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**aurender**  
REFERENCE MUSIC SERVERS

Aurender Reference Music Servers and the Aurender iPad\* App are products of TVLogic Company, Limited, the leading Korean HD broadcast monitor and audio products manufacturer, listed on the Korea Stock Exchange (KS:121800).

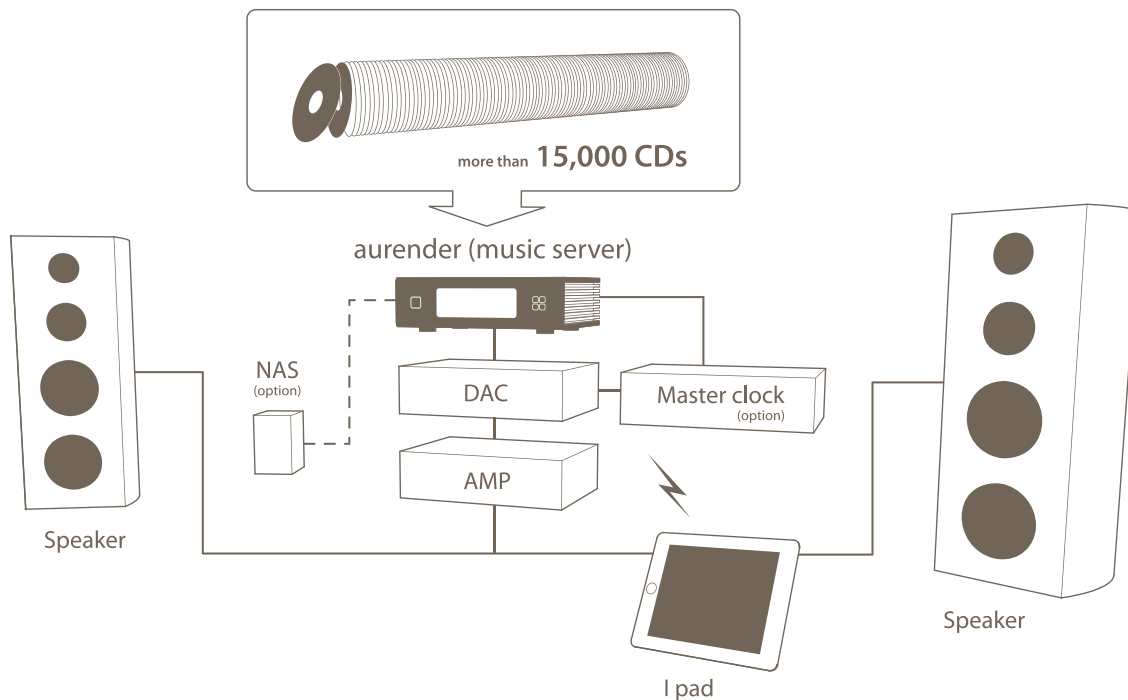
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# aurender

REFERENCE MUSIC SERVERS







## Aurender Reference Music Servers with iPad\* App

While sound quality is very important, equally important is convenience. Aurender music servers are meticulously engineered to enhance the total music listening experience through impeccable performance and utmost convenience in accessing and playing music collections.

Incorporating precision high performance components and the latest technology, Aurender music servers are designed to deliver bit-perfect audio output with nearly zero jitter to digital-to-analog converters and enabling them to perform at full potential in accurately reproducing the originally recorded sound.



## Oven-Controlled Crystal Oscillator (OCXO)

An accurate and stable clock is essential for reducing jitter in digital data transmissions. Aside from atomic clocks, the most accurate and stable clocks in use today are OCXO clocks. OCXOs are orders of magnitude more accurate and stable than inexpensive ordinary crystal oscillators found in computers and most soundcards. Temperature changes cause crystal oscillations to fluctuate and result in jitter. In addition, ordinary crystals are much less stable and lose significant accuracy over time. In OCXO clocks, a very stable high grade crystal oscillator is enclosed in a compartment and kept at a constant temperature, thereby eliminating jitter resulting from variations in frequency.

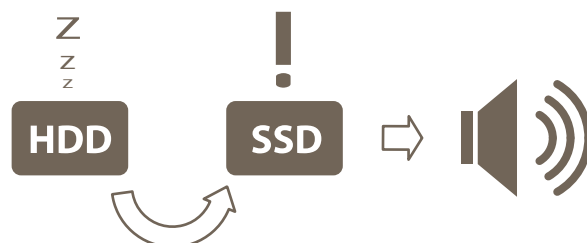
## Field Programmable Gate Array (FPGA)

Field Programmable Gate Arrays (FPGA) are programmable Integrated Chips that allow engineers to design custom solutions and not rely on third party soundcards or components. Aurender music servers use an FPGA-based Phase-Locked Loop re-locking with OCXO clocks to precisely clock digital audio data transmissions ensure the best possible accuracy in reading and transmitting digital audio signal to digital-to-analog converters. FPGAs also allow for future upgrades and improvements.



## Solid-State Drive (SSD) Playback

The hard disk drives on Aurender music servers are used for storing digital music files and the solid-state drives are used to cache selected songs for playback. The hard disk drive only operates momentarily when a selected song is not already cached to the solid-state drive. Having no moving parts, solid-state drives eliminate noise resulting from spinning motors and moving read/write heads found in hard disk drives. Since frequently played songs are already cached to the solid-state drive, the hard disk drive is used much less frequently resulting in less wear and tear on the disk bearings, a common cause of hard disk drive failure.



## Separate Audio Power Supply

Noise from AC power and other devices connected to the power mains is another major source of jitter. In Aurender W20 Reference Music Servers, problems arising from use of AC power are completely eliminated through the use of LiFePO4 (LFP) batteries to supply power to audio components. While in Aurender S10 Reference Music Servers, a more economical and practical solution, using extremely quiet linear power supplies developed in-house, effectively minimizes jitter to near negligible levels.

## Fanless Switching Mode Power Supply (SMPS)

A high performance fanless Switching Mode Power Supply is used to deliver stable power to non-audio components with almost no noise and is enclosed in a separate compartment to prevent any interference to other components.

## Shielded and Damped Hard Disk Drives

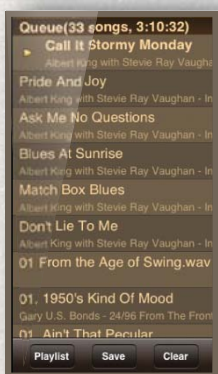
Hard disk drives on Aurender reference music servers are damped with rubber cushions to minimize vibrations and shielded from other components in a separate compartment. To further reduce noise and interference, hard disk drives on Aurender W20 Reference Music Servers are suspended from floating brackets and encased in an aluminum casing machined from a single block of high grade aluminum.





# Aurender iPad\* App

The Aurender iPad\* App comes with a full range of convenient easy-to-use features that put your music collection in the palm of your hand and at the control of your fingers. By offering a variety of fun ways to browse and play music, the Aurender iPad\* App makes music much more enjoyable to listen to. The Aurender iPad\* App can be downloaded free of charge from the Apple\* App Store



## Queue

Simply touch the song title to queue and play. To queue an entire album, category or selection of songs, just long press the selection and a pop-up menu with options for Add to Queue, Add to Playlist, Play Random and Related Folders will appear.



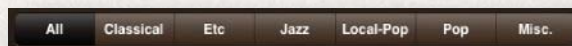
## Playlist

Playlists are an ideal way to save and play music according to mood or occasion. Using the Aurender iPad\* App, playlists can be made, edited and played quickly and easily.

There is even a very handy automatically saved Recently Played 500 playlist, so that the most recently played songs can be played at the touch of a button.

## Browser Buttons

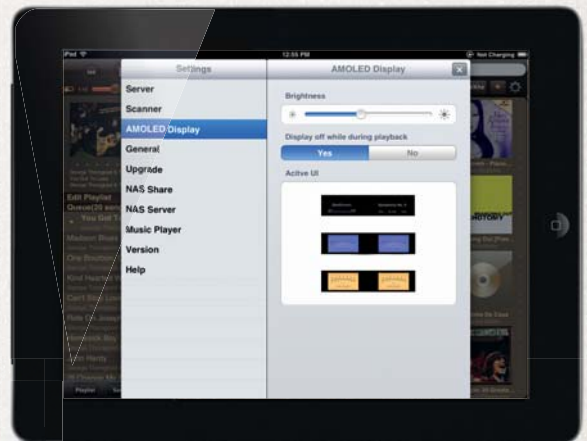
In addition to the standard browser buttons to instantly sort music into Song, Artist, Album, Genre, Composer, Conductor, or Folder views, the Aurender iPad\* App also provides five Folder Browser Buttons. These buttons located between the All and Misc buttons have the same names as folder on the hard drive. Pressing a Folder Brower Button will display the contents of that folder. Folder Buttons are especially handy for categorizing music without having to edit metadata.






## Filter Buttons

In addition to browser buttons, there are Filter Buttons to sort music according to when they were added to the music collection, according to different bit and sampling rates, and according to user rating (5-Star Rating System).



## Settings Menu

Tapping the  icon under the search window will open the Settings Menu with tabs for Server, Scanner, AMOLED Display, General, Upgrade, NAS Share, NAS Server, Music Player, Version, and Help.

## Album Cover View

To view album front and back covers, tap the album cover icon above the Queue and the album cover will be displayed full screen with various viewing options. Audio files need to be properly tagged for this function to work properly.



# Aurender W20 Reference Music Server

The flagship Aurender W20 Reference Music Server is one of the few music servers to offer master word clock and dual-wire mode support. Word clocks are used in recording studios to synchronize various audio components and minimize jitter in order to ensure the best sound quality possible. Dual-wire mode is used by many of the world's leading digital-to-analog converter manufacturers to transmit left and right channels of a digital audio signal at sampling rates above 96 kHz in order to obtain superior audio quality.

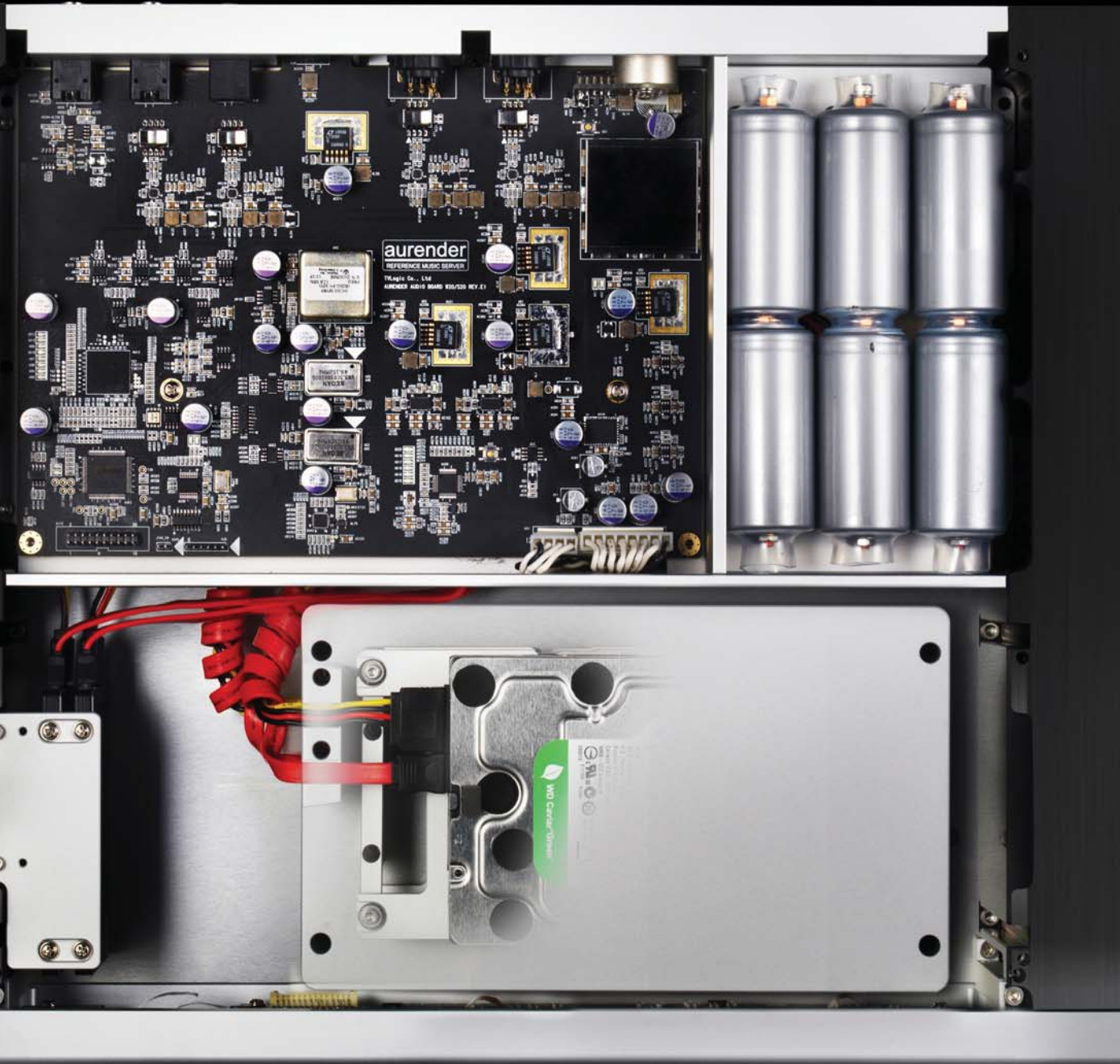
In the Aurender W20 Reference Music Server, jitter and noise resulting from AC power are completely eliminated through the use of longlasting and highly stable LiFePO4 (LFP) batteries to supply electrical power to audio components. In addition, OCXO oscillators, which are vastly more accurate and stable than ordinary crystal oscillators used in computers and most soundcards are combined in an FPGA-based Phase-Locked Loop system to ensure virtually jitter-free performance.

Two internal hard disk drives provide up to 6TB of storage which is enough to store almost 15,000 audio CDs in uncompressed high resolution audio format. The Aurender W20 Reference Music Server is factory equipped with one 240G solid-state drive for system operating software and caching songs for playback and can be upgraded to use two solid-state drives at authorized Aurender dealers.

The Aurender W20 Reference Music Server comes with a full range of SPDIF digital audio outputs (2 x AES/EBU, 1 BNC, 1 Coaxial, 1 Optical) and a dedicated asynchronous USB audio class 2.0 port.

For connection to computer networks, a wireless routers and Internet, a LAN port is provided on the rear panel. Two USB 2.0 ports are provided on the rear panel for transferring files to the internal hard disk drive.





## Aurender S10 Reference Music Server

The Aurender S10 Reference Music Server with iPad\* App has won wide international recognition for superior performance and user-friendly features and received many awards since its introduction in September of 2011, including Product of the Year in 2011 from Computer Audiophile and Product of Year in 2012 from SoundStage HiFi.

The Aurender S10 Reference Music Server is the one of the first music servers to incorporate ultra-stable Oven-Controlled Crystal Oscillators (OCXO) and sophisticated Field Programmable Gate Arrays (FPGA) in a Phase-Locked Loop system to dramatically reduce jitter.

Incorporating a comprehensive range of novel solutions and features, the Aurender S10 Reference Music Server is designed and developed to provide a bit-perfect and virtually jitter free digital audio signal to digital-to-analog converters.

The Aurender S10 Reference Music Server can store up to 2 TB of files uncompressed and lossless audio formats which is enough for almost 5,000 audio CDs. A 64G solid-state drive is used to cache songs for playback and for the system operating software. Solid-state drives can read data almost instantaneously and have no problems with latency and jitter from spinning disks and moving mechanical parts.

AC power is a major cause of jitter and noise. In the Aurender S10 Reference Music Server, a separate linear power supply delivers quiet and stable power to power audio components. To power the processors, displays, hard drives and other non-audio components, a high grade fanless switching-mode power supply is used. This combination delivers the best price to performance ratio compared to other solutions. The switching mode power supply is isolated from audio components by thick aluminum partitions.









| Model                             | aurender W20   | aurender S10  |
|-----------------------------------|--|---|
| <i>Player Software</i>            | aurender iPad* App   | aurender iPad* App  |
| <i>SSD Capacity</i>               | 1x 240G  | 1x 64G  |
| <i>HDD Capacity</i>               | 2 x 3TB  | 1 x 2TB   |
| <i>Audio Clock</i>                | OCXO   | OCXO  |
| <i>Dual Wire Mode</i>             | 2 x AES/EBU  | n/a   |
| <i>Digital Audio Outputs</i>      | Coaxial, Optical, 2 AES/EBU, BNC, Buffered USB Audio Class 2.0             | Coaxial, Optical, AES/EBU, USB Audio Class 2.0                          |
| <i>Digital I/O</i>                | 1 Gigabit LAN, 2 x USB 2.0   | 1 Gigabit LAN, 2 x USB 2.0  |
| <i>Word Clock Input (75 ohms)</i> | BNC<br>(Supports 44.1k, 48k, 88.2k, 96k, 176.4k, 192k)                     | -   |
| <i>Power Failure Protection</i>   | UPS  | Software Recovery   |
| <i>Audio Power Supply</i>         | LiFePO4 (LFP) Battery  | Linear Power Supply   |
| <i>CPU Power Supply</i>           | Fanless 100W SMPS  | Fanless 50W SMPS  |
| <i>CPU Board</i>                  | Developed In-house   | Mini-ITX  |
| <i>Main Memory</i>                | 4G   | 2G  |
| <i>HDD Isolation</i>              | Aluminum casing with floating suspension brackets for HDDs, rubber damping | Shielded from audio boards by thick aluminum partitions, rubber damping |
| <i>Voltage</i>                    | 90V ~ 240V   | 120V or 230V  |
| <i>Finish</i>                     | Silver or Black  | Silver or Black   |
| <i>Dimensions</i>                 | 430mm x 106mm x 370mm  | 430mm x 96mm x 353mm  |
| <i>Weight</i>                     | 19kgs.   | 14kgs.  |

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