TEAC

Supplemental to New Product Information (SNPI)

UD-505 ![Hi-Res AUDIO]

USB DAC/Headphone Amplifier

Dual monaural USB DAC/headphone amplifier supporting DSD512 and PCM32/768

■ Main functions

- Hi-Res audio playback supporting DSD512 (22.6MHz) and PCM 768kHz/32-bit PCM
- Dual monaural circuit design with a high-end AKM VERITA AK4497 DAC on each channel
- 5 types of PCM digital filters and 2 types of DSD digital filters
- Up-conversion up to 24.5MHz DSD and 384kHz/32-bit PCM
- Dual on-board clocks for 44.1kHz and 48kHz frequencies, and 10MHz external clock input
- Bluetooth? receiver supporting LDAC? and Qualcomm? aptX? HD
- TEAC-HCLD output buffer circuit and TEAC-QVCS volume control for high quality sound
- 4.4mm 5-polar Pentaconn jack and dual 1/4" TRS jacks for balanced and active-ground drives *1
- TEAC's patent registered pin-point feet in three positions for the perfect installation *2
- "Bulk Pet" USB transfer technology, with four transfer modes to vary sound character *3
- Free TEAC HR Audio Player for DSD512 and PCM32/768 playback

    *1 "Pentaconn" is a registered trademark of NIPPON DICS Co., Ltd., conforms to the RC-8141C JEITA standard
    *2 Japan patent No. 4075477 and No. 3778108
    *3 "Bulk Pet" is a registered trademark of Interface Corporation.

Brand	TEAC	
Series	Reference 505	
Model	UD-505-B	UD-505-S
Color	Black	Silver
UPC Code	043774 033300	043774 033317
EAN Code	4907034 221769	4907034 221776
Date of Launch	February, 2018	March, 2018
Product Dimensions (W x H x D) / NW	290 × 84.5 × 248.7 mm / 11.4" x 3.3" x 9.8" 4.2 kg / 9.3 lbs.	
Package Dimensions (W x H x D) / GW	440 × 190 × 340 mm / 17.3" x 7.5" x 13.4" 5.6 kg / 12.4 lbs.	

Supplemental to New Product Information (SNPI)

TEAC

■ Product overview

The UD-505 is a flagship dual monaural USB DAC with an integrated fully-balanced headphone amplifier, that fuses high-end audio design concepts and TEAC's decades of audio design experience, in an A4-sized footprint.

Like its predecessor models, the UD-501 and UD-503, it employs a dual monaural circuit design to process audio signals with even greater purity, with the latest VERITA AK4497 DAC chip used on each of the two channels. This improves the S/N (signal to noise) ratio by processing each channel individually in monaural mode, as well as delivering DSD512 (22.5MHz) native and 768kHz/32-bit PCM playback capabilities.

The analogue section, which is one of the keys to sound quality, includes four TEAC-HCLD buffer amp circuits process different drive modes, – fully-balanced drive for balanced output, and parallel drive mode for unbalance output, – to achieve enhanced acoustic expressive.

The headphone section is remarkable. A totally new 4.4mm headphone jack, called Pentaconn, is employed, allowing balanced and active ground connections within a single jack, while conventional 1/4" phone jacks are also provided. In addition to a wide range of digital and analogue inputs, a Bluetooth® receiver supporting LDAC™ and Qualcomm® aptX HD™ allows you to enjoy high-quality wireless audio streaming from your smartphone on this flagship USB DAC.

The UD-505 is a compact and high-spec USB DAC and headphone amplifier that supports today's high sampling rate Hi-Res formats.

For the ultimate digital-to-analogue performance

● High-performance VERITA AK4497 DACs supporting DSD512 and PCM32/768

The UD-505 employs the latest VERITA AK4497 (developed by Asahi Kasei Microdevices) on each of the left and right channels. It is a highly-regarded high-end audio DAC, and supports DSD512 (22.5MHz) and 768kHz/32-bit PCM formats, achieving industry-leading ultra low distortion levels. OSRD (Over-sampling Ratio Doubler) technology, meanwhile, significantly reduces out-of-band noise. As a result, the UD-505 has the refinement necessary to make the most of Hi-Res formats, successfully processing information that lies outside the audible range.

 * The AK4497 is the flagship product of the Asahi Kasei Microdevices Audio4pro™ family, which has been developed for professional audio equipment and high-end digital audio.

Supplemental to New Product Information (SNPI)

TEAC

● Dual monaural circuit design and fully-balanced design

A dual monaural circuit configuration is used throughout, from the power supply (including power transformers), to the D/A converters in the digital section and the analogue output stage. From the high-performance VERITA AK4497 D/A converters to the massive toroidal-core power transformers, each element is configured for single channel processing. This prevents mutual interference effects while reproducing a rich acoustic expressiveness.

In addition, the analogue audio signals of both the left and right channels are processed in full balanced mode soon after the D/A converters all the way to the output terminal, contributing to an improved S/N ratio and extended dynamic range. This allows the fantastic sense of air that Hi-Res formats possess to be processed and conveyed without any losses.

● High-quality wireless audio streaming via Bluetooth®

In addition to conventional SBC and AAC codecs, the UD-505 also supports LDAC™ (24/96 Hi-Res audio transmission), and Qualcomm® aptX™ HD, a codec that uses 24/48 format transmission. These allow you to playback playlists on your smartphone and tablet wirelessly.

● Dual on-board clocks for 44.1k and 48kHz, and external clock input

Instead of referencing to an unstable and noisy PC clock during USB audio playback, a more accurate and on-board clock is generated by a high-precision, low phase-noise, audio-grade crystal oscillator for USB asynchronous transfer mode. The UD-505 accommodates two on-board clocks exclusively for 44.1kHz and 48kHz sampling frequencies and applies the appropriate one to incoming digital signals – those that are multiples of 44.1k or 48k – to reproduce identical sound to the original by eliminating jitter effects on the audio signal.

In addition, an external 10MHz clock input is also provided, to synchronise with an even higher-precision master clock generator, such as the TEAC CG-10M, for yet further upgraded audio playback with excellent sound quality.

● Up-conversion up to 384kHz/32-bit PCM and 24.5MHz DSD

Employing RDOT-NEO (Refined Digital Output Technology NEO), a fluency algorithm that renders digital audio signals smoothly, the UD-505 up-converts PCM digital signals up to 384kHz/32-bit PCM and 24.5MHz DSD. With the up-conversion function activated, you will hear an improvement in quality, even with music that you are familiar with.

Supplemental to New Product Information (SNPI)

● "Bulk Pet" USB transfer technology for enhanced audio quality

When transferring large volumes of digital data for Hi-Res audio sources through USB cables using conventional isochronous transfer mode, large variations can occur in the processing loads of the sending computer and the receiving USB DAC. This can cause sound to drop out and other problems to occur.

However, with our new USB transmission technology – dubbed "Bulk Pet" – a fixed amount of data is transmitted constantly, levelling out the processing burden on both devices and contributing to stable data transmission. Changing the

processing burden on the computer directly affects audio quality so users can select the setting they prefer (from four transmission modes).

*"Bulk Pet" is a registered trademark of Interface Corporation.
For more information about "Bulk Pet," please visit the Interface Corporation website.
https://www.itf.co.jp/prod/audio_solution/bulk-pet

● More digital filters than previous model

On the UD-505, there are two types of DSD filters and another five types of PCM digital filters, allowing you to apply the filter that best matches the file format or type of music you're listening to. The filter can be changed at the touch of a button on the remote control, allowing you to enjoy the different sonic nuances of each filter.

PCM digital filters
- Sharp Roll Off: FIR filter with a steep roll-off that sharply cuts signals outside the audio band
- Slow Roll Off: FIR filter with a slow roll-off that gently cuts signals outside the audio band
- Short Delay - Sharp: Short delay filter with a steep roll-off that sharply cuts signals outside the audio band
- Short Delay - Slow: Short delay filter with a slow roll-off that gently cuts signals outside the audio band
- Low Dispersion: Short delay filter with low dispersion that cuts signals outside the audio band.
- Off

   *When receiving signals at 352.8 kHz, 384 kHz or higher, the digital filter will be disabled during processing regardless of the above setting.

DSD digital filter
- Narrow: Cut-off frequency of 39kHz (at 2.8M), 78kHz (at 5.6M), 156kHz (at 11.2M) or 312kHz (at 22.5M)
- Wide: Cut-off frequency of 76kHz (at 2.8M), 152kHz (at 5.6M), 304kHz (at 11.2M) or 608kHz (at 22.5M)

● Isolated digital and analogue sections

In order to suppress interference between the digital and analogue sections, the UD-505 employs an independent power supply and ground circuit, so eliminating cross-interference in the signal path where digital and analogue sections connect. A digital isolator is employed at the input section to eliminate noise originating from any connected digital sources, including noise that is generated from the computer via USB, power line and the ground path. This isolation circuit also makes a significant improvement in the signal-to-noise ratio as well as the final sound quality.

● Dual high-capacity toroidal-core power transformers

The dual monaural theme continues. Two over-sized high-capacity toroidal-core power transformers are employed in the UD-505, supplying stable, individual current sources for each of the left and right channels. This means neither channel will be affected by changes in the power consumption of the other during digital processing.

Supplemental to New Product Information (SNPI)

TEAC

Further enhanced analogue output circuitry

● Unique TEAC-HCLD output buffer amp circuits

At the heart of analogue section are TEAC-HCLD (High Current Line Driver) buffer amp circuits, designed to enhance current supply. Each channel employs two identical buffer amps that process differential drive for balanced output, and parallel drive for unbalanced output. By increasing the current supply to the buffer amp section, the analogue audio signal is passed to the next step without any loss of dynamism.

● TEAC-QVCS high-precision volume control with four circuits

The UD-505 is also a superb pre-amplifier, thanks to its combination of outstanding analogue processing performance, a wide range of analogue/digital inputs, and fixed/variable level XLR (balanced) and RCA (unbalanced) outputs. These allow you to build a fully-fledged hi-fi system around the UD-505 with a stereo amplifier/pair of monaural power amplifiers and floorstanding speakers, or a simplified system based on a pair of active speakers

The TEAC-QVCS (Quad Volume Control System) is a precise volume control design incorporated in the pre-amp section. This circuit employs four sets of variable gain-amps controlling volume for left, right, positive and negative (L+, L−, R+, R-). Each variable gain-amp is located on a simplified signal path which helps eliminate interference noise by creating a shorter signal path.

In addition, the TEAC-QVCS provides precise volume control in 0.5dB steps in 'dB' display mode, or 100 steps in 'step' display mode.

● Full-dot OLED display with excellent visibility

A high contrast full-dot OLED (organic EL display) with 4-step dimmer is employed, for excellent visibility. Even better, a highly legible, large font size allows you to easily verify the volume level, input source and other information, even when sat at a distance.

Designed to bring out the maximum potential of your headphones

● Discrete circuit design with balanced drive

The UD-505's headphone amplifier circuit provides balanced-drive by using the TEAC-HCLD circuit, – comprised of four output transistors for each left and right channel – for headphone output. Furthermore, by driving these transistors in parallel when a single-ended headphone is connected, the UD-505 delivers stronger driving power than most ordinary single-ended headphone amps provide. When listening to conventional headphones, it also operates in Class-A (by expanding the Class-A range of operation), despite using a Class-A/B amplifier.

With challenging 600Ω high-impedance headphones for example, the UD–505 allows you to bring out the potential of these type of headphones.

● Pentaconn, a totally new single-plug connector for balanced headphone drive

In addition to the dual conventional 1/4" TRS jacks for balanced connection, the UD-505 employs a newly designed single headphone jack for balanced drive. The Pentaconn jack is a new 4.4mm 5-pole jack that has been developed by   NIPPON DICS Co., Ltd, and complies the RC-8141C JEITA Standard, providing a single-jack solution for balanced headphones. More Pentaconn jack-equipped headphones and cables are expected in the near future.

Supplemental to New Product Information (SNPI)

TEAC

Along with the Pentaconn jack, two 1/4" TRS jacks provide three driving modes: balanced, active-ground, and parallel drive (for two pairs of single-ended headphones).

  *"Pentaconn" is a registered trademark of NIPPON DICS Co., Ltd.
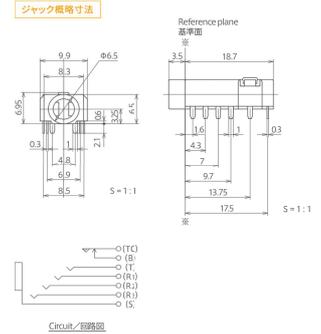
• Active-ground drive offers a new headphone drive mode

The active-ground is a new driving mode that employs the principles of balanced connection. It forcefully drives the ground, by lowering the ground level to 0V, providing an ideal ground condition (rather than just connecting to the conventional ground) This means it also suppresses hum noise from the power supply and enhances the purity of silent pauses by lowering the noise floor. Subtle detail, such as the breathing of artists and the textures of sounds, will feel even more convincing.

Obsessively well-designed

• Full-metal body for functionality and beauty

Just as with the successful Reference 503 series, the UD-505 employs aluminum-alloy panels - including iconic side guard-bars - and a robust metal chassis with a compact A4-size footprint* that completely matches with the 500 series and the new CG-10M master clock generator. The full metal construction isn't just beautiful, it's also functional. It's highly effective at isolating the internal circuits from electromagnetic noise.

*Not including connectors, knobs and other protruding parts.

• Symmetrically laid out XLR and RCA output jacks

The UD-505 is equipped with both balanced and unbalanced analogue audio outputs. A pair of XLR connectors and another pair of RCA connectors – each gold-plated – are symmetrically laid out, hinting at the dual monaural arrangement inside, and allowing a wide range of possible audio configurations. A wide-spaced pitch layout for the RCA outputs accommodates professional grade plugs with large-diameter shells. The UD-505 has a total of 5 digital inputs: USB audio, coaxial, optical on the rear panel, and a combination jack on the front panel (for coaxial and optical, supporting PCM 24/192 and DSD64 in DoP format).

A pair of RCA analogue audio input connectors allow the UD-505 to function as a pre-amplifier equipped with a high quality and precision volume control (TEAC-QVCS).

• Three-position, patent-registered 'Pin-Point' feet for perfect stability

The UD-505 employs TEAC's patented 'Pin-Point' feet. These ingeniously comprises two separated metal sections in a in an integrated housing. One is has a spiked top and is attached to the bottom of the chassis, the other is a basin-shaped base that hangs down from the spiked section with a flange-shaped cup to simply installation.

Three 'Pin-Point' foot are used for support, two at the front and one at the rear, for excellent stability, even on an uneven floor.

As a result, the three 'Pin-Point' feet help improve the accuracy of clock oscillation by minimising vibrations and resonance. This, in turn, reduces mid and low frequency muddiness, improves the soundstage and enhances fine sound detail.

* Patent numbers 4075477 and 3778108

● **Free TEAC HR Audio Player software for DSD512 playback on both Windows and Mac**
The next-generation Hi-Res formats, DSD512 (22.5MHz) and PCM 768kHz/32-bit are supported via the TEAC HR Audio Player software for Windows and Mac. This software guarantees the best available playback quality with any combinations of audio format and computer configurations via a single USB cable. All the user has to do is choose the UD-505 from the pull-down menu showing target output devices.The TEAC HR Audio Player is available from TEAC's web site, and is completely free to use.
*Use on a Windows computer requires a free driver, also provided by TEAC.

■ List of features
● Hi-Res audio playback supporting DSD512 (22.6MHz) and PCM 768kHz/32-bit PCM
● Dual monaural circuit design with a high-end AKM VERITA AK4497 DAC on each left and right channel
● 5 types of PCM digital filters and 2 types of DSD digital filters
● Up-conversion up to 24.5MHz DSD and 384kHz/32-bit PCM
● Dual on-board clocks for 44.1kHz and 48kHz frequencies, and 10MHz external clock input
● Bluetooth® receiver supporting LDAC™ and Qualcomm® aptX™ HD
● TEAC-HCLD output buffer circuit and TEAC-QVCS volume control for high quality sound
● Dual toroidal-core power transformers
● Digital Isolator for separated digital and analogue sections
● 4.4mm 5-polar Pentaconn jack and dual 1/4" TRS jacks for balanced and active-ground drives*[1]
● TEAC's patent-registered pin-point feet in three positions for the perfect installation*[2]
● Bulk Pet USB transferring technology with four transfer modes for various sound characters*[3]
● USB audio port for Hi-Res audio input from Windows/Mac
● Coaxial and optical digital inputs on both front and back
● Convenient analogue LINE input to use the UD-505 as a pre-amplifier
● Analogue outputs with balanced XLR and conventional unbalanced RCA outputs
● High-contrast full-graphic organic EL display with dimmer
● Full-metal body with an A4-sized footprint
● Free TEAC HR Audio Player for DSD512 and PCM32/768 playback
● Compliant with RoHS

*1 "Pentaconn" is a registered trademark of NIPPON DICS Co., Ltd., complies with the RC-8141C JEITA standard
*2 Japan patent No. 4075477 and No. 3778108
*3 "Bulk Pet" is a registered trademark of Interface Corporation.

Supplemental to New Product Information (SNPI)

■ Specifications

<u>Supported formats</u>

USB input
PCM	16/24/32-bit, 44.1/48/88.2/96/176.4/192/352.8/384/705.6/768 kHz
DSD	2.8/5.6/11.2/22.5 MHz

Coaxial digital input
PCM	16/24-bit, 32/44.1/48/88.2/96/176.4/192 kHz
DSD	2.8MHz (supported with 176.4kHz/24-bit DoP format)

Optical digital input
PCM	16/24-bit, 32/44.1/48/88.2/96/176.4/192 kHz
DSD	2.8 MHz (supported with 176.4kHz/24-bit DoP format)

<u>DAC section</u>

USB DAC	Asahi Kasei Microdevices AK4497 × 2
Up-conversion	up to 384kHz/32-bit PCM, 22.5MHz DSD

Digital filters
PCM filters	Sharp Roll Off, Slow Roll Off, Short Delay Sharp, Short Delay Slow, Low Dispersion, off
DSD cutoff frequencies	Narrow: 39kHz (at 2.8M), 78kHz (at 5.6M), 156kHz (at 11.2M) or 312kHz (at 22.5M)
	Wide: 76kHz (at 2.8M), 152kHz (at 5.6M), 304kHz (at 11.2M) or 608kHz (at 22.5M)

<u>Audio inputs</u>

USB	USB B port, USB 2.0, asynchronous mode transfer, bulk transfer
Compatible Software	TEAC HR Audio Player (Windows, Macintosh)

COAXIAL digital (rear)	RCA pin × 1 (gold-plated)
Input level	0.5 Vp-p
Input impedance	75 Ω

Optical digital (rear)	TOS-link × 1
Input level	−24.0 dBm to −14.5 dBm peak

Coaxial digital (front)	1/8" (3.5mm) mini* × 1 (combined with optical digital input, detected automatically)
Input level	0.5 Vp-p
Input impedance	75 Ω
	* 1/8" Mini - RCA conversion cable included.

Optical digital (front)	1/8" Mini Optical*× 1 (combined with coaxial digital input, detected automatically)
Input level	−24.0 dBm to −14.5 dBm peak

Analogue (rear)	RCA pin × 1 pair (gold-plated)
Input impedance	24 kΩ
Input sensitivity	130 mV

Bluetooth®
Bluetooth® version	4.0
Output class	Class2 (Range: approx. 33ft / 10m)
Supported profiles	A2DP, AVRCP
Content protection	SCMS-T
Supported codec	LDAC™, Qualcomm® aptX™ HD, aptX™, AAC, SBC
No. of paired device	maximum 8 devices

<u>Audio outputs</u>

XLR balanced	XLR × 1 pair (gold-plated)
Output level	Fixed (0 dB), fixed (+6 dB), variable, output off (selectable)
Maximum output level	2.0 Vrms (1 kHz, full scale, into 10 kΩ, when set to fixed (0 dB))
	4.0 Vrms (1 kHz, full scale, into 10 kΩ, when set to fixed (+6 dB))
	12.0 Vrms (1 kHz, full scale, into 10 kΩ, when set to variable)
Output impedance	188 Ω

RCA unbalanced	RCA pin × 1 pair (gold-plated)
Output level	Fixed (0 dB), fixed (+6 dB), variable, output off (selectable)
Maximum output level	2.0 Vrms (1 kHz, full scale, into 10 kΩ, when set to fixed (0 dB))
	4.0 Vrms (1 kHz, full scale, into 10 kΩ, when set to fixed (+6 dB))
	6.0 Vrms (1 kHz, full scale, into 10 kΩ, when set to variable)
Output impedance	150 Ω

<u>Headphone outputs</u>

Connector 1	1/4" (6.3mm) TRS stereo jacks × 2 (gold-plated)
Polarity (balanced)	Tip: HOT, Ring: COLD, Sleeve: NC (GND)
Polarity (unbalanced)	Tip: L, Ring: R, Sleeve: GND

Connector 2	4.4mm 5-pole Pentaconn × 1 (gold-plated)

Supplemental to New Product Information (SNPI)

Polarity (balanced)   Tip: L+, Ring 1: L−, Ring 2: R+, Ring 3: R−, Sleeve: GND

Maximum output
Balanced	700 mW + 700 mW (into 32 Ω)
Unbalanced	500 mW + 500 mW (into 32 Ω × 1)
	350 mW + 350 mW (into 32 Ω × 2)
Active ground	500 mW + 500 mW (into 32 Ω)
Supported impedances	16–600 Ω

Clock section
  Internal clock
Type	Crystal oscillator
Number of clocks	2 (44.1kHz and 48kHz)

  External clock input
Connector	BNC (gold-plated)
Input frequency	10 MHz
Input impedance	50 Ω
Input level	Rectangle wave: equivalent to TTL levels
	Sine wave: 0.5 to 1.0 Vrms

Audio performance
Frequency Response	10 Hz – 80,000 Hz (+1/−3 dB, 192kHz PCM input, RCA output, digital filter off)
Total harmonic distortion	0.002% or less (192kHz PCM input, RCA output, digital filter off)
S/N ratio	110 dB or higher (192kHz PCM input, RCA output, digital filter off)

Operating systems
|	
Windows	Windows 10
	Windows 8.1 (32-bit, 64-bit)
	Windows 8 (32-bit, 64-bit)
	Windows 7 (32-bit, 64-bit)
Macintosh	High Sierra (macOS 10.13)
	Sierra (macOS 10.12)
	El Capitan (OS X 10.11)
	Yosemite (OS X 10.10)
	Mavericks (OS X 10.9)
	Mountain Lion (OS X 10.8)
	Lion (OS X 10.7)

General
Power supply	AC 120V 60Hz (US/Canada), AC 230V 50Hz (UK/Europe)
Power consumption	18 W (0.3 W in standby)
Overall dimensions	290 × 84.5 × 248.7 mm / 11.4" x 3.3" x 9.8"
	(W x H x D, including protrusions)
Weight	4.2 kg / 9.3 lbs.

Included accessories   Power cord, RCA mini plug adapter cable, remote control (RC-1330),
2 AAA batteries for remote control, 3 feet cushions, Owner's Manual (with warranty)

■ Rear panel

Supplemental to New Product Information (SNPI)

TEAC
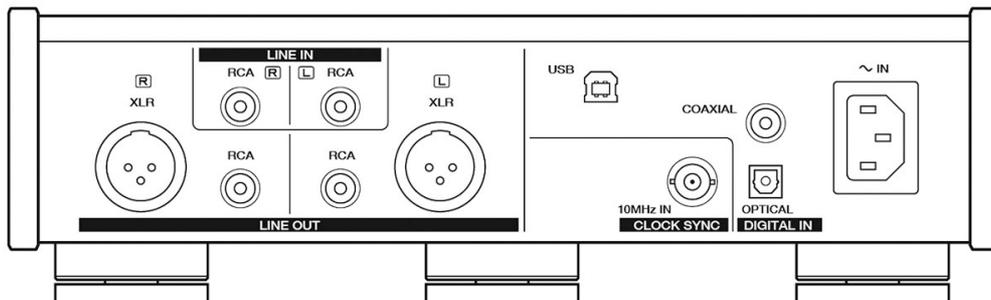
■ Up-conversion table

Input Source		Up-convert setting					
Coax/Opt	USB	Off	2Fs	4Fs	8Fs	DSD256	DSD512
Input Frequency (Hz)		**Up-converted Frequency (Hz)**					
32k	–	32k	64k	128k	256k	8.0M	16M
44.1k	44.1k	44.1k	88.2k	176.4k	352.8k	11.2M	22.5M
88.2k	88.2k	88.2k	88.2k	176.4k	352.8k	11.2M	22.5M
176.4k	176.4k	176.4k	176.4k	176.4k	352.8k	11.2M	22.5M
–	352.8k	352.8k	352.8k	352.8k	352.8k	11.2M	22.5M
–	705.6k	705.6k	705.6k	705.6k	705.6k	11.2M	22.5M
48k	48k	48k	96k	192k	384k	12.2M	24.5M
96k	96k	96k	96k	192k	384k	12.2M	24.5M
192k	192k	192k	192k	192k	384k	12.2M	24.5M
–	384k	384k	384k	384k	384k	12.2M	24.5M
–	768k	768k	768k	768k	768k	12.2M	24.5M

No conversion

Maximum up-conversion rate is 8Fs.

■ Comparison with previous models

	UD-505	UD-503	UD-501
USB DAC	AK4497 × 2 (L/R)	AK4490 × 2 (L/R)	PCM 1795 × 2 (L/R)
Supported DSD formats	22.5MHz maximum	11.2MHz maximum	5.6MHz maximum
Supported PCM formats	768kHz/32-bit maximum	384kHz/32-bit maximum	384kHz/32-bit maximum
Up-conversion (Max)	DSD: 24.5MHz (DSD 256, 512) PCM: 384kHz/32-bit (2 fs, 4 fs, 8 fs)	DSD: 12.2MHz (DSD 256) PCM: 384kHz/32-bit (2 fs, 4 fs, 8 fs)	PCM: 192kHz/24-bit (fixed)
PCM filters	Digital filters ● Sharp Roll Off ● Slow Roll Off ● Short Delay Sharp ● Short Delay Slow ● Low Dispersion ● Off	Digital filters ● Sharp Roll Off ● Slow Roll Off ● Short Delay Sharp ● Short Delay Slow ● Off	Digital filters ● Short Delay Sharp ● Short Delay Slow ● Off
DSD filters	Digital filters ● Cut Off: Narrow 39 kHz (when 2.8 MHz) 78 kHz (when 5.6 MHz) 156 kHz (when 11.2 MHz) 312 kHz (when 22.5 MHz) ● Cut Off: Wide 76 kHz (when 2.8 MHz) 152 kHz (when 5.6 MHz) 304 kHz (when 11.2 MHz) 608 kHz (when 22.5 MHz)	Digital filters ● Cut Off 50 kHz ● Cut Off 150 kHz	Analogue filters ● Cut Off 185 kHz (Gain −6.6 dB) ● Cut Off 90 kHz (Gain +0.3 dB) ● Cut Off 85 kHz (Gain −1.5 dB) ● Cut Off 94 kHz (Gain −3.3 dB)

Supplemental to New Product Information (SNPI)

TEAC

	UD-505	UD-503	UD-501
Dual monaural	Yes	Yes	Yes
TEAC HCLD circuit (Current buffer circuit)	Yes	Yes	—
TEAC QVCS circuit (High-precision volume)	Yes	Yes	—
Line/balanced outputs	Yes	Yes	Yes
Line parallel/ unbalanced outputs	Yes	Yes	Yes
High-precision dual clock	Yes	Yes	Yes
External clock input	Yes	Yes	—
Preamplifier function	Yes	Yes	—
Bulk Pet transmission	Yes	—	—
Line output level switching	● Fixed (0 dB) ● Fixed (+6 dB) ● Variable ● Off	● Fixed (0 dB) ● Fixed (+6 dB) ● Variable ● Off	— (Line output on/off selection only when headphones connected)
Front digital input	Yes (Combined coaxial/optical mini jack)	Yes (Combined coaxial/optical mini jack)	—
Analogue line inputs	1 pair (RCA)	1 pair (RCA)	—
Bluetooth® receiver	Yes	—	—
Headphone amplifier circuit	Current-strengthening circuit	Current-strengthening circuit	Op-amp
Headphone output connectors/ drive modes	● 4.4mm 5-pole × 1 ● Balanced ● Active ground ● Standard 6.3mm × 2 ● Balanced ● Active ground ● Unbalanced	● Standard 6.3mm × 2 ● Balanced ● Active ground ● Unbalanced	● 3.5mm stereo mini × 1 ● Unbalanced
Pin-Point feet	Yes	Yes	—
Remote control	Yes	Yes	—