

LINN at PUBLICASITY 9/10/10

LINN Revamps the Akurate System with Significant Advances in DS technology



Numerous members of clan Linn descended on London 9th Nov 2010 to teach the gathered press just how it should be done. And the 'it' was; a quality music system where the music is derived from a server. The audio components proper, by intention, had no computers, no CD or hard drives anywhere near them. Here Linn's Tech Director Keith Robertson was master of ceremonies and taught us that drives were bad, noisy things, noisy in respect of vibration, power supply and radio frequency interference, and he explained this was true of all drives. Such things were best placed remotely, somewhere else, perhaps up with the server control, all that was needed was the preferable wired Ethernet connection, the Cat 6 cable end to plug into the Akurate DS or other Linn DS devices. (And with only mild reservations expressed, perhaps mains derived 'cable-less' server network).

For those not up to speed DS is Digital Streaming ie a 'receiver' which will play almost any music format coming down the Cat6 wire, right up to 24/192 HD audio. By 'play' we mean deliver analogue stereo audio to feed a Hi Fi system. And it is only a year ago that LINN announced that they had abandoned the manufacture of CD players. Remarkably, their successor DS products have been so successful that they now account for 40% of turnover, so they certainly played this card right.



Keith Robertson Linn Technical Director

Their brave new world has no physical digital media, no CDs, these already uploaded to the network drive or store to go with the Linn 'studio master' downloads, and all the other digital music you may have acquired, down to MP3/128. He stressed that the system would make the best even of this latter material. I mentioned the CLOUD and Robertson had no objections; the Akurate DS already has CLOUD interactivity via its direct replay of thousands of live streaming world radio stations. As the cloud grows, high speed internet availability notwithstanding, 'live 'HD' audio is eventually going to be possible. But timed download of higher def material to a home NAS drive is the status quo for now. One day we won't store anything, even software, the whole lot will load seamlessly to a control point, reminiscent those remote 'terminals' we used to use in the very early days of computing where processors were a rarity and were located centrally.

Robertson reminded us of the nearly 40 year old Linn mantra that the *source* was pre-eminent, not the loudspeaker and that CD was now 30 years old, was 'some kind of ancient digital turntable'. Considering quality he compared MP3 at 0.128 megabits per second to CD at 1.4 megabits per second and then to Linn's own studio master downloads at a 9.2MBs, in respect of improving data density and resolution.

Concerning rights management Linn are dead against it, Robertson in particular. He said that like LP and CD, if you have bought the music you should be able to use it

anywhere with anything, and was implacably opposed to those post CD, DRM matters (digital rights management). Robertson expressed the philosophy of 'openness' where LINN made the coding and software interfaces, the access to different forms of music storage and coding, as open as possible, not be prescriptive, but to offer as much access as possible. Thus the Akurate DS will play a wide range of file types. (FLAC, WAV, ALAC, MP3, WMA, AIFF, AAC and OGG audio formats with up to 24-bit 192 kHz native sample rate)

Reviewing the 'music network architecture' Keith 'named' the three primary component parts as the **Media Server**, where your stuff is stored, the **Renderer** (eg a DS), where the data turns into analogue music, and the **Control Point** which can be anywhere and conveniently accesses the network, allowing you to choose what you want and where and how to use it. Inherent is a good GUI, 'user interface', with music selection and system control to say the least and this can be on an iPad or similar device linked to the server. The LINN DS components do not have WiFi or other gadgets which may date prematurely, just join them to the CAT 6 server connection and get on with it, on a theoretically foolproof 'uPNP' universal plug and play basis.

Several aspects of new Akurate range were covered, not least the new boxes for the electronics which have sharper yet simpler and more elegant styling, subtle understatement necessary so older components would not look too out of place. Some tricks were needed to get the clean lines, such as pre-grooving the folded metalwork like folding loudspeaker cabinets to get a small edge radius. Front panels are castings with post machining for a clean finish and crisp edges. Larger machined feet improve the look too.

The latest Akurate speakers are a complete home theatre range but with key components, including an impressive metre high floor standing 5way design with a massive and substantially rigid one piece aluminium floor base compared with the outgoing two piece. It may also be retrofitted to older models. This improves rigidity and floor coupling and was said to deliver an audible improvement. Called the 242 this 40 litre box is bass reflex loaded and has a pair of 6.5 inch sandwich bass drivers, plus the established LINN '3K' array, that distinctive sculpted alloy plate, a module carrying a 4inch mid driver, plus upper and lower treble drivers rigidly built, and in favourably close proximity.

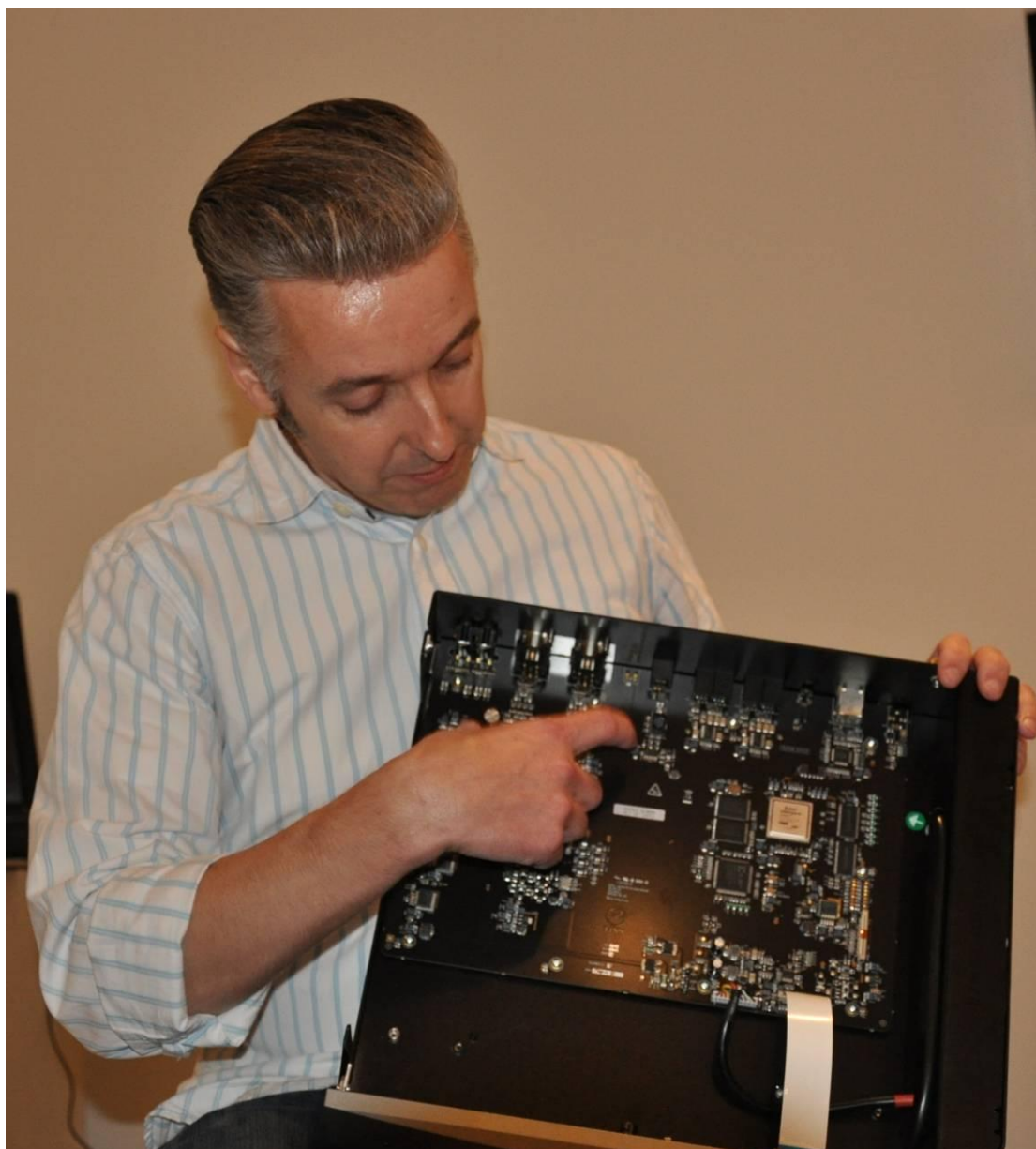
Murray Smith, senior design engineer led us through some of the intricacies of the new Akurate DS (£4,500) which seems to have mainly air inside, bar the almost unnoticed black brick to the right which carries the switch mode power supply, well screened in all respects. In fact this design uses a multilayer component board with substantial complexity that Murray explained took a few tries to get the digital and the audio sections just right. There is a sort of quiet mini computer inside, a large chip which includes a big FPGA complement, or programmable array. Here LINN can exploit this area for substantial pre processing and with improved up sampling and digital filtering, this feature allowing the Sigma Delta DAC chip to run almost 'straight', improving its audio performance.

This DS operates by 'pulling' audio data from the server, dumping data packets in a 'store' and the reading out it at a stable rate, if you like, from the other 'end' with quiet and continuous data. By comparison both SPDIF and USB interfaces are 'push'

systems with inherently higher jitter driven by the source clock unless otherwise handled.

Master clock accuracy has been doubled, also lowering jitter. Incidentally the DS has an SPDIF output for those wishing to use their own external DAC. While the output ICS, SE and balanced, are standard, recent work showed sound quality benefits from retuned local power supplies which have now been installed. The DS does include a high resolution digital volume control but in the complete system this function is likely, but not necessarily carried out by a Kontrol, the matching analogue preamplifier. This features an optional phono card with both moving coil and moving magnet facility, you can have one or the other but not both at once. The choice is conveniently determined by the orientation of the phono board when installed by your dealer.

Akurate Kontrol (£4,200) is a pure analogue preamplifier and is of particular interest for HIFICRITIC since LINN have looked carefully at the RFI issues and have common mode filters on every cable connection, inputs and outputs, including the ground for the balanced connections. In addition all signal connections are connected and disconnected according to which is in use to remove any interference or ground current from unused sources which could contaminate the wanted signal. Kontrol has an Ethernet terminal but this is for system control and not for signal use. Kontrol has no moving parts save the switch buttons and its large blue display may be muted, this also reducing noise.



Murray Smith with the Akurate DS

Not much was said about LINN's relatively inexpensive and economical switch mode power amplifiers e.g. the 2200 (£ 3,350) to 2400 which have the cosmetic improvement, and we should note that they are available in 2,3 and 4 channel forms, all 100W/ch 8ohms, 200W into 4. This multiplicity comes in handy when you need drive the loudspeakers actively and need 10 amplifier channels altogether. They ran the system via a server on 24/192 demonstrations in active speaker mode with one stereo and two 4ch power amplifiers. These amps have both SE and balanced XLR inputs.



Phil Budd – Senior Acoustic Engineer discussing active-v-passive operation for the Akurate 242, '5' way loudspeaker, in gloss finish. The photo by chance brings out the multi-way connector panel (the silver connector board) for the crossover which allows for single and multi -way wiring and then for direct connection for active operation in conjunction with an external line level active filter crossover

They announced that 200 colours and finishes are now available to order for the speakers to aid room décor matching, and these are at relatively moderate pricing. Electronics are silver or black.

Phil made some presentations on active versus passive speaker drive which I for one found disingenuous, though I accept they were designed for a less technical audience. Even so, the acknowledged and accepted limitations inherent in passive, internal crossover loudspeakers were highlighted in an exaggerated manner, out of proportion to their true import. I felt that there were more straightforward ways of explaining the advantage of active speakers. Phil suggested that the inherent damping factor of an

amplifier, say 500 could be restored to a speaker when 'active' by eliminating the, for example, low frequency series inductor from the crossover network, while not explaining that the bass driver voice coil has an inherent resistance of say 5ohms (which remains in circuit) when compared with resistance of the inductor at maybe a tenth or a twentieth of that. There was more presentation of this nature which I not labour here. Incidentally as Barry Fox pointed out with 5-way working you also need 10 discrete cable runs from the amplifiers to the speakers, 'what about the cost?' Though the suggested cable was not particularly expensive in practice. The dem space at Publicasity was almost perfectly undamped, while with asymmetric walls was largely non resonant, but with a very lively reverberation, several seconds when empty though this aspect was greatly improved when the invited audience was present and seated. They clearly represented some considerable absorption.

HD material sounded crisp, detailed and 'present' with taut punchy bass, though I was in no fair position to comment any further on the absolute fidelity shown at this dem. The whole active streamed system deal we heard is priced at about £26,000 so the bits do rather add up.

We all thanked LINN for making the effort to come down and give us a better insight into the new line up and for their helpful responses to probing questions.

Appendix: Some specifications

2200 Series Power amps all revised for 2010

Linn Chakra technology for responsive, powerful and efficient • performance

Powered by Linn Dynamik Switch Mode Power Supply (SMPS)•

Output power 2x 100w into 8ohm, 200 W per channel (into 4 • Ω)

Available in two, three or four-channel models•

Choice of balanced or unbalanced models (XLR or RCA connectors)•

Internally upgradeable with Aktiv crossover cards for use in a fully Aktiv • system

Energy saving automatic signal-sensing circuitry•

Akurate Kontrol

Stereo analogue pre-amplifier•

Built-in high quality phono stage (MM/MC)•

2 Balanced (XLR) inputs and 4 unbalanced (RCA) inputs (phono stage • input configurable to line level)

Headphone output and Aux input (3.5 mm) on front panel•

Balanced (XLR) and unbalanced (RCA) outputs•

Linn Dynamik Switch Mode Power Supply (SMPS) •

Ethernet-enabled for easy configuration and control options•

A dedicated Class A low-distortion headphone amplifier supplies the headphone output on the front panel, and the high quality 3.5 mm Aux input alongside it features auto source-switching for instantly connecting portable music players.

- Date of introduction November 2010 (original model released May 2007)
- Dimensions (H) 91 mm x (W) 380 mm x (D) 380 mm
(H) 3.58 inches x (W) 15 inches x (D) 15 inches
- Weight 5.8 kg / 12.8 lb
- Mains supply voltage 100 – 120 V ac ($\pm 10\%$) 50 – 60 Hz
(auto ranging) 200 – 240 V ac ($\pm 10\%$) 50 – 60 Hz
- Fuse 250 V, T1.6 A (not user replaceable)
- Power consumption
sleep 10 W
active 22 W
- Control interfaces Remote control IR receiver (IR handset supplied)
Ethernet 100Base-T RJ45
6 button front panel keypad 128 x 32 pixel front panel display
- Network configurable via Linn Konfig software
- Analogue audio inputs
4 pairs of RCA socket inputs
2 pairs of XLR Balanced inputs
3.5 mm Front Aux input
- Analogue audio outputs
1 pair of RCA sockets - pre-out
1 pair of RCA sockets - record (fixed volume)
1 pair of XLR Balanced sockets
3.5 mm headphone output
- Phono stage (set to MC as default but dealer-configurable)
MC input impedance 180 Ω , 10 nF
MC (high gain) input voltage 5.0 mV peak @ 1kHz
MC (high gain) +64 dB (x 1500) @ 1 kHz
MC (low gain) +54 dB (x 500) @ 1 kHz
MC signal-to-noise ratio Better than -90 dB
MM input impedance 47 k, 68 pF
MM input voltage 70.0 mV peak @ 1kHz
MM input gain +40 dB (x 100) @ 1kHz
MM signal-to-noise ratio Better than -104 dB
- Analogue input impedance 15 k Ω nominal (unbalanced)
- Input signal (max) + 10 dBv
- Output impedance 300 Ω nominal (unbalanced)
- Peak output signal + 10 dBv
- Volume range - 80 dB to + 20 dB
(0 - 100 scale range in 1 dB steps)
- Unity gain Yes - individual inputs configurable via Konfig
- Unity gain volume 80
- Frequency response 5 Hz to 100 kHz
- Finishes Silver, Black

Akurate DS

Plays digital music from a standard Ethernet network•

Streams internet radio, podcasts and 'listen again' broadcasts•

Decodes FLAC, WAV, ALAC, MP3, WMA, AIFF, AAC and OGG audio • formats with up to 24-bit 192 kHz native sample rate

Compatible with UPnP™ media servers and UPnP™ AV 1.0 control points•

Balanced (XLR), unbalanced (RCA) and digital (BNC SPDIF) outputs•

Linn Dynamik Switch Mode Power Supply (SMPS)•

- Date of introduction November 2010 (original model released November 2007)
 - Type Digital stream player
 - Dimensions (H) 91 mm x (W) 380 mm x (D) 380 mm
(H) 3.58 inches x (W) 15 inches x (D) 15 inches
 - Weight 5.6 kg / 12.35 lb
 - Mains supply voltage 100 – 120 V ac ($\pm 10\%$) 50 – 60 Hz
(auto ranging) 200 – 240 V ac ($\pm 10\%$) 50 – 60 Hz
 - Fuse 250 V, T1.6 A (not user replaceable)
 - Power consumption
sleep 8 W
active 16 W
 - Supported file types FLAC, ALAC, WAV, MP3, WMA (except lossless), AIFF, AAC, OGG
 - Audio sample rates 7.35 k, 8 k, 11.025 k, 12 k, 14.7 k, 16 k, 22.05 k, 24 k,
29.4 k, 32 k, 44.1 k, 48 k, 88.2 k, 96 k, 176.4 k, 192 k
 - Word depths 16 – 24 bits
- Control protocol Compatible with UPnP™ media servers,
UPnP™ AV 1.0 control points
 - Control interfaces Remote control IR receiver (IR handset supplied)
Ethernet 100Base-T RJ45
6 button front panel keypad
128 x 32 pixel front panel display
 - Finishes Silver, Black
 - Back Panel Connectors
 - Analog audio
Line out (L+R) 2 x RCA phono
Line out (L+R) Balanced XLR
 - Digital audio
SPDIF Out BNC
 - Control
Ethernet 100Base-T RJ45
RS232 (1 & 3) 4 x RJ11
 - Output Electrical
 - RCA outputs
Output voltage 2 V RMS (0 dBFS, vol. 80)
Output impedance 300 Ω
 - XLR outputs
Output voltage 4 V RMS (0 dBFS, vol. 80)
Output impedance 600 Ω
 - SPDIF digital output
Output voltage 0.5 V (when terminated with 75 Ω)
Output impedance 75 Ω
 - Audio Performance
 - THD+N < 0.002 %
 - Dynamic range > 110 dB
 - Digital Pre-amplifier
 - Gain range -80 dB to +20 dB
 - Gain resolution 1 dB
 - Unity gain volume 80
- Linn Products Limited

AKURATE 242 Loudspeaker

The lead L,R and Stereo component in a set of home theatre loudspeakers

5 way bass reflex floorstanding loudspeaker

incorporating Linn 3K Driver Array and

2 x 6 1/2 inch Sandwich cone bass drivers

▮ Cabinet volume 42 litres

▮ Impedance (passive) 8 Ω

▮ Impedance (active bass) 16 Ω

▮ Impedance (active mid) 8 Ω

▮ Impedance (active tweeter) 6 Ω

▮ Impedance

(active super tweeter) 4 Ω
| Efficiency 87 dB for 1 watt at 1 metre (1 kHz)
| Frequency response (passive) 49 Hz - 33 kHz
| Frequency response (active) 40 Hz - 33 kHz
| Magnetic shielding yes
| Crossover options Fully passive, partially or fully AKTIV
| Connection options Up to 5 way by wire or amplifier,
bass lift option when Bi-wiring,
+/- 2 dB
| Dimensions H 1000 x W 210 x D 380 mm
H 39 1/2 x W 8 3/8 x D 15 inches
| Weight 32 kg / 70 1/2 lbs

End.....10/10/10 MC