

KANN MAX

Product Overview

2022.02.15
Astell&Kern Unit (Rev.3)



**KANN
MAX**

KANN MAX

The KANN series is a portable player lineup loved by audiophiles all over the world for its performance focused on high output and clear sound.

KANN MAX, the fourth product in the KANN series, builds on the advantages of the KANN series with higher output and portability.

It provides 4 levels of gain and up to 15Vrms output so that a wide array of headphones can be driven in an optimal state.

By integrating the proven design of the KANN series into a lighter weight and smaller sized player, we have realized both ultra-high output and low noise.

KANN MAX features ESS ES9038Q2M Quad-DAC together with Astell&Kern's unique audio technology to provide the best performance you can feel from a portable DAP.

- 4-step gain level with maximum 15Vrms output
- Perfect circuit design with ultra-high output and low noise in an even smaller sized player
- Equipped with ESS ES9038Q2M Quad-DAC that reproduces clear, exceptional output
- TERATON ALPHA, the epitome of Astell&Kern audio technology
- 32-bit/768kHz, Native DSD512 support
- Bluetooth 5.0 and 24-bit codec (Qualcomm® aptX™ HD , LDAC) support
- ReplayGain that automatically adjusts volume to be consistent across tracks

slogan keyword

Powerful - Powerful output level, Powerful, Strong
Light, small – smaller size and lighter weight, Lightweight
Quality - sound quality
Design – Bold ship and Maximum concept, rocket, hot hatch car

Slogan example) Maximum Lighter and Stronger
Lighter Stronger and Better
Make the Best Better
Powerful Rocketeer

Powerful
Output
15Vrms

Quad-DAC

TERATON α

Native
DSD 512

32-
bit/768kHz
Bit-to-Bit
play

MQA 8X

LED
Indicator

Bluetooth
Sink

4-Step Gain Level in a Smaller Size Device With Ultra-High Output of up to 15Vrms

KANN MAX takes the identity of the series to the next level to provide a perfect experience with high power and clear sound. It provides 4 stages of gain level and ultra-high output of up to 15Vrms, which was previously only possible with a stationary headphone amplifier.

KANN MAX can perfectly drive even the most sophisticated headphones with high impedance.

KANN MAX offers a smaller size and weight than the KANN ALPHA player, which boasted the best portability in the existing KANN series.

Although smaller in size, all power-related components have been analyzed and the power circuit has been redesigned several times to achieve 13 hours of continuous playback.

KANN Series Comparison

Features	KANN MAX	KANN ALPHA	KANN CUBE	KANN
Product				
Output Level	[Super] Unbalanced 8Vrms Balanced 15Vrms (Condition No Load)	x		X
	[High] Unbalanced 6Vrms Balanced 12Vrms (Condition No Load)	[High] Unbalanced 6Vrms Balanced 12Vrms (Condition No Load)		[High] Unbalanced 4.1Vrms Balanced 8.1Vrms (Condition No Load)
	[Mid] Unbalanced 4Vrms Balanced 8Vrms (Condition No Load)	[Mid] Unbalanced 4Vrms Balanced 8Vrms (Condition No Load)		[Low] Unbalanced 2.1Vrms Balanced 2.1Vrms (Condition No Load)
	[Low] Unbalanced 2Vrms Balanced 4Vrms (Condition No Load)	[Low] Unbalanced 2Vrms Balanced 4Vrms (Condition No Load)		
Dimensions(WHD)	68.3 x 117 x 23.6(mm)	68.3 x 117 x 25(mm)	87.7 x 140 x 31.5(mm)	71.2 x 115.8 x 25.6(mm)
Weight	about 10.76oz (305g)	about 11.14 oz (about 316g)	about 17.3 oz (493g)	about 9.83 oz (278.7 g)
Playback Time	13 hours	14.5 hours	9 hours	15 hours

Perfect Circuit Design That Achieves Both Ultra-High Output and Low Noise

As the output increases, so does the noise level.

KANN MAX is equipped with ultra-high output, does not allow any noise and conveys Astell&Kern's philosophy of delivering the original sound as it should be, without compromise.

Together, we have completed the perfect circuit design to achieve this.

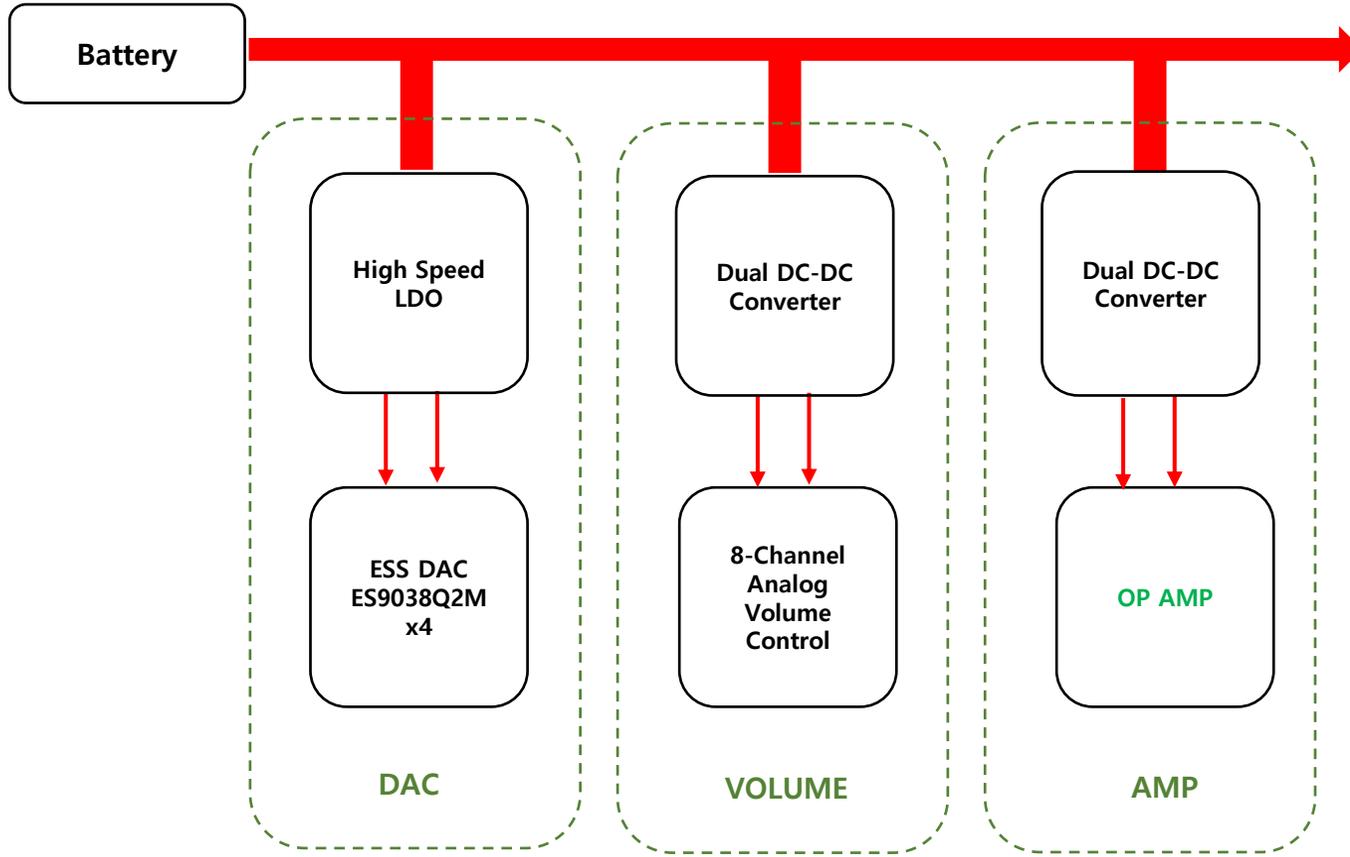
KANN MAX applies an analog volume controller to deliver a rich dynamic range without loss.

By separately configuring the power supply IC for each Audio Block divided into DAC, Volume, and AMP, KANN MAX is designed to stably supply the power required for each Audio IC. Through this design, the interference ripple noise of the DC-DC power supply (the shaking noise phenomenon that occurs when power is supplied) is removed.

Audio noise that can be heard amplified like audio sound in OP AMP is minimized.

Ultra-high output and low noise in the KANN MAX was achieved through different circuit design, including creating and dividing a limited PCB that is the same size as KANN ALPHA into 12 layers and reviewing the physical size of the device applied to the AMP circuit.

Power Block Diagram



Quad-DAC Sound That Reproduces Clear and Overwhelming Sound Output

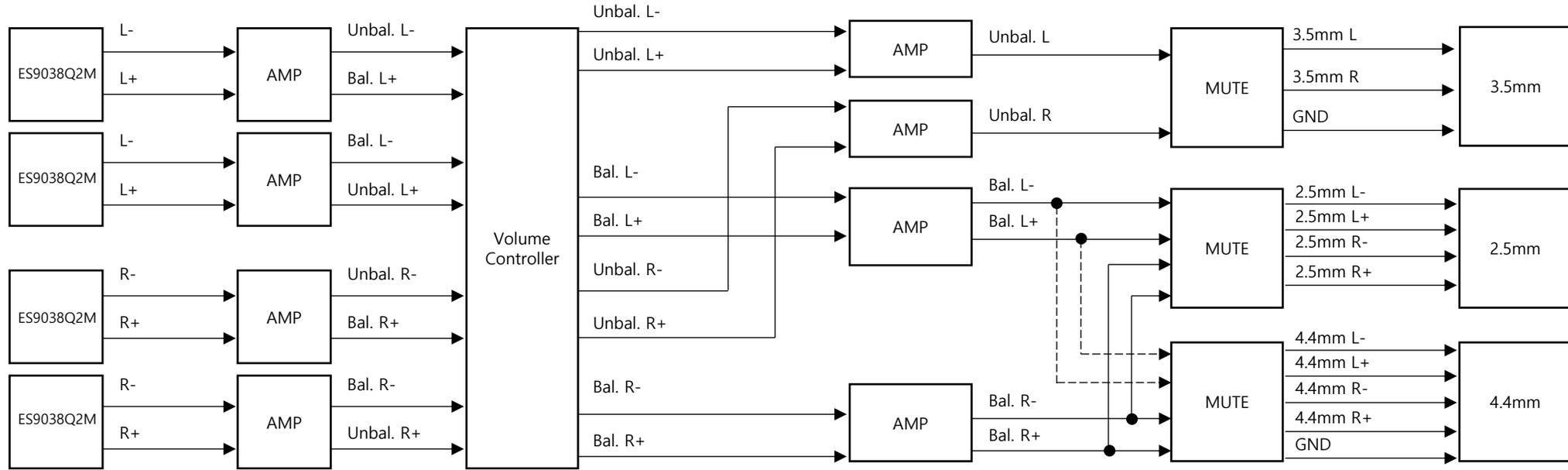
KANN MAX is the first player in the KANN series to be equipped with four ES9038Q2M DACs for high-output performance.

By applying Quad DACs, one DAC can be fully allocated to one channel, so the depth and realism of the sound source can be expressed to the fullest.

Combined with Astell&Kern's amplifier circuit technology that naturally and delicately raises the strengths of the DAC, and the perfect decoding ability of the DAC to deliver the original sound as it is, music output is expressed as the original sound without distortion.

Four DACs applied to KANN MAX, a power supply IC configured for each audio block, and a perfect circuit design produce ultra-high output and low noise, providing you with the best performance and sound that the KANN series is known for.

Quad-DAC Audio Block Diagram



Gold PVD Output Coating

In order to minimize contact noise from the output jacks, a gold PVD coating method is applied to the headphone connector instead of the typical rings used by other products. This improves both design and function.

32-bit/768kHz, Native DSD512 Support

Bit-to-bit playback is available up to 32-bit/768Hz, and DSD playback is native up to 22.4MHz, for uncompressed sound quality, staying true to the artist's original intention, in high-resolution and with minimal distortion.

32-bit bit-to-bit Playback by the KANN MAX



32-bit Playback by Other Products



AK 오디오 기술 결정체 TERATON ALPHA



AK ULTIMATE SOUND SOLUTION, TERATON ALPHA

TERATON ALPHA 는 효과적인 전원 노이즈 제거, 효율적 전력 소비와 흔들림 없는 증폭, 완벽히 변환되는 오디오 출력 인터페이스를 통해 원음에 가까운 소리를 구현해 내는 AK만의 ultimate Sound Solution입니다.

오직 원음에 가까운 소리를 위해 끊임없이 연구하고 개발한 수만 시간의 결과물인 아스텔앤컨만의 특허 받은 기술들이 집약된 TERATON ALPHA가 적용되었습니다.

[TERATON ALPHA 보러가기 >>](#)

AK ULTIMATE SOUND SOLUTION, TERATON ALPHA

TERATON ALPHA is AK's ultimate Sound Solution to produce audio playback that is close to the original sound through the audio output interface by use of effective power noise removal, efficient power management and amplification with minimal distortion.

TERATON ALPHA features Astell&Kern's patented technologies, which are the result of tens of thousands of hours of continuous research and development to produce sound close to the original sound the artist and producer intended.

Go to TERATON ALPHA >>

Equipped With Bluetooth 5.0 and Support for Wireless 24-Bit aptX HD, LDAC Codecs

Bluetooth 5.0 features faster transmission speed and greater range compared to Bluetooth 4.2, therefore providing a more stable wireless connection.

Both LDAC and aptX HD is supported to provide audiophiles with high-quality sound even when listening wirelessly.

BT Sink를 통한 무선 Hi-Fi Sound

새롭게 선보이는 BT Sink 기능은 스마트폰과 BT 스피커를 연결하는 것처럼, 외부 기기에 SE180을 BT로 연결하여, 외부기기에서 재생되고 있는 음악을 BT Sink 기능을 통해 SE180으로 전달할 수 있습니다.



Wireless Hi-Fi Sound Through BT Sink

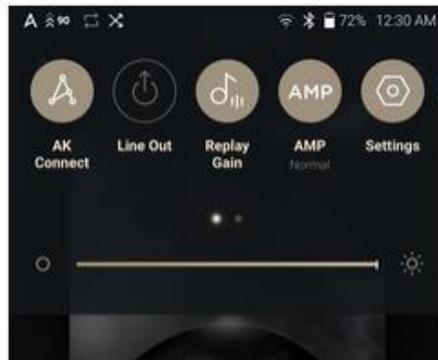
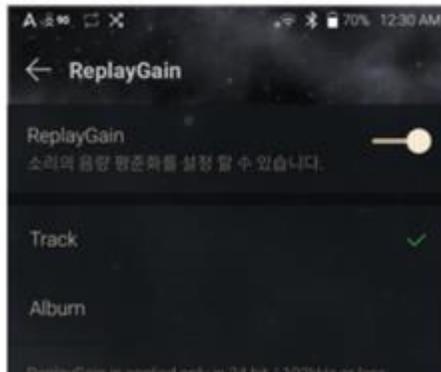
The BT Sink function connects the KANN MAX to an external device via Bluetooth, similar to connecting a smartphone with a BT speaker. Music from an external device, such as a smartphone can now be played back in high-quality on the KANN MAX using the BT Sink function.

Replay Gain Automatically and Uniformly Adjusts Playback Volume

Replay Gain automatically adjusts the loudness of each song to prevent large fluctuations of volume between different musical tracks.

Now, you can enjoy your own playlists seamlessly, at a consistent volume through the use of the Replay Gain feature on the KANN MAX.

*Replay Gain supports sound sources up to 24-bit/192kHz.



AK File Drop to Enjoy Wireless Transfers

The new AK File Drop function in the KANN MAX makes files transfers easier and more convenient. Using AK File Drop, you can freely transfer files wirelessly through a PC, smartphone, or FTP program located on the same network. Music file management is now possible with a cableless, wireless solution.



DESIGN

KANN MAX has been visualized as Maximum while inheriting the bold concept of the KANN series to capture the overflowing horsepower of a high-performance sports car and the intense power of a rocket engine.

While the existing KANN series image was a heavy and strong image like an off-road car, with KANN MAX, we wanted to continue the identity of the Astell&Kern KANN lineup while boasting a thinner size and high-power performance like a high-performance sports car.

The slimmer shape is emphasized with the hexagonal top line that narrows sharply from the bottom up, and the hairline treatment on the back expresses the sense of speed and shows confidence that it can produce powerful output.

The wheel protectors wrapped around the volume wheel radiate sparks in the shape of a powerful engine mounted on them, giving off a strong image that looks like it will pop out at any moment.

The gold PVD coating line applied to the finely processed ceramic top cover and the Astell&Kern logo applied to the top along the edge line on the back visually express the balance and delicacy inherent in strength.

General Specifications

Model	KANN MAX
Body Color	Anthracite Gray
Body Material	Aluminum
Display	4.1-inch 720 x 1280 touch screen
Supported Audio Formats	WAV, FLAC, WMA, MP3, OGG, APE, AAC, ALAC, AIFF, DFF, DSF
Sample Rate	PCM : 8kHz ~ 768kHz (8/16/24/32bits per Sample) DSD Native: DSD64(1bit 2.8MHz), Stereo / DSD128(1bit 5.6MHz), Stereo / DSD256(1bit 11.2MHz), DSD512(1bit, 22.4MHz) Stereo
Output Level	[Low] Unbalanced 2Vrms / Balanced 4Vrms (Condition No Load), [Mid] Unbalanced 4Vrms / Balanced 8Vrms (Condition No Load), [High] Unbalanced 6Vrms / Balanced 12Vrms (Condition No Load), [Super] Unbalanced 8Vrms / Balanced 15Vrms (Condition No Load)
CPU	Quad-core
DAC	ESS ES9038Q2M x4 (Quad-DAC)
Decoding	Support up to 32-bit/768kHz Bit-to-Bit Playback
Input	USB Type-C input (for charging & PC & MAC)
Outputs	Unbalanced Out (3.5mm), Optical Out (3.5mm) Balanced Out (2.5mm, only 4-pole supported 4.4m, only 5-pole supported)
Wi-Fi	802.11 b/g/n (2.4GHz)
Bluetooth	V5.0 (A2DP, AVRCP, Qualcomm® aptX™ HD, LDAC)
Dimensions	2.68"(68.3mm)[W] x 4.6"(117mm)[H] x 0.92"(23.6mm)[D]
Weight	about 10.76oz (305g)
Feature Enhancements	Firmware upgrade supported (OTA)
Operating Temperature	0°C ~ + 40°C (32°F~ 104°F)

Audio Specifications

Frequency Response	±0.023dB (Condition : 20Hz~20kHz) Unbalanced ±0.026dB (Condition : 20Hz~20kHz) Balanced ±0.035dB (Condition : 20Hz~70kHz) Unbalanced ±0.072dB (Condition : 20Hz~70kHz) Balanced
S/N	114dB @ 1kHz, Unbalanced 115dB @ 1kHz, Balanced
Crosstalk	-124dB @ 1kHz, Unbalanced -135dB @ 1kHz, Balanced
THD+N	0.0003% @ 1kHz, Unbalanced 0.0004% @ 1kHz, Balanced
IMD SMPTE	0.0007% 800Hz 10kHz (4:1) Unbalanced 0.0007% 800Hz 10kHz (4:1) Balanced
Output Impedance	Unbalanced Out 3.5mm (1ohm) Balanced Out 2.5mm (1.6ohm), 4.4mm (1.6ohm)

Clock Source

Clock Jitter	25ps (Typ)
Reference Clock Jitter	70ps

*** Audio specifications will be based on Low Gain.**

Storage Capacity

Built-in Memory	64GB [NAND]
External Memory	microSD x1 (Max. 1TB)

Battery

Capacity	5,600mAh 3.8V Li-Polymer
Charge Time	about 3.5 hours (9V 1.67A Fast Charging) 5.5hours (5V 2A General Charging)
Playback Time	about 13 hours (Standard: FLAC, 16bit, 44.1kHz, Unbalanced, Vol.40, LCD Off, LED On, Low Gain)

Supported OS

Supported OS	Windows 7,8,10(32/64bit) MAC OS X 10.7
--------------	--