

MUSICBOOK MASTERCLASS

LINDEMANN.

Lindemann's Musicbook:

25 combines many components in one compact package – and performs at the highest level.

Format madness is taking hold! At least that's the impression that one gets in the sales areas of a specialist dealer, where there are devices showing bitrates of 352kHz and more, and which are even capable of processing DSD 512 signals – even though it's hard enough to find music in the comparatively low-resolution of DSD 64.

Why? Well, digital devices have always faced a problem: addition to the actual audio data, digital converters generate their own noise, which needs to be

removed as part of the playback process. At its simplest, this problem is tackled with analogue filters in the output stage, but the more they intervene, the more they influence the timing and phase of the music.

DSD as a data-polisher

However, there is another way: these days, just about every DAC is capable of handling very high bitrates, so to push the noise well out of the audible band, it's possible to exploit this capability by

upsampling incoming datastreams to 96kHz, 192kHz, or even above, so that any spurious noise generated is well beyond human hearing, and thus more easily removed.

A growing number of manufacturers – including Lindemann, the maker of the Musicbook:25 DAC/network player we have here – are even starting to say goodbye to the traditional PCM in favor of internal working based on the DSD format. This has great advantages: the clock here in the megahertz area, standard DSD

(or DSD64) being a 2.8 MHz/1-bit format, DSD128 pushing that up to 11.2MHz and DSD256, or 'quad DSD', all the way up above 20MHz. Our hearing is guaranteed to not pick up artifacts in those frequency bands!

Norbert Lindemann was enthusiastic on his visit to our editorial department, explaining that „Direct Stream Digital“ is an 'analog digital' format. The zeros and ones of the data stream are not here for individual samples, but form the edges of an analogue waveform: a „one“ increases

the amplitude, another one climbs the edge even faster and even higher. If a „zero“ follows, the amplitude decreases again. Believe it or not, you could send the DSD data stream directly into the pre-amp via a capacitor (used as a low-pass filter to take out all the ultrasonic content), and it would produce a usable music signal there.

This small technology crash course makes it easy for you to understand what makes Lindemann's Musicbook 25 so special. Although the concept of DSD

upsampling is a complex process, the effect is astonishingly simple, since digital processes and analogue output stages work together here instead of masking the mistakes of the other.

Data received via one of the four S/PDIF inputs, USB, LAN, WLAN or Bluetooth are all upsampled to DSD 128 or DSD256, using two digital clocks – one for CD's 44.1kHz and its multiples, the other for 48kHz, 96kHz and so on – to avoid resampling and the resultant rounding errors. Two aliasing filters settings can



◀ Musicbook combines an amazing variety of gold-plated connectors on its rear panel



◀ No more changing batteries: the rugged remote handset can be charged via its USB port or via any mobile phone power supply, and accesses system settings unavailable via the Lindemann control app.

be selected, this purely mathematical filter stage being built directly into the Asahi Kasei AK4137 upsampler used here, and the digital to analog conversion itself is handled by two AK 4490 devices from the same company, sued in dual-differential mode for even greater noise-cancellation.

Meanwhile, signals entering the Musicbook:25 via the two analog inputs are passed directly and unchanged into the analogue preamplifier.

The Munich-based company has been producing the Musicbook series since 2014 and has now introduced the new DSD generation. The „source side“ consists of four models: the Musicbook:10 (around 3280 euro) is a preamp with D/A converter, while the otherwise identical 15 (around 3780 euro) adds a CD drive. The two pricier models – the 20 (around 4280 euro) and our test model, the Musicbook:25 – also have comprehensive

network players, again the difference between the two being the CD drive in this range-topper. The four siblings are complemented by two y matching power amps, which we present in the box on the right.

Great User Guide

The Teac drive in the 25 is a slot-loader, and so well integrated as to be all but invisible at first glance, sharing the front panel of the unit with a headphone jack, a USB input and the excellent fine-text display, which provides information about the conversion processes. The top line clearly indicates the sampling rate of the incoming signal and what the D/A converter is doing, so it's impossible to confuse the transparent and incredibly liquid sound of a native DSD input with the crisper and lighter upsampled PCM.

The excellent User Guide explains all essential functions of the versatile little

FORMATS & SERVICES

Supported audio formats: DSD256, WAV, AIFF, FLAC (all up to 24/384), ALAC (max 24/96), MP3, AAC, Ogg Vorbis, WMA

Web streaming services: Tidal, podcast and internet radio

Network/Media Player: detects UPnP and DLNA data sources in the local network, WLAN, Apt X-Bluetooth, playback of USB storage media, Gapless Play with WAV, AIFF, FLAC, ALAC and MP3

Control: system remote control, free app (Android and iOS)

machine in large figures and diagrams and shows numerous application and connection examples, which illustrate how to connect the preamp with active speakers, power amplifiers and so on, over 32 wide-format high-gloss pages. This effort deserves praise, and other manufacturers would do well to imitate it – if they want to see how it's done, a PDF version of the manual is freely accessible on the manufacturer's website.

In addition to the drive and DAC, Musicbook:25's main source is the integrated extensive network player, built on Audivo's streaming platform: as well as DSD it supports PCM formats up to 24/192 and - except for AAC and WMA - allows uninterrupted gapless playback.

All these functions are controlled by Lindemann's in-house-developed Android and iOS app, which provides a very good overview and smooth operation. The control software even offers sorting and filtering options for the integrated Tidal service, which were new to us: or example, recently added favorites can be displayed. A further contribution to the general transparency of the complex digital technique can be found by

tapping on the cover picture of the current song during playback: this reveals a small table with the actual „de facto“ rate of incoming signals. In this manner, we discovered that Tidal's premium subscription sometimes smuggles in low-resolution data...

After conversion, the signals pass through a completely symmetrical and discretely constructed dual mono preamp, with a purely analogue level control controlled by an encoder wheel which, mounted on the case lid, protrudes a little to the front and conveys a feeling of high-quality workmanship, rather like a thumbwheel control on a fine camera. However, we were surprised by its operation: to increase the volume you have to turn it to the left, which seems almost willfully counter-intuitive.

The Musicbook:25 stands out with its almost invincible neutrality, which is especially apparent with minimalistic arrangements – such as on Christian

Willisohn's outstanding album „Hold On“ –, allowing as it does a fine view of individual instruments. The Musicbook projected the blues pianist plastically and with surprisingly natural proportions in the listening room, opening up every detail of the outstanding recorded environment, as well as all the nuances of the piano. Yes, the superb tonality can be limited –the DSD upsampler sounds somewhat softer, more transparent and velvety in the higher ranges when compared with the slightly brighter PCM mode – but both have almost incredible dynamics and timing, giving the 'Number 25' a very exciting musical flow, and both excitement and neutrality.

Teamed up with the matching Musicbook:55 power amplifier, we consider Lindemann's Musicbook:25 to be a high-end system, which would be hard to beat for musicality, operation and design. Top marks in all sectors!

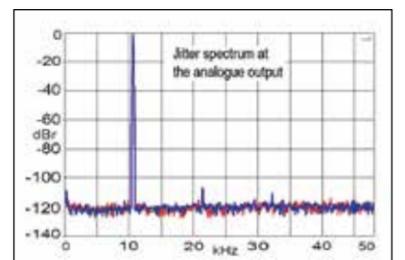
Carsten Barnbeck

KEYWORD
PCM: Pulse Code Modulation - the oldest technique for digital imaging of audio signals.

LINDEMANN
MUSICBOOK 25 DSD
Approx. 4780€
Measurements: 28 x 7 x 22 cm (WxHxD)
Warranty: 5 years
Contact: Lindemann Audiotechnik
Tel.: 08153/9533390
www.lindemann-audio.com

Lindemann's Musicbook is an excellent symbiosis of top quality, flexibility, superb ergonomics and excellent processing – it's a 'designer' system to makes even the most discerning music-lover happy.

MEASUREMENT RESULTS



Distortion Factor (300 mV)	0.001%
Noise level CD (500 mV, 1 kOhm)	102.8 dB
Stereo channel separation (10 kHz)	88.6 dB
Noise ratio Digital	0 97.7 dB
Distortion Factor (400 Hz / -9 dB)	0.002
Transducer nonlinearity up to -90 dB	0.1 dB
Output resistor cinch	40 W

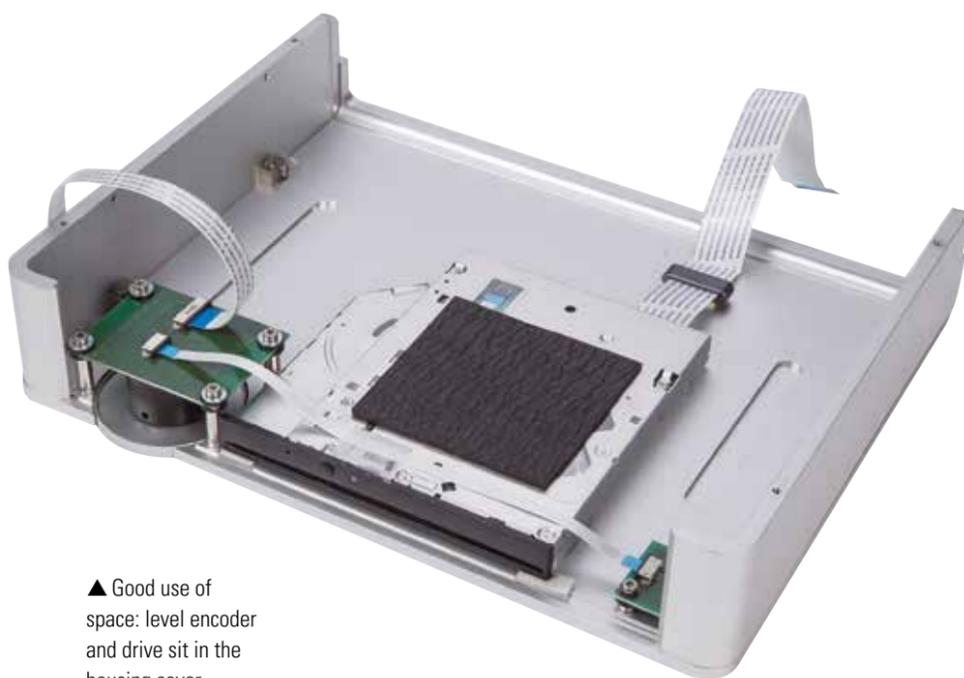
Power consumption
Off | Standby | Idle 0 | <2 | 11 watts

LABORATORY COMMENT: consistently good to very good measured values in analogue and digital part. In addition, the low power requirement in idle mode and operating is very pleasing.

EQUIPMENT

Slot-in CD drive, 4 digital inputs (each 2 x coax snd optic), 2 cinch analogue inputs, 2 x USB (computer, data carrier), LAN/WLAN, UPnP / DLNA network player, web radio, Bluetooth, Tidal, system remote control, remote app (Android / iOS)

STEREO -TEST
SOUND LEVEL NETWORK **92%**
SOUND LEVEL DAC **93%**
PRICE/PERFORMANCE
★★★★★
OUTSTANDING



▲ Good use of space: level encoder and drive sit in the housing cover.

TWO SUITABLE POWER STATIONS

Lindemann completes the Musicbook series with two power amplifiers, in matching housings. The less expensive 50 (around 1980 euro) uses Class D amplification to provide 2 x 80 watts, but we tested the 25 with the more ambitious „55“ (around 2980 euros): with 2 x 240 watts it could unleash a real dynamic storm in our listening rooms. The combination harmonizes perfectly, and not only visually: the power amplifier plays to the characteristic strengths of the pre-amp, and adds no character of its own. Its sheer power give it incredible control down to the lowest bass register, underscoring the impressive dynamics and the outstanding musicality of the „25“. A perfect team!