

Juke Box Hero

To play soundfiles by means of a computer - sounds mundane. That it can be a very sensual experience is shown by the Resolution Audio Cantata USB D to A Converter/Integrated Amplifier combination.

The integration of a computer into a HiFi system is becoming ever more popular, because using this approach high resolution sound files can also be effectively played on a computer. More and more high end specialists are developing appropriate D to A converters with USB connectivity. Thus also Resolution Audio who is introducing a most interesting D to A converter with an integrated CD transport. This combination is now joined by the flawlessly manufactured Cantata integrated amplifier for 4000 Euro. This motivated stereoplay to straight away test this combination.

Jeff Kalt, the joint chief and developer of Resolution Audio, is by no means a newcomer to the industry. After concluding his studies at the famous Massachusetts Institute of Technology (MIT) he concerned himself with audio solutions with which he did not want to reach "specifications for a certain price." He dedicated himself to developments where the "the human ear is the only reliable instrument for the result." His first product in 1993 was a D to A converter.

Strict Separation

That Mr. Kalt has much experience in this area is already evident with a first

glance at the Cantata Music Center. To start with, the four toroidal transformers which supply the different regulated voltages, each one separately, catch one's eye. The prevention of potential interference by means of systematic ground separation is of considerable importance to Jeff Kalt. Therefore digital isolators inside of ICs (ADuM 1401) separate the digital circuitry from the D to A converter components (PCM 1704). In order to achieve maximum channel separation and so that the converters can be supplied with symmetric digital signals, Kalt employs two per channel. Concurrently he uses a

Music from Mac

The complete Reson/Resolution Solution

A USB D to A converter only represents one component in a digital juke box. The actual source is the medium that stores the digital data, usually the computer. Here the ease of use stands in the foreground, since after all one does not want to continually run to the PC or take it on one's lap. Reson, the distributor of Resolution Audio, recommends a Mac Mini (from 709 Euro) as a basic unit. It can be configured so that one can comfortably,

remotely control the music library via an iPod or iPad of the App Remote and of the WLAN receiver's Airport Express (89 Euro). With the Mac Mini, Reson swears upon iTunes in combination with the add-on program Pure Music (101 Euro, www.channid.com/puremusic). This combination assures that the data is always presented correctly to the USB D to A converter in its original resolution, and Pure Music enables a playback

mode from the internal memory which results in better sound. If requested, the dealer can deliver all of this ready-to-use. This complete solution from

Reson is rounded out by means of suitable cables and a soundwise optimized rack called "Domo" for 625 Euro.

self-programmed processor which supplies them with 24 bit/192 kHz. It is astounding that from the symmetrical analog signals, after the DACs, an asymmetrical one is immediately produced by means of an instrument IC (INA 103). But this makes sense according to Kalt because at this stage he also implements the analog filters and the DC voltage suppression. For friends of XLR inputs and balanced connections there is an additional stage which enables this mode of operation. However Resolution Audio only recommends this operating mode with especially long cables.

But the icing on the cake with the music center is the excellent volume level adjustment via an IC (PGA 2310), which allows the DAC to be directly connected to amplifiers. If one does not require this level adjustment capability one does not have to be afraid of the extra component in the signal path because

the IC is bridged by a relay when the maximum volume level of 100 is reached.

Even if the analog side is already full of tricks, Kalt displays all of his expertise on the digital level. Therefore the

USB input as well as the CD transport work asynchronously. This means that the data flows into a large buffer, in order to be then read with an extremely exact clock, thus creating a very exact data

stream which is also apparent in the excellent jitter values. The asynchronous mode of operation however cannot be used with the other digital inputs, and the reason for this in the excellent jitter values.



Screens

- 1 The output stages of the Cantata 50 amplifier are exclusively built up with discrete transistors.
- 2 The preamp section is realized with a complex amplifier chip (INA 103) and an IC volume control.
- 3 Each function group of the Cantata Music Center embodies its own circuits besides transformers.
- 4 Reclocking of data is available for USB and for the transport, but not for the S/P-DIF-Inputs.
- 5 Four high-quality D to A converters are incorporated. After the converters the circuitry is continued unbalanced.

The asynchronous mode of operation however cannot be used with the other digital inputs, and the reason for this is the S/P-DIF-Norm which does not allow the transferred data stream to be controlled.

Therefore the amount of storage cannot be regulated, and asynchronous operation becomes impossible. However also here the developer, Jeff Kalt, did his homework impressively, because the optical TOSLINK, the electrical RCA input, as well as the symmetrical AES/EBU input demonstrated exemplary good jitter measurement values in the stereoplay-TEST factory, and also process high resolution 24/192.

A Clear Amplifier Concept

When taking a closer look at the Cantata C50 integrated amplifier it becomes clear that Resolution Audio paid attention to much that makes sense. Just like in the Music Center there is a clear division between the power supplies of the digital domain, necessary for the operation of the Cantata 50, and the audio circuitry, via separate power supplies and two toroidal transformers. It is not surprising that both regions are

galvanically separated with the same IC (ADuM 1401) as with the Music Center. The preamplifier area of the Cantata 50 is clearly laid-out. After the choice of four inputs, two balanced and two unbalanced, a high-quality IC (INA) constitutes the first stage. From here the signal goes directly into the volume control chip (PGA 2320). Leaving here the signal only moves through circuits with bipolar single transistors in order to end in a complementary push-pull stage with MOSFET transistors. For this circuit and its realization the English developer Denis Morecroft, who reached cult status with his DNM-Electronic, lend a hand to Kalt. Now it is also not a surprise that grounding has been optimized - there are expensive four pole low inductive T-Net-capacitors, as well as rectifying diodes which produce few disturbing switching peaks.

Did you know...

... that Wladimir Kotelnikow in Russia already in 1933 described the digital sampling theorem (Clock frequency = double maximum usable frequency)?

Musical Elegance

After this extensive analysis of the technical innards the testers were anxious to know how the Cantata 50 would behave with the power hungry Magico M5 (Test 5/10) reference loudspeakers. Although the Resolution Audio is not a power giant, it astounded immediately with its buoyant style of playing, and its delicate and colorful midrange. In light of this brilliant performance the testers reached for the stereoplay Highlight Pathos Logos amplifier (12/05). Admittedly this amp played a bit more steadfast in the bass, and minimally airier in the heights, but it did not playquite as joyfully as the Cantata 50, which in addition glistened with more natural voices and more physical representation.

Accessories

Cable Joys

With cables Reson follows a consistent concept. Just as in the loudspeaker wire LSC (Test 1/06) one relies in the RCA Cable TBB upon ribbon construction with solid cores. Here one uses two ultra-pure copper wires of 0.4 millimeter diameter, and the well known Bullet-Plug plugs from Eichmann. The ribbon construction leads to a significantly lower capacity than, for example, co-axial construction in which the inner conductor is surrounded by a return outside shield. A drawback of the ribbon construction is the missing shielding which can lead to interference with strong noise sources

and longer cables. In our listening room such interference could not be heard, and the TBB played with a very exact and explosive style of playing into the hearts of the testers. Although it did not quite offer the bass and the warmth of the Goldkabel High Line RCA (4/08), in return the winds belted out more committedly, and the interaction of the musicians was replicated more exactly when the TBB was connected. Consequently this cable is a hot tip for everyone for whom dynamic shadings are very important, but who does not want to forego a neutral tone color.

Reson
TBB
140 Euro (Manufacturer's Info)



stereoplay Test Verdict

Sound enhancement (13 pF) (8)
Sound good
Price/Performance very good

- = neutral
- = cool, precise, spatial
- = warm, strong bass

Bridge Building

USB connections are limited to five meters? The USB Pont Neuf adapter provides a remedy. With the little decorative metal box and the usual ethernet cable connection, lengths of up to 100 meters to the Music Center are possible.



At first, the standoff only applied to the M5 loudspeakers. With speakers which offer a somewhat higher efficiency such as the Epos Encore 50 speakers (Test 3/10), the Cantata really showed what it could do. It performed even more dynamically and more powerfully, and the slight uncertainties in the bass were as if blown away. The testers were almost tempted to award it another point, but because of its somewhat restricted universality, it remained with 56 points. On top of this it was also honored with the stereoplay Highlight. However, the Cantata Music Center did want to come from behind, and as a pure CD player challenged the Ayre CX 7eMP CD player. The latter with minimally finer highs and a bit more spaciousness could barely reach a draw against the more rhythmically and more compelling playing Cantata. The Music Center made an even better impression via its digital inputs. The testers did not take offense that it sounded minimally more tepid via its TOSLINK versus its RCA input, because this was also the case with

the stereoplay-Referenzen (stereoplay-references) EmmLabs DAC 2 (9/10) and Naim Audio DAC + XPS (5/10). Via the RCA input the Music Center also kept on a level playing field with the other two DACs. Although the Naim DAC threw ample tonal colors and abundant bass into the balance, the EmmLabs DAC as usual sought meticulous high frequency details, but the Cantata responded with an additional pronounced joy of playing and a more natural midrange. Further- more the Cantata with its USB connection had an additional ace up its sleeve. The DAC 2 barely kept up with CD fare, and had to pass when the Resolution Audio DAC showed its proficiency with high resolution 24/96 data which the DAC 2 could not play back. Here the difference in reference to the usual 16/44 is greater than ever. Since even 24/192 data into the RCA input of the DAC 2 did not sound better than the 24/96 USB option of the Cantata Music Center, the latter is now the new *stereoplay Reference Component*.

Dalibor Beric ■

Translated from
German by Peter Ullman

Opinion



Dalibor Beric
Redakteur
Sonderaufgaben

Often the rational incorporation of a computer into an in-home audio system is a problem because the installation and operation is not simple to achieve.

Therefore I commend the complete system conceived by Reson. With an iPad, a Mac Mini, and the Resolution Audio Cantata a very simple to operate and very logical "Stand-Alone-Solution" was created which also, soundwise, fulfilled the highest demands. This, in turn, eliminates the antipathy towards digital music reproduction.

stereoplay
Highlight

Resolution Audio Cantata C50

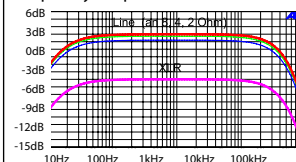
4000 Euro (Manufacturer's Info)

Distributor: Reson Audio, Albbbruck
Telephone: 0 77 53 / 62 43 35
www.reson.de
www.resolutionaudio.com
Visit web site for foreign distributors

Measurement: W: 43 x H: 5 x D: 23 cm
Weight: 5.3 kg

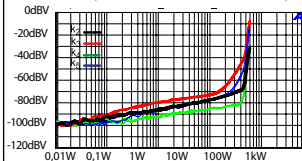
Measurement Values

Frequency Response

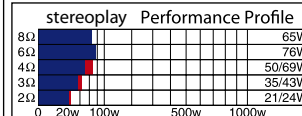


Decent bass drop-off and
soft high-frequency roll-off

Distortion (k2 to k5 vs. Performance)



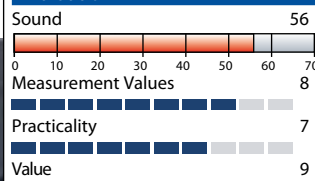
Very consistent and load independent
distortion components,
k3 (red) dominates



Good music performance up to 76
watts into 6 ohm, less into low ohm
and more complex load

Sinewave power output into 8/4 Ω
k = 1 %: 47/57 W
Signal-to-Noise Ratio Line/XLR 95/95 dB
Phono MM/MC - dB
Consumption: Standby/Operation .7/17 W

Evaluation



The integrated Cantata C50 amplifier stems from the Resolution Audio Company, which is evident not only by its tantalizing appearance, but likewise by its dynamic sweeping musicality. The deserved reward: a *stereoplay Highlight*

stereoplay Test Verdict

| | | |
|-------------------------|--------------------|-----------|
| Sound | Absolute Top Class | 56 Points |
| Overall Verdict | Very Good | 80 Points |
| Price/Performance Ratio | Outstanding | |

stereoplay
Highlight

Resolution Audio Cantata Music Center

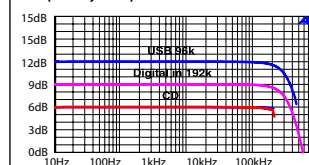
5900 Euro (Manufacturer's Info)

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Weight: 5 kg

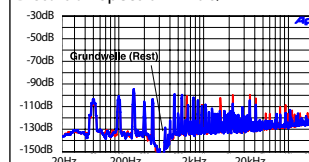
Measurement Values

Frequency Response



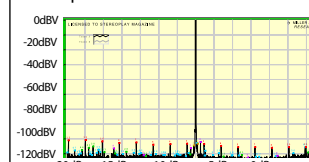
Very balanced with a soft
high drop-off

Distortion Spectrum 96/24



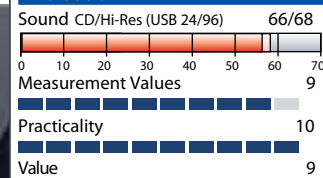
Negligible distortion with a somewhat
wide spectrum, and minimal line impact

Jitter-Spectrum USB



Jitter S/P-DIF/USB/TOS 163/157/221 ps
Signal-to-Noise Ratio USB 94 dB
Output Impedance RCA/XLR 100/49 Ω
Consumption: Standby/Operation .7/17.8 W

Evaluation



Conceived as a USB D to A
converter, the Music Center also
showed no weaknesses with CD
and other digital inputs. It sounds
so natural and dynamic that it
attains *stereoplay Reference status*.

stereoplay Test Verdict

| | | |
|-----------------------------|--------------------|--------------|
| Sound CD/Hi-Res (USB 24/96) | Absolute Top Class | 66/68 Points |
| Overall Verdict | Outstanding | 96 Points |
| Price/Performance Ratio | Outstanding | |