

P1:

DX270

R2R Ultra

Digital Audio Player

Crafted with 344 high-precision resistors

8-channel R2R, fully differential design

20bit R2R + 4bit String DAC

Hardware resistor compensation network

Completely solves the zero-crossing distortion and outstanding linearity performance

130dB dynamic range, THD+N: -97dB

FPGA-Master 3.0 inside, supporting NOS mode and four in-house developed digital filters

Two ultra-low noise Accusilicon femtosecond oscillators

Supports 12V DC external power input

Qualcomm Snapdragon 665 SoC

4G RAM + 128G ROM

P2:

The Ultimate Evolution of R2R Decoding

— R2R Ultra

The DX270 is not a typical R2R player, but a deep reconstruction of R2R decoding by iBasso, in a way to implement R2R. It adopts a hybrid architecture of 20bit R2R + 4bit String DAC, combined with an 8-channel, fully differential discrete R2R, FPGA-Master 3.0 within-house developed algorithms and hardware resistor compensation network. This results in 130dB dynamic range and THD+N better than -97dB, which thoroughly overcomes common zero-crossing distortion issues in R2R devices, delivering nearly perfect linearity. We call this entire technical system R2R Ultra.

P3:

8-Channel, Fully Differential R2R

The DX270 utilizes a fully balanced architecture design with L+, L-, R+, R-, each internally containing two R2R DACs, forming an "8-channel R2R" configuration. This differential design with dual DACs is key to solving "zero-crossing distortion" — when audio signals switch at the zero point between positive and negative voltages, traditional single-channel decoding can cause signal gaps. The differential output of the dual DACs compensates for these gaps, allowing smoother transitions. Even with small signals, it maintains stable linearity.

This not only solves zero-crossing distortion but pushes the R2R decoding dynamic range to an industry-leading 130dB, revealing the music's full dynamic range.

P4:

20bit R2R + 4bit String DAC

A Leading Technology For Superior Sound Quality

The DX270 employs a hybrid architecture of 20bit R2R + 4bit String DAC. For high-bit (MSB) processing, a String DAC is used, which directly approximates the target voltage through series resistors and switches. It offers a large dynamic range, low spurious energy, and excellent THD+N. The downside is the need for more resistors.

We invest heavily—344 high-precision resistors in total—nearly doubling the resistor count compared to standard R2R DACs, resulting in more delicate, natural and pure sound.

P5:

FPGA-Master 3.0 Inside

In-house Developed Algorithm For Audio Evolution

The DX270 features FPGA-Master 3.0, based on years of iBasso's algorithm development, with logic LUTs 7.5 times more than version 2.0. As the main audio controller, it fetches data directly from the SoC using synchronized system clocks with two ultra-low noise Accusilicon femtosecond oscillators,

The FPGA-Master3.0 also acts as a "hardware calibration master". It can detect and compensate for parameter errors in real-time, reducing the non-linear characteristics of components, and improving the precision of the hardware resistor compensation network. Through the synergy of algorithms and hardware, the DX270's THD+N and dynamic range are further optimized, resulting in more stable decoding performance.

Thanks to our algorithm, the DX270 also supports NOS mode and four types of digital filters for a different listening experience.

P6:

Hardware Resistor Compensation Network

Further Pushing Performance Limits

Combined with FPGA algorithms and a hardware resistor compensation network, which utilizes 76pcsvery precise resistors working together, decoding accuracy is significantly improved, the dynamic range is expanded, and there is reduced distortion. This "software + hardware" deep synergy allows the R2R Ultra DAC to break through traditional performance ceilings. The accuracy of the equivalent resistance reaches 1.4 parts in 100,000.

P7:

Thoroughly Solving Zero-Crossing Distortion

Proven by Both Measurements & Listening

Zero-crossing distortion at near-zero signal levels causes loss of detail, abnormal noise, or muddiness in low frequencies. This is a common problem in traditional R2R DACs. The DX270 utilizes a fully differential architecture and precise calibration to achieve an ultra-low -120dB zero-crossing distortion level, ensuring even subtle instrument harmonics and vocal nuances are clearly reproduced.

P8:

Outstanding Linearity

Quieter Background, Excellent Airiness

The complex waveforms of music are composed of many frequency components. When the DAC's output curve isn't perfectly linear, extra harmonic distortion, intermodulation, and waveform distortion occur. Linearity directly impacts decoding accuracy. The DX270, with ultra-high resistor matching, reliable switch precision, and optimized circuit architecture, exceeds mainstream R2R linearity. The output curve closely matches the ideal curve, free of extra harmonics or distortion, delivering a "night-black" background while delivering a natural and realistic musical presentation.

P9:

Qualcomm Snapdragon 665 SoC

4G RAM + 128G ROM, 5.5-inch Screen

Equipped with Qualcomm Snapdragon 665 SoC, 4GB RAM, and 128GB UFS 2.1 high-speed storage thus ensuring smooth operation and response. The DX270 supports up to 2TB micro SD card expansion for massive storage space. The 5.5-inch display with 1080\*2160 resolution offers rich colors and precise touch experience, elevating usability.

P10:

Supports 12V DC External Power Input

Powerful and Dynamic Performance

Connecting to a 12V DC power supply boosts the amplification section's power supply from  $\pm 8V$  to  $\pm 12V$ , enabling "Super Gain Mode" with output power up to  $1575mW + 1575mW @ 32\Omega$ . This abundant power can handle complex music genres and various headphone types with ease.

P11:

Two JRC Analog Volume Chipsets

Ensuring Pure Sound with Noise Attenuation

The DX270 utilizes two dual-channel JRC analog volume ICs, forming a 4-channel volume control. At low volumes, this volume control synchronously attenuates noise. At typical listening volume (50mV), it achieves over 91dB SINAD, ensuring a clean and natural sound.

P12:

Non-SRC Android 13 & Linux-Based Mango OS

The DX270 utilizes Android 13 OS with a refined UI that supports installation of various streaming APPs. It bypasses SRC at the system level, allowing apps like Mango Player to work at their best. Additionally, it features Mango OS, a Linux-based music system with many advanced algorithms,

which are dedicated for audio playback. With lower SoC load, no WiFi interference, no Bluetooth interference, and lower EMI, the results are a purer sound.

P13:

4.4mm PO + 4.4mm LO + 3.5mm PO

Low-Latency USB-DAC

Featuring both 3.5mm and 4.4mm output interfaces, it effortlessly handles both balanced and single-ended headphones and IEMs.

The 4.4mm balanced line-out offers convenient external amplification.

The 3.5mm coaxial output, supports high-quality digital output up to 384kHz.

Supporting USB-DAC mode, the DX270 can turn into a high-end R2R USB-DAC for PC or smartphones.

P14:

Packaging Contents:

P15:

Specifications:

Model: DX270

Chassis Material: Aluminum alloy

Screen: 5.5inch, 1080\*2160 resolution, In-cell capacitive touch screen

Audio Formats: APE, FLAC, WAV, WMA, ACC, ALAC, AIFF, OGG, MP3, DFF, DSF, DXD, DST, including CUE, ISO, M3U, M3U8

USB: USB-C USB 3.1 (high-speed data transfer and fast charging)

Output Port: 4. 4mm Balanced Phone Out, 4.4mm Balanced Line Out, 3.5mm Single-ended Phone Out, 3.5mm Coaxial Output, USB Digital Output

WiFi: 802.11a/b/g/n/ac (2.4Ghz/5Ghz)

Bluetooth: V5.0

Storage: 4G RAM +128G ROM, supports Micro SD card up to 2TB

Battery: 4400mAh, 3.8V Li-polymer battery

Charging Time: 2.3 hours

Play Time: Up to 13.5 hours (The play time varies with different gains, resolutions, volume used and headphone/IEM loads.)

Size: 136mm x 73.5mm x 19mm

Weight: 265g

Contents: DX270 Player/ USB-C cable/ coaxial cable/ burn-in cable/ leather protective case/ 12V AC adapter/ screen protector/ warranty card/ quick start guide

4.4mm Balanced Phone Out:

Output Voltage: 7.3Vrms (12V DC-IN),

6Vrms (Battery)

Output Power: 1575mW + 1575mW @32Ω, THD<0.1% (12V DC-IN)

1050mW + 1050mW @32ohm, THD<0.1% (Battery)

Frequency Response: 10Hz-40kHz, -1dB

Signal-to-Noise Ratio: 128dB

Dynamic Range: 128dB

THD+N: -95dB (A-weighted, 600Ω load)

Crosstalk: 135dB

Output Impedance: 0.7Ω

3.5mm Single-Ended Phone Out:

Output Voltage: 3.7Vrms (12V DC-IN),

3Vrms (Battery)

Output Power: 416mW + 416mW @32Ω, THD<0.1% (12V DC-IN)

Frequency Response: 10Hz-40kHz, -1dB

Signal-to-Noise Ratio: 122dB

Dynamic Range: 122dB

THD+N: -91dB (A-weighted, 600Ω load)

Crosstalk: 118dB

Output Impedance: 0.5Ω

4.4mm Balanced Line Out:

Voltage: 4Vrms (DAC High Gain),

3Vrms (DAC Low Gain)

Frequency Response: 10Hz-40kHz, -1dB

Signal-to-Noise Ratio: 130dB

Dynamic Range: 130dB

THD+N: -97dB (A-weighted, 200kΩ load)

Crosstalk: 135dB