



**HPA-DAC8**  
**Dante® Accessory Card**



# HPA-DAC8

## *Owner's Manual*

### Introduction

The HPA-DAC8 accessory card is designed to work in conjunction with HPA Series 8-channel amplifiers. The HPA-DAC8 is an 8-input Dante® receiver that features digital audio transportation over standard IP networks. The HPA Series 8-channel amplifiers come standard with eight balanced line inputs and an accessory slot to fit the HPA-DAC8. Dante® input 1, and the analog balanced input levels are isolated from each other and are electronically summed together forming a mixed output. Both the Dante® input and the analog balanced input levels to the amplifier channel are controlled by the Ch-1 level control. Channel 2 through 8 inputs are configured the same as Channel 1.

### Key Features

- Dante® Digital Audio Platform
- 8-Channel Receiver
- Integrates with 8-Channel HPA Series Amplifiers

### Dante® Overview

Audinate® created Dante®, an uncompressed, multi-channel digital media networking technology, with near-zero latency and synchronization. Hundreds of Dante® enabled products allow you to find the right mix of devices for your system requirements.

One cable does it all. Dante® does away with heavy, expensive analog or multicore cabling, replacing it with low-cost, easily-available CAT5e, CAT6, or fiber optic cable for a simple, lightweight, and economical solution. Dante® integrates media and control for your entire system over a single, standard IP network.

Dante® systems can easily scale from a simple pairing of a console to a computer, to large capacity networks running thousands of audio channels. Because Dante® uses logical routes instead of physical point-to-point connections, the network can be expanded and reconfigured at any time with just a few mouse clicks.

Since the signal audio is transmitted digitally, common analog challenges like interference from other electrical equipment, crosstalk between cables, or signal degradation over long cable runs is not a problem. Setting up Dante® networks is easy, even the most complex networks can be set up and configured quickly and easily with Dante®, making system integration simple. Dante® automatically handles the technical complexities.

Signal routing and system configuration with Dante® is fast, simple, and incredibly flexible. Dante® Controller is a powerful software application that manages devices on the network. Setting up a Dante® network is typically just a matter of plugging devices into an Ethernet switch and connecting a computer to the network. All Dante® devices are automatically discovered and displayed in Dante® Controller, so a system can be up and running in seconds.

Visit [www.audinate.com](http://www.audinate.com) for details or to learn more on using Dante®. There are many Dante® guides available in the industry. AtlasIED offers one in the BlueBridge® DSP section of [atlasied.com](http://atlasied.com).

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### Audio Applications

When installed, the HPA-DAC8 converts the HPA Series amplifier into a digital audio network amplifier and makes the HPA Series amplifier the “go to” solution for a variety of applications including:

- Restaurants
- Government Facilities
- Schools
- Industrial Facilities
- Houses of Worship

### Matching Gain from a Source to the HPA Series Amplifier in a Dante® Network

Understanding the gain structure is very important to avoid clipping the audio signal or amplifier output. There are three potential ways to clip the signal chain.

1. Amplifier Input Clipping - This occurs when the applied input signal exceeds the maximum input level of the amplifier input stage.
2. Amplifier Output Clipping - When the channel level controls are set to maximum, 0dBV / 1V of input signal is required to achieve maximum amplifier output.  
**Note:** AtlasIED recommends the level to be set with the level being controlled from the source. Exceeding 1V or 0dBV level will cause the amplifier output stage to clip.
3. Digital Clipping - This occurs when the 0dBFS levels are exceeded. This is very important to understand. Several examples are provided to help understand digital to analog gain structure. **Note:** AtlasIED recommends to always place a limiter set for 0dB in the signal path prior to the Network Output of the transmitting device. This is the best way to prevent clipping the HPA-DAC8.

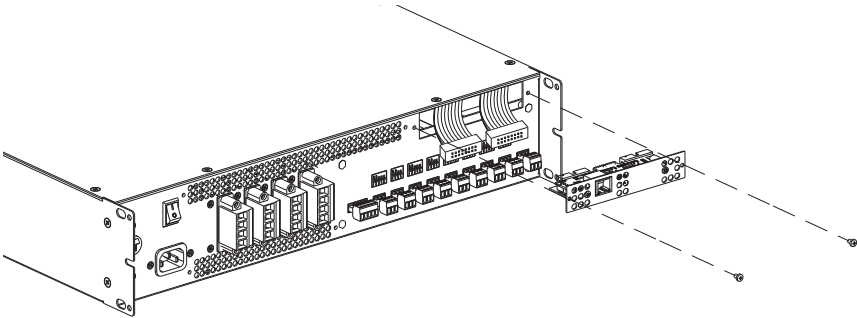
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### HPA-DAC8 Card Installation

**Note:** Accessory card installation must be done by a qualified technician.

1. Remove the HPA amplifier from the AC mains source. **Note:** In standby mode there are DC voltages present. The HPA amp must be removed from the AC mains source in order to prevent damage to the card or amplifier.
2. Remove the two screws (M3 x 8mm Pan Head Black) holding the HPA accessory blank panel.
3. Remove the ribbon cables from the cover.
4. Connect the accessory card to the ribbon cables 1 and 2 by carefully aligning the ribbon cable connector to the mating PCB connector. Do not force. If aligned correctly the cable will mate easily.
5. Carefully guide the accessory card into the slot without forcing the PCB or cable.
6. After the card is inserted and the accessory panel is flush to the chassis, align the two screw holes and secure them together by inserting two M3 x 8mm screws.



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### HPA-DAC8 Card Installation

1. It is important to set the input levels within the system to avoid clipping the amplifier input or the output HPA-DAC8 card. **Note:** The best way to prevent clipping the HPA-DAC8 (Dante® receiver) is to place a limiter set for 0dB in the signal path prior to the network output of the Dante® transmitting device (always recommended).
2. Set the HPA amplifier input sensitivity to 1V. (This is the factory default setting)
3. Set the HPA front panel level controls to the max (10) or fully clockwise.



4. In most systems a DSP processor will be used as the system input source preamp with a Dante® transmitter for network audio output. It is highly recommended that a limiter is placed before the network audio output. This will prevent the amplifier input or HPA-DAC8 from clipping, but will still be enough signal to achieve maximum amplifier output. **Note:** The HPA-DAC8 clips at +13dBu.
5. With the HPA front panel levels set to max, increase the source level until the HPA Limit LEDs just begin to blink, then, back down the source level slightly so Limit LEDs only blink occasionally.
6. After the proper source levels have been set, adjust the HPA amplifier output level to the desired sound levels. The HPA comes with security covers to prevent tampering with level controls.



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### **Selecting the Router OR Network Switch – Important!**

It is extremely important when selecting a router or switch for the Dante® network; not all routers or switches are the same. The size of the Dante® network will influence which router or switch is needed to handle network traffic. There are three things to look for (at a minimum) or system dropouts may occur. **Note:** Refer to Audinate® for products they recommend.

1. Gigabit speed.
2. If using a network switch, it must be a “managed switch” type.
3. If using a router with a built-in switch, it should have DD-WRT firmware or open source firmware.

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### Dante® Items to Know or Think About

1. Fixed Levels - Signal level cannot be added or reduced within Dante® Controller. It is strictly a signal router.
2. What Does 0dBFS Mean - 0dBFS is defined as decibels relative to full scale. It is the maximum amplitude levels in digital systems before clipping. Each digital product has their own specific maximum amplitude levels. When interfacing Dante networks, it is very important to know the source and receiver 0dBFS specification to prevent system clipping.
3. Industry Standard - At the time of this information, there is no industry standard between companies for scaling 0dBFS gain levels in equipment. In a digital studio this is usually not an issue because most of the same brand is used or a limited number of products are interfaced. However, with live sound or commercial audio there can be multiple brands used in one job. Dante® can be great for reliable connectivity between devices but be aware of gain structure
4. Interfacing Data with Different Manufacturers' Equipment - To help understand scaling here are some examples:
  - Source device 0dBFS = 20dBu, transmits to a receiver with a 0dBFS = 20dBu reference, the output is 0dBu. This scenario is ideal when using the HPA amplifiers.
  - Source device 0dBFS = 20dBu, transmits to a receiver with a 0dBFS = 10dBu reference, the output is -10dBu. To get full output of the HPA amplifiers you have to increase the network output levels by 10dBu to get 0dBu into the HPA amplifiers input.
  - Source device 0dBFS = 10dBu, transmits to a receiver with a 0dBFS = 20dBu reference, the output is +10dBu. This combination will give too much signal into the HPA amplifier. Reduce the signal from the DSP network output.
  - Source device 0dBFS = 10dBu, transmits to a receiver with a 0dBFS = 10dBu reference, the output is 0dBu. This scenario is ideal when using amplifiers with 0.775V input sensitivity.
5. Understanding Digital Noise vs Headroom - If headroom before clipping is a concern, the higher the ratio between 0dBFS and output level, the less likely clipping will be an issue. If the application is paging and background music, then a lower ratio is ok because the headroom is not as critical. In live sound reinforcement applications such as a church band or a concert, more headroom and gain is needed for dynamics. It's important to note that the higher the gain the higher the noise output. To combat high gain output noise, use a Dante® transmitter product with good signal to noise ratio specification, such as 100dB or better. For instance, AtlasIED BlueBridge® DSP has a signal to noise ratio of 110dB. The noise is very low before it is amplified, assuring low noise out of the HPA amplifier. Look at the input and output 0dBFS reference points and the noise floor specification. If they are not listed call the manufacturer.

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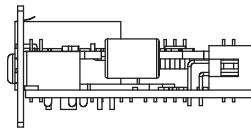
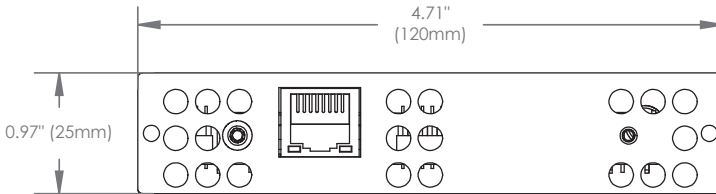
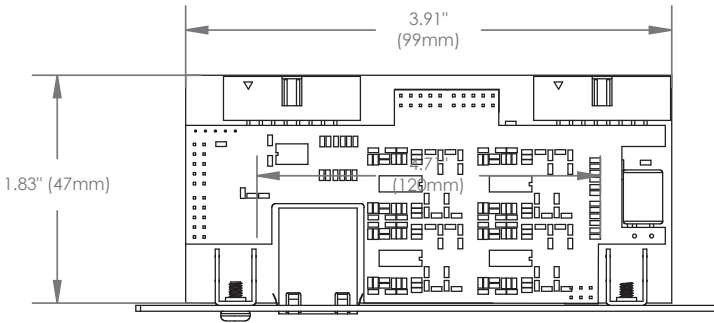
<b>System</b>	
Type	8 Input Dante® Receiver Card for the HPA Series Amplifiers
Connection	Single RJ-45
Cable Quality	CAT-5
Gain Settings	None
Indicators	Ethernet Network Activity LED Green / Yellow
Amplifier Interface	2 x 16 Pin HPA Amplifier Connections
<b>Electrical</b>	
Dante® Transmission Speed	100Mbps
Frequency Response	20Hz - 20KHz +/- 1dB
THD	0.06% @ 1KHz
Maximum Input Level	13dBu, 3.5V
Noise	-83dBu
<b>Mechanical</b>	
Color	Black
Material	Steel
Product Dimensions (HxWxD)	0.97" x 4.7" x 2.5" (25mm x 119mm x 63mm)
Shipping Dimensions (HxWxD)	2.75" x 5.5" x 5.5" (70mm x 138mm x 138mm)
Unit Weight	0.15 lbs. (0.07kg)
Shipping Weight	0.325 lbs. (0.15kg)



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### Dimensional Drawings





# HPA-DAC8

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**Notes:**

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### **Limited Warranty**

All products manufactured by AtlasIED are warranted to the original dealer / installer, industrial or commercial purchaser to be free from defects in material and workmanship and to be in compliance with our published specifications, if any. This warranty shall extend from the date of purchase for a period of three years on all AtlasIED products, including SOUNDOLIER brand, and ATLAS SOUND brand products except as follows: one year on electronics and control systems; one year on replacement parts; and one year on Musician Series stands and related accessories. Additionally, fuses and lamps carry no warranty. AtlasIED will solely at its discretion, replace at no charge or repair free of charge defective parts or products when the product has been applied and used in accordance with our published operation and installation instructions. We will not be responsible for defects caused by improper storage, misuse (including failure to provide reasonable and necessary maintenance), accident, abnormal atmospheres, water immersion, lightning discharge, or malfunctions when products have been modified or operated in excess of rated power, altered, serviced or installed in other than a workman like manner. The original sales invoice should be retained as evidence of purchase under the terms of this warranty. All warranty returns must comply with our returns policy set forth below. When products returned to AtlasIED do not qualify for repair or replacement under our warranty, repairs may be performed at prevailing costs for material and labor unless there is included with the returned product(s) a written request for an estimate of repair costs before any nonwarranty work is performed. In the event of replacement or upon completion of repairs, return shipment will be made with the transportation charges collect.

EXCEPT TO THE EXTENT THAT APPLICABLE LAW PREVENTS THE LIMITATION OF CONSEQUENTIAL DAMAGES FOR PERSONAL INJURY, ATLASIED SHALL NOT BE LIABLE IN TORT OR CONTRACT FOR ANY DIRECT, CONSEQUENTIAL OR INCIDENTAL LOSS OR DAMAGE ARISING OUT OF THE INSTALLATION, USE OR INABILITY TO USE THE PRODUCTS. THE ABOVE WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES INCLUDING BUT NOT LIMITED TO WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

AtlasIED does not assume, or does it authorize any other person to assume or extend on its behalf, any other warranty, obligation, or liability.

This warranty gives you specific legal rights and you may have other rights which vary from state to state.

## Service

Should your HPA-DAC8 require service, please contact the AtlasIED warranty department through the online warranty claim process.

### Online Warranty Claim Processes

1. Warranty submissions are accepted at: [https://www.atlasied.com/warranty\\_statement](https://www.atlasied.com/warranty_statement) where the type of return Warranty or Stock return can be selected.
2. Once selected, you will be prompted to enter your login credentials. If you do not have a login, register on the site. If already logged-in, navigate to this page by selecting “Support” and then “Warranty & Returns” from the top menu.
3. In order to file a Warranty Claim, you will need:
  - A. A copy of the invoice / receipt of the purchased item
  - B. Date of Purchase
  - C. The product name or SKU
  - D. The serial number for the item (if no serial number exists, enter N/A)
  - E. A brief description of the fault for the claim
4. Once all required fields are completed, select the “Submit Button”. You will receive 2 emails:
  1. One with a confirmation of the submission
  2. One with a case# for your reference should you need to contact us.

Please allow 2-3 business days for a response with a Return Authorization (RA) number and further instructions.

AtlasIED Tech Support can be reached at 1-800-876-3333 or [atlasied.com/support](http://atlasied.com/support).

Visit our website at [www.AtlasIED.com](http://www.AtlasIED.com) to see other AtlasIED products.