

HA-P5 Portable Headphone Amplifier



**Integration of High-performance and Ergonomic Design,
USB DAC/Headphone Amplifier supporting DSD 5.6 and PCM 24/192**

■ Main Features

- Ergonomic and human-friendly design
- Light-weight and compact body for mobile use
- USB DAC supporting DSD 5.6MHz and PCM 24-bit/192kHz
- 160mW + 160mW of Output Power (at 32-ohm load)
- Headphone Output with Separated grounds for Left and Right channels
- Direct connection with iOS devices for Hi-Res playback (Lightning-Camera Adapter not required)
- LED indicators for Incoming Digital Audio Formats
- Versatile Inputs of Digital and Analog (USB/Coaxial/Optical/Analog Line)
- Free Hi-Res playback Apps/Software supplied from TEAC



Brand	TEAC
Model	HA-P5
EAN Code	4907034220786
Product Dimensions/NW (W x H x D)	65.4 x 121.4 x 21.6 / 182 (mm/g) 2.6" x 4.8" x 0.9" / 6.4 (inch/oz.)
Package Dimensions/GW (W x H x D)	130.8 x 185 x 72.3 / approx. 440 (mm/g) 5.1" x 7.3" x 2.8" / approx. 15.5 (inch/oz.)
Qty. per Master Carton	10 pcs.

■ Overview

The HA-P5 is a high-performance and light-weight portable headphone amplifier/USB DAC ideal for mobile audiophiles.

Equipped with DSD 5.6MHz and PCM 24-bit/192kHz Hi-Res audio input, and massive power amplifier section that delivers 160mW + 160mW of output power, the circuit design employs Left and Right channel ground-separation for high-quality headphone listening with ground-separation driven headphones. An analog audio output turns your home hi-fi system into today's Hi-Res audio system.

■ Concept

● Ergonomic and human-friendly design

From the human-engineering point of view, the design of the HA-P5 started from the scratch. Compactness, lightweight and comfortable for human hands are keys to design, and it weighs only 182g or 6.4 oz. which is the lightest portable device in TEAC's portable headphone amplifier range.

● Delivering the best sound with daily essentials

The fundamental circuit design of the HA-P5 is based on the highly reputed TEAC Reference 501 series, the UD-501, a USB DAC, and the HA-501, a Headphone Amplifier. A high-performance D/A Converter PCM1795 from BurrBrown allows the Hi-Res digital data to perform its potential, as discrete design push-pull circuit design delivers high-quality audio signal from its 1/8" headphone jack.

● Made in Tokyo

High-quality is another answer from TEAC. Every single HA-P5 is manufactured at the TEAC's own factory in Tokyo, Japan, all though the assembly processes, from the soldering to the final quality checking,

■ Performance – High-performance digital circuit that pioneering the Hi-Res Audio

● BurrBrown PCM1795 D/A Converter

Same as the highly reputed USB DAC, the TEAC UD-501, and the industry-standard DSD Master Recorder, the TASCAM DA-3000, a high-performance D/A Converter, BurrBrown PCM1795 is employed.



● Dual on-board master clocks for 44.1kHz and 48kHz systems

Master clock is another key player on digital processing. The HA-P5 employs two high-precision crystal master clocks for 44.1kHz (22.5792MHz) and 48kHz (24.576MHz) systems, to synchronize with sampling frequency of the incoming digital audio signal completely, which means accurate Digital-to-Analog conversion. Asynchronous transfer mode is also supported to cancel less-accurate clock signal sent from a computer or smartphone, for jitter-noise-free signal.



● Circuit design eliminating noise interference

Circuit layout is designed to separate digital and analog sections, in order to eliminate distortions that is produced by interference noise.

● Multi-platform design

The HA-P5 supports both USB A and USB Micro B inputs for direct connection with iOS devices – meaning no additional cable is required, such as Apple's Lightning-USB Camera Adapter –, allowing DSD 5.6MHz and PCM 24-bit/192kHz Hi-Res Audio input. A USB Micro B input allows connections with Android device, and Windows/Macintosh computers, at DSD 5.6MHz and PCM 24-bit/192kHz. A Hi-Res Audio Player software/app is provided free of charge.



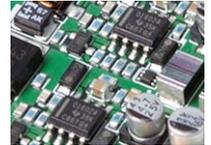
■ Experiences from Headphone Amplifier Design

● Discrete design with Push-pull circuit and Hi-Fi Op-amps

An A/B class headphone amplifier design is employed that composed with Push-pull circuit and discrete design Op-amps. Know-hows from the reference headphone amplifier HA-501 are fulfilled into the HA-P5, and its noise-reduced and crystal clear circuit design delivers 10 to 100,000Hz of frequency response and 110dB of Signal-to-Noise ratio, that mean the HA-P5 delivers both details of the master tape quality by Hi-Res audio format and nuances of the atmosphere as they were originally played.

● Low-distortion and high-precision Op-amps OPA 1602 from BurrBrown

Audio Op-amps BurrBrown OPA1602 SoundPLUS® are employed in the headphone amplifier section, for low-distortion sound.



● 160mW + 160mW High performance Power Amplifier

Thanks to its high-voltage and low-impedance design, the HA-P5 delivers 160mW + 160mW of output power at 32-ohms load, or 30mW + 30mW at 600-ohms load, which are incomparable performance in Portable Headphone Amplifier.

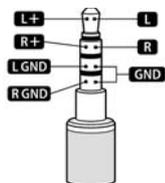
● High-quality Chip-film capacitors designed for Hi-Fi

Large capacity chip-film capacitors are employed to eliminate its self-generated noise and unnecessary vibrations.

■ Versatility for system expansion

● Left and Right channel separated-ground circuit

From the headphone amplifier section to the 4-pole headphone jack, each ground of the left and right channel is completely separated from another, as conventional portable audio device share the same ground that causes worth channel-separation. The HA-P5's separated-grounds are also independent from that of amplifier section, and it contributes to deliver clear and "visible" sound stage.



The 4-pole headphone jack is also compatible with a conventional 3-pole headphone jack. Pin assignment of the pole is as follows*. (from tip to bottom)

Tip: Left Positive
Ring: Right Positive
Ring: Left GND
Sleeve: Right GND

* Same as the Sony NW-ZX2 and Oppo HA-2.

● Digital and Analog Inputs

In addition to the USB digital audio input, the HA-P5 equips both coaxial and optical digital audio inputs and a conventional analog line audio input, which are essential for portable headphone amplifiers. The coaxial and optical digital inputs supporting 24-bit/192kHz allows you to connect Hi-Res Audio players to compare differences of the sound generated by different D/A converter chip.

● Multi-platform configuration and free Hi-Res playback Apps

A complementary Hi-Res audio playback app/software is supplied from TEAC for both iOS and Android devices and both Windows and Macintosh computers. You will enjoy profound sound world of DSD 5.6MHz native Hi-Res sound on any platform you own.

● Conventional Analog Audio output

Another advantage of the HA-P5 is a conventional analog audio output that is independent from the headphone amplifier section. This allows you to connect your existing home hi-fi system as a DAC unit, and turns it into today's Hi-Res hi-fi system.

Supplementary New Product Information (SNPI)

■ Ergonomic design that merges functionality and beauty

● Volume knob design that prevent from unwanted operations

The volume knob is seamlessly designed with the top-end to prevent from unwanted operations in your pocket or bag. Embowed curve of the knob fits your finger as you operate it, and is also allows touch control.



● Simplified LED indicators

Status indicators that tell sampling rate of the incoming digital audio and battery indicator are carefully located on the front.

These allow you to confirm type of signal that is actually being played back at a glance.

Battery power is displayed in 5 steps, and the blue LED around the volume knob blinks when it is low.



● Light-weight body for mobile use

The HA-P5 employs full aluminum body not only for light-weight and robustness, but also for noise shielding.

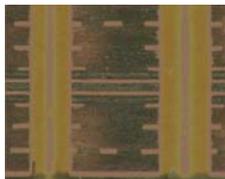
● Universal USB charging

A built-in Li-ion rechargeable battery allows 5 hours of operation (at digital connection) is compatible with de-fact standard USB AC adapters that deliver 1.0A of DC power.

■ Made at the TEAC's own factory in Tokyo, Japan

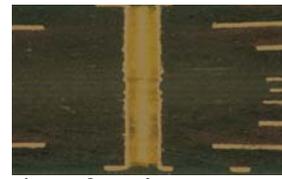
Any fine audio components and circuit design will not work well unless they are on high-quality circuit board. The HA-P5's circuit boards are manufactured in a specialized factory in Japan, who also produces that for professional audio equipment for broadcasting/recording industries. A thick-membrane copper layer with even thickness is employed for lowering impedance of the entire circuits, and its evenness contributes to equalize current level on the both power and ground lines, consequently, it refines sound quality.

Section of HA-P5's circuit board hole



Smooth surface (even contact)

Section of conventional circuit board hole



Rough surface (uneven contact)

● High-quality soldering

Soldering process is operated in the soldering pool filled with nitrogen that eliminates oxidization during the process, and improves reliability of the soldering. Also, material of the soldering is carefully selected for finer sound quality by improving current flow.

Supplementary New Product Information (SNPI)

TEAC

■ Exclusively designed accessories that colors of a life with the HA-P5

● Valet Tray hand made of solid walnut by KOMA factory

By collaboration with a handmade furniture manufacturer KOMA in Musashino, Tokyo, a wooden valet tray exclusively designed for the HA-P5 will be released. A solid walnut board is shaped and polished by hands in every carving, and its elegant shape that admires you gives a special atmosphere on your desk, as it enriches your moment of audio listening.



● Leather Wrap by Van Nuys corp.

Famous for heavy-duty built and up-to-date design, the Van Nuys corp. collaborates with TEAC. A genuine leather wrap in various color provides perfect fit to the HA-P5 by its carefully sewn details.



Notes: These third-party accessories are available in limited countries.

■ Features at-a-glance

- Ergonomic and human-friendly design
- Light-weight and compact body for mobile use
- USB DAC supporting DSD 5.6MHz and PCM 24-bit/192kHz
- 160mW + 160mW of Output Power (at 32-ohm load)
- Headphone Output with Separated grounds for Left and Right channels
- Direct connection with iOS devices for Hi-Res playback (Lightning-Camera Adapter not required)
- LED indicators for Incoming Digital Audio Formats
- Versatile Inputs of Digital and Analog (USB/Coaxial/Optical/Analog Line)
- Free Hi-Res playback Apps/Software supplied from TEAC
- Complied with RoHS

■ Specifications

Headphone Output

Frequency Response	10Hz to 100kHz (LINE IN)
Supported Headphones Impedance	16 to 600 ohms
Maximum Output Power	160mW + 160mW (32ohms load, 1kHz, 10%THD, JEITA) 60mW + 60mW (300ohms load, 1kHz, 10%THD, JEITA) 30mW + 30mW (600ohms load, 1kHz, 10%THD, JEITA)

Digital Inputs

Connectors

USB	USB A (iOS device) USB Micro B (Android device, Windows, Macintosh)
Coaxial	1/8" (3.5mm) Mini Jack (compatible with Optical/Analog Line inputs)
Optical	Optical Mini Jack (compatible with Coaxial/Analog Line inputs)

Supported Formats

DSD	5.6MHz
PCM	24-bit/192kHz

Analog Input

Connector	1/8" (3.5mm) Stereo Mini Jack x 1
-----------	-----------------------------------

Supplementary New Product Information (SNPI)

Maximum Input	2Vrms
<u>Analog Output</u>	
Frequency Response	10Hz to 80kHz (LINE IN)
Maximum Output	2Vrms
<u>General</u>	
Operation Temperature	0 to 35 degrees Celsius / 32 to 95 degrees Fahrenheit
Battery Life	5 hours (at 32ohms load, 0.1mW + 0.1mW)
Charging Hour	4 hours (at DC charging)
Overall Dimensions (W x H x D)	65.4 x 121.4 x 21.6mm / 2.6" x 4.8" x 0.9"
Weight	182g / 6.4 oz.
Accessories	USB - Micro USB Cable USB - DC Charging Cable RCA - 1/8" Stereo Mini Conversion Cable Owner's Manual (incl. Warranty card)

■ Top/Bottom/Side Panels

