommend efficient speakers.

For iPod and personal audio players

Not everything is digital (yet), so we provided inputs for personal audio players and iPod. The signal is AC coupled by Wima capacitors, and a 24bit Analog to Digital converter from Wolfson is used at this important stage.

The headphone output is without sound degrading coupling capacitors and can drive 32-600 ohm speakers.

Power Supply



The DAC AMP has an external regulated DC power supply, to avoid interference from the power supply transformer to the audio circuits. The electromagnetic field from a main transformer is very large, and distance is the most efficient (and cost effective) cure for this.

The power supply for the power amplifier is supplied through a number of medium capacitance paralleled capacitors instead of one big capacitor. This gives the advantage of lower power supply impedance (ESR), and this (in audio terms) gives a better transient response, because power can be delivered faster to the amplifier.

The power supply is converted separately for the analog part and the digital part. Local series and shunt regulators are used in sensitive places (e.g. reference clock). Power consumption is very low even when playing (typical 5W), due to the high efficiency of the digital amplifier. And in power off it is <1W.

Product Specification

USB	44.1kHz, 48kHhz
Digital Input	0kHz to 216kHz
Analog Input	2VRMS /10kohm
Frequency response	15Hz to 20kHz (analog input) 3Hz to 20kHz (digital input)
THD at 1KHz	< 0.03% (6dB below maximum output)
Output Power (1% THD)	2x25W 8 ohm 2x14W 4 ohm
S/N ratio	> 100dB (A weighting)
Jitter	<100pS by design (ASR)
LineOutput Level	1V RMS max 600R Load
HeadPhone Output	32-600 ohm drive 100mW.
Power consumption	< 5W at normal playing (max 60W) <0.5W standby
Dimensions	215 X 170 X 45 mm
Weight	2kg

**the specification might be changed without prior notice*