GAU4

4 x 50W + 1 x 100W 4.1 Audio Amplifier - Gaming Amplifier Unit with Digital Input

The GAU4 is powered by the Texas Instruments TPA3116 amplifier IC, delivering four 50W full-range channels into 4Ω loads and one 100W mono subwoofer channel into a 2Ω load, providing deep and impactful bass. Four knobs on the unit provide independent control over volume, balance, tone, and bass levels. In addition to analog input, the GAU4 features digital audio input via a USB codec and optical interface, with flexible connectivity options. Designed to operate on a 12–24V DC power supply, the GAU4 ensures reliable performance. Its compact and versatile design makes it an ideal choice for both home gaming environments and arcade gaming systems.

Features:

Multi-Channel Output:
- *4 x 50W channels into 4Ω loads.*
- *1 x 100W channel into a 2Ω load.*

Amplifier IC:
- *Texas Instruments, TPA3116*

PC UI Control Interface:
- *Communication interface that allows accessing and control the DSP settings.*

Compliance:
- *Certified by FCC and CE for safety and regulatory standards.*

Mounting Solution:
- *Secure & stable installation on a variety of surfaces.*

Self-Locking Connector:
- *Prevents loosening and ensures dependable connectivity.*

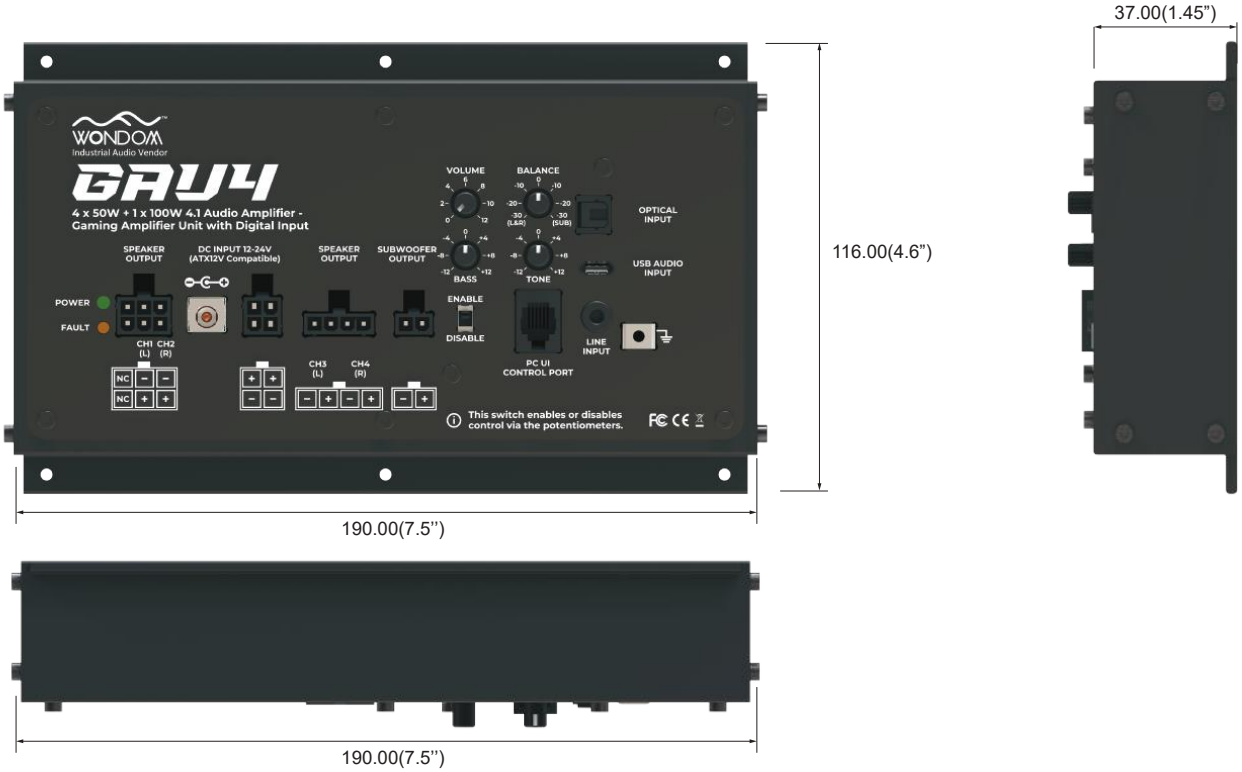
10 Years
Long Term
Manufacturing Plan

Specifications

Supply Voltage	: DC 12-24V	Audio Input Source	: Analog (3.5mm Audio Jack) &
Output Connector	: Molex Mini-Fit (2x3 & 1x4) CKT - L&R		: Digital (Optical/USB Type-C)
	: Molex Mini-Fit 1x2 CKT - Subwoofer	Product Size mm (inch)	:190.0 x 116.0 x 37.0 (7.5” x 4.6” x 1.45”)
Output Power	: 4 x 50W (4Ω) + 1 x 100W (2Ω)	Weight (g)	: 680g ±5g

Mechanical Drawing

(Nominal Dimensions, mm(inch))



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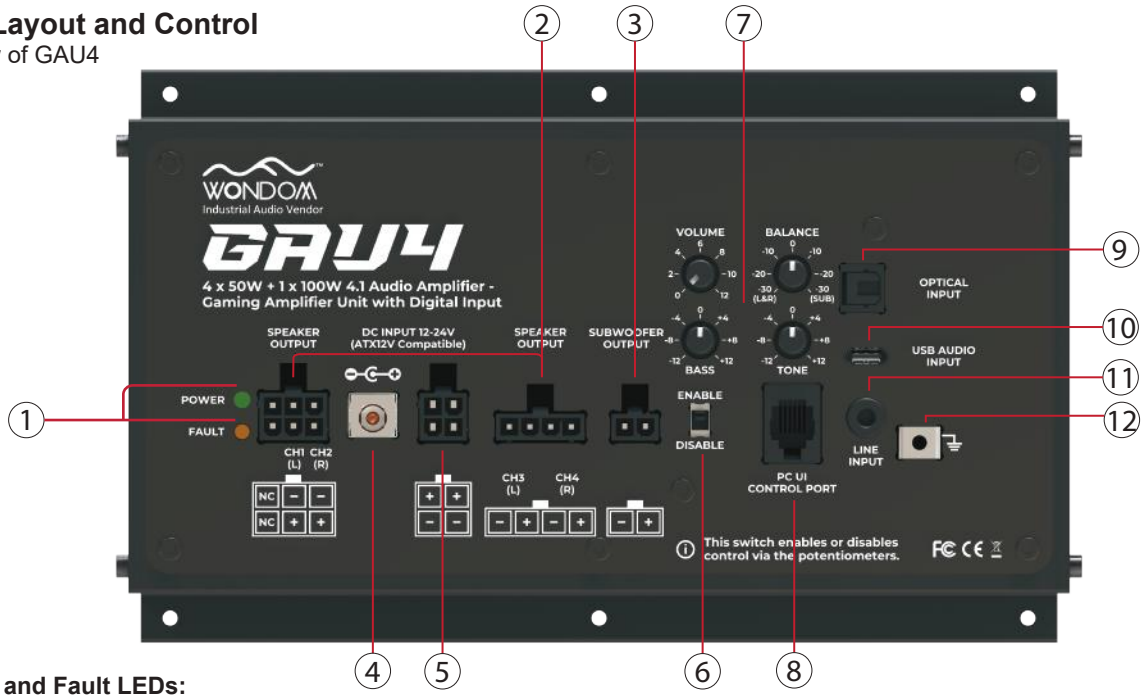
Port(s) Layout and Control

Front View of GAU4



① **Power and Fault LEDs:**
The Power LED indicates that the amplifier is powered on and functioning properly, while the Fault LED lights up to signal system errors, such as overheating, short circuits, or other malfunctions.

② **Speaker Output Port (Mini-Fit 2x3, 1x4 CKT):**
The Speaker Output Port consists of Mini-Fit connectors (2x3, 1x4 CKT) designed for speaker connections. It provides outputs for multiple speaker channels, allowing flexible wiring configurations. The connectors ensure secure and reliable connections for high-power audio output.

③ **Subwoofer Output Port (Mini-Fit 1x2 CKT):**
The Subwoofer Output Port consists of a Mini-Fit 1x2 connector designed for subwoofer connections. It provides output for a subwoofer channel, allowing flexible wiring configurations. The connectors ensure secure and reliable connections for high-power audio output.

④ **Power Input Port (5.5mm/2.5mm DC Jack):**
The main power supply connects to this port using a DC Jack. It provides the necessary power to operate the amplifier, accepting a DC input voltage range of 12V to 24V. This wide voltage range allows for flexible power supply options, from smaller portable batteries to larger power adapters.

⑤ **Power Input Port (Mini-Fit 2x2 CKT):**
The main power supply connects to this port via a Mini-Fit 2x2 connector. It provides the necessary power to operate the amplifier, accepting a DC input voltage range of 12V to 24V. This wide voltage range allows for flexible power supply options, from smaller portable batteries to larger power adapters.

⑥ **Selection Switch:**
This switch allows you to select either disabling or enabling the onboard control potentiometers.

⑦ **Control Potentiometers:**
The potentiometers on the panel allow users to adjust volume, balance, bass and tone levels, providing precise control over the audio output for customized sound tuning.

⑧ **PC UI Control Port (RJ11):**
The PC UI Control port, which uses an RJ11 connector, allows users to connect to ICP5(required), enabling external adjustment of the amplifier's control settings instead of using the onboard controls on the panel.

⑨ **Optical Input Port (Toslink):**
The Optical Input port is a digital audio interface that allows high-quality audio transmission via an optical fiber cable, reducing interference and ensuring clear audio signals.

⑩ **USB Data Input Port (USB Type-C):**
The USB Data Input port allows digital audio input or firmware updates, enabling direct connections to compatible devices for seamless data transmission.

⑪ **Line Input Port (3.5mm Audio Jack):**
The Line Input port, which uses a 3.5mm audio jack, allows users to connect external audio sources, such as smartphones, laptops, and other audio devices, for signal input to the amplifier.

⑫ **Ground Connection Port (Screw Terminal):**
Provides a return path for electrical current to prevent noise, signal interference, or grounding loops, ensuring reliable data transmission.

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Power Input Options

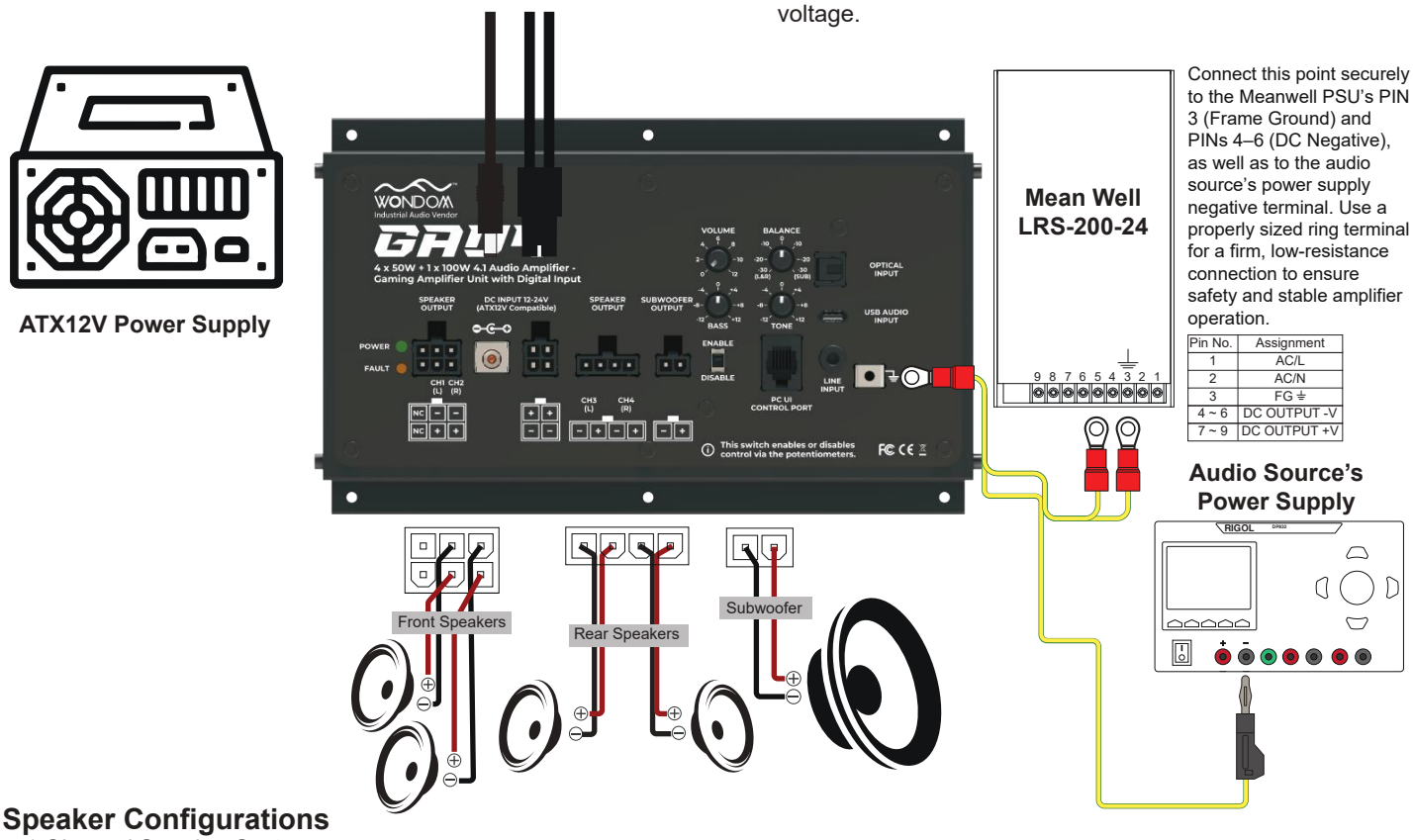
Flexible Power Connections via DC Jack and Mini-Fit 2x2 CKT

The GAU4 supports flexible power input with a 12V–24V DC range, using either a standard 5.5mm/2.5mm DC Jack or a Molex Mini-Fit 2x2 connector. It is also ATX12V compatible, ensuring stable and efficient power for high-performance audio applications.

Grounding Connection Overview

System Ground Point

This designated ground point provides a secure electrical connection between the amplifier system and the chassis or earth ground. It helps minimize noise, prevent interference, and ensure user safety by stabilizing the system's reference voltage.



Connect this point securely to the Meanwell PSU's PIN 3 (Frame Ground) and PINs 4–6 (DC Negative), as well as to the audio source's power supply negative terminal. Use a properly sized ring terminal for a firm, low-resistance connection to ensure safety and stable amplifier operation.

Pin No.	Assignment
1	AC/L
2	AC/N
3	FG ⏚
4 ~ 6	DC OUTPUT -V
7 ~ 9	DC OUTPUT +V

Speaker Configurations

4.1 Channel Speaker System

In this 4.1 channel configuration, Channels 1 and 2 connect to the front left and right speakers, while Channels 3 and 4 connect to the rear speakers for surround sound. The subwoofer is connected to its dedicated output, delivering low-frequency bass for a fuller audio experience.

Onboard Audio Adjustment Instructions

This panel allows the users to manually fine-tune the audio system using onboard controls. It includes potentiometers for adjusting volume, bass, tone, and balance between L&R and subwoofer channels. The Enable/Disable switch activates or deactivates these knobs.

Step 1: Enable Local Control

Before powering on, flip the ENABLE/DISABLE switch to "ENABLE" position, indicating that the control potentiometers(Volume, Balance Bass, Tone) is activated.

Step 2: Set Initial Positions

VOLUME: Start at a low level (e.g., between 1–3).
BALANCE: Set to 0 (center) to evenly distribute sound between Left/Right and Subwoofer.
BASS & TONE: Start at 0 or slightly below for flat sound.

Step 3: Select Your Input Source

USB AUDIO INPUT: Connect a device via USB Type-C (for digital audio).
OPTICAL INPUT: Use an SPDIF optical cable for digital input.
LINE INPUT: Plug in a 3.5mm AUX cable for analog audio.

Step 4: Power On System

Turn on your amplifier or audio system. Ensure the connected audio source is also active and playing.

Step 5: Fine-Tune Sound

Gradually increase the VOLUME to a comfortable level. Adjust the BASS to emphasize low frequencies, the TONE to control mid-to-high frequency gain, and the BALANCE to set the relative gain between channels.

Step 6: Disable Local Control (If Needed)

If you have done with the potentiometer controls, flip the switch to DISABLE to deactivate the knobs. The system will now run the loaded program or external control, such as the PC UI control port.

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Electrical and 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
Number of Channels	-	-	5	-	-
Minimum Load Impedance	Power supply= 24V, PBTL Mode, Vout = 34Vrms, f=1kHz, sine, THD<1%	2	4	-	Ω
Voltage Range	DC Supply Voltage, without input signal	12	-	24	VDC
Idle Current	Power supply=24V, without input signal,Button Triggle, Power off	-	0.13	-	A
Power Output	Load resistance=4Ω, THD+N≤10%	-	3.2	-	W

Parameter	Conditions	Min.	Typ.	Max.	Units
Amp Gain	3.5mm Input, Stereo channels, f=1kHz, Load resistance=4Ω, Power supply=24V	-	26.8	-	dB
	3.5mm Input, Mono channels, f=1kHz, Load resistance=4Ω, Power supply=24V	-	35.4	-	
	Optical Input, Stereo channels, f=1kHz, Load resistance=4Ω, Power supply=24V	-	+34.1	-	dB(Vrms /FS)
	USB Input, Stereo channels, f=1kHz, Load resistance=4Ω, Power supply=24V	-	12.8	-	Vrms/FS
Input Sensitivity	Power supply=24V, 3.5mm Input, Stereo channels, 4×50W, Load resistance= 4Ω, 1kHz	-	775	-	mVrms
	Power supply=24V, Optical Input, Stereo channels, 4×50W, Load resistance= 4Ω, 1kHz	-	-11	-	dBFS
SNR	THD+N<1%, f=1kHz,Gain=26dB, 3.5mm Input, Stereo channels sensitivity= 3.4Vrms, Load resistance 4Ω, A-weighted	-	94.9	-	dB
	THD+N<1%, f=1kHz,Gain=35dB, 3.5mm Input, Mono channels sensitivity= 1Vrms, Load resistance 4Ω, A-weighted	-	91.2	-	
	THD+N<1%, f=1kHz,Gain=+34dB, Optical Input, Stereo channels sensitivity= 10Vrms, Load resistance 4Ω, A-weighted	-	95.0	-	
	THD+N<1%, f=1kHz,Gain=12Vrms/FS, USB Input, Stereo channels sensitivity= 10Vrms, Load resistance 4Ω, A-weighted	-	93.8	-	
THD+N	3.5mm Input, Stereo channels, f=1kHz, Load resistance=4Ω, Power supply=24V, A-weighted	-	0.24	-	%
	3.5mm Input, Mono channels, f=1kHz, Load resistance=4Ω, Power supply=24V, A-weighted	-	0.01	-	
	Optical Input, Stereo channels, f=1kHz, Load resistance=4Ω, Power supply=24V, A-weighted	-	0.21	-	
	USB Input, Stereo channels, f=1kHz, Load resistance=4Ω, Power supply=24V, A-weighted	-	0.20	-	
Noise Level	3.5mm Input, Stereo channels, 20Hz-20kHz, Gain=26dB, Load resistance=4Ω, A-weighted	-	237.4	-	uVrms
	3.5mm Input, Mono channels, 20Hz-20kHz, Gain=35dB, Load resistance=4Ω, A-weighted	-	460.9	-	
	Optical Input, Stereo channels, 20Hz-20kHz, Gain=+34dB, Load resistance=4Ω, A-weighted	-	233.6	-	
	USB Input, Stereo channels, 20Hz-20kHz, Gain=12Vrms/FS, Load resistance=4Ω, A-weighted	-	262.5	-	

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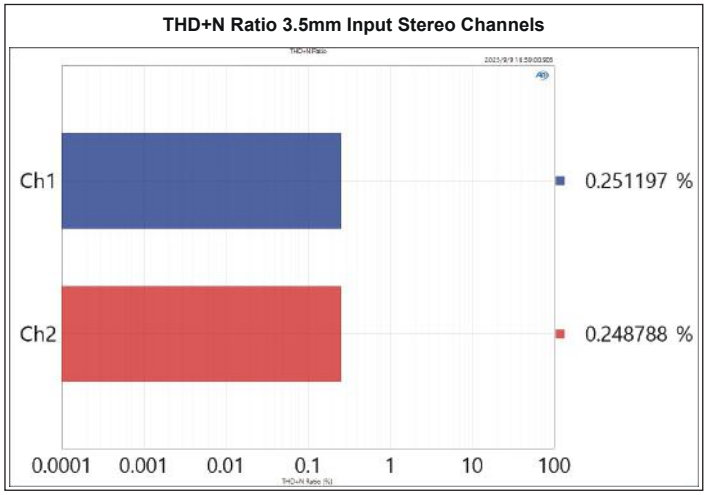
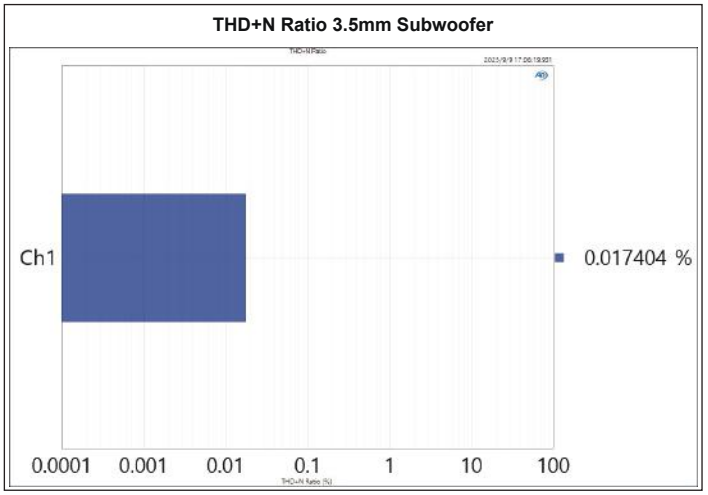
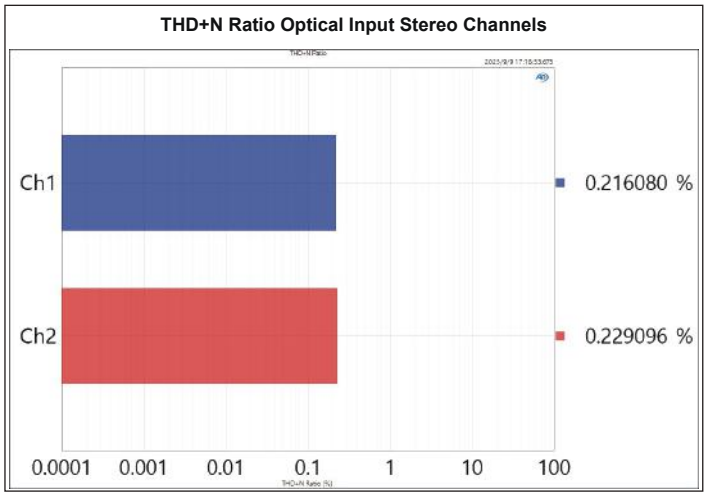
GAU4 Audio Parameters & Performance Graph

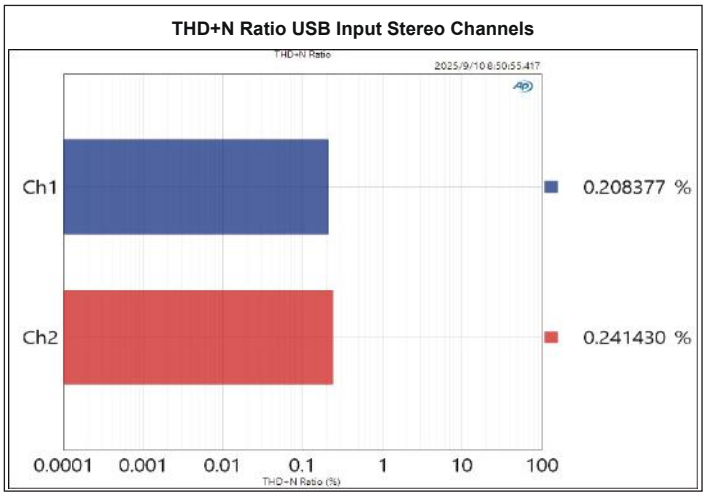
The GAU4 was tested in both stereo and mono modes, assessing various conditions across all key performance parameters to ensure reliability and optimal performance.

1. THD+N Ratio

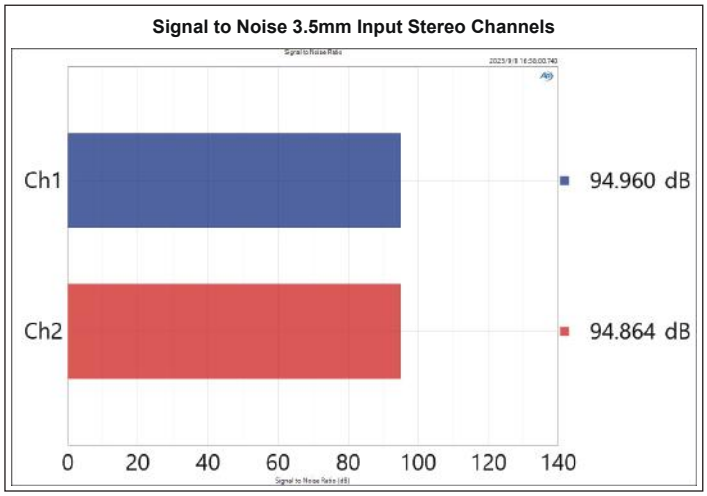


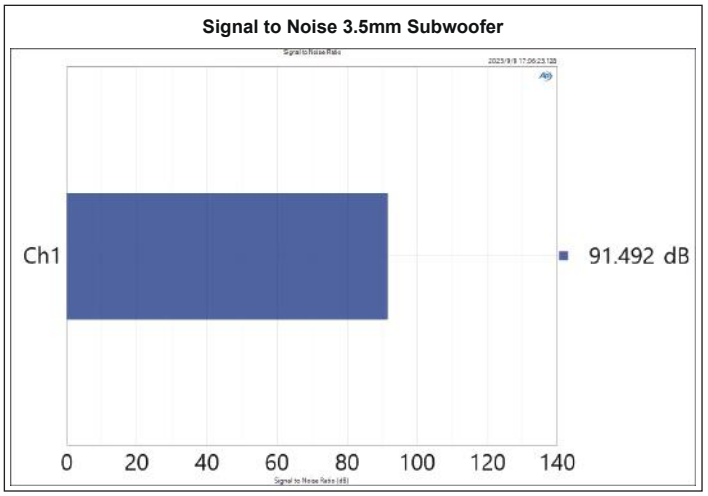






2. Signal to Noise Ratio





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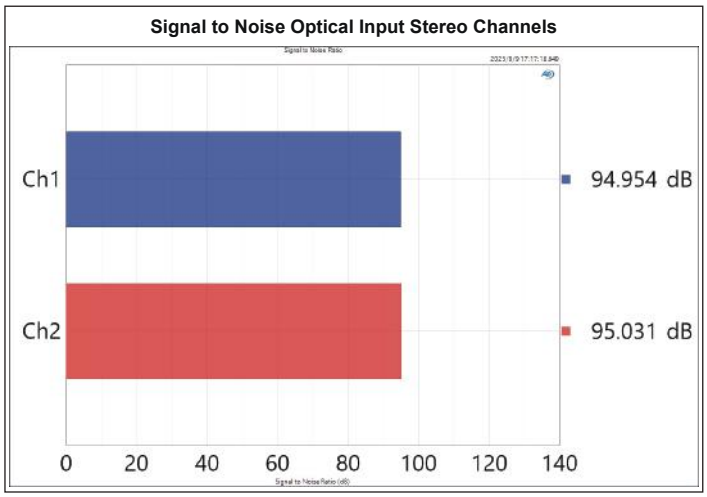
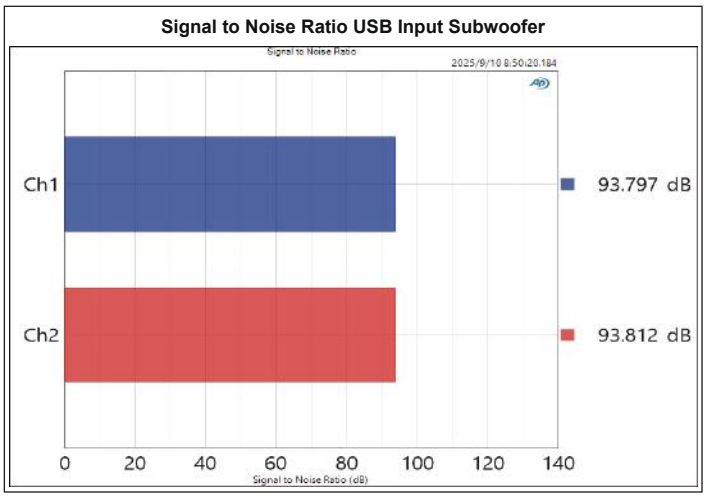
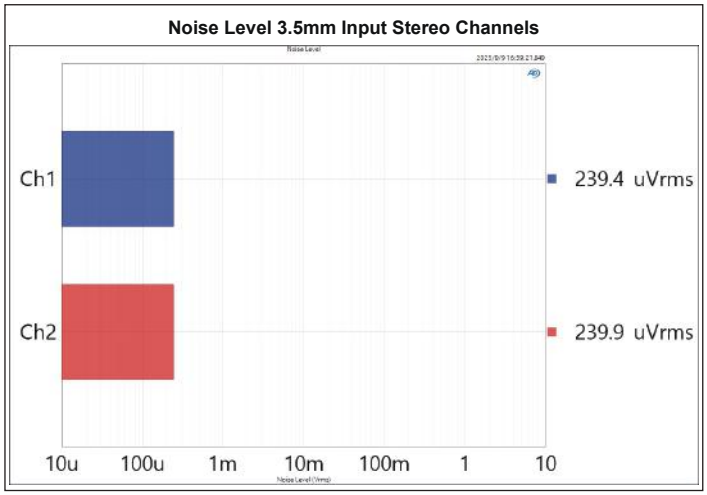
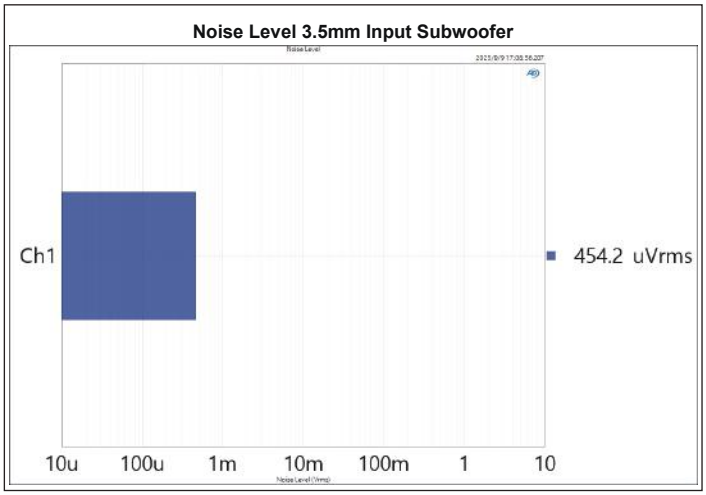
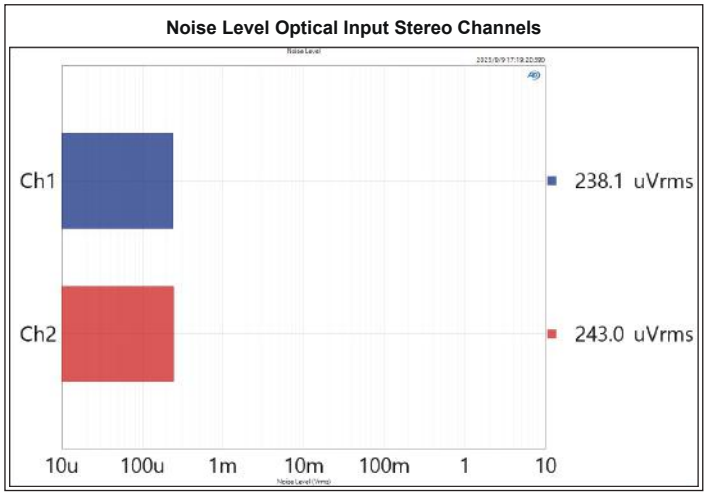


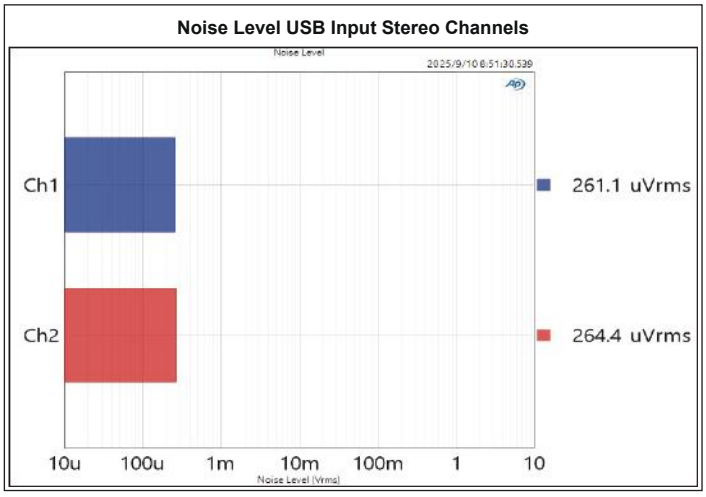


3. Noise Level Ratio









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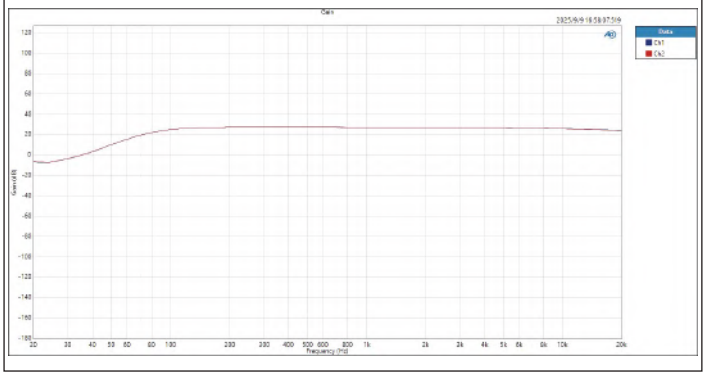
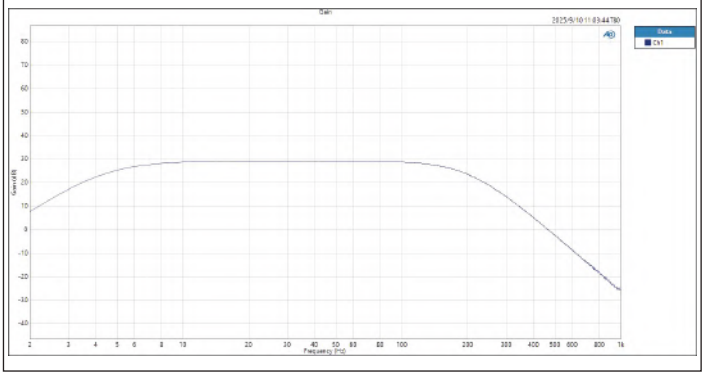
4. Gain Ratio

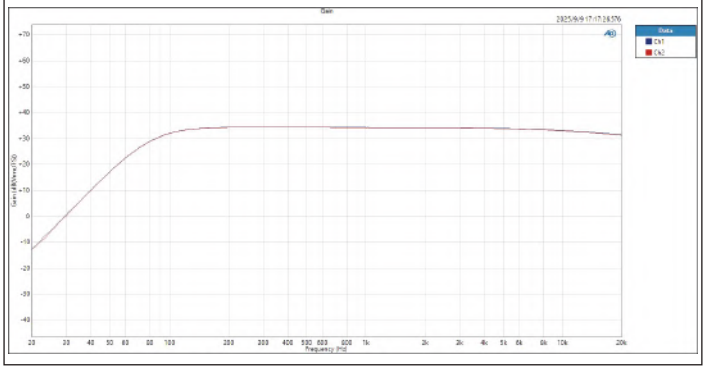
Gain 3.5mm Input Stereo Channels



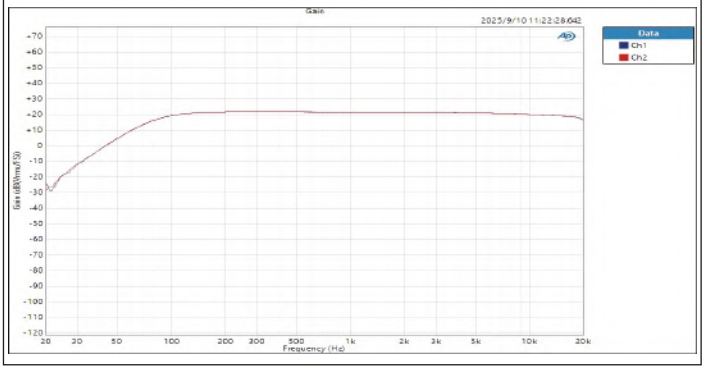
Gain 3.5mm Input Subwoofer



Gain Optical Input Stereo Channels



Gain USB Input Stereo Channels



Product Series for Gaming Amplifier Unit (GAU)

		GAU1	GAU4
SPECIFICATION	Bluetooth Capability	Yes	No
	Supply Voltage	DC 12-24V	DC 12-24V
	Output Connector	Mini-Fit 1x2, Micro-Fit 2x1 & 1x2 CKT	Mini-Fit 1x4, 2x3 & 1x2 CKT
	Output Power	2.1 Output 2 x 50W (4Ω) + 1 x 100W (2Ω)	4.1 Output 4 x 50W (4Ω) + 1 x 100W (2Ω)
	Audio Input Source	Bluetooth & 3.5mm Audio Jack	Optical, USB Type-C & 3.5mm Audio Jack
	Product Size mm (inch)	110.0 x 100.0 x 25.0 (4.3” x 3.9” x 0.9”)	190.0 x 116.0 x 37.0 (7.5” x 4.6” x 1.45”)
	Weight (g)	280.8g ± 10g	309g ± 10g

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Caution & Warning

Power Supply Compatibility

- Ensure the power supply voltage and current ratings match the specifications of the GAU4 plate amplifier. Using an incorrect power supply can damage the amplifier. It is recommended to use an adapter with a 12V to 24V output and a 3A or higher current rating. Do not use an adapter with more than 24V or connect it to a truck, bus or lorry battery system. These battery systems may have voltages higher than 24V and can rise up to 29V, which will cause permanent damage to the amplifier.
- Do not connect speakers with an impedance lower than recommended. Overloading the amplifier can result in damage or reduced performance.
- Double-check all wiring connections before powering on the amplifier. Incorrect wiring can cause short circuits and may damage the components.

Optional Accessories

Power Cable

Usage:
Connect to compatible power source.

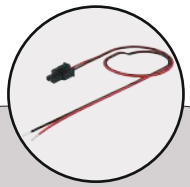
Input:
Voltage range of 15V to 30V

Length:
500mm±50mm

Audio Output Cable (1x4 CKT)

Usage:
Audio output for gaming and entertainment needs.

Length:
500mm±10mm



Audio Output Cable (1x2 CKT)

Usage:
Audio output for gaming and entertainment needs (Subwoofer).

Length:
500mm±10mm

Audio Output Cable (2x3 CKT)

Usage:
Audio output for gaming and entertainment needs.

Length:
500mm±10mm

PC UI Control Port RJ11 Modular Plug

Usage:
Provide a communication link between the PC and the device for control, configuration, and monitoring.

Length:
500mm±10mm

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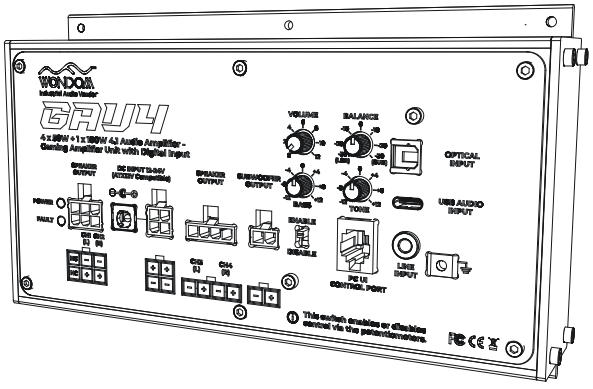

Designed by:

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Industrial Audio Vendor

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+60(4)2189323 | info@wondom.com
(Please use phone calls or email instead of WhatsApp or iMessage.)

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About the Manual

This manual provides general installation guidelines. However, please note that proper installation of wired cables for the GAU4 plate amplifier requires specialized experience. If you lack the necessary knowledge or tools to complete the installation successfully, we strongly recommend consulting an authorized Wondom dealer for assistance. Keep all instructions and sales receipts for future reference.

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