

# AK HB1

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Product Overview

2023. 07. 18  
Astell&Kern Business Team



3.5mm,  
4.4mm  
Dual  
Output

ES9281AC  
PRO DAC

aptX™HD  
LDAC

Built-In  
Microphon  
e

Smart  
Charging  
System

MQA

## **Experience the Freedom of Music**

AK HB1 is a portable Bluetooth DAC/AMP that lets you effortlessly experience high-quality audio and Hi-Fi streaming services with the best performance, all without the hassle of cables.

Pair your mobile device to AK HB1 through Bluetooth and experience seamless, wireless Hi-Fi sound across various IEMs and headphones, all facilitated by its compact, lightweight design and powerful built-in amplifier.

In addition to this, AK HB1 also delivers Astell&Kern's pristine sound quality via USB DAC functionality, and offers a seamless connection to gaming devices and immersive entertainment using microphones, transforming your mobile device into a hub of endless multimedia possibilities.

- **3.5-mm and 4.4-mm Dual Output**
- **Supports LDAC and aptX™HD for High-quality Bluetooth Sound**
- **Features ESS ES9281AC PRO DAC**
- **Separate DAC and AMP for Premium Hi-Fi Experience**
- **Plug & Play USB DAC Function**
- **Interchangeable Cable (Type-C and Lightning Cable Included)**
- **Supports UAC 1.0 (Gaming System)**
- **Clear and Vivid Voice in Calls**
- **Car Mode Supported**
- **Multi-point Connection (Up To Two Devices)**
- **MQA Renderer / Roon Tested**

## Premium Bluetooth for Hi-Fi Sound

AK HB1 is equipped with Qualcomm's CSR8675 Bluetooth chipset, which supports the transmission of high-resolution audio sources, ensuring a stable connection.

From LDAC, supporting 24 bit/96 kHz, to the aptX™ HD codec offering stable 24 bit/48 kHz support, AK HB1 accommodates an extensive selection of codecs, including the most commonly used AAC and SBC. This comprehensive codec support guarantees smooth wireless playback of high-resolution streaming audio from both smartphones and PCs.

Furthermore, AK HB1 features Bluetooth multi-point capability, allowing connection with up to two devices simultaneously. This feature allows you to effortlessly switch connections between various mobile devices, enabling scenarios like enjoying music from a tablet PC while concurrently receiving notifications and calls on your smartphone.



## Hi-Resolution Sound Unleashed by USB DAC

AK HB1 goes beyond simple Bluetooth playback, delivering outstanding, full high-resolution sound via USB DAC connection to PCs, smartphones, tablets, and more.

Supporting Native DSD256 and 32 bit/384 kHz playback, AK HB1 ensures compatibility with a diverse range of high-quality audio sources, providing Astell&Kern's signature premium sound quality.

Additionally, equipped with a renderer function that supports MQA 8X, AK HB1 enables MQA playback without the need for external DACs or playback devices. By simply connecting AK HB1 via cable to compatible devices, which support MQA unfolding, you can enjoy MQA audio playback through network-enabled apps and streaming services from anywhere.

\* To use AK HB1 as an H/W MQA renderer, a compatible S/W core decoder capable of unfolding MQA is required.



## Precision DAC and AMP Design for Hi-Fi Sound

AK HB1 incorporates ESS's ES9281AC PRO DAC for exceptional noise control and unparalleled ultra-high-quality Hi-Fi sound performance.

Adding to this, AK HB1 introduces an exclusive AMP circuitry that supersedes the standard built-in DAC AMP.

Its AMP enables a commanding 4 Vrms output (in Balanced connection) and dual connectivity options — 3.5 mm unbalanced and 4.4 mm balanced, catering to a wide range of IEMs and headphones.

While maintaining a compact form factor of 33 x 68.4 x 16.5 mm, we used micro resistors and capacitor parts to achieve a small footprint without compromising performance. Carefully selected ultra-small tantalum capacitors, which are used in AK player products to create a stable system and audio performance by controlling the power fluctuations, are also included to create an optimal audio circuit design. In addition, the output and audio performance are enhanced with Astell&Kern's unique power management technology to minimize current consumption in respect of the connected device.



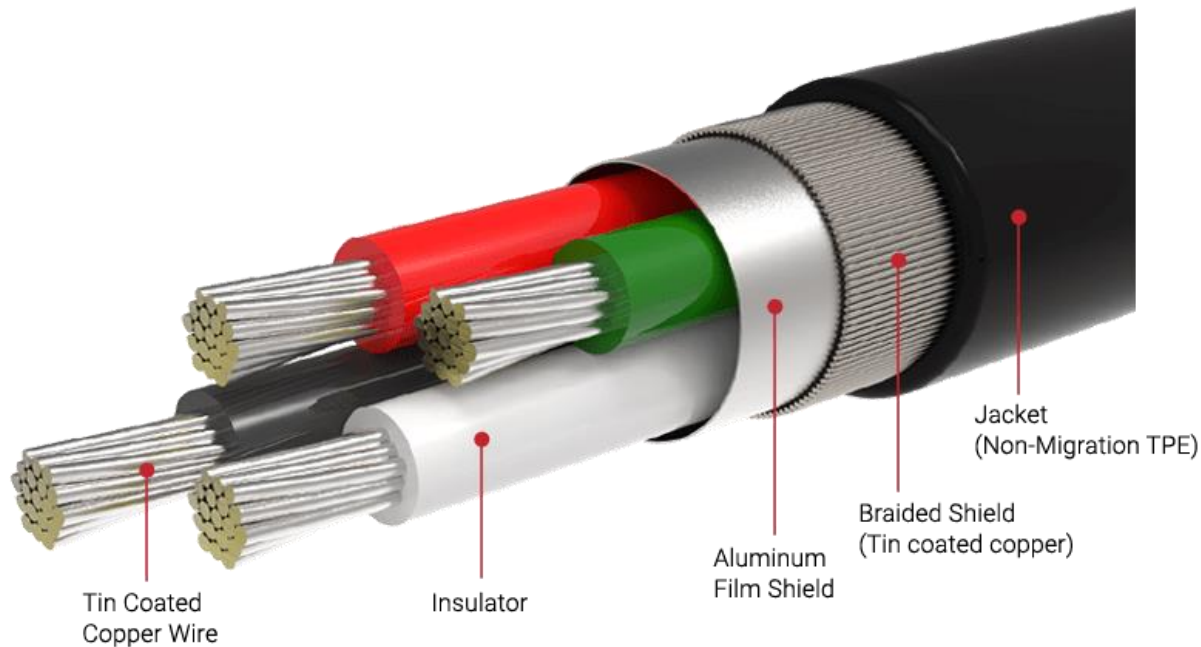
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## Dual Noise Shielded Cable

To ensure optimal usability across both Android and iOS devices without the need for additional adapters, AK HB1 features an interchangeable cable that readily supports Type-C and Lightning connections.

The AK HB1 features a dual shielded cable to minimize noise and deliver a more vivid, original sound. The copper core wire is coated with tin to prevent corrosion and strengthen tensile force for enhanced durability.

Additionally, the entire cable is wrapped in an aluminum film to block noise with an extra layer of shielding around the power cable to further minimize noise, the biggest issue in audio, then the tin-coated copper wire is woven to minimize noise interference to sound. Finished with a fabric jacket on top of the TPE jacket, the cable features enhanced durability and usability with perfect aesthetic appeal.



## Easy and Convenient, USB Plug & Play

AK HB1 simplifies the transition between Bluetooth and USB cable connections by supporting USB Plug & Play functionality. Connect AK HB1 to your PC or smart device using a USB cable to enjoy high-resolution sound while simultaneously controlling various settings and features through the app on your Bluetooth-connected smartphone. With BT Priority Mode enabled, AK HB1 seamlessly switches to Bluetooth mode, whenever a Bluetooth signal is received while using the USB DAC function.



## High Compatibility and Simultaneous Support for UAC 1.0 & 2.0 for Gaming

While modern smartphones, tablets, and PCs support UAC 2.0 connections, many gaming devices still exclusively support UAC 1.0 connections. To cater to both scenarios, AK HB1 ensures compatibility by supporting both UAC 2.0 and UAC 1.0 connections for cross-platform quality sound experiences. Connect AK HB1 to your gaming device such as PlayStation and Switch, and enjoy low latency and enhanced sound for an immersive gaming experience.

## Seamless Experience Extended to Cars with Car Mode

Activate AK HB1's dedicated Car Mode to enjoy high-quality DAC/AMP sound effortlessly while at the wheel. Simply connect AK HB1 to your vehicle's AUX port, and its power automatically turns on/off based on your vehicle's ignition, allowing you to enjoy audio from paired devices.





## Crystal-Clear Voice Calls Thanks to High-sensitivity MEMS MIC

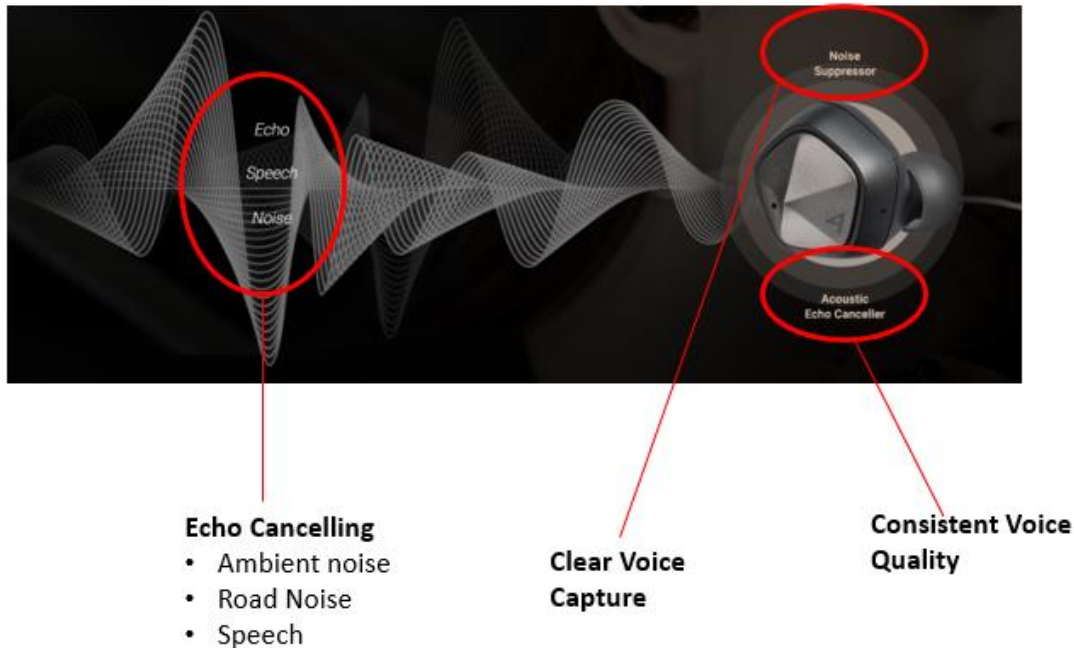
AK HB1 ensures crystal-clear voice quality and stability thanks to Knowles's high-quality MEMS microphone technology and Qualcomm's cVc Generation 8.0 call solution with Clear Voice Capture technology, which suppresses ambient noise while delivering clear vocals to the recipient.

Furthermore, AK HB1 incorporates a 4-pole in-line MIC, enabling voice calls via wired earphones.

Experience enhanced call quality alongside AK HB1's exceptional Hi-Fi sound.

\* The in-line MIC functionality is only available while USB DAC is enabled. During Bluetooth (BT) connections, the built-in microphone of HB1 handles calls.

\* For 4-pole earphones, AK HB1 supports only CTIA-compliant earphones (OMTP-compliant products are not supported).



## Smart Charging System

AK HB1 automatically recognizes devices when they are connected via a USB cable, whether playback or charging devices, streamlining the charging process without requiring additional setting adjustments.

Also, the charging mode can be turned on/off to allow simultaneous playback and device charging, preventing battery depletion during playback.

\*

1. When connected to a charger via USB, it charges at normal speed (1 hour and 30 minutes to full charge).

2. When connected to a playback device via USB, the charging speed is adjusted, and the charging mode can be turned on/off.

Charging Mode On: Charges HB1's battery using the playback device's battery power.

Charging Mode Off: Operates only by AK HB1's battery without charging from external devices.



## LED Indicators for Real-time Status

Two LED lights positioned on the side of the AK HB1 give you an overview of the current device status such as the file type being played and battery information.

### Status LED

PCM (Red) / DSD (Blue) / MQA (Magenta)

### Power LED

Charging (Blinking white) / Fully charged (Constant blue)

Level below 10% (Blinking red) / Level 11-20% (Constant red) /  
21-60% (Constant yellow) / 61-99% (Constant green) / 100% (Constant blue)



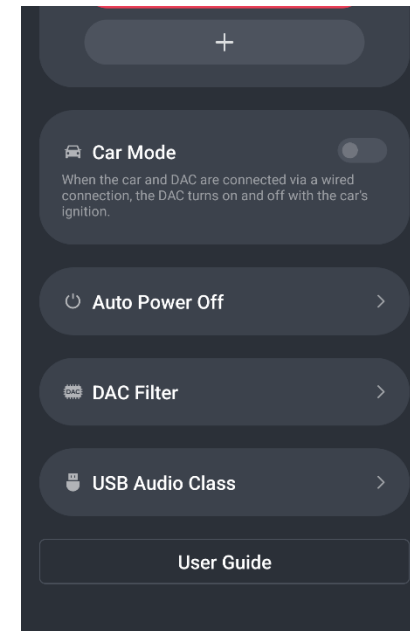
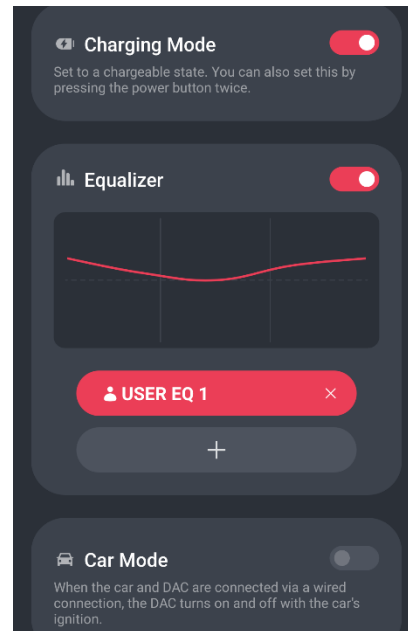
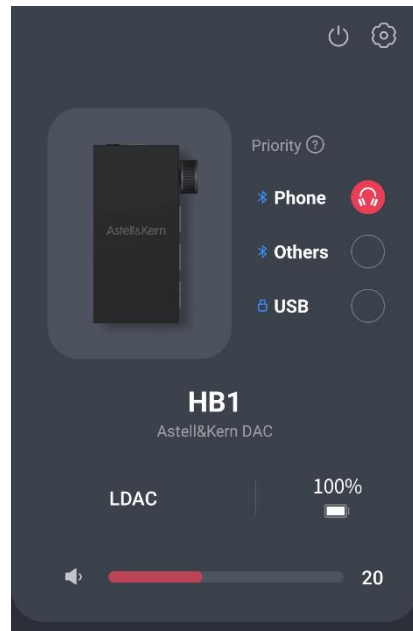
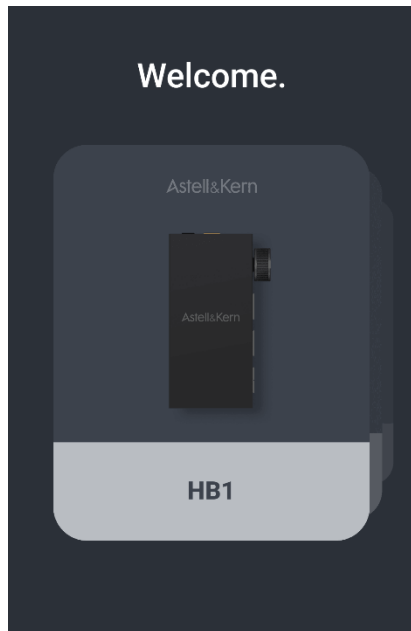
**Media**  
**Status LED**  
**Pairing**  
**Power LED**  
**Power**

## Easy Configuration with Our Proprietary App

Install the exclusive app to use various functions and enjoy easy setup.

The AK Control app is equipped with various newly developed user functions for the AK HB1.

Users now can conveniently control Device Priority, Volume Level, User EQ setup, Car Mode and DAC Filter setting, etc.





MQA (Master Quality Authenticated) is an award-winning British technology that delivers the sound of the original master recording. The master MQA file is fully authenticated and is small enough to stream or download. Visit [mqa.co.uk](http://mqa.co.uk) for more information. Astell&Kern SP3000 includes MQA technology, which enables you to play back MQA audio files and streams, delivering the sound of the original master recording.

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Roon Tested devices

Roon plays to thousands of USB, Airplay, and Chromecast devices, but Roon Tested devices are profiled by the Roon team to ensure simple setup and effortless daily use.

If you own a Roon Tested device or are thinking about buying one, you can have the confidence that you will enjoy the best possible experience of it.

## Design Concept

The AK HB1 embodies Astell&Kern's design philosophy with inspiration from the architectural masterpiece "Church of Light" by Tadao Ando, known for its interplay of light and shadow.

Embodying the essence of robustness and simplicity, much like concrete, the device showcases a sleek form that cleverly integrates buttons and earphone connections within the gaps between its front and back housings.

The use of silver coloring between the front and rear surfaces creates an illusion of light gracefully flowing between the two facades.

Intuitively designed with a comfortable grip, the size and placement of the wheel ensure effortless volume control.

The wheel features a combination of aluminum and rubber materials for improved grip and accuracy, ensuring easy and accurate control.

## General Specifications

Model	AK HB1	
Body Color	Shadow Black	
Body Material	Polycarbonate (Body) / Aluminum (Volume Wheel)	
Bluetooth	Chipset	Qualcomm CSR8675
	Version	5.0
	Codec	LDAC, aptX™HD, aptX™, AAC, SBC
	Profile	A2DP, AVRCP, HFP
DAC	ESS ES9281AC PRO	
Sample rate	PCM : 8kHz ~ 384kHz (8/16/24/32bits per Sample) DSD Native: DSD64(1bit 2.8MHz), Stereo / DSD128(1bit 5.6MHz), Stereo / DSD256(1bit 11.2MHz), Stereo	
Output Level	Unbalanced 2Vrms / Balanced 4Vrms (Condition No Load)	
Input	USB Type-C (Supports UAC 1.0 and UAC 2.0)	
Output	3.5mm (Supports CTIA standard 4-pole earphones/headphones), 4.4mm (Only 5-pole supported)	
Dimensions	33 x 68.4 x 16.5mm (Excluding volume wheel) 39.8 x 68.4 x 16.5mm (Including volume wheel)	
Weight	About 1.41oz (40g)	
Feature Enhancements	Firmware upgrade supported (OTA with APP)	

## Audio Specifications

Frequency Response	±0.135dB (Condition : 20Hz~20kHz) Unbalanced   ±0.136dB (Condition : 20Hz~20kHz) Balanced
S/N	117dB @ 1kHz, Unbalanced   118dB @ 1kHz, Balanced
Crosstalk	-112dB @ 1kHz, Unbalanced   -112dB @ 1kHz, Balanced
THD+N	0.0005% @ 1kHz, Unbalanced   0.0005% @ 1kHz, Balanced
IMD SMPTE	0.0003% 800Hz 10kHz (4:1) Unbalanced   0.0003% 800Hz 10kHz (4:1) Balanced
Output Impedance	Unbalanced Out 3.5mm (0.8ohm)   Balanced Out 2.5mm 4.4mm(1.8ohm)

## Battery

Capacity	600mAh 3.8V Li-Polymer
Charge Time	about 1.5hours
Playback Time	about 6hours (Standard : AAC )