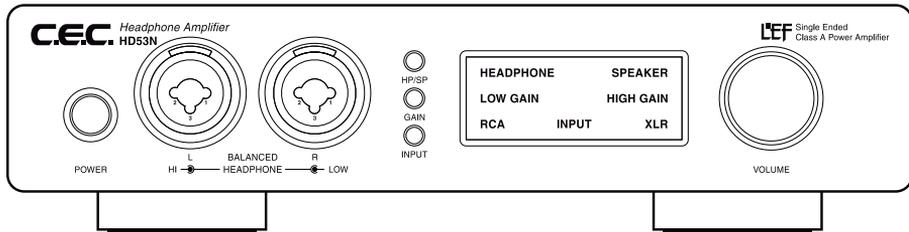


# Balanced Headphone Amplifier

# HD53N

## Owner's Manual



**C.E.C.**

## Contents

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## Introduction

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Thank you for purchasing HD53N.  
Please read through and refer to this Owner’s manual to use your HD53N safely and adequately. It is recommended that you keep the unit’s packaging available for future transportation needs.

### Features

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- HD53N is a very high grade headphone amplifier as well as a complete HiFi-solution for music lovers with headphone priority. Due to the integrated power amplifier HD53N can be the center of a very high grade music-listening-equipment.
- HD53N incorporates a truly balanced circuitry and consequently offers balanced headphone operation as well as a balanced speaker output. Of course a standard unbalanced headphone terminal is also available. Balanced operation makes the signal very clean due to independence of the ground level. The slew-rate is twice of the unbalanced output. Regardless of the headphone type used the improvement is easy to hear.
- The whole amplifier circuitry is using the unique LEF technology, which offers very low distortion without the need of global feedback loops degrading sound. LEF allows a single-ended-amplifier design, which just works in pure class A operation, with much higher efficiency than a traditional design. All outputs are directly driven by LEF amplifier stages.

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•HD53N's design also allows the easy variation of the amplifier gain. Consequently used an intelligent gain management (IGM) replaces a traditional volume control with a lot of advantages:

- It uses the full signal level of the source and thus avoids dynamic losses and improves S/N-ratio.

- The amplifier noise level is significantly reduced and reaches the usual noise level just on maximum volume.

- The amplifier's sound quality improves when using lower gains. Generally the maximum gain is rarely needed, while traditional amplifier designs always use the maximum gain.

•A headphone amplifier has a very wide range of usage requirements. From low impedance (16 Ohm) headphones with high sensitivity up to high impedance types (300 Ohm) which require much higher voltage levels. At last the speaker operation is a different requirement. HD53N offers two different basic gain settings which allow the matching of a specific headphone. It also automatically changes the gain for leveling XLR and RCA inputs. This makes HD53N a very versatile headphone amplifier.

•HD53N's headphone output (LOW) is guiding the headphone's movement by having a very low output impedance. Most (high grade) headphone will benefit from a strong amplifier control, but some headphones lack of low frequency substance when driven with a very low impedance source. For this purpose HD53N offers a second unbalanced output (HI) with 120 Ohm impedance.

•For a truly balanced amplifier of course there is one balanced XLR input which is recommended to use. This matches perfectly to sources like DA53N D/A converter or other balanced sources. For those who don't have a balanced source HD53N also has a standard RCA input. For preserving most of the balanced advantages this RCA input is handled differentially by HD53N without fixed ground connecting. This is a quasi-balanced operation which shows much better measurement specification than the traditional RCA connection. Both inputs can be connected at the same time and the input selector is located at the front panel.

## Important Safety Instructions



The lighting flash with arrowhead symbol, within an equilateral triangle, is intended to alert the use to potential shock hazards within the product's enclosure.



The exclamation point within an equilateral triangle, is intended to notify the user to the presence of important operating and maintenance (servicing) instructions in the accompanying documentation.

**WARINIG: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THE APPLIANCE TO RAIN OR MOISUTRE.**

- 1) Read these instructions.
- 2) Keep these instructions.
- 3) Heed all warnings.
- 4) Follow all instructions.
- 5) Do not use the unit near water.
- 6) Clean only with a dry cloth.
- 7) Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
- 8) Do not install the unit near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- 9) (For USA, Canada: ) Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades, with one blade wider than another. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit your outlet, consult an electrician for replacement of the obsolete outlet. (For European Countries: ) Do not defeat the safety

purpose of the grounding-type plug. This plug has two poles and a third grounding hole. The third hole is provided for your safety. If the provided plug does not fit your outlet, consult an electrician for replacement of the obsolete outlet.

10) Protect the unit's power cord from being walked on or pinched, especially around the plugs, convenience receptacles, and where it exists the unit's casing.

11) Only use attachments/accessories specified by the manufacturer.

12) Only use the unit with a cart, stand, tripod, bracket, or table specified by the manufacturer or sold with the unit. If using a cart, exercise caution when moving the cart unit combination to avoid injury from it tipping over.



13) Unplug the unit during lightning storms or when leaving it unused for extended periods of time.

14) Refer all servicing to qualified service personnel. Servicing is required when the unit itself, its power-supply cord, or plug has been damaged in any way, when liquids have been spilled onto the unit, when foreign objects have fallen into the unit, when the unit has been exposed to rain or moisture, when the unit does not operate normally, or when the unit has been dropped.

### Caution

- Do not expose the unit to drips or splashes.
  - Do not place any objects filled with liquids, such as vases, on the unit.
  - Do not install the unit in a confined space, such as within a bookcase or similar piece of furniture.
  - Plug the AC power cord into an easily accessible AC wall outlet, so it can be quickly unplugged in case of emergency.
  - Do not remove the protective housing with a screwdriver.
  - Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.
  - If the unit seems to be malfunctioning, contact a qualified service station.
- Discontinue use of any malfunctioning unit.

For CANADA:

AC POWER CORD CONNECTION

CAUTION:

TO PREVENT ELECTRIC SHOCK, MATCH THE BLADE WIDTH OF THE PLUG TO THE SLOT WIDTH. THE PLUG MUST BE FULLY INSERTED TO THE SLOT.

## Handling Precautions

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### 1. Connecting Other Devices

Unplug HD53N's AC power cord from the outlet before connecting or disconnecting other devices. Exercise caution when handling the AC power cord. When disconnecting the AC cord from a socket, make sure you pull the plug, and not the cord itself.

### 2. Turning Power ON/OFF

Your system components should be turned ON/OFF in the following order to avoid generating noise from your headphones and speakers, and damaging the headphones and speakers themselves or other devices:

Turning power ON: Turn HD53N's volume to the minimum and power ON at last, after turning ON the DA converter or CD-player connected to HD53N.

Turning power OFF: Turn HD53N's volume to the minimum and power OFF first, before turning OFF connected units.

### 3. Handle with Care

Avoid exerting excessive force on the cabinet, the volume and selector knobs and push switches of HD53N.

### 4. Avoid Electrostatic Discharge

Like all complex electronic devices, HD53N is sensitive to electrostatic discharge. A discharge may cause malfunction or damage.

### 5. Installation

Use of an audio rack is recommended to maximize the sound quality and performance of HD53N. Installation and use of HD53N in the locations described below may cause deterioration in sound quality or malfunctions.

- Locations exposed to direct sunlight, such as windowsills, and other exceptionally warm locations, such as near heating appliances (surrounding temperature higher than 35 °C), or exceptionally cold locations (surrounding temperature lower than 5 °C), may prevent HD53N from functioning adequately.
- Damp locations exceeding 90% humidity may cause HD53N's metal parts to rust, causing the unit to malfunction.
- Dusty locations may cause HD53N to malfunction. The accumulation of dust outside and inside the unit may lower the performance of music signal amplification. It may also cause contact failure of the switches and/or noise.
- Otherwise, avoid installing HD53N close to other transformers and electrical motors, so as to prevent the pickup of induction hum. Also, avoid mounting HD53N on surface that may be affected by vibration.

### 6. Avoid Lightning Strikes Damages

Disconnect the AC power cord from the AC outlet when there is a thunderstorm in your vicinity.

### 7. Condensation

When HD53N has been brought into a warm room when the exterior temperature is cold, or when the room temperature rises sharply from using a heater, condensation may occur from both inside and outside the unit, hampering its performance. If this happens, leave HD53N unused in the room for 1 to 2 hours (depending on the amount of condensation), so as to bring the unit's temperature closer to the room temperature. The condensation should go away gradually.

## 8. Listening Etiquette

- Excessive sound pressure from headphones and earphones can cause hearing impairments. Take care not to increase the volume too much.
- When adjusting the sound volume level, make sure you do not disturb other people and your neighborhood.

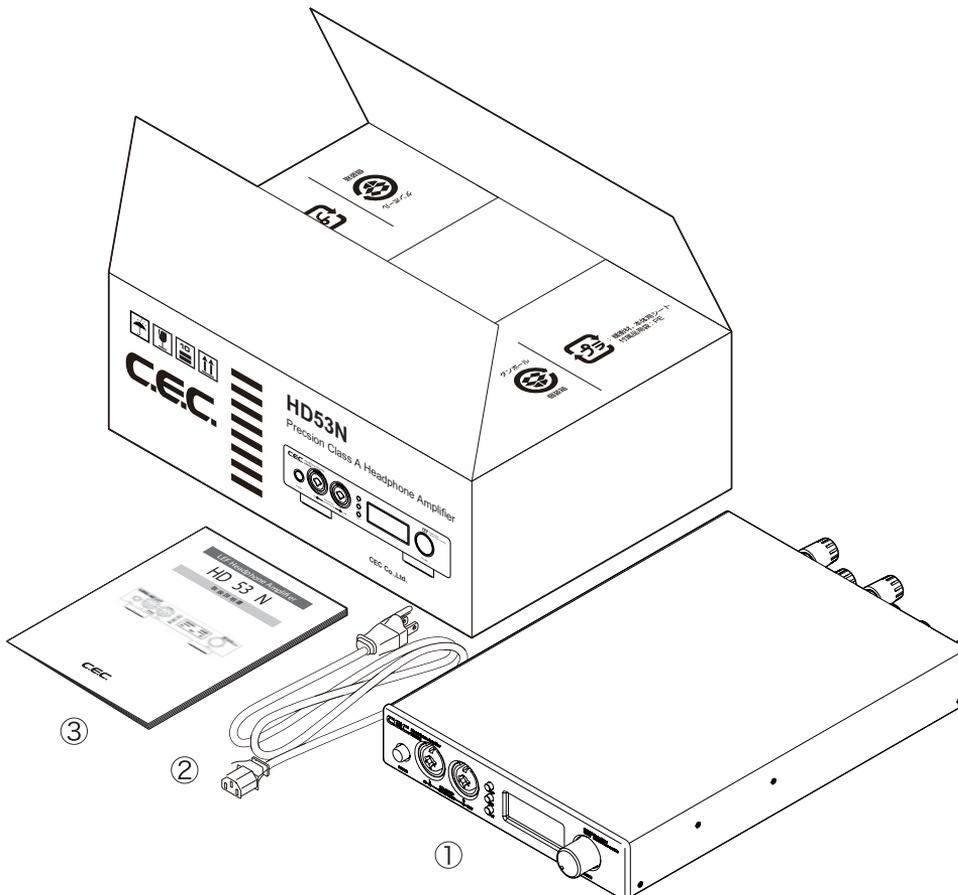
## Accessories

The packaging of HD53N should contain the following:

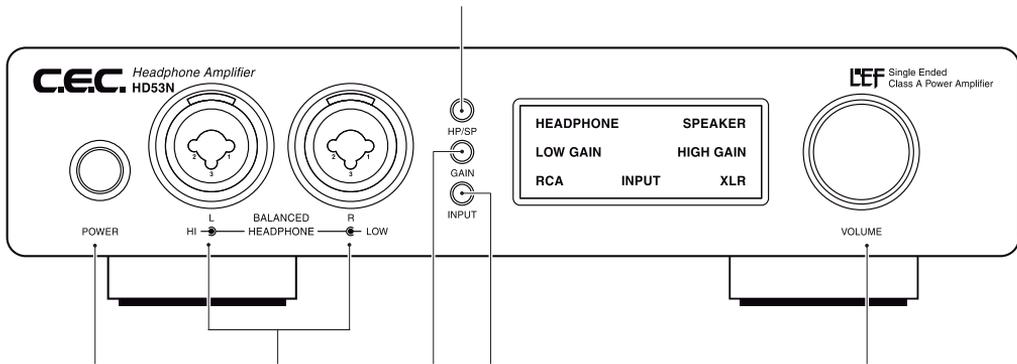
1. HD53N unit
2. AC Power Cord
3. Owner's manual

NOTE: Keep the packaging available for future transportation needs.

The AC power cord is for use with HD53N exclusively, and should not be used for other devices.



## Front Panel Functions



### POWER button

Push the POWER button to turn HD53N ON respectively OFF.

When HD53N is turned ON the display will blink “INPUT” and “XLR” or “RCA” indicators during the unit is in starting-up. Approximately 20 seconds later once the display changes to indicate the selected INPUT and light up a gain setting (“LOW GAIN” or “HIGH GAIN”) and output (“HEADPHONE” or “SPEAKER”) indicators, HD53N is ready for use.

Starting input and output are the last selected input and output when HD53N was turned off. Press INPUT selector button and HP/SP selector button to change to different input and output.

Note: When you need to turn the power OFF and back ON again, wait for least 20 seconds after turning the unit OFF to prevent malfunction.



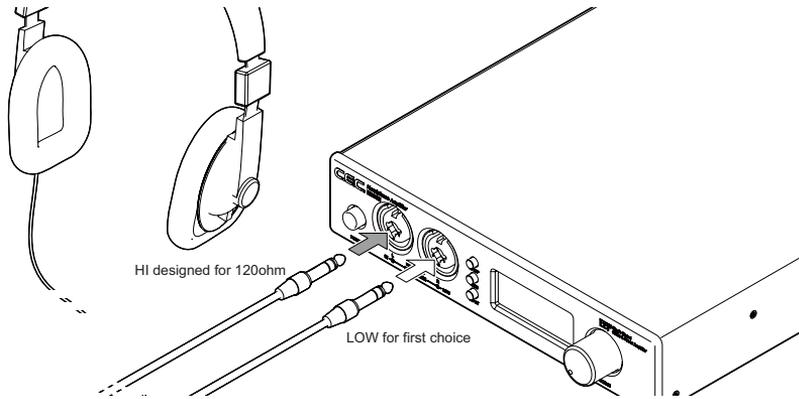
Before turning HD53N ON or OFF, turn the volume knob to the minimum to avoid a switching noise or sudden and big sound from the headphones or speakers, which may result in damaging the headphones or speakers, or injuring your ears. Headphones or earphones should be taken off before HD53N is turned ON and OFF.

### HEADPHONE Output

Headphone output is a combination type of two standard 6.3mm headphone and a balanced XLR jacks.

#### A)Headphones with 6.3mm plug

For Standard headphones with a 6.3mm plug there are two outputs with different output impedances.



•**LOW** (right side / output impedance approx. 10 Ohm): First choice for best headphone control.

•**HI** (left side / output impedance approx. 120 Ohm): Sound tuning option for headphones designed for 120 Ohm output.

Notes:

\*Sound level from LOW and HI is different even at the same volume position. Generally LOW output sounds louder.

\*Offering the 120 Ohm option has historical reasons: Using a series resistor was an easy way to adjust volume of high and low impedance headphones. This practice was leading to some headphones being tuned to sound better with 120 Ohm. Comparing and listening both outputs may be the best way to find the output which can produce your preferred sound quality.

\*For using a headphone with 3.5mm mini plug, purchase a 6.3mm conversion plug from a dealer.

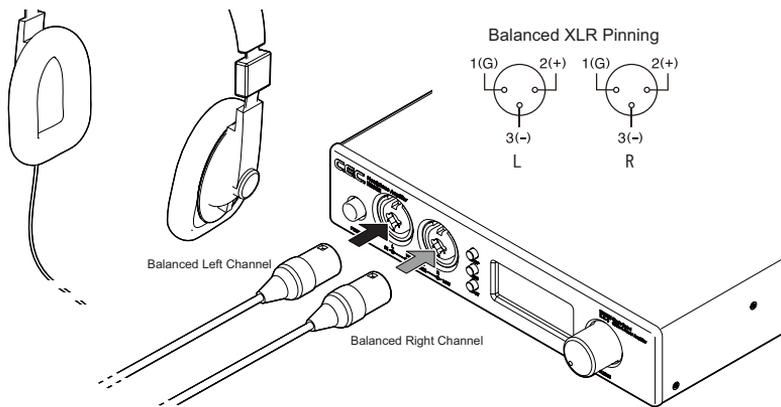
**B)Headphones with balanced XLR plugs**

Connect a headphone XLR plug for the left channel to the jack marked with L at the left side, and connect another XLR plug for the right channel to the jack marked with R at the right side. Pinning: 2=Hot(+), 3=Cold(-).

Balanced output impedance is nearly 0 Ohm.



Never use any kind of adaptors from XLR to an unbalanced headphone plug! It may destroy HD53N and/or the headphones!





Before connecting or disconnecting the headphone plugs, turn the volume knob to the minimum and take off the headphones or earphones from your ears to avoid a sudden excessive sound pressure or noise, which may cause hearing impairment.

### OUTPUT(HP/SP) selector button

Press the HP/SP button to select an output from headphone and speaker. The selected output indicator “HEADPHONE” or “SPEAKER” lights up in the display.

\*Before changing the output, turn the volume to the minimum and take off the headphones or earphones from your ears.

### GAIN button

Press the GAIN button to change the amplifier gain setting to LOW GAIN or HIGH GAIN. The corresponding GAIN indicator lights up in the display.

LOW GAIN is recommended for the beginning of use. In case that you feel a lack of sound level due to the headphone's or speaker's efficiency and sensitivity, change to the HIGH GAIN.

\*The volume knob position where HD53N exceeds the maximum output power varies with the connected devices and input sources. When the sound is distorted the power may exceed the maximum already. In this case, change the gain setting to LOW GAIN or decrease the volume.

### INPUT selector button

Press the INPUT button to select an input from the balanced XLR or unbalanced RCA. The corresponding indicator lights up in the display.

\*Before changing the input, turn the volume to the minimum and take off the headphones or earphones from your ears.

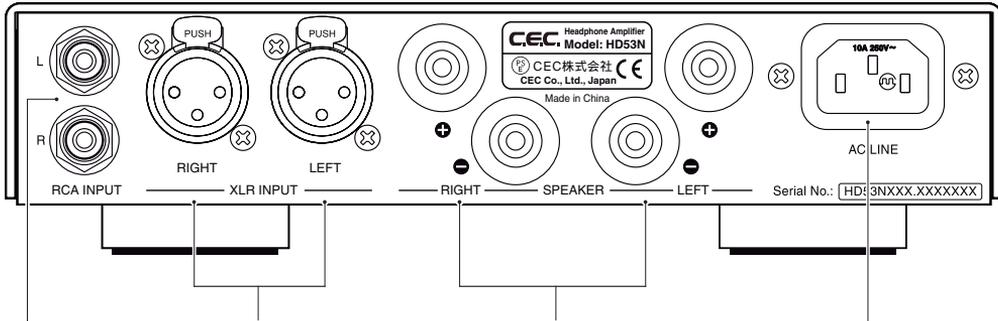
### VOLUME knob

Turn the VOLUME knob clockwise to increase the volume, and turn the knob counterclockwise to decrease the volume.

\*Due to the Intelligent Gain Management (IGM) volume control system, small sound still comes out from headphones or speakers even at the minimum volume knob position. To mute the sound completely, stop the playback of the connected source device.

\*Due to the potentiometer character, the sound level of the both channels may be unbalanced in a very small range of just the starting point. Passing through the starting point by increasing the volume a little more, the channel balance should be perfect soon.

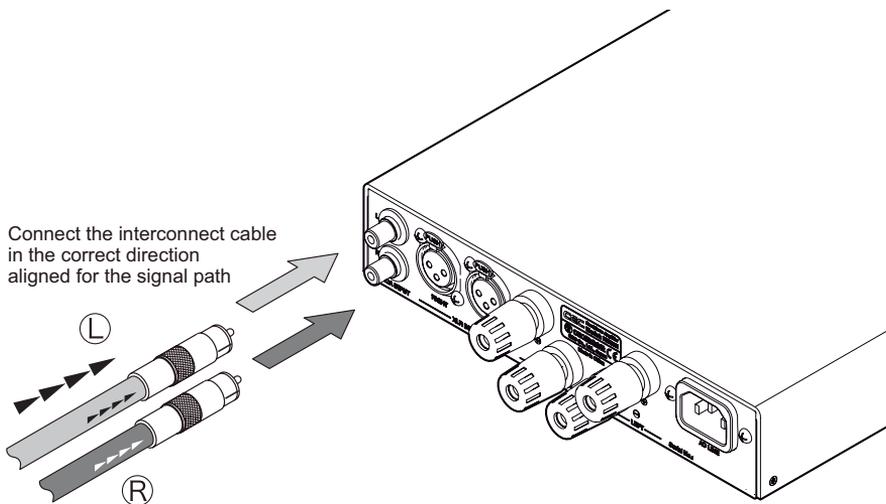
## Rear Panel Functions



### RCA Input

Line in audio signal input jacks equipped with unbalanced RCA connectors. Use interconnect RCA cables to connect the RCA input to external sources with RCA line output, such as CD player, tuner or tape deck.

\*Phono and digital sources cannot be connected to the RCA input.

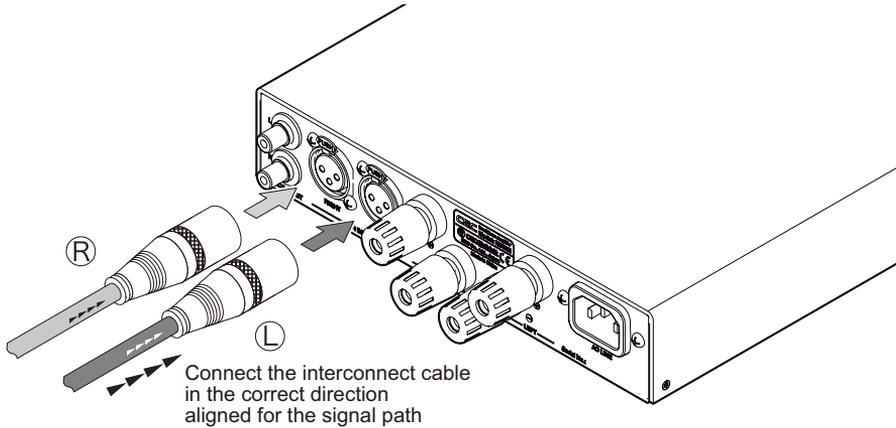


### XLR Input

Line in audio signal input jacks equipped with balanced XLR connectors. Use interconnect XLR cables to connect the XLR input to external sources with XLR line output, such as CD player, DVD player or DA converter. Due to a full balanced circuitry design the balanced XLR connection is recommended

for better sound quality. Pinning: 1=Ground, 2=Hot, 3=Cold.

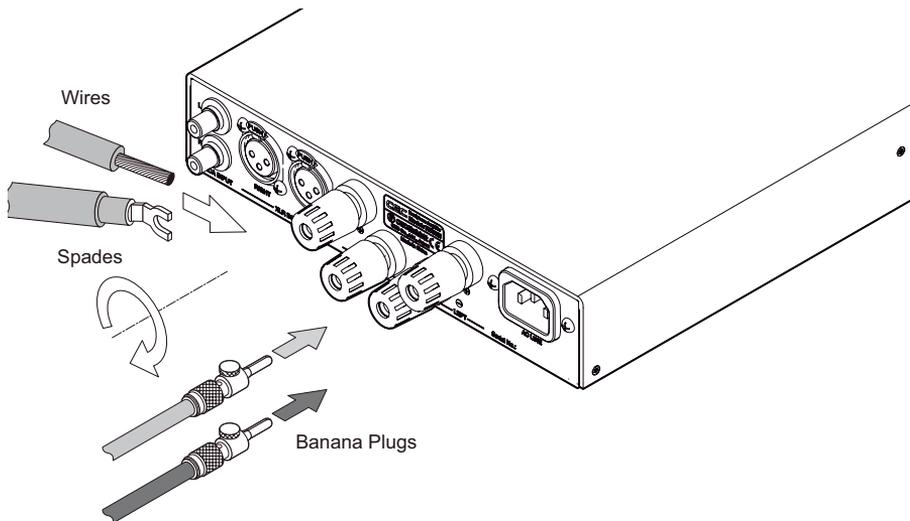
\*Phono and digital sources cannot be connected to the XLR input.



#### RIGHT / LEFT SPEAKER output

Power amplifier output terminals for the right/left speakers. The red terminal is for (+) the black one is for (-). Speakers with 4 ohm to 8 ohm impedance can be connected by using banana plugs, spades or wires.

Note: Before connecting or disconnecting speakers turn the HD53N's power OFF.



#### AC LINE

Connect the provided AC power cord to the AC LINE inlet.

## Cautions Regarding Handling

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- Never connect the speaker output terminals to any ground. Both speaker terminals carry an active signal due to the full balanced circuit design of HD53N.
- Be careful when connecting active subwoofers or similar devices to the speaker terminals. A short circuit to the ground may result in damage to HD53N or a broken fuse.
- The DC voltage at the speaker and the balanced headphones output terminals is not 0 when measuring related to ground. However, the differential DC voltage from (+) to (-) terminals is nearly 0 and thus harmless to speakers and headphones.
- Audiophile amplifiers produce heat! Make sure to leave enough space around HD53N (at least 15cm) for keeping the air circulating. Make sure you never cover the air vents on the top and bottom plates, which could result in an overheating. It is recommended to use HD53N in a low-dust environment.
- In case of overheating (over approx. 65 °C) HD53N will cut off the operating power automatically. In this case it is suggested to put the main power switch to "OFF" position. Otherwise HD53N will power ON again after cooling down.

## Maintenance

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- HD53N requires no periodic maintenance and contains no user-serviceable parts. Contact your dealer or an authorized CEC service center for inspection and repair in case of malfunction.
- If the surface of the HD53N enclosure is soiled, wipe with a soft cloth or use diluted neutral cleaning liquid. Be sure to remove any fluid completely. Do not use thinner, benzene, alcohol, chemical cloths or bleaching agents as these may damage the surface of the HD53N enclosure. Also avoid using aerosol insecticides near the unit.
- If dust should have accumulated on the unit, remove it with stick tape (e.g. Scotch tape). Make sure not to touch the enclosure with any tools or other hard parts.

## Troubleshooting

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If you suspect a malfunction of the unit, please check the following chart before calling your dealer.

### **No power**

- Check the connection at the both ends of the AC power cord.
- Make sure there is power at the wall outlet.
- Check the power switch position.

### **No sound**

- Check the connection from the external source, e.g. CD player.
- Check the operation of the external source, e.g. CD player.
- Check the connection to the headphones or speakers.
- Check whether the matching input is selected.

### **INPUT indicator continues blinking and the unit is not ready for use**

- Turn HD53N off and unplug the AC power cord from the outlet. Wait for a minute, plug the AC power cord back in and turn HD53N on again. Check all plugs on the front and rear panel are properly connected.

### **Humming noise**

- Check the pin plugs are connected adequately.

### **Distorted sound**

- Decrease the volume level.
- Check that input signal does not exceed 2Vrms(RCA) and 4Vrms(XLR).
- Check all plugs are connected adequately.

## Service Contact Preparation

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In case you need to contact the service center please prepare the following information.

- Model name and serial number
- Purchase date
- Dealer name and contact information
- Description of the unit's problem

## Specifications

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|                                  |   |
|----------------------------------|---|
| Frequency Response:              | 20Hz – 20kHz, +0/-0.25dB  |
| S/N Ratio:                       | -103dB Headphone LOW/Hi (Volume 50% max. power / A-weighted)<br>-110dB Headphone Balanced (Volume 50% max. power / A-weighted)                                |
| THD:                             | 0.06% Headphone LOW/Hi (1Vrms input / 0dBu output)<br>0.009% Headphone balanced (1Vrms input / 3dBu output)<br>0.03% Speaker 8 Ohm (2Vrms input / 10W output) |
| Rated power:                     | 2 x 1.15W (32Ω) Headphone LOW<br>2 x 0.25W(32Ω) Headphone HI<br>2 x 4.7W(32Ω) Headphone Balanced<br>2 x 13W(8Ω) Speaker                                       |
| Load impedance:                  | 16 Ohm – 2k Ohm Headphone, 4 Ohm – 8 Ohm Speaker  |
| Gain:                            | HI / LOW (Selectable)   |
| Input terminals:                 | 1 x balanced XLR, 1 x unbalanced RCA  |
| Headphone output:<br>(Impedance) | 1 x balanced XLR (0 Ohm)<br>1 x 6.3mm Jack (10 Ohm) for best control<br>1 x 6.3mm Jack (120 Ohm) for sound tuning   |
| Speaker output:                  | 1 x Balanced  |
| AC power Line:                   | AC120V/230V, 50/60Hz (Specified on rear panel)  |
| Power consumption:               | 23W Headphone drive, max. 50W Speaker drive   |
| Dimensions:                      | Approx. 218(W) x 354(D) x 58(H) mm (Incl. knobs, terminals and legs)  |
| Weight:                          | Approx. 3.2kg   |
| Accessories:                     | AC power cord, Owner's manual   |
| Color:                           | Silver  |

NOTE: Design and specifications are subject to change without notice.

NOTE: Illustrations on the owner's manual may deviate from the actual unit due to design improvements.

The logo for CEC Co., Ltd. features the letters 'C.E.C.' in a bold, black, sans-serif font. Each letter is separated by a small square dot, and the letters are slightly shadowed to give a three-dimensional appearance.

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**CEC Co., Ltd. Japan**  
<http://www.cec-web.co.jp>

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