

# **LM-DANTE-EXP**

Dante Option Card  
for MIX-16  
**USER GUIDE**



**DIGITAL AUDIO**  
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## SAFETY INSTRUCTIONS

**TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER. NO USER SERVICEABLE PARTS INSIDE. CONTACT DIGITAL AUDIO LABS FOR SERVICING.**

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of un-insulated and/or potentially dangerous voltage within the products enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.



### POWER CORD NOTICE FOR INTERNATIONAL OPERATION

Please call Digital Audio Labs Support at 952-401-7700.

## Important Safety Instructions

1. Read and understand this entire manual.
2. Keep this manual available for reference.
3. Heed all warnings and precautions in this manual and notices marked on the product.
4. Do not use this product near water or damp environments.
5. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
6. Provide for proper airflow around product. Do not install near products that produce high levels of heat. Do not expose the unit to direct sun light or heating units as the internal components' temperature may rise and shorten the life of the components.
7. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong.
8. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they connect to the product. Do not use the unit if the electrical power cord is frayed or broken.
9. Only use attachments/accessories specified by the manufacturer.
10. Unplug this product during lightning storms or when unused for long periods of time.
11. Refer all servicing to qualified service personnel. There are no user serviceable components inside the product.
12. The product shall not be exposed to moisture. Do not touch the unit with wet hands. Do not handle the unit or power cord when your hands are wet or damp.
13. The product should be connected to a power supply only of the type described in the operating instructions or as marked on the product.

## Care

- From time to time you should wipe off the front and side panels and the cabinet with a dry soft cloth. Do not use rough material, thinners, alcohol or other chemical solvents or cloths since this may damage the finish or remove the panel lettering.
- The Livemix system is capable of delivering high levels of volume. Please use caution with volume levels, listen with the lowest possible volume for proper operation and avoid exposure to prolonged high volume levels.
- The manufacturer cannot be held responsible for damages caused to persons, personal possessions, or data due to an improper or missing ground connection.

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# DIGITAL AUDIO LABS LIMITED WARRANTY

Digital Audio Labs warrants their products against defects in material and workmanship for a period of two years from date of purchase. During this period, Digital Audio Labs will, at its option, repair the defective unit or replace it with a new or rebuilt one.

The warranty does NOT cover:

- Damage due to abuse, misuse, or accident.
- Damage due to operation contrary to the instructions in the product instruction manual.
- Units on which the product serial number has been removed or altered.
- Units that have been serviced by unauthorized personnel.

All implied warranties, including warranties on merchantability and fitness, are limited in time to the length of this warranty. Some states do not allow time limitations on implied warranties, so this limitation may not apply to you. Digital Audio Labs' liability is limited to the repair or replacement of its product. Digital Audio Labs shall in no way be held liable for incidental or consequential damages resulting from the use of their product or its software, including, without limitation, damages from loss of business profits, business interruption, loss of business information or other pecuniary loss. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

## Repair Policy

Please do not return the product without obtaining an RMA number first. Contact Digital Audio Labs at support@digitalaudio.com to acquire an RMA number. Do not return the product to the place of purchase. Please write the RMA number on the outside of the shipping carton. Any product sent to us without a valid RMA number will be refused. Include the following with the product: a brief description of the problem, your name, return shipping address, phone number and the RMA number. Do not include any accessories. DAL is not responsible for any damage to or loss of the product during transit. We recommend that customers obtain a receipt and tracking number for all packages shipped to us. Turnaround time on repairs is generally ten business days. If you live outside of the United States, please contact your local distributor for warranty service.

Please return product to:  
Digital Audio Labs  
Attn: RMA Number  
1266 Park Road  
Chanhassen, MN 55317  
USA

## Warranty Service

You will be required to pay the shipping charges when you ship your product to DAL. DAL will pay for return shipping via UPS ground. We reserve the right to inspect any product that may be the subject of any warranty claim before repair is carried out. For warranty service, we may require proof of the original date of purchase if you have not registered your product with DAL. Final determination of warranty coverage lies solely with Digital Audio Labs.

## Non-Warranty Service

If it is determined that the product does not meet the terms of our warranty, you will be billed for labor, materials, return freight and insurance. There is a \$50 USD minimum charge for materials and labor. Appropriate shipping charges will be applied. We require payment in advance of repair by credit card; we accept Visa and Master Card. In the event the charges are over the minimum charge, DAL will contact you and inform you of the cost of the repair before any work is completed.

LIVEMIX DANTE OPTION CARD (LM-DANTE-EXP)

## INTRODUCTION

The Livemix LM-DANTE-EXP is an add-on expansion board for the MIX-16 that allows the Livemix personal monitor system to connect to a Dante network. The system can then receive up to 24 channels from the Dante network. Any channel that has been published to the Dante network is available to assign to any of the 24 available channels in the Livemix personal monitor system.

Audinate's Dante network protocol delivers a no hassle, self configuring, true plug-and-play digital audio network that uses standard Internet Protocols over 100Mb and/or Gigabit Ethernet. Patent-pending Dante technology distributes digital audio plus integrated control data with sub millisecond latency, sample-accurate playback synchronization, extreme reliability and high channel counts.

### NOTE:

It is important to understand how your Dante devices publish audio streams to the network. Many digital consoles have multiple output options and many of them can be published to the Dante network. Consult the manual for your particular Dante device to ensure you have published channels to the network.

## ANATOMY OF THE DANTE OPTION CARD



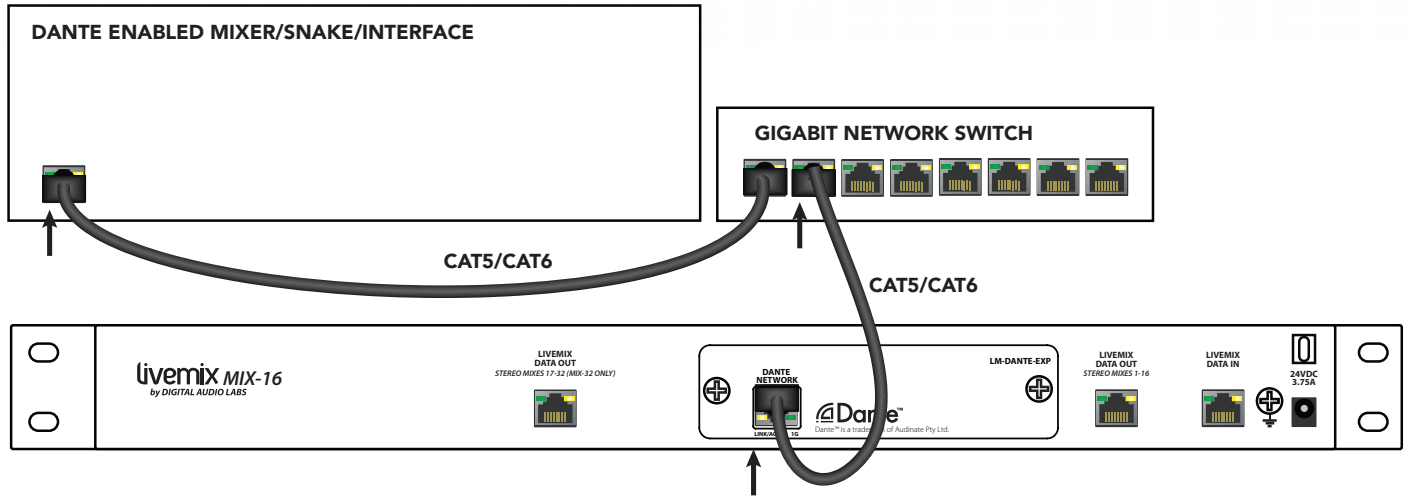
**DANTE NETWORK CONNECTION PORT:** Connect a CAT6 cable from the connector labeled DANTE NETWORK to a Dante device or a gigabit switch.

Two indicator lights on each port report device status information.

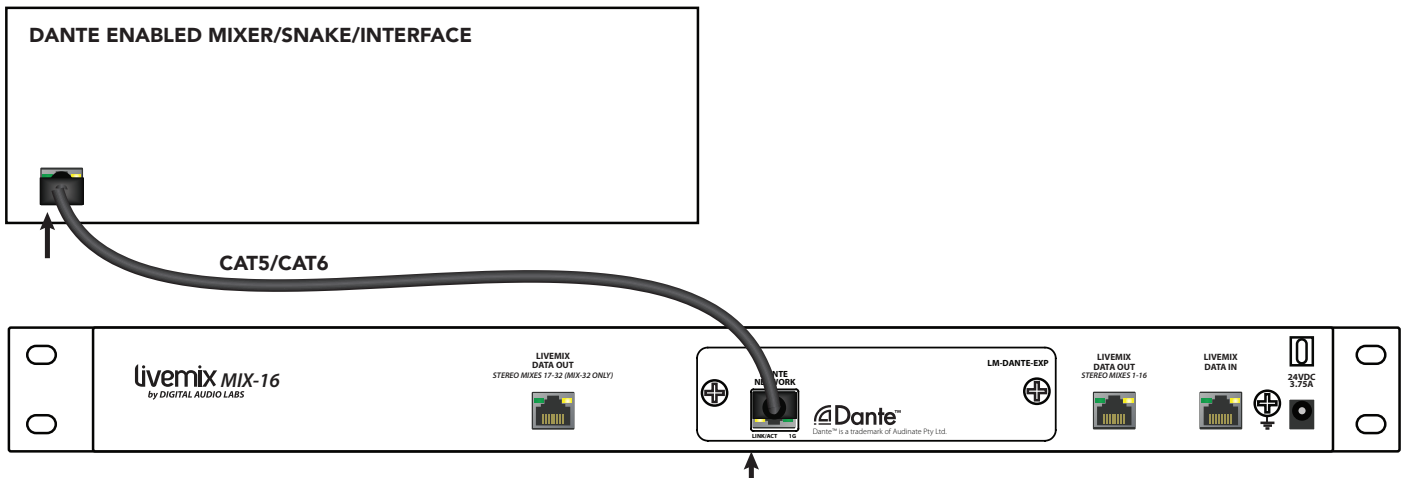
- The yellow light indicates data is being transferred.
- The green light will illuminate to indicate a 1 Gpbs Ethernet connection. It will be off to indicate a 100 Mbps or lower connection.

# SETUP DIAGRAMS

## Connection to a Dante Network



## Direct Connection to a Dante Device



# SETUP AND OPERATION

## Installation

If you purchased a Livemix digital bundle, the LM-DANTE-EXP will have been installed for you. If you are updating your Livemix system to use the Dante option card, you will need to install the LM-DANTE-EXP. To install the LM-DANTE-EXP:

1. Turn off the MIX-16 and disconnect the power cable.
2. Remove the blank panel on the back of the MIX-16 by removing the two screws holding it in place.
3. The back of the LM-DANTE-EXP has a slotted connector (see image to the right). This connector needs to seat into a connector in the MIX-16.
4. Insert the LM-DANTE-EXP into the option card slot. Hold the card by the black panel and gently seat the connector into the MIX-16. Do not force it, but feel for gentle resistance as the connectors mate.
5. Reattach the screws removed in step 1 to secure the option card.



## Physical Setup

Using the Livemix personal monitor system with a Dante network requires at least one device that is transmitting/publishing audio to the network. To connect Livemix to the Dante network, you will need either a Gigabit switch, or a direct connection to the transmitting device.

At this time, Livemix is a receiving device only. This means that it can receive and subscribe to channels on the network, but does not place any audio onto the network.

## Direct Connection to Dante Device

If you have only one additional Dante device like a digital console, the Dante Option Card can connect directly to another Dante enabled device.

1. Connect a CAT6 cable to the Ethernet connector on the Dante Option Card.
2. Connect the opposite end to the Dante connector on the transmitting device.
3. Often there will be both Primary and Secondary connectors. In most cases you will use the Primary connector.

### TERMINOLOGY NOTE

Dante terminology is based on networking terms. When a channel is PUBLISHED, it is made available for any device on the network to SUBSCRIBE to it. You might also see TRANSMIT and RECEIVE. It is similar to input and output in audio terminology. A device must TRANSMIT its channels by PUBLISHING them to the network. The Livemix system will RECEIVE the channels by SUBSCRIBING to them.

### CABLE NOTE:

Audinate, the makers of Dante technology, recommend using a CAT6 cable to connect devices to the network.

## Connecting to Dante Network with a Switch

If you have multiple Dante devices like a digital console and a digital snake, you will want to use a Gigabit switch to connect Livemix to the Dante network. Most standard off the shelf Gigabit switches will work with Dante, provided they meet the Quality of Service (QOS) requirements. For more information, please reference the Dante FAQ on the Audinate website ([www.audinate.com](http://www.audinate.com)).

1. Connect a CAT6 cable to the Ethernet connector on the Dante Option Card.
2. Connect the opposite end to an open port on the Gigabit switch.
3. Connect other Dante enabled devices to the Gigabit switch in the same manner.
4. Set up the switch to work with Dante. Consult the Audinate website or the website of the device you will use to transmit onto the Dante network for more information. In general, you will need to disable the Energy Efficient Ethernet (EEE) if your switch has that feature.

### **MORE INFORMATION ON SETTING UP A DANTE NETWORK:**

For more detailed information on switches and setting them up, please visit Audinate's Dante Setup pages here:

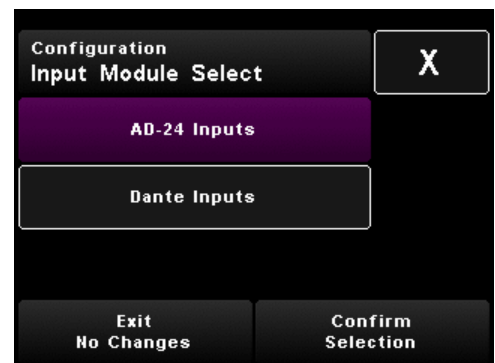
[http://dev.audinate.com/kb/webhelp/content/setting\\_up\\_dante/setting\\_up\\_dante\\_faqs.htm](http://dev.audinate.com/kb/webhelp/content/setting_up_dante/setting_up_dante_faqs.htm)

## INPUT SOURCE SELECT

The Livemix personal monitor system can receive analog input via the Livemix AD-24, or Dante digital input via the LM-DANTE-EXP option card for the MIX-16.

To select Dante input (or verify that it is setup for the LM-DANTE-EXP):

1. Enter the Mix Tools menu and PRESS Global Setup.
2. PRESS the Input Select and Digital Configuration button.
3. You will be prompted with a warning. PRESS the Continue button to continue.
4. PRESS the Input Source Select button.
5. SELECT Dante Inputs.
6. PRESS the Confirm Selection button.



Your Livemix system is now setup to receive audio from the Dante network.



## DANTE STATUS LABELS

Each channel in the Dante Channel Setup screen will report the status of the channel. These options are:

OK: This channel is assigned to a channel properly.

OFF: This channel is not assigned or there is no device/channel present or it is assigned to a device that is no longer on the network.

WAIT: Device is in the process of setting up a subscription.

ERROR: There is a problem with this channel or there is not enough bandwidth on the network to accommodate a subscription.

## ASSIGNING CHANNELS

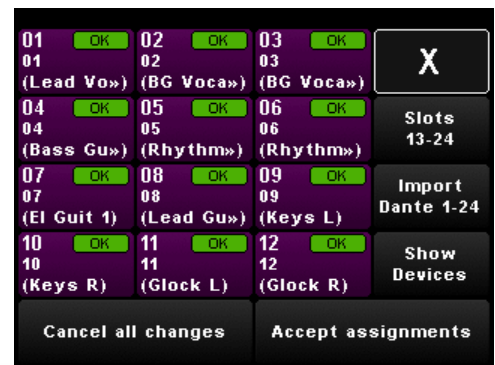
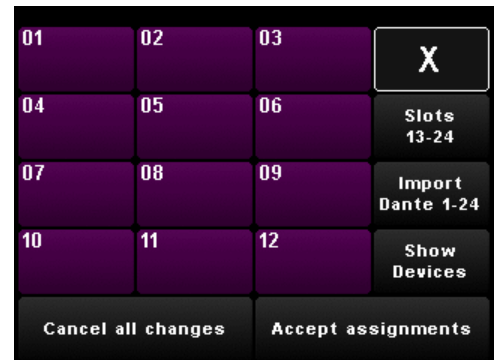
Configuring Livemix for use with the Dante network can be performed with any CS-DUO personal mixer in the system. You can also use the Dante Controller software provided by Audinate on a Windows or Mac OS X computer. Consult the user manual of your other Dante enabled devices for information on how each device will transmit/publish channels to the Dante network.

### Auto Assign Dante Channels 1-24

With the Dante Channel Setup on the Livemix CS-DUO, it is easy to assign the first 24 networked channels of any Dante device.

1. Enter the Mix Tools menu and PRESS Global Setup.
2. PRESS the Input Select and Digital Configuration button.
3. You will be prompted with a warning. PRESS the Continue button to continue.
4. PRESS the Dante Channel Setup button.
5. PRESS the Import Dante 1-24 button. The button will flash to indicate the import feature is active.
6. Turn the ADJUST knob to select a device on the Dante network.
7. PRESS the ADJUST knob to confirm device selection.

Your Livemix system will now be subscribed to the first 24 channels of the chosen Dante device.



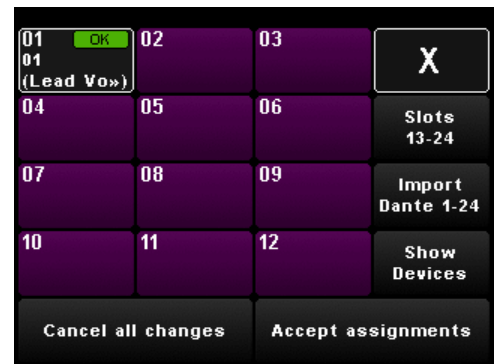
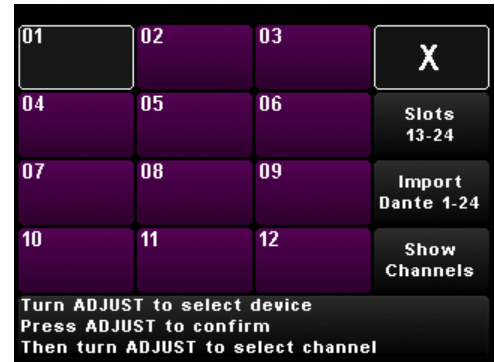
## Manually Assigning Dante Channels

You may want to manually subscribe to channels on the Dante network. Using the manual assign feature will allow you to connect to multiple devices, or to change the order of connected devices, for example, connecting Dante transmitter channel 24 from a console to channel 4 on the Livemix personal monitor system.

1. Enter the Mix Tools menu and PRESS Global Setup.
2. PRESS Input Select and Digital Configuration.
3. You will be prompted with a warning. PRESS the Continue button to continue.
4. PRESS Dante Channel Setup to enter the Dante setup configuration screen.
5. PRESS a Channel to assign to a Dante channel. A popup will appear on the bottom of the window.
6. Select a Device by rotating the ADJUST knob. PRESS the ADJUST knob to accept a selected device. If you have previously assigned a device to this channel, the selector may be on channel select, if so, PRESS the ADJUST knob to change to the device selector.
7. Select a Channel on the selected device by rotating the ADJUST knob. After a few second, the highlighted channel will be automatically selected.
8. Repeat steps 5-7 as necessary. Press the Slots 13-24 button to access additional channels.
9. PRESS the Accept Assignments button to accept the assigned channels.

### Device/Channel View Toggle

The Show Device/Show Channels button toggles what information is visible in each channel cell. By default, the names of the assigned channels are visible. PRESS the Show Devices button to see which devices are assigned to each Livemix channel. To go back to viewing the channels, PRESS the Show Channels to toggle it to the Show Devices view.



### NOTE:

After making a device and channel selection, it may take a few seconds for the network to recognize the change and update.

## IMPORTING NAMES

If you are using Livemix with an existing system that has published “Channel Labels” to the network, you can use those same labels as the Livemix channel names that appear in the Channel Overview and Single Channel View.

NOTE: Not all Dante network devices use channel labels. Some only publish the number of the channel.

To import Channel Labels from the Dante network:

1. PRESS the Global Setup button from the Mix Tools menu.
2. PRESS the Input Select and Digital Configuration button.
3. You will be prompted with a warning. PRESS the Continue button to continue.
4. PRESS the Import Dante Names button.
5. PRESS the Yes button to copy the Dante Channel names to the Livemix channel names.

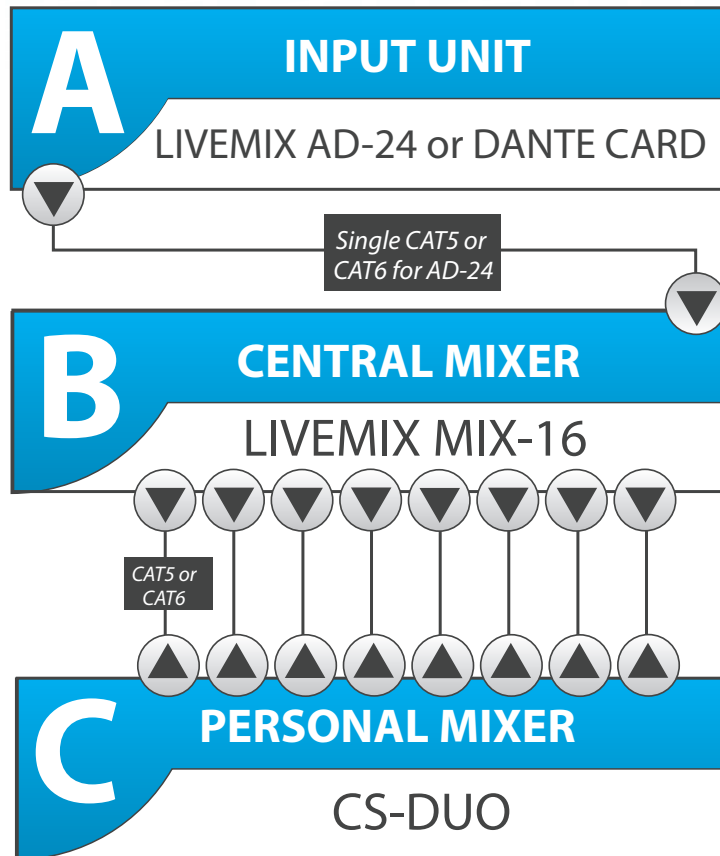


## SAVING DANTE CHANNEL DATA

To ensure that Dante channel setup and names are saved, Save a Global Template after changes are made. Instructions for Saving a Global Template are in the Livemix CS-DUO User Guide.

## LIVEMIX SYSTEM OVERVIEW

There are three components required to make a Livemix system. Each system will have either an analog or digital input unit, a central mixer unit, and at least one attached personal mixer.



### Input Options

Users with analog source material will use the AD-24. Using the TRS or DB-25 inputs, audio from the source material is made available to the Livemix system.

Users with digital source material will use the Dante Option Card (LM-DANTE-EXP). This is an option card that is installed in the MIX-16 and allows the Livemix system to receive audio from a Dante based network.

### Central Mixer Options

The Livemix Central Mixer processes and distributes digital audio and power to connected Control Surfaces. Control up to 16 personal mixes with the Livemix MIX-16.

### Personal Mixer

Livemix needs at least one connected personal mixer to make a mix. Livemix Bundles (both Analog and Digital) come with 4 Livemix CS-DUO units for a total of 8 personal mixes. Each Livemix CS-DUO connects via network cable to one of the ports of the MIX-16. Using various controls on the unit, two users can each create their own custom mix, which is then output to headphones, in-ear monitors or stage monitors, right from the CS-DUO unit.

## TROUBLESHOOTING

**I connected the LM-DANTE-EXP to a Dante device but I can't see the device in the setup screen.**

- Cycle the power to the Dante device to make sure the Livemix system is properly seeing it.
- Verify that the Dante devices are available on the network. The Dante Controller from Audinate can be a helpful tool here. It is a free download at [www.audinate.com](http://www.audinate.com).

**I have assigned all the channels and they show up but there is no audio.**

In many devices like a console, you need to tell the Dante network which signals get assigned to the channels. A digital console may allow you to put directs, inserts, aux sends, etc. on the Dante network. Consult the users guide for your particular device to determine how to assign the desired outputs to the Dante network.

## LIVEMIX SUPPORT

Phone Support: 952-401-7700  
Toll Free: 844-DAL-INFO  
Email Support: support@digitalaudio.com  
Website: www.digitalaudio.com/support

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## TECHNICAL SPECIFICATIONS

### LM-DANTE-EXP Option Card Specifications

Input Channels	24
Sample Bit Depth	20 Hz – 22 kHz $\pm$ .5dB
Sample Rate	48 kHz
Sample Bit Depth	24 bits per sample

### LIVEMIX SYSTEM SPECIFICATIONS

THD+N (18 dBu 1KHz input)	.03% (100mW, 22 $\Omega$ Load)
	.014% (100mW, into 32 $\Omega$ Load )
	.005% (100mW into 64 $\Omega$ ohms)
	.003% (100mW into 300 $\Omega$ )
S/N Ratio	103dB
Frequency Response	20Hz-22KHz $\pm$ 3dB
Crosstalk (Left to Right)	-103 dB
Latency	1.5 mS



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Patents pending.