



SPREADING CLEAR SOUND
AROUND THE WORLD

H4PA-2-150(-T)

User Manual



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1. General information

H4PA-2-150(-T) Class-D Audio Amplifier

The H4PA-2-150 is a dual channel Class-D 100V power amplifier featuring a Digital Signal Processing platform. Amplifier output power is 150W per channel, collectively outputting 300 W. Both channels feature Lo-Z or Lo-Z and 100V line (T version) operating options. Analog XLR and digital USB-B inputs offer great flexibility and adaptability to different installations, making H4PA-2-150(-T) an excellent solution for nearly every system.



Fig. 1 H4PA-2-150(-T) Class-D Audio Amplifier

Modern DSP platform

H4PA features a modern approach, implementing all operations, including signal processing, smart control algorithms, control signal generation and smart audio algorithms on a single DSP platform. With this approach H4PA achieves an extremely competitive price in an ever growing market demand while also achieving extremely high efficiency.

System compatibility

It is no secret that every audio system has different characteristic and operational requirements. Ease of integration is everything in the world of audio amplifiers. Because of this H4PA features adaptability to any system input with both analog XLR inputs and a digital USB-B port. This allows the user to implement virtually any preamplifier or PC/Laptop to generate the input signal reference. The H4PA output features two loudspeaker channels with Lo-Z or Lo-Z and 100V line (T version) outputs, both rated for 150 W operation, totalling 300 W for any system of this kind.

Efficiency

The H4PA features modern Gallium-Nitride (GaN) semiconductor technology enabling an extremely high efficiency compared to other Class-D Audio Amplifier solutions. Operating temperature of all parts of the system does not exceed 50°C in any operating conditions, making it suitable for racking in any environment and stacking for systems that demand extremely high power.

Protection

The H4PA features multiple protection capabilities for ensuring safety of operation and personnel in case of loudspeaker or faults on the AC mains. These include input short circuit, output short circuit, DC short circuit, overload, overvoltage and overtemperature protection.

Important safety instructions

1. READ THE FOLLOWING INSTRUCTIONS.
2. ALWAYS KEEP THE FOLLOWING INSTRUCTIONS. NEVER THROW THEM AWAY.
3. HEED ALL WARNINGS.
4. FOLLOW ALL INSTRUCTIONS.
5. THIS DEVICE MUST BE INSTALLED BY QUALIFIED PROFESSIONALS ONLY.
6. THE DEVICE MUST BE RACKED IN A 1U UNIT AND NOT PLACED IN AN ENCLOSED ENVIRONMENT WHICH COULD BLOCK VENTILATION OPENINGS.
7. THE DEVICE MUST NOT BE PLACED IN AN ENVIRONMENT CONTAINING RAIN, MOISTURE OR LIQUID OF ANY KIND, DUST OR HIGH CONCENTRACION OF ANY SOLID PARTICLES.
8. FOR PROPER USE OF THE DEVICE REFER TO THIS DOCUMENT.
9. THE DEVICE MUST BE CONNECTED TO A MAINS SOCKET OUTLET 220-240V 50Hz OR 110-120V 60Hz WITH PROTECTIVE EARTH CONNECTION (LISTED ON THE BACK PANEL).
10. DO NOT CONNECT DEVICE INPUT OR OUTPUT PORTS TO ANY OTHER VOLTAGE SOURCE.
11. ONLY USE ATTACHEMENTS AND ACCESSORIES SPECIFIED IN THIS DOCUMENT BY THE MANUFACTURER.
12. UNPLUG THE DEVICE DURING LIGHTNING STORMS OR WHEN UNUSED FOR LONG PERIODS OF TIME.
13. CLEAN THE DEVICE USING ONLY DRY MATERIAL.
14. **WARNING:** TO REDUCE THE RISK OF FIRE OR ELECTRICAL SHOCK DO NOT EXPOSE THE DEVICE TO RAIN OR MOISTURE. THE DEVICE SHALL NOT BE EXPOSED TO DRIPPING OR SPLASHING, AND OBJECTS FILLED WITH LIQUIDS SHALL NOT BE PLACED ON TOP OF THE DEVICE.

Features

- 1U high rack version and standalone version
- Full rack width
- High power Class-D Audio Amplifier module with two 100V line output transformers
- Stereo operation of two output channels
- Output power 2 x 150W @ 4Ω / 100V (T version), Stereo operation capability
- Output connection: two Euroblock connectors with 4 pins
- Input connection: 2 x XLR analog reference port, 1 x USB-B digital reference port
- 4.2Vrms XLR input signal reference level
- High efficiency >95%
- Integrated DSP platform featuring digital control, smart audio processing algorithms
- GaN semiconductor technology for enhanced efficiency and robustness
- No cooling fan – maintenance free
- Extended speaker and amplifier protection circuits: input short circuit, output short circuit, DC short circuit, overtemperature, overvoltage and overload protection

2. Front & rear panel



Fig. 2 Front & rear panel of the H4PA

Front & rear panel of the H4PA-2-150 feature a simple configuration offering effortless connection and configuration.

1. AC Mains power supply

Before turning on the device the mains power supply (230~240 V AC / 50 Hz) must be applied to this AC power port. The connection is made by an IEC 60320 power connector.

2. Power switch

After connecting the AC mains power supply cable use this switch to turn on the device.

ATTENTION: Do not turn on the device before connecting the loudspeakers to the output ports.

3. Output ports for loudspeaker connection

Loudspeakers are connected to the device via a Euroblock connector. There is two output connectors labelled Output 1 and Output 2 on the rear panel. Each connector is 4-pin Euroblock (5.08 mm pitch) connector with the first two ports used for Lo-Z ($4\ \Omega$) speakers and the second two ports used for 100V line (T version). A detailed description for connecting loudspeakers in the most appropriate way for each application can be found in Chapter 3. 'Connecting and setting up the amplifier'.

4. XLR analog signal input connections

Analog signal input connectors are available through two XLR ports at 4.2Vrms voltage level. These inputs are used for analog signal aquisition and offer stereo operation of the two output channels.

5. USB-B digital signal input connections

Digital signal input connector is available through a USB-B port.

6. Potentiometers

Sound level of each output channel is set independently using two potentiometers on the rear panel of the device.

3. Connecting and setting up the amplifier

ATTENTION: Device must be turned OFF before any connections or wiring adjustments are made. Disregarding this rule can lead to injury and permanent damage of the equipment.

Input connections

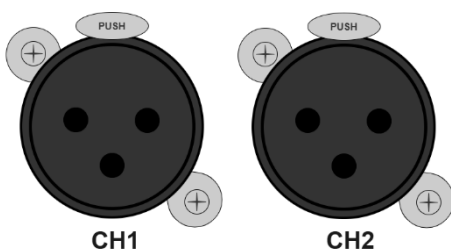


Fig. 3 XLR connectors – balanced analog input connection

The balanced analog input signal connection is implemented through two 3-pin XLR female connectors. The connections labelled CH1 and CH2 correspond to Channel 1 and Channel 2 loudspeaker outputs. Balanced connection allows for stereo operation of the two loudspeaker output channels. This connection necessitates for a preamplifier to be used for generating the analog reference signal.

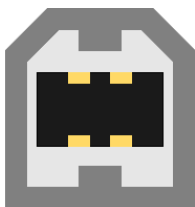


Fig. 4 USB-B digital input port

Input signal can be supplied digitally provided through a female USB-B port. When driving the channels this way loudspeaker channels also provide stereo output. This allows for generating reference directly from PC/Laptop in case no preamplifier is available as well as making easy adjustments when installing the equipment.

Output connections

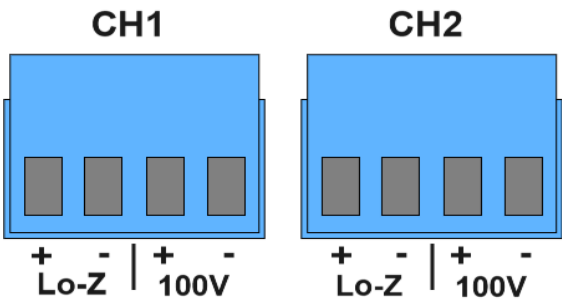


Fig. 5 Loudspeaker channels connectors

The loudspeaker output connections are implemented using 4-pin Euroblock (5.08 mm pitch) connectors for each output.

Both outputs provide **100V line** terminal (T version) and **Lo-Z (4 Ω)** terminal, allowing connection of two loudspeaker lines. The table below shows the output voltage, impedance and maximum power load in **100V line** or **4 Ohm** output configuration:

Table 1 Maximum load impedance in 100V and Lo-Z modes for an individual output channel

Mode	Output voltage	Impedance	Power
100V	100 Vrms	66 Ω	150W
Lo-Z	24.8 Vrms	4 Ω	150W

In **4 Ω** mode, ensure that the total load connected to the output does not fall below **4 Ω**. When operating in **100V line** output (T version only), multiple loudspeakers may be wired in parallel, provided the total load impedance remains above the amplifier's minimum threshold. The maximum number of units is determined by the combined power draw and impedance of the connected speakers.

Lo-Z (4 Ω) output connection example

The **low-impedance (Lo-Z) mode** allows for a direct connection between the amplifier and a single loudspeaker. When operating in this mode, only one low impedance loudspeaker, **4 Ω** or higher, may be connected to the output terminals to ensure the system operates within its rated limits. The following example illustrates the correct wiring for a single-speaker setup.

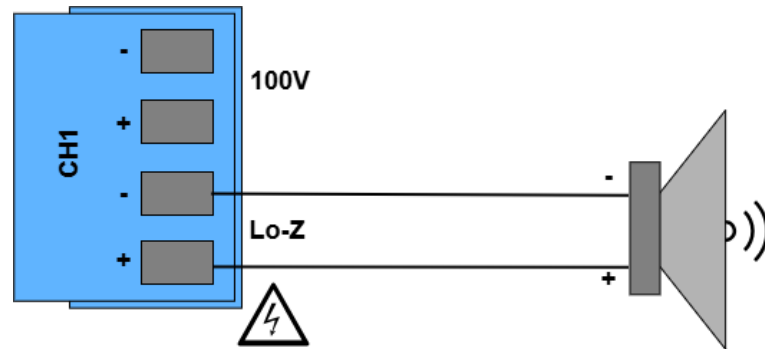


Fig. 6 Lo-Z output connection example

100V output connection example (T version)

The **100V line** output supplies a constant voltage to drive multiple loudspeakers over long distances with minimal power loss. This setup requires loudspeakers equipped with integrated **100V line transformers**, which allow for simple parallel wiring as long as the combined wattage of the power taps does not exceed the H4PA's capacity of **150W**. The following example illustrates a standard configuration for distributed audio, showing multiple speakers connected in parallel across both output terminals.

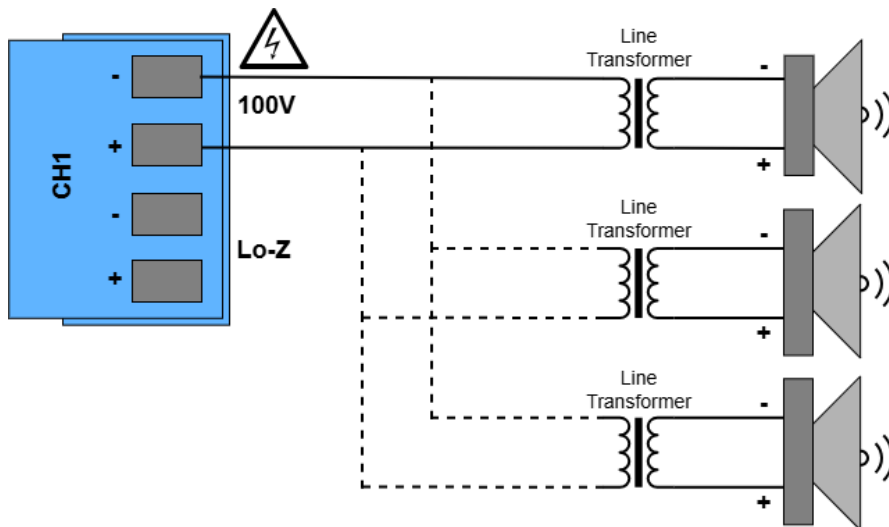


Fig. 7 100V output connection example

Volume control



The potentiometers on the front panel provide independent volume control for each individual loudspeaker output channel. Use these for precise setting of the signal intensity of each Amplifier channel as indicated by the labels.

Fig. 8 Potentiometers for volume control

Wiring the system

To ensure best performance of the system in all circumstances, wiring from the channel outputs to the loudspeakers must be done according to the following rules. Speaker cable for the loudspeaker outputs of minimum $2 \times 1.5 \text{ mm}^2$ must be used, or $2 \times 2.5 \text{ mm}^2$ in case of distance larger than 15m (including 100V line and Lo-Z connections). Music sources and zone outputs should be connected using high-quality audio cables if best results are required.

Setting up the amplifier

The following procedure indicates how to connect and setup the device, referring to the connections as indicated by the previous examples.

1) Connecting audio sources

Connect all audio sources to the input connections on the rear side of the amplifier. Depending on the installation and whether the XLR (pre-amplifiers, mixers, matrix systems, ...) or the USB-B (PC, Laptop,...) is used, the appropriate connection should be made. Connecting both the XLR and USB-B sets the priority of operation on the XLR input.

2) Connecting loudspeakers

Connect loudspeakers to the outputs of the amplifier. Loudspeakers are to be connected to the +/- ports as indicated by the labels beside the Euroblock connectors. Depending on the specific application, a 4Ω load or a 100V line can be connected, as indicated in the previous paragraph.

3) Connecting the power supply

After the input and output connections are made, connect the AC mains power cable to the inlet located on the rear panel of the device.

4) Configuring the loudness level

After all connections are made, potentiometers are used to set the loudness level of the connected loudspeakers. **NOTE:** Exposure to high sound levels may cause a permanent hearing loss.

4. Technical specifications

Continuous power (AES)	T version	@ 100 V	2 x 150 W
		@ Lo-Z	2 x 150 W
Min load impedance	T version	@ 100 V	66 Ω
		@ Lo-Z	4 Ω
Frequency response			20 Hz - 20 kHz
Signal to Noise Ratio			> 60 dB
Total Harmonic Distortion + Noise @ 1kHz			< 0.1%
Common Mode Rejection			70 dB
Crosstalk			> x dB
Inputs	Type		Balanced Line Digital
	Connector		Female XLR Input USB-B Input
	Impedance		X k Ohm balanced
	Sensitivity		-x dB ~ +x dB
Output	Type		Loudspeaker Output
	Connectors		4-pin Euroblock ~ 5.08 mm
Protection			DC Short Circuit Input Short Circuit Output Short Circuit Overtemperature Overload
Cooling system			Self cooling
Amplifier technology			Class-D
Power supply	Type		Switching mode
	Range		110~120V AC / 60Hz 230~240 V AC / 50 Hz
Power consumption	Idle		~ 8.4 W
	1/8 Rated power		50W
	1/3 Rated power		115W
	Rated power		300W