BLV-D3 2x50W + 1x100W 2.1 Channel Bluetooth Amplifier with ADAU1701 DSP - TPA3116

The BLV-D3 audio amplifier delivers high-power output with Bluetooth 5.0 connectivity and user-friendly features, including a volume control potentiometer, a Bluetooth unpair button, and LED indicators. Integrated with DSP for enhanced audio quality, it includes a heat sink for thermal efficiency and operates with the reliable TPA3116 amplifier IC for superior performance.

Features:

- **LED Indicator:**
  - Blue LED for Bluetooth connectivity status.
- **Bluetooth Unpairing Button:**
  - Used for Bluetooth disconnection with compatible devices.
- **Audio Controls:**
  - Allows you to fine-tune the audio output to your preferences.
  - Balance control potentiometer.
  - Bass control potentiometer.
  - Crossover control potentiometer.
  - Power and Volume control potentiometer.
- **Bluetooth Antenna:**
  - Enhances Bluetooth signal reception and range.
- **AUX Input and Headphone Output:**
  - AUX Input for connecting external audio sources to the BLV-D3.
  - Headphone Output with an 3.5mm connector for connecting headphones to the BLV-D3.

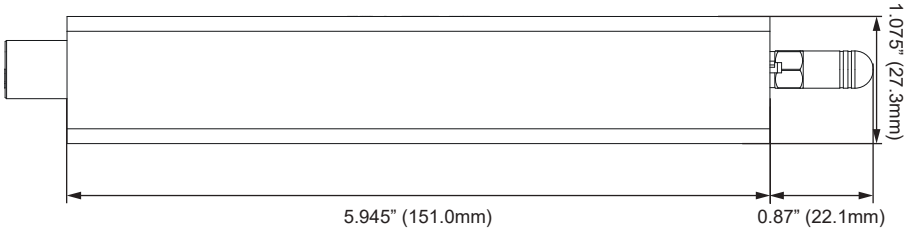
Specification(s)	
Bluetooth Version	5.0
Bluetooth Name	BerryBak BLV-D3
Power Supply	DC 12V - 24V & USB Type-C PD 2.0
Audio Input	Bluetooth / AUX Input
Speaker Output	Screw-Free Push-Type Terminal Block

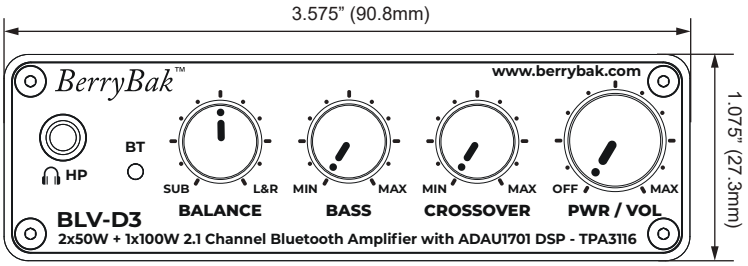
Output Channel(s)	2.1CH
Output Power	2 x 50W + 1x100W
Product Size	5.945” x 3.575” x 1.075” (inch)
Product Size	151.0 x 90.8 x 27.3 (mm)
Weight	17.0 oz ± 0.4 oz (ounce)
Weight	433g ± 10g (gram)

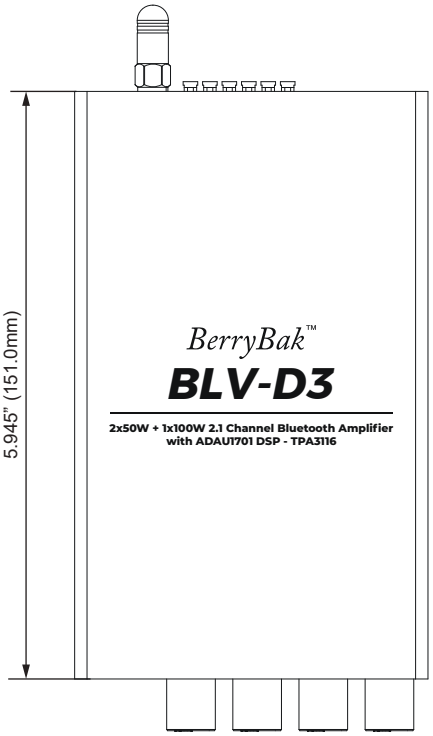
*The product size does not include the Bluetooth antenna on the rear panel and the potentiometer knob on the front panel.

Mechanical Drawing

(Nominal Dimensions, inch (mm))

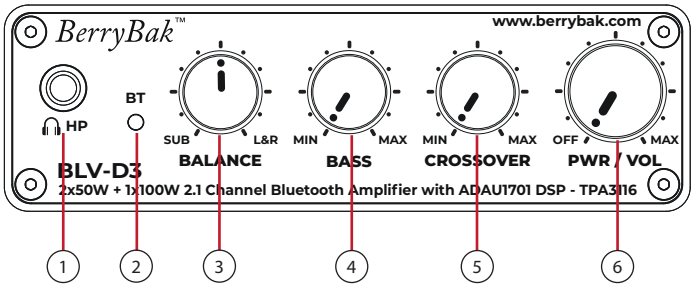






Panel Layouts

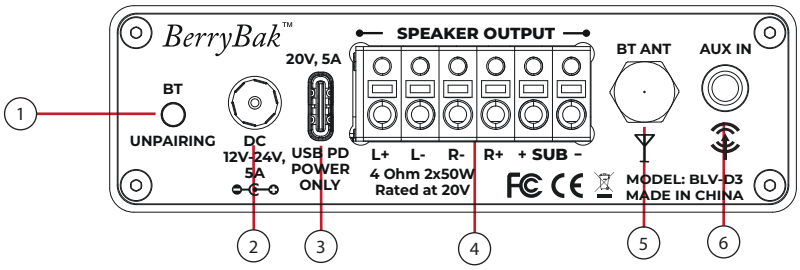
Front panel



Note: The 2D illustration is provided in a 1:1 scale. Please ensure that your print settings are set to "actual size" or "100%" to maintain accurate dimensions.

1. **Headphone Output** - The BLV-D3 features a 3.5mm Headphone Output , providing a standard interface for connecting headphones. It allows users to enjoy amplified audio privately, ensuring clear sound quality and compatibility with most consumer headphones.
2. **LED Indicator** - The blue LED blinks when the device is in pairing mode and remains steady once a successful connection is established.
3. **Balance Control Potentiometer** - The BLV-D3 includes balance control potentiometer this control allows you to adjust the relative output level of the audio signal between different channels in your system.
4. **Bass Control Potentiometer** - The BLV-D3 features a Bass Control Potentiometer, enabling users to adjust the bass output to suit their preferences.
5. **Crossover Control Potentiometer** - The BLV-D3 features a crossover control potentiometer, adjusting this control allows you to fine-tune the sound and ensure that each speaker is handling the frequencies it's designed for, resulting in better overall sound quality.
6. **Power and Volume Control Potentiometer** - The BLV-D3 is equipped with a power and volume control potentiometer, allowing user to adjust the audio output volume to your desired level, providing you with precise control over the sound output.

Rear panel

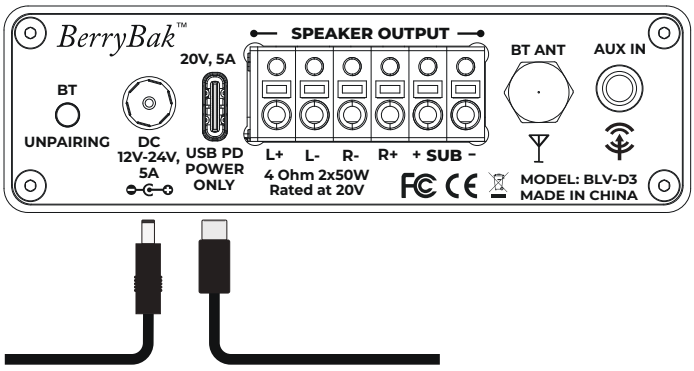


Note: The 2D illustration is provided in a 1:1 scale. Please ensure that your print settings are set to "actual size" or "100%" to maintain accurate dimensions.

1. **Bluetooth Unpairing Button** - The Bluetooth Unpairing Button on the BLV-D3 allows users to easily disconnect the Bluetooth connection with any paired devices. This provides a quick way to unpair or reset the Bluetooth link without the need to access settings on the device itself.
2. **DC Power Input 12V-24V** - The BLV-D3 features a versatile power input option, supporting a direct current (DC) power supply within the voltage range of 12V to 24V. It requires a current of 5 Amps for optimal performance.
3. **USB Type-C Port for Power Input** - The BLV-D3 is equipped with a USB Type-C port for power delivery, offering a convenient and efficient way to charge or power the device. This port allows compatibility with modern, high-capacity power sources, including USB Type-C adapters and power banks. It ensures stable, reliable power input, supporting optimal performance even during extended use.
4. **Speaker and Subwoofer Output** - The BLV-D3 is equipped with a powerful speaker and subwoofer output, utilizing the TPA3116 AMP IC. This setup provides a total output power of 2 x 50 Watts for the stereo channels and 1 x 100 Watts for the subwoofer, ensuring robust audio performance across different frequency ranges.
5. **Bluetooth Antenna** - The Bluetooth Antenna in the BLV-D3 enhances the device's connectivity by extending the operating range, ensuring uninterrupted audio streaming even at greater distances. This feature expands the Bluetooth connection range, allowing users more flexibility and mobility without compromising signal quality.
6. **AUX Input** - The BLV-D3 features a 3.5mm connector, which allows you to connect various audio sources such as smartphones, MP3 players, or other compatible devices, enabling you to enjoy your favorite audio content through the BLV-D3.

Power Input Options

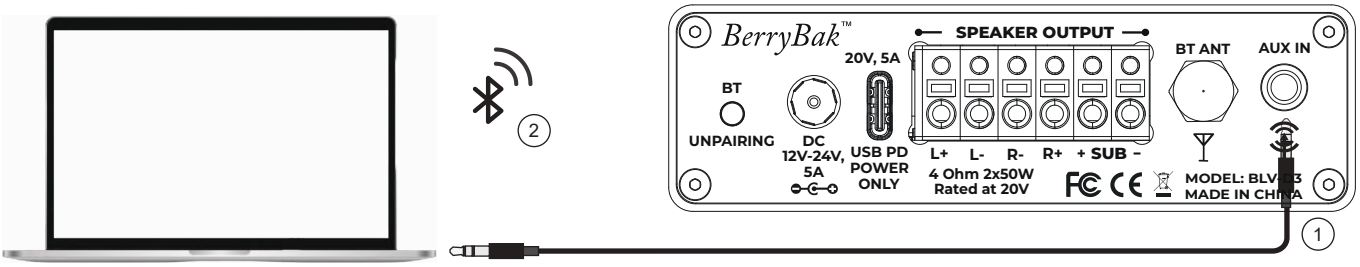
Flexible Power Connections via DC Jack and USB Type-C



The BLV-D3 supports two power input options for enhanced flexibility. It accepts DC power within a 12V to 24V range, requiring a stable 5 Amp current for optimal performance. Additionally, the device features a USB Type-C port for power delivery, allowing users to power the BLV-D3 with modern USB Type-C adapters or power banks, ensuring consistent performance and offering a variety of power source options.

Audio Input Source Options

3.5mm AUX Input and Bluetooth Connectivity

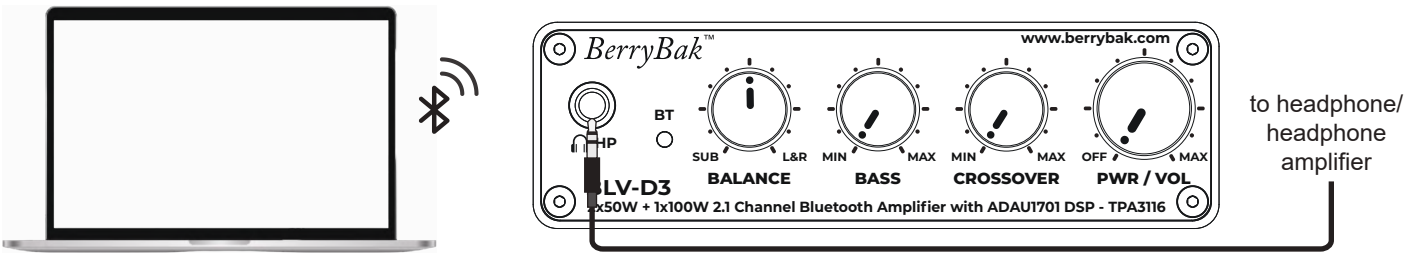


The BLV-D3 offers two primary audio input options: a 3.5mm AUX input and Bluetooth connectivity. The 3.5mm input provides a reliable wired connection for direct audio signal transmission from devices such as smartphones, PCs, and audio players, ensuring low-latency, high-quality audio.

When both inputs are active simultaneously, the 3.5mm input takes priority due to its pin detection mechanism, automatically selecting the wired connection for playback. This feature guarantees a seamless user experience, eliminating the need for manual input switching.

Audio Output Option

Connect to Headphones or Headphone Amplifier



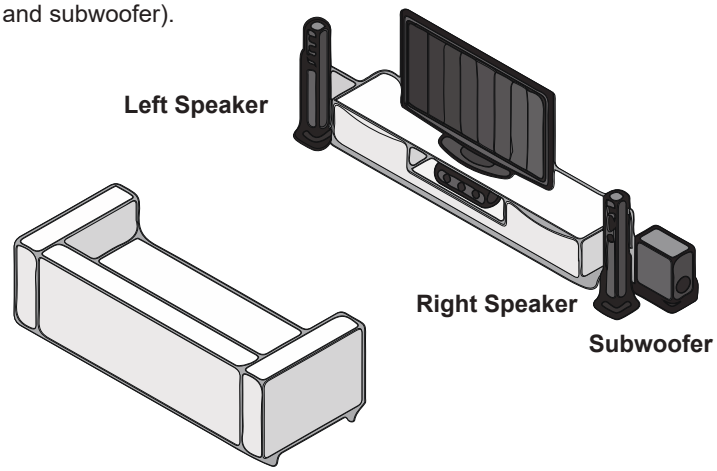
The BLV-D3 features a headphone output designed for high-fidelity sound reproduction. However, with an output impedance of 600Ω, it is not recommended for direct connection to headphones, as this can affect sound quality and potentially damage the headphones. For optimal audio performance and to protect your headphones, it is advised to connect the headphone output to a headphone amplifier or preamplifier, which can properly drive the headphones and enhance audio fidelity.

Connection Diagram for 2.1 Channel Audio System Outputs

Overview of the 2.1 configuration, including the channels (left, right, and subwoofer).

The connection method for a 2.1 channel audio system involves ensuring proper wiring for both the right and left speakers, as well as the subwoofer, to the amplifier's outputs. The system typically uses screw-free, push-type terminal blocks, which are simple and effective for making secure connections. It's essential to observe proper polarity, ensuring that the positive terminal from the amplifier connects to the positive terminal on the speakers and subwoofer (and similarly for the negative terminals).

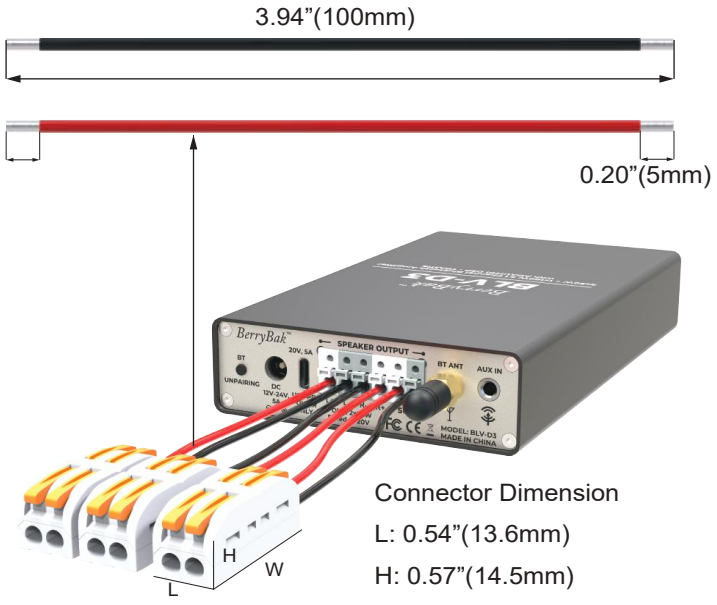
For a 2.1 system, the right and left speakers each receive 50 watts of power, while the subwoofer channel provides 100 watts. This setup enables a balanced audio experience by delivering clear, well-defined mids and highs through the speakers, while the dedicated subwoofer channel ensures deep, rich bass. The result is an enhanced overall sound quality that makes the system ideal for both music and multimedia use, providing immersive sound with distinct bass and clear frequencies across the spectrum.



Note: The 3D illustration provided serves as an example to give an overview of the 2.1 channel audio system. It is intended to demonstrate the layout and connections of the system components, helping users visualize how everything integrates, but it may not represent a specific product or configuration.

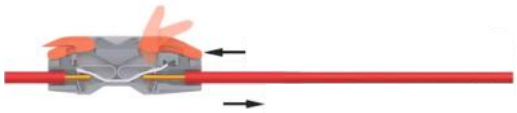
Wire and Connector Specifications

Comprehensive Guidelines for Wire Extension, Insertion, and Disconnection Techniques



Connector Dimension
L: 0.54"(13.6mm)
H: 0.57"(14.5mm)
W: 1.5"(38.6mm)

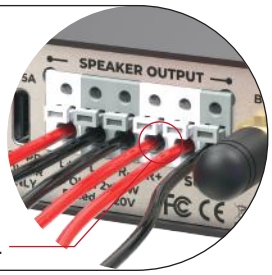
1. Use Push-Type Splitter Connector :
   - Open the handle on the connector.
   - Insert the wire into the connector and press down the handle to secure it.
2. Disconnecte the wire:
   - To remove the wire, open the handle and gently pull out the wire.
3. Connect to speaker:
   - Use banana plugs, stripped wire, or any compatible speaker wire connection method to attach the wire to the speaker.



Applicable Wires:

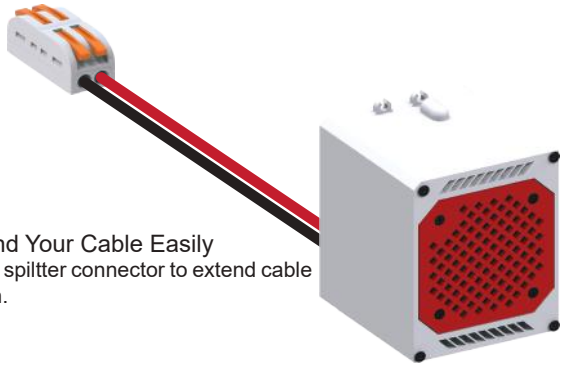
- ✓ Single-strand hard wire (BV)
- ✓ Multi-strand soft wire (RV)
- ✓ Multi-strand hard wire (BRV)

Insert the Wire: Place the speaker wire into the speaker output terminal.
Release the Wire: To disconnect, press the button (marked with a circle in the diagram).
Apply pressure: If needed, use a screwdriver or similar tool to push harder for release.



To ease the speaker cable insertion process, ensure that you use Single-strand hard wire cables (BV) for a seamless connection experience. Four Single-stranded hard wire (BV) speaker cables have been included in the package for your convenience.

Should you find the provided speaker cables to be too short, utilize the splitter connector included for extending the cable length as needed.



Extend Your Cable Easily
Use a spiltter connector to extend cable length.

Electrical & Audio Specifications

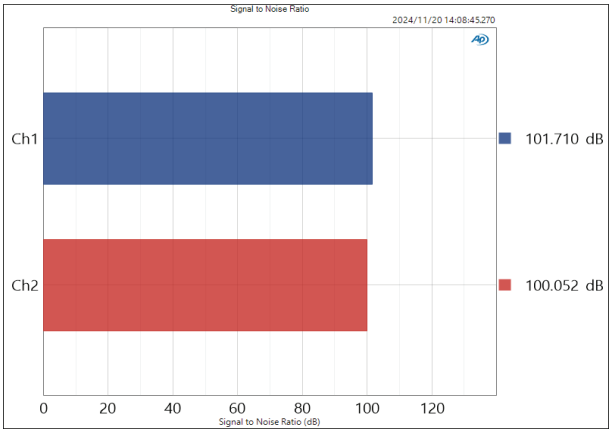
Electrical and audio performance specifications are typical at +25°C, powered by 24V DC, unless subject to change without notice.

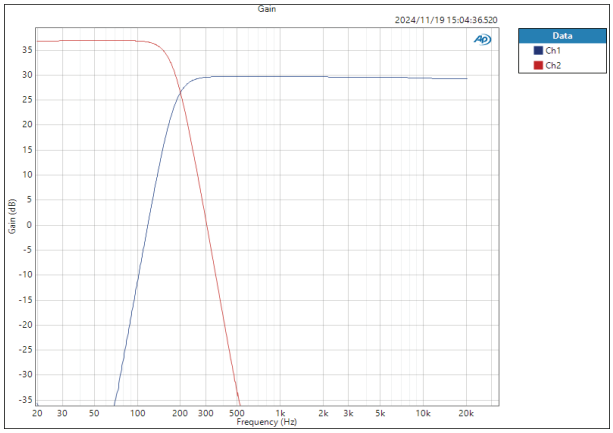
Parameter	Conditions		Min.	Typ.	Max.	Units
Amp Gain	Line In, Stereo	L&R	29.02	29.62	30.21	dB
	Line In, Mono		28.82	29.41	29.99	dB
SNR	Line In, Stereo 2 x 50W @ 4Ω, A-weighting	L&R	99.68	101.71	103.74	dB
	Line In, Mono 1 x 100W @ 4Ω, A-weighting		98.45	100.46	102.46	dB
THD+N	Line In, Stereo 1W @ 4Ω, 1kHz	L&R	0.027	0.028	0.029	%
	Line In, Mono 1W @ 4Ω, 1kHz		0.009	0.009	0.009	%
	Bluetooth, 1W @ 4Ω, 1kHz		0.027	0.029	0.029	%
Output Noise Level	Line In, Stereo A-weighting, Input Connected to GND	L&R	135.95	138.72	141.50	uV
	Line In, Mono A-weighting, Input Connected to GND		141.91	144.81	147.41	uV
	Bluetooth, A-weighting, Input Connected to GND		135.96	138.73	141.50	uV
Input Impedance	Line In @ 1kHz		9.5	10	10.5	kΩ
DC Offset	-		3.9	4.1	4.3	mV

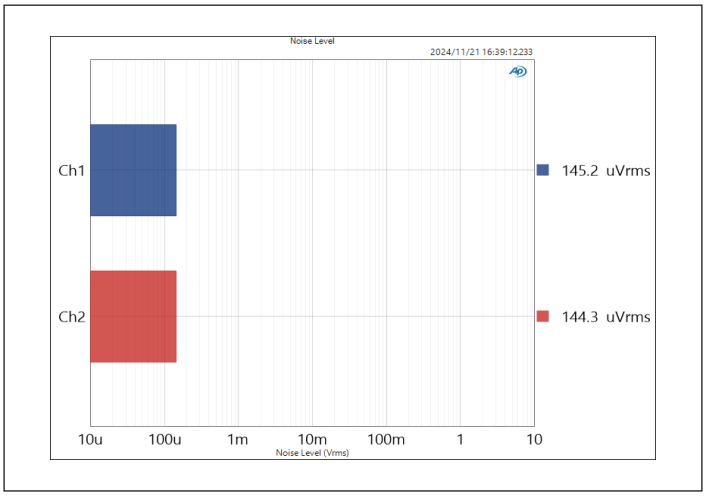
Parameter	Conditions	Min.	Typ.	Max.	Units
Number of Channels	-	-	3	-	-
Nominal Load Impedance	-	-	2/4	-	Ω
Nominal Power Requirement	@ 1kHz, THD+N 10%	-	2x50W+ 1x100W	-	W
Operating Voltage	@1kHz, 8Ω	12	24	24.5	V
Idle Power	Signal detected @ 24V	-	4.5	-	W
STBY Power	Signal detected @ 24V	-	0.048	-	W
Switching Frequency	SD Floating	-	400	-	kHz

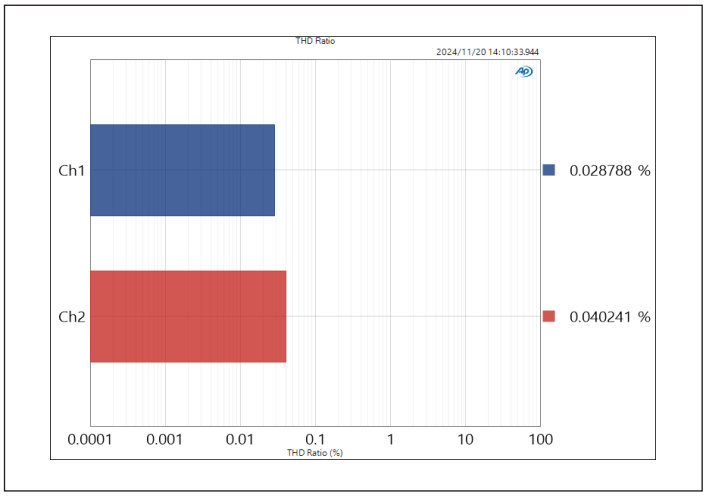
BLV-D3 Audio Parameters & Performance Graph

The BLV-D3 was tested in both stereo and mono modes, assessing various conditions across all key performance parameters to ensure reliability and optimal performance.

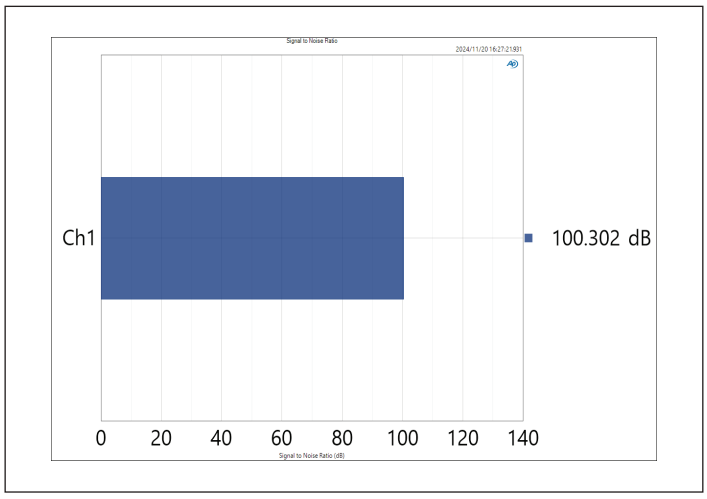


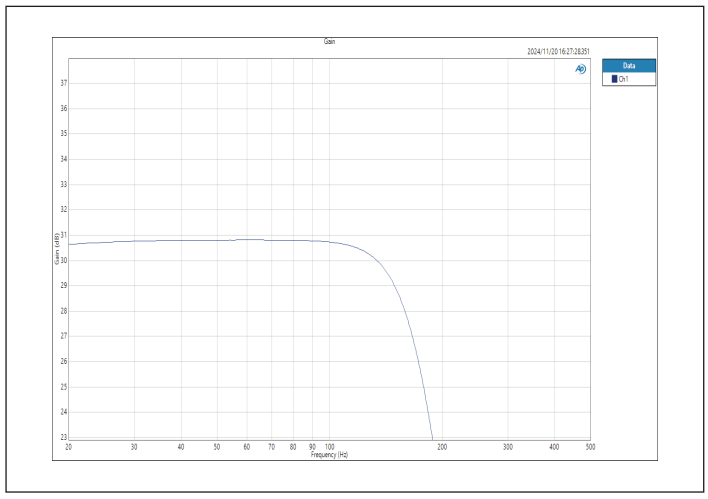


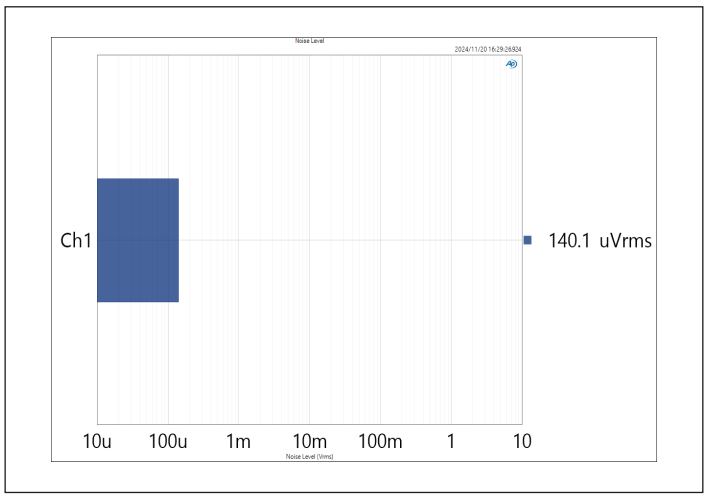


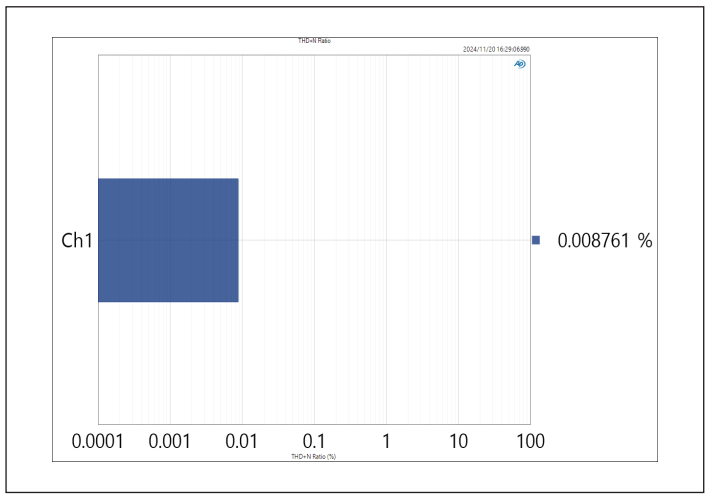


The BLV-D3 test conditions for stereo mode include the following: for frequency response, VDD is set at 24V with a Pout of 2x5W and an Rload of 4Ohm; for noise level testing, VDD is at 24V with Pout at 0W and an Rload of 4Ohm, utilizing an A-weighting filter with the input shorted to GND; and for THD+N ratio assessment, VDD is maintained at 24V with a Pout of 2x1W and an Rload of 4Ohm. For all tests, measurements are conducted with analog input sources.









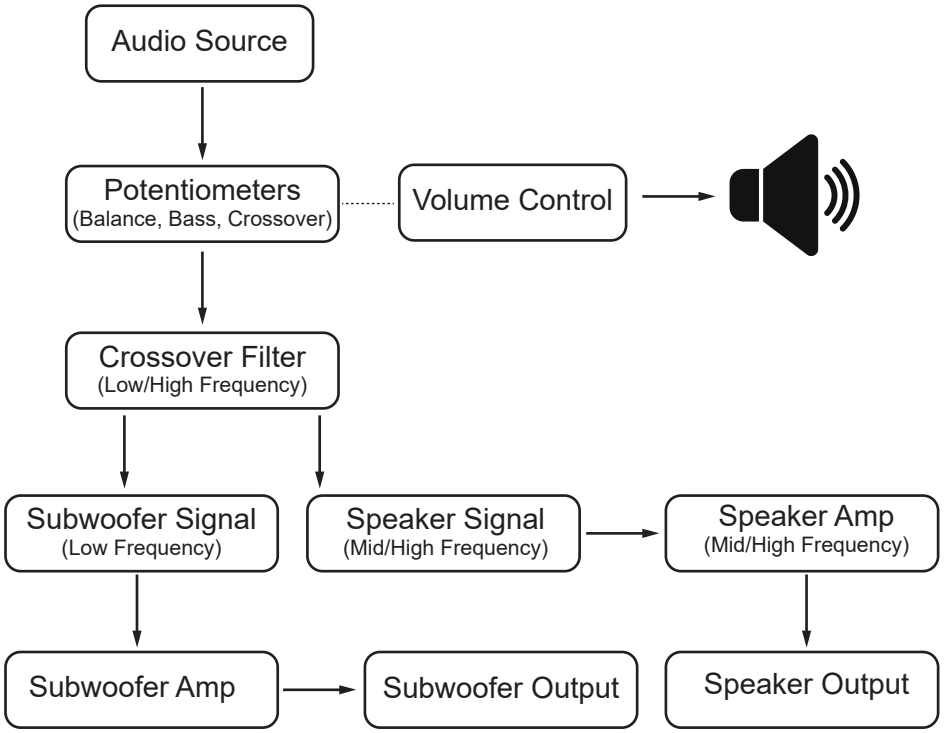
The BLV-D3 test conditions for mono mode are as follows: For frequency response measurement, VDD is set to 24V, Pout is 2x5W, and Rload is 4Ω. For noise level testing, VDD is maintained at 24V with Pout at 0W, Rload at 4Ω, and an A-weighting filter applied, with the input shorted to GND. For THD+N ratio assessment, VDD remains at 24V, Pout is 2x1W, and Rload is 4Ω. All tests are conducted using analog input sources.

How Potentiometers Control Audio Signals

This section explains how the potentiometers are used to control various aspects of the audio signal, such as volume, balance, and tone (bass and treble). The signal flows through the potentiometer, and adjusting it modifies the level of the signal reaching the speakers or subwoofer.

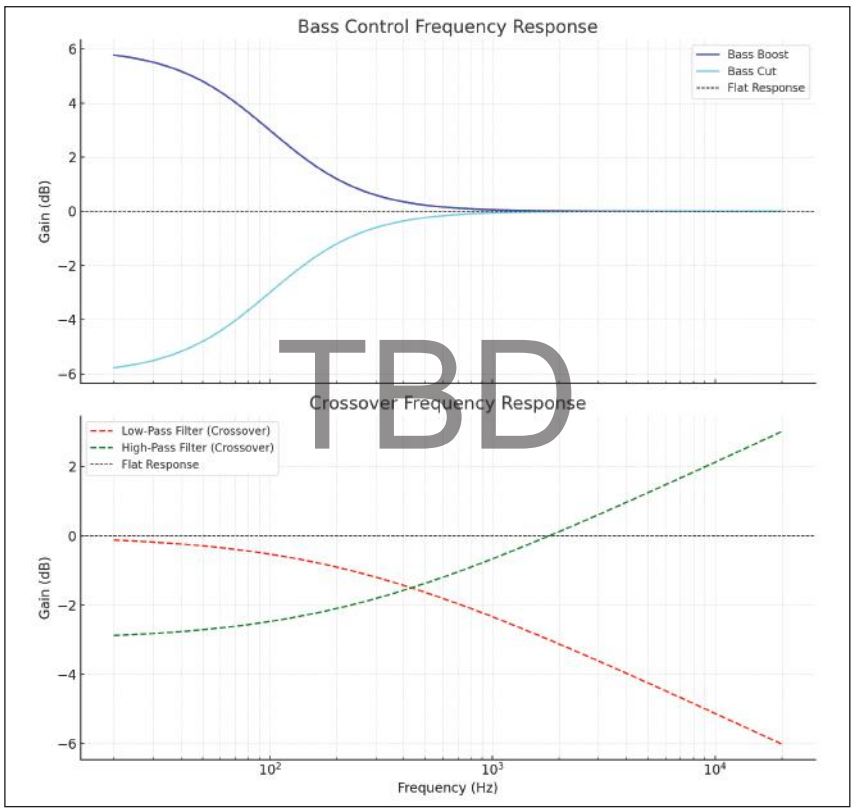
Subwoofer:
The signal from the amplifier is routed through the potentiometer (usually a bass or crossover control) to adjust the low frequencies before reaching the subwoofer. The potentiometer adjusts how much of the low-frequency signal is sent to the subwoofer based on the set crossover frequency and bass level.

Speakers:
The signal from the amplifier is routed through the potentiometer (typically the volume and balance controls) to adjust the output levels for the left and right speakers. The potentiometer modifies the signal strength that drives the speakers, affecting the overall volume and tone.



Tone Control and EQ Setting Adjustment

This section explains how to adjust the amplifier's tone settings using the bass and crossover controls to shape the sound output according to your preferences or the audio environment. The bass control directly adjusts the low-frequency range of the audio signal, typically below 200 Hz, and the crossover control determines the frequency range that is sent to specific speakers.



The first graph illustrates the bass control frequency response, where the blue curve represents bass boost, showing an amplification of low frequencies centered around 100 Hz with a peak gain of approximately +6 dB, while the cyan curve depicts bass cut, indicating attenuation of low frequencies with a maximum reduction of around -6 dB, both of which affect primarily the bass range (20–200 Hz) and leave higher frequencies largely unchanged,

The second graph represents the crossover frequency response, with the red dashed curve showing a low-pass filter that allows frequencies below approximately 200 Hz to pass while attenuating higher frequencies, and the green dashed curve illustrating a high-pass filter that permits frequencies above 200 Hz to pass while reducing lower frequencies, with the crossover point near 200 Hz marking the transition where the two filters overlap to ensure that each speaker reproduces only the frequencies it is designed for, thereby improving overall sound clarity and reducing distortion.

Designed

BerryBak™

Have Fun with Us

BLV-D3 Audio Amplifier User Manual

Warranty Terms and Product Usage Restrictions

BerryBak products come with a one-year warranty starting from the date of purchase. Customers are responsible for the cost of returning goods to the seller, and by making a purchase, you agree to this condition. Due to the nature of DIY products, visible damage, or use of screw holes or solder pad tinning, will directly invalidate the warranty.

Damage caused by the use of incorrect power sources, such as exceeding the specified voltage range or reverse polarity, is not covered under warranty. All BerryBak products undergo thorough testing before shipment. Bulk returns are not accepted after a bulk purchase. If you are unsure of the quantity needed, please purchase the appropriate amount.

All BerryBak products are intended for DIY use only and are not suitable for industrial applications. The rated operating temperature range is 0-40°C. Please refrain from using BerryBak products in industrial or extreme environments.

If you require products tested for industrial operating temperature ranges, we recommend seeking products labeled to support ranges such as -20-65°C or -40-85°C.

Bulk Purchase Rights

All rights for bulk purchases are limited to the quantity purchased in a single transaction and are not related to the annual or cumulative purchase quantity. Due to cost considerations, any customization and pricing are determined based on the quantity purchased in a single transaction.

Retail purchases can only be made through Amazon e-Commerce platforms, and there are no other purchasing channels. The listed prices visible on the platform are the retail prices, which may fluctuate at any time.

We do not provide any form of modification to existing products or additional price discounts for quantities below 100 units.

For purchases that meet the minimum quantity of 100 units, you can send an email to customize the silkscreen and have your brand logo placed on the panel or enclosure. BerryBak does not provide any other form of customization services such as changing panel dimensions or adding/removing ports.

There is a standard price list for purchases of 100 units or more, which can be requested from our contact email. You can sell at a price you deem appropriate, but there is not a significant difference between the bulk price and the bundled price based on 10 units.

Distributed by:

URE™ electronics

Sure Electronics Co., Ltd.
Professional Industrial Audio Solution Provider

3F, Building F6, No. 9, Weidi Road,
Xianlin, Qixia Dist., Nanjing, China.
+86(25)8526-0046 | info@sure-electronics.com

To view our products and purchase,
please visit our website:
store.sure-electronics.com

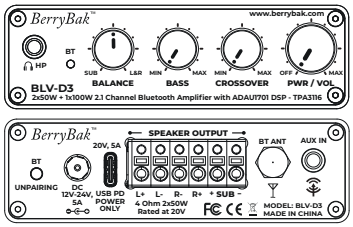
store.sure-electronics.com

Designed by:

BerryBak™

58-7-2 Wisma Fortune Height,
Jalan Cantonment, 10250 Georgetown, Penang, Malaysia.
+60 17 344 0643 | info@berrybak.com
(Please use phone calls or email instead of WhatsApp or iMessage.)

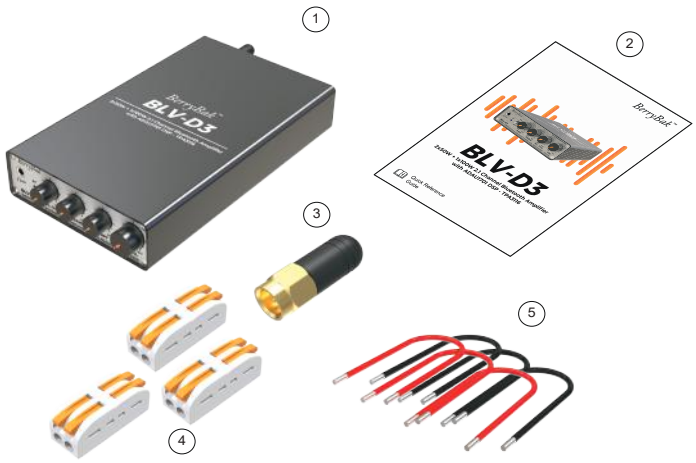
To view our products and purchase, please check the Taobao or Aliexpress website by searching for the product name (example: BLV-D3).



Packaging Content

The following items should be placed in the box according to the model you purchased. If there is any missing, please inform the seller or manufacturer as soon as possible.

No.	Description	Quantity
1	BLV-D3 Unit	1 unit
2	Quick Reference Guide	1 pc
3	Bluetooth Antenna	1 pc
4	Push-Type Splitter Connector	3 pcs
5	Black and Red AWG 20 Wire, 100mm Length	3 sets



About the Manual

This manual provides general installation guidelines. However, please note that proper installation of wired cables for the BLV-D3 audio amplifier requires specialized experience. If you lack the necessary knowledge or tools to complete the installation successfully, we strongly recommend consulting an authorized BerryBak dealer for assistance. Keep all instructions and sales receipts for future reference.