



Brise Audio

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TSURANAGI-V2
UM002 REV1.0
APRIL 2024

Brise Audio

Portable Headphone Amplifier

TSURANAGI-V2

User's Manual

English version



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1. Introduction

Thank you very much for your purchase of TSURANAGI-V2.

We hope you will read the **1.Introduction** and **2.How to use** before using the product.

1.1 To ensure safe use of the product

Brise Audio's products are designed with full consideration for safety. However, all electrical products are dangerous if used improperly, as fire or electric shock can result in personal injury. In order to prevent accidents, please be sure to observe the following.

- ✓ If it breaks down, don't use it.

- ✓ No disassembly

- ✓ Don't charge or leave the battery near a fire or in the hot sun.

- ✓ Please contact us immediately in case of any malfunction or damage.

- ✓ If you hear strange noises, smells, or see smoke..

- Turn off power→If the battery is being charged, disconnect the charging cable as well.→Ask us to repair it.



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1.2 Packaged good

- ① Amplifier
- ② User's manual
- ③ USB charging cable (USB Type-A to USB Type-C)
- ④ Product ID card
- ⑤ Warranty card
- ⑥ AC adaptor

1.3 Precautions for use (※Be sure to read)

Notes on input terminals

Don't connect to both unbalanced and balanced inputs at the same time. Doing so may damage the amplifier on the balanced output side of the player, causing it to malfunction.

Notes on output terminals

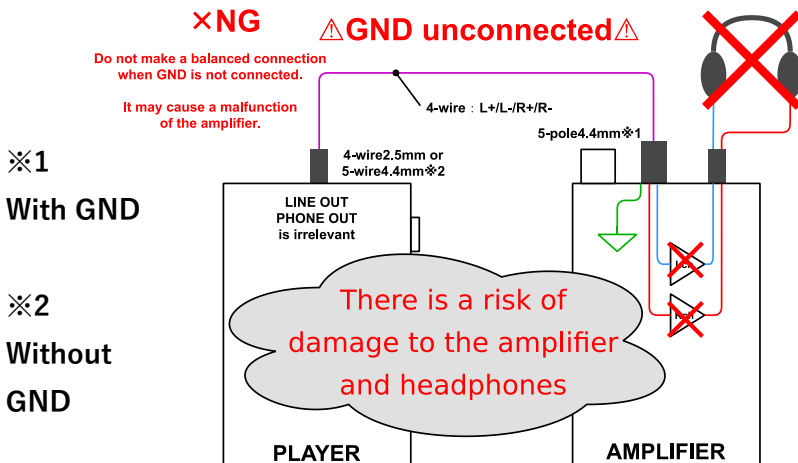
Don't use 5-pole 4.4 mm and 4-pole 2.5 mm terminals at the same time. Failure to do so may result in overload.

The output is balanced only. Unbalanced output using the HOT side and GND is not recommended and is not covered by the warranty, as it may lead to **failure**.

Cautions for balanced connection between player and amplifier

Be sure to connect to GND.

If you don't do the GND connection, it will lead to the **failure** of the amplifier and headphones at worst.



Be sure to use a balanced mini-mini cable with a 5-wire GND connection.

There are some devices that have 5-pole 4.4mm terminals with no GND connection, so please check the specifications of your player before using it. We are also in the process of checking whether or not the players on the market have a GND connection. If you have any questions, please contact us.



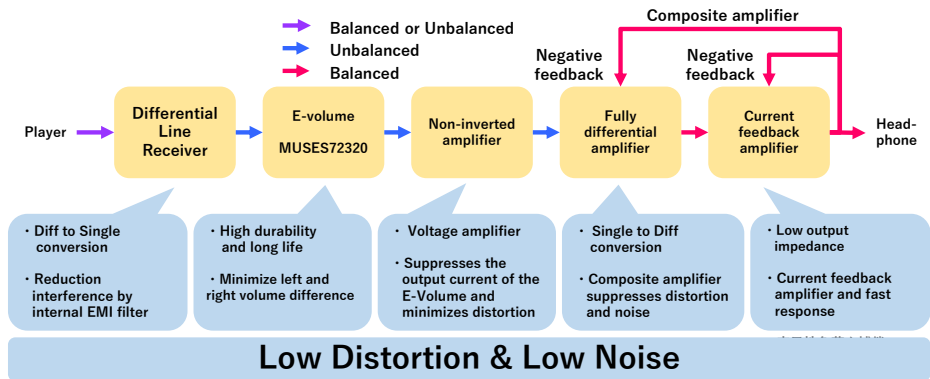
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1.4 Product Concept

In recent years, in response to the increase in balanced drive of players with balanced LINE OUT and headphones and earphones, we have developed a portable amplifier capable of balanced input / output, which is ideal for Brise Audio for the development of mini-mini cables and re-cables. It also has a 3-pole 3.5mm unbalanced input so that it can be connected to a conventional player, and it is internally converted to a balanced signal with high accuracy and then output. The output terminal has both a 5-pole 4.4 mm and a 4-pole 2.5 mm. The theme is to express the source information thoroughly, and the design is based on low distortion and low noise. If the performance of the circuit is low from the input to the output, the performance of the whole is deteriorated, so the circuit and the component of low distortion & low noise are adopted as all the signal processing circuits. Due to the high input impedance of $1M\Omega$, the distortion output by the player corresponding to the upstream is also minimized. Since the balanced signal is once unbalanced and converted with high precision by the differential line receiver to remove external noise, clean playback is possible even outdoors with

a lot of noise. The key compound amplifier of this amplifier performs unbalance-balance conversion and current amplification at the same time. The distortion is further suppressed by putting the current feedback amplifier in the feedback loop of the all-differential operational amplifier. The power circuit is supplied independently for each channel from the regulator of ultra-low noise & ultra-high PSRR. A 6-layer board is used to eliminate common impedance and improve signal quality in terms of layout.



Why did you choose the configuration to convert to unbalanced once?

Brise Audio's goal in developing a portable amplifier with ideal sound quality was to express the source information in its entirety. To achieve this goal, we placed the highest priority on low distortion and low noise



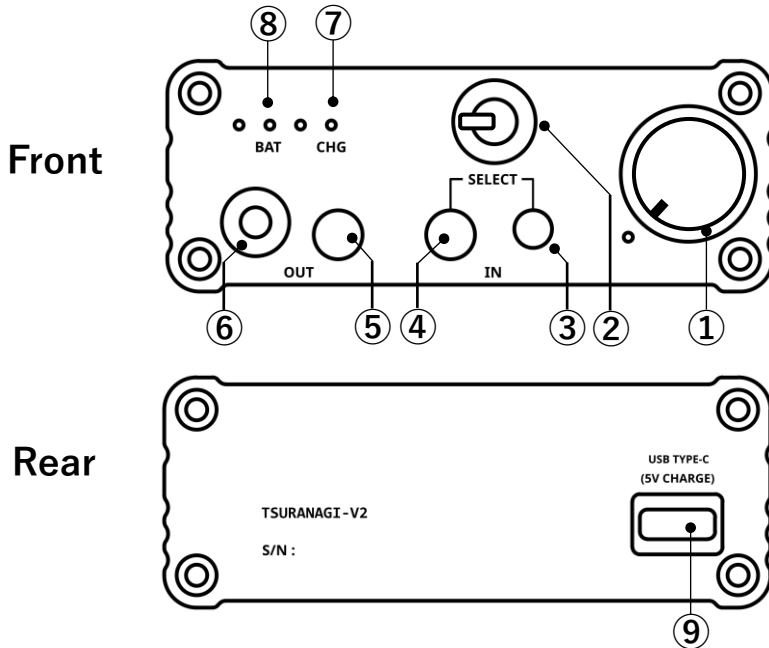
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in the circuit design. To achieve low noise, we also focused on thorough common mode noise elimination. In order to ensure stable playback at all times without interference from radio waves and other sources, we adopted a configuration that eliminates common mode noise to the greatest extent possible, as it is expected to be used outdoors. In order to achieve both low noise and low distortion, an ultra-low distortion audio differential line receiver with a high common mode noise rejection ratio over a wide bandwidth was used for the common mode noise rejection circuit. We also wanted to incorporate the MUSES72320 electronic volume, which we feel has advantages in terms of performance and sound quality, and to overcome the problem of different attenuation between the positive and negative side circuits of the signal (although the error is small to begin with because it is an electronic volume), we converted it to unbalance in the first stage of the electronic volume. This is one of the reasons. In order to make the most of the limited resources of portable amplifiers, the unbalanced circuit in the middle of the amplifier is designed to have low power consumption and a spacious mounting area.

2. How to use

2.1 Names and functions of each part



- ① **Power switch and volume knob**...The switch on the volume knob also serves as the power switch. The microcomputer detects the position of the volume and commands the electronic volume IC the attenuation rate.
- ② **Input selector**...Select balanced or unbalanced input. The right side is unbalanced and the left side is balanced.



Do not input signal at the same time.

Simultaneous input may cause the player to malfunction.

③**Unbalanced input**...Connect a player with 3-pole 3.5 mm output.

④**Balanced input**...Connect a balanced output player.

⑤**Balanced output 1**...Connects to headphones or earphones with a 5-pole 4.4mm plug.

⑥**Balanced output 2**...Connects to headphones or earphones with a 4-pole 2.5 mm plug.

In order to avoid overload, do not connect ⑤ & ⑥ at the same time.

⑦**Charge status LED**...Lights up while charging. The light turns off when charging is complete.

If it flashes, a charging error has occurred.

→For more details, please refer to 3. Troubleshooting.

⑧**Battery level LED**...1 Flashing (less than 25%), 1 light (25% to 50%), 2 lights (50% to 75%), and 3 lights (75% to 100%).

This function also serves as an error indication when the amplifier is defective in some way.

→For more information, please refer to 3. Troubleshooting.



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⑨**USB Type-C charging port**…Charging function only, not compatible with PD, QC, etc. It can be charged most quickly with a 5V2A charger

Mute function at power-on…Reduces pop noise when power is turned on. It takes about 5 seconds to start up.

DC offset detection function…Shuts down the amplifier when a DC offset is detected, protecting your headphones.

Overcurrent detection function…Shuts down the amplifier when an overcurrent is detected.

2.2 Setting the output level of the player side

When the output (gain) of the player is set to a high output for playback, the output of the amplifier may exceed the allowable limit of this product and distort the output of the amplifier.

However, it is recommended from the viewpoint of sound quality to take the player's output higher within the range of TSURANAGI's maximum input level.

In TSURANAGI-V2, the gain is reduced by 6dB from TSURANAGI, and noise is less likely to be a problem even with earphones.

*This product does not have gain switching. The gain is fixed at 4.5dB.



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2.3 Use while charging

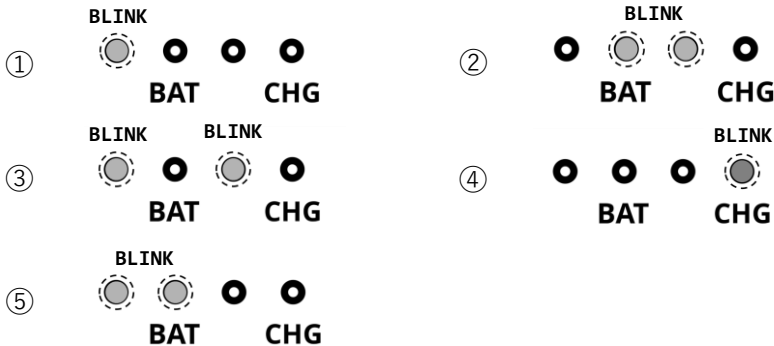
You can also use the device while it is charging. However, there is a condition that the remaining battery charge must be less than 60% before you can use it while charging, because using it while it is near full charge will accelerate the deterioration of the battery. If the LED on the CHG is lit, the battery is being charged. Also, the charging speed is very slow at this time, and the power consumption of the amplifier is almost equal to the charging power. Please turn off the power supply when you are done using the product; if you want to charge the battery to 100%, please do so after turning off the power supply. When the power is off, you can start charging in any state, regardless of the remaining power.

3. Trouble-shooting

If the following trouble-shooting does not solve your problem, please contact us.

3.1 No sounds

- ✓ Increase the volume of the unit and player.
- ✓ Make sure that the cable is firmly connected to the unit and that it is inserted all the way in.
- ✓ If the battery level gauge is blinking, it indicates the following conditions.



- ① The remaining charge is less than 25%.
- ② DC offset or output overcurrent is detected.
- ③ A defect in the charging circuit is detected.
- ④ Detecting charging failure.

⑤ A defect in the power supply circuit is detected.

✓If none of the above applies, or in case of ②③④⑤, there is a suspicion of malfunction. In case of ②, there is a possibility of over-current due to excessive volume.

3.2 Distorted sound

✓The signal level input to the amplifier may be too high. If you can reduce the output of the player, please set it to a lower level and check again.

✓If the problem is improved by lowering the volume, it may be due to over-current or the limit of the output voltage of the amplifier. We apologize for any inconvenience this may cause, but please use the product at a level lower than the rated value.

3.3 Noisy sound

✓If it is not connected to the player, connect it and check again.

✓Check the direction of the input selector switch.

✓Check for defective cables.



- ✓ When using balanced input, make sure that the GND connection to the player is made.
- ✓ The input impedance is as high as $1M\Omega$, making it very sensitive to noise when the player is not connected. Therefore, do not disconnect the mini-mini cable with the earphones attached. It may cause malfunction or harm to your hearing.
- ✓ If you are connecting to a player that has a function that shuts down the output if it is not played for a certain period of time, the shutdown state is equivalent to disconnecting the cable. Since the input impedance of the amplifier is very high, noise may be heard during such a condition. If you play the player with the volume minimized and no noise is heard, this may be the cause. During playback, the player will come back from shutdown and the noise will be completely gone. This is not a malfunction. When we developed the amplifier, we confirmed the existence of such a player.
- ✓ The hand grip of the 4-pole 2.5mm plug is L-, and if it comes in contact with the chassis (GND) of the amplifier during playback, it may overload the amplifier, causing noise or a failure of the



amplifier. If the plug diameter is too large to make contact, please use a cable with a smaller diameter plug.

3.4 Charging LED does not light up or blinks

- ✓ When charging the battery when the power is on, the battery must be below 60% to prevent deterioration.
- ✓ There is a possibility that the USB cable is disconnected. Please try a different cable.
- ✓ There is a possibility that the battery is faulty. Please contact us.
- ✓ There is a possibility that the AC adapter is defective. Please try a different one.
- ✓ If the battery is hot, the charging circuit will shut down. Please allow the amps to cool down in a cool place before trying to charge.



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4. Specifications

Item	Unbalanced input	Balanced input
Input connector	3-pole 3.5 mm	5-pole 4.4 mm(w/ GND)
Output connector		5-pole 4.4 mm(w/ GND) / 4-pole 2.5 mm
Voltage gain (Max volume)		4.5 dB
Max input level(Low volume / Max volume)※	5Vrms / 3.5 Vrms	6Vrms / 3.5 Vrms
Frequency response (-3dB)		2 Hz - 200 kHz
Recommended load impedance		more than 16 Ω
Maximum output level(16ohm, THD+N < 0.01%)		700 mW + 700 mW
Maximum output level(32ohm, THD+N < 0.01%)		1000 mW + 1000 mW
Maximum output level(300ohm, THD+N < 0.01%)		100 mW + 100 mW
THD+N (BW=20kHz, 1Vrms output,16ohm)		< 0.004 %
THD+N (BW=20kHz, 1Vrms output,300ohm)		< 0.001 %
THD+N (BW=20kHz, 2.3Vrms output,no load)		< 0.0007 %
Crosstalk(20Hz - 20kHz)		< -100 dB
Continuous standby time		> 8 h
Mass		360 g
Dimension (W x H x D), protruding part not included		80 mm x 30 mm x 120 mm
Battery charge connector		USB Type-C
Battery capacity		7.4 V 2800 mAh
Charge time		< 5 h (Using a 5V 2A AC adapter)

※The clipping conditions are different when the volume is attenuated and when it is at its maximum. Basically, it is acceptable to refer to the time of attenuation.



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5. Disclaimer

The manufacturer, importer, and distributor are not responsible for any damages, including injury or accident, resulting from improper use and operation of this product. The information in this document is based on the latest product specifications.

Circuit specifications, firmware, and operating instructions are subject to change without prior notice.



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6. Warranty and Contact Information

6.1 Warranty Policy

The warranty is in accordance with the enclosed warranty card.

No compensation beyond the product price will be provided.

Please understand.



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6.2 Contact Information

Brise Audio Inc.

Zip code : 370-1134

Adress : 135-5 Yorokubu, Tamamura-machi, Sawa-gun, Gunma-ken, JAPAN

TEL : 050-3553-0441

Contact Us Form

<https://briseaudio.com/pages/inquiry>



Repair acceptance form

<https://briseaudio.jp/pages/repair>



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