Product Information

Reference 7 Series

Network CD player/Integrated amplifier

NR-7CD

Our devotion to sound quality, recognized by professionals the world over, started in the era of reel-to-reel tape. Today, we have fused our passion for sound with the latest network audio features and state of the art audio technology.
TEAC presents the New Vintage...

Product overview

As the first model in the Reference 7 Series, we invested the NR-7CD Network CD player/ Integrated amplifier with all the high-resolution playback expertise that TEAC has accumulated over the years through the development of high-end and pro audio equipment.
From high-resolution master audio sources, including DSD, to the classic albums sleeping in the corner of your CD library and the vast collections of music that can be accessed online, this unit can handle them all.
Despite being multifunctional in nature, this is a no-compromise device. Every stage, from the D/A converter to the power amp, uses a 'dual mono' configuration, fully-balanced from beginning to end. Highly-experienced craftsmen undertake the entire process from soldering to assembly. With a "Made in Japan" label comes immense attention to detail, as well as a level of sound quality that's appropriate for the flagship of our Reference Series.
The TEAC sound, which has been recognized in professional audio environments over the decades, and a design that embraces this accumulated history, have been successfully fused into this Network CD player/ Integrated amplifier for a new era.

Brand	TEAC
Series	Reference 7 series
Model	NR-7CD
Color	Silver
Main unit size (W x H x D, including protrusions)/ weight	442 x 152 x 345 (mm) (17 1/2" × 6" × 13 5/8")/ 13.4 kg (29 5/8 lb)
Unit packaging size (W x H x D)/weight	561 × 350 × 446 (mm)(22 1/8" × 13 7/8" × 17 5/8")/ 16.5 kg (36 1/2 lb)

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Main features

· High-quality network player functionality

This OpenHome-compatible network player can play back a diverse range of formats at high resolutions of up to 5.6MHz DSD and 192kHz/24-bit PCM. You will enjoy seamless high-resolution listening with support for gapless playback[1] and on-device playlists.[2] Furthermore, track selection operation is intuitive and easy when using the app, designed and optimised especially for the NR-7CD.

· Playback from NAS and USB storage supported

In addition to enjoying playback of high-resolution audio stored on a network attached storage (NAS) unit, you can also use USB storage (connected to the USB port on the back panel) as a simple server.

· Support for TIDAL and Qobuz high-quality audio music streaming services

Both TIDAL and Qobuz high-quality audio music streaming services are supported. These allow you to enjoy huge collections of lossless-quality music as though they were part of your own library. (Available only in limited locations, TIDAL and Qobuz cannot be used in areas where the services are not provided.)

· LDAC-compatible Bluetooth receiver enables high-resolution wireless transmission

In addition to LDAC, which enables high-resolution audio transmission, the Bluetooth® receiver also supports Qualcomm® aptX™, AAC and SBC codecs. Whichever compatible device you use, you can enjoy wireless high-quality audio listening.

· Class-D power amplifier section with discrete left and right channel construction

The power amplifier stage uses a BTL configuration with two highly-regarded 50ASX2 Class-D stereo power amplifiers (made by ICEpower), one for each of the left and right channels. This gives a maximum output of 140W+140W (4Ω). Consequently, this amplifier delivers music playback that is both of wide bandwidth and high linearity.

· New Vintage design

In line with the New Vintage concept, the designs of the meters and the side panels evoke the essence of classic audio components, reinterpreted in a wholly contemporary manner.

· TEAC-made CD drive mechanism designed for audio

The TEAC-made CD drive mechanism, specifically designed for audio replay and used in professional audio equipment, provides both high performance and exceptional reliability.

· RDOT-NEO realizes upconversion to 12.2MHz DSD

Our original RDOT-NEO[3] upconversion circuit can upconvert any PCM audio source, including Bluetooth® and CD sources, to resolutions up to 12.2MHz DSD and 384kHz PCM. Upconverting 44.1kHz/16-bit CD format files to high-resolution quality makes playback virtually analogue in nature by interpolating data into smooth waveforms.

· Full Stage Dual Mono Differential Circuit

From the D/A converter to the preamp and then the power amplifier, a dual mono circuit structure is used with symmetrically-arranged circuit boards for the left and right channels. We have

improved channel separation by thoroughly minimising interference between the left and right channels. Furthermore, using fully-balanced routing at every stage makes the signal circuits resistant to noise, achieving a realistic, expressive soundstage.

[1]Gapless playback is a function that allows music tracks that flow together, such as live performances, to be played consecutively without interruptions.
[2]The on-device playlist function allows playback to continue without interruption even if the operating application stops.
[3]RDOT-NEO is a new upconversion circuit that supports high-resolution formats up to 12.2MHz DSD and is based on TEAC's original RDOT (Refined Digital Output Technology) circuit, which applies a fluency function.

Features

Versatile support for a wide range of sources

・Stream from NAS devices and USB flash drives

High-resolution playback is supported from NAS and high-capacity USB storage devices. As well as 2.8/5.6MHz DSD and 384kHz/32-bit PCM,* numerous other formats (DSF, DSDIFF, FLAC, Apple Lossless, WAV, AIFF, MP3, AAC) are supported. In addition, gapless playback is supported for every lossless format, allowing uninterrupted playback of live performances that span multiple tracks.

*384kHz PCM is downconverted to 192kHz PCM, 352.8kHz PCM to 176.4kHz PCM and 32-bit to 24-bit.
*Playback of high-resolution formats from NAS requires a compatible audio NAS.

・TEAC HR Streamer control app offers excellent usability

The TEAC HR Streamer app is not only compatible with the OpenHome standard, it is also an app* for network playback control that has been purpose-designed for ease of use.
Because a cache system in the app captures tag information and images for the tracks on the NAS and USB storage in advance, you can zoom in and out and scroll through album art instantaneously. You can also freely re-arrange your library by recording year, composer, category or other criteria. You can choose tracks on the iPad/iPhone and create and play playlists as you wish. The operation buttons and various screens, including the playlist and the library, are all designed to be visually clear so that even new users can operate them intuitively.

*The iPad/iPhone/iPod touch version is available as of June 2017. We plan to release the Android version at later dates.
A device with the dedicated app installed must be connected to the same network in order to use this unit's network and USB storage playback functions. A wireless LAN is necessary to use the app.

・**Full support for TIDAL and Qobuz**

There’s comprehensive support for the TIDAL and Qobuz subscription music streaming services. These enable you to enjoy huge collections of music of high-resolution (or CD-equivalent lossless quality) over a network. Owners can use the TEAC HR Streamer to select and enjoy tracks seamlessly from their own NAS and USB storage as well as from Tidal/Qobuz’s vast collections in the cloud. (Available only in limited locations, TIDAL and Qobuz

cannot be used in areas where the services are not provided.)

· LDAC-compatible Bluetooth receiver enables wireless high-resolution transmission

In addition to LDAC, which enables high-resolution audio transmission, the NR-7CD's Bluetooth receiver also supports aptX, AAC and SBC codecs. Using a compatible device, you can easily enjoy wireless high-quality audio listening.

LDAC can transfer data at rates about three times greater than existing technologies.* You can thereby enjoy high-quality sound wirelessly from devices that support LDAC, including high-resolution and CD-quality audio sources.
*Bluetooth A2DP SBC (when 328kbps, 44.1kHz) (See http://www.sony.net/Products/LDAC/)

· Optical/coaxial digital inputs enable DSD transmission

Two optical digital inputs and one coaxial digital input allow you to enjoy high-quality audio from TVs, universal players, portable audio players and many other digital sources.
Transmission of high-resolution signals is supported, and PCM signals up to 192kHz/24-bit and 2.8MHz DSD signals can be input.*
*The DoP (DSD Audio over PCM Frames) format is used for transmission.

· TEAC-made CD drive mechanism, provides high performance and reliability

The audio CD drive mechanism used, one that we have designed and manufactured ourselves, has a proven track record, having been used in many professional CD players. You can easily continue to enjoy your CD collection together with that format's traditional ease of use.
In addition, upconversion with RDOT-NEO interpolates analogous data for frequencies above 20 kHz, which is not recorded on CDs, allowing you to enjoy smooth and rich sound that is closer to the original source.

Design

New Vintage design evokes classic styles while also feeling contemporary

· New Vintage design

Vintage audio design has been appreciated over the decades because the universal appeal of classic audio components is timeless. Using classic but functional audio equipment as a design guide, we re-interpreted it to take account of modern sensibilities and to sit well in modern living spaces.

· Large peak power meters

Large peak power meters are located on the front panel. The movement of the meter needles allows you to see and visibly 'feel' the dynamics of the music. The meter lighting can be adjusted via a dimmer function and set to three levels of brightness or turned off altogether. The meters emit a warm light, allowing the amplifier's presence to act as an interior lighting accent.

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· **Side panels with a rounded design**

The side panels, a key visual feature of the Reference Series design, are fabricated from 12mm thick aluminum. These thick panels increase the rigidity and vibration resistance of the chassis. Viewed from the front, the panels have rounded forms that draw gentle arcs in a design that simultaneously evokes a sense of both solidity and elegance.

· **Presenting a new A3 size**

Many full-size components are significantly deep, requiring users to consider placement space before installation. Even though the NR-7CD is full-size, it occupies approximately the same footprint as a piece of A3 paper, with a depth of just 30 cm, making it relatively easy to locate. This enables placement on shallow shelves, in racks and other convenient locations. This also leaves plenty of space for attaching cables to the back.

· **Display**

The display uses organic EL technology. Large numerals are used to indicate volume control and are shown on as much of the display area as possible, making them easy to see and allowing comfortable operation even from a distance. The display also shows the sampling frequency of the song being played back (supported for network and digital inputs). The track number, playback time and other information messages are shown during CD playback. The dimmer function allows the display to be set to three brightness levels or turned off. (Song data during network playback is only shown in the control app.)

· **Precision-cut aluminum knobs use high-precision bearings**

Precision-cut aluminum knobs are used for the volume and selector controls. They are attached using high-precision bearings, giving a luxurious feeling to the touch.

Design for high audio quality (Sound Technology)

· **Full Stage Dual Mono Differential Circuit**

Transmission is fully balanced at every stage in the preamp and power amplifier sections, minimising and eliminating commonmode noise. As a result, audio signals are transmitted with as little noise as possible and possess outstanding S/N ratios. What's more, the left and right channel circuits are completely independent from the D/A converter to the power amplifier. Using this dual mono configuration minimises interference between the two channels and achieves outstanding channel separation. This allows you to enjoy a realistic soundstage that makes you feel as if you are right next to the performers. It also makes moments of silence feel truly still.

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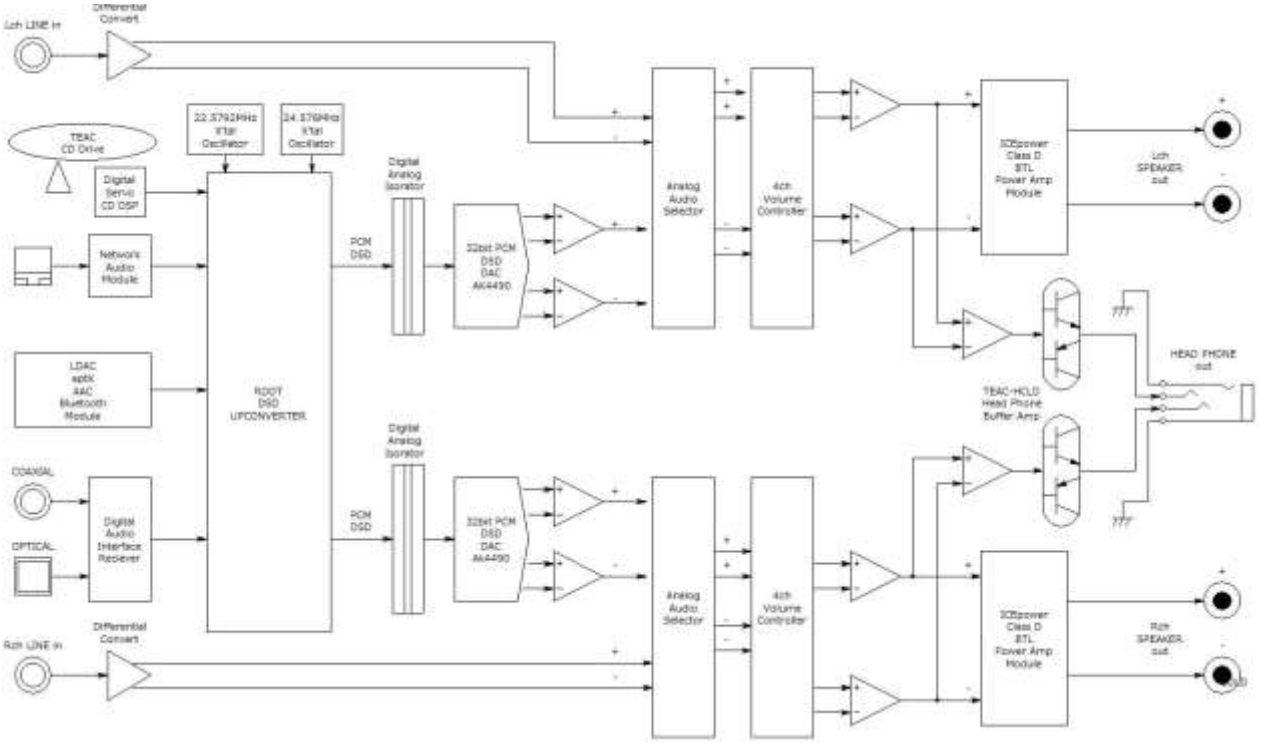

· **Dual mono D/A converter**

Quality DAC chips are crucial for digital audio. For this dual mono configuration, two VERITA AK4490 DACs have been used for the left and right channels. These DACs are made by Asahi Kasei Microdevices Corporation and have an excellent reputation when used in high-end audio equipment. By keeping channels independent from the DAC section, high channel separation is maintained.

· **Power amplifier with independent left and right channels**

In a BTL configuration, one highly-regarded 50ASX2 Class-D stereo power amplifier made by ICEpower is used in each of the left and right channels. This achieves a maximum output of 140 W + 140 W (at 4 Ω). With high linearity and high speed, sound is beautifully delivered with power to spare.

· **TEAC-OVCS (Octa Volume Control System)**

Our TEAC-OVCS volume control method is optimised for pure signal routing. Turning the volume knob simultaneously operates a total of eight switched resistor-ladder volume controls, including two independent parallel circuits each with a positive and negative for both left and right channels. This arrangement retains audio signal left, right, positive and negative independence, achieving a clear sound with outstanding channel separation and phase performance. Moreover, by eliminating wiring to volume components from the audio circuit board, the audio signal path has been greatly shortened, preventing the degradation of audio quality.

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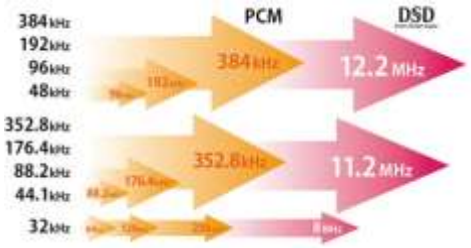
· RDOT-NEO (Refined Digital Output Technology NEO)



The FPGA (programmable IC), an original TEAC design, uses a fluency algorithm that smoothly augments digital audio signals. This enables upconversion of PCM digital signals 2, 4 or even 8 times as well as DSD upconversion. Using this function, you can easily experience the dense sense of air that DSD files have when playing back your own CD archives. During CD playback, signals are upconverted to the 11.2MHz DSD format, which contains about 256 times more data than standard CD audio. This method is truly outstanding at recreating natural tone and a soundstage that resembles live performance. You can hear the music reverberate naturally and feel the differences in resolution and reverberations, especially so when instruments overlap. 48kHz PCM audio sources can also be played back at 384kHz PCM or 12.2MHz DSD.

RDOT, which applies an analogous interpolation method using fluency logic, is a technology that was developed to enable the playback of the frequencies higher than 20kHz that are lost by the 44.1kHz/16-bit CD format. Based on the information read from the CD, analogous data is generated between the waveform samples. As a result, data above 20kHz is also generated. RDOT-NEO doesn't just work for PCM upconversion, it also enables conversion to the DSD format.

· Chassis construction designed for high rigidity

A double deck structure is used, one that separates analogue and digital sections into top and bottom. The middle chassis is welded to the side panels, increasing the rigidity of the entire chassis and reducing the vibration of parts and minimising unwanted vibrations from outside. This also provides a very effective shield that prevents interference between the analogue and digital sections.

· AMAC (Aluminum-Block Mounted Amplifier Construction)

The DAC and the preamp are mounted on one side of a very-rigid 10mm-thick aluminum block, and the power amplifier module is mounted on the other side. This structure transmits analogue signals by the shortest route possible and increases the shielding effect to suppress the influence of noise while also enhancing heat dispersion from the power amplifier.

· TEAC-HCLD headphone amplifier

A TEAC-HCLD (High-Current Line Driver) buffer amplifier is used for the headphone amplifier. This is also used in our UD-503, which has an established reputation as a DAC/headphone amplifier. It enables 500mW+500mW maximum output (into 32Ω load, THD 1%). This headphone amp can even drive 600Ω high-impedance headphones, which are difficult to power,

with ease.

·The 3.5mm 4-pole headphone jack supports separate left and right grounding

L/R ground separation is supported by the 3.5mm 4-pole separate ground jack. Connecting compatible headphones or earphones with a 3.5mm 4-pole plug will increase left and right channel separation, allowing you to enjoy outstanding stereo imaging when listening with headphones. (You can also use headphones with standard 3.5mm 3-pole plugs as is.)

· Custom EI core transformer with separate left and right windings

The digital, preamp and power amplifier sections each have independent power transformer taps. A dual mode structure has been implemented in the power supply by using a custom EI core transformer with separate left and right windings especially for the preamp section.

· Current stabilization circuit

A shunt regulator, also known as an A-class drive, in the power supply stabilises the current of the D/A converter and preamp sections. In addition to suppressing fluctuations in ground potential, it also achieves close tracking of current fluctuations in the circuit.

· Four types of digital filters and an OFF mode

Four types of digital filters are available for PCM signal processing. In addition to two types of FIR digital filters, which have a long established reputation for audio quality, there are also two short delay digital filters that eliminate pre-echo included in impulse waveforms and make the beginnings of sounds seem even more natural. An OFF mode that disables the digital filter can also be used. You can select these as you prefer.

FIR digital filter settings

These filters have a very well established reputation. They offer a quality that allows reverberation that is both dense and rich while also crisp.

SDLY digital filter settings

The key characteristic of these filters is that there is no pre-echo in their impulse responses and the beginnings of sounds and their reverberations are natural, making the sound close to the original.

· 44.1kHz and 48kHz internal master clocks

Separate dedicated 44.1kHz and 48kHz master clocks are built in. The effect of jitter on audio quality is greatly suppressed and the original sound is reproduced faithfully by using audio grade, high-precision crystal oscillators, featuring low phase noise, on input signals with sampling frequencies that are whole number multiples.

· Digital/analogue isolation

Interference from the digital section on signals in the analogue section can cause various types of noise. In order to eliminate as much of this as possible, the analogue circuit, after the digital

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section and the D/A converter, is separated by an isolator and the purity of the analogue signal is maintained by electrical isolation.

· Three supporting pinpoint feet

Support legs arranged at three points enable stable placement of the unit so that it is not affected by slight irregularities in the placement surface. We use an original construction method, with a spike-shaped foot connected to a basin-shaped base. Although pinpoint feet are said to be ideal for audio equipment, they have often been difficult to place. Our design makes placement easy. Supporting the unit on pinpoint feet reduces unwanted vibration, greatly eliminating heaviness and muddiness in low and medium frequencies. This method also improves the resolution and stereo imaging, which contributes to defining individual sounds.

Other features

· Large metal-plated speaker terminals

· High-quality shaved-metal plated RCA jacks

· IEC-standard AC inlet

· A power cable that uses OFC conductors wire

· Mute, dimmer and automatic display off function settings

· Infrared remote control (Control of the network section is only possible using the app.)

· Automatic power-off function

· Complies with ErP2

· Complies with RoHS

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Specifications

Amplifier

Maximum output		
When power supply voltage is 230 V		230 W + 230 W (4 Ω, 1 kHz, THD 10%)
		130 W + 130 W (8 Ω, 1 kHz, THD 10%)
When power supply voltage is 120 V		210 W + 210 W (4 Ω, 1 kHz, THD 10%)
		130 W + 130 W (8 Ω, 1 kHz, THD 10%)
Rated Output		100 W + 100 W (4 Ω, 1 kHz, THD 0.07%)
		60 W + 60 W (8 Ω, 1 kHz, THD 0.07%)
Allowable speaker impedance		4–8 Ω
Total harmonic distortion		0.008% (1 kHz, 8 Ω, 50 W)
S/N ratio	LINE IN	110dB (IHF-A/LPF 20 kHz, 1kHz/2V input)
Frequency response		5 Hz – 100 kHz (+1/−3 dB)

Headphone amplifier section

Jack	3.5mm (1/8") stereo mini jack (1) (Supports 4-pole separate ground connections)
Practical maximum output	500 mW + 500 mW (into 32Ω)
Compatible impedance range	16–600 Ω

Analogue audio inputs

RCA connectors	1 pair (L/R)
Input impedance	47 kΩ
Input sensitivity	30 mV

CD section

Supported disc types	CD, CD-R, CD-RW (12cm, 8cm)
Playback file format	CD-DA
Sampling frequency	44.1 kHz
Quantization bit depth	16-bit

Digital audio inputs

Coaxial digital	RCA connector (1) (0.5 Vpp, 75 Ω)
Optical digital	Square (TOSLINK) connectors (2) (−24.0 to −14.5dBm peak)
Audio formats	Linear PCM: 32–192 kHz, 16–24 bit DSD(DoP) : 2.8 MHz (supported using 176.4kHz/ 24-bit DoP transmission)

Network

LAN	1000BASE-T (1)
USB storage	USB Type A port (USB 2.0 standard) (1) : USB flash memory, USB hard disk, etc. (single-partition FAT32 and NTFS only)

Audio formats

PCM: 44.1–384 kHz, 16–32 bit*

(*384 kHz PCM is downconverted to 192 kHz PCM, 352.8 kHz PCM to 176.4 kHz PCM and 32-bit to 24-bit.)

Supported file formats

WAV, AIFF , FLAC, Apple Lossless (ALAC)

MP3, AAC (m4a container)

DSD: 2.8/5.6 MHz

Supported file formats DSF, DSDIFF(DFF)

(The NAS must support a file format for it to be played back.)

Bluetooth section

Bluetooth version	4.0
Output class	Class 2
(transmission distance without obstructions*	10 m)
Supported profiles	A2DP, AVRCP
A2DP content protection	SCMS-T
Supported A2DP codecs	LDAC, aptX™, AAC, SBC
Maximum number of saved pairings	8

*The transmission distance is approximate. The transmission distance could vary depending on the surrounding environment and electromagnetic waves.

Others

Power supply	
Model for Europe	AC 220–240 V, 50/60 Hz
Model for U.S.A./Canada	AC 120 V, 60 Hz
Power consumption	
Model for Europe	130 W
Model for U.S.A./Canada	120 W
Standby power	less than 0.5 W (in standby mode)
External dimensions (W × H × D, including protrusions)	442 mm × 152 mm × 345 mm (17 1/2" × 6" × 13 5/8")
Weight	13.4 kg (29 5/8 lb)
Operating temperature	+5°C to +35°C
Operating humidity range	5% to 85% (no condensation)
Storage temperature range	−20°C to +55°C

Included items

Power cord × 1

Remote control (RC-1328) × 1

Batteries for remote control (AAA) × 2

Felt pads × 3

Owner's manual (including warranty) × 1