

ALTAIR Wireless Streaming DAC



USER'S GUIDE

For Firmware Version 4.0 and Above

Revision 1.0

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Welcome

Thank you for choosing AURALiC product. ALTAIR is a perfect single-box music source for your modern HiFi system. It combines a High-End DAC with world class wireless streaming solution.

- **High-End Wireless Streaming**

ALTAIR is equipped with AURALiC's award-winning Lightning streaming technology that supports DXD and Quad-Rate DSD playback through Wi-Fi network. It also supports several advanced features such as gapless playback, multiple-room functions. Memory Playback, the latest feature added to Lightning streaming technology allows ALTAIR to fetch and cache the entire track in its on-board memory or system storage in advance, and then to play locally without any network data transfer needed, in order to improve the sound quality to the highest level.

- **15 Input Sources, More to Come**

ALTAIR functions as a home music center designed for virtually all kinds of digital input sources. By joint-used with Lightning DS, you can stream TIDAL, Qobuz and listen to Internet Radio lively at any time. ALTAIR's AirPlay, Songcast and Bluetooth inputs provide alternative ways to stream your favorite music from Apple Music, Spotify and other service providers from a smartphone or a computer. The rest of inputs include AES/EBU, Coaxial, Toslink and USB connection designed for a Computer-as-Source system.

- **Femto Master Clock**

The dual-frequency Femto Master Clock inside the ALTAIR is specially designed and optimized for its ESS Sabre DAC chip: with one frequency for 44.1K and multiple of 44.1K, and with another working frequency for 48K. This design makes ALTAIR to lock on with highest clock precision (equal to the VEGA's "EXACT" mode) at all time without dropouts.

- **Full Linear Power Supply**

With more and more DACs at this price range starting to use switching power supplies, AURALiC insists on using high performance but costly Purer-Power™ linear power supply technology on the ALTAIR. With this technology, the noisy AC power firstly goes into a power purification module, and the DC current and noise from both within and outside audio frequencies can be reduced by as much as 90dB.

- **Flexible Filter Mode**

ALTAIR has four built-in filter modes that allow users to customize sound best befitting their personal preference. Those filter modes were developed from AURALiC's well known Flexible Filter Mode in the VEGA Digital Audio Processor, with each containing several digital filters optimized for a corresponding sampling rate.

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CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN



**TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER.
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.**

IMPORTANT SAFETY INSTRUCTIONS

- All safety and operating instructions must be read before actual operation, and retained for future reference.
- This product should be connected only to the type of power source indicated on the back of the unit. If you are not sure of the type of your mains power supply, please consult your dealer or local power company.
- To completely disconnect this product from the AC mains, disconnect the power supply cord plug from the AC receptacle.
- Do not use the product near water, i.e. near a bathtub, kitchen sink, laundry tub, in a wet basement, near a swimming pool etc.
- Do not install the product near heat sources such as radiators, heat registers, stoves, or other apparatus that produce heat. See "Placement and Cabling" on page 7.
- Do not let objects or liquids fall into the product. Do not expose the product to dripping or splashing. Do not place a vessel containing liquid on top of the product.
- Clean only with a soft, dry cloth.
- Do not attempt to service this product yourself. Opening or removing covers may expose you to dangerous voltage. Refer all servicing to authorized service personnel. See "Service" on page 19.

Warranty

AURALiC offers a 1-Year factory warranty from the date of purchase that can be extended to a 3-Year limited warranty. The additional Two (2) Years Extended Limited Warranty is available for ALTAIR. This non-transferable warranty is available to the original owner of the product by completing the product registration including the original sales information from your authorized AURALiC dealer within 30 days of the purchase date.

IMPORTANT: BY USING YOUR ALTAIR, YOU ARE AGREEING TO BE BOUND BY THE TERMS OF THE AURALiC ONE (1) YEAR LIMITED WARRANTY (“WARRANTY”) AS SET OUT BELOW.

<http://www.auralic.com/en-us/Lightning/EULA.html#Warranty>

Warranty coverage includes all parts and labors. Warranty is void if damage is due to abuse, neglect or unauthorized modifications. Costs associated with the return of this product are the sole responsibility of the owner. All repair work must be done by AURALiC or by an authorized AURALiC repair agency. Work done by unauthorized persons will void any and all warranty coverage. AURALiC products are uniquely identified with a serial number (S/N) on the back of the unit. This number is required to validate your warranty. Please provide your serial number if service is required. Before the product can be returned for service, an RMA (Return Material Authorization) number must be issued by AURALiC. Contact your dealer or AURALiC for further information. Units without an RMA number will not be accepted for service.

Unpacking

Please check that the following items are in the box:

- ALTAIR
- AC Power Cable and USB Cable
- Remote Control
- User’s Guide (this book)
- Wi-Fi Antennas (2 pieces)

Carefully unpack each piece, if there is any damage, or if anything is missing, please contact your AURALiC dealer or us directly (support@auralic.com). Please be sure to retain the original shipping carton and all packing materials as they are specially designed to protect the unit during transportation or shipping when future factory upgraded may be needed.

ONLY SHIP THIS PRODUCT IN ITS ORIGINAL PACKING!

Placement and Cabling

Placement

ALTAIR should be placed on a solid and stable surface with good ventilation condition. Do not install this product near any heat sources such as radiators or other products (such as amplifiers) that produce heat. Site the product so that its location or position does not interfere with its proper ventilation. For example, it should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings, or placed in a built in installation such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.

Ventilation Requirement

ALTAIR dissipates up to 30 Watts of power during normal operation. It should be installed in a space with at least one inch of clearance above, behind and on both sides of its enclosure to provide adequate ventilation. Avoid placing it directly above other equipment that produces heat.

Check Your AC Mains Voltage

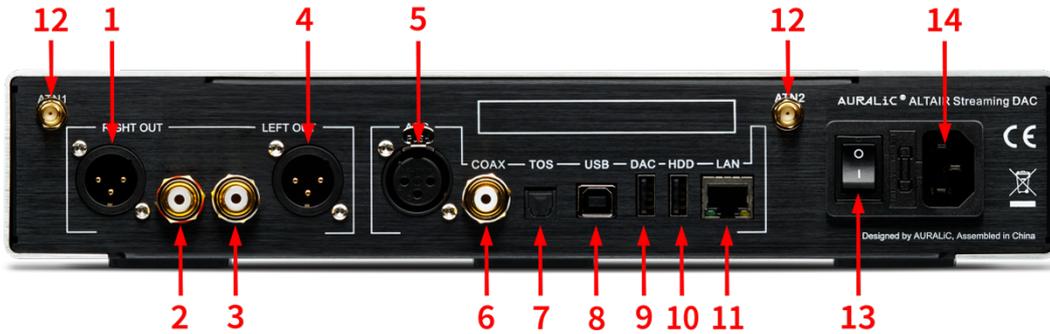
ALTAIR is shipped with its mains voltage preset for operations in the destination country / region. The mains voltage setting is written on the back of the unit, besides the power cord socket. Mains voltage setting is not intended to be changed by the user. If it needs to be changed, contact your dealer or AURALiC.

The power cord has a three-wire grounding type plug (a plug having a third pin for grounding). It will only fit into a grounding type power outlet. If you are unable to insert the plug fully into the outlet, contact your dealer or AURALiC. Do not defeat the safety purpose of the grounded type plug.

**ALTAIR MUST BE USED WITH CORRECT
MAINS VOLTAGE AND PROPERLY EARTHED!**

Cabling

The I/O ports on the rear of the unit are shown as following:



1	Right Balanced Analog Output	8	USB 2.0 High Speed Input
2	Right Single-Ended Analog Output	9	USB DAC Output
3	Left Single-Ended Analog Output	10	USB Storage Input
4	Left Balanced Analog Output	11	Ethernet Connectors
5	AES/EBU Balanced Digital Input	12	WiFi Antenna Connectors
6	Coaxial Digital Input	13	Main Power Switch
7	Toslink Digital Input	14	Main Power Inlet Socket

Please make sure to power off all units in your system before any cabling job, failed to follow this instruction may result in permanent damage to the device and void any warranty.

ALWAYS POWER OFF ALTAIR BEFORE CABLING!

- **Analog Outputs**

The balanced and single-ended analog outputs of ALTAIR are buffered individually. These two outputs groups can be used simultaneously. However, we suggest you to disconnect unused ports to avoid any potential electromagnetic interference induced by cables.

The amplitude of analog outputs is adjustable with maximum level at about 4.4Vrms on both XLR and 2.2Vrms on RCA outputs. Please pay double attention NOT to short any pin of any analog output to ground.

**NEVER SHORT ANY OUTPUT OF ALTAIR TO GROUND!
FAILED TO DO THAT WILL DAMAGE THE UNIT
PERMANENTLY AND WILL VOID FACTORY WARRANTY!**

- **WiFi, Ethernet for Lightning Streaming**

The Lightning Streaming can be activated through Wi-Fi or Ethernet connection. Please refer to page 14 for detailed instruction on how to setup ALTAIR in your home network.

- **USB Storage Input**

The USB storage port can deliver 5V/500mA current to power USB drive. We suggest you to use self-powered USB drive for better sound quality consideration. To play music stored on the USB drive, you need to connect ALTAIR to your home network first, please refer to page 14 for instruction.

- **USB DAC Output**

When using ALTAIR as a Lightning streamer, you may connect ALTAIR to a USB DAC, making it as a digital streamer only. To use this function, you will need to connect ALTAIR to your home network first, please refer to page 14 for instruction.

- **AES/EBU, Coaxial and Toslink Digital Inputs**

The AES/EBU, Coaxial and Toslink digital inputs are individually buffered. Maximum sampling rate supported by these ports is 24 Bit / 192 KHz.

- **USB 2.0 High Speed Input**

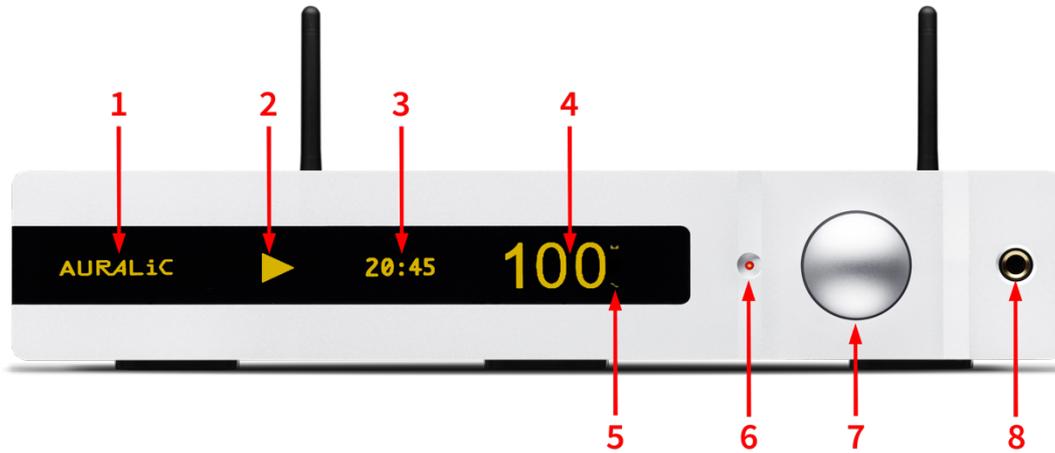
The USB 2.0 Input uses asynchronous transmission mode and is buffered by AURALiC's ActiveUSB technology to further reduce jitter effects. The USB input supports PCM signals up to 32 Bit / 384KHz, DSD streams at 2.8224 MHz and 5.6448 MHz through DoP V1.1 protocol and DSD256 through Native DSD on Windows PC with selected compatible playback software or through other Linux based streamer. The specific driver is required for proper functioning under Windows PC system, please refer to 'To use ALTAIR as standalone USB DAC' on page 15.

- **Main Power Inlet Socket**

We suggest you to use standalone power supply for the ALTAIR to provide isolation from other digital source components using switching power supply. The power consumption of ALTAIR is less than 30W, so a heavy gauge power cord is not recommended as the weight of the power cord connector may damage the power cord socket on the back of the unit. Please double check the AC mains voltage on the back of the unit before connecting to the power.

Operation

The front panel of ALTAIR and the display of main screen are shown below:



1	Operation Indicator	5	Special Function Indicators
2	Input Indicator / Playback Status	6	Power LED Indicator
3	Sampling Indicator / Play Timer	7	Rotary Switch
4	Output Volume Indicator	8	Headphone Output

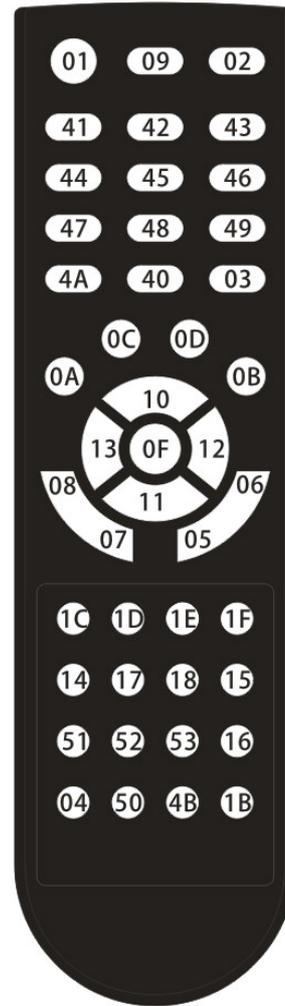
Power On/Off

ALTAIR will power on when the **main power switch (13 on the rear of the unit)** is toggled to 'I' position and will power off when the power switch is at 'O' position.

As soon as ALTAIR is powered on, it will go to sleep mode. In the sleep mode, ALTAIR will only shut-down some parts of digital circuits, keep all analog on and the Femto clock active. The **Operation Indicator (1)** will display at low brightness in sleep mode.

Operation by RC-1 Remote Control

The layout of buttons and key numbers of RC-1 remote control are shown below:



- **Start Work**

When powered on, ALTAIR will be in sleep mode automatically. To start work, just press **POWER (01)** button, ALTAIR will run self-test and start. This operation is only available at main screen and is disabled in menu.

- **Adjust Volume**

Based on your settings, volume can be set by **VOL- (05)** and **VOL+ (06)** or **DOWN (11)** and **UP (10)** buttons. A single press will change volume in one step, keep pressing will change volume continuously. ALTAIR will measure the length you press the buttons and apply corresponding change acceleration, the longer the volume button is pressed, the faster the volume will change. This operation is only available at main screen and is disabled in menu.

- **Input Selection**

Input can be selected and switched immediately by pressing one of the **IPOD (51)**, **USB**

(14), AES (17), COAX (18) and TOS (15) buttons. The corresponding **Input Channel Indicator (2)** will show up at main screen. **If you want to use streaming, AirPlay, Bluetooth and other input channels related to streaming, please use IPOD (51).** This operation is only available at main screen and is disabled in menu.

- **Display ON/OFF**

Display screen can be manually switched off by pressing the **DISPLAY (09)** button and can be re-activated by pressing any button on the remote control. This operation is only available at main screen and is disabled in menu.

- **MUTE/UNMUTE**

Pressing the **MUTE (02)** button on the remote control will change between MUTE and UNMUTE in sequence. The volume value on the main screen will flash when the unit is set to MUTE.

- **Streaming Transport Control**

When used with Lightning streaming input, the following function will be mapped to the key on the remote control:

Function	Remote Control Button
Play/Pause	Button 0C
Stop	Button 0D
Fast Forward	Button 0B
Backward	Button 0A
Next Track	Button 07
Previous Track	Button 08
Shuffle	Button 1D
Repeat	Button 1C

- **Menu Operations**

- **Enter and Exit Menu**

To enter setup menu, press **MENU (4A)** button at main screen. To exit menu at any position, press **EXIT (03) or POWER (01)**. Any previous operation will not be saved except for balance setting (see page 17) after an exit operation is applied. If no operation is applied for 15 seconds, ALTAIR will quit to main screen automatically.

- **Menu Item Selection and Confirmation**

There are two ways to select a menu item. The first is to use navigation buttons **UP (10)**, **DOWN (11)**, **RIGHT (12)** and **LEFT (13)** in any position of the menu. The alternative way is to use the number buttons **1 to 6 (41 to 46)** to select a menu item with corresponding number. To confirm the operation or enter selected menu, press **OK (0F)** button. If no operation is applied for 15 seconds, ALTAIR will quit to main screen automatically.

- **Sleep**

Press button **#01 (POWER)** on remote control, a dialog box will appear to confirm the operation, select YES (by default) and press button **OK (0F)**, the unit will go to sleep mode or select NO to quit. If no operation is applied for 15 seconds, ALTAIR will quit to main screen automatically. You can press and hold button **#01 (POWER)** for 5 seconds to put the unit into sleep directly without need to select Yes as confirmation.

Operation by Rotary Switch

ALTAIR uses also a **Rotary Switch (7)** to make all operations if you don't want to use the remote control. The rotary switch can be rotated in clockwise or anti-clockwise order at 20 steps for a full cycle and be pushed for confirmation.

- **Start Work**

After powered on, ALTAIR will be in sleep mode. To start the unit, press the rotary switch briefly, ALTAIR will run self-test and start.

- **Adjust Volume**

The easiest way to change the volume is to operate the rotary switch at main screen. A clockwise rotation will increase volume and an anti-clockwise rotation will decrease volume. ALTAIR can detect the speed of rotation and apply corresponding acceleration. At low speed, a single step of rotation means one step of volume change, the higher speed you rotate, the more steps of volume it will change.

- **Menu Operation**

To enter setup menu, press the rotary switch briefly to display the menu items, rotate the switch will highlight the selected menu item in sequence. To enter the selected menu item or confirm the operation, press the rotary switch briefly. If no operation is applied for 15 seconds, ALTAIR will quit to main screen automatically.

- **Sleep**

Press and hold the rotary switch at main screen for 3 seconds, a dialog box will appear

to confirm the operation, select YES (by default) and press rotary switch to confirm, or select NO and press rotary switch to quit. If no operation is applied for 15 seconds, ALTAIR will quit to main screen automatically.

To use ALTAIR as a streamer

To use ALTAIR as a streamer, you will need to connect the device to your home network and control it through AURALiC Lightning DS control software. Lightning DS is available for download free of charge in Apple App store, you will need to have an iPad (iPad 2 or later model), iPhone (iPhone 4S and later model) or iPod touch (5th generation or later model) to operate the device. ALTAIR's streaming function will also compatible with 3rd party OpenHome/UPnP control software or Roon, It is however the initial setup, such as WiFi network setup can only be done through Lightning DS.

Download
Lightning DS



Lightning DS has built-in animated guide which will help you to setup ALTAIR in your home network, we highly recommend you to follow the guide to finish the device setup.

Since the ALTAIR device firmware and Lightning DS are designed to update with new features from time to time, please visit our online support center to get latest document and user's guide.

Please visit **SUPPORT.AURALIC.COM** to get the latest version of Lightning Streaming user's guide for ALTAIR.

To use ALTAIR as stand-alone USB DAC

Apple Mac OS X 10.6.4 or later, specific Linux system supporting USB 2.0 audio device, and all AURALiC Lightning streaming bridges such as ARIES do not need driver installation.

USB driver is required for proper operations under all Microsoft Windows operation systems including Windows 7 / 8 / 10. Please be noticed that Windows XP and Vista operation are no longer supported.

You can download the latest version of USB drive for Windows operation system through our support website at: **SUPPORT.AURALIC.COM**.

No driver is required for Mac OS and Linux based streamer.

Please visit **SUPPORT.AURALIC.COM** to get the latest version of USB Audio driver for Windows system (Windows 7, 8, 10 and above)

Operation Menu

1. INPUT

1. AES

Switch to AES/EBU input channel.

2. COAX

Switch to COAXIAL input channel.

3. STREAM (Default)

Switch ALTAIR to work as a streamer.

4. TOSLINK

Switch to TOSLINK input channel.

5. USB HS

Switch to USB High Speed input channel.

6. BACK

Back to previous menu.

2. BALANCE

This menu is to adjust volume balance between left and right channel. If left and right channel volumes are not equal, a small icon:  will appear on the main screen at right top corner to remind you of using this option. The default value for this menu is left = right.

3. PHASE

1. NORMAL (Default)

Set analog output's phase without change.

2. INVERT

Invert the analog output's phase. A small icon:  will appear on the main screen at the right bottom corner to remind you of using this option.

3. BACK

Back to previous menu

4. FILTER

1. PRECISE (default)

PRECISE offers best measurement performance with flat frequency response well extended to treble. This mode has very small in-band ripple and best stop-band attenuation performance. PRECISE is best for the playback of orchestral

music.

2. DYNAMIC

DYNAMIC exhibits a gentler roll-off curve of frequencies; it maintains great in-band, stop-band performance while trades off small attenuation at treble. DYNAMIC is best for the playback of light jazz, chamber music and piano solo.

3. BALANCE

BALANCE is designed to minimize the 'pre-ringing' and 'echo' effects. As a result, this mode sounds very smooth. However, due to the slow roll-off at high frequency, it may lose some details in treble for certain kinds of music. BALANCE is best for vocal, jazz and pop music.

4. SMOOTH

All filters in this mode are designed to optimize the subjective listening experience at maximum. By using minimum phase design, there is no 'pre-ringing' effect in this mode, the 'echo' effect is also been reduced as much as possible SMOOTH is the 'all-best' option for music enjoyment.

5. BACK

Back to previous menu.

5. SYSTEM

1. VOL.MOD

1. MASTER

All input channels will use same volume setting. Default volume at first use is 20 (-40dB).

2. INDVDL (default)

Each input channel has its own volume setting. When you switch to new input channel, ALTAIR will fade in slowly to avoid sudden loud sound. Default volume for every input channel is 20(-40dB).

3. BACK

Back to previous menu.

2. DISPLAY

1. KEEP ON (default)

Display will keep on till manually switch off by remote control. Display will light again by any button on the remote control or the rotary switch.

2. AUTO OFF

The display switches off automatically after 15 seconds without any operation. And it will light again by any button on the remote control or the rotary switch.

3. DIM

Set display brightness to low.

4. NORMAL (default)

Set display brightness to middle.

5. BRIGHT

Set display brightness to high.

6. BACK

Back to previous menu.

3. REMOTE

1. VOL- / + (Default)

Use VOL- or VOL+ on the remote control to set the volume.

2. DOWN / UP

Use DOWN or UP button on the remote control to set the volume. Since TAU-RUS PRE (our balanced preamplifier) uses VOL- or VOL+ to control the volume, this setting separates volume operations from different units.

3. BACK

Back to previous menu.

4. RESET

Erase all user's settings, restore to factory defaults. A warning message will be displayed before the operation is processed.

5. NEXT

Go to SYSTEM menu page 2.

6. BACK

Back to previous menu.

6. SYSTEM (PAGE 2)

1. WIFI AP

By using this operation, ALTAIR will create a WiFi network named 'AURALiC-Lightning'. By joining this network, you can connect to ALTAIR using Lightning DS to control ALTAIR join particular home WiFi network or Ethernet. A warning message will be displayed before the operation is processed.

2. NETWORK

Display ALTAIR's current network connection status such as connection type, IP address, WiFi network name and etc.

3. ABOUT

Display information of this unit including device type, S/N, hardware and firmware versions.

4. BACK

Back to SYSTEM menu page 1.

Maintenance & Service

Maintenance

ALTAIR does not require regular maintenance under normal use situation. However, there are a few things that will help to keep it in good operating and cosmetic conditions:

Cleaning

Only clean the enclosure with a soft, dry cloth.

Extended Non-use

Disconnect ALTAIR from mains power when it will be left unattended or unused for an extended period of time.

Service

If your ALTAIR encounters a problem, contact your dealer or AURALiC. Do not void the warranty by allowing unauthorized personnel for repair attempt. Do not attempt to service the product yourself. Opening the cover may expose you to dangerous voltage, as well as void the warranty.

Before ALTAIR can be returned for service, an RMA (Return Material Authorization) number must be issued by AURALiC. Contact your dealer or AURALiC for further information.

Contact

If you have any question, please feel free to contact our technical support department:

AURALiC (Beijing) Technolgoy Co., Ltd.
1F, Building No.7, No.1A Chaoqian Road
Beijing, 102200
China

support@auralic.com
www.auralic.com

Troubleshooting

No Power

- Make sure the power cord is connected to both the AC mains connector and an AC wall outlet.
- Try to change for another power cord.
- Check the AC mains voltage indication on the back of the unit and see if it corresponds to your local power voltage.

No Sound or Low Output

- Examine all cables to ensure a solid connection between the ALTAIR and associated components.
- If you are using the USB port, make sure the playback software's volume is set to an audible level and not muted.
- Make sure all associated components are powered on.
- Make sure the associated components connected to the selected input has an audible output signal.
- Try rebooting the ALTAIR (power off the ALTAIR, then power on again).

Distorted or Partial Sound

- Check the output cables between the ALTAIR and the preamplifiers / power amplifiers / active loudspeakers, make sure all are well connected.
- Make sure that all speaker connections are tight and that no stray strands of wire shorting exist within the speaker terminals.
- Try rebooting the ALTAIR (power off the ALTAIR, then power on again).

Noise / Hum

- Check the output cables between the ALTAIR and associated components, make sure all connections are well done.
- Make sure the output cables between the ALTAIR and the power amplifiers are not settled near any AC cables, power transformers, or other EMI inducing devices.
- It may be helpful to plug all associated components into the same AC circuit in order to share a common ground.

Specifications

Frequency Response	20 Hz - 20 KHz, +/- 0.1 dB*
THD+N	<0.0003%, 20 Hz - 20 KHz at 0 dBFS
Dynamic Range	124 dB, 20 Hz - 20 KHz, A-weighted
Streaming Inputs	<p>Network shared folder USB Drive Internal Music Storage** uPnP/DLNA Media Server TIDAL and Qobuz streaming Internet Radio AirPlay Bluetooth Songcast RoonReady</p>
Digital Inputs	<p>1*AES/EBU 1*Coaxial 1*Toslink 1*USB device to computer 2*USB host to storage and DAC 1*RJ45 Gigabit Ethernet 1*802.11b/g/n/ac Tri-Band WiFi</p>
Analog Outputs	<p>1*Balanced XLR 1*Single-ended RCA 1*6.35mm headphone Jack</p>
Supported Digital Format	AAC, AIFF, ALAC, APE, DIFF, DSF, FLAC, MP3, OGG, WAV, WV and WMA
Supported Digital Format	All PCM from 44.1KS/s to 384KS/s in 32Bit*** DSD64, DSD128, DSD256***
Output Voltage	<p>4Vrms at 0dBFS (XLR) 2Vrms at 0dBFS (RCA)</p>

Control Software	AURALiC Lightning DS for iOS AURALiC RC-1 remote control OpenHome compatible control software uPnP compatible control software
User Interface	AURALiC RC-1 remote control 512*64 pixels OLED Display
Power Consumption	Sleep: <10W Playback: 35W at max.
Dimension	11"W x 9"D x 2.6"H (33cm x 23cm x 6.5cm)
Weight	7.0 pounds (3.2kg)

* Tested under Filter Mode Precise for all sampling rate

** With optional 2.5-inch HDD or SSD installed

** 352.8KS/s and 384KS/s are supported through streaming and USB input only

*** 32bit is supported through streaming and USB input only

*** By 'DoP V1.1' or native DSD protocol through streaming and USB input only

All specifications are subject to change without notice.

