



AIP-D1401

4 Balanced Out, Dante to Analog Audio



Operation Manual

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SAFETY PRECAUTIONS

Please read all instructions before attempting to unpack, install or operate this equipment and before connecting the power supply. Please keep the following in mind as you unpack and install this equipment:

- Always follow basic safety precautions to reduce the risk of fire, electrical shock and injury to persons.
 - To prevent fire or shock hazard, do not expose the unit to rain, moisture or install this product near water.
 - Never spill liquid of any kind on or into this product.
 - Never push an object of any kind into this product through any openings or empty slots in the unit, as you may damage parts inside the unit.
 - Do not attach the power supply cabling to building surfaces.
 - Use only the supplied power supply unit (PSU). Do not use the PSU if it is damaged.
 - Do not allow anything to rest on the power cabling or allow any weight to be placed upon it or any person walk on it.
 - To protect the unit from overheating, do not block any vents or openings in the unit housing that provide ventilation and allow for sufficient space for air to circulate around the unit.
 - Please completely disconnect the power when the unit is not in use to avoid wasting electricity.
-

VERSION HISTORY

REV.	DATE	SUMMARY OF CHANGE
RDV1	2020/07/22	Preliminary release
RDV2	2022/09/07	Minor typographical corrections
Ver 1.10	2023/12/15	Add feature support for AES67. Updated 1. Introduction, 5. Features





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1. INTRODUCTION

This 4-channel Dante audio to analog output receiver is easy to use and convenient to install. Thanks to the integrated support for Dante/AES67 technology which extends and routes audio across standard Ethernet networks, this unit forms an important part of an easier and more flexible system for managing large audio systems than traditional point-to-point physical wiring. Dante does away with the bundles of heavy, expensive, multi-core analog audio cables and replaces it with low cost, and easy to manage, Cat.5e or Cat.6 cables while maintaining the high quality expected from uncompressed digital audio. Due to the nature of packet-based Ethernet data transmission, there is no need to worry about the traditional enemies of long distance audio extension, such as analog signal interference, crosstalk, or signal attenuation. All of this is provided with the absolute minimum of latency (typically around 1ms).

The unit is equipped with four analog mono audio outputs and one Dante input port which can receive up to 4 audio channels and is compatible with any standard Dante audio sources that might be routed to it. It is powered directly by PoE (Power over Ethernet) which allows for increased installation location flexibility. Basic device configuration is provided by serial over USB while routing and network configuration management is provided via 3rd party control software.

2. APPLICATIONS

- Home Theaters
- Classrooms
- Lecture Halls

3. PACKAGE CONTENTS

- 1× 4 Balanced Out, Dante to Analog Audio
- 4× 3-pin Terminal Block
- 1× Operation Manual



4. SYSTEM REQUIREMENTS

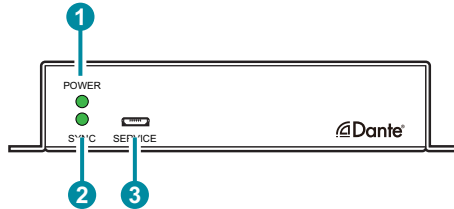
- An active network connection from a switch or router that supports PoE (802.3af) for extension of Dante audio and to power the unit.
- Analog audio receiving equipment such as audio amplifiers or powered speakers.
- 3rd party control software, such as Dante Controller from Audinate, is required to configure and manage audio routes between Dante endpoints.

5. FEATURES

- One standard Dante input
- Four line-level balanced analog mono audio outputs
- High quality DAC (Digital to Analog audio Conversion) functionality with very low latency
- Compatible with existing Dante and AES67 audio networks
- Powered directly by PoE (802.3af) provided by the network switch or router connected to the Dante port
- Simple and easy audio routing via 3rd party control software which is available for both Windows and macOS systems
- Basic device configuration via serial over USB

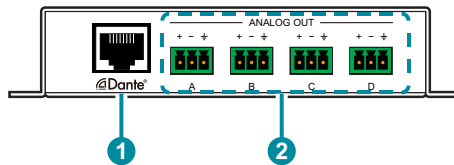
6. OPERATION CONTROLS AND FUNCTIONS

6.1 Front Panel



- 1 **POWER LED:** This LED will illuminate to indicate the unit is on and receiving power.
- 2 **SYNC LED:** This LED will illuminate to indicate the unit is actively connected to a valid Ethernet network.
- 3 **SERVICE Port (USB 2.0 Micro-B):** This port is used for serial control and firmware updates.

6.2 Rear Panel



- 1 **DANTE Port:** Connect to a standard Ethernet network switch or router, which is hosting Dante audio sources, with a single Cat.5e/6/7 cable for reception of all routed digital audio signals.

Note: This unit is powered via PoE (802.3af) which must be supplied by the network switch or router connected to the Dante port.

- 2 **ANALOG OUT A-D 3-pin Terminal Blocks:** Connect to powered speakers or an amplifier for analog mono audio output.

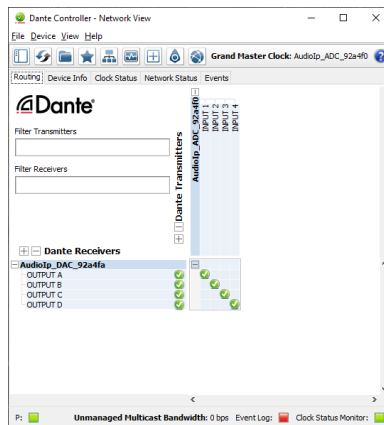
6.3 RS-232 Pinout and Defaults

Serial Port Default Settings	
Baud Rate	19200
Data Bits	8
Parity Bits	None
Stop Bits	1
Flow Control	None

Note: Serial control over this unit is available only via the USB Micro-B service port on the front of the unit. Connect the unit directly to the USB port on a PC or laptop and configure the virtual COM port to use the above settings.

6.4 Audio Routing Control

Discovery of Dante hardware and control over the behavior and routing of Dante audio is managed via 3rd party control software or hardware. The simplest available option is the Dante Controller software which is freely available directly from Audinate (www.audinate.com). This is a fully software based solution for controlling multiple audio transmitters and receivers, in a variety of configurations, providing full and detailed control over the audio handling of each individual unit. The Dante Controller software is available for both Windows and macOS systems.



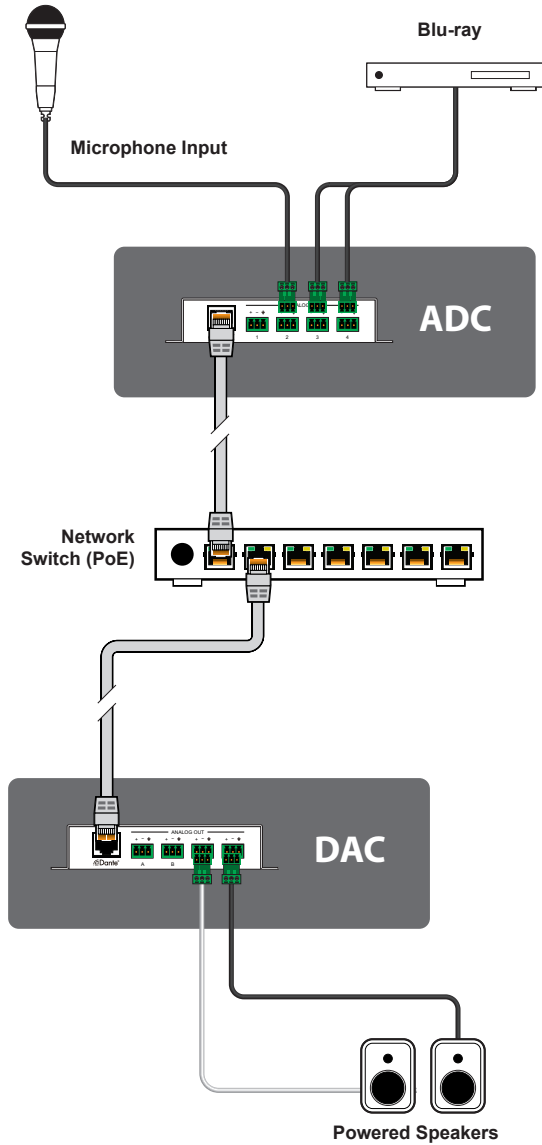
6.5 Serial Commands (via USB)

COMMAND												
Description and Parameters												
<p>help↵</p> <p>Show the full command list.</p>												
<p>help N1↵</p> <p>Show details about the specified command.</p> <p>N1 = {Command}</p>												
<p>? ↵</p> <p>Show the full command list.</p>												
<p>? N1↵</p> <p>Show details about the specified command.</p> <p>N1 = {Command}</p>												
<p>get fw ver↵</p> <p>Show the unit's current firmware version.</p>												
<p>set factory default↵</p> <p>Reset the unit to the factory defaults.</p>												
<p>set system usb fw update↵</p> <p>Trigger the unit's firmware update state and load the new firmware file via USB.</p>												
<p>set audio out N1 mute N2↵</p> <p>Enable or disable muting the specified audio output.</p> <p>Available values for N1:</p> <table data-bbox="190 1165 728 1284"> <tr> <td>A</td> <td>[Analog output A]</td> </tr> <tr> <td>B</td> <td>[Analog output B]</td> </tr> <tr> <td>C</td> <td>[Analog output C]</td> </tr> <tr> <td>D</td> <td>[Analog output D]</td> </tr> </table> <p>Available values for N2:</p> <table data-bbox="190 1324 638 1380"> <tr> <td>ON</td> <td>[Mute]</td> </tr> <tr> <td>OFF</td> <td>[Unmute]</td> </tr> </table>	A	[Analog output A]	B	[Analog output B]	C	[Analog output C]	D	[Analog output D]	ON	[Mute]	OFF	[Unmute]
A	[Analog output A]											
B	[Analog output B]											
C	[Analog output C]											
D	[Analog output D]											
ON	[Mute]											
OFF	[Unmute]											

COMMAND	
Description and Parameters	
set audio out all mute N1 ↵	
Enable or disable muting on all audio outputs.	
Available values for N1 :	
ON	[Mute]
OFF	[Unmute]
get audio out N1 mute ↵	
Show the current mute state of the specified output.	
Available values for N1 :	
A	[Analog output A]
B	[Analog output B]
C	[Analog output C]
D	[Analog output D]
set audio out N1 volume N2 ↵	
Set the volume level of the specified output's audio.	
Available values for N1 :	
A	[Analog output A]
B	[Analog output B]
C	[Analog output C]
D	[Analog output D]
N2 = 0~100	[Volume level]
get audio out N1 volume ↵	
Show the current volume level of the specified output's audio.	
Available values for N1 :	
A	[Analog output A]
B	[Analog output B]
C	[Analog output C]
D	[Analog output D]

Note: Commands will not be executed unless followed by a carriage return. Commands are not case-sensitive.

7. CONNECTION DIAGRAM



8. SPECIFICATIONS

8.1 Technical Specifications

Ethernet Bandwidth	100Mbps
Input Port	1×Dante (RJ-45)
Output Ports	4×Analog Mono (3-pin Terminal Block)
Service/Control Port	1×USB 2.0 (Micro-B)
Baud Rate	19200
Power Supply	PoE (802.3af)
ESD Protection (HBM)	±8kV (Air Discharge) ±4kV (Contact Discharge)
Dimensions (W×H×D)	128mm×25mm×108mm [Case Only] 128mm×25mm×110mm [All Inclusive]
Weight	354g
Chassis Material	Metal (Aluminum)
Chassis Color	Black
Operating Temperature	0°C – 40°C/32°F – 104°F
Storage Temperature	-20°C – 60°C/-4°F – 140°F
Relative Humidity	20 – 90% RH (Non-condensing)
Power Consumption	1.2W

8.2 Audio Specifications

8.2.1 Digital Audio

Dante Input	
LPCM	
Max Channels	4 Channels
Sampling Rate (kHz)	44.1, 48, 88.2, 96
Bitstream	
Supported Formats	None

8.2.2 Analog Audio

Analog Output	
Max Audio Level	4.2Vrms
THD+N	< -87dB@0dBFS 1kHz (A-wt)
SNR	> 105dB@0dBFS
Frequency Response	< ±0.5dB@20Hz~20kHz
Impedance	499Ω
Type	Balanced

8.3 Cable Specifications

Dante Audio Cable Length (Per network segment)	
Ethernet Cable	
Cat.5e/6	100m
Cat.6A/7	100m

9. ACRONYMS

ACRONYM	COMPLETE TERM
ADC	Analog-to-Digital Converter
Cat.5e	Enhanced Category 5 cable
Cat.6	Category 6 cable
Cat.6A	Augmented Category 6 cable
Cat.7	Category 7 cable
DAC	Digital-to-Analog Converter
dB	Decibel
GbE	Gigabit Ethernet
Gbps	Gigabits per second
IP	Internet Protocol
kHz	Kilohertz
LAN	Local Area Network
LED	Light-Emitting Diode
LPCM	Linear Pulse-Code Modulation
MAC	Media Access Control
MHz	Megahertz
PD	Powered Device
PoE	Power over Ethernet
PSE	Power Sourcing Equipment
SNR	Signal-to-Noise Ratio
THD+N	Total Harmonic Distortion plus Noise
USB	Universal Serial Bus
Ω	Ohm



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