

Quick Start Guide



EXPANSION CARD X-DANTE

High-Performance 32-Channel Audinate Dante Expansion Card for X32





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EN Important Safety Instructions

Terminals marked with this symbol carry electrical current of sufficient

magnitude to constitute risk of electric shock. Use only high-quality professional speaker cables with ¼" TS or twist-locking plugs pre-installed. All other installation or modification should be performed only by qualified personnel.



This symbol, wherever it appears, alerts you to the presence of uninsulated dangerous voltage inside the enclosure - voltage that may be sufficient to constitute a risk of shock.



This symbol, wherever it appears, alerts you to important operating and maintenance instructions in the accompanying literature. Please read the manual.

**Caution**

To reduce the risk of electric shock, do not remove the top cover (or the rear section). No user serviceable parts inside. Refer servicing to qualified personnel.

**Caution**

To reduce the risk of fire or electric shock,

do not expose this appliance to rain and moisture. The apparatus shall not be exposed to dripping or splashing liquids and no objects filled with liquids, such as vases, shall be placed on the apparatus.

**Caution**

These service instructions are for use by qualified service personnel only. To reduce the risk of electric shock do not perform any servicing other than that contained in the operation instructions. Repairs have to be performed by qualified service personnel.

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. 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. The wide blade or the third prong are provided for your safety.

If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.

11. Use only attachments/accessories specified by the manufacturer.



12. Use only with the cart, stand, tripod, bracket, or table specified by the

manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.

13. Unplug this apparatus during lightning storms or when unused for long periods of time.

14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

15. The apparatus shall be connected to a MAINS socket outlet with a protective earthing connection.

16. Where the MAINS plug or an appliance coupler is used as the disconnect device, the disconnect device shall remain readily operable.



17. Correct disposal of this product: This symbol indicates that this product must not be disposed of with

household waste, according to the WEEE Directive (2012/19/EU) and your national law. This product should be taken to a collection center licensed for the recycling of waste electrical and electronic equipment (EEE).

The mishandling of this type of waste could have a possible negative impact on the environment and human health due to potentially hazardous substances that are generally associated with EEE. At the same time, your cooperation in the correct disposal of this product will contribute to the efficient use of natural resources. For more information about where you can take your waste equipment for recycling, please contact your local city office, or your household waste collection service.

18. Do not install in a confined space, such as a book case or similar unit.

19. Do not place naked flame sources, such as lighted candles, on the apparatus.

20. Please keep the environmental aspects of battery disposal in mind. Batteries must be disposed-of at a battery collection point.

21. Use this apparatus in tropical and/or moderate climates.

LEGAL DISCLAIMER

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LIMITED WARRANTY

For the applicable warranty terms and conditions and additional information regarding MUSIC Group's Limited Warranty, please see complete details online at music-group.com/warranty.



Warning

Failure to observe the following warnings may lead to fatality or serious injury from fire or electric shock.

Before installing the card, you must refer to the owner's manual of the host device or to behringer.com to verify that your host device supports this card, and to verify the number of cards that can be installed in combination with other BEHRINGER or third-party cards.

- Do not attempt to disassemble or modify the card. Do not apply excessive force to board connectors or other board components. Mishandling of board may lead to shock, fire hazard, or equipment failure.
- Disconnect the power cable from the main unit before installing this card to eliminate shock hazard.



Caution

Failure to observe the following precautions may lead to personal injury, or may result in damage to equipment or other property.

- Do not touch the board's metallic leads (pins) when handling the card. Pins are sharp and may cause injury.
- **The card is electrostatic-sensitive. Before handling the card, you should briefly touch the main unit's metal casing with your bare hand so as to drain off any static charge from your body.** BEHRINGER assumes no responsibility for data loss, equipment damage, or injury caused by inappropriate handling or usage.

FCC INFORMATION U.S.A.

1. IMPORTANT NOTICE: DO NOT MODIFY THIS UNIT! This product, when installed as indicated in the instructions contained in this manual, meets FCC requirements. Modifications not expressly approved by BEHRINGER may void your authority, granted by the FCC, to use the product.

2. IMPORTANT: When connecting this product to accessories and/or another product, use only high quality shielded cables. Cables supplied with this product **MUST** be used. Follow all installation instructions. Failure to follow instructions could void your FCC authorization to use this product in the USA.

3. NOTE: This product has been tested and found to comply with the requirements listed in FCC Regulations, Part 15 for Class "B" digital devices. Compliance with these requirements provides a reasonable level of assurance that your use of this product in a residential environment will not result in harmful interference with other electronic devices. This equipment generates/uses radio frequencies and, if not installed and used according to the instructions found in the users manual, may cause interference harmful to the operation of other electronic devices. Compliance with FCC regulations does not guarantee that interference will not occur in all installations. If this product is found to be the source of interference, which can be determined by turning the unit "OFF" and "ON", please try to eliminate the problem by using one of the following measures: Relocate either this product or the device that is being affected by the interference. Utilize power outlets that are on different branch circuits (circuit breaker or fuse) or install AC line filters. In the case of radio or TV interference, relocate/reorient the antenna. If the antenna uses 300 Ohm ribbon cable, use coaxial cable instead. If these corrective measures do not produce satisfactory results, please contact the local retailer authorized to distribute this type of product. If you can not locate the appropriate retailer, please contact BEHRINGER customer service.

1. Introduction

Dante is a high-performance digital media protocol designed to deliver audio over a standard Ethernet IP network. The X-DANTE card allows the X32 series of digital mixers to share up to 32 x 32 channels of audio with any network of Dante-enabled devices via single or redundant Ethernet connection. Using existing network infrastructure at 100 Mbit/s or 1 Gbit/s, the Dante protocol offers very stable, low-latency transmission for a variety of professional applications unifying multi-channel audio distribution across multiple locations or device families.

2. Installation

Before you install the X-DANTE card in the expansion slot of the X32 console, you must check behringer.com to verify whether the console firmware supports that card. Minimum required X32 firmware for X-DANTE is version 2.0. We recommend that you periodically check your console's product page for console firmware updates.

Caution – before installing the X-DANTE card into the console, you must make sure that the console's power switch is turned off. Malfunctions or electrical shock may occur otherwise.

1. Make sure that the mixer's power is turned off.
2. Loosen the 2 screws left and right that fasten the slot, then remove the slot cover or currently-installed card and keep it in a safe place.
3. Before removing the X-DANTE card from its protective bag, we recommend touching the grounded metal chassis of the console to prevent electrostatic discharges affecting the sensitive electronic components. It is generally a good idea to hold the card either by the face plate or by the two small handles, but never touching the components on the circuit board directly.

4. Align both edges of the card with the guide rails inside the slot and carefully insert the card into the slot. It should slide in without any considerable resistance. Push the card all the way into the slot to ensure that the contacts of the card are correctly inserted into the connector inside.
5. Fasten the card using the included screws. Be aware that damage or malfunctions may occur if the card is not fastened.



3. Requirements

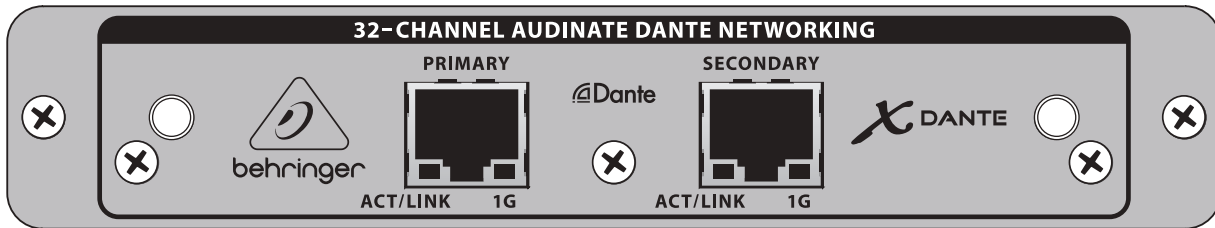
Minimum hardware:

Windows-based application	- Core 2 Duo CPU, 2 GHz - Ethernet port - 1 GB RAM
Mac	- 1.5 GHz CPU - Ethernet port - 512 MB RAM

Recommended Operating Systems:

Windows:	Windows 7 32-bit or 64-bit, Windows 8 32-bit or 64-bit (ASIO/WDM drivers supplied)
Mac:	10.6.8 Snow Leopard, 10.7.5 Lion, 10.8 Mountain Lion (CoreAudio compatible)

4. Connector Plate



- 2x RJ45 connectors with integrated LEDs
- ACT/LINK LED (green) lights green when valid IP network connection exists.
- 1 G LED (amber) lights when used in 1 GBit/s network.
- 2x small handles (St) for removing the expansion card from the slot
- 2x outer screws for fixing the card in the slot (M3 x 6 size).
- 3x countersunk screws fixing the PCBA to the bracket.
Do not remove these!

5. Connection Scenarios

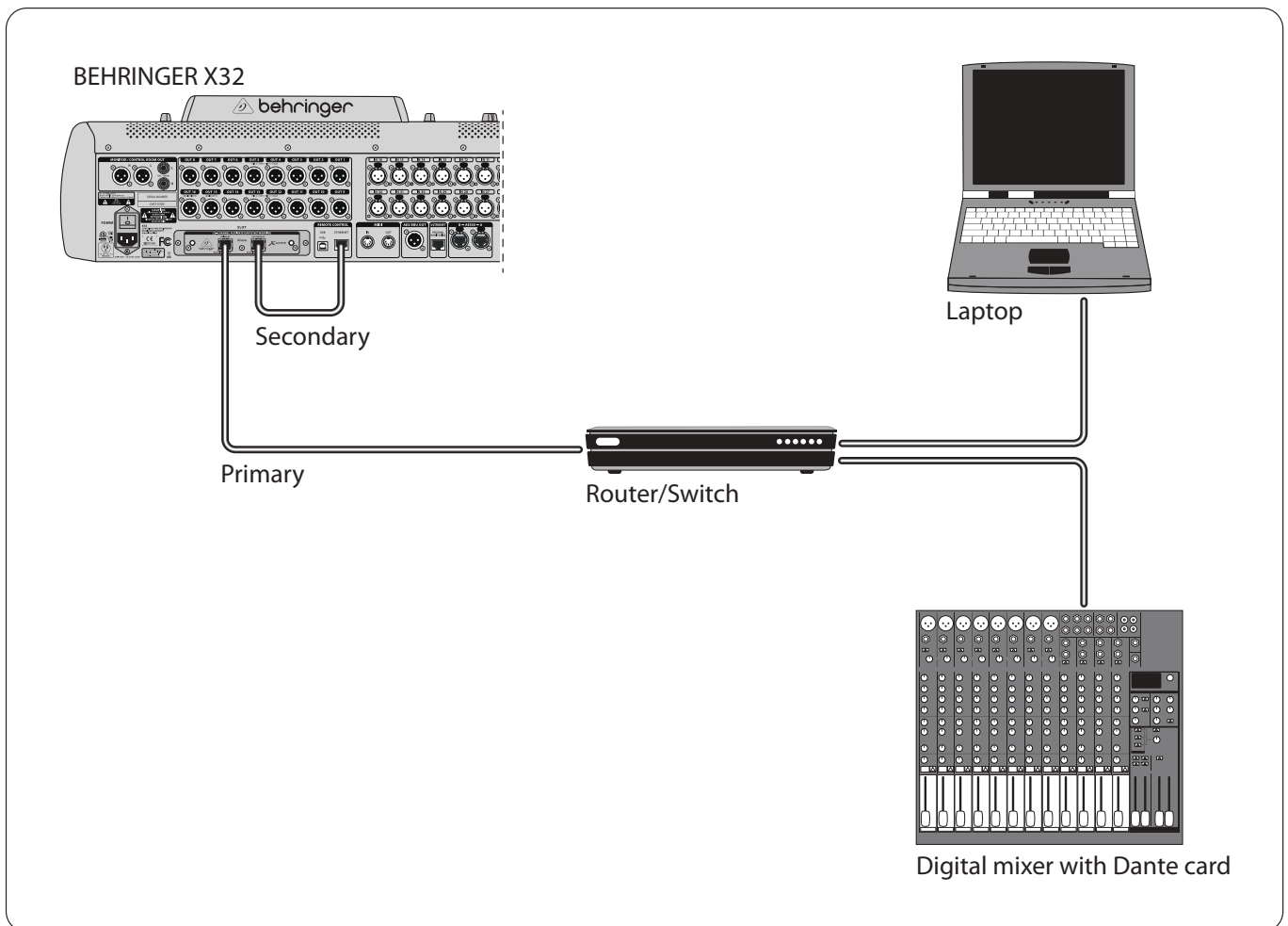
5.1 X32 with X-DANTE connection to Dante™ network

X32 → network router¹ → PC and other Dante-enabled audio devices, e.g. generic digital console with Dante card

¹ for advice on suitable network routers for use with Dante networks visit audinate.com

Here the PC performs 3 tasks concurrently:

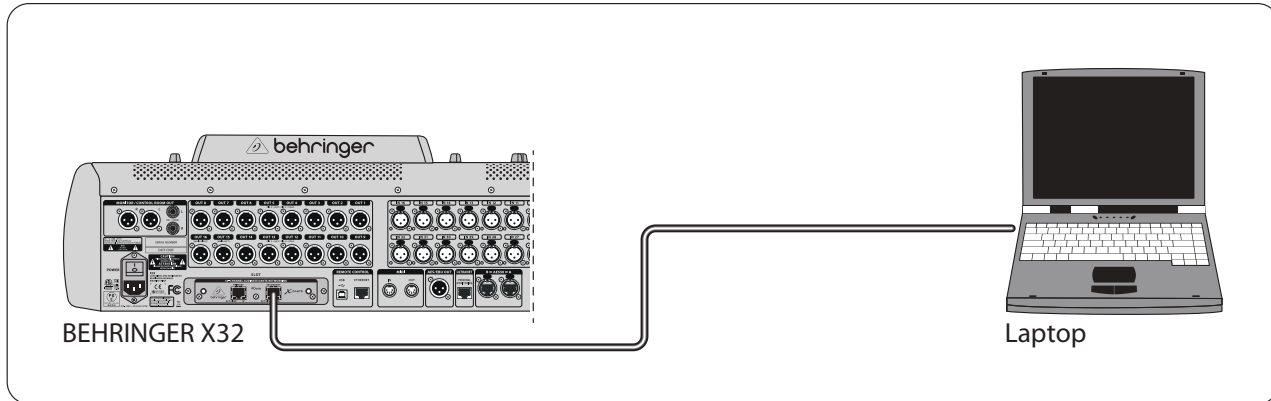
- run Dante Controller app for signal routing
- run X32-Edit app, for X32 remote control
- run Dante Virtual Soundcard, DVS, for recording/playback of all audio channels of both mixers



5.2 X32 with X-DANTE straight connection to PC / Mac and Dante Virtual Soundcard

DVS², for recording/playback up to 32 x 32 channels

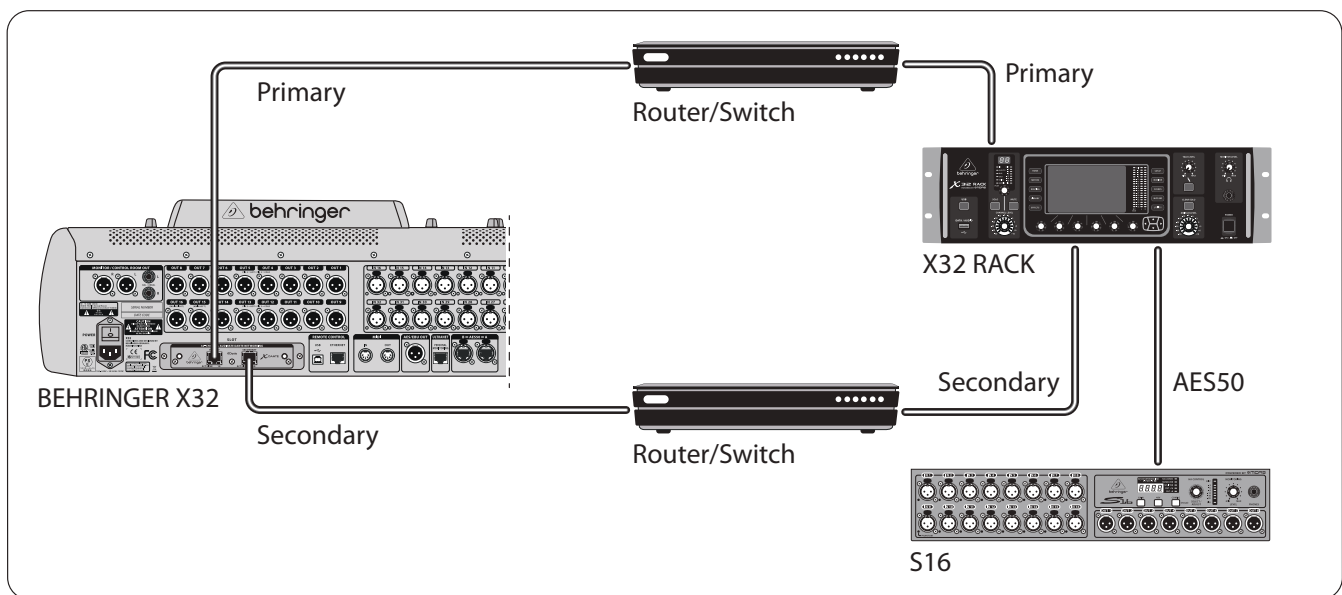
²for advice on using and licensing Dante Virtual Soundcard visit audinate.com



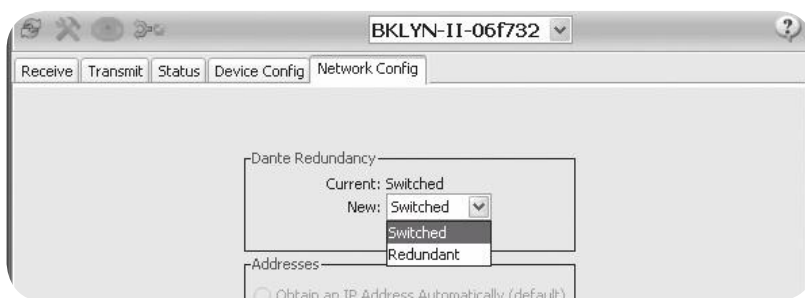
5.3 X32 with X-DANTE redundant network infrastructure

X32 → two separate routers with independent wiring

wiring → X32 RACK + S16

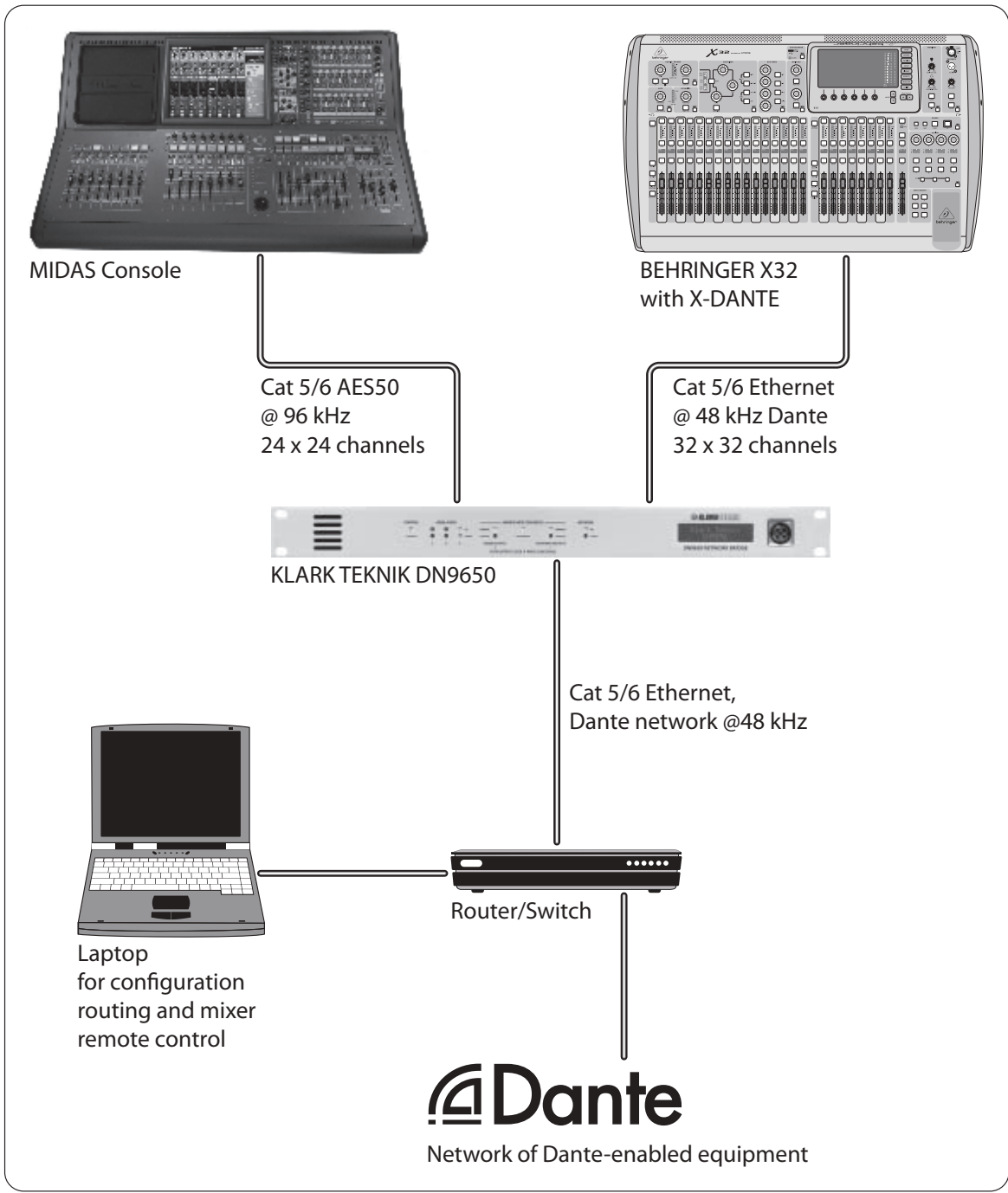


X32 with DANTE redundant network infrastructure



Change Dante Controller network configuration tab 'Switched' to 'Redundant'

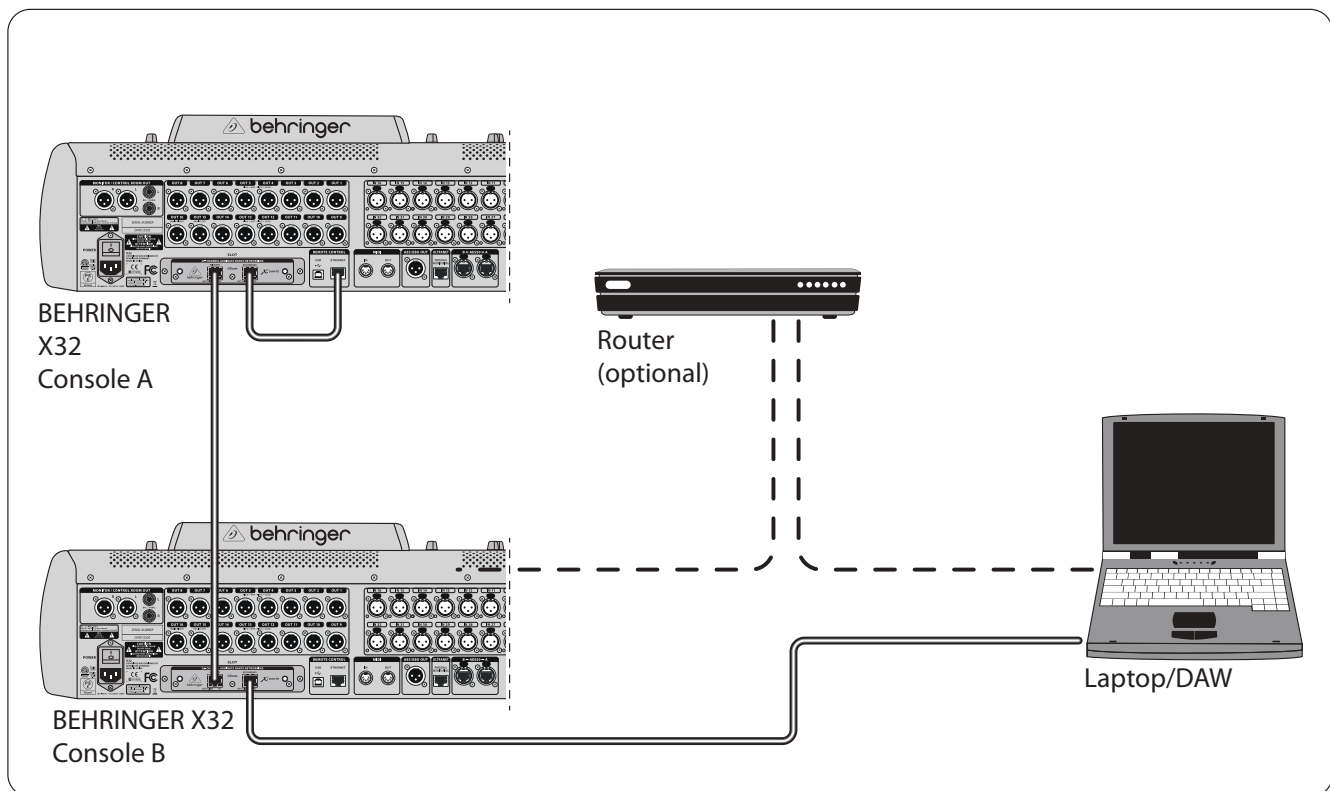
5.4 X32 with X-DANTE connection to Midas PRO2 via DN9650 + CM1 Dante card



5.5 Two X32 consoles with X-DANTE connection to DVS for recording 64 simultaneous tracks

- Both consoles need to have X-DANTE cards installed. Connect one of the X-DANTE Ethernet ports on console A with the card installed in console B.
- Connect the second port of console B, either directly with the DAW-PC/Mac or via a network router to which the DAW has access. This link will carry all 64 channels to and from both consoles.

- Tip: The console's Ethernet remote control can be done over the same network. For remote controlling console A in this example, it is sufficient to use a short patch cable connecting console A's Remote connector with the free port on X-DANTE. Since both ports on X-DANTE of console B are occupied already, you would need to patch a separate cable to the network router.
- Open the Dante Virtual Soundcard driver control panel and switch it ON.
- Run the Dante Controller application to configure the virtual channel patch bay and route the channels between Dante Virtual Soundcard and the consoles.

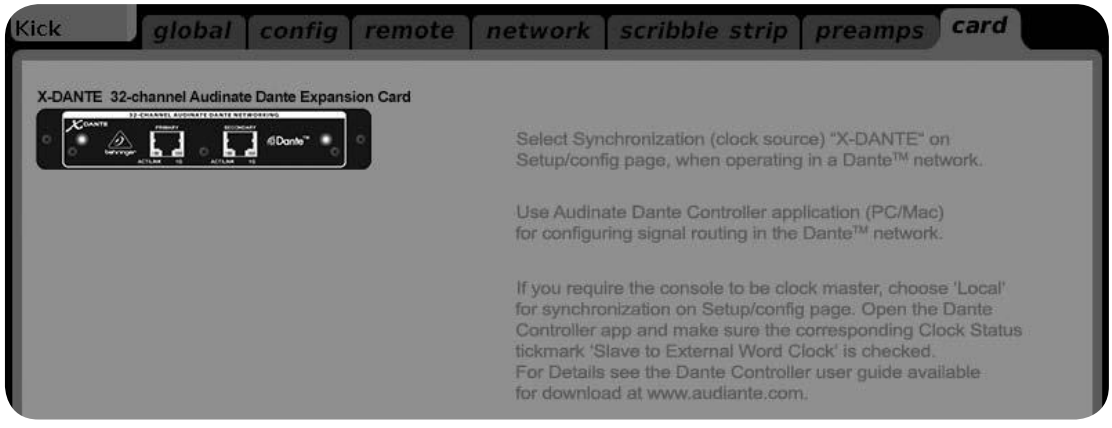


Two X32 consoles with X-DANTE connection to DVS for recording 64 simultaneous tracks

6. X32 Setup

The following four X32 screens have to do with configuring the X-DANTE and the signals to/from the card.

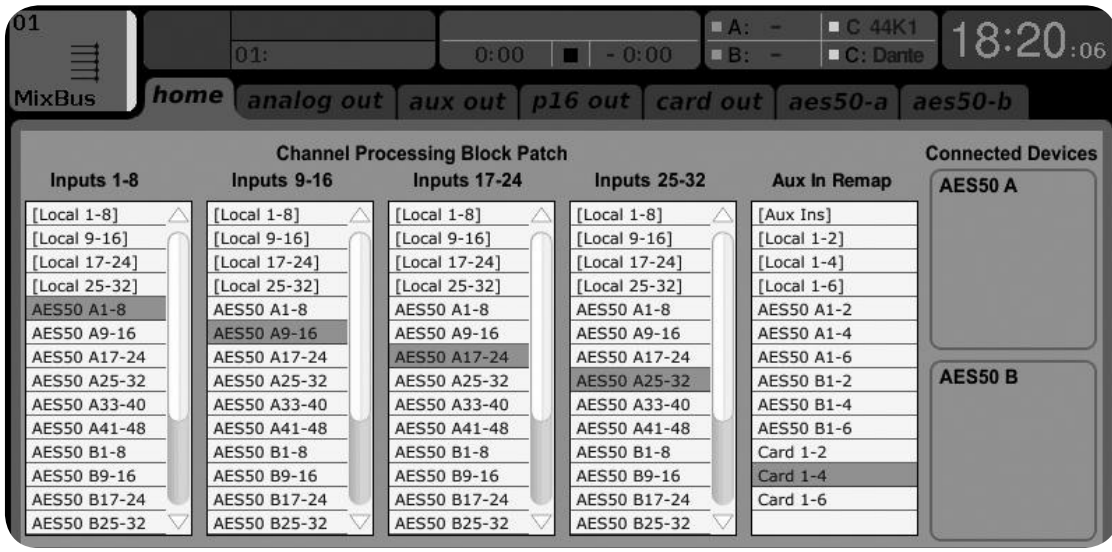
- The SETUP/card screen shows a graphic of the X-DANTE card when it has been installed correctly, and offers advice on setup.



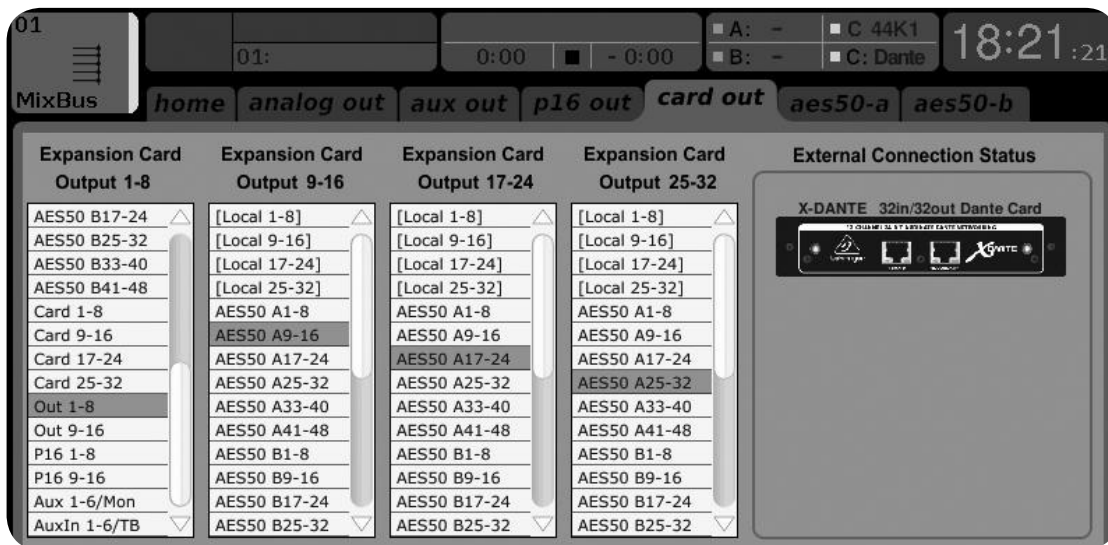
- The SETUP/config page selects the synchronization source and shows status indicators in the top 'global' area (which should normally be "C" for X-DANTE Card).



- The ROUTING/home page allows patching of signals from the X-DANTE card to the Input Channel processing. (e.g. channel 1-4 on Aux In)



- The ROUTING/card out page selects channel blocks that will be provided to the Dante network controller. (e.g. 8 Local Outputs and 3 x 8 signals from AES50 Port A)

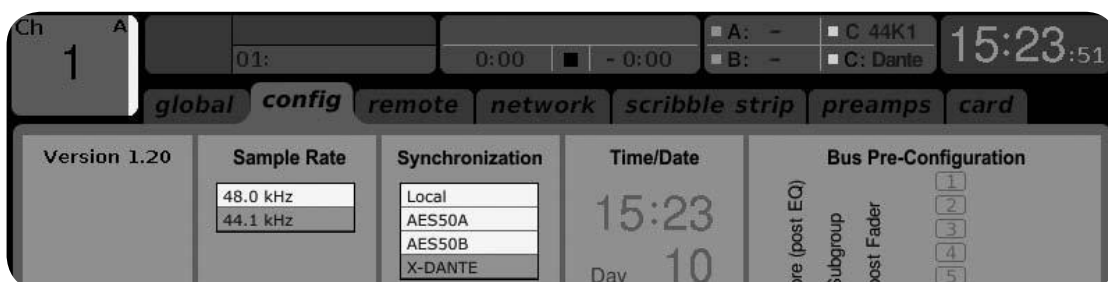


Note that the Dante network routing must be configured exclusively using the Dante Controller Application for Mac/PC. The signals that have been routed from the Dante Controller App to the X-DANTE card are available for patching to the input channel routing on the console's Routing/Home page. Please refer to

audinate.com for a comprehensive set of documentation, FAQ and forum advices on configuring the Dante Controller and Dante Virtual Soundcard applications.

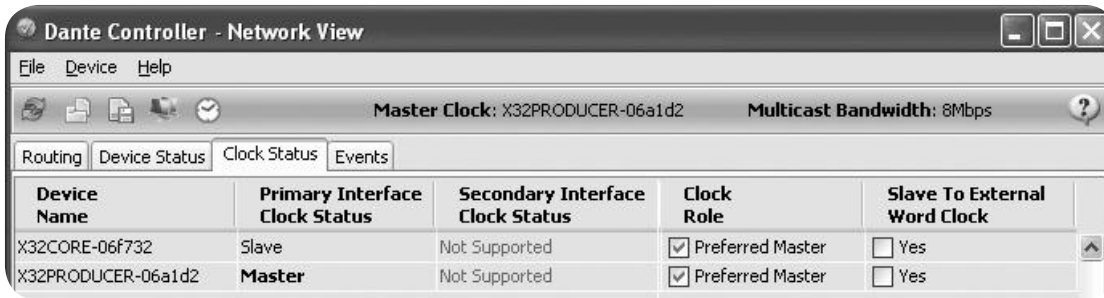
Synchronization

A master word clock source must be selected for the network. The X-DANTE Brooklyn II VCXO clock offers extremely low-jitter. In this case the Setup/Config page should look like this:



Note that the status bar shows "C: 44K1" and a green light for proper synchronization of 44.1 kHz to the card.

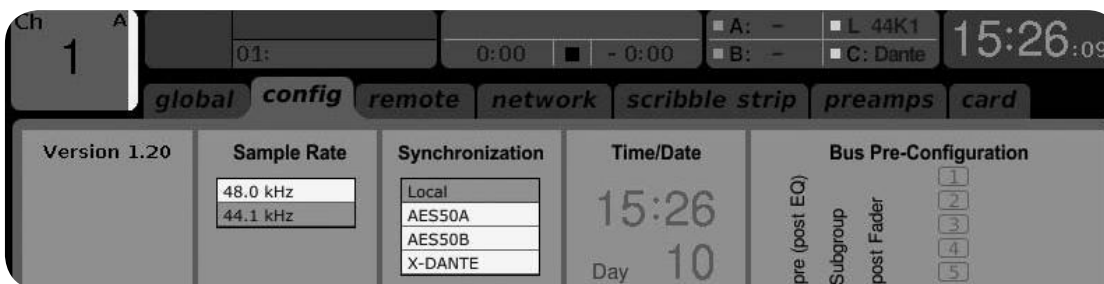
The second green light "C: Dante" indicates proper installation of the X-DANTE card. The Dante Controller app configures the network for using the X-DANTE VCXO clock in this application. See the X32 PRODUCER line, which is configured for Clock Status Master in the following example:



Note that the check boxes for 'Slave to External Word Clock' are unchecked in this application.

Alternative Synchronization:

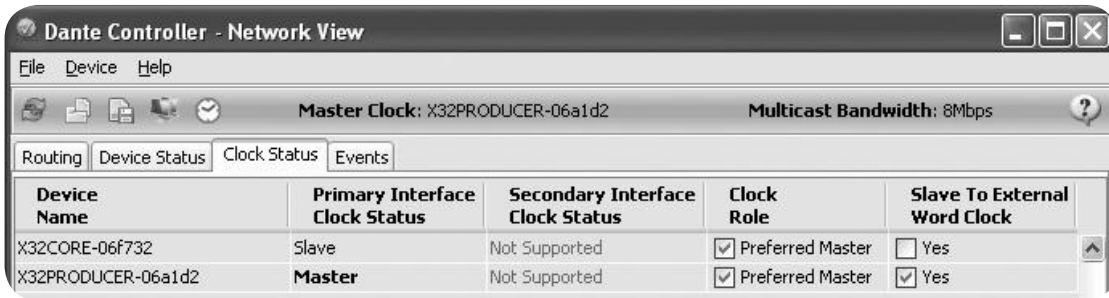
Use the internal X32 clock as master clock. In this case the Setup/Config page should look like this:



Note that the status bar shows "L 44K1" and a green light for Local (internal) clock of 44.1 kHz.

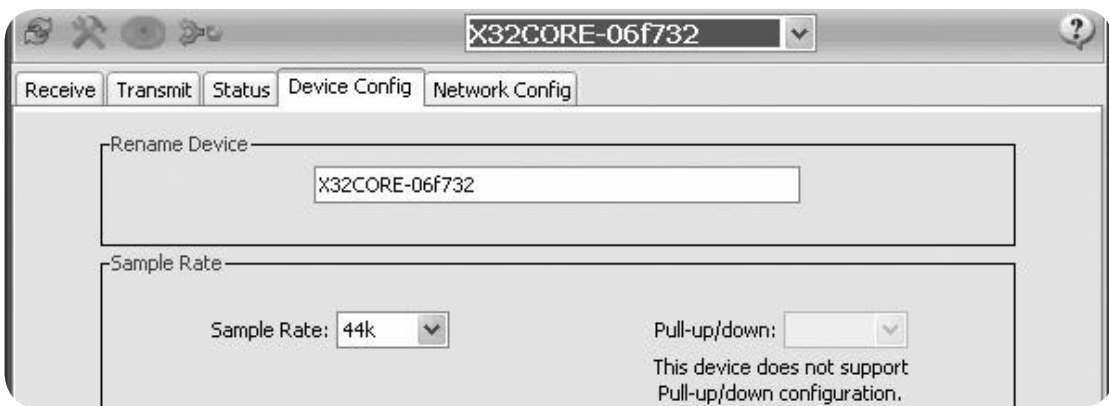
The second green light "C: Dante" indicates proper installation of the X-DANTE card.

The Dante Controller must now be configured for "Slave to External Word Clock" in this application. See the X32 PRODUCER line, which is configured Master in this example:



Renaming Dante Devices “Device View”

By default, the X-DANTE card may show up as “BKLYN-II-06f732” in the controller app. The last six digits represent a part of the card’s Ethernet MAC address. However, the controller’s Device View allows assigning a more descriptive name to the network device, see example below.



7. Audinate Software Tools

Dante Controller

The Dante Controller is a software application provided by Audinate which allows users to configure and route audio around Dante networks. It is available for PCs running Windows and Apple Macs running OSX 10.5. Dante Controller must be installed on one or more PC/Mac computers on the Dante network in order to change any signal routing or clocking in the network. Dante Controller is not required, when everything is pre-configured, for running audio between Dante devices over the network.

Dante Virtual Soundcard

The Dante Virtual Soundcard is a software application that turns your PC or Mac into a Dante-enabled device, allowing Dante audio traffic to be transmitted and received using the standard Ethernet port. No additional hardware is required. On Windows, the Dante

Virtual Soundcard uses Steinberg’s ASIO audio interface, and can be used with any audio application that supports ASIO or WDM. On Mac OSX, the Dante Virtual Soundcard uses the standard Core Audio interface, and can be used by almost any standard audio application.

Visit audinate.com for further advice on downloading and licensing these applications.

8. Specifications

Connectors		
RJ45, Gigabit Ethernet 1 GBit/s, 'PRIMARY' and 'SECONDARY'	2	
Input/Output Characteristics		
Input / Output channels	32 / 32	
Sample rates	44.1 kHz / 48 kHz	
Sample word length	24-Bit PCM	
Clock synchronization, onboard high-quality Dante network clock, based upon IEEE1588 PTP (precision time control)	X32 'Local' or Dante network clock 'X-DANTE'	
System audio latency depends on Dante Controller network configuration	0.25 ms, 0.5 ms, 1 ms or 5 ms	
Dual-input Gigabit Ethernet ports	Ethernet Switch Mode or Dante Redundancy Mode	
Indicator		
Ethernet Link, LED indicator in socket, flashes with network activity	2 LED, green	
1 Gbit/s Ethernet Link, LED indicator in socket	2 LED, amber	
System Requirements		
	Dante Controller App	Dante Virtual Soundcard
PC Hardware, minimum	CPU 1 GHz RAM 512 MB Display 1024 x 768 Wired Ethernet interface	CPU Dual Core RAM 1 GB Wired Ethernet interface, 1 GB/s required for channel counts higher than 32 x 32 @ 48 kHz
Windows applications, *recommended (ASIO and WDM audio device interface)	XP SP3 32-Bit *Win7 32-/64-Bit Win8 32-/64-Bit	Win7 32-/64-Bit Win8 32-/64-Bit
Mac OSX applications (Intel CPU only, no PPC support, CoreAudio)	Mac OSX 10.6.8, 10.7.5, 10.8, 10.9	Mac OSX 10.5, 10.6.8, 10.7.5, 10.8, 10.9

FEDERAL COMMUNICATIONS COMMISSION COMPLIANCE INFORMATION

**BEHRINGER****EXPANSION CARD X-DANTE**

Responsible Party Name: **MUSIC Group Services NV Inc.**

Address: **5270 Procyon Street
Las Vegas, NV 89118
USA**

Phone Number: **+1 702 800 8290**

EXPANSION CARD X-DANTE

complies with the FCC rules as mentioned in the following paragraph:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

Important information:

Changes or modifications to the equipment not expressly approved by MUSIC Group can void the user's authority to use the equipment.

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